Tasks

Universal Controller 7.6.x

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1 Tasks

Creating Tasks
Manually Running and Controlling Tasks
Retrieving Output from a Completed Task
Creating Task Virtual Resources
Copying Tasks
Setting Mutually Exclusive Tasks
Creating Step Conditions
Creating Step Actions
Creating Notes

2 Task Types

Task Types

3 Task Actions

Creating Task Actions
Abort Actions
Email Notification Actions
Set Variable Actions
SNMP Notification Actions
System Operation Actions

4 Task Types

Task Type	Usage
Workflow	Create a sequence of connected tasks, which could include other workflows.
Linux/Unix	Run a platform-specific application on a Linux/Unix machine.
Windows	Run a platform-specific application on a Windows machine.
z/OS	Run a platform-specific application on a z/OS machine.
Universal Command	Run a platform-specific application on a machine where Universal Command is running.
SAP	Send commands to an SAP system and gather status information and output back from SAP.
PeopleSoft	Send commands to a PeopleSoft system and gather status information and output back from PeopleSoft.
File Transfer	Execute file transfers on remote machines using FTP, FTPS, FTPES, SFTP, and UDM protocols.
Manual	Create a pause in the workflow during which the user must take some action.
Timer	Execute a timer command for a specified period of time or until a specific time.
SQL	Execute one or a series of SQL statements against the database specified in the task.
Stored Procedure	Execute a stored procedure against the database specified in the task.
Email	Create and send emails.
Web Service	Invokes a Web Service running on any application server.
Recurring	Specifies the recurrence of a task run.
Task Monitor	Monitor another task or tasks for one or more specific statuses.
Agent File Monitor	Monitor a specific remote machine for the creation, deletion, change, existence, or non-existence of one or more files at a specific location.
Remote File Monitor	Monitor for a file on a remote machine where an FTP server is running.
System Monitor	Monitor a specific remote machine and check for free disk space.
Variable Monitor	Monitor the value of a Global variable.
Email Monitor	Monitor a Mailbox Folder for one or more specific statuses.
Universal Monitor	Monitor published Universal Events.
Application Control	Execute a start, stop, or query command against an application in the Controller network.
Universal	Execute a user-defined script in a Universal Template on which the task is based.

4.1 Built-In Variables

Several built-in variables are available for use in all task types; other built-in variables exist for specific task types.

5 Creating Tasks

5.1 Overview

A Universal Controller task executes a process on a machine, either local or remote. The process might be resident on the machine (agent-based process), or the task itself (such as a File Monitor task) might embed the process.

You can launch tasks within Workflows , by way of triggers , or manually.

5.2 Creating a Task

There are multiple ways to create a task:

1. On the All Tasks list , click the **New** drop-down list and select a task type. A Task Details pop-up displays that lets you enter / select information for a new task.
2. On the Tasks list for a specific task type , click the **New** icon. A Task Details pop-up displays that lets you enter / select information for a new task.
3. In the empty (except for default values) Task Details that displays below the task list for a specific task type, enter / select information for a new task. If the Task Details displays information for an existing task, click the **New** button to clear the Task Details and enter / select information for a new task.
4. Create a copy of a task by clicking the **Copy** button in the Task Details and renaming the task.

For detailed information on creating a task for a specific task type, click that task type in the Task Types table, above.

5.3 All Tasks List

To display a list of all currently defined tasks for all task types, from the Automation Center navigation pane select **Tasks > All Tasks**. The All Tasks list displays.

5.3.1 All Tasks List Information

The following table provides a description of the default columns that display on the All Tasks list.

For information about customizing this list, including filtering, sorting, searching, and other list features, see Record Lists.

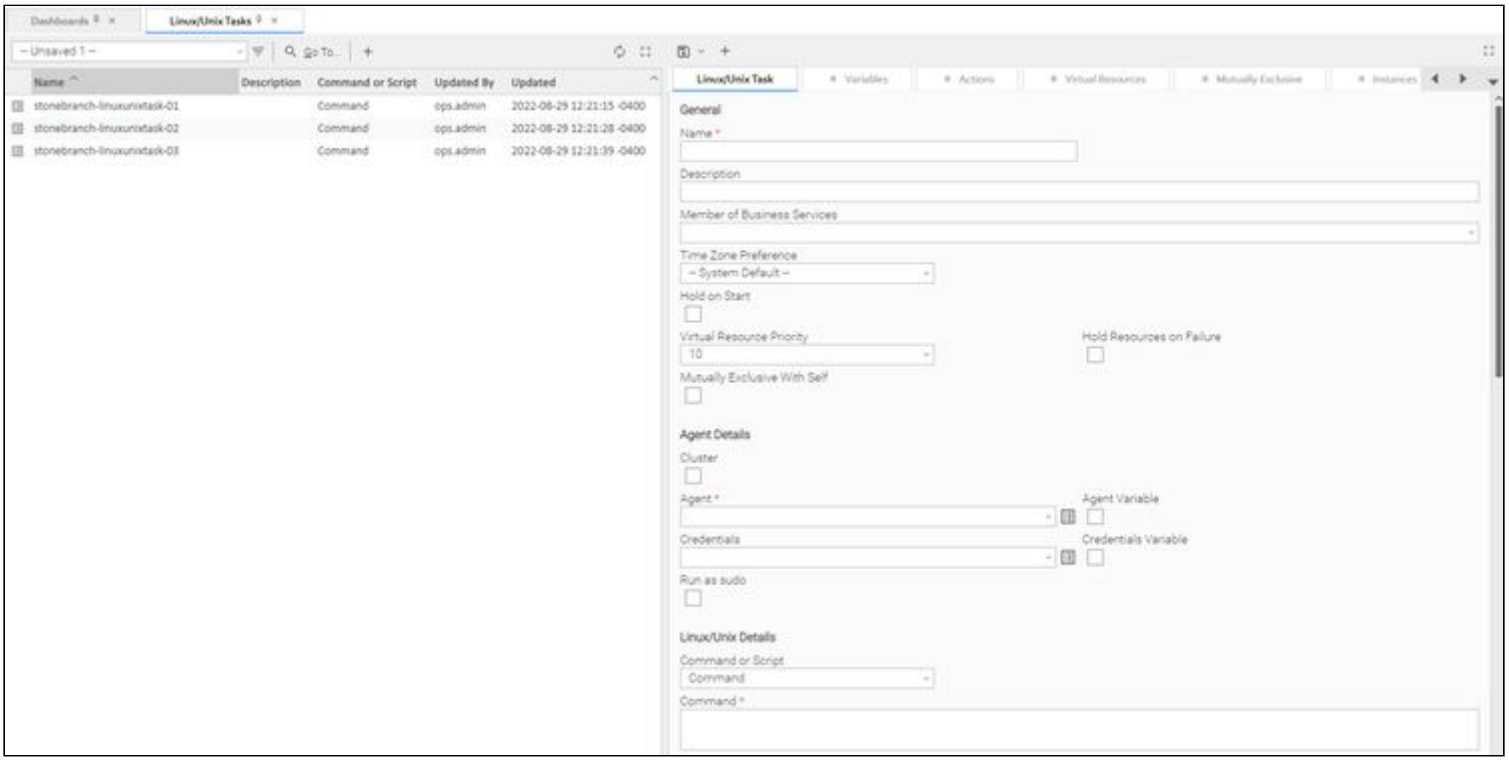
Column	Description
Name	User-defined. Name assigned to this task.
Type	Type of task.
Description	User-defined. Copied from the Description field in the task.
Updated By	System-supplied; User that last updated this record.

Column	Description
Updated	System-supplied; Date and time this record was last updated.

5.4 <Task Type> Tasks List

If you select **Tasks > <Task Type>** from the Automation Center navigation pane, a tasks list for that selected task type displays.

For example:

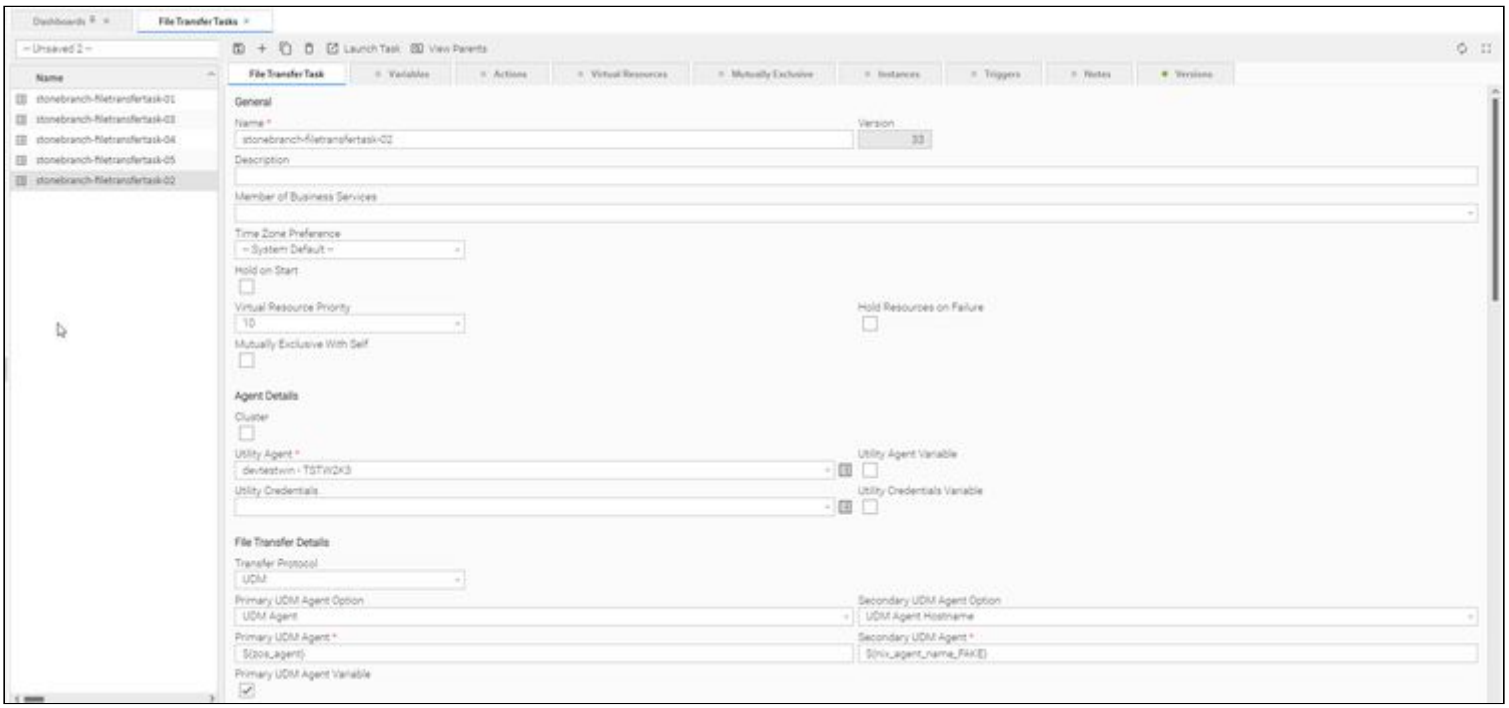


5.4.1 <Task Type> Tasks List Information

The default columns that display on a <Task Type> Tasks list are specific to that type of task.

5.5 Task Details

When you click a task in a Tasks List, Task Details to the right of the list displays all currently defined information for that task.



Use the scroll bar on the right to view more of the Details, or click the Details icon next to the **Name** of the task to display a pop-up version of the task Details.

For more information on viewing Details of any record type, including tasks, see Records.

For information on Details for a specific task type, click the appropriate link in Task Types, above.

5.6 Task Instance Details

When you run a task, the Controller create a task instance of that task.

You can view task instance details either by:

- From the Task Details, click the Instances tab and select a task instance of that task.
- Select a task instance from the Activity Monitor .
- Select a task instance from the Task Instances list .

File Transfer Task Instance Details: stonebranch-filetransfertask-05
Force Finish
Hold
Skip
File Transfer Task Instance
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-filetransfertask-05
Instance Number
1
Description
Member of Business Services
Task
stonebranch-filetransfertask-05
Source Version
2
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Yan
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Status
Status
Undeliverable
Exit Code
0
Status Description
Agent is not Active
Operational Memo
Trigger Time
Launch Time
2022-08-29 14:52:07 -0400
Wait Until Time
Start Time
End Time
Duration
Agent Details
Cluster
Utility Agent *
devtestwin - TSTW2K3
Utility Agent Variable
Utility Credentials
Utility Credentials Variable
File Transfer Details
Transfer Protocol
UDM
Primary UDM Agent Option
UDM Agent
Secondary UDM Agent Option
UDM Agent
Primary UDM Agent *
ca-centerpoint.stone.branch - centerpoint
Secondary UDM Agent *
nbunb
Primary UDM Agent Variable
Secondary UDM Agent Variable
Primary Credentials
Secondary Credentials
Primary Credentials Variable
Secondary Credentials Variable
Form or Script
Form
Transfer Type
Binary
UDM Operation
Copy
Transfer Direction
PUT (Primary to Secondary)
Primary File(s) *
file 1
Secondary File(s) *
file 2
Use Regular Expression
Codepage
-- None --
Compress
NO
Encrypt
NO
Destination File Creation Option
-- None --
Runtime Directory
Advanced UDM Options
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count

5.7 Additional Task and Task Instance Details

For information on how to access additional details - such as Metadata and complete database Details - for Tasks and Task Instances (or any type of record), see Records.

5.7.1 Task Instance Status History

The Status History of every task instance is contained in the Metadata and database Details . You also can select to display Status History for every task instance on the Activity Monitor , Task Instances list , and the History list .

5.8 User-Defined Fields

You can define two fields that will display in the General Information section of the task Details for every existing and new task and task instance.

To define a user-defined field:

1. Enter a value in either (or both) of the following Universal Controller system properties:
   User Defined Task Field 1 Label
   User Defined Task Field 2 Label
2. To specify whether or not a user-defined field is required, enter a value in the appropriate Universal Controller system property:
   User Defined Task Field 1 Required
   User Defined Task Field 2 Required
3. Re-login or click your browser refresh button to see the field(s) in every task Details. In either case, all unsaved changes will be lost, including any open application tabs.

Note

The Custom Field 1 and Custom Field 2 built-in variables resolve to the current values of these user-defined fields.

5.8.1 URLs in User-Defined Fields

You can enter a URL in a user-defined field in any task Details. Format: http://, https://, and ftp:// are supported. For example: https://www.stonebranch.com.

An icon, which links to the URL resource, will automatically display next to the field. If you select that user-defined field as a column in the tasks list for that task type, the URL displays as a link in that column for that task. When you click the field icon or the URL link in the column, the URL resource will open in a new browser tab.

5.9 Updating Tasks

To save information that you have changed in a task, you must click the **Update** button that displays above and below the Task Details.

If the task is contained in one or more Workflows, and the Confirm Update For Tasks In Workflows Universal Controller system property value is set to **true**, the Confirm Update dialog displays when you click **Update**.

The Confirm Update dialog allows you to see which Workflows could be impacted by the update.

It displays, by default, two columns of information:

Workflow	Name of a Workflow that contain the task.
Vertex Name	Name of the task (or task alias) within the Workflow.

You also can display the following additional column by right-clicking either column header and selecting it from **Columns** on the Action menu :

Vertex Id	ID of the task vertex within the Workflow.

Click the **OK** button to update the task, or click the **Cancel** button.

Note

You also can see this parent Workflows information for a task without updating a task (see Viewing Task Parents).

For information on updating multiple tasks, see Updating Multiple Records .

5.10 Deleting Tasks

To delete a task, either:

- Right-click the task in a tasks list and, on the displayed Action menu , click **Delete**.
- Open the task and click the **Delete** button.

Note

You cannot delete a task if it is either:

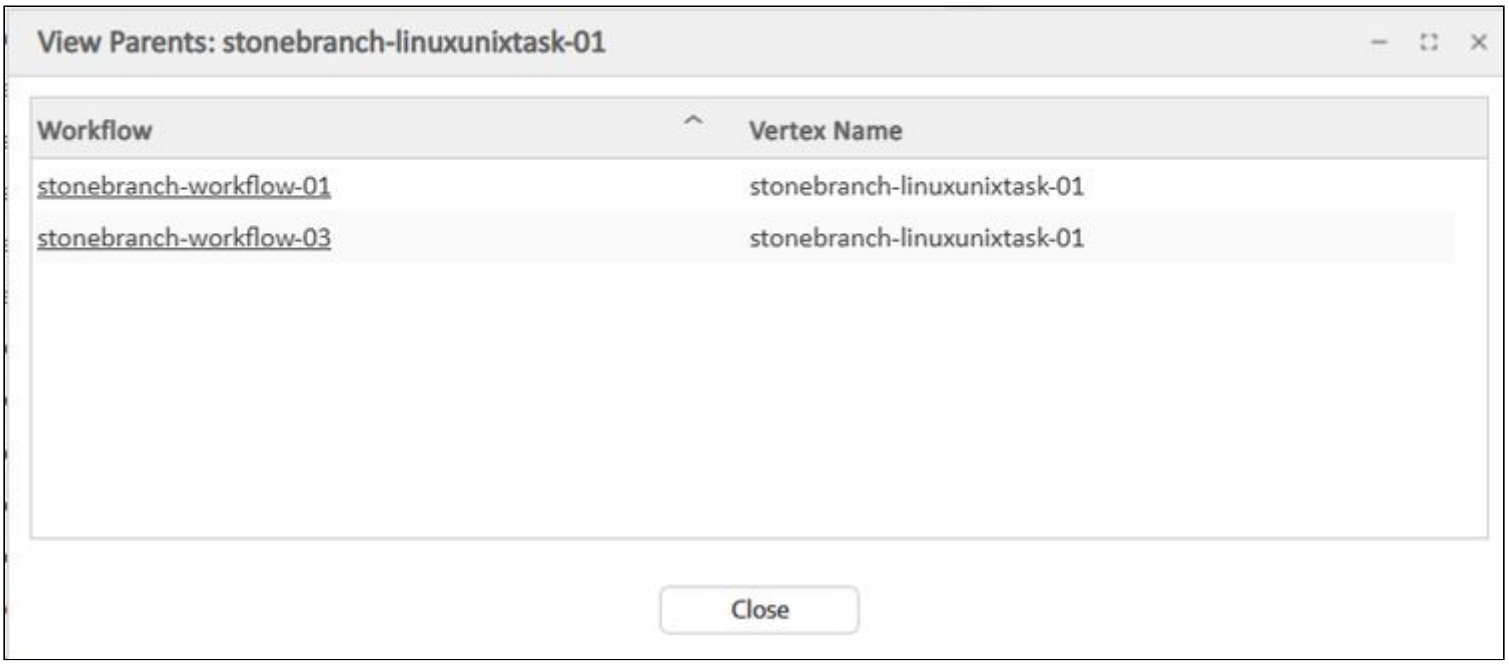
- Specified in an enabled Trigger.
- The only task specified in a disabled Trigger.

5.11 Viewing Task Parents

You can view any parent Workflow information for a task either by:

- Clicking the **View Parents** button in the Task Details
- Displaying the Action menu from the Task Details or Tasks list and then selecting View Parents .

In either case, a View Parents dialog displays:



The View Parents dialog displays, by default, two columns of information:

Workflow	Name of a Workflow that contain the task.
Vertex Name	Name of the task (or task alias) within the Workflow.

You also can display the following additional column by right-clicking either column header and selecting it from **Columns** on the Action menu :

Vertex Id	ID of the task vertex within the Workflow.

Note

It also is possible to see this parent Workflows information for a task when you are updating a task .

5.12 Additional Information

The following pages provide additional information related to the creation of tasks:

- Creating Task Actions

- Copying Tasks
- Setting Mutually Exclusive Tasks
- Creating Notes

5.13 Linux Unix Task

5.13.1 Before You Begin

The Linux/Unix task allows you to run a platform-specific application on a Linux/Unix machine. To run a Linux/Unix task, you must first complete the following tasks:

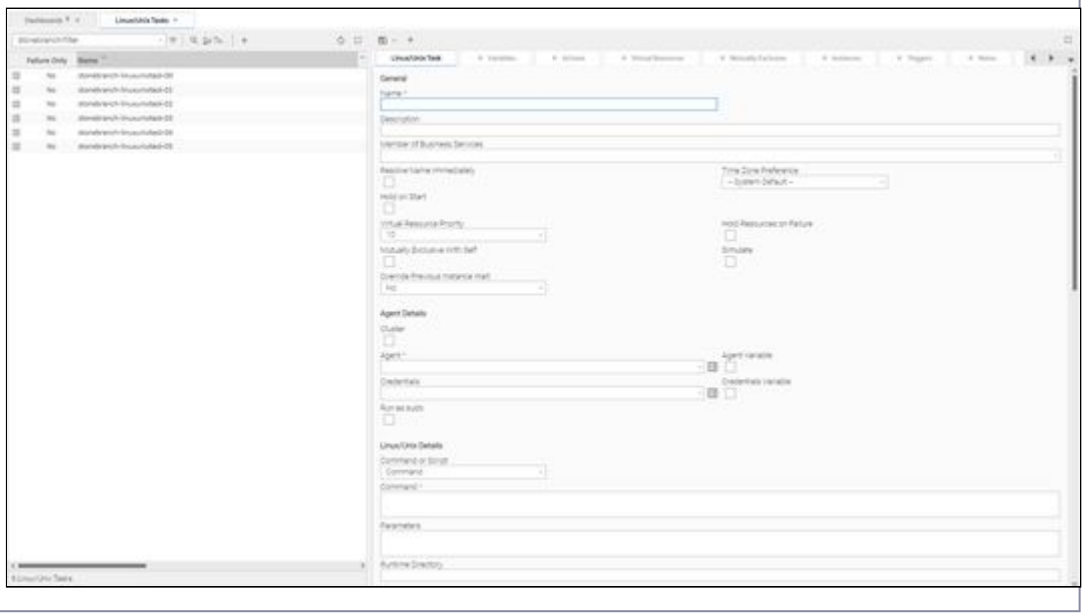
- Install Universal Agent for Linux/Unix on a Linux/Unix machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an Agent resource definition in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in Linux/Unix Agent Details Field Descriptions.

5.13.2 Built-In Variables

The following built-in variables can be used in a Linux/Unix task to pass data where appropriate:

- Agent-Based Task Instance varia
- Task Instance variables

5.13.3 Creating a Linux/Unix Task

Step 1	From the Automation Center navigation pane, select **Tasks > Linux/Unix Tasks**. The Linux/Unix Tasks list displays a list of all currently defined Linux/Unix tasks. To the right of the list, Linux/Unix Task Details for a new Linux/Unix task displays. 

Step 2	Enter / select Details for a new Linux/Unix task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the button above the list to display a pop-up version of the Details.
Step 3	Click the button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

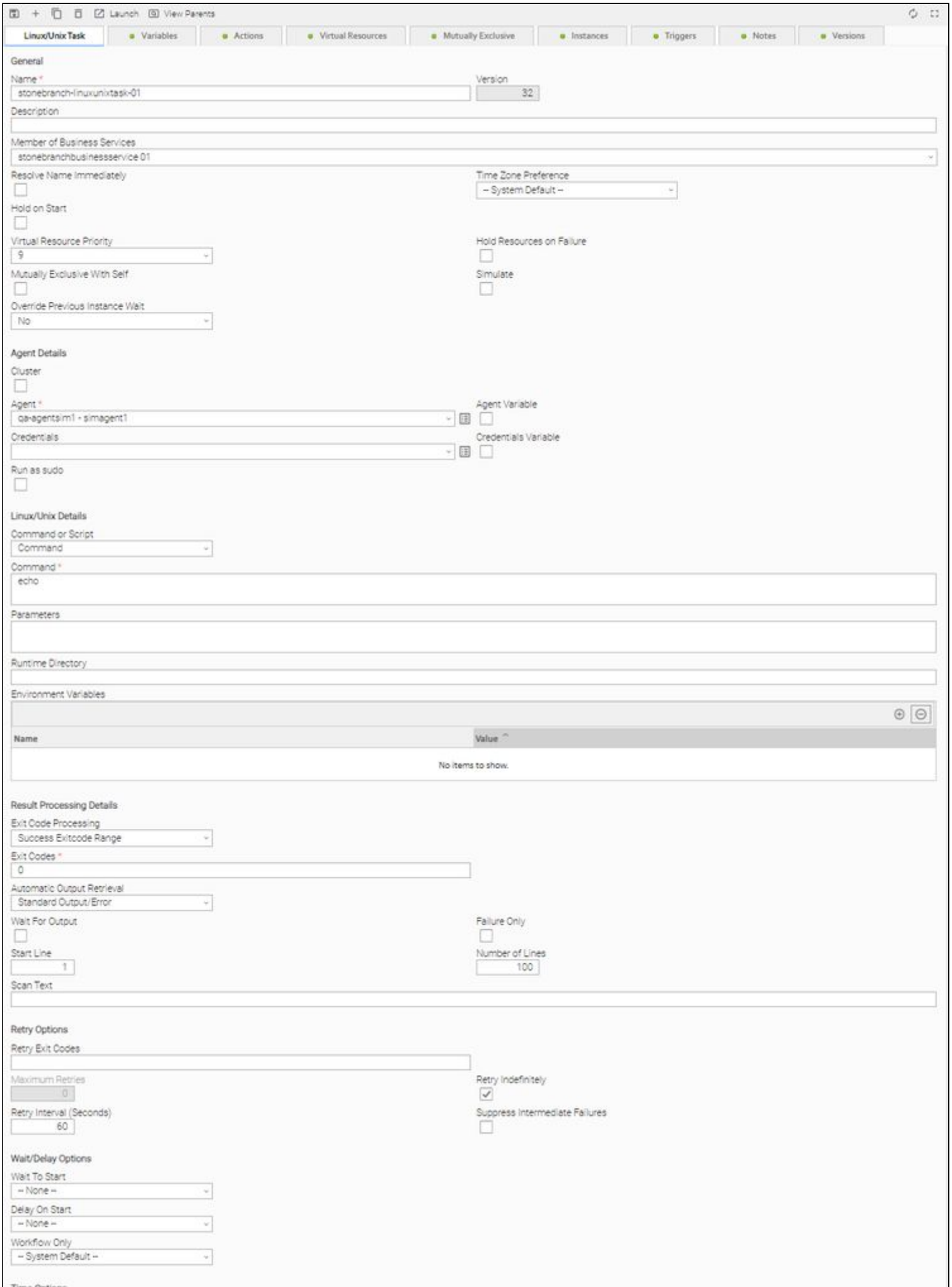
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.13.3.1 Linux/Unix Task Details

The following Linux/Unix Task Details is for an existing Linux/Unix task.

Depending on the values that you enter / select for these fields, and whether or not the Linux/Unix task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Linux/Unix Task Details.


Launch
View Parents
Linux/Unix Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-linuxunixtask-01
Version
32
Description
Member of Business Services
stonebranchbusinessservice 01
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
9
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Cluster
Agent *
qa-agentsim1 - simagent1
Agent Variable
Credentials
Credentials Variable
Run as sudo
Linux/Unix Details
Command or Script
Command
Command *
echo
Parameters
Runtime Directory
Environment Variables
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
Standard Output/Error
Wait For Output
Failure Only
Start Line
1
Number of Lines
100
Scan Text
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --

5.13.3.2 Linux/Unix Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Linux/Unix Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.

Simulate	Specifies if the instance should execute under simulation mode.
Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.

Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Broadcast	Displays only if Cluster is selected; Indication that selecting a Cluster Broadcast is required. Selecting Broadcast hides the Agent and Agent Cluster fields; you cannot select values for them.
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). If Broadcast is selected for a task, you must select a Cluster Broadcast instead of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Cluster Broadcast Variable	Indication of whether the Cluster Broadcast field is a reference field for selecting a specific Cluster Broadcast (unchecked) or a text field for specifying the Cluster Broadcast as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Cluster Broadcast reference to using a Cluster Broadcast variable, you must change the **Cluster Broadcast Variable** field to **Yes** and specify the Cluster Broadcast variable in the **Cluster Broadcast Unresolved** field. Conversely, to change from using a Cluster Broadcast variable to using a Cluster Broadcast reference, you must change the **Cluster Broadcast Variable** field to **No** and specify the Cluster Broadcast reference in the **Cluster Broadcast** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Run as sudo	If Command or Script = Command; Run the command as sudo (superuser do). The Run as sudo option prefixes the command with either: • **sudo** (if a credential is not specified; that is, the command is run as root) • **sudo -u userid** (if a credential is specified, where userid = the Runtime User from the supplied credential) When using the Run as sudo option, you must grant Universal Broker userid authority to sudo to the requested userid without specifying its password; you can do this via the `sudoers` file. Please refer to your local security policy and documentation for updating the `sudoers` file.
Linux/Unix Details	This section contains assorted detailed information about the task.
Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script If the Windows/Linux Scripts Permitted Universal Controller system property is set to false: • The Command or Script field is set to Command and is read-only. • If the Command or Script field is set to Script, the field becomes modifiable so that you can change it to Command.
Script	Required if Command or Script = Script; Name of the script in the Controller database that will be executed by this task. **Note** If you click the Details icon for a Script selected in this field, the Script Type field in the Details is read-only.
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Parameters	Any arguments needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.

Environment Variables	Allows you to enter environment variables needed by the program to run. To add a variable, click the **+** icon and enter a **Name** and **Value**. To delete a variable, select in the list of variables and click the **-** icon. You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath. Credential Functions, Database Connection Functions, SAP Connection Functions, Script Functions, Output Path Functions, and Variable Path Functions are supported. With Command or Script set to Script, the value of an environment variable named UAG_SCRIPT_DIRECTORY will be the directory where the temporary script file is written on the Agent system. The path formed with this value will be passed to the shell executing the script. This variable and the variable UAG_SCRIPT_DIRECTORY_RELATIVE_TO is intended to support chroot environments, where the path used to refer to a script file may change depending on the context. The value of UAG_SCRIPT_DIRECTORY_RELATIVE_TO is prepended to UAG_SCRIPT_DIRECTORY when the Agent writes the script, but is not included in the path passed to the shell executing the script. For example, if a user's Agent system has a chroot in /jail, and wishes to see the script in /scripts while chrooted, they would set UAG_SCRIPT_DIRECTORY=/scripts and UAG_SCRIPT_DIRECTORY_RELATIVE_TO=/jail, so that UAG will write the script in /jail/scripts, and pass the path to the script to the shell as /scripts.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.

Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. The Task Automatic Output Retrieval Default Universal Controller system property specifies the default value for this field. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.

Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None --.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.

Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.

Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.13.4 Viewing a Linux/Unix Task Instance

When a Linux/Unix task is launched, the Controller creates a task instance record of that task.

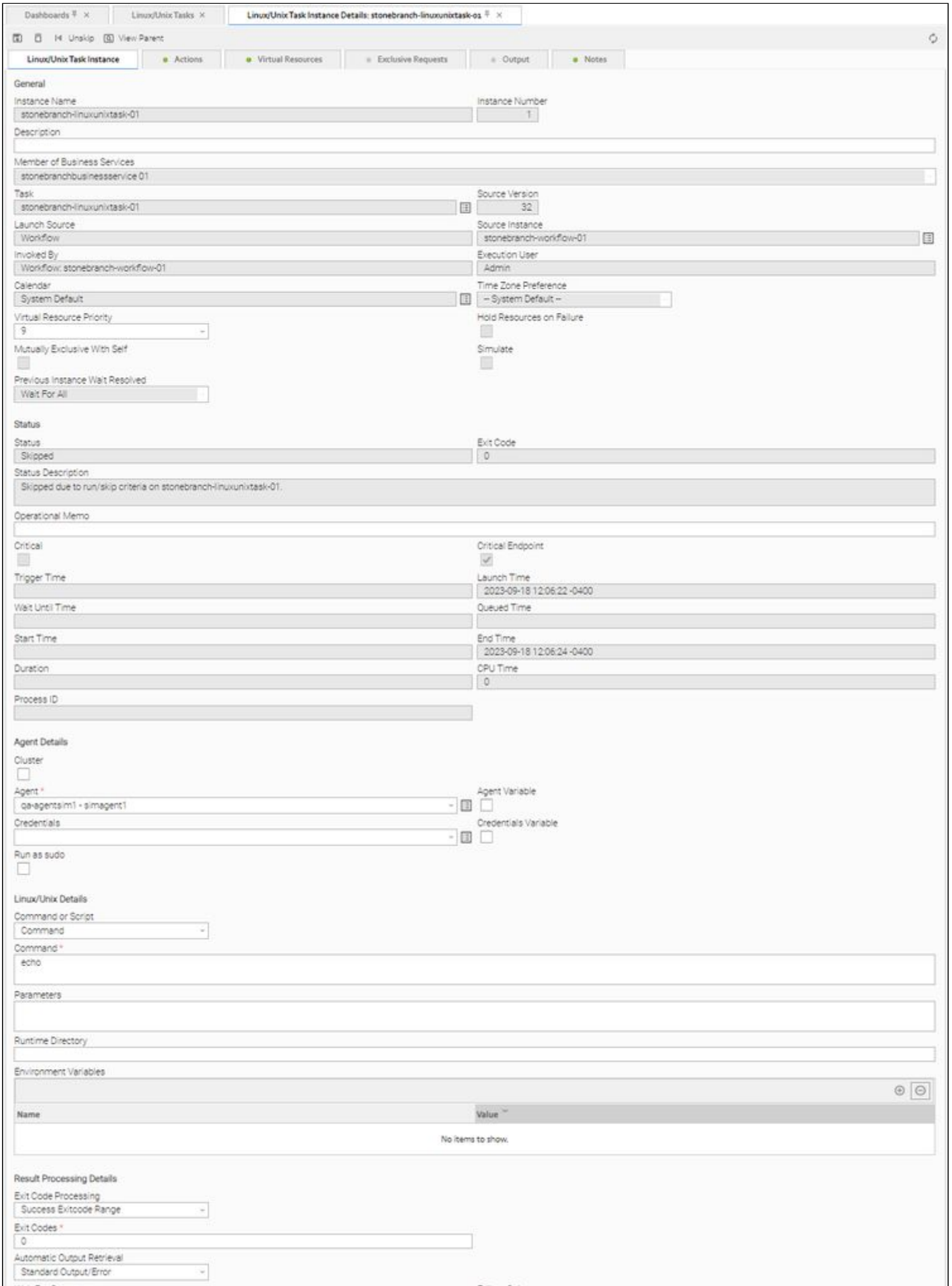
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Linux/Unix Task Details for that task
- Activity Monitor
- Task Instances list

5.13.4.1 Linux/Unix Task Instance Details

The following Linux/Unix Task Instance Details contains information on the execution of the task shown in the Linux/Unix Task Details.


Dashboards
Linux/Unix Tasks
Linux/Unix Task Instance Details: stonebranch-linuxunixtask-01
Unskip
View Parent
Linux/Unix Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-linuxunixtask-01
Instance Number
1
Description
Member of Business Services
stonebranchbusinessservice 01
Task
stonebranch-linuxunixtask-01
Source Version
32
Launch Source
Workflow
Source Instance
stonebranch-workflow-01
Invoked By
Workflow: stonebranch-workflow-01
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
9
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
Wait For All
Status
Status
Skipped
Exit Code
0
Status Description
Skipped due to run/skip criteria on stonebranch-linuxunixtask-01.
Operational Memo
Critical
Critical Endpoint
Trigger Time
Launch Time
2023-09-18 12:06:22 -0400
Wait Until Time
Queued Time
Start Time
End Time
2023-09-18 12:06:24 -0400
Duration
CPU Time
0
Process ID
Agent Details
Cluster
Agent *
qa-agents:m1 - simagent1
Agent Variable
Credentials
Credentials Variable
Run as sudo
Linux/Unix Details
Command or Script
Command
Command *
echo
Parameters
Runtime Directory
Environment Variables
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
Standard Output/Error

5.13.4.2 Linux/Unix Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Linux/Unix Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Process ID	System-supplied; ID of the process that was launched.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.

Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Run as sudo	If Command or Script = Command; Run the command as sudo (superuser do). The Run as sudo option prefixes the command with either: • **sudo** (if a credential is not specified; that is, the command is run as root) • **sudo -u userid** (if a credential is specified, where userid = the Runtime User from the supplied credential) When using the Run as sudo option, you must grant Universal Broker userid authority to sudo to the requested userid without specifying its password; you can do this via the `sudoers` file. Please refer to your local security policy and documentation for updating the `sudoers` file.
Linux/Unix Details	This section contains assorted detailed information about the task instance.

Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script If the Windows/Linux Scripts Permitted Universal Controller system property is set to false: • The Command or Script field is set to Command and is read-only. • If the Command or Script field is set to Script, the field becomes modifiable so that you can change it to Command.
Script	Required if Command or Script = Script; Name of the script in the Controller database that will be executed by this task. **Note** If you click the Details icon for a Script selected in this field, the Script Type field in the Details is read-only.
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Parameters	Any arguments needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.
Environment Variables	Allows you to enter environment variables needed by the program to run. To add a variable, click the **+** icon and enter a **Name** and **Value**. To delete a variable, select in the list of variables and click the **-** icon. You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath. Credential Functions, Database Connection Functions, SAP Connection Functions, Script Functions, Output Path Functions, and Variable Path Functions are supported. With Command or Script set to Script, the value of an environment variable named UAG_SCRIPT_DIRECTORY will be the directory where the temporary script file is written on the Agent system. The path formed with this value will be passed to the shell executing the script. This variable and the variable UAG_SCRIPT_DIRECTORY_RELATIVE_TO is intended to support chroot environments, where the path used to refer to a script file may change depending on the context. The value of UAG_SCRIPT_DIRECTORY_RELATIVE_TO is prepended to UAG_SCRIPT_DIRECTORY when the Agent writes the script, but is not included in the path passed to the shell executing the script. For example, if a user's Agent system has a chroot in /jail, and wishes to see the script in /scripts while chrooted, they would set UAG_SCRIPT_DIRECTORY=/scripts and UAG_SCRIPT_DIRECTORY_RELATIVE_TO=/jail, so that UAG will write the script in /jail/scripts, and pass the path to the script to the shell as /scripts.
Result Processing Details	This section contains assorted detailed information about result processing for this task.

Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported. **Note** If you are updating a task instance, the Exit Codes field must be resolved; you cannot change the value to a variable.
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.

Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.

Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported. **Note** If you are updating a task instance, the Retry Exit Codes field must be resolved; you cannot change the value to a variable. .
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None --.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.

Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.

Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.

Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.
Retrieve Output	See Retrieving Output.

<table>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Output</td><td>Displays output generated from the process, if any, based on specifications provided by the user in the Automatic Output Retrieval fields in the task Details.
If automatic output retrieval was not available or was not selected, output can be obtained by clicking the Retrieve Output button.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.13.5 Running a Linux/Unix Task

You can run a Linux/Unix task:

- Manually, by clicking the Launch or Launch with Variables button in the Linux/Unix tasks list or Linux/Unix Task Details Action menu.
- As part of a Workflow.
- Specify triggers that run the task automatically based on times or events.

5.13.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.14 Windows Task

5.14.1 Before You Begin

The Windows task allows you to run a platform-specific application on a Windows machine. To run a Windows task, you must first complete the following tasks:

- Install Universal Agent for Windows on a Windows machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an Agent resource definition in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in Windows Agent Details Field Descriptions.

5.14.2 Built-In Variables

The following built-in variables can be used in a Windows task to pass data where appropriate:

- Agent-Based Task Instance variables
- Task Instance variables

5.14.3 Creating a Windows Task

Step 1	From the Automation Center navigation pane, select **Tasks > Windows Tasks**. The Windows Tasks list displays a list of all currently defined Windows tasks. To the right of the list, Windows Task Details for a new Windows task displays.
Step 2	Enter/select Details for a new Windows task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click the save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

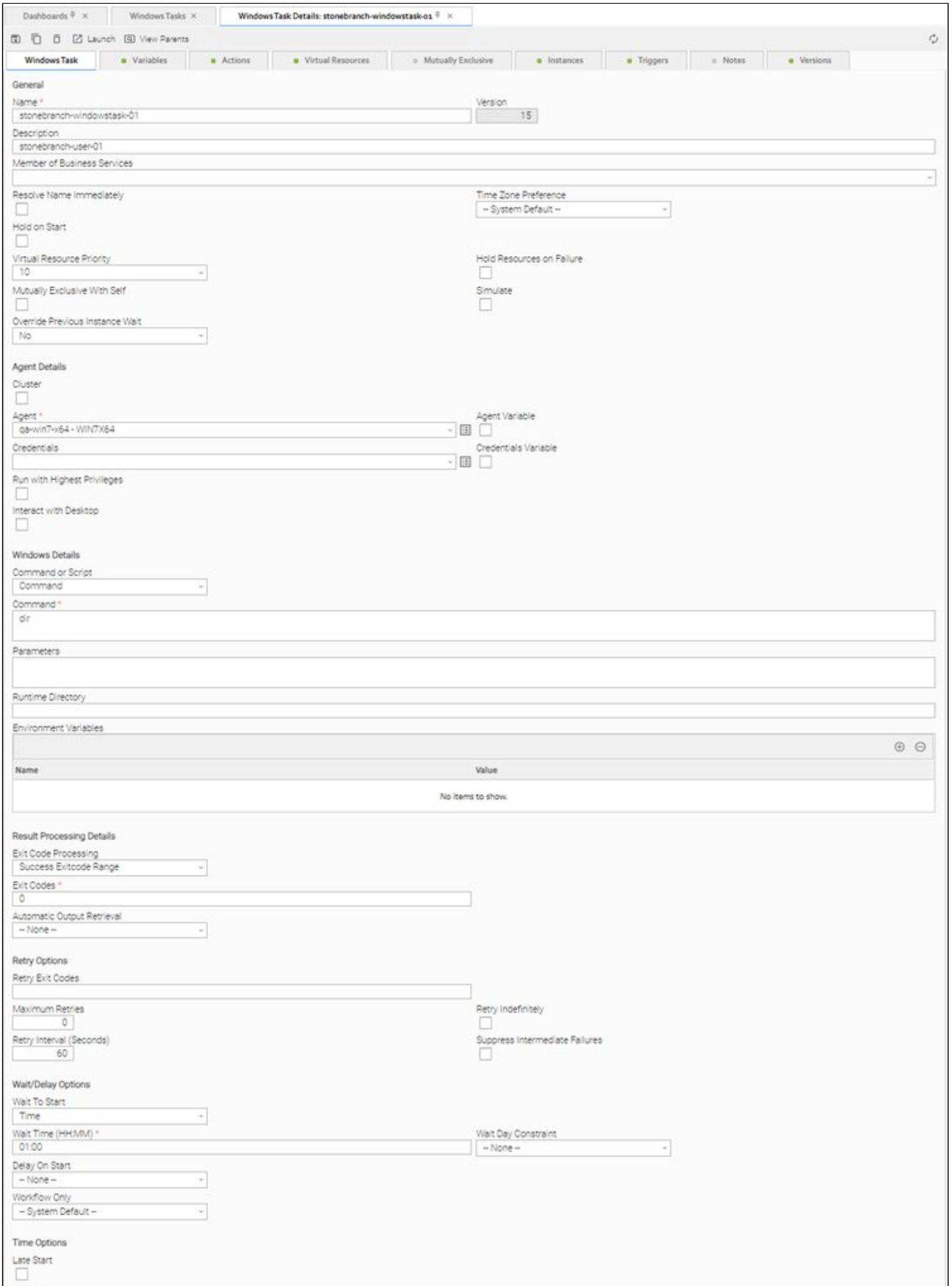
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.14.3.1 Windows Task Details

The following Windows Task Details is for an existing Windows task.

Depending on the values that you enter / select for these fields, and whether or not the Windows task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Windows Task Details.


Dashboards
Windows Tasks
Windows Task Details: stonebranch-windowstask-01
Launch
View Parents
Windows Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-windowstask-01
Version
15
Description
stonebranch-user-01
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Cluster
Agent *
qa-win7-x64 - WIN7X64
Agent Variable
Credentials
Credentials Variable
Run with Highest Privileges
Interact with Desktop
Windows Details
Command or Script
Command
Command *
dir
Parameters
Runtime Directory
Environment Variables
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
-- None --
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
Time
Wait Time (HH:MM) *
01:00
Wait Day Constraint
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start

5.14.3.2 Windows Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Windows Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.

Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Broadcast	Displays only if Cluster is selected; Indication that selecting a Cluster Broadcast is required. Selecting Broadcast hides the Agent and Agent Cluster fields; you cannot select values for them.
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). If Broadcast is selected for a task, you must select a Cluster Broadcast instead of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Cluster Broadcast Variable	Indication of whether the Cluster Broadcast field is a reference field for selecting a specific Cluster Broadcast (unchecked) or a text field for specifying the Cluster Broadcast as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Cluster Broadcast reference to using a Cluster Broadcast variable, you must change the **Cluster Broadcast Variable** field to **Yes** and specify the Cluster Broadcast variable in the **Cluster Broadcast Unresolved** field. Conversely, to change from using a Cluster Broadcast variable to using a Cluster Broadcast reference, you must change the **Cluster Broadcast Variable** field to **No** and specify the Cluster Broadcast reference in the **Cluster Broadcast** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Run with Highest Privileges	This option must be enabled in order to execute the task using an elevated privileges token, rather than one subject to User Account Control (UAC) restrictions. An elevated token allows a process to execute with all the privileges available to its specified credentials. For example, a task executed with an administrative account will behave as though it received permission via a UAC dialog to perform a privileged operation. This option will **not** give a user account privileges that have are not already granted to it. For example, taking ownership of a file is a privileged operation by default. A task will still fail even with this option selected if it is run with a regular user account that has not been granted the ability to change file ownership. **Note** This option only will affect tasks executed on Windows systems that support User Account Control (UAC). It will have no affect on tasks run on Windows releases prior to Vista (for example, Windows XP, Server 2003).
Interact with Desktop	If Windows Task Interact With Desktop Permitted system property = true; This option must be enabled for a task that runs an application with a GUI requiring some manual actions from a user (for example, clicking buttons or entering values). **Note** When using this option to display GUI applications on any version of Windows that enforces session 0 desktop isolation (that is, Windows Vista and later), the GUI will only be accessible from the interactive console session. Further, the task will execute using the credentials of the user logged into that session. This means that any GUI-based application executed via a Windows task will not be visible from a remote desktop session. It will be visible only from console of the interactive session that exists on the system itself (that is, the session you would see from a monitor attached directly to the Windows machine or by logging in via a VM's host UI).
Create Console	If Interact with Desktop is enabled; Allocates a new console for the process, rather than having it inherit one.
Windows Details	This section contains assorted detailed information about the task instance.

Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script If the Windows/Linux Scripts Permitted Universal Controller system property is set to false: • The Command or Script field is set to Command and is read-only. • If the Command or Script field is set to Script, the field becomes modifiable so that you can change it to Command. **Note** For both command-based tasks that call a **.vbs/.js** file directly, and script-based tasks that also rely on the systems association with file extension, GUI-based **wscript.exe** is associated with the **vbs** and **js** file extensions. Without explicitly calling one or the other, the Controller would use **wscript.exe**. The Agent system may need to be adjusted to properly use the Windows Scripting Host from the scheduler/agent environment. The following command can be used to set the default script host to **cscript.exe**: `C:\tmp>cscript //h:cscript //s`
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Script	Required if Command or Script = Script; Name of the script in the Controller database that will be executed by this task. **Note** If you click the Details icon for a Script selected in this field, the Script Type field in the Details is read-only.
Parameters	Any arguments needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.
Environment Variables	Allows you to enter environment variables needed by the program to run. To add a variable, click the **+** icon and enter a **Name** and **Value**. To delete a variable, select in the list of variables and click the **-** icon. You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath. Credential Functions, Database Connection Functions, SAP Connection Functions, Script Functions, Output Path Functions, and Variable Path Functions are supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.

Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. The Task Automatic Output Retrieval Default Universal Controller system property specifies the default value for this field. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.

Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.

Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.

Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.14.4 Viewing a Windows Task Instance

When a Windows task is launched, the Controller creates a task instance record of that task.

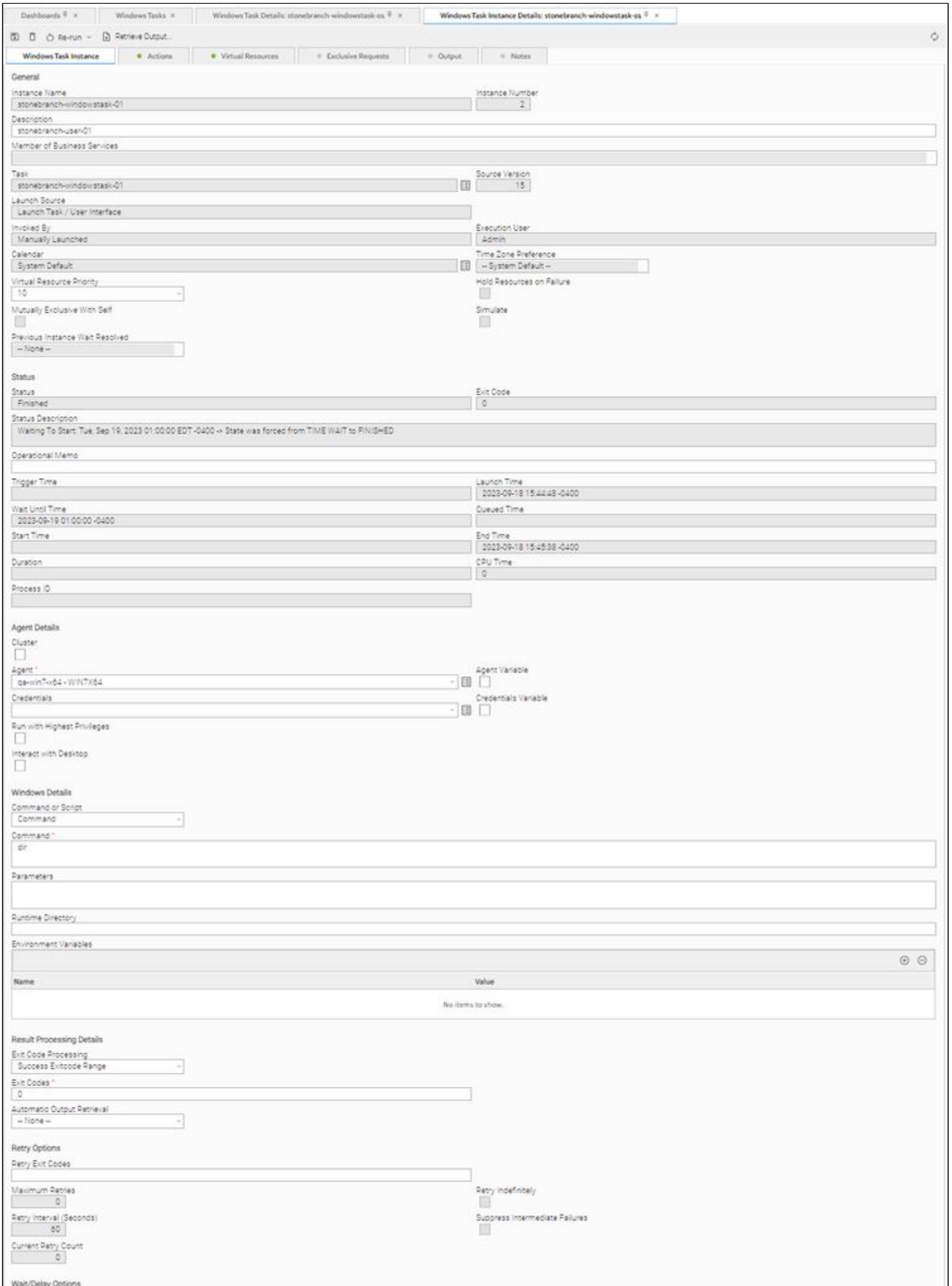
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Windows Task Details for that task
- Activity Monitor
- Task Instances list

5.14.4.1 Windows Task Instance Details

The following Windows Task Instance Details contains information on the execution of the task shown in the Windows Task Details.


Dashboards
Windows Tasks
Windows Task Details: stonebranch-windowstask-os
Windows Task Instance Details: stonebranch-windowstask-os
Re-run
Retrieve Output...
Windows Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-windowstask-01
Instance Number
2
Description
stonebranch-user-01
Member of Business Services
Task
stonebranch-windowstask-01
Source Version
15
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Exit Code
0
Status Description
Waiting To Start: Tue, Sep 19, 2023 01:00:00 EDT -0400 -> State was forced from TIME WAIT to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-18 15:44:48 -0400
Wait Until Time
2023-09-19 01:00:00 -0400
Queued Time
Start Time
End Time
2023-09-18 15:45:38 -0400
Duration
CPU Time
0
Process ID
Agent Details
Cluster
Agent *
Agent Variable
Credentials
Credentials Variable
Run with Highest Privileges
Interact with Desktop
Windows Details
Command or Script
Command
Command *
dir
Parameters
Runtime Directory
Environment Variables
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
-- None --
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count
0
Wait/Delay Options

5.14.4.2 Windows Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Windows Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Process ID	System-supplied; ID of the process that was launched.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.

Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.

Run with Highest Privileges	This option must be enabled in order to execute the task using an elevated privileges token, rather than one subject to User Account Control (UAC) restrictions. An elevated token allows a process to execute with all the privileges available to its specified credentials. For example, a task executed with an administrative account will behave as though it received permission via a UAC dialog to perform a privileged operation. This option will **not** give a user account privileges that have are not already granted to it. For example, taking ownership of a file is a privileged operation by default. A task will still fail even with this option selected if it is run with a regular user account that has not been granted the ability to change file ownership. **Note** This option only will affect tasks executed on Windows systems that support User Account Control (UAC). It will have no affect on tasks run on Windows releases prior to Vista (for example, Windows XP, Server 2003).
Interact with Desktop	If Windows Task Interact With Desktop Permitted system property = true; This option must be enabled for a task that runs an application with a GUI requiring some manual actions from a user (for example, clicking buttons or entering values). **Note** When using this option to display GUI applications on any version of Windows that enforces session 0 desktop isolation (that is, Windows Vista and later), the GUI will only be accessible from the interactive console session. Further, the task will execute using the credentials of the user logged into that session. This means that any GUI-based application executed via a Windows task will not be visible from a remote desktop session. It will be visible only from console of the interactive session that exists on the system itself (that is, the session you would see from a monitor attached directly to the Windows machine or by logging in via a VM's host UI).
Create Console	If Interact with Desktop is enabled; Allocates a new console for the process, rather than having it inherit one.
Windows Details	This section contains assorted detailed information about the task instance.

Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script If the Windows/Linux Scripts Permitted Universal Controller system property is set to false: • The Command or Script field is set to Command and is read-only. • If the Command or Script field is set to Script, the field becomes modifiable so that you can change it to Command. **Note** For both command-based tasks that call a **.vbs/.js** file directly, and script-based tasks that also rely on the systems association with file extension, GUI-based **wscript.exe** is associated with the **vbs** and **js** file extensions. Without explicitly calling one or the other, the Controller would use **wscript.exe**. The Agent system may need to be adjusted to properly use the Windows Scripting Host from the scheduler/agent environment. The following command can be used to set the default script host to **cscript.exe**: `C:\tmp>cscript //h:cscript //s`
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Script	Required if Command or Script = Script; Name of the script in the Controller database that will be executed by this task. **Note** If you click the Details icon for a Script selected in this field, the Script Type field in the Details is read-only.
Parameters	Any arguments needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.
Environment Variables	Allows you to enter environment variables needed by the program to run. To add a variable, click the **+** icon and enter a **Name** and **Value**. To delete a variable, select in the list of variables and click the **-** icon. You can add a maximum of 4,000 characters for the combined Names and Values of all variables. The variable is listed in the space underneath. Credential Functions, Database Connection Functions, SAP Connection Functions, Script Functions, Output Path Functions, and Variable Path Functions are supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.

Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.

Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported. **Note** If you are updating a task instance, the Retry Exit Codes field must be resolved; you cannot change the value to a variable. .
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.

Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.

Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.

Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.

<table>
<tr><td>Retrieve Output</td><td>See Retrieving Output.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Output</td><td>Displays output generated from the process, if any, based on specifications provided by the user in the Automatic Output Retrieval fields in the task Details.
If automatic output retrieval was not available or was not selected, output can be obtained by clicking the Retrieve Output button.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.14.5 Running a Windows Task

You can run a Windows task:

- Manually, by clicking the Launch or Launch with Variables button in the Windows tasks list or Windows Task Details Action menu.
- As part of a Workflow.
- Specify triggers that run the task automatically based on times or events.

5.14.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.15 z/OS Task

Information on z/OS tasks is contained on the following pages:

- Creating and Running a z/OS Task
- Special Processing on z/OS Tasks
- Creating Step Conditions
- Creating Step Actions
- Creating Restart Criteria

5.15.1 Creating and Running a z/OS Task

5.15.1.1 Before You Begin

The z/OS task allow you to run a platform-specific application on a z/OS machine. To run a z/OS task, you must first complete the following tasks:

- Install Universal Agent for z/OS on a z/OS machine.
- Launch the Agent. When the Agent connects with the Universal Controller, it automatically creates an Agent resource definition in the database.
- Optionally, customize the Agent heartbeat and log levels, as described in z/OS Agent Details Field Descriptions.

5.15.1.2 Built-In Variables

The following built-in variables can be used in a z/OS task to pass data where appropriate:

- Agent-Based Task Instance variables
- Task Instance variables
- z/OS Task Instance variables

5.15.1.3 Creating a z/OS Task

Step 1	From the Automation Center navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays a list of all currently defined z/OS tasks. To the right of the list, z/OS Task Details for a new z/OS task displays.
Step 2	Enter/select Details for a new z/OS task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

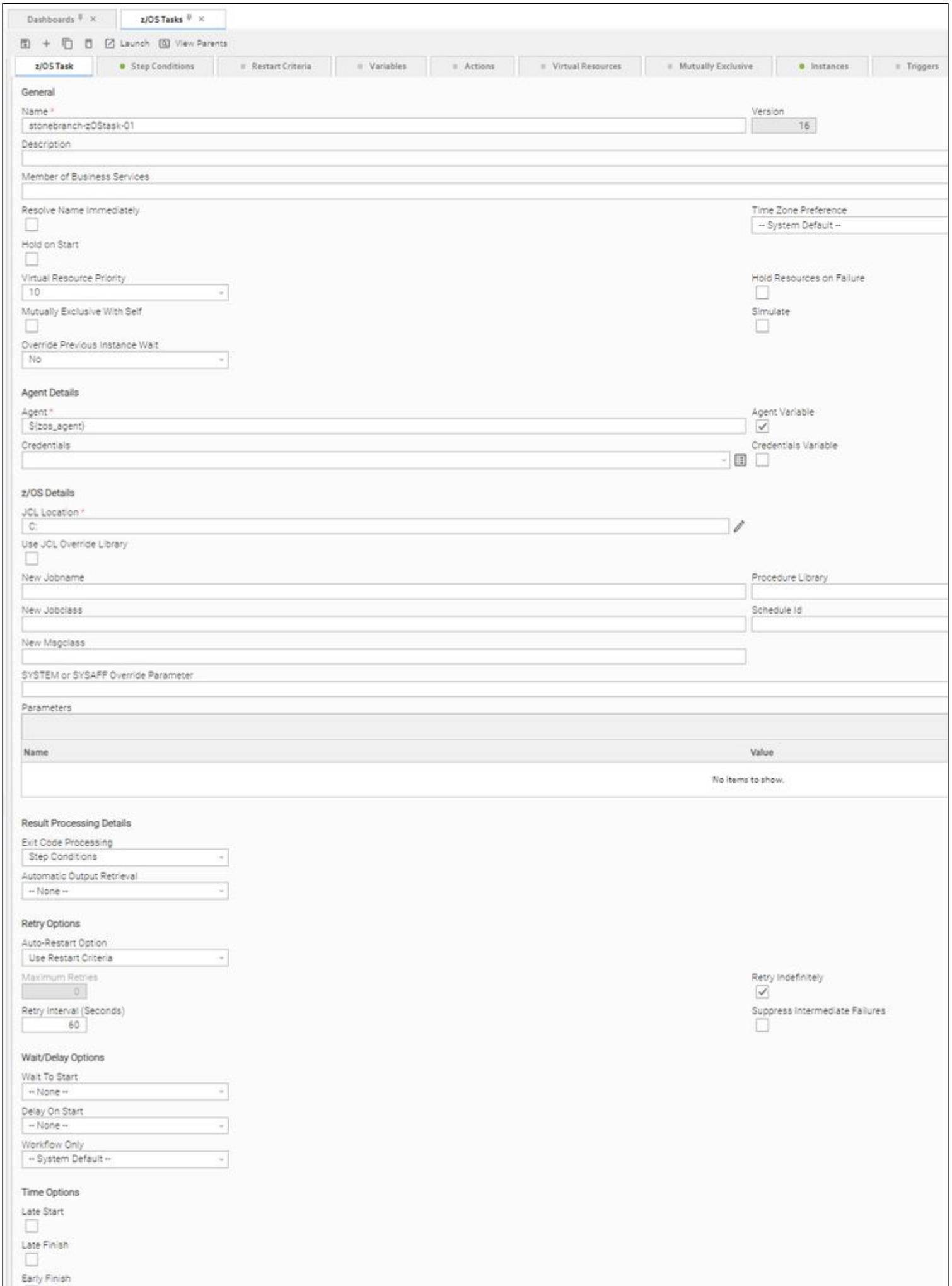
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the + button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.15.1.3.1 z/OS Task Details

The following z/OS Task Details is for an existing z/OS task.

Depending on the values that you enter / select for these fields, and whether or not the z/OS task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the z/OS Task Details.


Dashboards
z/OS Tasks
Launch
View Parents
z/OS Task
Step Conditions
Restart Criteria
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
General
Name *
stonebranch-zOStask-01
Version
16
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Agent *
${zos_agent}
Agent Variable
Credentials
Credentials Variable
z/OS Details
JCL Location *
C:
Use JCL Override Library
New Jobname
Procedure Library
New Jobclass
Schedule Id
New Msgclass
SYSTEM or SYSAFF Override Parameter
Parameters
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Step Conditions
Automatic Output Retrieval
-- None --
Retry Options
Auto-Restart Option
Use Restart Criteria
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish

5.15.1.3.2 z/OS Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the z/OS Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.

Simulate	Specifies if the instance should execute under simulation mode.
Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
z/OS Details	This section contains assorted detailed information about the task.
JCL Location	File and member name containing the JCL script. When you are using the JCL_LIBRARY feature, you can substitute the name of the library with a string starting with "&", that names the library specified in the uags.conf file with the JCL_library definitions. For example, the name of a job might look like the following: `&PRODLIB(PAYJOB01)`
Use JCL Override Library	Allows the task to work with a JCL override library on the target system. If this option is selected, the Agent will check the JCL override path (specified in JCL Override Location) before submitting the job from JCL Location. If a JCL member is found at the override path, the job is submitted from there. Otherwise, the Agent will look to the JCL Location path for submission. The task instance will display the actual path that was used for job submission in Submitted JCL Location.
JCL Override Location	Required if Use JCL Override Library is selected; Specifies the file and member name potentially containing an override JCL script. The Agent will check this location for JCL before looking in the standard JCL Location. If JCL is found in this location, the job will be submitted from there. If JCL is not found in this location, the Agent will submit the job from the standard JCL Location. Missing override JCL is not considered an error condition. As with JCL Location, when you are using the JCL_LIBRARY feature, you can substitute the name of the library with a string starting with "&" that names the library specified in the `uags.conf` file with the JCL_library definitions.
Delete Override JCL	Optional if Use JCL Override Library is selected; Allows the task to define criteria that will control the automated clean-up of the override JCL. If this option is not selected, the Controller and Agent will take no action to delete the override JCL from the target system.

Override Instance Count for Deletion	Required if Delete Override JCL is selected; Specifies the number of successful override instances that must occur before the override JCL library member is deleted. When the deletion criteria has been satisfied, the Controller will instruct the Agent to delete the member specified in JCL Override Location. An override instance is considered successful only if the ending state in the controller is SUCCESS. **Note** Manual resubmissions of a task instance do not increment the tracked number of successful override instances that go towards satisfying the deletion criteria. If a task is not submitted from the override location (that is, no override member was found), the task's "successful override instance count" is reset to 0.
Last Override Deletion	If Delete Override JCL is selected; system-supplied. Displays after the specified override JCL member is deleted. The date and time the last override JCL deletion occurred.
Number of Override Instances	If Delete Override JCL is selected; Read only; system-supplied. Indicates the number of successful override instances that have occurred for this task. This number is checked against the deletion criteria to determine when the override JCL member should be deleted. **Note** This number is automatically reset to 0 by the system if a task instance does not submit from override JCL (that is, no override member was found).
New Jobname	Job name that will replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL. This value should be validated before the job is launched to avoid JES start failures. The syntax of a job name is: • 1-8 characters • Upper case • Name must start with an alphabetic or $, #, @ character. • Remaining characters are alphanumeric or $, #, @. • No spaces or tabs.
New Jobclass	New Jobclass to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.
New Msgclass	New MSGCLASS to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.
Procedure Library	The PROCLIB field allows for defining a JES2 PROCLIB control statement in the job JCL. For example, a PROCLIB value of PROC01 will result in the following JES2 control statement generated in the job JCL: `/*JESPARM PROCLIB=PROC001` The PROCLIB value must refer to a ddname defined in the JES2 procedure. Refer to IBM MVS JCL Reference for more information regarding the JES2 PROCLIB control statement.

Schedule ID	CA7 Schedule ID; for CA7 toleration only (see CA7/CA11 Toleration).
SYSTEM or SYSAFF Override Parameter	Specifies the SYSTEM or SYSAFF Override Parameter using the following syntax: SYSTEM={SystemName} {(SystemName,SystemName, ...,SystemName)} {(-SystemName,SystemName, ...,SystemName)} {-SystemName} {ANY} {JGLOBAL} {JLOCAL} SYSAFF={MemberName} {(MemberName,MemberName, ...,MemberName)} {(-MemberName,MemberName, ...,MemberName)} {-MemberName} {(MemberName,...,IND)} {(-MemberName,...,IND)} {ANY} {(ANY,IND)} Value must conform to documented IBM JCL syntax.
Parameters	Displays a list of parameters that will be inserted into the JCL. Each parameter consists of a Name and a Value. You can enter as many parameters as needed. To add a parameter, click the **+** icon; add a Name and Value, and click the **Update** button. To delete a parameter, click the parameter on the list, the **-** icon, and the **Update** button. Each parameter that you enter creates a separate JCL construct called the SET command. Each one appears as a new line inserted dynamically into the JCL submitted to the Controller for the current execution. The JCL is not permanently modified. For example, you might specify a parameter Name = RUNTYPE and Value = PROD. This results in the following JCL SET statement being inserted in the job after the job card: `// SET RUNTYPE=PROD` The Parameter fields also support two additional special functions: • They allow you to specify any steps you want skipped during the job run. See Skipping Steps during Initial Run for detailed instructions. • They allow you to add data to DD* input streams. See Using Variables in JCL and In-Stream Data Sets for detailed instructions.
Result Processing Details	This section contains assorted detailed information about result processing for this task.

Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions). **Note** If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.

Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.

Auto-Restart Option	Allows the z/OS job to be resubmitted with controlled step selection. This option is processed when/if a task transitions to a failed state. It works in conjunction with the Maximum Retries, Retry Interval, and Retry Indefinitely options. **Note** The Maximum Retries value must be greater than 0 for the Auto-Restart Option to be processed. Options: • None No job steps will be automatically selected for restart. • Restart From First Job Step All restartable job steps will be selected for restart. • Restart From Failed Job Step All restartable job steps from the failed step to the last job step will be selected for restart. • Use Restart Criteria The entries in the Restart Criteria tab will be evaluated. If a Restart Criteria entry matches the failure scenario, the step selection will be based on the option specified in the matching Restart Criteria entry (see Creating Restart Criteria). If you select an option other that **None** for a task that ends in a failed state, audit records will be generated to record the step selection that took place for the restart. The audit records include all restart options, criteria matching, and directives that were used to select the set of job steps to be re-run. z/OS auto-restart audit records show up as audit type **z/OS Auto-Restart** from source **Task Instance**. **Note** If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.

Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.

Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Step Conditions</td><td>Lists all step conditions defined for this task.</td></tr>
<tr><td>Restart Criteria</td><td>Displays a list of all restart criteria defined for this task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

Versions	Stores copies of all previous versions of the current record. See Record Versioning.

5.15.1.4 Viewing a z/OS Task Instance

When a z/OS task is launched, the Controller creates a task instance record of that task.

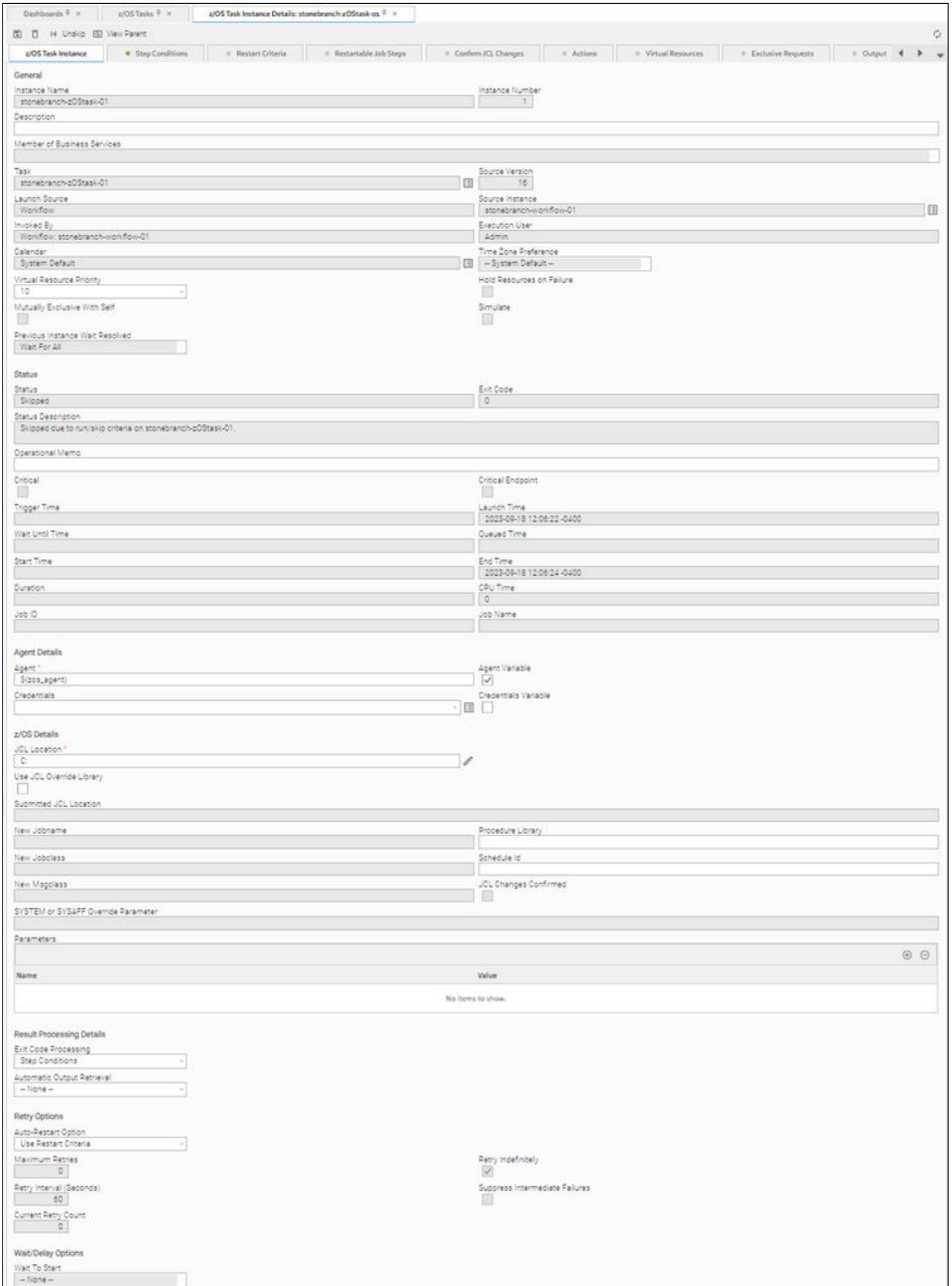
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the z/OS Task Details for that task
- Activity Monitor
- Task Instances list

5.15.1.4.1 z/OS Task Instance Details

The following z/OS Task Instance Details contains information on the completion of a z/OS task


Dashboards
z/OS Tasks
z/OS Task Instance Details: stonebranch-zOStask-os
Unskip
View Parent
z/OS Task Instance
Step Conditions
Restart Criteria
Restartable Job Steps
Confirm JCL Changes
Actions
Virtual Resources
Exclusive Requests
Output
General
Instance Name
stonebranch-zOStask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-zOStask-01
Source Version
16
Launch Source
Workflow
Source Instance
stonebranch-workflow-01
Invoked By
Workflow: stonebranch-workflow-01
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
Wait For All
Status
Status
Skipped
Exit Code
0
Status Description
Skipped due to run/skip criteria on stonebranch-zOStask-01.
Operational Memo
Critical
Critical Endpoint
Trigger Time
Launch Time
2023-09-18 12:06:22 -0400
Wait Until Time
Queued Time
Start Time
End Time
2023-09-18 12:06:24 -0400
Duration
CPU Time
0
Job ID
Job Name
Agent Details
Agent *
${sos_agent}
Agent Variable
Credentials
Credentials Variable
z/OS Details
JCL Location *
C:
Use JCL Override Library
Submitted JCL Location
New Jobname
Procedure Library
New Jobclass
Schedule Id
New Msgclass
JCL Changes Confirmed
SYSTEM or SYSAFF Override Parameter
Parameters
Name
Value
No items to show.
Result Processing Details
Exit Code Processing
Step Conditions
Automatic Output Retrieval
-- None --
Retry Options
Auto-Restart Option
Use Restart Criteria
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count
0
Wait/Delay Options
Wait To Start
-- None --

5.15.1.4.2 z/OS Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in z/OS Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
CPU Time	System-supplied; amount of CPU time the task took to run.
Job ID	Job identifier of the job executed by the task instance.
Job Name	Name of the job executed by the task instance.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
z/OS Details	This section contains assorted detailed information about the task instance.
JCL Location	File and member name containing the JCL script. When you are using the JCL_LIBRARY feature, you can substitute the name of the library with a string starting with "&", that names the library specified in the uags.conf file with the JCL_library definitions. For example, the name of a job might look like the following: `&PRODLIB(PAYJOB01)`
Use JCL Override Library	Allows the task to work with a JCL override library on the target system. If this option is selected, the Agent will check the JCL override path (specified in JCL Override Location) before submitting the job from JCL Location. If a JCL member is found at the override path, the job is submitted from there. Otherwise, the Agent will look to the JCL Location path for submission. The task instance will display the actual path that was used for job submission in Submitted JCL Location.
JCL Override Location	If Use JCL Override Library is selected; Required. Specifies the file and member name potentially containing an override JCL script. The Agent will check this location for JCL before looking in the standard JCL Location. If JCL is found in this location, the job will be submitted from there. If JCL is not found in this location, the Agent will submit the job from the standard JCL Location. Missing override JCL is not considered an error condition. As with JCL Location, when you are using the JCL_LIBRARY feature, you can substitute the name of the library with a string starting with "&" that names the library specified in the `uags.conf` file with the JCL_library definitions.
Delete Override JCL	If Use JCL Override Library is selected; Optional. Allows the task to define criteria that will control the automated clean-up of the override JCL. If this option is not selected, the Controller and Agent will take no action to delete the override JCL from the target system.
Submitted JCL Location	System-supplied; actual path that was used for job submission.

Override Instance Count for Deletion	If Delete Override JCL is selected; Required. Specifies the number of successful override instances that must occur before the override JCL library member is deleted. When the deletion criteria has been satisfied, the Controller will instruct the Agent to delete the member specified in JCL Override Location. An override instance is considered successful only if the ending state in the controller is SUCCESS. **Note** Manual resubmissions of a task instance do not increment the tracked number of successful override instances that go towards satisfying the deletion criteria. If a task is not submitted from the override location (that is, no override member was found), the task's "successful override instance count" is reset to 0.
Number of Override Instances	If Delete Override JCL is selected; Read only; system-supplied. Indicates the number of successful override instances that have occurred for this task. This number is checked against the deletion criteria to determine when the override JCL member should be deleted. **Note** This number is automatically reset to 0 by the system if a task instance does not submit from override JCL (that is, no override member was found).
New Jobname	Job name that will replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL. This value should be validated before the job is launched to avoid JES start failures. The syntax of a job name is: • 1-8 characters • Upper case • Name must start with an alphabetic or $, #, @ character. • Remaining characters are alphanumeric or $, #, @. • No spaces or tabs.
New Jobclass	New Jobclass to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.
New Msgclass	New MSGCLASS to replace the one in the JCL member. This allows you to override the value in your JCL from the Controller without having to modify the JCL.
Procedure Library	The PROCLIB field allows for defining a JES2 PROCLIB control statement in the job JCL. For example, a PROCLIB value of PROC01 will result in the following JES2 control statement generated in the job JCL: `/*JESPARM PROCLIB=PROC001` The PROCLIB value must refer to a ddname defined in the JES2 procedure. Refer to IBM MVS JCL Reference for more information regarding the JES2 PROCLIB control statement.
JCL Changes Confirmed	If Status = **Confirmation Required**; indicates that JCL changes have been confirmed. You cannot rerun a job if this field is not selected.

Schedule ID	CA7 Schedule ID; for CA7 toleration only (see CA7/CA11 Toleration).
SYSTEM or SYSAFF Override Parameter	Specifies the SYSTEM or SYSAFF Override Parameter using the following syntax: SYSTEM={SystemName} {(SystemName,SystemName, ...,SystemName)} {(-SystemName,SystemName, ...,SystemName)} {-SystemName} {ANY} {JGLOBAL} {JLOCAL} SYSAFF={MemberName} {(MemberName,MemberName, ...,MemberName)} {(-MemberName,MemberName, ...,MemberName)} {-MemberName} {(MemberName,...,IND)} {(-MemberName,...,IND)} {ANY} {(ANY,IND)} Value must conform to documented IBM JCL syntax.
Parameters	Displays a list of parameters that will be inserted into the JCL. Each parameter consists of a Name and a Value. You can enter as many parameters as needed. To add a parameter, click the **+** icon; add a Name and Value, and click the **Update** button. To delete a parameter, click the parameter on the list, the **-** icon, and the **Update** button. Each parameter that you enter creates a separate JCL construct called the SET command. Each one appears as a new line inserted dynamically into the JCL submitted to the Controller for the current execution. The JCL is not permanently modified. For example, you might specify a parameter Name = RUNTYPE and Value = PROD. This results in the following JCL SET statement being inserted in the job after the job card: `// SET RUNTYPE=PROD` The Parameter fields also support two additional special functions: • They allow you to specify any steps you want skipped during the job run. See Skipping Steps during Initial Run for detailed instructions. • They allow you to add data to DD* input streams. See Using Variables in JCL and In-Stream Data Sets for detailed instructions.
Result Processing Details	This section contains assorted detailed information about result processing for this task.

Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions). **Note** If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.
Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.

Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.

Auto-Restart Option	Allows the z/OS job to be resubmitted with controlled step selection. This option is processed when/if a task transitions to a failed state. It works in conjunction with the Maximum Retries, Retry Interval, and Retry Indefinitely options. **Note** The Maximum Retries value must be greater than 0 for the Auto-Restart Option to be processed. Options: • None No job steps will be automatically selected for restart. • Restart From First Job Step All restartable job steps will be selected for restart. • Restart From Failed Job Step All restartable job steps from the failed step to the last job step will be selected for restart. • Use Restart Criteria The entries in the Restart Criteria tab will be evaluated. If a Restart Criteria entry matches the failure scenario, the step selection will be based on the option specified in the matching Restart Criteria entry (see Creating Restart Criteria). If you select an option other that **None** for a task that ends in a failed state, audit records will be generated to record the step selection that took place for the restart. The audit records include all restart options, criteria matching, and directives that were used to select the set of job steps to be re-run. z/OS auto-restart audit records show up as audit type **z/OS Auto-Restart** from source **Task Instance**. **Note** If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.

Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  ◦ If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  ◦ If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.

Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.

Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)

Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.

CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.

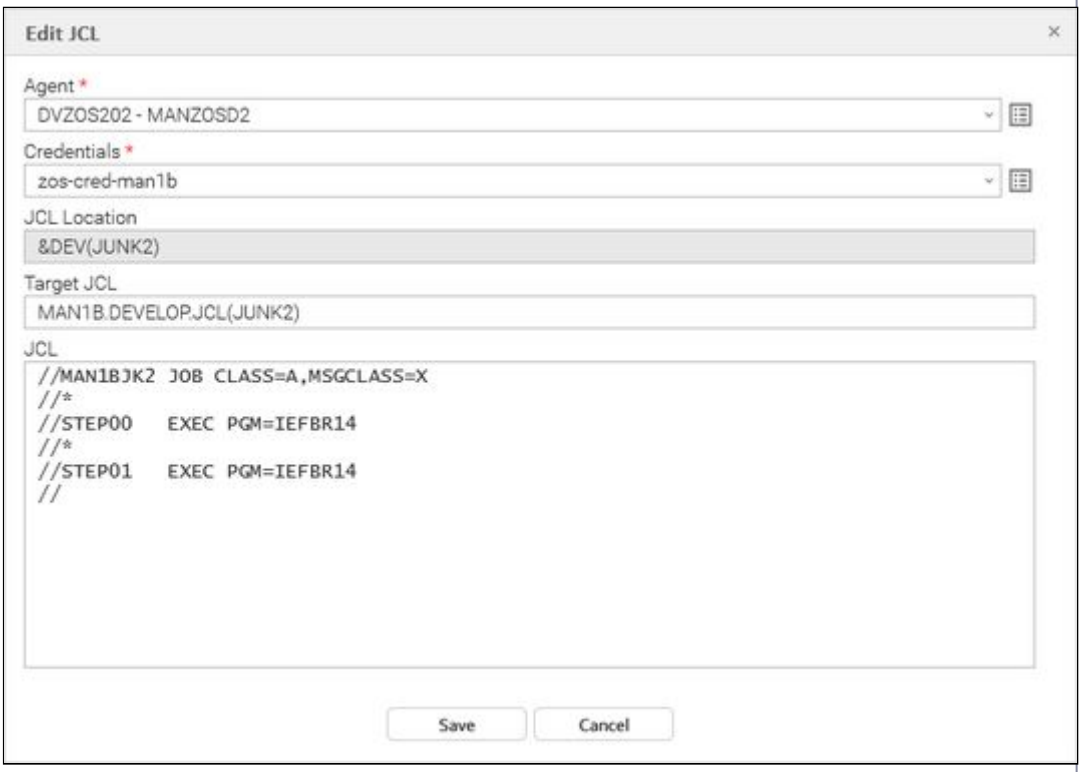
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.

Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.
Retrieve Output	See Retrieving Output.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task instance.
Tabs	This section identifies the tabs across the top of the z/OS Task Instance Details that provide access to additional information about the task instance.
Step Conditions	Lists all step conditions defined for this task.
Restart Criteria	Displays a list of all restart criteria defined for this task.
Restartable Job Steps	(See Re-running a z/OS Task.)
Confirm JCL Changes	(See Re-running a z/OS Task.)

<table>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table>
<tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr>
<tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr>
<tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr>
<tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr>
<tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr>
</table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Output</td><td>Displays output generated from the process, if any, based on specifications provided by the user in the Automatic Output Retrieval fields in the task Details.
If automatic output retrieval was not available or was not selected, output can be obtained by clicking the Retrieve Output button.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.15.1.5 Editing JCL Library and JCL Override Library

Users with the ops_jcl_view role can view the JCL location and the JCL data. Users with the ops_jcl_edit role can view and update the contents. The edit icon next to the JCL Location and JCL Override Library fields will only be visible for users with at least one of the JCL roles.

Step 1	On the z/OS Task Form, click the Icon next to the JCL Location or JCL Override Location field. The View JCL pop-up dialogue displays.
Step 2	Select the Agent and Credentials for the JCL Location and click **View**. The Edit JCL pop-up dialogue displays. 
Step 3	Enter/Select Details for the JCL, using the field descriptions below as a guide.
Step 4	Click **Save**.

5.15.1.5.1 JCL Field Descriptions

Field Name	Description
Agent	Select an agent for the application to run on.

Field Name	Description
Credentials	Select default credentials for the agent.
JCL Location	File and member name containing the JCL script.
Target JCL	Target File and member name of the JCL script.
JCL	JCL file/script contents.

5.15.1.6 Running a z/OS Task

You can run a z/OS task:

- Manually, by clicking the Launch or Launch with Variables button in the z/OS tasks list or z/OS Task Details Action menu.
- As part of a Workflow.
- Specify triggers that run the task automatically based on times or events.

5.15.1.7 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.15.2 Special Processing on z/OS Tasks

5.15.2.1 Overview

The following special processing features are available for running z/OS tasks:

- Using Variables in JCL and In-Stream Data Sets
- Skipping Steps during Initial Run
- Overriding Key JCL Parameters from Universal Controller
- Disabling Automatic Data Set Deletion

The following failure processing features are available for handling job failures:

- Re-running a z/OS Task Instance
- Interactively Ignoring a Step Code to Force a Task to Complete

The Controller supports compatibility with other schedulers:

- CA7/CA11 Toleration

The Controller provides the following reports that track error processing:

- Viewing Re-run Reports
- Viewing Audit Trails on a Restart

Each of these features is described in detail below.

5.15.2.2 Using Variables in JCL and In-Stream Data Sets

There are two categories of variables that can be defined in z/OS task Details:

- JCL Symbolic Parameters
- Universal Controller Parameters

Parameter values can use Universal Controller built-in or user-defined variables.

5.15.2.2.1 JCL Symbolic Parameters

Use the z/OS Task Details Parameters field to specify JCL symbolic parameters to be used in the JCL.

Any parameter name that does not start with `*@` is considered a JCL symbolic parameter. JCL symbolic parameters result in the Controller adding a JCL SET statement to the JCL before the first step EXEC statement.

As an example, a z/OS Task parameter name of PHLQ and value of APP.PROD will result in the following JCL SET statement being added to the JCL:

```
// SET PHLQ=APP.PROD
```

The PHLQ symbolic parameter in the example above can then be used in the remaining JCL as described by the IBM JCL Reference.

5.15.2.2.2 Universal Controller Parameters

Use the z/OS Task Details Parameters field to specify parameters that can be used in any JCL statement and in in-stream data sets.

In-stream data sets are typically defined with a DD * JCL statement. the Controller will substitute the parameter values in the JCL statements and in the in-stream data before the JCL is submitted to JES.

Universal Controller parameters are defined with a parameter name that starts with the character sequence `*@`. The parameters are referenced in the JCL and in-stream data by prefixing the parameter name with the `@` character.

The following steps add a Universal Controller parameter with the name `*@DATE1` and a value of 20110601:

Step 1	Open the z/OS task.
Step 2	In the Parameters field, click the **+** icon.
Step 3	Add a parameter in the following format: • Name is the name of a variable preceded with `@`. For example: `*@DATE1`. • Value is the value you want to set to the variable. For example: `20110601`.

Step 4	When the JCL is submitted for execution, the parameter `*@DATE1` (shown in the following example) will be substituted with the value 20110601 in the JCL or
	in any in-stream data. The example also shows the `*@DATE1` parameter being used in an in-stream data and in a JCL IF statement:
	
	`//INPUT DD *`
	`@DATE1`
	`/*`
	
	`//AIF  IF @DATE1 > 20110101 THEN`
	
	If a Universal Controller parameter must be concatenated with a non-space character, end the parameter name with a period (.). The example below
	uses the `*@DATE1` parameter concatenated with a non-space character in an in-stream data set:
	
	`//INPUT DD *`
	`DATE@DATE1.ACT9898`
	`/*`

5.15.2.3 Skipping Steps during Initial Run

In a z/OS task, you can specify that one or more steps from the JCL should be skipped when the Controller launches the job. You achieve this by adding SKIPSTNN variables (or parameters) to your z/OS task record.

To configure your z/OS task to skip specific JCL steps:

Step 1	Open the z/OS task.
Step 2	In the Parameters field, click the **+** icon.
Step 3	Add a parameter in the following format: • Name = SKIPSTAA (SKIPST is a required string. AA is any combination of alphanumerics used to make this SKIPST command unique. (You can add as many SKIPST commands as needed.) • Value = STEPNAME (JCL step name)
Step 4	Repeat Steps 2 and 3 for each step you want to skip. Change the AA portion of the SKIPST for each parameter you add. Each Name must be unique. For example, you could enter parameters: • SKIPST01, STEP03 • SKIPST02, STEPo5

5.15.2.4 Overriding Key JCL Parameters from Universal Controller

When you launch a z/OS task from the Controller, you can specify a different Jobname, Jobclass, Msgclass, Schedule ID or add a JOBPARM card. This enables you to run your JCL jobs from the Controller without having to go in and modify your JCL. You can do so by entering new value into the appropriate field in the z/OS Task Details.

5.15.2.5 Disabling Automatic Data Set Deletion

Universal Automation Center Agent (UAG) will automatically detect and delete data sets that would cause a **NOT CATLGD 2** condition. The data set deletion takes place before the job is started. Automatic data set deletion can be disabled for a z/OS task by defining the OPSDSDEL parameter with a value of NO in the z/OS task definition.

To configure your z/OS task with automatic data set deletion disabled:

Step 1	Open the z/OS task.
Step 2	In the Parameters field, click the **+** icon.
Step 3	Add a parameter in the following format: • Name = OPSDSDEL • Value = NO

The OPSDSDEL parameter accepts a value of YES (the default) or NO.

- A value of YES specifies that automatic data set deletion is enabled for the z/OS task.
- A value of NO specifies that automatic data set deletion is disabled for the z/OS task.

The Re-run Report will indicate if the feature has been disabled.

5.15.2.6 Re-running a z/OS Task Instance

When you re-run a z/OS task, you must select job steps in the task to include in the re-run; you cannot simply click a **Re-run** button or **Re-run** in an Action menu, as with other tasks.

The **Restartable Job Steps** tab in the z/OS Task Instance Details provides a list of all job steps in the task and indicates from which steps you can start the re-run.

When you re-run a z/OS task, the Controller automatically performs the following:

- Deletes data sets that were created in dependent steps.
- Maintains Generation data group.

Note

You must re-run a z/OS task from the Universal Controller user interface in order for these clean-up procedures to be performed. Do not re-run the task from the z/OS prompt.

You also can re-run a z/OS task in the In Doubt status (see Re-run a z/OS Task Instance in the In Doubt Status).

5.15.2.6.1 Confirming JCL Changes

If you make any JCL changes, the Controller will prompt you for a confirmation, as described in Re-run a z/OS Task Instance from a Specific Step, below.

During the confirmation process, UAG checks for the following JCL changes:

- Job name has changed.
- Step name had changed.
- Steps have been re-ordered.
- Program name has changed for a step.
- New steps.
- Removed steps.
- New DD statements.
- Removed DD statements.
- Dataset name changed for a DD.

Note

UAG does not check for changes to steps which will not run.

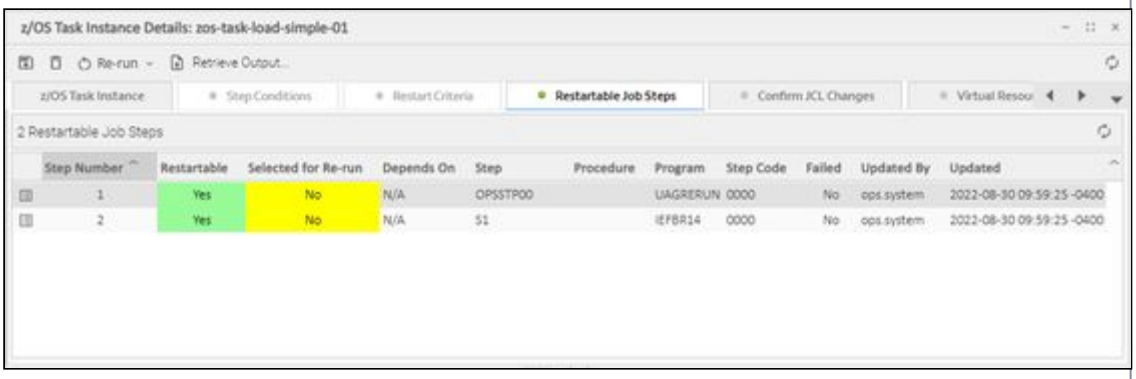
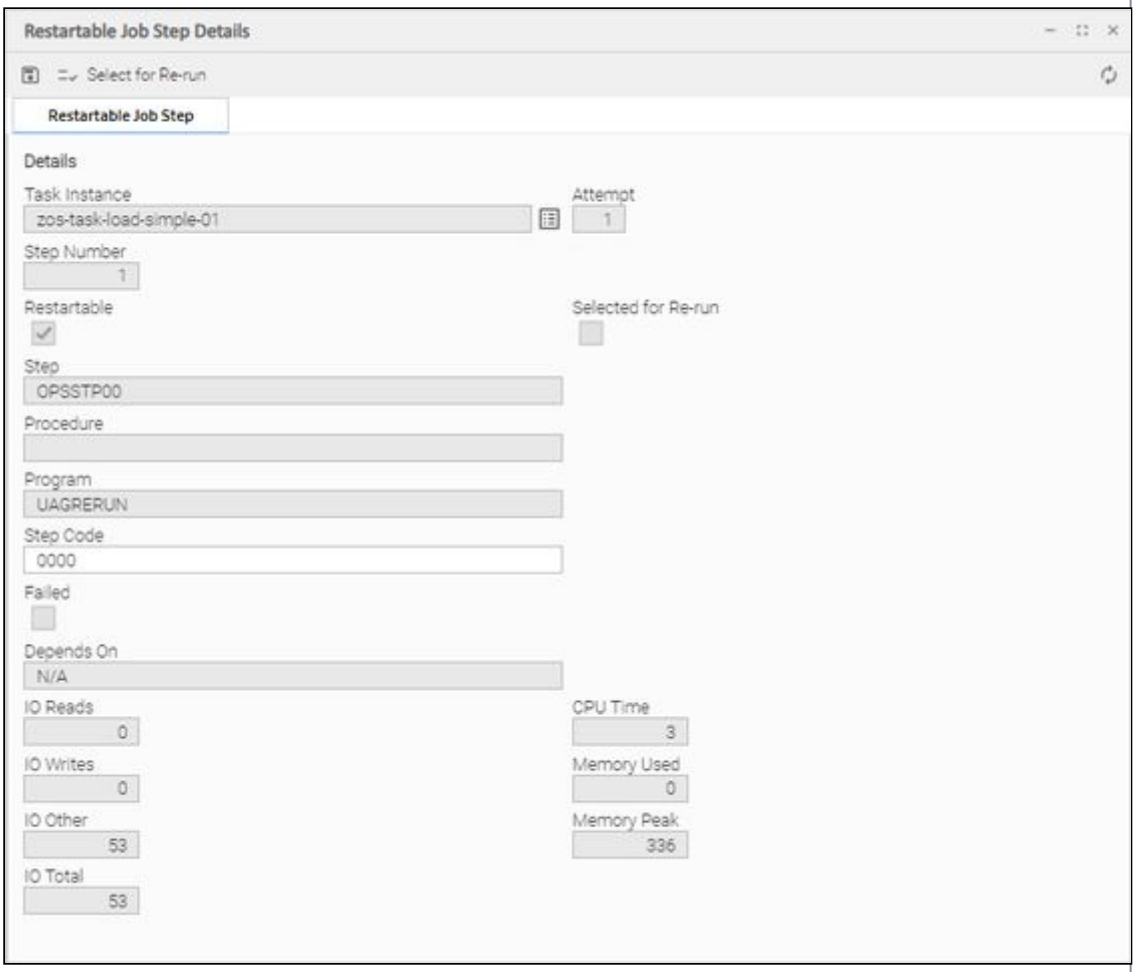
5.15.2.6.2 Re-running a z/OS Task Instance in Start Failure Status

If a z/OS task instance is in Start Failure status, the existence or non-existence of Restartable Job Steps will determine the outcome of a Re-run command.

- If Restartable Job Steps exist, you can re-run the task instance from any steps identified as Restartable under the Restartable Job Steps tab.
- If Restartable Job Steps do not exist, you must re-submit the task instance from the beginning, as when re-running a z/OS task instance from the In Doubt status.

5.15.2.6.3 Re-run a z/OS Task Instance from a Specific Step

Step 1	On the Activity Monitor, click the Details icon next to the **Instance Name** of the task you want to re-run. The z/OS Task Instance Details displays.

Step 2	Click the **Restartable Job Steps** tab to display a list of all job steps in the task.  Check the **Restartable** column to see from which steps you can start the re-run (Yes or No). If applicable, the **Failed** column indicates at which step(s) the task failed.
Step 3	Assuming any failures were caused by error(s) in the JCL, examine the JCL and make your corrections. The Controller uses a background process to determine whether changes have been made to the JCL. Any changes trigger a confirmation process.
Step 4	Click the Details icon next to the **Step Number** of any step to see detail information about that step. 

Step 5	From the Restartable Job Steps list, select the steps that you want included in the re-run: 1. Click the first step that you want included in the re-run. 2. Press and hold the <Shift> key. 3. Click the last step that you want included in the re-run. 4. Right-click any step in the selected group to display an Action menu. 5. Click **Select for Re-run**. (You also can right-click a step and select **Select to End for Re-run** to include that selected step and all following steps in the re-run.) If you want to de-select a job step in the group for inclusion in the re-run, right-click the step and, in the Action menu, click **Deselect for Re-run**.
Step 6	Click the **z/OS Task Instance tab** to redisplay the z/OS Task Instance Details.
Step 7	Click the **Re-run** button to re-run the task for the selected job steps.
Step 8	If you have made changes to the JCL, the task instance goes into a status of **Confirmation Required** on the Activity Monitor. To confirm the changes: 1. From the Activity Monitor, open the task instance. 2. Click the **Confirm JCL Changes** tab to display a list of all changes that were made to the JCL. 3. Click the **Confirm** button at the top of the list. 4. Click the **z/OS Task Instance** tab. Verify that the **JCL Changes Confirmed** field is checked and then click the **Re-run** button. **Note** If a z/OS task instance transitions into the Confirmation Required status, and the Controller determines that the number of steps did not change, it preserves the step re-run selection. However, if the Controller detects a change in the number of steps, all steps will be de-selected.
Step 9	After the re-run is complete, the **Failed** column in the **Restartable Job Steps** list should show **No** for each step. **Note** If you repeat the above process on the same task instance, the previous list of JCL changes, if any, is replaced with the most recent list of changes.

5.15.2.6.4 Restartable Job Steps List Column Descriptions

The following table describes each column on the z/OS Restartable Job Steps list.

Column Name	Description
Step Number	Number assigned to this step by the Controller.

Column Name	Description
Restartable	If the JCL job fails, the Controller determines the latest step that you can restart from. Yes indicates that you can restart from this step.
Selected for Re-run	Indicates (Yes or No) whether or not this step has been selected for re-run (the Selected for Re-run field is enabled in the Restartable Job Steps Details).
Depends On	Specifies which other step(s), if any, must be completed successfully before you can run this step.
Step	Name of the JCL step (extracted from the JCL).
Procedure	Procedure step name from within the JCL step.
Program	Name of the program being executed by the step.
Step Code	Extracted from the JCL. Exit code for this step of the program.
Failed	Indicates (Yes or No) whether or not this step failed.
Updated By	Name of the user that last updated this step.
Updated	Date and time that this step was last updated.

5.15.2.6.5 Confirm JCL Changes Tab Column Descriptions

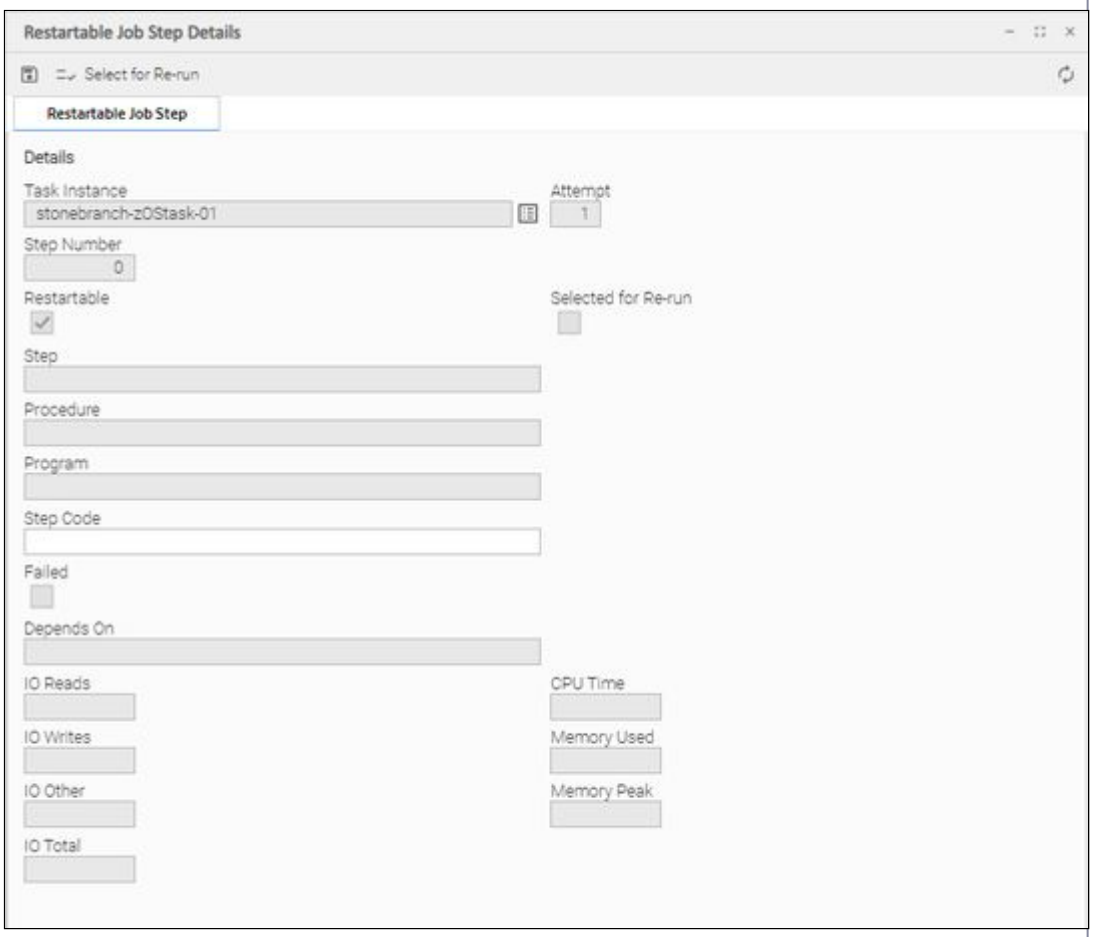
The following table describes each column on the Confirm JCL Changes list.

Column Name	Description
Job Id	Number assigned to this step by the Controller.
Step Number	JCL step number that was modified.
Error Message	Description of the change.
Old Data	JCL before the change.
New Data	JCL after the change.
Confirmed	Indicates (Yes or No) whether or not this JCL change was confirmed.
Updated By	Name of the user that last updated the JCL.
Updated	Date and time that the JCL was last updated.

5.15.2.7 Interactively Ignoring a Step Code to Complete a Task

If the step code (exit code) on a previous step is causing a step failure, but you still want to finish the job, you can change the step code in order to complete the task.

Step 1	From the Activity Monitor, open the task instance.

Step 2	From the **Restartable Steps** tab, click on the step whose code you want to change. The Restartable Job Step Details for this job step displays: 
Step 3	Enter the new code in the **Step Code** field and click .
Step 4	Click the **z/OS Task Instance** tab and then click the **Re-run** button.

Note

By default, on a re-run, the return code in the restarted step will revert to the original return code.

To retain the new step code, change the Retain Overridden Step Codes On z/OS Task Re-run Universal Controller system property to true.

5.15.2.8 CA7/CA11 Toleration

5.15.2.8.1 Non-Restartable Customized Job Steps

The Controller can read and interpret JCL DD names that have been customized for CA11 and UCC. This allows you to launch your existing CA11 and UCC jobs from the Controller without modifying the JCL.

When the Controller encounters one of the following DD names in the JCL for a job step, the Controller will mark the step as non-restartable during a restart:

- CA11NR - CA11 Non-Restartable
- UCC11NR - UCC11 Non-Restartable
- OPSNR000 - Opswise Non-Restartable

5.15.2.8.2 SCHID - Overriding the CA7 Schedule ID

The Schedule ID field in the z/OS Task Details allows you to override the CA7 SCHID (Schedule ID).

For example, the JCL shown below contains CA7 Scheduled Overrides statements #JI and #JEND. This JCL will set CLASS =A if the SCHID is between 1 through 39, and set CLASS=B if the SCHID is between 40 through 79. The user can set the SCHID by entering it into the Schedule ID field. The Agent scans for #JI and #JEND, and generates the appropriate JCL, as shown in the following example.

```
//SCHID JOB (IMS,001),JIM,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,
#JI,ID=(1-39)
//             CLASS=A
#JEND
#JI,ID=(40-79)
//             CLASS=B
#JEND
//S1      EXEC PGM=IGWSPZAP
//SYSLIB   DD DSN=OPS01.JS01.LOAD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
DUMPT WMSSETRC WMSSETRC
/*
//
```

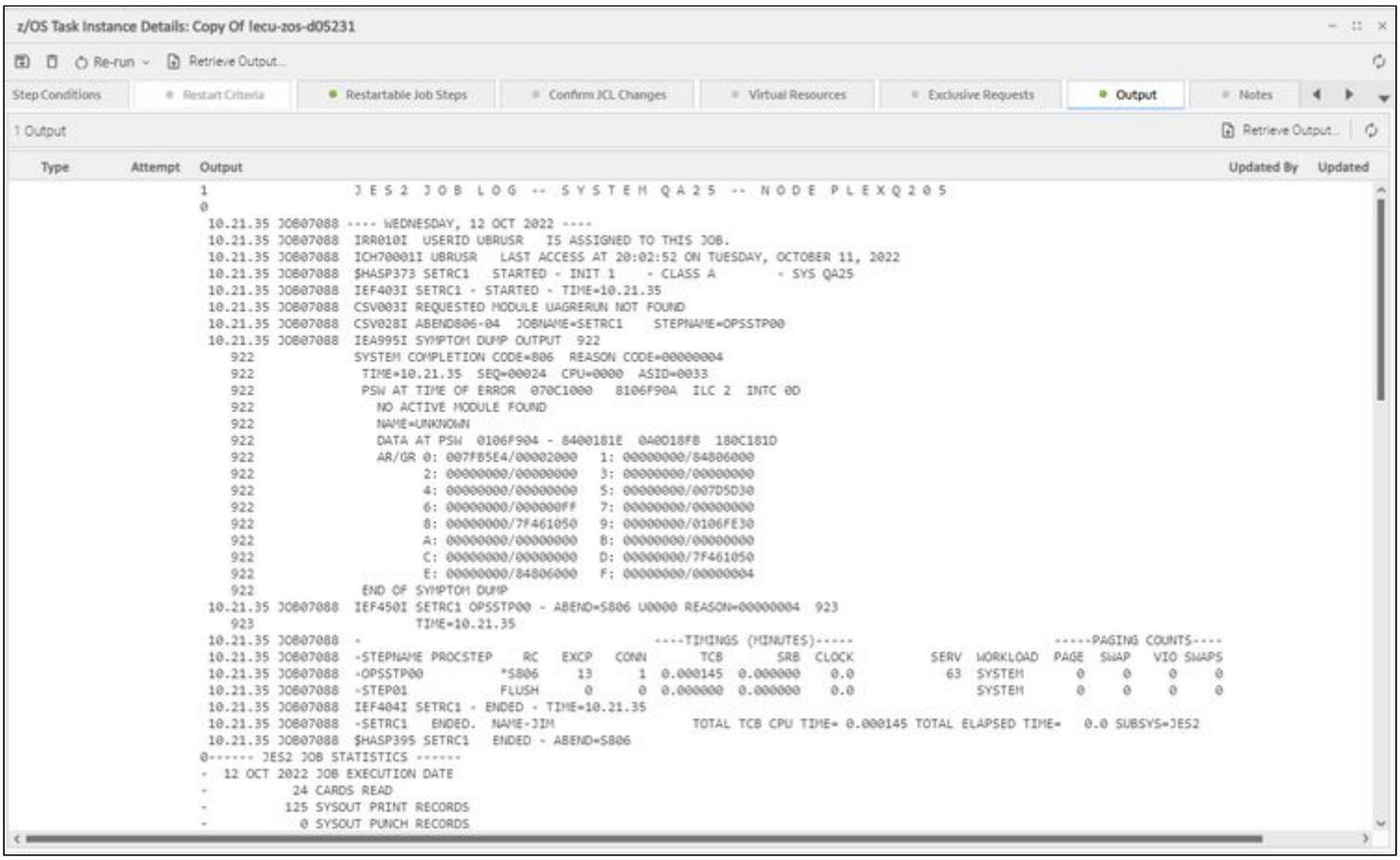
5.15.2.9 Non-Restartable Job Steps

A z/OS Agent determines that a job step is non-restartable if the step contains any of the following:

- One of the special DDNAMEs: CA11NR, UCC11NR, or OPSNR000.
- DD statement with DISP=(NEW,PASS) or (OLD,DELETE). (Note that the third DISP value is not considered by the agent.)
- A backwards volume reference. For example: VOL=REF=...
- The JOB or EXEC statement specifies RD=NR or RD=NC.

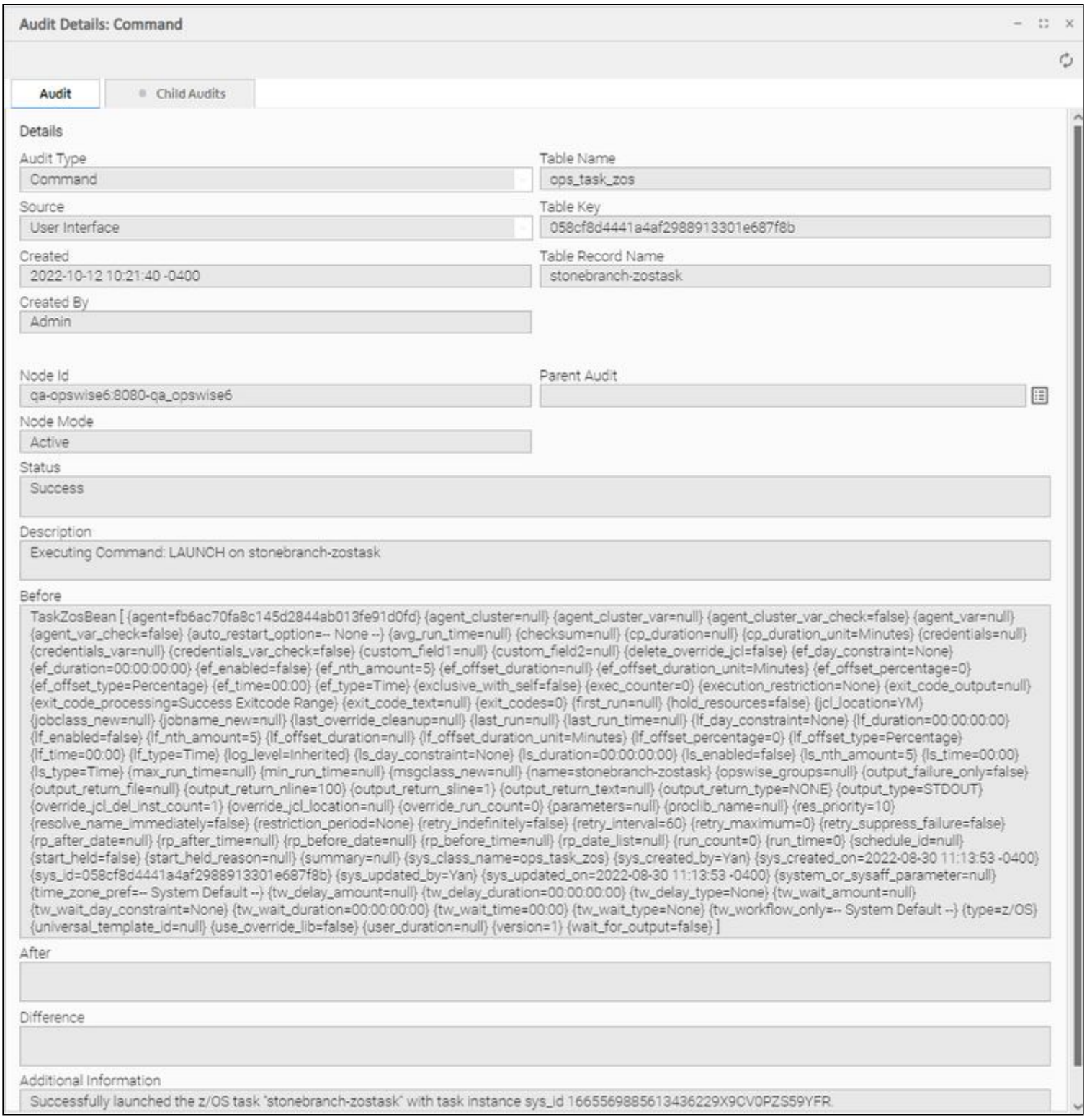
5.15.2.10 Viewing Re-run Reports

The Controller keeps a detailed record of task re-runs. This data is written to the **Output** tab on the task instance record, as shown in the sample below:



5.15.2.11 Viewing Audit Trails on a Restart

The Controller maintains detailed audit records on all system activity. The following audit record is for a launch on a z/OS task.



5.15.3 Creating Step Conditions

5.15.3.1 Overview

A z/OS JES batch job consists of one or more steps defined by JCL EXEC statements. The JCL EXEC statement identifies the program that the step is to execute. During job execution, steps are executed sequentially under conditions defined by the JCL statements. When a step completes execution, a Step Condition code is recorded by JES. The Step Condition code is either an integer condition code, in the range of 0 - 4095, or an ABEND code. If a step does not execute, which can be for a number of reasons, it is referred to as FLUSH'ed.

A task's status of SUCCESS or FAILED is determined by task exit code processing. The z/OS Task Details Exit Code Processing field specifies the method used to determine the task status for a z/OS batch job. When the **Step Conditions** method is selected, the task status of the z/OS batch job is controlled by the Step Conditions defined in the z/OS Task and parent workflow.

In addition to determining the z/OS Task status, Step Conditions provide a means to control the execution of job steps without any changes to the batch job JCL. A Step Condition definition can specify that job execution is halted, continued, or determined by a console operator. For example, if a multi-step job has a step that ends with a condition code of 8, you could include a Step Condition check to decide whether or not to run the following steps.

Step Conditions can be applied at the z/OS Task level or at the workflow level that apply to all z/OS tasks in that workflow and sub-workflows.

Note

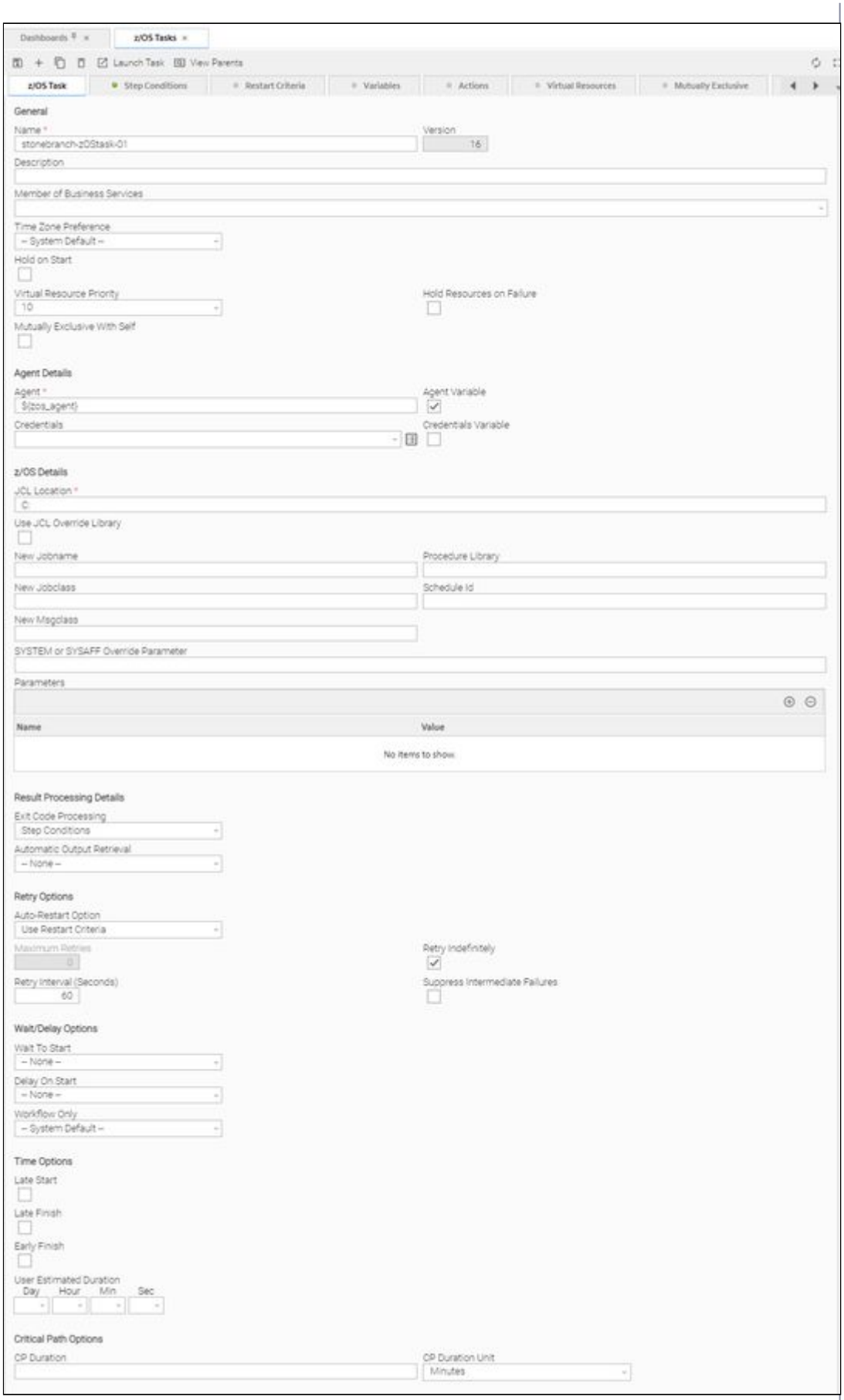
If Step Conditions has been selected for Exit Code Processing, and you then select a different option, a confirmation pop-up displays to warn that any defined Step Conditions will be removed.

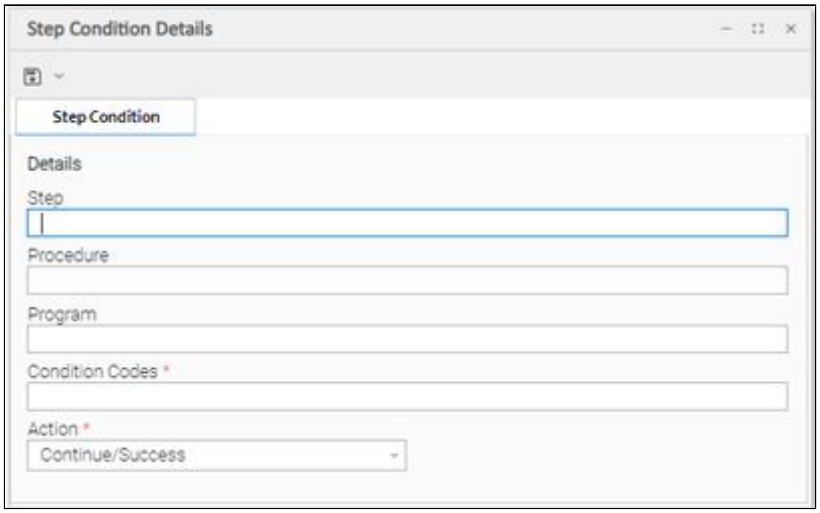
5.15.3.1.1 Runtime Monitoring

You can monitor Step Conditions at run time via the Activity Monitor , which lets you add or change Step Conditions for a single task instance and then re-run that job.

5.15.3.2 Creating a Step Condition

Step 1	From the Automation Center navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays.
Step 2	Select the task for which you want to create one or more Step Conditions. The z/OS Task Details for that task displays.


Dashboards
z/OS Tasks
Launch Task
View Parents
z/OS Task
Step Conditions
Restart Criteria
Variables
Actions
Virtual Resources
Mutually Exclusive
General
Name *
stonebranch-zOStask-01
Version
16
Description
Member of Business Services
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Agent Details
Agent *
${zos_agent}
Agent Variable
Credentials
Credentials Variable
z/OS Details
JCL Location *
C
Use JCL Override Library
New Jobname
Procedure Library
New Jobclass
Schedule Id
New Msgclass
SYSTEM or SYSAFF Override Parameter
Parameters
Name
Value
No items to show
Result Processing Details
Exit Code Processing
Step Conditions
Automatic Output Retrieval
-- None --
Retry Options
Auto-Restart Option
Use Restart Criteria
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit
Minutes

Step 3	In the Exit Code Processing field, select **Step Conditions** from the drop-down list and then click the **Update** button.
Step 4	Click the **Step Conditions** tab. The Step Conditions list displays a list of any currently defined Step Conditions for this task.
Step 5	Click **New**. The Step Condition Details pop-up dialog displays. 
Step 6	Using the field descriptions , below, as a guide, complete the fields as needed.
Step 7	Click a **Save** button to save the record and return to the Step Conditions list.
Step 8	If appropriate, repeat these steps for any additional Step Conditions you want to add.

5.15.3.3 Step Condition Details Field Descriptions

The table below describes the fields and buttons in the Step Conditions Details pop-up dialog.

Field Name	Description
Step	Job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	Procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (*) will match any program name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.

Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (`-`) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes. For example: 1,6-4095,Sxxx,Unnnn,JCLERR
Action	Action to take and the task status to set if the Step Condition matches. See Step Condition Logic, below, for an explanation of the actions.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Step Condition Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update button	Saves updates to the record.
Refresh	Refreshes any dynamic data displayed in the Details.
Delete button	Deletes the current record.
Close	For pop-up view only; closes the pop-up view of this task.

5.15.3.4 Step Condition Logic

Step Condition exit code processing starts the task with a task status of SUCCESS. As the job executes and steps complete, the task status can change from SUCCESS to FAILED based on Step Condition definitions and job execution conditions. Once a task status has been changed to FAILED, it cannot be changed back to SUCCESS.

Note

The Controller searches Step Condition definitions based on their order in the Step Conditions list; the definition at the top of the list is searched first. To change the order of the definitions in the list, drag and drop them to any location.

In addition to Step Condition definitions changing the task status, the following specific job execution conditions will change the task status:

- JCL errors (for examaple, IEFC452I or IEF453I) change the task status to FAILED.
- A job step ABEND that does not match any Step Condition definition changes the task status to FAILED.

As job steps complete execution, Universal Controller searches the list of task-level Step Condition definitions that matches the current step based on the job step name, procedure step name, program name, and the Step Condition code. The search stops when the first definition is found. If a matching Step Condition is found, the Step Condition action is taken. If no matching task-level Step Condition is found, the search continues with the parent workflow-level Step Conditions. If no matching workflow-level Step Condition is found, the search continues with its parent workflow-level Step Conditions and so on until a match is found or all Step Conditions have been search in the hierarchy. If no matching Step Condition is found, the Controller takes no action and normal JES processing of the job continues.

Note

If a step does not execute, no search is performed for that step in the Step Condition definitions. For example, if a job step FLUSH'es due to a JCL IF statement, the Step Conditions will not be search for the step.

The Step Condition definition action value specifies two attributes, the action to take and the task status. These two attributes are combined into combinations that form the possible action values. The following Step Condition actions are supported:

Continue/Success	Job execution continues and task status is set to SUCCESS.
Continue/Failed	Job execution continues and task status is set to FAILED.
Halt/Failed	Job execution is halted at the current step and task status is set to FAILED.
Askoper	Job execution is stopped and the Controller sends a WTOR message to the console operator requesting a reply on how job execution should proceed. The action is dependent upon the operator reply (see Example 4, below).

During job processing, the Controller issues message UAG1059A to the job log when it matches a Step Condition definition to a step that has completed execution. Message UAG1059A includes the Step Condition definition values including the action that is taken. The message provides an audit record of Step Condition processing that has influenced job execution.

5.15.3.5 Example Steps and Condition Codes

This section provides a sample job and PROC, followed by example condition code checks for that job.

5.15.3.5.1 Example Job and Procedure

5.15.3.5.1.1 Example Job

```
//JOBA  JOB ...
//S1    EXEC ACCTBL10
```

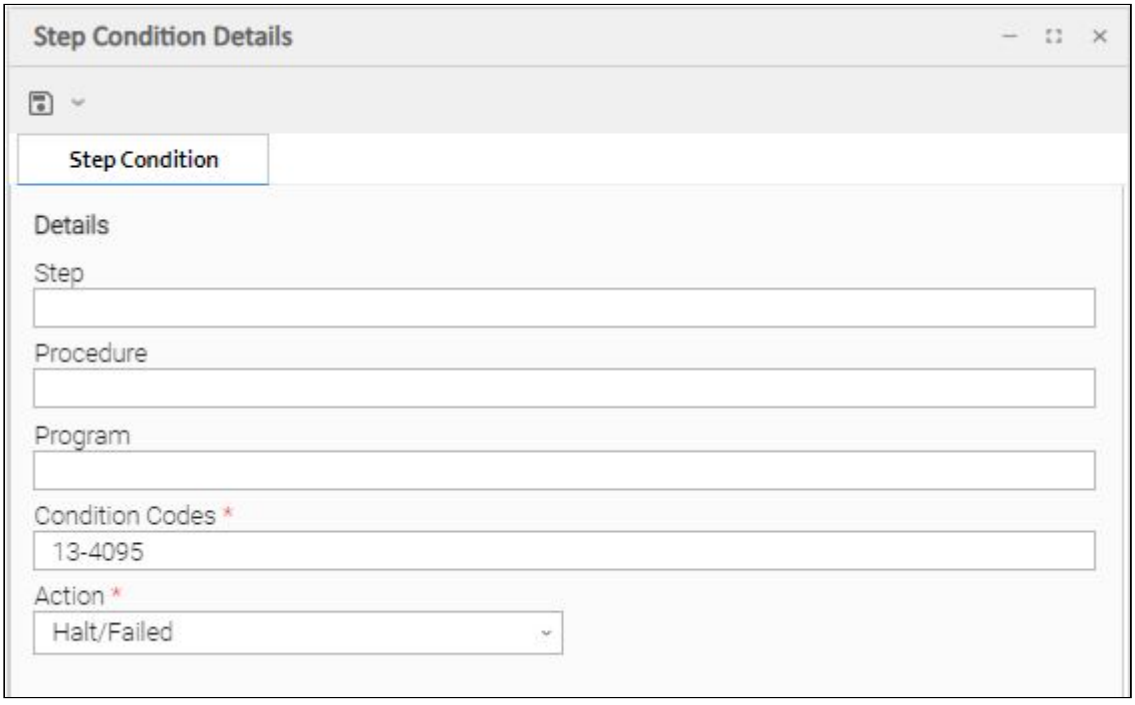
5.15.3.5.1.2 Example Procedure (Cataloged Procedure)

```
//ACCTBL10 PROC
//STEP1    EXEC PGM=BALANCE
//STEP2    EXEC PGM=MERGE
//STEP3    EXEC PGM=IEBGENER
//         PEND
```

5.15.3.5.2 User Interface Specifications and Actions

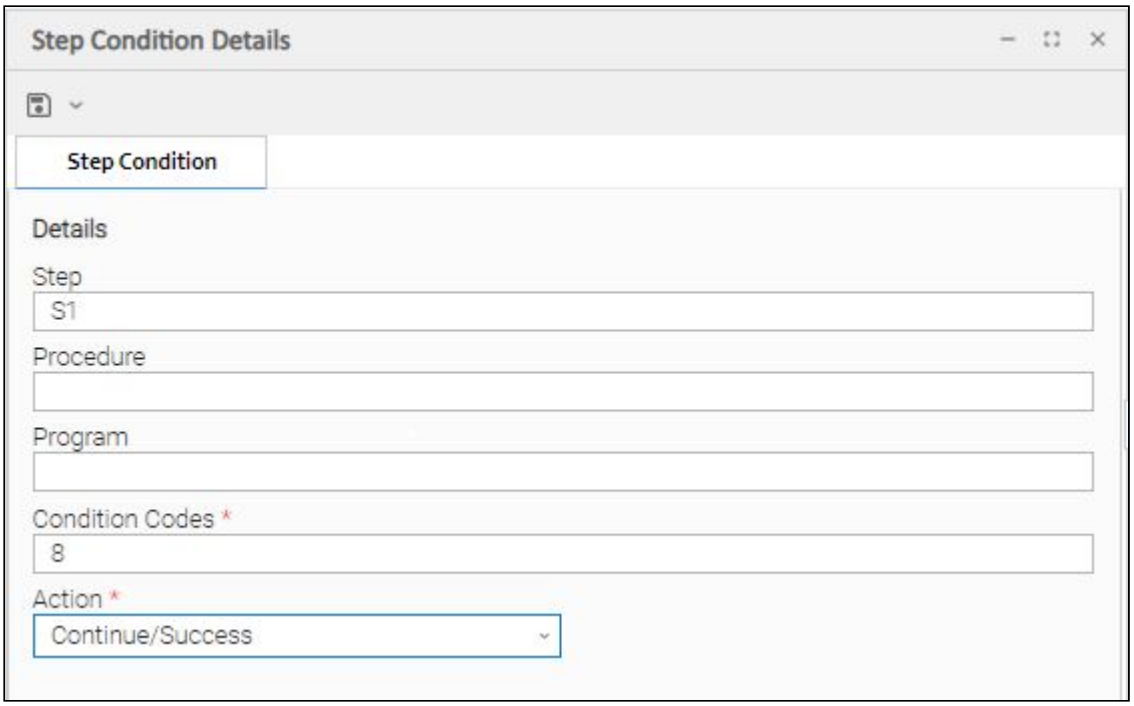
The following examples specify condition code checks for the example job above.

5.15.3.5.2.1 Example 1



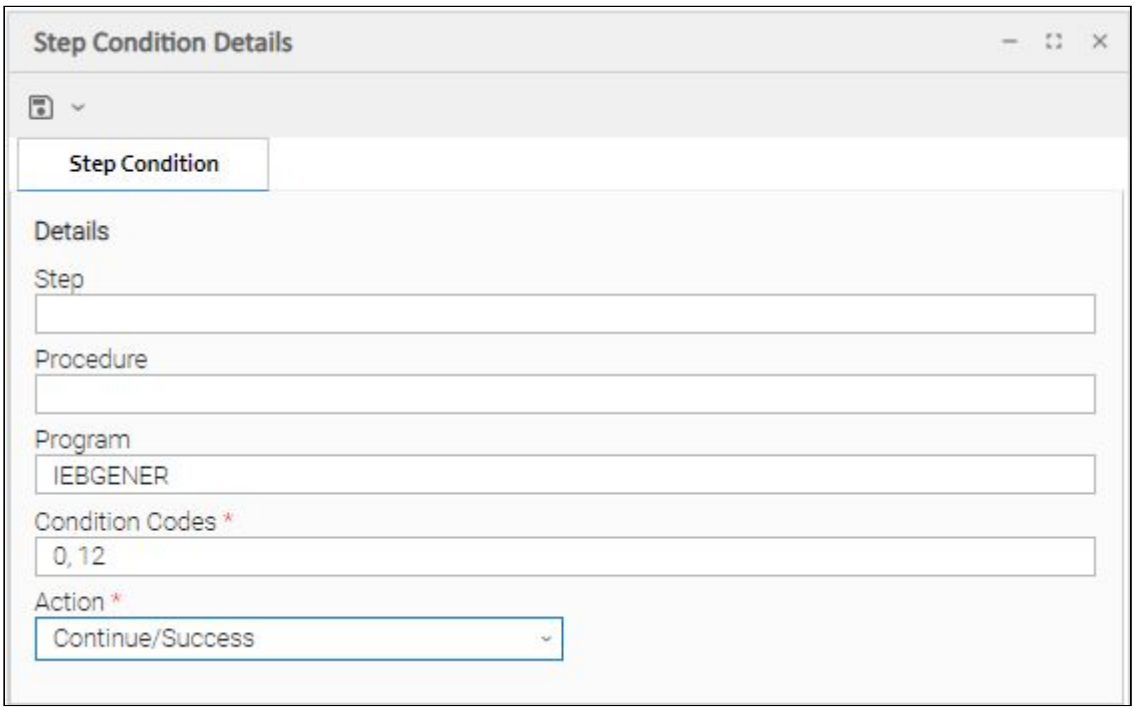
In this example, if the condition code of any step of the job is greater than 12, the job halts and the task status is set to FAILED.

5.15.3.5.2.2 Example 2



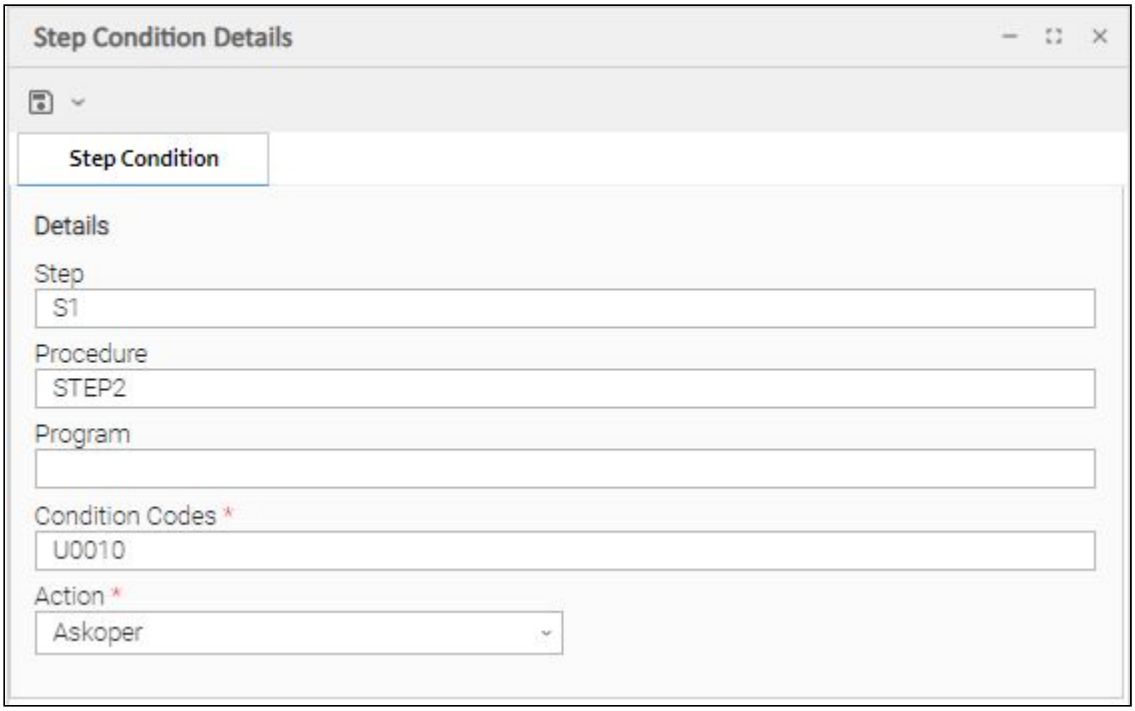
In this example, if the condition code of any procedure step executed as job step S1 is equal to 8, the job continues and the task status is set to SUCCESS.

5.15.3.5.2.3 Example 3



In this example, if the condition code of program IEBGENER is 0 or 12, the job continues and the task status is set to SUCCESS.

5.15.3.5.2.4 Example 4



In this example, if the condition code from job step S1, procedure step STEP2 is user ABEND U0010, the operator is alerted with a WTOR console message that specifies the job name, the job step, the procedure step, and the actual condition code. The Controller will take the action specified by the operator reply.

Issued WTOR

```
UAG1058A JOBA    ,S1      ,STEP2   ,Code: U0010 Reply 1:CONT/SUCCESS, 2:CONT/FAIL,
3:HALT/FAIL
```

The UAG1058A WTOR message identifies the job name as JOBA, step name as S1, procedure step name as STEP2, and the Step Condition code as U0010 that matched the Step Condition definition which resulted in the ASKOPER action.

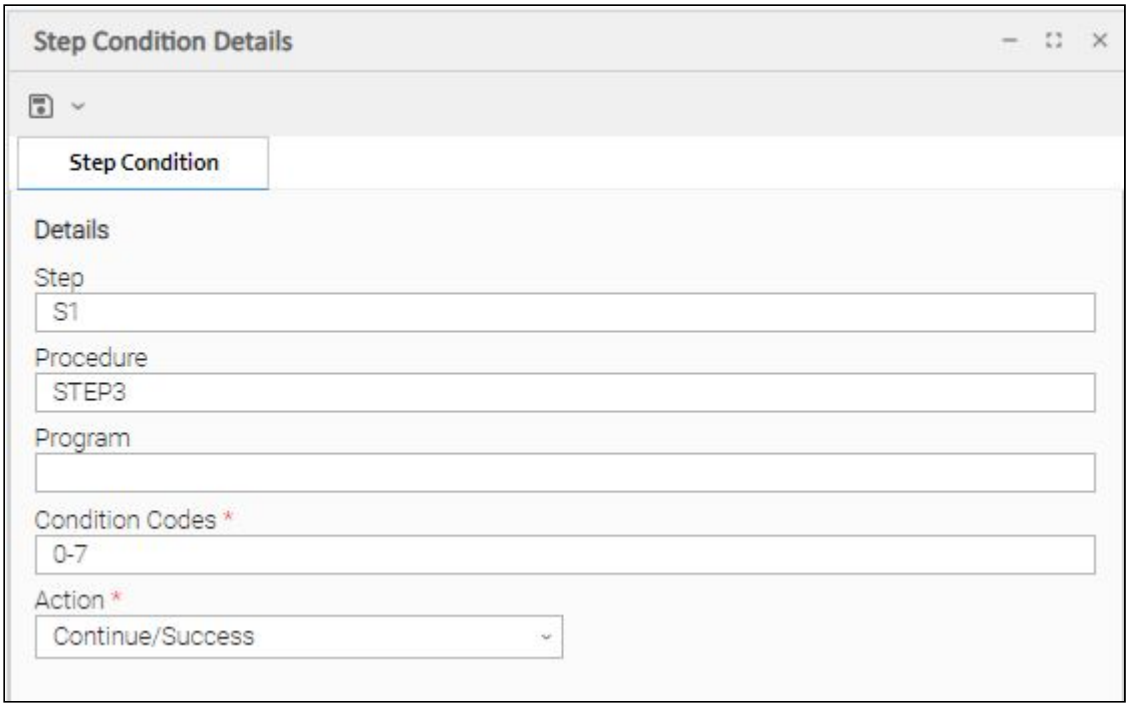
Operator Reply

The operator must reply with one of the following:

- (1) CONTINUE/SUCCESS
- (2) CONTINUE/FAILED
- (3) HALT/FAILED

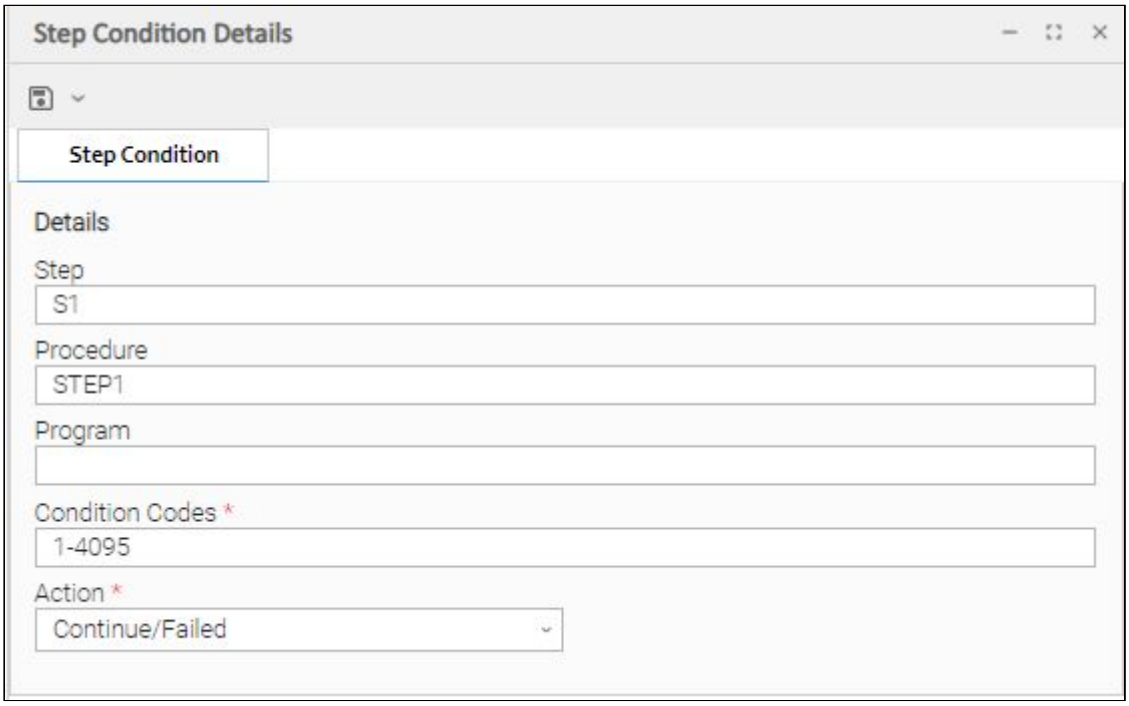
(See Step Condition Logic for an explanation of these replies.)

5.15.3.5.2.5 Example 5



In this example, if the condition code from job step S1, procedure step STEP3 is within the range of 0-7, the job continues and the task status is set to SUCCESS.

5.15.3.5.2.6 Example 6



In this example, if the condition code from job step S1, procedure step STEP1 is greater than 0, the job continues and the task status is set to FAILED.

5.15.4 Creating Step Actions

5.15.4.1 Overview

You can specify actions to take on z/OS tasks in a Workflow based on step condition codes returned for any of the steps in that z/OS task.

> **Note**
>
> Currently, the only step action that you can take on z/OS tasks in a workflow is a System Operation.

Step actions can be defined only at the Workflow level. They apply to one, more, or all z/OS tasks in that immediate Workflow; they do not apply to any z/OS tasks in sub-workflows. (Every task in a Workflow has a unique Vertex ID, which is how you can tell one task from another if the Workflow has more than one of the exact same task.)

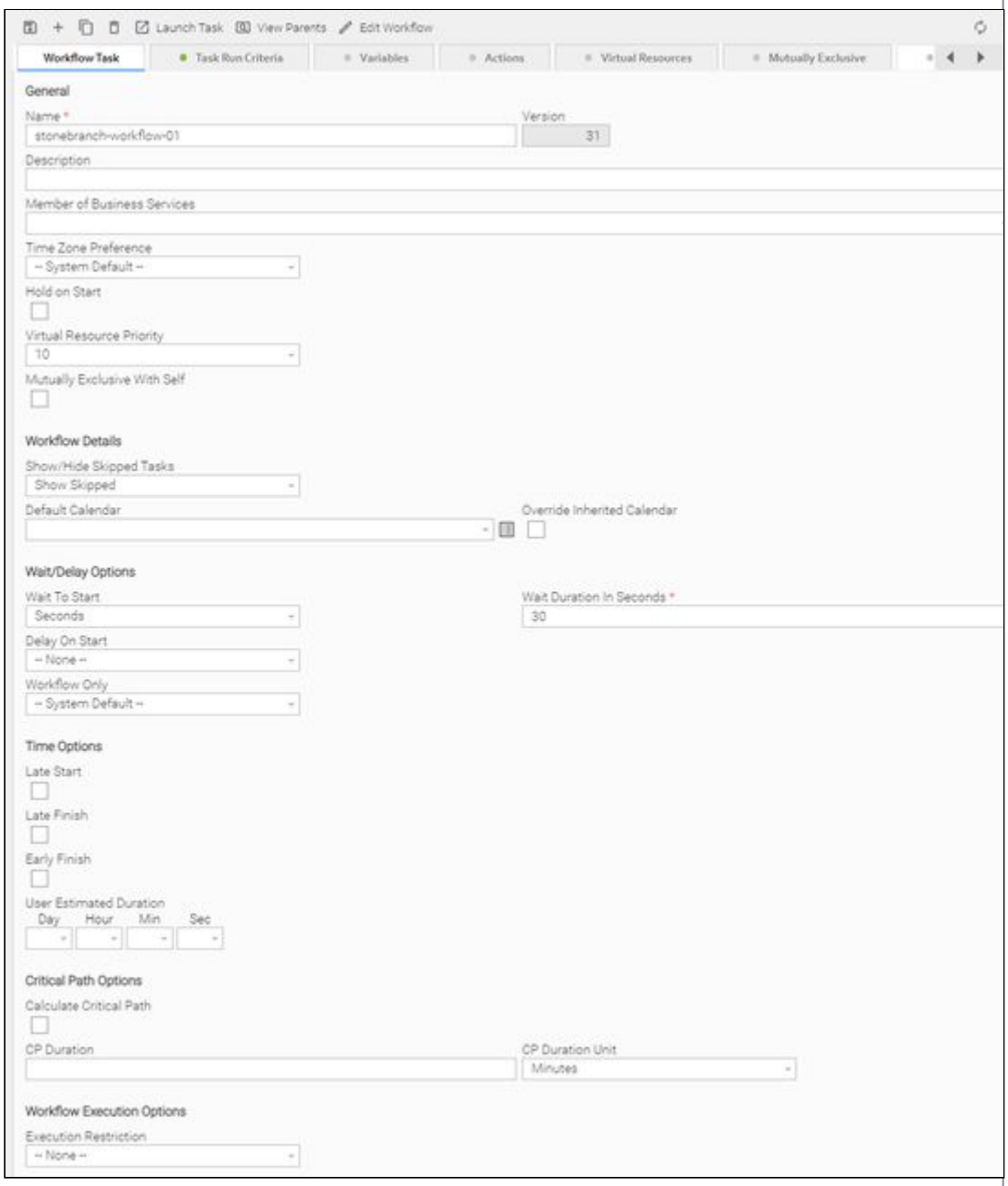
When you create a step action for a task in the Workflow, you specify the name of the task in the Task field. If there is more than one of those tasks in the Workflow, the Vertex Id drop-down list shows the Vertex Id for all tasks. So you can apply the step action to all tasks of that name in the Workflow or just the task with that Vertex Id.

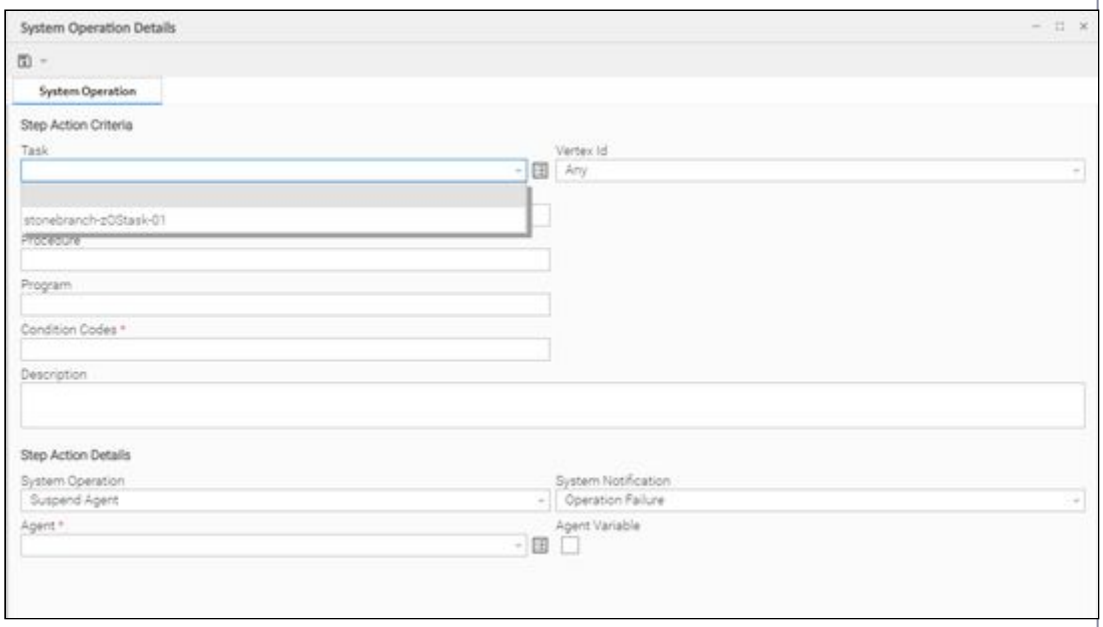
In the Workflow Editor, when you right-click a task, there's a **View/Edit Run Criteria** selection for every task. For z/OS tasks, there's also a **View/Edit z/OS Step Actions** selection.

Every z/OS task is comprised of one or more steps. Each step in a z/OS task ends in a step condition code. System Operation step actions optionally let you send system notifications based on the outcome of each step action with options for None, Operation Failure, Operation Success/Failure, and Operation Success.

5.15.4.2 Creating a Step Action

Step 1	From the Automation Center navigation pane, select **Tasks > Workflow Tasks**. The Workflow Tasks list displays.

Step 2	Select the Workflow for which you want to create one or more step actions. The Workflow Task Details for that Workflow displays. 
Step 3	Click the **Step Actions** tab. The System Operation Step Actions list displays.

Step 4	Click . The System Operation Step Actions pop-up dialog displays. 
Step 5	Using the field descriptions , below, as a guide, complete the fields as needed.
Step 6	Click the button to save the record and return to the Step Actions list.
Step 7	If appropriate, repeat these steps for any additional step actions you want to add.

5.15.4.3 System Operation Step Action Field Descriptions

The following table describes the fields and buttons in the System Operation Step Action Details.

Field Name	Description
Step Action Criteria	This section contains criteria for performing the step action.
Task	Name of a task. In combination with the Vertex Id , it specifies a specific task within the Workflow to which the step action applies; if no task is specified, the step action applies to all z/OS tasks within the Workflow.
Vertex Id	Numerical ID of the task that identifies it uniquely from other tasks of the same type in the Workflow. In combination with the Task , it specifies a specific task within the Workflow to which the step action applies. Options: • **Any** - The action applies to any instance of the specified task in the Workflow. • **<number>** - The action applies only to this instance of the task in the Workflow.
Step	Job step name to match. A blank value or an asterisk (`*`) will match any job step name. Generic matching characters asterisk (`*`) and question mark (`?`) match zero or more characters and one character, respectively.

Procedure	Procedure step name to match. A blank value or an asterisk (`*`) will match any procedure step name. Generic matching characters asterisk (`*`) and question mark (`?`) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (`*`) will match any program name. Generic matching characters asterisk (`*`) and question mark (`?`) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (`-`) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes.
Description	Description of this System Operation Step Action.
Step Action Details	This section contains assorted detailed information about the step action.
System Operation	Specific system operation to perform. Options: • Suspend Agent • Resume Agent • Suspend Agent Cluster • Resume Agent Cluster • Suspend Cluster Membership • Resume Cluster Membership • Set Agent Task Execution Limit • Set Cluster Task Execution Limit • Set Virtual Resource Limit • Run Task Instance Command • Launch Task • Trigger Now • Enable Trigger • Disable Trigger **Note** For the Suspend Agent and Resume Agent operations, the user must have the following Agent permissions : • Explicit Read permission if the Strict Business Service Membership Read Constraints Universal Controller system property is true. • Suspend Agent and Resume Agent commands permission. For the Suspend Agent Cluster, Resume Agent Cluster, Suspend Agent Cluster Membership, and Resume Agent Cluster Membership operations, the user must have the following Agent Cluster permissions : • Explicit Read permission , if the Strict Business Service Membership Read Constraints Universal Controller system property is true. • Suspend Agent, Resume Agent, Suspend Agent Membership, and Resume Agent Membership commands permission.

System Notification	Status of the specified system operation that will trigger a system notification. Options: • None • Operation Failure (default) • Operation Success/Failure • Operation Success **Note** The Controller must be configured for system notifications in order for system notifications to be triggered.
Agent	If System Operation is **Suspend Agent**, **Resume Agent**, **Suspend Cluster Membership**, **Resume Cluster Membership**, or **Set Agent Task Execution Limit**; Agent for which the system operation is to be performed.
Agent Variable	If System Operation is **Suspend Agent**, **Resume Agent**, **Suspend Cluster Membership**, **Resume Cluster Membership**, or **Set Agent Task Execution Limit**; Indication of whether the **Agent** field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the **Agent** as a variable (checked).
Agent Cluster	If System Operation is **Suspend Agent Cluster**, **Resume Agent Cluster**, **Suspend Cluster Membership**, **Resume Cluster Membership**, or **Set Cluster Task Execution Limit**; Agent Cluster for which the system operation is to be performed.
Agent Cluster Variable	If System Operation is **Suspend Agent Cluster**, **Resume Agent Cluster**, **Suspend Cluster Membership**, **Resume Cluster Membership**, or **Set Cluster Task Execution Limit**; Indication of whether the **Agent Cluster** field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the **Agent Cluster** as a variable (checked).
Task Execution Limit	If System Operation is **Set Agent Task Execution Limit** or **Set Cluster Task Execution Limit**; Specification for whether a Limited or Unlimited number of task instances can be run concurrently on the specified Agent / Agent Cluster. (Default is Unlimited.)
Virtual Resource	If System Operation is **Set Virtual Resource Limit**; Virtual resource for which a virtual resource limit is to be set. **Note** If the Strict Business Service Membership Read Constraints Universal Controller system property is true, the drop-down list displays only Virtual Resources for which the user has explicit Read permission .
Virtual Resource Variable	If System Operation is **Set Virtual Resource Limit**; Indication of whether the **Virtual Resource** field is a reference field for selecting a specific Virtual Resource (unchecked) or a text field for specifying the **Virtual Resource** as a variable (checked).
Limit	If System Operation is **Set Agent Task Execution Limit** or **Set Cluster Task Execution Limit**, and Task Execution Limit is **Limited**; Number of tasks that can be run concurrently by the specified Agent / Agent Cluster. If System Operation is **Set Virtual Resource Limit**; Virtual resource limit to be set for the specified virtual resource.

Command	If System Operation is **Run Task Instance Command**; Type of task instance command to run. Options: • Cancel • Force Finish • Force Finish (Halt) • Force Finish/Cancel • Force Finish/Cancel (Halt) • Skip • Unskip • Hold • Release • Release Recursive • Clear All Dependencies • Clear Exclusive • Clear Predecessors • Clear Resources • Clear Timewait • Re-run
Instance Lookup Option	If System Operation is **Run Task Instance Command**; Specification for how to search for the task instance to run a command against. Options: • Instance Name • Instance Name/Task • Instance Id • Task
Instance Name	If Instance Lookup Option is **Instance Name** or **Instance Name/Task**; Name of the task instance to run the command against.
Instance Criteria	If Instance Lookup Option is **Instance Name**, **Instance Name/Task**, or **Task**; Additional criteria for selecting a specific task instance if multiple task instances have matching names. • Newest Active Instance • Oldest Active Instance • Newest Instance • Oldest Instance (An Active task instance is an instance that is not in any of these statuses: Skipped, Finished, Success.) **Note** An Unskip command can use only the Newest Instance and Oldest Instance criteria; an active instance cannot be unskipped.
Task Reference	• If Instance Lookup Option is **Instance Name/Task** or **Task**; Name of the task for which the task instance was run. • If System Operation is **Launch Task**; Name of the task to launch.
Task Reference Variable	If Instance Lookup Option is **Instance Name/Task** or **Task**, or if System Operation is Launch Task; Indication of whether the **Task Reference** field is a reference field for selecting a specific Task (unchecked) or is a text field for specifying the task as a variable (checked). For a variable, use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions.
Instance ID	If Instance Lookup Option is **Instance ID**; ID of task instance to run the command against. The instance ID (sysid) is a 32-character universally unique identifier. You can use the **`${ops_task_id}`** variable or `${_siblingid('mytask')}` function to get the instance id.

Trigger Reference	If System Operation is Trigger Now, Enable Trigger, or Disable Trigger; Name of the trigger.
Trigger Reference Variable	If System Operation is Trigger Now, Enable Trigger, or Disable Trigger; Indication of whether the **Trigger Reference** field is a reference field for selecting a specific Trigger (unchecked) or is a text field for specifying the trigger as a variable (checked). For a variable, use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions.
Override Variables	If System Operation is Launch Task or Trigger Now; Variables to override.
Override Variables Resolution Disabled	If System Operation is Launch Task or Trigger Now; Indication of whether or not Override Variables resolution should be disabled to allow for passing unresolved variable values. • If enabled (checked), Override Variables will be left unresolved. Any unresolved variables will be resolved in the context of the launched or triggered task instance. • If disabled (unchecked), Override Variables will be resolved prior to the execution of the Launch Task or Trigger Now System Operation.
Override Trigger Date/Time	If System Operation is Trigger Now, Indication of whether or not to override the date/time of the trigger.
Override Date Offset	If Override Trigger Date Time is selected; Override date offset.
Override Time	If Override Trigger Date Time is selected; Override time.
Workflow Instance Name Condition	If System Operation is Run Task Instance Command; Optional. Type of condition for the name of the parent workflow task instance that contains the task on which to perform the specified action. The action will be performed only on a task instance in a parent workflow task instance meeting the specified condition value. Options: • Equals • Starts With • Contains • Ends With For the selected condition (the default is Equals), a corresponding field displays (see below) that allows you to enter a value for that condition.
Workflow Instance Name Equals	If Workflow Instance Name Condition = Equals; Exact name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Starts With	If Workflow Instance Name Condition = Starts With; Character string at the start of the name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Contains	If Workflow Instance Name Condition = Contains; Character string in the name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Ends With	If Workflow Instance Name Condition = Ends With; Character string at the end of the name of a parent workflow task instance containing the task. Variables are supported.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.

Buttons	This section identifies the buttons displayed above and below the Step Action Details that let you perform various actions.
Save	Saves the new System Operation Step Action Details record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Refresh	Refreshes any dynamic data displayed in the Details.
Delete	Deletes the current record.
Close	For pop-up view only; closes the pop-up view of this task.

5.15.5 Creating Restart Criteria

5.15.5.1 Overview

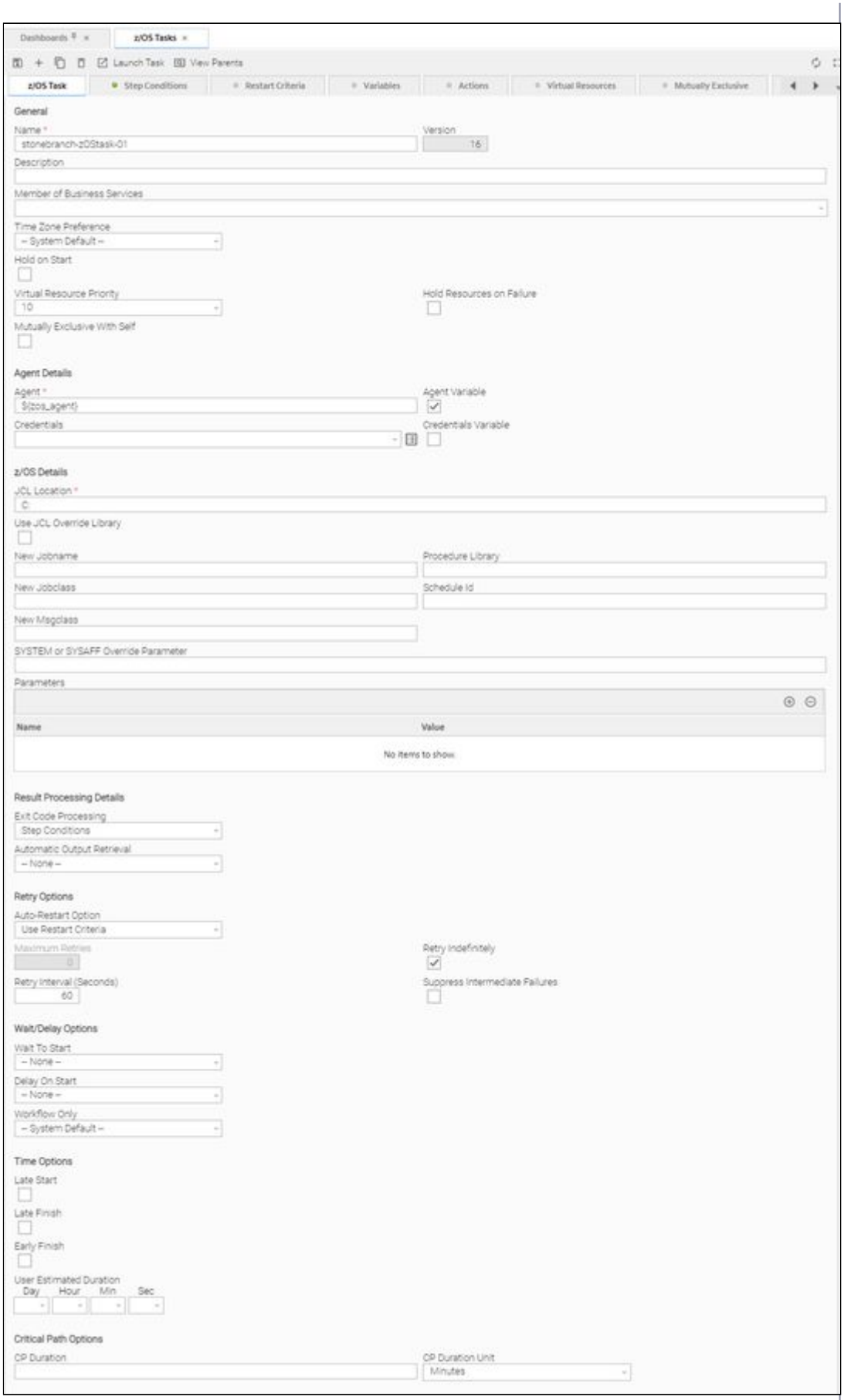
A z/OS JES batch job consists of one or more steps defined by JCL EXEC statements. The JCL EXEC statement identifies the program that the step is to execute. During job execution, steps are executed sequentially under conditions defined by the JCL statements.

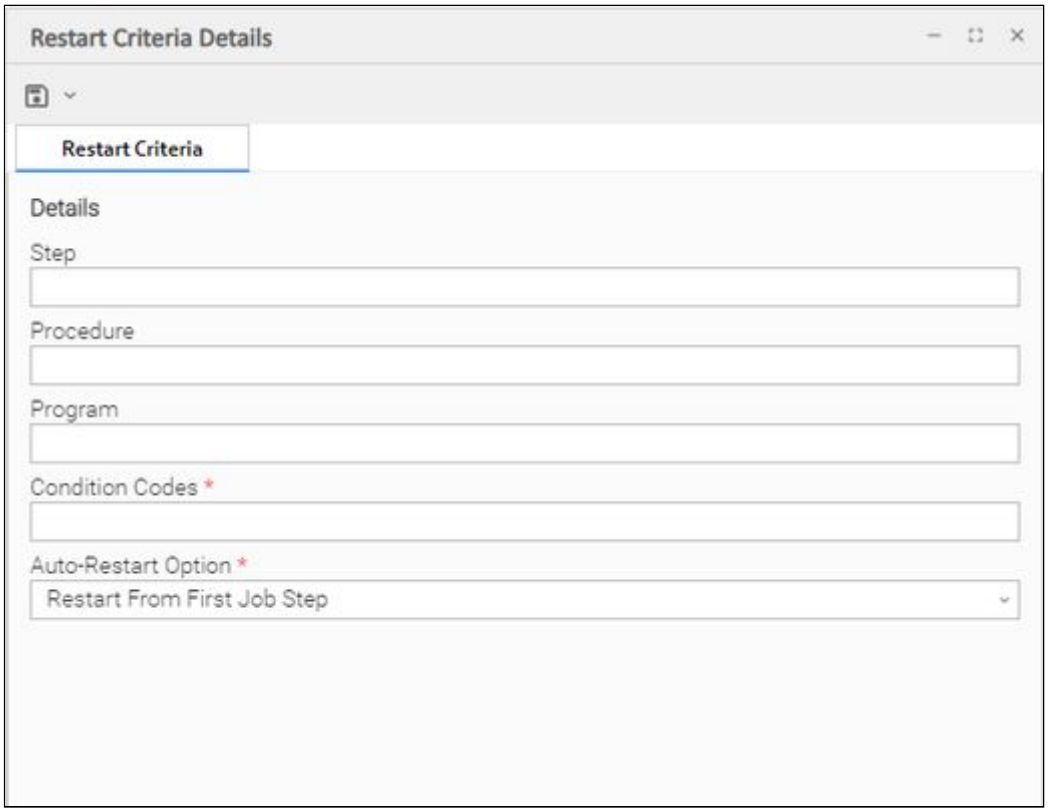
When a task ends in a failed state, some or all of the job steps may need to be re-run. The set of steps that should be re-run (if any) may vary depending on how and where the task failed. If the task is defined with Auto-Restart Option = **Use Restart Criteria**, the Restart Criteria is used to select the appropriate steps to restart based on a particular failure scenario.

> **Note**
>
> If Use Restart Criteria has been selected for Auto-Restart Option, and you then select a different option, a confirmation pop-up displays to warn that any defined Restart Criteria will be removed.

5.15.5.2 Creating Restart Criteria

Step 1	From the Automation Center navigation pane, select **Tasks > z/OS Tasks**. The z/OS Tasks list displays.
Step 2	Select the task for which you want to create one or more Restart Criteria. The z/OS Task Details for that task displays.


Dashboards
z/OS Tasks
Launch Task
View Parents
z/OS Task
Step Conditions
Restart Criteria
Variables
Actions
Virtual Resources
Mutually Exclusive
General
Name *
stonebranch-zOStask-01
Version
16
Description
Member of Business Services
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Agent Details
Agent *
${zos_agent}
Agent Variable
Credentials
Credentials Variable
z/OS Details
JCL Location *
C
Use JCL Override Library
New Jobname
Procedure Library
New Jobclass
Schedule Id
New Msgclass
SYSTEM or SYSAFF Override Parameter
Parameters
Name
Value
No items to show
Result Processing Details
Exit Code Processing
Step Conditions
Automatic Output Retrieval
-- None --
Retry Options
Auto-Restart Option
Use Restart Criteria
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit
Minutes

Step 3	In the Auto-Restart Option field, select **Use Restart Criteria** from the drop-down list and then click the button.
Step 4	Click the Restart Criteria tab. The Restart Criteria list displays.
Step 5	Click . Restart Criteria Details displays. 
Step 6	Using the field descriptions provided below as a guide, complete the fields as needed.
Step 7	Click the button to save the record and return to the Restart Criteria list.
Step 8	If appropriate, repeat these steps for any additional Restart Criteria that you want to add.

5.15.5.3 Restart Criteria Field Descriptions

The following table describes the fields and buttons in the Restart Criteria Details.

Field Name	Description

Step	Job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	Procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Program	Program name to match. A blank value or an asterisk (*) will match any program name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Condition Codes	Conditions codes are integer return codes from the program or ABEND codes. Integer return codes are specified as a comma-separated list of integer values or ranges. Ranges are specified with a dash (-) separating the lower and upper bounds of the range. The z/OS job step return code range is 0-4095. ABEND codes are specified directly as either a user ABEND or a system ABEND. The ABEND code must be specified verbatim including leading zeroes. For example: 1,6-4095,Sxxx,Unnnn,JCLERR
Auto-Restart Option	Method of step selection to perform for the restart. See Restart Criteria Logic, below, for an explanation of the options.
Directives List	(See Restart Criteria Details - Directives, below.)
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Restart Criteria Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this record.

5.15.5.4 Restart Criteria Logic

Restart Criteria are processed when a task transitions to a Failed status, provided that:

- Auto-Restart Option = **Use Restart Criteria**.

- Maximum Retries = greater than zero.

When Restart Criteria processing begins, the Controller will search the list of Restart Criteria definitions to find a match for the current failure scenario. Matching is based on job step name, procedure step name, program name, and the step condition code. The search stops when the first definition is found. If a matching Restart Criteria is found, the Auto-Restart Option for that Restart Criteria is performed. If no matching Restart Criteria is found, the Controller takes no action and no job steps will be selected for restart.

Note

The Controller searches Restart Criteria definitions based on their order in the Restart Criteria list; the definition at the top of the list is searched first. To change the order of the definitions in the list, drag and drop them to any location.

The Restart Criteria Details **Auto-Restart Option** specifies how steps will be selected for restart.

The following Auto-Restart Options are supported:

Restart From First Job Step	All restartable job steps, from first to last, will be selected for restart.
Restart From Matching Job Step	All restartable job steps, from the step that matched the Restart Criteria to the last job step, will be selected for restart.
Restart Using Directives	Job steps will be selected for restart based on the directives specified in the Restart Criteria directive table.

5.15.5.5 Restart Criteria Details - Directives

The following table describes the fields and button in the Directives section of the Restart Criteria Details.

Field Name	Description
Directive	Specifies a directive for step selection. Options: • **Start** - Directive used to specify the starting step in a range of steps selected for restart. The directive table can contain zero or one Start directives. If a start directive is not specified, the first job step will be used as the starting step. • **Skip** - Directive used to specify a step that should be skipped. Skipped steps will not be restarted. The directive table can contain zero or more Skip directives. • **End** - Directive used to specify the ending step in a range of steps that will be selected for restart. The directive table can contain zero or one End directives. If an end directive is not specified, the last job step will be used as the ending job step.

Field Name	Description
Step	The directive step optionally specifies: 1. A relative step number. Relative step numbers begin with **+** or **-**, followed by some number of steps to offset from the step matched by the Restart Criteria. A value of **-0** or **+0** indicated that the directive is referring to the job step that matched the Restart Criteria. Relative step numbers are mutually exclusive with the Procedure field. If a relative step number is specified, no matching is performed. The directive will apply to an explicit offset from the job step that matched the Restart Criteria definition. 2. The job step name to match. A blank value or an asterisk (*) will match any job step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Procedure	The procedure step name to match. A blank value or an asterisk (*) will match any procedure step name. Generic matching characters asterisk (*) and question mark (?) match zero or more characters and one character, respectively.
Add button	Adds the directive defined by the fields above to the directive table.

5.16 Universal Command Task

5.16.1 Before You Begin

The Universal Command task allows you to run a platform-specific application on a machine where Universal Agent is running. Universal Command is functionality provided by the Agent that serves as an agent process. Universal Command runs on any supported platform: z/OS, Linux/Unix, and Windows.

To run a Universal Command task, you must first complete the following:

- Install an Agent on the target machine.
- Launch the Agent. When the Agent connects with the Controller, it automatically creates an Agent resource definition in the Controller database.

Note

If you are running multiple **ubroker** started tasks and want to run a Universal Command task on a specific **ubroker**, you must specify the service port number associated with that **ubroker** in the Universal Command Options field on the Universal Command Task Details. The syntax is `-port nnnn`.

5.16.2 Built-In Variables

The following built-in variables can be used in a Universal Command task to pass data where appropriate:

- Agent-Based Task Instance variables
- Task Instance variables

5.16.3 Creating a Universal Command Task

Step 1	From the Automation Center navigation pane, select **Tasks > Universal Command Tasks**. The Universal Command Tasks list displays a list of all currently defined Universal Command tasks. To the right of the list, Universal Command Task Details for a new Universal Command task displays.
Step 2	Enter/select Details for a new Universal Command task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

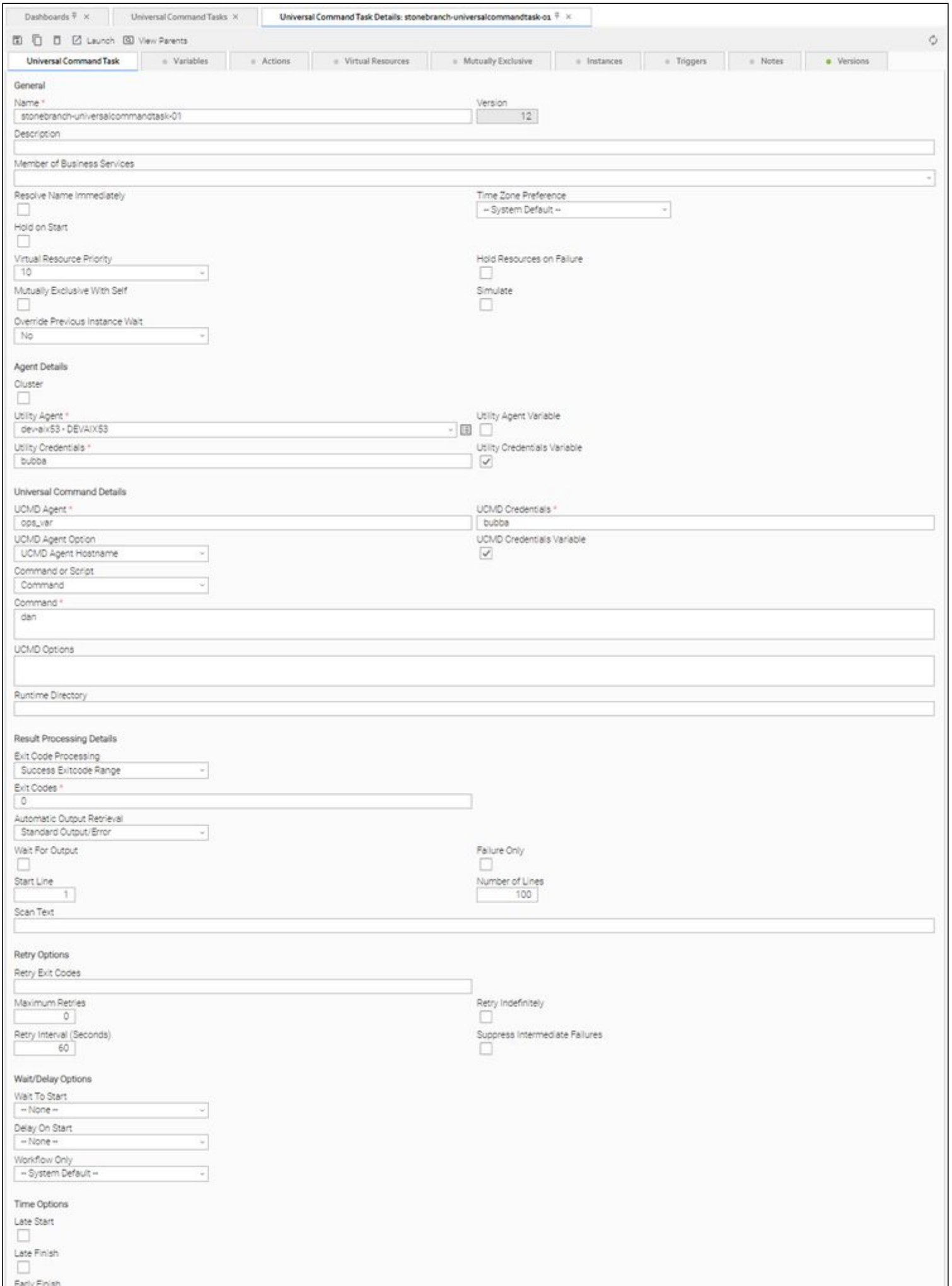
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.16.3.1 Universal Command Task Details

The following Universal Command Task Details is for an existing Universal Command task.

Depending on the values that you enter / select for these fields, and whether or not the Universal Command task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Universal Command Task Details.


Dashboards
Universal Command Tasks
Universal Command Task Details: stonebranch-universalcommandtask-01
Launch
View Parents
Universal Command Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-universalcommandtask-01
Version
12
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Cluster
Utility Agent *
devaix53 - DEVAIX53
Utility Agent Variable
Utility Credentials *
bubba
Utility Credentials Variable
Universal Command Details
UCMD Agent *
ops_var
UCMD Credentials *
bubba
UCMD Agent Option
UCMD Agent Hostname
UCMD Credentials Variable
Command or Script
Command
Command *
dan
UCMD Options
Runtime Directory
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
Standard Output/Error
Wait For Output
Failure Only
Start Line
1
Number of Lines
100
Scan Text
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish

5.16.3.2 Universal Command Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Universal Command Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/ launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting a Utility Agent Cluster is required. If Cluster is selected, selecting a Utility Agent is not required unless Utility Agent Variable is selected.
Utility Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify a Utility Agent, you must specify a Utility Agent Cluster or Utility Cluster Broadcast.
Utility Agent Variable	If enabled, the Utility Agent field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the **Utility Agent Variable** field to **Yes** and specify the Utility Agent variable in the **Utility Agent Unresolved** field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the **Utility Agent Variable** field to **No** and specify the Utility Agent reference in the **Utility Agent** field.
Utility Agent Cluster	If Cluster is selected; Group of Agents, one of which the Controller will choose to run this task. You can specify a Utility Agent Cluster in addition to or in place of a specific Utility Agent. If you specify a Utility Agent and a Utility Agent Cluster, the Controller first tries to run the task on the specific Utility Agent. If the Utility Agent is not available, the Controller reverts to the Utility Agent Cluster. See Agent Clusters for more information.

Utility Agent Cluster Variable	Indication of whether the Utility Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Utility Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the **Utility Agent Cluster Variable** field to **Yes** and specify the Utility Agent Cluster variable in the **Utility Agent Cluster Unresolved** field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the **Utility Agent Cluster Variable** field to **No** and specify the Utility Agent Cluster reference in the **Utility Agent Cluster** field.
Utility Credentials	Login credentials that the Agent will use to access the Universal Command server machine. Required if the Agent Credentials Required Universal Controller system property is true.
Utility Credentials Variable	Indication of whether the Utility Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Utility Credentials as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the **Utility Credentials Variable** field to **Yes** and specify the Utility Credentials variable in the **Utility Credentials Unresolved** field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the **Utility Credentials Variable** field to **No** and specify the Utility Credentials reference in the **Utility Credentials** field.
Universal Command Details	This section contains assorted detailed information about the task.
UCMD Agent	Depending on the value in the UCMD Agent Option field, this field contains either: • Record name from the UCMD Agent table. • Variable that will be resolved when the task is launched. • Host name of a machine where the UCMD Agent is running.
UCMD Agent Option	Specifies how the name of the UCMD Agent is being supplied in the UCMD Agent field. Options: • UCMD Agent - UCMD Agent record is selected from the UCMD Agent table. • UCMD Agent Variable - UCMD Agent field contains a variable that will be resolved when the task is launched. • UCMD Agent Hostname - UCMD Agent field contains the host name where the UCMD Agent is running. The host name must be accessible by the Controller.
UCMD Credentials	Login credentials that Controller will use to access the remote machine where the UCMD Agent is running.

UCMD Credentials Variable	Indication of whether the UCMD Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the UCMD Credentials as a variable (checked). Use the format: ${variablename}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a UCMD Credentials reference to using a UCMD Credentials variable, you must change the **UCMD Credentials Variable** field to **Yes** and specify the UCMD Credentials variable in the **UCMD Credentials Unresolved** field. Conversely, to change from using a UCMD Credentials variable to using a UCMD Credentials reference, you must change the **UCMD Credentials Variable** field to **No** and specify the UCMD Credentials reference in the **UCMD Credentials** field.
Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Script File	Required if Command or Script = Script; Path and filename of the script file that will be executed on the remote machine.
Script Options	If Command or Script = Script; Optional. One or more command line options to pass to the script file.
UCMD Options	Any UCMD options needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).

Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.

Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.

CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.

Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.

<table>
<tr><td>Delete</td><td>Deletes the current record.

Note
You cannot delete a task if it is either:
• Specified in an enabled Trigger.
• The only task specified in a disabled Trigger.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
• Task instance status
• Exit codes
• Late start
• Late finish
• Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
</table>

Instances	Lists all instances of the task.
Triggers	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.
Notes	Lists all notes associated with this record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

5.16.4 Viewing a Universal Command Task Instance

When a Universal Command task is launched, the Controller creates a task instance record of that task.

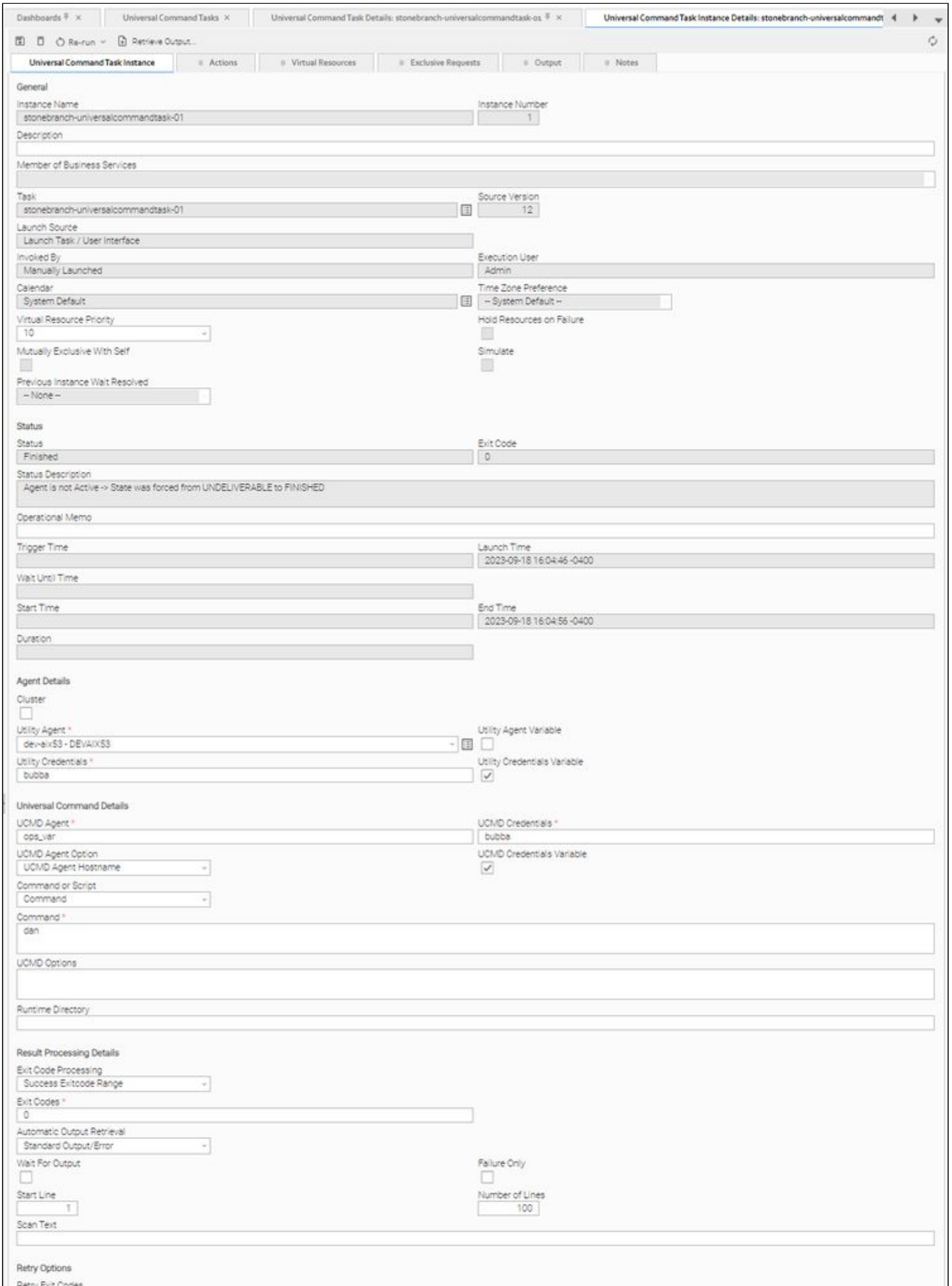
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Universal Command Task Details for that task
- Activity Monitor
- Task Instances list

5.16.4.1 Universal Command Task Instance Details

The following Universal Command Task Instance Details contains information on the execution of the task shown in the Universal Command Task Details.


Dashboards
Universal Command Tasks
Universal Command Task Details: stonebranch-universalcommandtask-os
Universal Command Task Instance Details: stonebranch-universalcommandt
Re-run
Retrieve Output...
Universal Command Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-universalcommandtask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-universalcommandtask-01
Source Version
12
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Exit Code
0
Status Description
Agent is not Active -> State was forced from UNDELIVERABLE to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-18 16:04:46 -0400
Wait Until Time
Start Time
End Time
2023-09-18 16:04:56 -0400
Duration
Agent Details
Cluster
Utility Agent *
dev-aix53 - DEVAIX53
Utility Agent Variable
Utility Credentials *
bubba
Utility Credentials Variable
Universal Command Details
UCMD Agent *
ops_var
UCMD Credentials *
bubba
UCMD Agent Option
UCMD Agent Hostname
UCMD Credentials Variable
Command or Script
Command
Command *
dan
UCMD Options
Runtime Directory
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Automatic Output Retrieval
Standard Output/Error
Wait For Output
Failure Only
Start Line
1
Number of Lines
100
Scan Text
Retry Options

5.16.4.2 Universal Command Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Universal Command Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting a Utility Agent Cluster is required. If Cluster is selected, selecting a Utility Agent is not required unless Utility Agent Variable is selected.
Utility Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify a Utility Agent, you must specify a Utility Agent Cluster or Utility Cluster Broadcast.
Utility Agent Variable	If enabled, the Utility Agent field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the **Utility Agent Variable** field to **Yes** and specify the Utility Agent variable in the **Utility Agent Unresolved** field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the **Utility Agent Variable** field to **No** and specify the Utility Agent reference in the **Utility Agent** field.
Utility Agent Cluster	If Cluster is selected; Group of Agents, one of which the Controller will choose to run this task. You can specify a Utility Agent Cluster in addition to or in place of a specific Utility Agent. If you specify a Utility Agent and a Utility Agent Cluster, the Controller first tries to run the task on the specific Utility Agent. If the Utility Agent is not available, the Controller reverts to the Utility Agent Cluster. See Agent Clusters for more information.

Utility Agent Cluster Variable	Indication of whether the Utility Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Utility Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the **Utility Agent Cluster Variable** field to **Yes** and specify the Utility Agent Cluster variable in the **Utility Agent Cluster Unresolved** field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the **Utility Agent Cluster Variable** field to **No** and specify the Utility Agent Cluster reference in the **Utility Agent Cluster** field.
Utility Credentials	Login credentials that the Agent will use to access the Universal Command server machine. Required if the Agent Credentials Required Universal Controller system property is true.
Utility Credentials Variable	Indication of whether the Utility Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Utility Credentials as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the **Utility Credentials Variable** field to **Yes** and specify the Utility Credentials variable in the **Utility Credentials Unresolved** field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the **Utility Credentials Variable** field to **No** and specify the Utility Credentials reference in the **Utility Credentials** field.
Universal Command Details	This section contains assorted detailed information about the task instance.
UCMD Agent	Depending on the value in the UCMD Agent Option field, this field contains either: • Record name from the UCMD Agent table. • Variable that will be resolved when the task is launched. • Host name of a machine where the UCMD Agent is running.
UCMD Agent Option	Specifies how the name of the UCMD Agent is being supplied in the UCMD Agent field. Options: • UCMD Agent - UCMD Agent record is selected from the UCMD Agent table. • UCMD Agent Variable - UCMD Agent field contains a variable that will be resolved when the task is launched. • UCMD Agent Hostname - UCMD Agent field contains the host name where the UCMD Agent is running. The host name must be accessible by the Controller.
UCMD Credentials	Login credentials that Controller will use to access the remote machine where the UCMD Agent is running.

UCMD Credentials Variable	Indication of whether the UCMD Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the UCMD Credentials as a variable (checked). Use the format: ${variablename}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a UCMD Credentials reference to using a UCMD Credentials variable, you must change the **UCMD Credentials Variable** field to **Yes** and specify the UCMD Credentials variable in the **UCMD Credentials Unresolved** field. Conversely, to change from using a UCMD Credentials variable to using a UCMD Credentials reference, you must change the **UCMD Credentials Variable** field to **No** and specify the UCMD Credentials reference in the **UCMD Credentials** field.
Command or Script	Specifies whether a single command or a script is being executed. Options: • Command (default) • Script
Command	Required if Command or Script = Command; Command being executed on the remote machine. Variables supported.
Script File	Required if Command or Script = Script; Path and filename of the script file that will be executed on the remote machine.
Script Options	If Command or Script = Script; Optional. One or more command line options to pass to the script file.
UCMD Options	Any UCMD options needed by the program to execute properly. Variables supported.
Runtime Directory	Directory from which the application should be executed. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field. • Step Conditions (z/OS only) Command is considered completed successfully/failed if any of its specified condition codes falls within the range specified under the Step Conditions tab (see Creating Step Conditions).

Output Type	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File (for Exit Code Processing)	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Automatic Output Retrieval	Specifies whether you want the Controller to automatically retrieve any output from the job and attach it to the task instance record. Options: • None Do not attach any output to the task instance record. • Standard Output Attach all standard output. • Standard Error Attach standard error output. • File Attach the file specified in the Output File field. • Standard Output/Error Attach all standard output and standard error output. **Note** Tasks specifying Automatic Output Retrieval will fail with Start Failure if the Agent Output Prohibited field is true in the Details of the specified Agent.
Wait For Output	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Failure Only is not enabled (checked); Specification that the task should wait for the requested output before completing.
Failure Only	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error, and Wait For Output is not enabled (checked); Indication for whether output should be retrieved on task failure only.
Start Line	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Instructs the Controller to retrieve data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.

Scan Text	If Automatic Output Retrieval = Standard Output, Standard Error, File, or Standard Output/Error; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
Output File (for Automatic Output Retrieval)	Required if Automatic Output Retrieval = File; path and file name containing the output that you want automatically retrieved and attached to the task instance.
Retry Options	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported. **Note** If you are updating a task instance, the Retry Exit Codes field must be resolved; you cannot change the value to a variable. .
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.

Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.

Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.

Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)

Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.

CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.

User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.

<table>
<tr><td>Re-run</td><td>See Re-running a Task Instance.

Note
If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options:
Re-run
Re-run (Suppress Intermediate Failures)
The Re-run button does not display if the task instance does not qualify for Re-run.
If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.</td></tr>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Retrieve Output</td><td>See Retrieving Output.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
</table>

Virtual Resources	Lists all Virtual Resources to which this task is assigned. If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.
Exclusive Requests	Lists all records in the Exclusive Requests table (`ops_exclusive_order`) for this task instance.
Output	Displays output generated from the process, if any, based on specifications provided by the user in the Automatic Output Retrieval fields in the task Details. If automatic output retrieval was not available or was not selected, output can be obtained by clicking the Retrieve Output button.
Notes	Lists all notes associated with this record.

5.16.5 Output Redirection

An Agent processes Universal Command, File Transfer/UDM, and SAP task types differently than Windows and Linux/Unix task types. Universal Command, File Transfer/UDM, and SAP command lines are sent to the user process via standard input, so any redirection operators entered as task command input are not processed as expected.

If you want to direct output from a Universal Command task to your file system, the **-uagstdio** command option lets you specify the same output redirection commands that are available for Windows and Linux/Unix task types. UAG will apply the user-specified value for **-uagstdio** directly to the command image.

The I/O redirection commands that you can use with **-uagstdio** are dependent on the OS/command shell. You should be able to set up any redirection that the OS/command shell supports (just as with Windows and Unix/Linux task types).

The syntax of **-uagstdio** is similar to Universal Command, Universal Data Mover, and Universal Connector command line options; option followed by value.

For the Universal Command task type, you can specify **uagstdio** in either of the following fields:

- Command
- Universal Command Options

5.16.5.1 -uagstdio Examples

```
-uagstdio >C:\UNIVERSAL COMMANDOUT\Universal Command.out
```

If the **-uagstdio** value contains spaces, it must be enclose in double quotation marks ("):

```
-uagstdio ">C:\UNIVERSAL COMMANDOUT\Universal Command.out 2>C:\UNIVERSAL
COMMANDOUT\Universal Command.err"
```

If the quoted value itself requires double quotation marks, they must be doubled (""):

```
-uagstdio ">C:\tmp\""Universal Command output""\Universal Command.out 2>C:
\tmp\""Universal Command output""\Universal Command.err"
```

5.16.6 Running a Universal Command Task

You can run a Universal Command task:

- Manually, by clicking the Launch or Launch with Variables button in the Universal Command tasks list or Universal Command Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.16.7 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.17 File Transfer Task

5.17.1 Overview

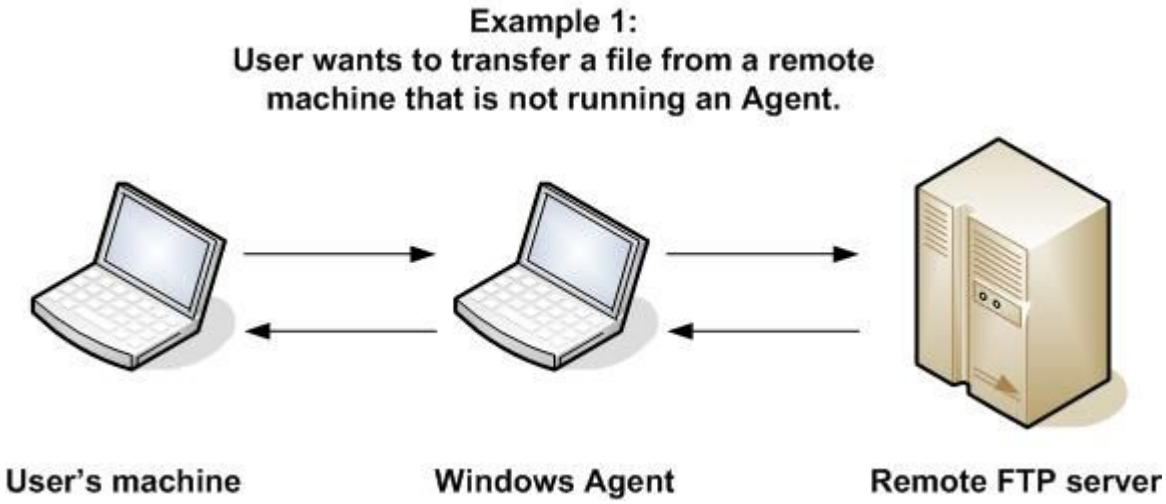
The File Transfer task allows you to execute file transfers on remote machines using any of the following protocols:

- FTP
- SFTP
- UDM
- FTPS
- FTPES

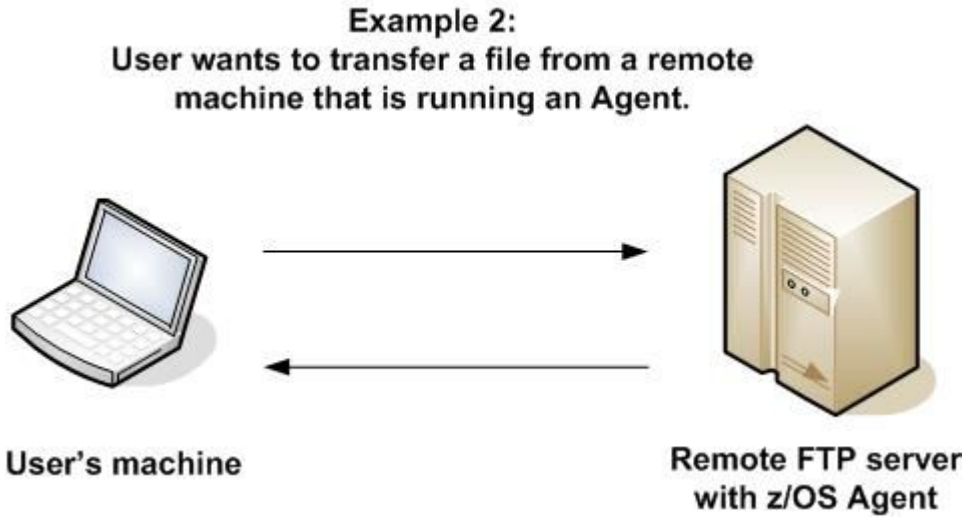
To run a File Transfer task, you need Universal Agent for Linux/Unix, z/OS, or Windows to communicate with the File Transfer server. The Agent can, but does not have to be, running on the same machine as the File Transfer server.

The following examples provide sample configurations for executing file transfers using a File Transfer task.

In the first example, the user wants to transfer a file from a remote File Transfer Server on a machine that does not have an Agent running on it. In this case, the File Transfer task definition provides an address and login credentials for the machine where the Agent is running as well as address and login credentials for the machine where the File Transfer server is running.



In the second example, the user wants to transfer a file from a remote File Transfer Server on a z/OS machine that does have an Agent running on it. In this case, the login credentials for the Agent machine and the File Transfer server machine are the same.



5.17.2 Built-In Variables

The following built-in variables can be used in a File Transfer task to pass data where appropriate:

- Task Instance variables
- Agent-Based Task Instance variables
- File Transfer Task variables

5.17.3 Creating a File Transfer Task

Step 1	From the Automation Center navigation pane, select **Tasks > File Transfer Tasks**. The File Transfer Tasks list displays a list of all currently defined File Transfer tasks. To the right of the list, File Transfer Task Details for a new File Transfer task displays.
Step 2	Enter/select Details for a new File Transfer task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.17.3.1 File Transfer Protocols

When you create a File Transfer task, you select a file transfer protocol: FTP, SFTP, UDM, FTPS or FTPES.

The File Transfer Task Exclude Protocols Universal Controller system property permits the exclusion of one or more, but not all, protocols from being selected (see the Transfer Protocol field, below.)

The order of precedence for selecting a default Transfer Protocol for a File Transfer task is UDM, SFTP, FTPS, FTP, FTPES. The first of these protocols that is **not** specified in the File Transfer Task Exclude Protocols system property will be the default.

For example:.

- If File Transfer Task Exclude Protocols = UDM, the default Transfer Protocol will be SFTP.
- If File Transfer Task Exclude Protocols = UDM and SFTP, the default Transfer Protocol will be FTPS.

5.17.3.1.1 File Transfer Protocols Details

The Details for FTP, SFTP, FTPS, and FTPES transfer protocols are the same; the Details for the UDM transfer protocol differs considerably.

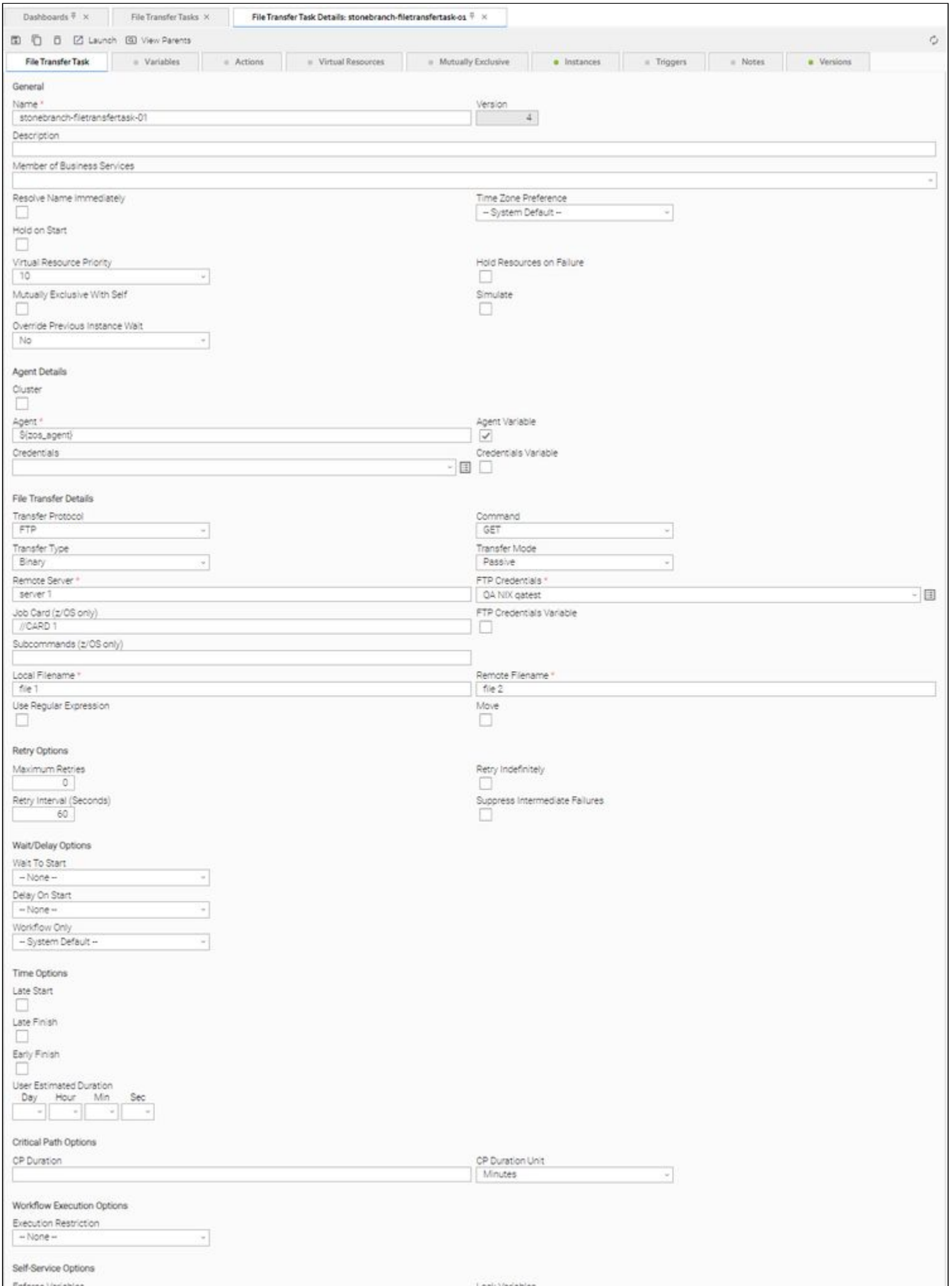
Using **SFTP** requires that you supply a valid credential that specifies the location of the SSL/TLS Private key on your Agent. In the Credentials Details, you supply the location for the private key in the field "Key Location (File Transfer only)". This location must exist on the Agent where you intend to run the SFTP task.

Make sure you have your private/public keys properly set up and working before you configure the Controller to use it. For example, to validate the keys, log into your destination server from your agent server using ssh.

5.17.3.2 FTP/SFTP/FTPS/FTPES File Transfer Task Details

The following FTP/SFTP/FTPS/FTPES File Transfer Task Details is for an existing FTP/SFTP/FTPS/FTPES File Transfer task.

Depending on the values that you enter / select for these fields, and whether or not the FTP/SFTP/FTPS/FTPES File Transfer task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the FTP/SFTP/FTPS/FTPES File Transfer Task Details.


Dashboards
File Transfer Tasks
File Transfer Task Details: stonebranch-filetransfertask-01
Launch
View Parents
File Transfer Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-filetransfertask-01
Version
4
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Cluster
Agent *
${zos_agent}
Agent Variable
Credentials
Credentials Variable
File Transfer Details
Transfer Protocol
FTP
Command
GET
Transfer Type
Binary
Transfer Mode
Passive
Remote Server *
server 1
FTP Credentials *
QA NIX qatest
Job Card (z/OS only)
//CARD 1
FTP Credentials Variable
Subcommands (z/OS only)
Local Filename *
file 1
Remote Filename *
file 2
Use Regular Expression
Move
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit
Minutes
Workflow Execution Options
Execution Restriction
-- None --
Self-Service Options

5.17.3.3 FTP/SFTP/FTPS/FTPES File Transfer Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in FTP/SFTP/FTPS/FTPES File Transfer Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.
Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.

Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Broadcast	Displays only if Cluster is selected; Indication that selecting a Cluster Broadcast is required. Selecting Broadcast hides the Agent and Agent Cluster fields; you cannot select values for them.
Cluster Broadcast	Group of Agents, all of which will run this task (compare with Agent Cluster). If Broadcast is selected for a task, you must select a Cluster Broadcast instead of a specific Agent and/or agent cluster. Each instance of the task running on its own Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Cluster Broadcast Variable	Indication of whether the Cluster Broadcast field is a reference field for selecting a specific Cluster Broadcast (unchecked) or a text field for specifying the Cluster Broadcast as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Cluster Broadcast reference to using a Cluster Broadcast variable, you must change the **Cluster Broadcast Variable** field to **Yes** and specify the Cluster Broadcast variable in the **Cluster Broadcast Unresolved** field. Conversely, to change from using a Cluster Broadcast variable to using a Cluster Broadcast reference, you must change the **Cluster Broadcast Variable** field to **No** and specify the Cluster Broadcast reference in the **Cluster Broadcast** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
File Transfer Details	This section contains assorted detailed information about the task.
Transfer Protocol	Type of transfer protocol for this file transfer. Options: • FTP • SFTP • UDM • FTPS • FTPES
Command	File Transfer command being executed. Options: • GET - Copies a remote file to the local computer. • PUT - Copies a local file to the remote computer. • MGET - Copies multiple remote files to the local computer. • MPUT - Copies multiple local files to the remote computer. • DELETE - Deletes the specified file from the remote computer. • MDELETE - Deletes the specified file(s) from the remote computer • MKDIR - Creates the specified directory on the remote computer. • RMDIR - Removes the specified directory from the remote computer.
Job Card (z/OS only)	For z/OS, the job card information for the JCL statement. Example: `//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,CLASS=A`
Subcommands (z/OS only)	For z/OS, any subcommands used in the JCL statement.
Verify Host Name	If Transfer Protocol = FTPS or FTPES; Indication of whether to verify the DNS name or IP address of the FTP server's certificate against the host system.
Authenticate Peer	If Transfer Protocol = FTPES; Indication of whether to use a CA certificate configured in the agent to authenticate the FTP server's certificate.
Transfer Type	Data format of the file being transferred. Options: • Binary • ASCII

Transfer Mode	If Transfer Protocol is FTP, FTPS, or FTPES; Transfer mode. Options: • Active • Passive • Extended Passive
Remote Server	Required if Transfer Protocol = FTP, SFTP, FTPS, or FTPES; name or IP address of the File Transfer server. This machine may or may not be the same as the Agent machine. You also can specify a non-standard FTP, SFTP, FTPS, or FTPES port: port number separated from the host name with a colon: "some.server.com:2222".
FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the File Transfer server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.
FTP Credentials Variable	Indication of whether the FTP Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the FTP Credentials as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the **FTP Credentials Variable** field to **Yes** and specify the FTP Credentials variable in the **FTP Credentials Unresolved** field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the **FTP Credentials Variable** field to **No** and specify the FTP Credentials reference in the **FTP Credentials** field.
Local Filename	Required if Transfer Type = FTP, SFTP, FTPS, or FTPES; Path and file name on the local server. That is, the "transfer from" file name.
Use Regular Expression	Enables the use of a regular expression in the Local Filename field.
Remote Filename	Required if Transfer Type = FTP, SFTP, FTPS, or FTPES; Path and file name on the remote server. That is, the "transfer to" file name.
Move	If Transfer Protocol = FTP, SFTP, FTPS, or FTPES, and Command = GET, MGET, PUT, or MPUT; Modifies the behavior of GET/MGET and PUT/MPUT by deleting the source file(s) after being transferred to the destination. GET/MGET with Move enabled will delete the files from the remote FTP server; PUT/MPUT with Move enabled will delete the files from the local FTP client.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.

Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration

Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.

Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.

Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.

<table>
<tr><td>Delete</td><td>Deletes the current record.

Note
You cannot delete a task if it is either:
• Specified in an enabled Trigger.
• The only task specified in a disabled Trigger.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
• Task instance status
• Exit codes
• Late start
• Late finish
• Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

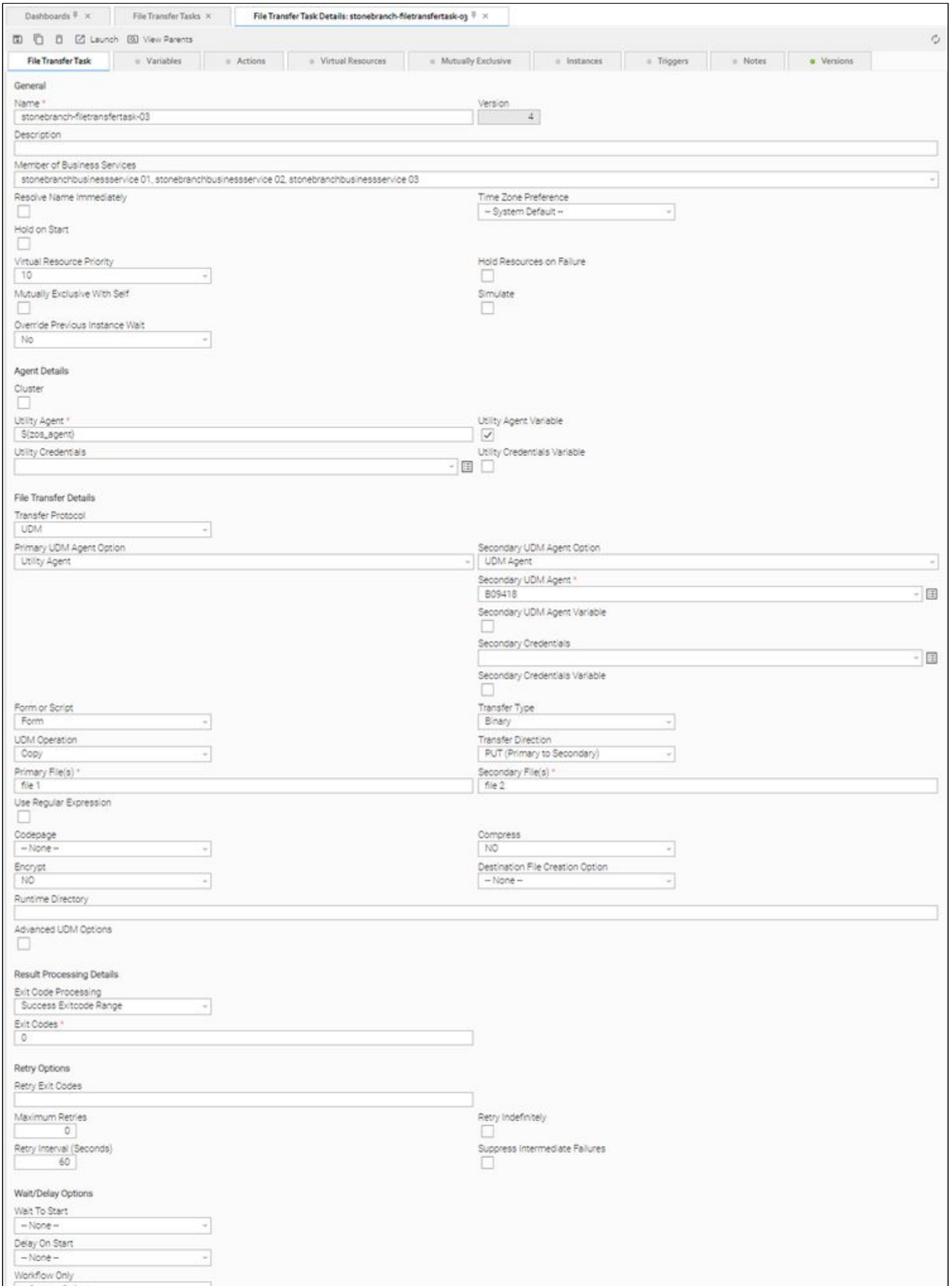
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
</table>

Instances	Lists all instances of the task.
Triggers	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.
Notes	Lists all notes associated with this record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

5.17.3.4 UDM File Transfer Task Details

The following UDM File Transfer Task Details is for an existing UDM File Transfer task.

Depending on the values that you enter / select for these fields, and whether or not the UDM File Transfer task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the UDM File Transfer Task Details.


Dashboards
File Transfer Tasks
File Transfer Task Details: stonebranch-filetransfertask-og
Launch
View Parents
File Transfer Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-filetransfertask-03
Version
4
Description
Member of Business Services
stonebranchbusinessservice 01, stonebranchbusinessservice 02, stonebranchbusinessservice 03
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Agent Details
Cluster
Utility Agent *
${zos_agent}
Utility Agent Variable
Utility Credentials
Utility Credentials Variable
File Transfer Details
Transfer Protocol
UDM
Primary UDM Agent Option
Utility Agent
Secondary UDM Agent Option
UDM Agent
Secondary UDM Agent *
B09418
Secondary UDM Agent Variable
Secondary Credentials
Secondary Credentials Variable
Form or Script
Form
Transfer Type
Binary
UDM Operation
Copy
Transfer Direction
PUT (Primary to Secondary)
Primary File(s) *
file 1
Secondary File(s) *
file 2
Use Regular Expression
Codepage
-- None --
Compress
NO
Encrypt
NO
Destination File Creation Option
-- None --
Runtime Directory
Advanced UDM Options
Result Processing Details
Exit Code Processing
Success Exitcode Range
Exit Codes *
0
Retry Options
Retry Exit Codes
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only

5.17.3.5 UDM File Transfer Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in UDM File Transfer Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting a Utility Agent Cluster is required. If Cluster is selected, selecting a Utility Agent is not required unless Utility Agent Variable is selected.
Utility Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify a Utility Agent, you must specify a Utility Agent Cluster or Utility Cluster Broadcast.
Utility Agent Variable	If enabled, the Utility Agent field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the **Utility Agent Variable** field to **Yes** and specify the Utility Agent variable in the **Utility Agent Unresolved** field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the **Utility Agent Variable** field to **No** and specify the Utility Agent reference in the **Utility Agent** field.
Utility Agent Cluster	If Cluster is selected; Group of Agents, one of which the Controller will choose to run this task. You can specify a Utility Agent Cluster in addition to or in place of a specific Utility Agent. If you specify a Utility Agent and a Utility Agent Cluster, the Controller first tries to run the task on the specific Utility Agent. If the Utility Agent is not available, the Controller reverts to the Utility Agent Cluster. See Agent Clusters for more information.

Utility Agent Cluster Variable	Indication of whether the Utility Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Utility Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the **Utility Agent Cluster Variable** field to **Yes** and specify the Utility Agent Cluster variable in the **Utility Agent Cluster Unresolved** field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the **Utility Agent Cluster Variable** field to **No** and specify the Utility Agent Cluster reference in the **Utility Agent Cluster** field.
Broadcast	Displays only if Cluster is selected; Indication that selecting a Cluster Broadcast is required. Selecting Broadcast hides the Agent and Agent Cluster fields; you cannot select values for them.
Utility Cluster Broadcast	Group of Agents, all of which will run this task (compare with Utility Agent Cluster). You can specify a Utility Cluster Broadcast in place of a specific Utility Agent and/or Utility Agent Cluster. Each instance of the task running on its own Utility Agent becomes a separate task instance record in the database and displays separately on the Activity Monitor.
Utility Cluster Broadcast Variable	Indication of whether the Utility Cluster Broadcast field is a reference field for selecting a specific Utility Cluster Broadcast (unchecked) or a text field for specifying the Utility Cluster Broadcast as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Cluster Broadcast reference to using a Utility Cluster Broadcast variable, you must change the **Utility Cluster Broadcast Variable** field to **Yes** and specify the Utility Cluster Broadcast variable in the **Utility Cluster Broadcast Unresolved** field. Conversely, to change from using a Utility Cluster Broadcast variable to using a Utility Cluster Broadcast reference, you must change the **Utility Cluster Broadcast Variable** field to **No** and specify the Utility Cluster Broadcast reference in the *Utility Cluster Broadcast * field.
Utility Credentials	Login credentials that the Agent will use to access the Universal Command server machine. Required if the Agent Credentials Required Universal Controller system property is true.

Utility Credentials Variable	Indication of whether the Utility Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Utility Credentials as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the **Utility Credentials Variable** field to **Yes** and specify the Utility Credentials variable in the **Utility Credentials Unresolved** field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the **Utility Credentials Variable** field to **No** and specify the Utility Credentials reference in the **Utility Credentials** field.
File Transfer Details	This section contains assorted detailed information about the task.
Transfer Protocol	Type of transfer protocol for this file transfer. Options: • FTP • SFTP • UDM • FTPS • FTPES
Primary UDM Agent Option	Type of definition to use for the Primary UDM Agent selection. Options: • --None-- (If Form or Script = Script) • Utility Agent Uses the File Transfer Task Utility Agent as the UDM Primary Agent; this will configure UDM in 2-party transfer mode. • UDM Agent Primary Agent is a UDM Agent defined in the Controller. • UDM Agent Cluster Primary Agent is selected from the Primary UDM Agent Cluster. • UDM Agent Hostname Primary Agent runs on the host name specified in the Primary UDM Agent field. If Form or Script = Form; Default is Utility Agent. If Form or Script = Script; Default is -- None -- .
Secondary UDM Agent Option	Type of definition to use for the Secondary UDM Agent selection. Options: • --None-- (If Form or Script = Script) • UDM Agent Secondary Agent is a UDM Agent defined in the Controller. • UDM Agent Cluster Secondary Agent is selected from the Secondary UDM Agent Cluster. • UDM Agent Hostname Secondary Agent runs on the host name specified in the Secondary UDM Agent field. If Form or Script = Form; Default is UDM Agent. If Form or Script = Script; Default is -- None -- .
Primary UDM Agent	If Primary UDM Agent Option is **not** Utility Agent or --None--; Agent to use as the Primary UDM Agent.
Secondary UDM Agent	If Secondary UDM Agent Option is not --None-- ; Agent to use as the Secondary UDM Agent.

Primary UDM Agent Variable	If Primary UDM Agent Option is UDM Agent or UDM Agent Cluster; Allows the Primary UDM Agent field to accept a variable.
Secondary UDM Agent Variable	If Secondary UDM Agent Option is UDM Agent or UDM Agent Cluster; Allows the Secondary UDM Agent field to accept a variable.
Primary UDM Agent Cluster	If Primary UDM Agent Option is UDM Agent Cluster; Agent Cluster to use for the Primary UDM Agent.
Primary UDM Agent Cluster Variable	If Primary UDM Agent Option is UDM Agent Cluster; Allows the Primary UDM Agent Cluster field to accept a variable.
Secondary UDM Agent Cluster	If Secondary UDM Agent Option is UDM Agent Cluster; Agent Cluster to use for the Secondary UDM Agent.
Secondary UDM Agent Cluster Variable	If Secondary UDM Agent Option is UDM Agent Cluster; Allows the Secondary UDM Agent Cluster field to accept a variable.
Primary Credentials	If Primary UDM Agent Option is **not** Utility Agent; Credentials for the Primary UDM Agent; Select existing Credentials from the drop-down list or click the Credentials Details icon to create new Details.
Secondary Credentials	Credentials for the Secondary UDM Agent; Select existing Credentials from the drop-down list or click the Credentials Details icon to create new Details.
Primary Credentials Variable	Indication of whether the Primary Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Primary Credentials as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Primary Credentials reference to using a Primary Credentials variable, you must change the **Primary Credentials Variable** field to **Yes** and specify the Primary Credentials variable in the **Primary Credentials Unresolved** field. Conversely, to change from using a Primary Credentials variable to using a Primary Credentials reference, you must change the **Primary Credentials Variable** field to **No** and specify the Primary Credentials reference in the **Primary Credentials** field.
Secondary Credentials Variable	Indication of whether the Secondary Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Secondary Credentials as a variable (checked). Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Secondary Credentials reference to using a Secondary Credentials variable, you must change the **Secondary Credentials Variable** field to **Yes** and specify the Secondary Credentials variable in the **Secondary Credentials Unresolved** field. Conversely, to change from using a Secondary Credentials variable to using a Secondary Credentials reference, you must change the **Secondary Credentials Variable** field to **No** and specify the Secondary Credentials reference in the **Secondary Credentials** field.

Form or Script	Form or Script for this UDM File Transfer to use. Default is Form.
Transfer Type	Type of data transfer. Options: • Binary • Text
UDM Operation	If Form or Script is Form; UDM Operation to be executed. Options: • Copy • Move • Delete • Rename • List • Copy Directory • Create Directory • Delete Directory Default is Copy.
Transfer Direction	If Form or Script = Form and UDM Operation = Copy, Move, or Copy Directory; Direction of the transfer between the Primary and Secondary UDM Agents. Options: • PUT (Primary to Secondary) • GET (Secondary to Primary) Default is PUT.

Primary File(s)	File(s) on the Primary UDM Agent.
	• If Form or Script = Form; Required if UDM Operation =
	  • Copy
	  • Move
	  • Copy Directory (and Transfer Direction = PUT)
	• If Form or Script = Script; Optional.

Secondary File(s)	File(s) on the Secondary UDM Agent.
	• If Form or Script = Form; Required if UDM Operation =
	  • Copy
	  • Move
	  • Copy Directory (and Transfer Direction = GET)
	• If Form or Script = Script; Optional.

Use Regular Expression	If UDM Operation is Copy, Move, Delete, or List; Allows the use of a regular expression when specifying file(s). **Note** If UDM Operation = Copy or Move: • If Transfer Direction = PUT; The regular expression will apply to Primary File(s). • If Transfer Direction = GET; The regular expression will apply to Secondary File(s). If UDM Operation = Delete or List: • If Primary File(s) is specified; The regular expression will apply to Primary File(s). • If Secondary File(s) is specified; The regular expression will apply to Secondary File(s).

Codepage	Options: (See Code Pages, below.)
Compress	The type of data compression used in the transfer, if any. Options: • YES • NO • ZLIB • HASP
Encrypt	The method of encryption that the Controller will use in the transfer. Options: • YES • NO (none) • RC4-SHA • RC4-MD5 • AES256-SHA • AES128-SHA • DES-CBC3-SHA • DES-CBC-SHA • NULL-SHA • NULL-MD5 • NULL-NULL • AES256-GCM-SHA384 • AES128-GCM-SHA256
Destination File Creation Option	If UDM Operation is Copy, Move, or Copy Directory; Specifies whether the transferred file should be created (new), appended, or replace any existing file. Options: • None • APPEND • NEW • REPLACE
Runtime Directory	Directory from which the application should be executed. Variables supported.
Advanced UDM Options	Additional UDM Options.
Trim Trailing Spaces	If Form or Script is Form and Advanced UDM Options is selected; If enabled, specifies that the Controller should trim trailing spaces from lines on a text transfer.
Network Fault Tolerant	If Form or Script is Form and Advanced UDM Options is selected; Enable if the session is network fault tolerant.
Show Progress	If Form or Script is Form, UDM Operation is Copy, Move, or Copy Directory, and Advanced UDM Options is selected; Shows periodic file transfer progress messages in the UDM transfer output.
Primary File System	If Form or Script is Form and Advanced UDM Options is selected; Primary file system (applies to IBM System z and System i) Options: • None • DSN • HFS • LIB

Secondary File System	If Form or Script is Form and Advanced UDM Options is selected; Secondary file system (applies to IBM System z and System i). Options: • None • DSN • HFS • LIB
Append Primary Open Options	If Form or Script is Form and Advanced UDM Options is selected; Additional UDM open command options for the Primary UDM Agent.
Append Secondary Open Option	If Form or Script is Form and Advanced UDM Options is selected; Additional UDM open command options for the Secondary UDM Agent.
Append UDM Options	If Advanced UDM Options is selected; Any additional free-form Universal Data Mover command options.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field.
Output Type-Exit Code	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File-Exit Codes	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Retry Options	This section contains specifications for retrying the task.
Retry Exit Codes	Exit code range for which an auto-retry of tasks in FAILED status will occur. Exit code ranges must be in the same format as ranges specified in the Exit Codes field. Maximum Retries must be greater than 0. If this field is empty, any exit code potentially will cause a retry. Variables are supported.

Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.

Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.

<table>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.17.4 Viewing a File Transfer Task Instance

When a File Transfer task is launched, the Controller creates a task instance record of that task.

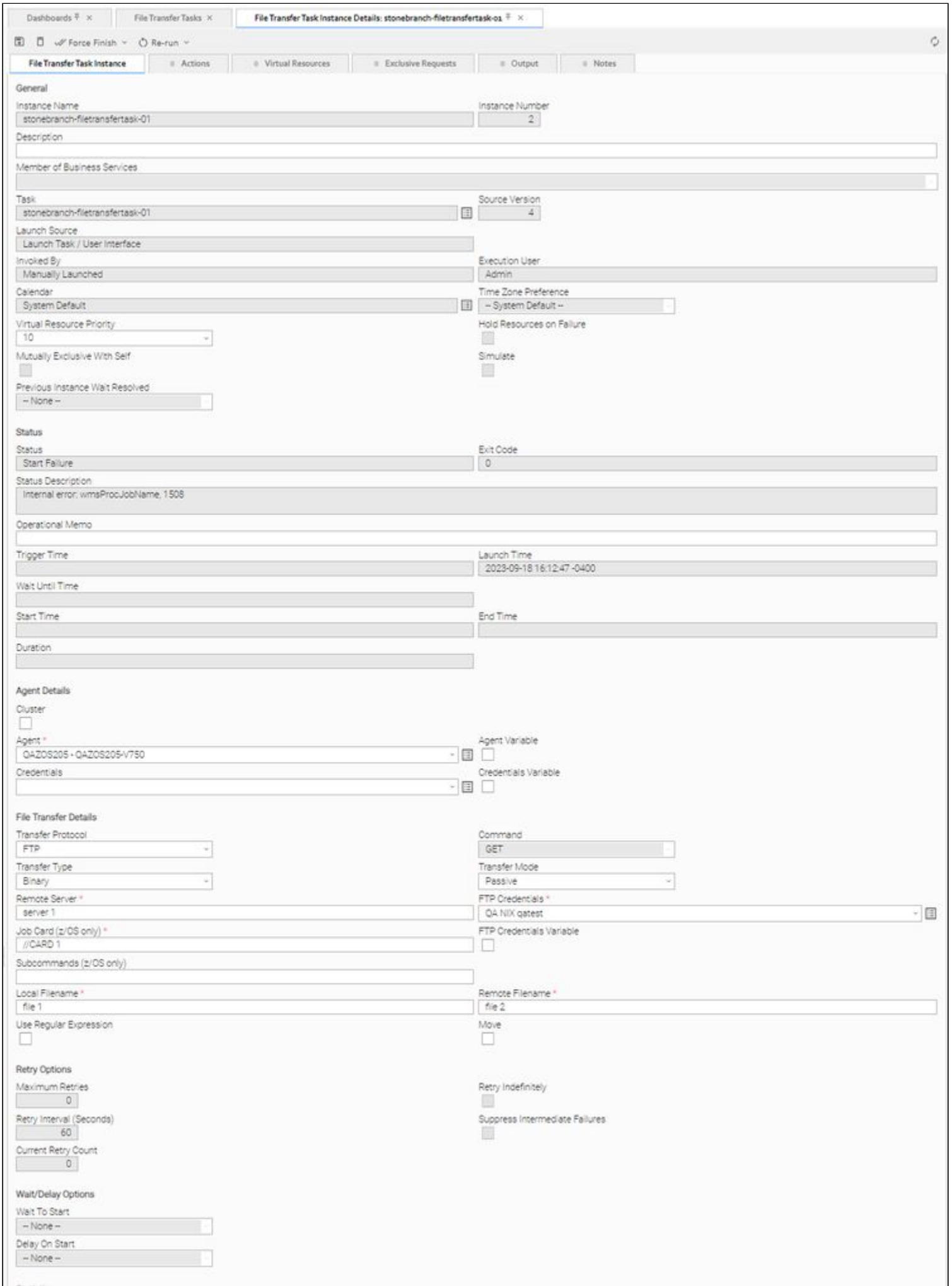
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the FTP/SFTP/FTPS/FTPES or UDM File Transfer Task Details for that task
- Activity Monitor
- Task Instances list

5.17.4.1 FTP/SFTP/FTPS/FTPES File Transfer Task Instance Details

The following FTP/SFTP/FTPS/FTPES File Transfer Task Instance Details contains information on the execution of the task shown in the FTP/SFTP/FTPS/FTPES File Transfer Task Details.


Dashboards
File Transfer Tasks
File Transfer Task Instance Details: stonebranch-filetransfertask-01
Force Finish
Re-run
File Transfer Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-filetransfertask-01
Instance Number
2
Description
Member of Business Services
Task
stonebranch-filetransfertask-01
Source Version
4
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Start Failure
Exit Code
0
Status Description
Internal error: wmsProcJobName, 1508
Operational Memo
Trigger Time
Launch Time
2023-09-18 16:12:47 -0400
Wait Until Time
Start Time
End Time
Duration
Agent Details
Cluster
Agent *
QAZOS205 - QAZOS205-V750
Agent Variable
Credentials
Credentials Variable
File Transfer Details
Transfer Protocol
FTP
Command
GET
Transfer Type
Binary
Transfer Mode
Passive
Remote Server *
server 1
FTP Credentials *
QA NIX qatest
Job Card (z/OS only) *
//CARD 1
FTP Credentials Variable
Subcommands (z/OS only)
Local Filename *
file 1
Remote Filename *
file 2
Use Regular Expression
Move
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count
0
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --

5.17.4.2 FTP/SFTP/FTPS/FTPES File Transfer Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in FTP/SFTP/FTPS/FTPES File Transfer Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.

Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.
Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.

Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting an Agent Cluster is required and selecting Broadcast, which lets you select a Cluster Broadcast, is optional. If Cluster is selected, selecting an Agent is not required unless Agent Variable is selected.
Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify an Agent, you must specify an Agent Cluster or Cluster Broadcast.
Agent Variable	Indication of whether the Agent field is a reference field for selecting a specific Agent (unchecked) or a text field for specifying the Agent as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent reference to using an Agent variable, you must change the **Agent Variable** field to **Yes** and specify the Agent variable in the **Agent Unresolved** field. Conversely, to change from using an Agent variable to using an Agent reference, you must change the **Agent Variable** field to **No** and specify the Agent reference in the **Agent** field.

Agent Cluster	If Cluster is selected and Broadcast is not selected; Group of Agents, one of which the Controller will choose to run this task (compare with Cluster Broadcast). You can specify an agent cluster in addition to or in place of a specific Agent. If you specify an Agent and an agent cluster, the Controller first tries to run the task on the specific agent. If the Agent is not available, the Controller reverts to the agent cluster. See Agent Clusters for more information.
Agent Cluster Variable	Indication of whether the Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an Agent Cluster reference to using an Agent Cluster variable, you must change the **Agent Cluster Variable** field to **Yes** and specify the Agent Cluster variable in the **Agent Cluster Unresolved** field. Conversely, to change from using an Agent Cluster variable to using an Agent Cluster reference, you must change the **Agent Cluster Variable** field to **No** and specify the Agent Cluster reference in the **Agent Cluster** field.
Credentials	Credentials under which an Agent runs this task. These Credentials override any Credentials provided in the Agent Details for any Agent running this task. If the user does not have a login shell, add a - character in front of the runtime credentials name. The Controller will provide a shell for that user and strip the - character from the name. Required if the Agent Credentials Required Universal Controller system property is true. When required, if the Credential is specified as a variable, and the variable resolves to blank, a Start Failure will occur.
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
File Transfer Details	This section contains assorted detailed information about the task instance.
Transfer Protocol	Type of transfer protocol for this file transfer. Options: • FTP • SFTP • UDM • FTPS • FTPES

Command	File Transfer command being executed. Options: • GET - Copies a remote file to the local computer. • PUT - Copies a local file to the remote computer. • MGET - Copies multiple remote files to the local computer. • MPUT - Copies multiple local files to the remote computer. • DELETE - Deletes the specified file from the remote computer. • MDELETE - Deletes the specified file(s) from the remote computer • MKDIR - Creates the specified directory on the remote computer. • RMDIR - Removes the specified directory from the remote computer.
Job Card (z/OS only)	For z/OS, the job card information for the JCL statement. Example: `//File TransferJOB01 JOB (File Transfer,001),FANNY,MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=&SYSUID,CLASS=A`
Subcommands (z/OS only)	For z/OS, any subcommands used in the JCL statement.
Verify Host Name	If Transfer Protocol = FTPS or FTPES; Indication of whether to verify the DNS name or IP address of the FTP server's certificate against the host system.
Authenticate Peer	If Transfer Protocol = FTPES; Indication of whether to use a CA certificate configured in the agent to authenticate the FTP server's certificate.
Transfer Type	Data format of the file being transferred. Options: • Binary • ASCII
Transfer Mode	If Transfer Protocol is FTP, FTPS, or FTPES; Transfer mode. Options: • Active • Passive • Extended Passive
Remote Server	Required if Transfer Protocol = FTP, SFTP, FTPS, or FTPES; name or IP address of the File Transfer server. This machine may or may not be the same as the Agent machine. You also can specify a non-standard FTP, SFTP, FTPS, or FTPES port: port number separated from the host name with a colon: "some.server.com:2222".
FTP Credentials	Login credentials that the Agent will use to access the FTP or SFTP server machine. If the File Transfer server and Agent are running on the same machine, enter the same credentials as those you entered in the Credentials field.

FTP Credentials Variable	Indication of whether the FTP Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the FTP Credentials as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using an FTP Credentials reference to using an FTP Credentials variable, you must change the **FTP Credentials Variable** field to **Yes** and specify the FTP Credentials variable in the **FTP Credentials Unresolved** field. Conversely, to change from using an FTP Credentials variable to using an FTP Credentials reference, you must change the **FTP Credentials Variable** field to **No** and specify the FTP Credentials reference in the **FTP Credentials** field.
Local Filename	Required if Transfer Type = FTP, SFTP, FTPS, or FTPES; Path and file name on the local server. That is, the "transfer from" file name.
Use Regular Expression	Enables the use of a regular expression in the Local Filename field.
Remote Filename	Required if Transfer Type = FTP, SFTP, FTPS, or FTPES; Path and file name on the remote server. That is, the "transfer to" file name.
Move	If Transfer Protocol = FTP, SFTP, FTPS, or FTPES, and Command = GET, MGET, PUT, or MPUT; Modifies the behavior of GET/MGET and PUT/MPUT by deleting the source file(s) after being transferred to the destination. GET/MGET with Move enabled will delete the files from the remote FTP server; PUT/MPUT with Move enabled will delete the files from the local FTP client.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.

Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.

Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related statistics for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.

Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)

Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.

CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.

User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.

<table>
<tr><td>Re-run</td><td>See Re-running a Task Instance.

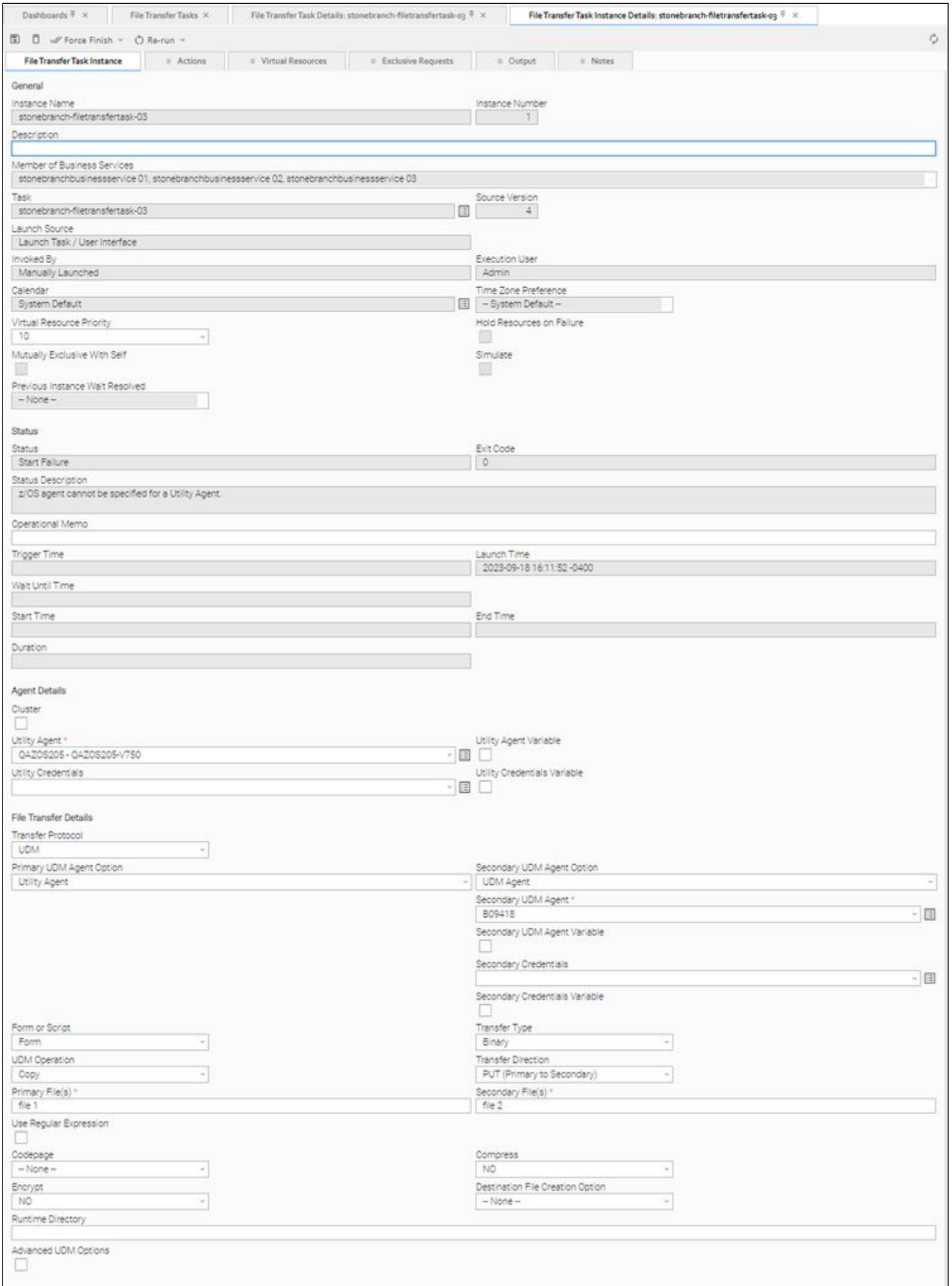
Note
If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options:
Re-run
Re-run (Suppress Intermediate Failures)
The Re-run button does not display if the task instance does not qualify for Re-run.
If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.</td></tr>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:

<table>
<tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr>
<tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr>
<tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr>
<tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr>
<tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr>
</table>
</td></tr>
</table>

Virtual Resources	Lists all Virtual Resources to which this task is assigned. If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.
Exclusive Requests	Lists all records in the Exclusive Requests table (`ops_exclusive_order`) for this task instance.
Output	Displays output generated from the process. **Note** For File Transfer task instances, output always is automatically retrieved and is available from the Output tab.
Notes	Lists all notes associated with this record.

5.17.4.3 UDM File Transfer Task Instance Details

The following UDM File Transfer Task Instance Details contains information on the execution of the task shown in the UDM File Transfer Task Details.


Dashboards
File Transfer Tasks
File Transfer Task Details: stonebranch-filetransfertask-o3
File Transfer Task Instance Details: stonebranch-filetransfertask-o3
Force Finish
Re-run
File Transfer Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-filetransfertask-03
Instance Number
1
Description
Member of Business Services
stonebranchbusinessservice 01, stonebranchbusinessservice 02, stonebranchbusinessservice 03
Task
stonebranch-filetransfertask-03
Source Version
4
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Start Failure
Exit Code
0
Status Description
z/OS agent cannot be specified for a Utility Agent.
Operational Memo
Trigger Time
Launch Time
2023-09-18 16:11:52 -0400
Wait Until Time
Start Time
End Time
Duration
Agent Details
Cluster
Utility Agent *
OAZOS205 - OAZOS205-V750
Utility Agent Variable
Utility Credentials
Utility Credentials Variable
File Transfer Details
Transfer Protocol
UDM
Primary UDM Agent Option
Utility Agent
Secondary UDM Agent Option
UDM Agent
Secondary UDM Agent *
B09418
Secondary UDM Agent Variable
Secondary Credentials
Secondary Credentials Variable
Form or Script
Form
Transfer Type
Binary
UDM Operation
Copy
Transfer Direction
PUT (Primary to Secondary)
Primary File(s) *
file 1
Secondary File(s) *
file 2
Use Regular Expression
Codepage
-- None --
Compress
NO
Encrypt
NO
Destination File Creation Option
-- None --
Runtime Directory
Advanced UDM Options

5.17.4.4 UDM File Transfer Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in UDM File Transfer Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Agent Details	This section contains assorted detailed information about the Agent / Agent Cluster selected for this task.
Cluster	Indication that selecting a Utility Agent Cluster is required. If Cluster is selected, selecting a Utility Agent is not required unless Utility Agent Variable is selected.
Utility Agent	Name of the Agent resource that identifies the machine where the operation will run. If you do not specify a Utility Agent, you must specify a Utility Agent Cluster or Utility Cluster Broadcast.
Utility Agent Variable	If enabled, the Utility Agent field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent reference to using a Utility Agent variable, you must change the **Utility Agent Variable** field to **Yes** and specify the Utility Agent variable in the **Utility Agent Unresolved** field. Conversely, to change from using a Utility Agent variable to using a Utility Agent reference, you must change the **Utility Agent Variable** field to **No** and specify the Utility Agent reference in the **Utility Agent** field.
Utility Agent Cluster	If Cluster is selected; Group of Agents, one of which the Controller will choose to run this task. You can specify a Utility Agent Cluster in addition to or in place of a specific Utility Agent. If you specify a Utility Agent and a Utility Agent Cluster, the Controller first tries to run the task on the specific Utility Agent. If the Utility Agent is not available, the Controller reverts to the Utility Agent Cluster. See Agent Clusters for more information.

Utility Agent Cluster Variable	Indication of whether the Utility Agent Cluster field is a reference field for selecting a specific Agent Cluster (unchecked) or a text field for specifying the Utility Agent Cluster as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Agent Cluster reference to using a Utility Agent Cluster variable, you must change the **Utility Agent Cluster Variable** field to **Yes** and specify the Utility Agent Cluster variable in the **Utility Agent Cluster Unresolved** field. Conversely, to change from using a Utility Agent Cluster variable to using a Utility Agent Cluster reference, you must change the **Utility Agent Cluster Variable** field to **No** and specify the Utility Agent Cluster reference in the **Utility Agent Cluster** field.
Utility Credentials	Login credentials that the Agent will use to access the Universal Command server machine. Required if the Agent Credentials Required Universal Controller system property is true.
Utility Credentials Variable	Indication of whether the Utility Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Utility Credentials as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Utility Credentials reference to using a Utility Credentials variable, you must change the **Utility Credentials Variable** field to **Yes** and specify the Utility Credentials variable in the **Utility Credentials Unresolved** field. Conversely, to change from using a Utility Credentials variable to using a Utility Credentials reference, you must change the **Utility Credentials Variable** field to **No** and specify the Utility Credentials reference in the **Utility Credentials** field.
File Transfer Details	This section contains assorted detailed information about the task instance.
Transfer Protocol	Type of transfer protocol for this file transfer. Options: • FTP • SFTP • UDM • FTPS • FTPES

Primary UDM Agent Option	Type of definition to use for the Primary UDM Agent selection. Options: • --None-- (If Form or Script = Script) • Utility Agent Uses the File Transfer Task Utility Agent as the UDM Primary Agent; this will configure UDM in 2-party transfer mode. • UDM Agent Primary Agent is a UDM Agent defined in the Controller. • UDM Agent Cluster Primary Agent is selected from the Primary UDM Agent Cluster. • UDM Agent Hostname Primary Agent runs on the host name specified in the Primary UDM Agent field. If Form or Script = Form; Default is Utility Agent. If Form or Script = Script; Default is -- None -- .
Secondary UDM Agent Option	Type of definition to use for the Secondary UDM Agent selection. Options: • --None-- (If Form or Script = Script) • UDM Agent Secondary Agent is a UDM Agent defined in the Controller. • UDM Agent Cluster Secondary Agent is selected from the Secondary UDM Agent Cluster. • UDM Agent Hostname Secondary Agent runs on the host name specified in the Secondary UDM Agent field. If Form or Script = Form; Default is UDM Agent. If Form or Script = Script; Default is -- None -- .
Primary UDM Agent	If Primary UDM Agent Option is **not** Utility Agent or --None--; Agent to use as the Primary UDM Agent.
Secondary UDM Agent	If Secondary UDM Agent Option is not --None-- ; Agent to use as the Secondary UDM Agent.
Primary UDM Agent Variable	If Primary UDM Agent Option is UDM Agent or UDM Agent Cluster; Allows the Primary UDM Agent field to accept a variable.
Secondary UDM Agent Variable	If Secondary UDM Agent Option is UDM Agent or UDM Agent Cluster; Allows the Secondary UDM Agent field to accept a variable.
Primary UDM Agent Cluster	If Primary UDM Agent Option is UDM Agent Cluster; Agent Cluster to use for the Primary UDM Agent.
Primary UDM Agent Cluster Variable	If Primary UDM Agent Option is UDM Agent Cluster; Allows the Primary UDM Agent Cluster field to accept a variable.
Secondary UDM Agent Cluster	If Secondary UDM Agent Option is UDM Agent Cluster; Agent Cluster to use for the Secondary UDM Agent.
Secondary UDM Agent Cluster Variable	If Secondary UDM Agent Option is UDM Agent Cluster; Allows the Secondary UDM Agent Cluster field to accept a variable.
Primary Credentials	If Primary UDM Agent Option is **not** Utility Agent; Credentials for the Primary UDM Agent; Select existing Credentials from the drop-down list or click the Credentials Details icon to create new Details.
Secondary Credentials	Credentials for the Secondary UDM Agent; Select existing Credentials from the drop-down list or click the Credentials Details icon to create new Details.

Primary Credentials Variable	Indication of whether the Primary Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Primary Credentials as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Primary Credentials reference to using a Primary Credentials variable, you must change the **Primary Credentials Variable** field to **Yes** and specify the Primary Credentials variable in the **Primary Credentials Unresolved** field. Conversely, to change from using a Primary Credentials variable to using a Primary Credentials reference, you must change the **Primary Credentials Variable** field to **No** and specify the Primary Credentials reference in the **Primary Credentials** field.
Secondary Credentials Variable	Indication of whether the Secondary Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Secondary Credentials as a variable (checked). Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Secondary Credentials reference to using a Secondary Credentials variable, you must change the **Secondary Credentials Variable** field to **Yes** and specify the Secondary Credentials variable in the **Secondary Credentials Unresolved** field. Conversely, to change from using a Secondary Credentials variable to using a Secondary Credentials reference, you must change the **Secondary Credentials Variable** field to **No** and specify the Secondary Credentials reference in the **Secondary Credentials** field.
Form or Script	Form or Script for this UDM File Transfer to use. Default is Form.
Transfer Type	Type of data transfer. Options: • Binary • Text
UDM Operation	If Form or Script is Form; UDM Operation to be executed. Options: • Copy • Move • Delete • Rename • List • Copy Directory • Create Directory • Delete Directory Default is Copy.

Transfer Direction	If Form or Script = Form and UDM Operation = Copy, Move, or Copy Directory; Direction of the transfer between the Primary and Secondary UDM Agents. Options: • PUT (Primary to Secondary) • GET (Secondary to Primary) Default is PUT.

Primary File(s)	File(s) on the Primary UDM Agent.
	• If Form or Script = Form; Required if UDM Operation =
	  • Copy
	  • Move
	  • Copy Directory (and Transfer Direction = PUT)
	• If Form or Script = Script; Optional.

Secondary File(s)	File(s) on the Secondary UDM Agent.
	• If Form or Script = Form; Required if UDM Operation =
	  • Copy
	  • Move
	  • Copy Directory (and Transfer Direction = GET)
	• If Form or Script = Script; Optional.

Use Regular Expression	If UDM Operation is Copy, Move, Delete, or List; Allows the use of a regular expression when specifying file(s). **Note** If UDM Operation = Copy or Move: • If Transfer Direction = PUT; The regular expression will apply to Primary File(s). • If Transfer Direction = GET; The regular expression will apply to Secondary File(s). If UDM Operation = Delete or List: • If Primary File(s) is specified; The regular expression will apply to Primary File(s). • If Secondary File(s) is specified; The regular expression will apply to Secondary File(s).
Codepage	Options: (See Code Pages, below.)
Compress	The type of data compression used in the transfer, if any. Options: • YES • NO • ZLIB • HASP

Encrypt	The method of encryption that the Controller will use in the transfer. Options: • YES • NO (none) • RC4-SHA • RC4-MD5 • AES256-SHA • AES128-SHA • DES-CBC3-SHA • DES-CBC-SHA • NULL-SHA • NULL-MD5 • NULL-NULL • AES256-GCM-SHA384 • AES128-GCM-SHA256
Destination File Creation Option	If UDM Operation is Copy, Move, or Copy Directory; Specifies whether the transferred file should be created (new), appended, or replace any existing file. Options: • None • APPEND • NEW • REPLACE
Runtime Directory	Directory from which the application should be executed. Variables supported.
Advanced UDM Options	Additional UDM Options.
Trim Trailing Spaces	If Form or Script is Form and Advanced UDM Options is selected; If enabled, specifies that the Controller should trim trailing spaces from lines on a text transfer.
Network Fault Tolerant	If Form or Script is Form and Advanced UDM Options is selected; Enable if the session is network fault tolerant.
Show Progress	If Form or Script is Form, UDM Operation is Copy, Move, or Copy Directory, and Advanced UDM Options is selected; Shows periodic file transfer progress messages in the UDM transfer output.
Primary File System	If Form or Script is Form and Advanced UDM Options is selected; Primary file system (applies to IBM System z and System i) Options: • None • DSN • HFS • LIB
Secondary File System	If Form or Script is Form and Advanced UDM Options is selected; Secondary file system (applies to IBM System z and System i). Options: • None • DSN • HFS • LIB
Append Primary Open Options	If Form or Script is Form and Advanced UDM Options is selected; Additional UDM open command options for the Primary UDM Agent.
Append Secondary Open Option	If Form or Script is Form and Advanced UDM Options is selected; Additional UDM open command options for the Secondary UDM Agent.
Append UDM Options	If Advanced UDM Options is selected; Any additional free-form Universal Data Mover command options.

Result Processing Details	This section contains assorted detailed information about result processing for this task.
Exit Code Processing	Specifies how the Controller should determine whether the executed command failed or completed successfully. Options: • Success Exitcode Range Command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range Command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Output Contains Command is considered completed successfully if its output contains the text specified in the Scan Output For field. • Failure Output Contains Command is considered failed if its output contains the text specified in the Scan Output For field.
Output Type-Exit Code	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; type of output. Options: • Standard Output (STDOUT) • Standard Error (STDERR) • File • Extension
Exit Codes	Required if Exit Code Processing = Success Exitcode Range or Failure Exitcode Range; range of exit codes. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30. Variables are supported.
Scan Output For	Required if Exit Code Processing = Success Output Contains or Failure Output Contains; text for which the Controller should scan the output file. The Controller will process this field as a regular expression.
Output File-Exit Codes	Required if Output Type = File; path and file name of the output file that should be scanned for the text in the Scan Output For field.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.

Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.

Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.

Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instances of this task.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.

<table>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table>
<tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr>
<tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr>
<tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr>
<tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr>
<tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr>
</table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Output</td><td>Displays output generated from the process.

Note
For File Transfer task instances, output always is automatically retrieved and is available from the Output tab.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.17.5 Output Redirection

An Agent processes File Transfer (UDM), Universal Command, and SAP tasks differently than Windows and Linux/Unix tasks. File Transfer (UDM), Universal Command, and SAP command lines are sent to the user process via standard input, so any redirection operators entered as task command input are not processed as expected.

If you want to direct output from a File Transfer (UDM) task to your file system, the **-uagstdio** command option lets you specify the same output redirection commands that are available for Windows and Linux/Unix tasks. UAG will apply the user-specified value for **-uagstdio** directly to the command image.

The I/O redirection commands that you can use with **-uagstdio** are dependent on the OS/command shell. You should be able to set up any redirection that the OS/command shell supports (just as with Windows and Linux/Unix tasks).

The syntax of **-uagstdio** is similar to Universal Data Mover, Universal Command, and Universal Connector command line options; option followed by value.

For a File Transfer (UDM) task, you can specify **uagstdio** in the following field:

- Append UDM Options

5.17.5.1 -uagstdio Examples

```
-uagstdio >C:\UDMOUT\udm.out
```

If the **-uagstdio** value contains spaces, it must be enclose in double quotation marks ("):

```
-uagstdio ">C:\UDMOUT\udm.out 2>C:\UDMOUT\udm.err"
```

If the quoted value itself requires double quotation marks, they must be doubled (""):

```
-uagstdio ">C:\tmp\""udm output""\udm.out 2>C:\tmp\""udm output""\udm.err"
```

5.17.6 Specifying When a Task Runs

You can run the task as part of a workflow, specify triggers that run the task automatically based on times or events, or run the task manually.

5.17.7 Running a File Transfer Task

You can run a File Transfer task:

- Manually, by clicking the Launch or Launch with Variables button in the File Transfer tasks list or File Transfer Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.17.8 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.17.9 Code Pages

The following table identifies all supported code pages for a UDM File Transfer task.

ISO8859-1	op437	IBM Portugal 037
ISO8859-2	op737	IBM German 273
ISO8859-3	op775	IBM Danish and Norwegian 277
ISO8859-4	op850	IBM Sweden and Finland 278
ISO8859-5	op852	IBM Italian 280
ISO8859-6	op855	IBM Spanish 284
ISO8859-7	op857	IBM International 500
ISO8859-8	op860	IBM Greek 875
ISO8859-9	op861	IBM Latin-1 1047
ISO8859-10	cp862	IBM Portugal 1140
ISO8859-13	cp863	IBM German 1141
ISO8859-14	cp864	IBM Danish 1142
ISO8859-15	cp865	IBM Finish 1143
	cp866	IBM Italian 1144
	cp869	IBM Spanish 1145
	cp874	IBM UK 1146
	cp1250	IBM Swiss 1148
	cp1251	IBM Greek 4971
	cp1252	
	cp1253	
	cp1254	
	cp1255	

	cp1256	
	cp1257	
	cp1258	

5.18 Manual Task

5.18.1 Overview

Manual tasks are used to create a pause in a Workflow during which the user must take some action.

The processing of a Manual task within a Workflow is described here:

Step 1	While its upstream tasks are running, a Manual task instance remains in WAITING status. When the Manual task instance launches, it goes immediately into ACTION REQUIRED status, meaning you must perform some manual activity. Universal Controller also sets the **Started Time** in the Manual task instance to the time that the task instance went into the ACTION REQUIRED status.
Step 2	Optionally, you can re-set the **Started Time** of the Manual task by issuing the **Set Started** command. Either: 1. On the Activity Monitor, right-click the Manual task and select **Set Started**. 2. On the Workflow Monitor, right-click the Manual task and select **Commands > Set Started**.
Step 3	When you have completed the activities called for in the Manual task, you must indicate that the task is completed and that the Workflow can continue. Either: 1. On the Activity Monitor, right-click the Manual task and select **Set Completed**. 2. On the Workflow Monitor, right-click the Manual task and select **Commands > Set Completed**.
Step 4	The Manual task goes into SUCCESS status, the End Time is set, and the Workflow continues. If the Manual task is not completed but you still want the Workflow to continue, select **Force Finish**.

Note

You also can set a Manual task to STARTED or COMPLETED status from the Command Line Interface (CLI).

5.18.2 Built-In Variables

The following built-in variables can be used in a Manual task to pass data where appropriate:

- Task Instance variables

5.18.3 Creating a Manual Task

Step 1	From the Automation Center navigation pane, select **Tasks > Manual Tasks**. The Manual Tasks list displays a list of all currently defined Manual tasks. Below the list, Manual Task Details for a new Manual task displays.
Step 2	Enter/select Details for a new Manual task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

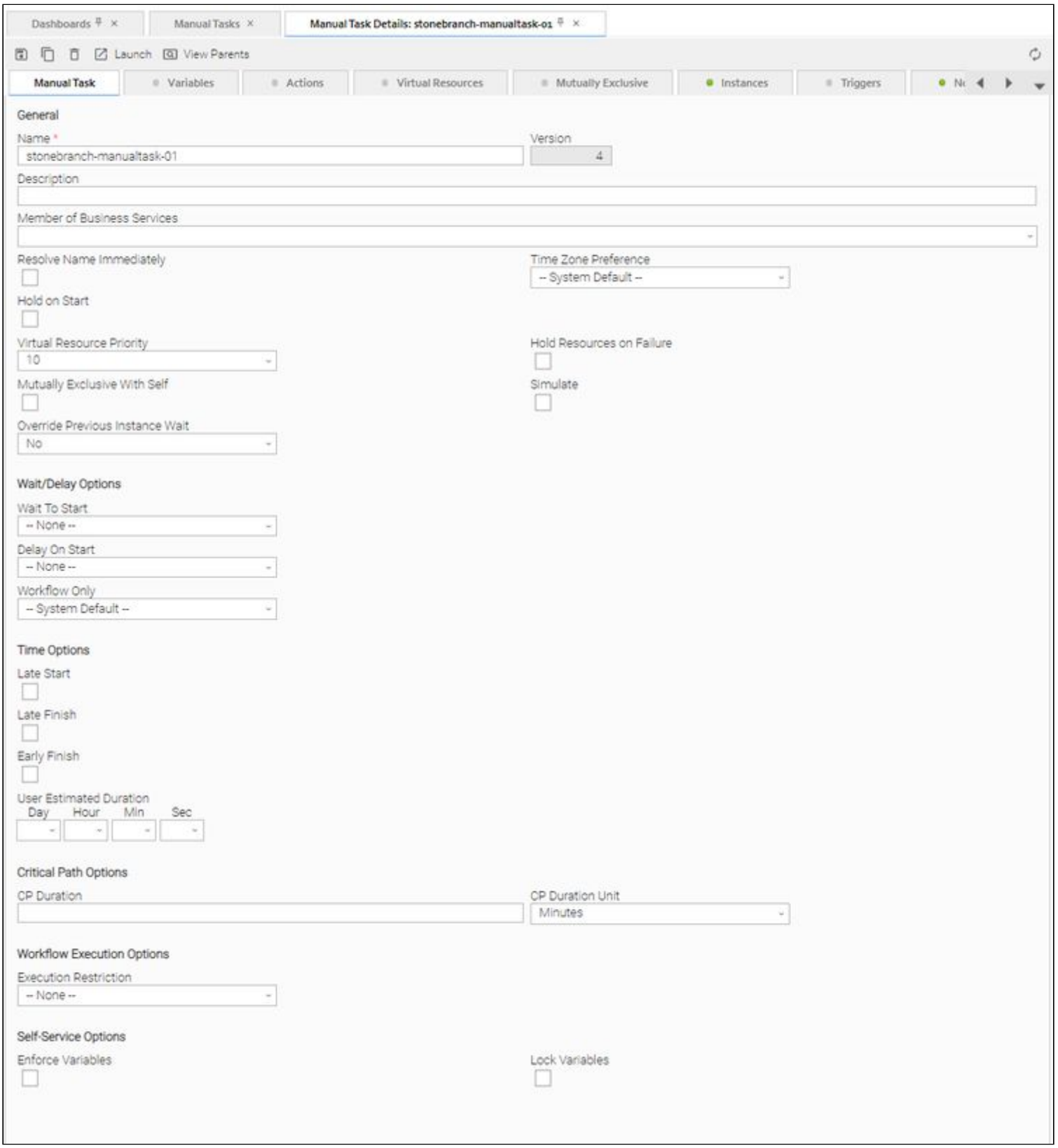
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.18.3.1 Manual Task Details

The following Manual Task Details is for an existing Manual task.

Depending on the values that you enter / select for these fields, and whether or not the Manual task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Manual Task Details.



5.18.3.2 Manual Task Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Manual Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.18.4 Viewing a Manual Task Instance

When a Manual task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Manual Task Details for that task
- Activity Monitor
- Task Instances list

5.18.4.1 Manual Task Instance Details

The following Manual Task Instance Details contains information on the execution of the task shown in the Manual Task Details.

Dashboards
Manual Tasks
Manual Task Details: stonebranch-manualtask-01
Manual Task Instance Details: stonebranch-manualtask-01
Re-run
View Parent
Manual Task Instance
Actions
Virtual Resources
Exclusive Requests
Notes
General
Instance Name
stonebranch-manualtask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-manualtask-01
Source Version
4
Launch Source
Workflow
Source Instance
stonebranch-workflow-01
Invoked By
Workflow: stonebranch-workflow-01
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
Wait For All
Status
Status
Finished
Status Description
State was forced from ACTION REQUIRED to FINISHED
Operational Memo
Critical
Critical Endpoint
Trigger Time
Launch Time
2023-09-18 12:06:22 -0400
Wait Until Time
Start Time
2023-09-18 12:06:24 -0400
End Time
2023-09-18 12:06:31 -0400
Duration
6 Seconds
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Critical Path Options
CP Duration
CP Duration Unit
Minutes
Statistics
User Estimated End Time
Average Estimated End Time
2023-09-18 12:06:24 -0400
Lowest Estimated End Time
Highest Estimated End Time
Projected Start Time
2023-09-18 12:06:24 -0400
Projected End Time
2023-09-18 12:06:31 -0400

5.18.4.2 Manual Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Manual Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.

Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.

Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Set Started	Sets the task instance to the Started status.
Set Completed	Sets the task instance to the Success status.
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.

<table>
<tr><td>Re-run</td><td>See Re-running a Task Instance.

Note
If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options:
• Re-run
• Re-run (Suppress Intermediate Failures)

The Re-run button does not display if the task instance does not qualify for Re-run.
If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.</td></tr>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Retrieve Output</td><td>See Retrieving Output.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
• Task instance status
• Exit codes
• Late start
• Late finish
• Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
</table>

Virtual Resources	Lists all Virtual Resources to which this task is assigned. If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.
Exclusive Requests	Lists all records in the Exclusive Requests table (`ops_exclusive_order`) for this task instance.
Notes	Lists all notes associated with this record.

5.18.5 Running a Manual Task

You can run a Manual task:

- Manually, by clicking the Launch or Launch with Variables button in the Manual Tasks list or Manual Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.18.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.19 Timer Task

5.19.1 Overview

The Timer task allows you to execute a timer command for a specified period of time or until a specific time. This task is helpful, for example, if you need to impose a pause in the processing of a Workflow.

5.19.2 Built-In Variables

The following built-in variables can be used in a Manual task to pass data where appropriate:

- Task Instance variables

5.19.3 Creating a Timer Task

Step 1	From the Automation Center navigation pane, select **Tasks > Timer Tasks**. The Timer Tasks list displays a list of all currently defined Timer tasks. To the right of list, Timer Task Details for a new Timer task displays.
Step 2	Enter/select Details for a new Timer task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

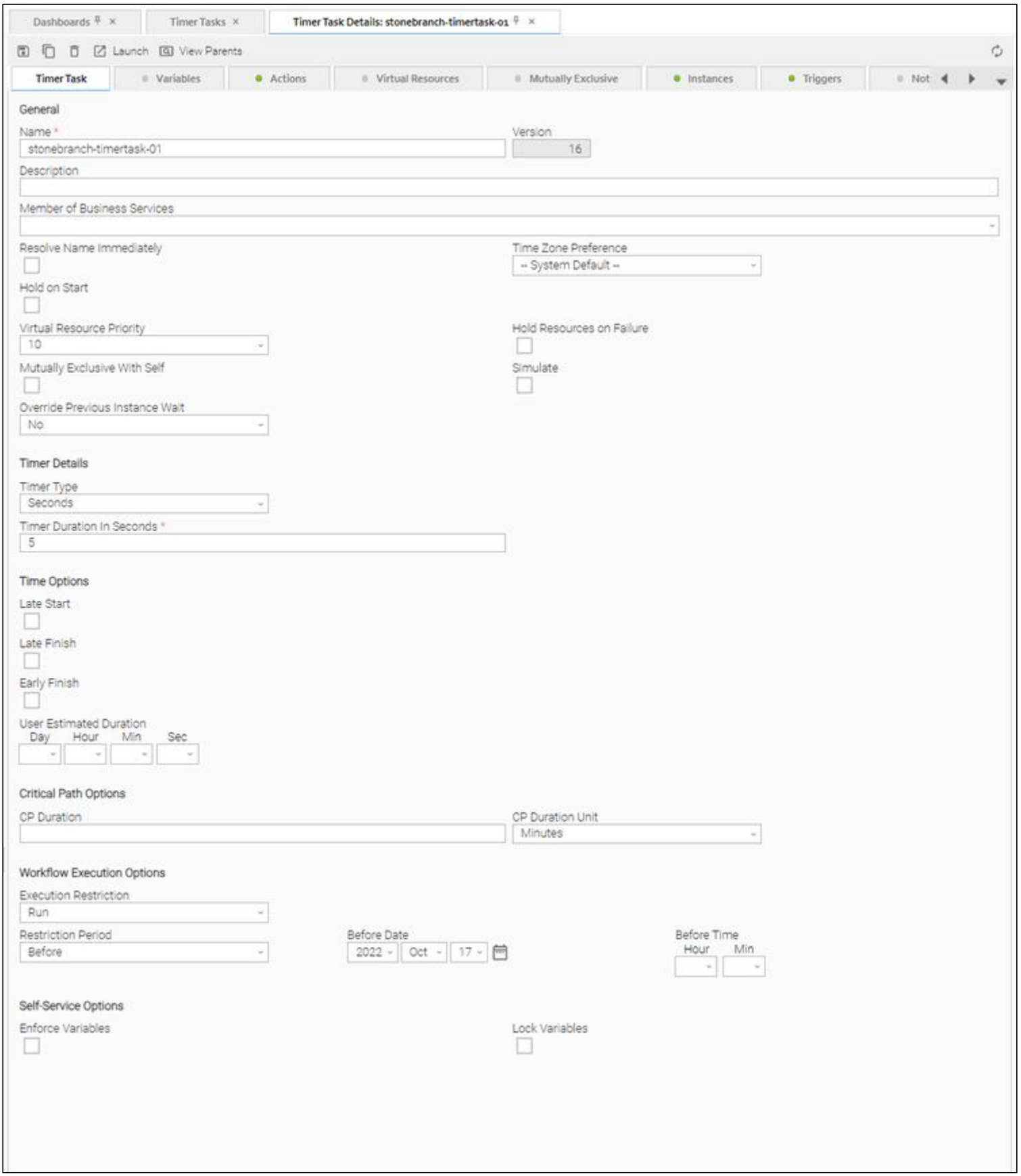
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.19.3.1 Timer Task Details

The following Linux/Unix Task Details is for an existing Linux/Unix task.

Depending on the values that you enter / select for these fields, and whether or not the Timer task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Timer Task Details.


Dashboards
Timer Tasks
Timer Task Details: stonebranch-timertask-01
Launch
View Parents
Timer Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Not
General
Name *
stonebranch-timertask-01
Version
16
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Timer Details
Timer Type
Seconds
Timer Duration In Seconds *
5
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit
Minutes
Workflow Execution Options
Execution Restriction
Run
Restriction Period
Before
Before Date
2022
Oct
17
Before Time
Hour
Min
Self-Service Options
Enforce Variables
Lock Variables

5.19.3.2 Timer Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Timer Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.

Simulate	Specifies if the instance should execute under simulation mode.
Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Timer Details	This section contains assorted detailed information about the task.
Timer Type	User-supplied; the type of Timer command you want to execute. Options: • Time Use the Timer Time field (and, optionally, the Timer Day Constraint field) to specify the time of day that you want the Timer task to be completed. • Relative Time Use the Timer Time field (and, optionally, the Timer Day Constraint field) to specify time of day, relative to the Trigger/Launch Time, that you want the Timer task to be completed. • Duration Use the Timer Duration field to specify the number of days, hours, minutes, and/or seconds that the Timer task will run. • Seconds Use the Timer Duration in Seconds field to specify the number of seconds that the Timer task will run.
Timer Time (HH:MM)	If Timer Type = Time; Time of day (in 24-hour time) that the Timer task should go to a completed status.

Timer Day Constraint	If Timer Type = Time or Relative Time; Specification for whether or not to advance the timer to another day.
	
	Valid values:
	• -- None --
	  • If Timer Type = Time; Advance to the next day if calculated wait time is before the current time.
	  • If Timer Type = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None --.

Timer Duration	If Timer Type = Duration; Number of days, hours, minutes, and/or seconds the Timer task will run.
Timer Duration in Seconds	If Timer Type = Seconds; Number of seconds the Timer task will run.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.

Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.

Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.

Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.

Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Critical Path-related specifications for the task.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.

Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for the task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.

Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.

<table>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table>
<tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr>
<tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr>
<tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr>
<tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr>
<tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr>
</table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.19.4 Viewing a Timer Task Instance

When a Timer task is launched, the Controller creates a task instance record of that task.

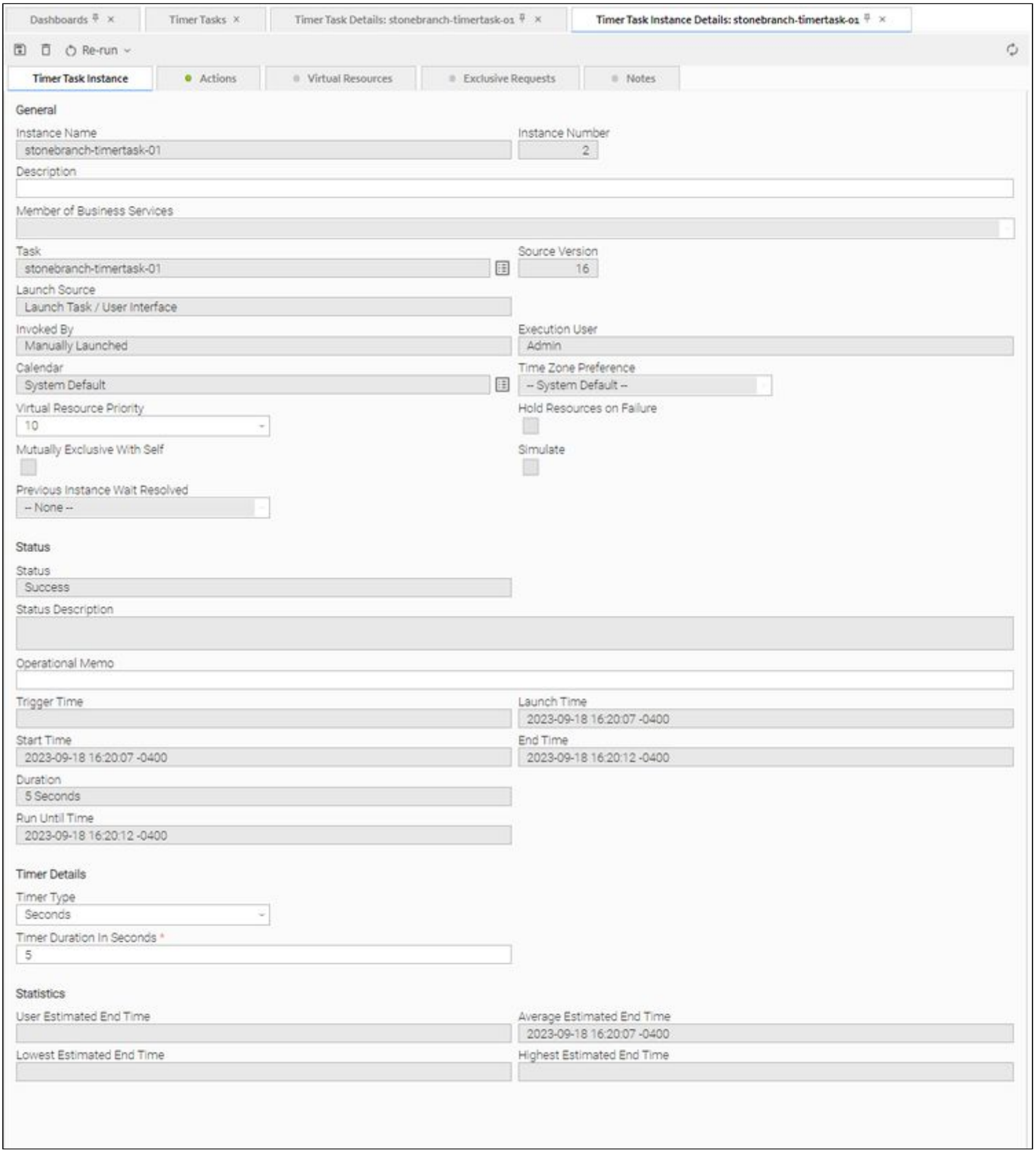
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Timer Task Details for that task
- Activity list
- Task Instances list

5.19.4.1 Timer Task Instance Details

The following Timer Task Instance Details contains information on the execution of the task shown in the Timer Task Details.


Dashboards
Timer Tasks
Timer Task Details: stonebranch-timertask-01
Timer Task Instance Details: stonebranch-timertask-01
Re-run
Timer Task Instance
Actions
Virtual Resources
Exclusive Requests
Notes
General
Instance Name
stonebranch-timertask-01
Instance Number
2
Description
Member of Business Services
Task
stonebranch-timertask-01
Source Version
16
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Success
Status Description
Operational Memo
Trigger Time
Launch Time
2023-09-18 16:20:07 -0400
Start Time
2023-09-18 16:20:07 -0400
End Time
2023-09-18 16:20:12 -0400
Duration
5 Seconds
Run Until Time
2023-09-18 16:20:12 -0400
Timer Details
Timer Type
Seconds
Timer Duration In Seconds *
5
Statistics
User Estimated End Time
Average Estimated End Time
2023-09-18 16:20:07 -0400
Lowest Estimated End Time
Highest Estimated End Time

5.19.4.2 Timer Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Timer Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	If Timer Type = Time; Time of day (in 24-hour time) that the Timer task should go to a completed status.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Run Until Time	Calculated run time.
CPU Time	System-supplied; amount of CPU time the task took to run.
Timer Details	This section contains assorted detailed information about the task instance.
Timer Type	User-supplied; the type of Timer command you want to execute. Options: • Time Use the Timer Time field (and, optionally, the Timer Day Constraint field) to specify the time of day that you want the Timer task to be completed. • Relative Time Use the Timer Time field (and, optionally, the Timer Day Constraint field) to specify time of day, relative to the Trigger/Launch Time, that you want the Timer task to be completed. • Duration Use the Timer Duration field to specify the number of days, hours, minutes, and/or seconds that the Timer task will run. • Seconds Use the Timer Duration in Seconds field to specify the number of seconds that the Timer task will run.
Timer Time (HH:MM)	If Timer Type = Time; Time of day (in 24-hour time) that the Timer task should go to a completed status.

Timer Day Constraint	If Timer Type = Time or Relative Time; Specification for whether or not to advance the timer to another day.
	
	Valid values:
	• -- None --
	  • If Timer Type = Time; Advance to the next day if calculated wait time is before the current time.
	  • If Timer Type = Relative Time; Advance to the next day if calculated wait time is before the Trigger/Launch Time.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None --.

Timer Duration	If Timer Type = Duration; Number of days, hours, minutes, and/or seconds the Timer task will run.
Timer Duration in Seconds	If Timer Type = Seconds; Number of seconds the Timer task will run.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.

Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.

Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.

Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.

<table>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Retrieve Output</td><td>See Retrieving Output.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.19.5 Running a Timer Task

You can run a Timer task:

- Manually, by clicking the Launch or Launch with Variables button in the Timer tasks list or Timer Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.19.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.20 SQL Task

5.20.1 Overview

The SQL task allows you to execute one or a series of SQL statements against the database specified in the task.

Note

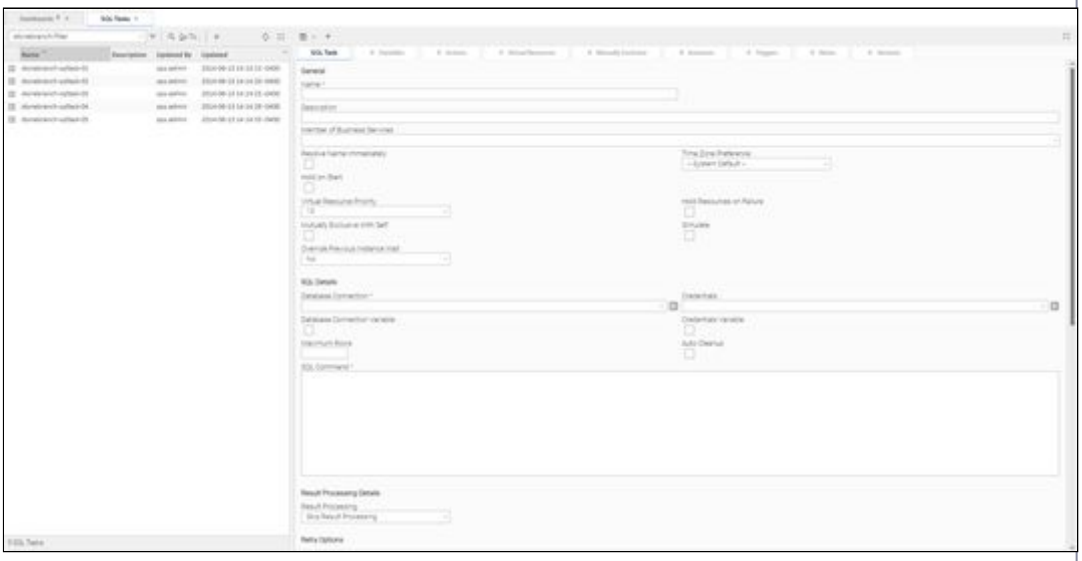
Before you can run a SQL task, you first must create a Database Connection, which defines the information needed to locate and access the database.

5.20.2 Built-In Variables

The following built-in variables can be used in a SQL task to pass data where appropriate:

- Task Instance variables
- SQL Task Instance variables

5.20.3 Creating a SQL Task

Step 1	From the Automation Center navigation pane, select **Tasks > SQL Tasks**. The SQL Tasks list displays a list of all currently defined SQL tasks. To the right of list, SQL Task Details for a new SQL task displays. 
Step 2	Enter/select Details for a new SQL task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click the save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

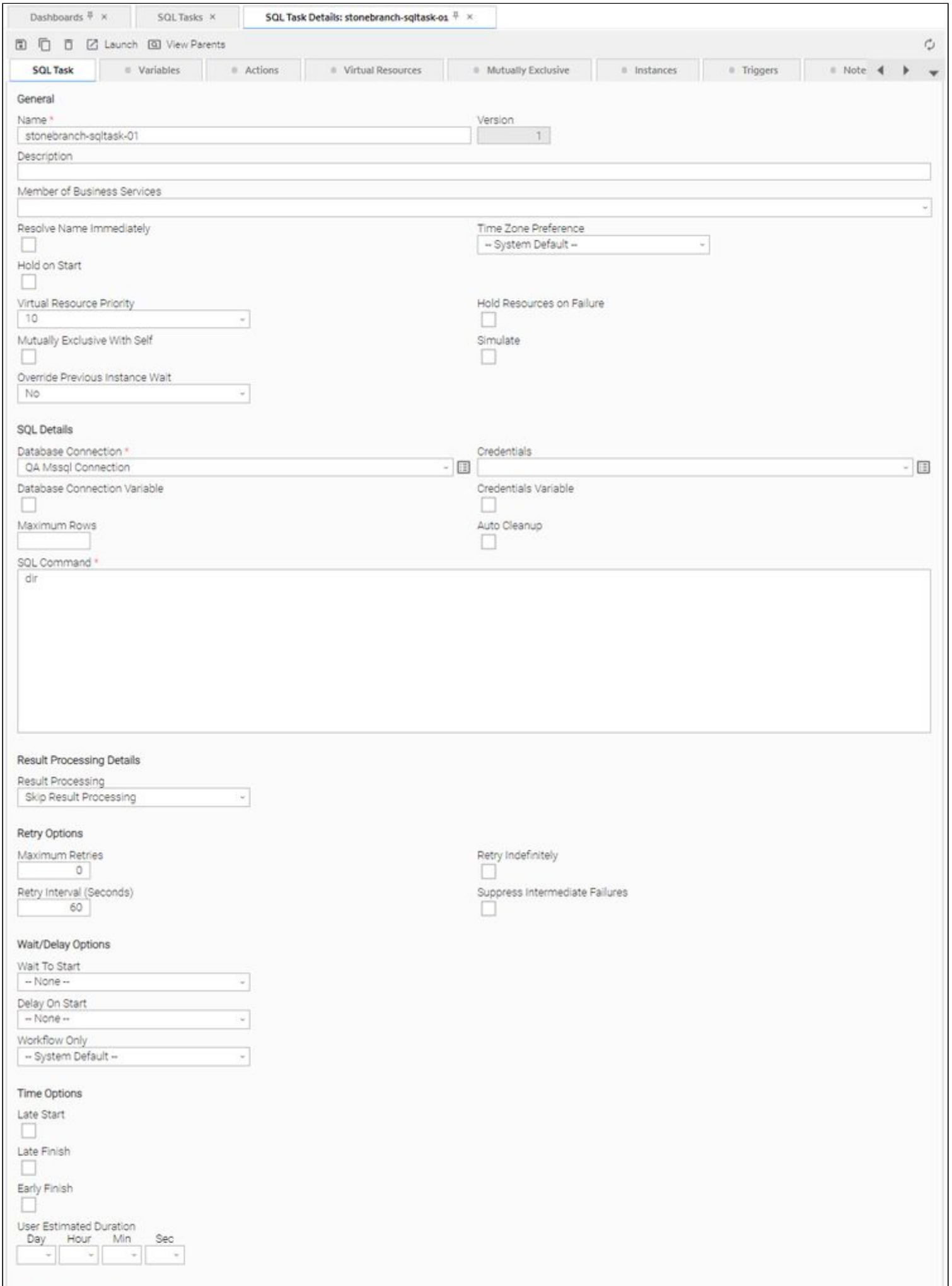
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.20.3.1 SQL Task Details

The following SQL Task Details is for an existing SQL task.

Depending on the values that you enter / select for these fields, and whether or not the SQL task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the SQL Task Details.


Dashboards
SQL Tasks
SQL Task Details: stonebranch-sqltask-01
Launch
View Parents
SQL Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Note
General
Name *
stonebranch-sqltask-01
Version
1
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
SQL Details
Database Connection *
QA Mssql Connection
Credentials
Database Connection Variable
Credentials Variable
Maximum Rows
Auto Cleanup
SQL Command *
dir
Result Processing Details
Result Processing
Skip Result Processing
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec

5.20.3.2 SQL Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the SQL Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
SQL Details	This section contains assorted detailed information about the task.
Database Connection	Name of the Universal Controller Database Connection that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the Database Connection field is a reference field for selecting a specific Database Connection (unchecked) or a text field for specifying the Database Connection as a variable (checked). Use the format: ${variable name} The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Database Connection reference to using a Database Connection variable, you must change the **Database Connection Variable** field to **Yes** and specify the Database Connection variable in the **Database Connection Unresolved** field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the **Database Connection Variable** field to **No** and specify the Database Connection reference in the **Database Connection** field.
Credentials	Credentials that specify the user and password for connecting to the database. These Credentials override any Credentials specified on the Database Connection. If Credentials are not specified in the Database Connection, you must specify them in the task.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Maximum Rows	If necessary, specifies a limit to the number of rows you want returned by the SQL/Stored Procedure statement. This value overrides any value you specify in the database connection. (A default limit can be specified by the SQL/Stored Procedure Maximum Rows Universal Controller system property.) If you set Maximum Rows to 0, no content from any of the ResultSets will be retrieved (the next() method on ResultSet will not be called). Each ResultSet will be closed, but no data or rows accessed.
Auto Cleanup	When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).
SQL Command	SQL command being executed against the database. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Result Processing	Specifies how the Controller should determine whether the SQL command failed or completed successfully. Options: • Skip Result Processing • Success Exitcode Range - The SQL command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range - The SQL command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Result Set Contains - The SQL command is considered completed successfully depending on the value in the first row of a specific database column (see Column Name, Operator, and Value fields). • Failure Result Set Contains - The SQL command is considered failed depending on the value in the first row of a specific database column (see Column Name, Operator, and Value fields).
Exit Codes	Required if Result Processing = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Column Name	Required if Result Processing = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.

Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex. **Note** For operators >, >=, <, and <=, if the values being compared are whole numbers or decimal numbers between -9223372036854775808 and 9223372036854775807, they will be compared as numbers; otherwise, they will be compared as text lexicographically.
Value	Value being compared, using the operator specified.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.20.4 Viewing a SQL Task Instance

When a SQL task is launched, the Controller creates a task instance record of that task.

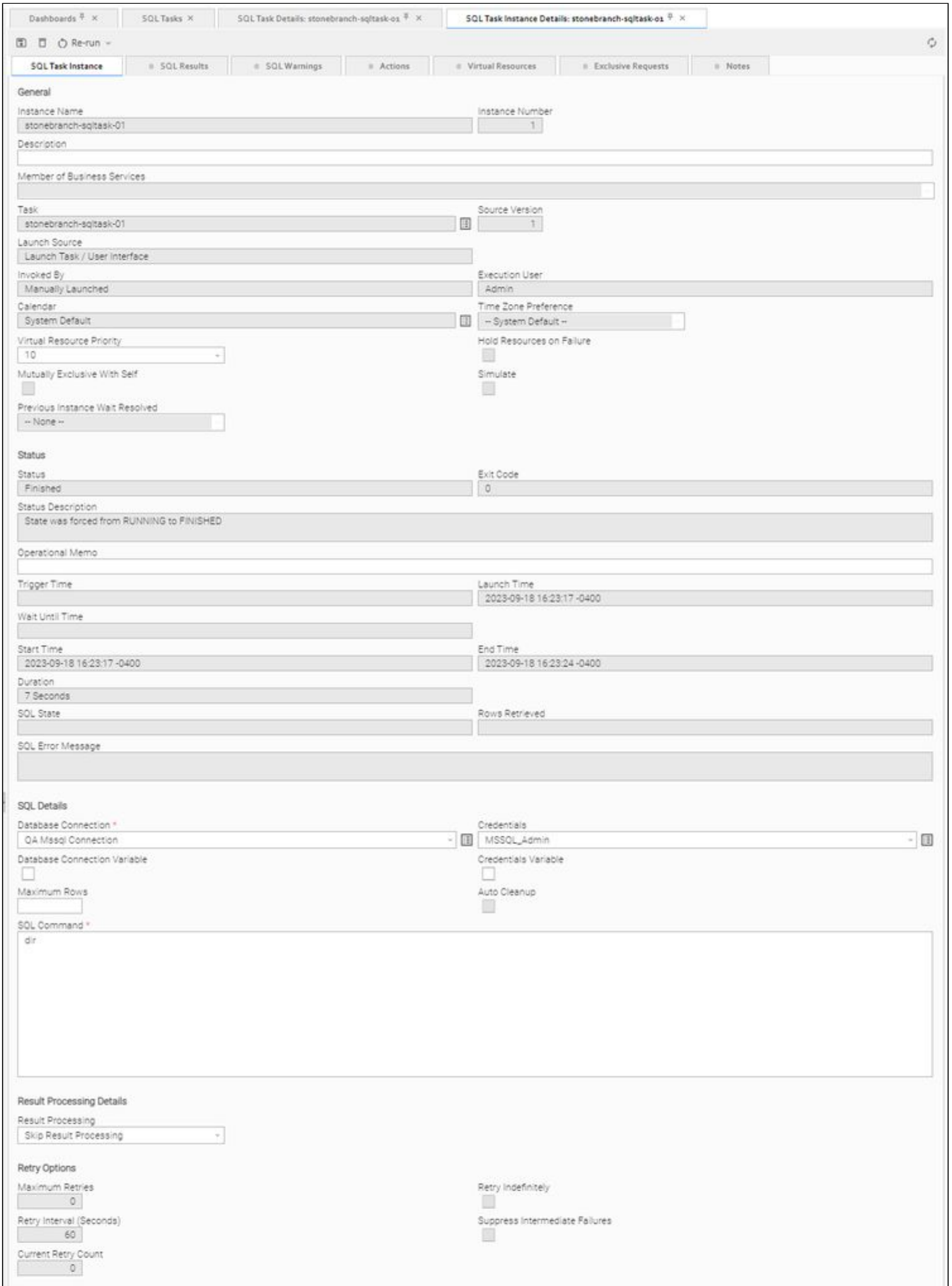
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the SQL Task Details for that task
- Activity Monitor
- Task Instances list

5.20.4.1 SQL Task Instance Details

The following SQL Task Instance Details contains information on the execution of a SQL task.


Dashboards
SQL Tasks
SQL Task Details: stonebranch-sqltask-01
SQL Task Instance Details: stonebranch-sqltask-01
Re-run
SQL Task Instance
SQL Results
SQL Warnings
Actions
Virtual Resources
Exclusive Requests
Notes
General
Instance Name
stonebranch-sqltask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-sqltask-01
Source Version
1
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Exit Code
0
Status Description
State was forced from RUNNING to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-18 16:23:17 -0400
Wait Until Time
Start Time
2023-09-18 16:23:17 -0400
End Time
2023-09-18 16:23:24 -0400
Duration
7 Seconds
SQL State
Rows Retrieved
SQL Error Message
SQL Details
Database Connection *
QA Mssql Connection
Credentials
MSSQL_Admin
Database Connection Variable
Credentials Variable
Maximum Rows
Auto Cleanup
SQL Command *
dir
Result Processing Details
Result Processing
Skip Result Processing
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count
0

5.20.4.2 SQL Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the SQL Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
SQL State	System-supplied; resolves to a return code that indicates the outcome of the most recently executed SQL statement.
Rows Retrieved	System-supplied; number of rows retrieved by the SQL procedure.
SQL Error Message	System-supplied; any error messages returned by the SQL procedure.
SQL Details	This section contains assorted detailed information about the task instance.
Database Connection	Name of the Universal Controller Database Connection that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the Database Connection field is a reference field for selecting a specific Database Connection (unchecked) or a text field for specifying the Database Connection as a variable (checked). Use the format: ${variable name} The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Database Connection reference to using a Database Connection variable, you must change the **Database Connection Variable** field to **Yes** and specify the Database Connection variable in the **Database Connection Unresolved** field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the **Database Connection Variable** field to **No** and specify the Database Connection reference in the **Database Connection** field.

Credentials	Credentials that specify the user and password for connecting to the database. These Credentials override any Credentials specified on the Database Connection. If Credentials are not specified in the Database Connection, you must specify them in the task.
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Maximum Rows	If necessary, specifies a limit to the number of rows you want returned by the SQL/Stored Procedure statement. This value overrides any value you specify in the database connection. (A default limit can be specified by the SQL/Stored Procedure Maximum Rows Universal Controller system property.) If you set Maximum Rows to 0, no content from any of the ResultSets will be retrieved (the next() method on ResultSet will not be called). Each ResultSet will be closed, but no data or rows accessed.
Auto Cleanup	When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).
SQL Command	SQL command being executed against the database. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Result Processing	Specifies how the Controller should determine whether the SQL command failed or completed successfully. Options: • Skip Result Processing • Success Exitcode Range - The SQL command is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range - The SQL command is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Result Set Contains - The SQL command is considered completed successfully depending on the value in the first row of a specific database column (see Column Name, Operator, and Value fields). • Failure Result Set Contains - The SQL command is considered failed depending on the value in the first row of a specific database column (see Column Name, Operator, and Value fields).
Exit Codes	Required if Result Processing = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Column Name	Required if Result Processing = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.

Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex. **Note** For operators >, >=, <, and <=, if the values being compared are whole numbers or decimal numbers between -9223372036854775808 and 9223372036854775807, they will be compared as numbers; otherwise, they will be compared as text lexicographically.
Value	Value being compared, using the operator specified.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.

Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.

Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.

<table>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>SQL Results</td><td>Stores results of executed SQL statements, if any.</td></tr>
<tr><td>SQL Warnings</td><td>Warnings returned by executed SQL statements, if any.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.20.5 Running a SQL Task

You can run a SQL task:

- Manually, by clicking the Launch or Launch with Variables button in the SQL tasks list or SQL Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.20.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.21 Stored Procedure Task

5.21.1 Overview

A Stored Procedure task allows you to execute a stored procedure against the database specified in the task.

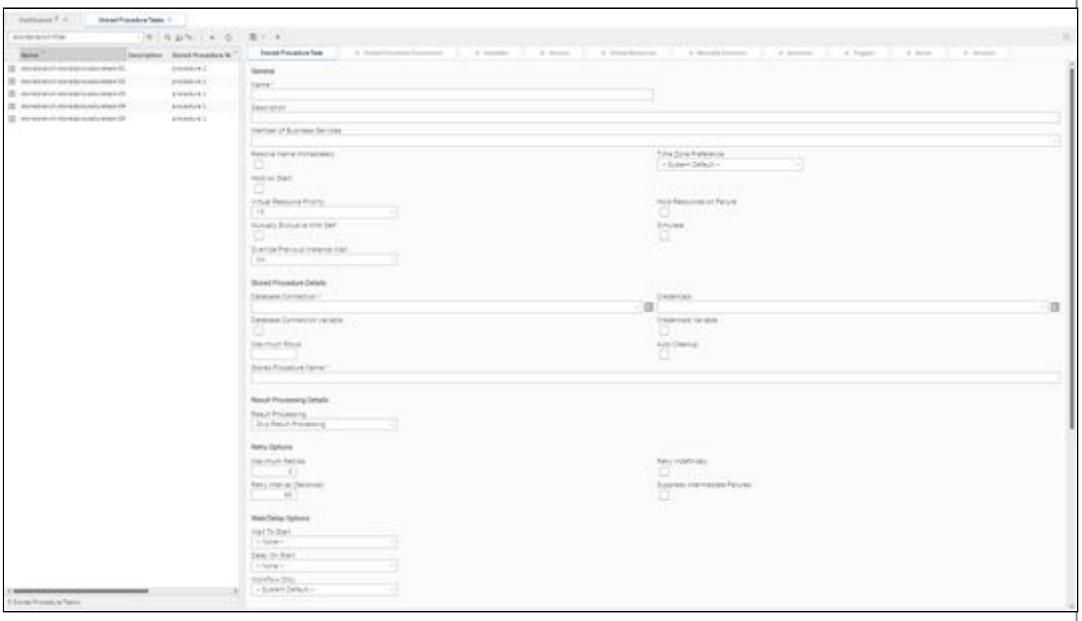
> **Note**
>
> Before you can run a Stored Procedure task, you first must create a Database Connection, which defines the information needed to locate and access the database.

5.21.2 Built-In Variables

The following built-in variables can be used in a Stored Procedure task to pass data where appropriate:

- Task Instance variables
- Stored Procedure Task Instance variables

5.21.3 Creating a Stored Procedure Task

Step 1	From the Automation Center navigation pane, select **Tasks > Stored Procedure Tasks**. The Stored Procedure Tasks list displays a list of all currently defined Stored Procedure tasks. Below the list, Stored Procedure Task Details for a new Stored Procedure task displays. 
Step 2	Enter/select Details for a new Stored Procedure task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

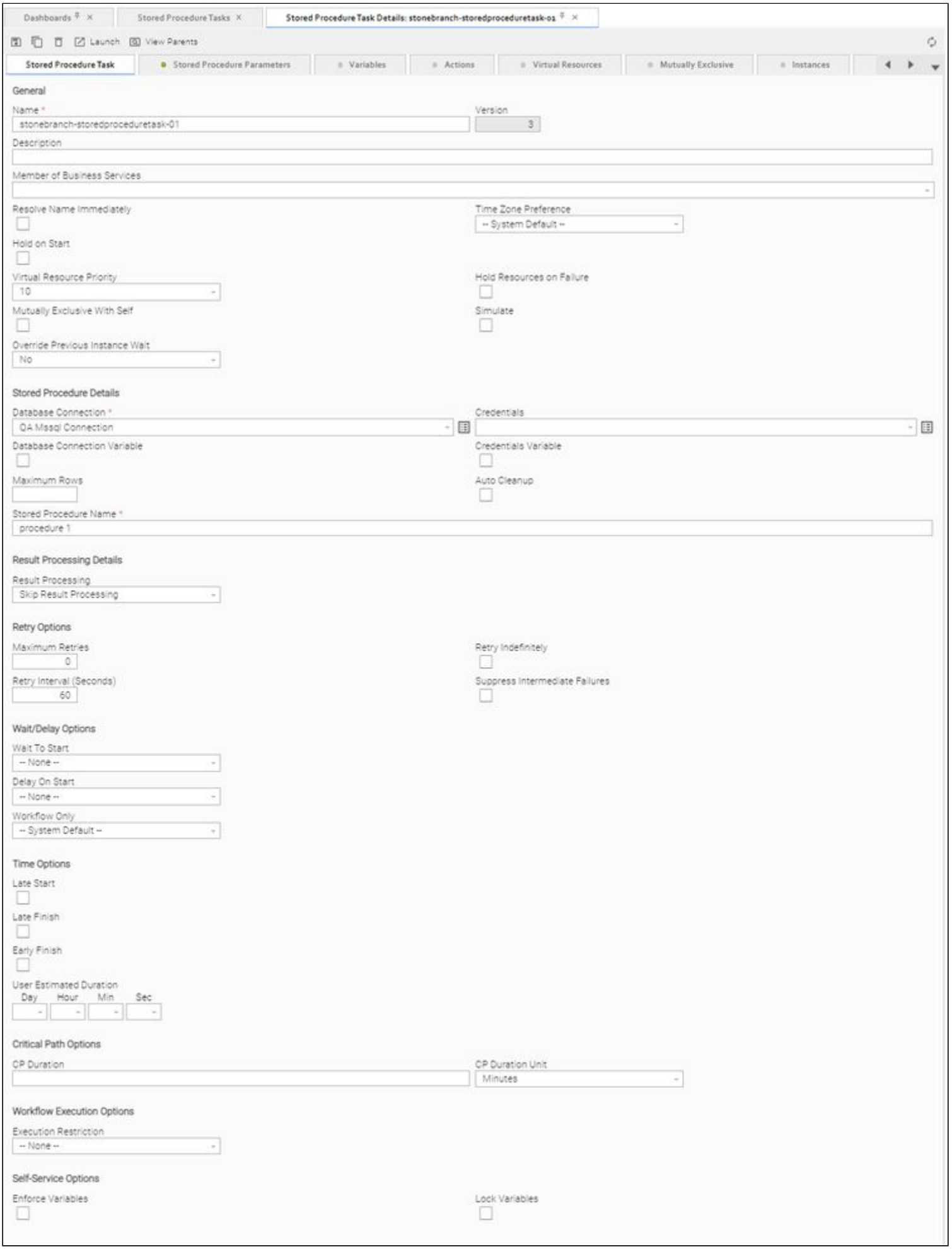
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.21.3.1 Stored Procedure Task Details

The following Stored Procedure Task Details is for an existing Stored Procedure task.

Depending on the values that you enter / select for these fields, and whether or not the Stored Procedure task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Stored Procedure Task Details.


Dashboards
Stored Procedure Tasks
Stored Procedure Task Details: stonebranch-storedproceduretask-01
Launch
View Parents
Stored Procedure Task
Stored Procedure Parameters
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
General
Name *
stonebranch-storedproceduretask-01
Version
3
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Stored Procedure Details
Database Connection *
QA Mssql Connection
Credentials
Database Connection Variable
Credentials Variable
Maximum Rows
Auto Cleanup
Stored Procedure Name *
procedure 1
Result Processing Details
Result Processing
Skip Result Processing
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit
Minutes
Workflow Execution Options
Execution Restriction
-- None --
Self-Service Options
Enforce Variables
Lock Variables

5.21.3.2 Stored Procedure Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Stored Procedure Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Stored Procedure Details	This section contains assorted detailed information about the task.
Database Connection	Name of the Universal Controller Database Connection that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the Database Connection field is a reference field for selecting a specific Database Connection (unchecked) or a text field for specifying the Database Connection as a variable (checked). Use the format: ${variable name} The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Database Connection reference to using a Database Connection variable, you must change the **Database Connection Variable** field to **Yes** and specify the Database Connection variable in the **Database Connection Unresolved** field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the **Database Connection Variable** field to **No** and specify the Database Connection reference in the **Database Connection** field.
Credentials	Credentials that specify the user and password for connecting to the database. These Credentials override any Credentials specified on the Database Connection. If Credentials are not specified in the Database Connection, you must specify them in the task.

Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Maximum Rows	If necessary, specifies a limit to the number of rows you want returned by the SQL/Stored Procedure statement. This value overrides any value you specify in the database connection. (A default limit can be specified by the SQL/Stored Procedure Maximum Rows Universal Controller system property.) If you set Maximum Rows to 0, no content from any of the ResultSets will be retrieved (the next() method on ResultSet will not be called). Each ResultSet will be closed, but no data or rows accessed.
Auto Cleanup	When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).
Stored Procedure Name	Name of the file containing the stored procedure being executed against the database. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Result Processing	Specifies how the Controller should determine whether the Stored Procedure failed or completed successfully. Options: • Skip Result Processing. • Success Exitcode Range - The Stored Procedure is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range - The Stored Procedure is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Result Set Contains - The Stored Procedure is considered completed successfully depending on the value in a specific database column (see Column Name, Operator, and Value fields). • Failure Result Set Contains - The Stored Procedure is considered failed depending on the value in a specific database column (see Column Name, Operator, and Value fields). • Success Output Parameter - The Stored Procedure is considered completed successfully if its output parameter satisfies the condition specified in the associated Parameter Position, Operator, and Value fields. • Failure Output Parameter - The Stored Procedure is considered failed if its output parameter satisfies the condition specified in the associated Parameter Position, Operator, and Value fields.
Exit Codes	Required if Result Processing = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Parameter Position	If Result Processing = Success Output Parameter or Failure Output Parameter; position of this parameter within a list of parameters.

Column Name	Required if Result Processing = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.
Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex. **Note** For operators >, >=, <, and <=, if the values being compared are whole numbers or decimal numbers between -9223372036854775808 and 9223372036854775807, they will be compared as numbers; otherwise, they will be compared as text lexicographically.
Value	Value being compared, using the operator specified.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Stored Procedure Parameters</td><td>See Adding Stored Procedure Parameters, below.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.21.4 Viewing a Stored Procedure Task Instance

When a Stored Procedure task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Stored Procedure Task Details for that task
- Activity Monitor
- Task Instances list

5.21.4.1 Stored Procedure Task Instance Details

The following Stored Procedure Task Instance Details contains information on the execution of the task shown in the Stored Procedure Task Details.

Dashboards
Stored Procedure Tasks
Stored Procedure Task Instance Details: stonebranch-storedproceduretask-01
Re-run
Stored Procedure Task Instance
SQL Results
SQL Warnings
Stored Procedure Parameters
Actions
Virtual Resources
Exclusive Reqi
General
Instance Name
stonebranch-storedproceduretask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-storedproceduretask-01
Source Version
3
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Exit Code
0
Status Description
State was forced from RUNNING to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-19 13:54:54 -0400
Wait Until Time
Start Time
2023-09-19 13:54:54 -0400
End Time
2023-09-19 13:55:05 -0400
Duration
11 Seconds
SQL State
Rows Retrieved
SQL Error Message
Stored Procedure Details
Database Connection *
QA Mssql Connection
Credentials
MSSQL_Admin
Database Connection Variable
Credentials Variable
Maximum Rows
Auto Cleanup
Stored Procedure Name *
procedure 1
Result Processing Details
Result Processing
Skip Result Processing
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Current Retry Count
0
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Statistics

5.21.4.2 Stored Procedure Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Stored Procedure Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
SQL State	System-supplied; resolves to a return code that indicates the outcome of the most recently executed SQL statement.
Rows Retrieved	System-supplied; number of rows retrieved by the SQL procedure.
SQL Error Message	System-supplied; any error messages returned by the SQL procedure.
Stored Procedure Details	This section contains assorted detailed information about the task instance.
Database Connection	Name of the Universal Controller Database Connection that defines the database. Select a database from the drop-down list or click the icon to create a new database connection.
Database Connection Variable	Indication of whether the Database Connection field is a reference field for selecting a specific Database Connection (unchecked) or a text field for specifying the Database Connection as a variable (checked). Use the format: ${variable name} The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Database Connection reference to using a Database Connection variable, you must change the **Database Connection Variable** field to **Yes** and specify the Database Connection variable in the **Database Connection Unresolved** field. Conversely, to change from using a Database Connection variable to using a Database Connection reference, you must change the **Database Connection Variable** field to **No** and specify the Database Connection reference in the **Database Connection** field.

Credentials	Credentials that specify the user and password for connecting to the database. These Credentials override any Credentials specified on the Database Connection. If Credentials are not specified in the Database Connection, you must specify them in the task.
Credentials Variable	Indication of whether the Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credential as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
Maximum Rows	If necessary, specifies a limit to the number of rows you want returned by the SQL/Stored Procedure statement. This value overrides any value you specify in the database connection. (A default limit can be specified by the SQL/Stored Procedure Maximum Rows Universal Controller system property.) If you set Maximum Rows to 0, no content from any of the ResultSets will be retrieved (the next() method on ResultSet will not be called). Each ResultSet will be closed, but no data or rows accessed.
Auto Cleanup	When data is retrieved as the result of a SQL task, the data is written into a database table. If Auto Cleanup is enabled, the data is discarded upon the successful completion of the task (or workflow if the task is contained within a workflow).
Stored Procedure Name	Name of the file containing the stored procedure being executed against the database. Variables supported.
Result Processing Details	This section contains assorted detailed information about result processing for this task.
Result Processing	Specifies how the Controller should determine whether the Stored Procedure failed or completed successfully. Options: • Skip Result Processing. • Success Exitcode Range - The Stored Procedure is considered completed successfully if its exit code falls within the range specified in the Exit Codes field. • Failure Exitcode Range - The Stored Procedure is considered failed if its exit code falls within the range specified in the Exit Codes field. • Success Result Set Contains - The Stored Procedure is considered completed successfully depending on the value in a specific database column (see Column Name, Operator, and Value fields). • Failure Result Set Contains - The Stored Procedure is considered failed depending on the value in a specific database column (see Column Name, Operator, and Value fields). • Success Output Parameter - The Stored Procedure is considered completed successfully if its output parameter satisfies the condition specified in the associated Parameter Position, Operator, and Value fields. • Failure Output Parameter - The Stored Procedure is considered failed if its output parameter satisfies the condition specified in the associated Parameter Position, Operator, and Value fields.

Exit Codes	Required if Result Processing = Success Exitcode Range or Failure Exitcode Range. Specifies the range. Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Parameter Position	If Result Processing = Success Output Parameter or Failure Output Parameter; position of this parameter within a list of parameters.
Column Name	Required if Result Processing = Success Result Set Contains or Failure Result Set Contains. Specifies the name of a database column that is being checked for a specific value.
Operator	Operator being used for the comparison. Options: =, !=, >, >=, <, <=, regex. **Note** For operators >, >=, <, and <=, if the values being compared are whole numbers or decimal numbers between -9223372036854775808 and 9223372036854775807, they will be compared as numbers; otherwise, they will be compared as text lexicographically.
Value	Value being compared, using the operator specified.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.
Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.

Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.

Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)

Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.

CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.

User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.

<table>
<tr><td>Re-run</td><td>See Re-running a Task Instance.

Note
If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options:
• Re-run
• Re-run (Suppress Intermediate Failures)

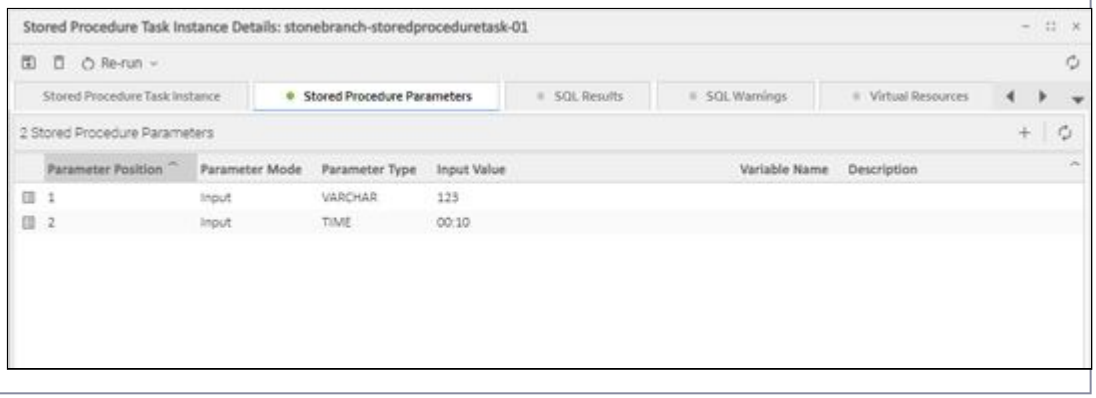
The Re-run button does not display if the task instance does not qualify for Re-run.
If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.</td></tr>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Stored Procedure Parameters</td><td>See Adding Stored Procedure Parameters, below.</td></tr>
<tr><td>SQL Results</td><td>Stores results of executed SQL statements, if any.</td></tr>
<tr><td>SQL Warnings</td><td>Warnings returned by executed SQL statements, if any.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
• Task instance status
• Exit codes
• Late start
• Late finish
• Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
</table>

Virtual Resources	Lists all Virtual Resources to which this task is assigned. If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.
Exclusive Requests	Lists all records in the Exclusive Requests table (`ops_exclusive_order`) for this task instance.
Notes	Lists all notes associated with this record.

5.21.5 Adding Stored Procedure Parameters

You can enter one or more parameters for each stored procedure, as described below.

5.21.5.1 Adding a Parameter

Step 1	Open the Stored Procedure task to which you want to add the parameter.
Step 2	Click the **Stored Procedure Parameters** tab. The Stored Procedure Parameters list displays a list of all currently defined Stored Procedure parameters. 

Step 3	Click the **New** button to display Stored Procedures Parameter Details for a new parameter.
Step 4	Use the field descriptions, below, to define the parameter.
Step 5	Click the **Save** button.

5.21.5.2 Stored Procedure Parameter Field Descriptions

Field Name	Description
Parameter Position	Position of this parameter within a list of parameters.
Parameter Mode	Mode of this parameter. Options: • Input • Output • Input/Output

Field Name	Description
Parameter Type	Type of parameter. Options: • NUMERIC • DECIMAL • INTEGER • SMALLINT • FLOAT • REAL • DOUBLE • VARCHAR • BOOLEAN • DATE The Input for date expects a real value entered in the format below. • yyyy-MM-dd • yyyy-MM-dd HH:mm • yyyy-MM-dd HH:mm:ss • yyyy-MM-dd HH:mm Z • yyyy-MM-dd HH:mm:ss Z • yyyy-MM-dd HH:mm:ss.SSS • yyyy-MM-dd HH:mm:ss.SSS Z Variables are supported as well. • TIME • TIMESTAMP • BIGINT • VARBINARY
Value is Null	If Parameter Mode = Input or Input/Output; Value for the parameter is a database NULL value; applies to the input part of a stored procedure parameter. That is, if a value in a database is undefined, it is NULL, which means it has no set value. An input value can be NULL and is represented by selecting **Value is Null**.
Input Value	If Parameter Mode = Input or Input/Output; Input value of the parameter (up to a maximum of 4000 characters), if any.
Description	Description of this parameter.
Variable Scope	If Parameter Mode = Output or Input/Output; applies to parameters associated with a task in a workflow. Scope of the variable to assign the Output value. Options: • Self • Parent • Top Level Parent • Global
Variable Name	If Parameter Mode = Output or Input/Output; name of variable to assign the Output value.

5.21.5.3 Deleting a Parameter

To delete a single parameter, either:

- Right-click the parameter on the Stored Procedure Parameters list and click **Delete** on the Action menu.

- Open the Stored Procedure Parameter record and click the **Delete** button.

5.21.6 Running a Stored Procedure Task

You can run a Stored Procedure task:

- Manually, by clicking the Launch or Launch with Variables button in the Stored Procedure tasks list or Stored Procedure Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.21.7 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.22 Email Task

5.22.1 Overview

The Email task allows you to create and send emails. In order to execute Email tasks, you first need to define an Email Connection, which defines the server information needed to create and send emails.

5.22.2 Built-In Variables

The following built-in variables can be used in an Email task to pass data where appropriate:

- Task Instance variables

5.22.3 Creating an Email Task

Step 1	From the Automation Center navigation pane, select **Tasks > Email Tasks**. The Email Tasks list displays a list of all currently defined Email tasks. To the right of list, Email Task Details for a new Email task displays.
Step 2	Enter/select Details for a new Email task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click a button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.22.3.1 Email Task Details

The following Email Task Details is for an existing Email task.

Depending on the values that you enter / select for these fields, and whether or not the Email task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Email Task Details.

Dashboards
Email Tasks
Email Task Details: stonebranch-emailtask-01
Launch
View Parents
Email Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-emailtask-01
Version
14
Description
testing attached reports
Member of Business Services
stonebranchbusinessservice 01
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Email Details
Email Template
Email Connection *
OA-OPSWISE-MAILER
Email Template Variable
Reply-To
To
john.doe@stonebranch.com
Cc
Bcc
Subject
attached Activity report
Body
Report
Report Variable
List Report Format
PDF
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
No
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options
CP Duration
CP Duration Unit

5.22.3.2 Email Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Email Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Email Details	This section contains assorted detailed information about the task.
Email Template	Name of an Email template defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template. Every Email template specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the Email Connection field. If you specify both an Email template (in this field) and an Email Connection, the Email server specified in the Email Connection field overrides the Email server specified in this field. **Note** Any information specified in an Email task (or Email Notification) overrides what is specified in an Email template.
Email Template Variable	Indication of whether the Email Template field is a reference field for selecting a specific Email Template (unchecked) or a text field for specifying the Email Template as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Email Template reference to using a Email Template variable, you must change the **Email Template Variable** field to **Yes** and specify the Email Template variable in the **Email Template Unresolved** field. Conversely, to change from using an Email Template variable to using an Email Template reference, you must change the **Email Template Variable** field to **No** and specify the Email Template reference in the **Email Template** field.

Email Connection	Required if an Email Template is not specified in the Email Template field; Name of an outgoing Email Connection (Type = Outgoing). An Email Connection specifies information about an outgoing or incoming email server. Enter the name of an existing outgoing Email Connection, select an existing outgoing Email Connection from the drop-down list, or clear the Email Connection field and click the Details icon to create a new Email Connection (Outgoing will be pre-selected in the Type field). If you specify both an Email Template and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the Email Template field.
Reply-To	Email address of the sender. Use commas to separate multiple recipients. Variables and functions supported.
To	Email address of the recipient. Use commas to separate multiple recipients. Variables and functions supported.
Cc	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
Bcc	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
Subject	Subject line of the email. Variables and functions supported.
Body	Text of the email message. Variables and functions supported. **Note** If both the Email Template and the Email Task (or Email Notification) contain text in the Body, the text in the Email Template is appended to the text in the Email Task (or Email Notification).
Report	Report to attach to this email.
Report Variable	Indication of whether the Report field is a reference field for selecting a specific Report (unchecked) or a text field for specifying the Report as a variable (checked). Use the format: `${variable name}` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a report reference to using a report variable, you must change the **Report Variable** field to **Yes** and specify the report variable in the **Report Unresolved** field. Conversely, to change from using a report variable to a using a report reference, you must change the **Report Variable** field to **No** and specify the report reference in the **Report** field.

List Report Format	Report format Options: • PDF • XML • JSON • CSV • TSV If the attached report is not a List type report, this option will be ignored.
Attach Local File	If the uc.email.attachments.local.path Universal Controller Start-Up Property specifies a local directory; specification for whether or not to attach a local file to the task.
Local Attachments Path	If Attach Local File is selected; Read-Only field showing the location of Local Attachments for the connected Node.
Local Attachment	If Attach Local File is selected; Name of the file(s) to attach. Supports variables as well as comma-separated list of file names.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.

Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

<table>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.22.3.3 Report Variable Resolution

Reports do not have to be unique by Title. However, Reports with the same Title must be unique per visibility: per User, per Group, and per Everyone.

Accordingly, the following applies regarding Report Variable field resolution.

Once resolved, the Report Variable field value could match multiple Reports with the same Title, but with different visibilities. Therefore, there is an order of precedence to choosing the report by Title:

1. User visibility (execution user).
2. Group visibility (execution user's groups).
3. Everyone visibility.
4. Any other report(s). (This is applicable only in the case of an administrator who can view all reports.)

If the execution user belongs to more than one Group, and there is more than one report matching the Title visible to those Groups, the first report found will be chosen.

If multiple reports are found by resolved report Title, the following will be logged:

```
Found more than one report with name <report-title> visible to execution user <execution-user>.
```

If the resolved report Title does not match any report visible to the execution user, the task instance will transition into the Start Failure status with the following status description:

```
Could not find report with name <report-title> visible to execution user <execution-user>.
```

If the Report Variable cannot be resolved, the task instance will transition into the Start Failure status with the following status description:

```
Report variable not resolved.
```

A Report Variable that resolves to blank implies that no report should be included. This is not considered an error; the task instance will proceed as normal.

5.22.4 Viewing an Email Task Instance

When an Email task is launched, the Controller creates a task instance record of that task.

A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Email Task Details for that task
- Activity Monitor
- Task Instances list

5.22.4.1 Email Task Instance Details

The following Email Task Instance Details contains information on the execution of the task shown in the Email Task Details.

Dashboards
Email Tasks
Email Task Details: stonebranch-emailtask-01
Email Task Instance Details: stonebranch-emailtask-01
Re-run
Email Task Instance
Actions
Virtual Resources
Exclusive Requests
Notes
General
Instance Name
stonebranch-emailtask-01
Instance Number
2
Description
testing attached reports
Member of Business Services
stonebranchbusinessservice 01
Task
stonebranch-emailtask-01
Source Version
14
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Status Description
Could not send email. Can't send command to SMTP host -> State was forced from FAILED to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-19 14:02:42 -0400
Wait Until Time
Start Time
2023-09-19 14:02:42 -0400
End Time
2023-09-19 14:02:47 -0400
Duration
5 Seconds
Email Details
Email Template
Email Connection *
OA-OPSWISE-MAILER
Email Template Variable
Reply-To
To
john.doe@stonebranch.com
Cc
Bcc
Subject
attached Activity report
Body
Report
Report Variable
List Report Format
PDF
Wait/Delay Options

5.22.4.2 Email Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Email Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Email Details	This section contains assorted detailed information about the task instance.
Email Template	Name of an Email template defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template. Every Email template specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the Email Connection field. If you specify both an Email template (in this field) and an Email Connection, the Email server specified in the Email Connection field overrides the Email server specified in this field. **Note** Any information specified in an Email task (or Email Notification) overrides what is specified in an Email template.
Email Template Variable	Indication of whether the Email Template field is a reference field for selecting a specific Email Template (unchecked) or a text field for specifying the Email Template as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Email Template reference to using a Email Template variable, you must change the **Email Template Variable** field to **Yes** and specify the Email Template variable in the **Email Template Unresolved** field. Conversely, to change from using an Email Template variable to using an Email Template reference, you must change the **Email Template Variable** field to **No** and specify the Email Template reference in the **Email Template** field.

Email Connection	Required if an Email Template is not specified in the Email Template field; Name of an outgoing Email Connection (Type = Outgoing). An Email Connection specifies information about an outgoing or incoming email server. Enter the name of an existing outgoing Email Connection, select an existing outgoing Email Connection from the drop-down list, or clear the Email Connection field and click the Details icon to create a new Email Connection (Outgoing will be pre-selected in the Type field). If you specify both an Email Template and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the Email Template field.
Reply-To	Email address of the sender. Use commas to separate multiple recipients. Variables and functions supported.
To	Email address of the recipient. Use commas to separate multiple recipients. Variables and functions supported.
Cc	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
Bcc	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
Subject	Subject line of the email. Variables and functions supported.
Body	Text of the email message. Variables and functions supported. **Note** If both the Email Template and the Email Task (or Email Notification) contain text in the Body, the text in the Email Template is appended to the text in the Email Task (or Email Notification).
Report	Report to attach to this email.
Report Variable	Indication of whether the Report field is a reference field for selecting a specific Report (unchecked) or a text field for specifying the Report as a variable (checked). Use the format: `${variable name}` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a report reference to using a report variable, you must change the **Report Variable** field to **Yes** and specify the report variable in the **Report Unresolved** field. Conversely, to change from using a report variable to a using a report reference, you must change the **Report Variable** field to **No** and specify the report reference in the **Report** field.

List Report Format	Report format Options: • PDF • XML • JSON • CSV • TSV If the attached report is not a List type report, this option will be ignored.
Attach Local File	If the uc.email.attachments.local.path Universal Controller Start-Up Property specifies a local directory; specification for whether or not to attach a local file to the task.
Local Attachments Path	If Attach Local File is selected; Read-Only field showing the location of Local Attachments for the connected Node.
Local Attachment	If Attach Local File is selected; Name of the file(s) to attach. Supports variables as well as comma-separated list of file names.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.

Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.

Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.

Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.

CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.

Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.
Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.

<table>
<tr><td>View Parent</td><td>Displays the task instance Details for the parent Workflow of this task instance.</td></tr>
<tr><td>Retrieve Output</td><td>See Retrieving Output.</td></tr>
<tr><td>Delete</td><td>Deletes the current record.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task instance.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.</td></tr>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.22.5 Running an Email Task

You can run an Email task:

- Manually, by clicking the Launch or Launch with Variables button in the Email Tasks list or Email Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.22.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.23 Web Service Task

5.23.1 Overview

The Web Service Task allows you to invoke a Web Service running on any application server.

5.23.2 SSL/TLS Secured HTTPS

Web Service Tasks support the use of https:// instead of the non-encrypted http:// for the Web Service Task URL.

This requires setting up a truststore (keystore) and setting the following properties in the Universal Controller Start-up Properties (uc.properties) file:

- uc.trustmanager.truststore
- uc.trustmanager.truststore.password

You must make sure that the HTTPS server's certificate (or root certificate) exists in the truststore that is referenced by these two properties. This is required to validate the remote web service providers identity. Universal Controller does not provide an option to bypass https certificate validation.

The hostname in your URL is verified against the certificate and must match the certificate's CN (Common Name) or SAN (Subject Alternative Name).

5.23.3 Preemptive Authentication

The default behavior of Apache HttpClient library used by the Web Service task is to not use pre-emptive authentication out of the box, because if misused or used incorrectly, the preemptive authentication can lead to significant security issues, such as sending user credentials in clear text to an unauthorized third party.

Therefore, users are expected to evaluate potential benefits of preemptive authentication versus security risks in the context of their specific application environment. Thus, Web Service Tasks using Basic Authentication will not pre-emptively send authentication credentials until prompted by the receiving API. Please see the following link for more information.

https://hc.apache.org/httpcomponents-client-4.5.x/current/tutorial/html/authentication.html#d5e717

5.23.4 Built-In Variables

The following built-in variables can be used in a Web Service task to pass data where appropriate:

- Task Instance variables
- Web Service Task Instance variables

5.23.5 Creating a Web Service Task

Step 1	From the Automation Center navigation pane, select **Tasks > Web Service Tasks**. The Web Service Tasks list displays a list of all currently defined Web Service tasks. To the right of the list, Web Service Task Details for a new Web Service task displays.
Step 2	Enter/select Details for a new Web Service task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click the save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

To open an existing record on the list, either:

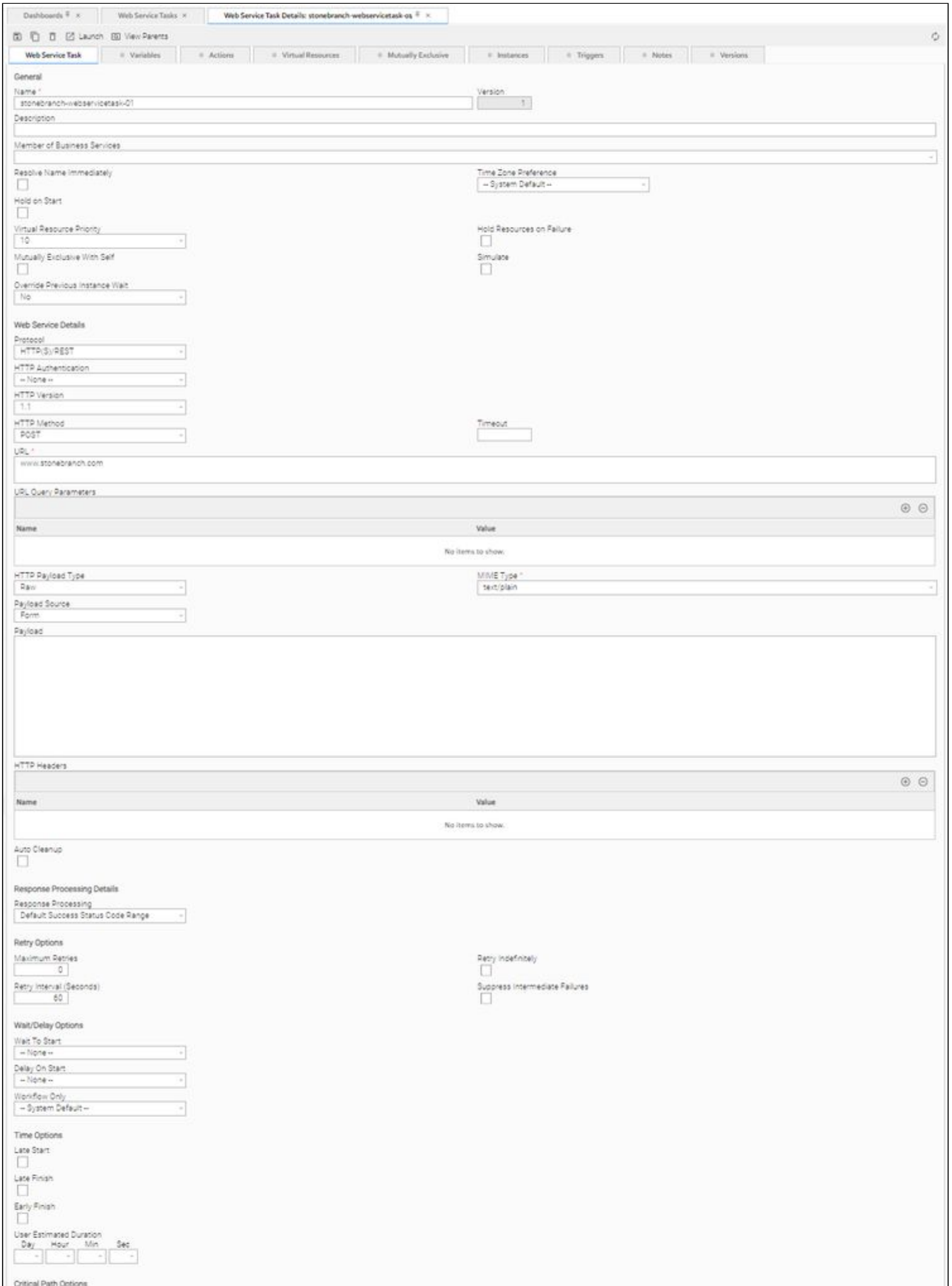
- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)

- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.23.5.1 Web Service Task Details

The following Web Service Task Details is for an existing Web Service task.

Depending on the values that you enter / select for these fields, and whether or not the Web Service task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Web Service Task Details.


Dashboards
Web Service Tasks
Web Service Task Details: stonebranch-webservicetask-01
Launch
View Parents
Web Service Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
Notes
Versions
General
Name *
stonebranch-webservicetask-01
Version
1
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Web Service Details
Protocol
HTTP(S)/REST
HTTP Authentication
-- None --
HTTP Version
1.1
HTTP Method
POST
Timeout
URL *
www.stonebranch.com
URL Query Parameters
Name
Value
No items to show.
HTTP Payload Type
Raw
MIME Type *
text/plain
Payload Source
Form
Payload
HTTP Headers
Name
Value
No items to show.
Auto Cleanup
Response Processing Details
Response Processing
Default Success Status Code Range
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options

5.23.5.2 Web Service Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Web Service Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.

Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Web Service Details	This section contains assorted detailed information about the task.
Protocol	Protocol to use for the operation. Options: • HTTP(S)/REST • SOAP Default is HTTP(S)/REST.
HTTP Authentication	HTTP authentication scheme to use. Options: • - - None - - • Basic Default is - - None - -.
Credentials	If HTTP Authentication = Basic; Credentials used when invoking the Web Service.

Credentials Variable	If Credentials Variable - Web Service#HTTP Authentication = Basic; Indication of whether the Credentials Variable - Web Service#Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credentials Variable - Web Service#Credential as a variable (checked). Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
HTTP Version	Version of the HTTP protocol to use. Options: • 1.0 • 1.1 Default is 1.1.
Insecure	Allows the Web Service task to use a TLS/SSL connection that is considered to be insecure. **Note** The Insecure field displays only if: • Protocol is HTTP(S)/RES. • Web Service Task Insecure Permitted (HTTP) Universal Controller system property is set to true.
HTTP Method	If Protocol = HTTP(S)/REST; Type of HTTP request method to use. Options: • GET • POST • PUT • PATCH • DELETE Default is POST.
SOAP Version	If Protocol = SOAP; Version of the SOAP protocol to use. Options: • 1.1 • 1.2 Default is 1.2.
Timeout	Number of seconds to wait for the request to complete. If no value is specified, the value defaults to the Web Service Task Timeout Universal Controller property value.

URL	URL of the target service, excluding query parameters. Optionally, you can include query parameters directly on the URL; however, the query string must be properly URL-encoded. In other words, the URL must be valid. For specifying unencoded query parameters, use URL Query Parameters. **Note** The Web Service Task URL Whitelist Regular Expression Universal Controller system property specifies which URLs are supported by the Web Service task. (The default allows all URLs to be supported.) If a task instance attempts to run, but this URL does not match a URL specified by Web Service Task URL Whitelist Regular Expression, the task instance transitions to a Start Failure with an appropriate Status Description.
URL Query Parameters	Any query parameters to be encoded as a query string and appended to the URL. Parameter values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
HTTP Payload Type	If Protocol = HTTP(S)/REST and HTTP Method = POST, PUT, or PATCH; Type of HTTP payload. Options: • Raw • Form Data Default is Raw.
MIME Type	If Protocol = HTTP(S)/REST; MIME type of the message body. Options: • application/javascript • application/json • application/xml • text/html • text/plain • text/xml • Other... No default. **Note** If HTTP Payload Type = Form Data, MIME Type is automatically assigned a value of **application/x-www-form-urlencoded** and becomes read only.
Form Data	If HTTP Payload Type = Form Data; Any parameters to be encoded and added to the message body. Parameter values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.

SOAP Payload Type	If Protocol = SOAP; Type of SOAP payload. Options: • Body • Envelope Default is Body.
SOAP Action	If Protocol = SOAP; Value of: • SOAPAction HTTP Header field in SOAP 1.1 • action parameter in SOAP 1.2
Payload Source	If HTTP Payload Type = Raw; Specification for whether the payload is defined directly in this form (task Details) or if it is a reference to a script that contains the content of the request payload. Options: • Form • Script Default is Form.
Payload	If Payload Source = Form; Request payload. Supports Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
Payload Script	If Payload Source = Script; Script that contains the content of the request payload. Supports Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
HTTP Headers	HTTP headers Values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
SOAP Response Output	If Protocol = SOAP; Element of the SOAP response to be captured as output. Options: • Body/First Element • Body • Envelope Default is Body/First Element.
Auto Cleanup	Specification for whether or not to enable the auto clean-up of Web Service response output upon task instance completion or, if the task instance is within a workflow, when the top-level workflow instance completes.
Response Processing Details	This section contains assorted detailed information about response processing for this task.
Response Processing	Specification for how to process the response in order to determine success or failure. Options: • Default Success Status Code Range • Success Status Code Range • Failure Status Code Range • Success Output Contains • Failure Output Contains Default is Default Success Status Code Range.
Status Codes	If Response Processing = Success Status Code Range or Failure Status Code Range; Qualifying status codes. Format: 200-299,503.

Output Type	If Response Processing = Success Output Contains or Failure Output Contains; Output type that the Response Processing mechanism should assume when evaluating the output. If the expected output is XML or JSON, it is valid to specify Text. However, when specifying XML or JSON, the output must be XML or JSON, respectively; otherwise, the parsing will fail and the path expression evaluation will return no matches. Options: • Text • XML • JSON Default is Text.
Path Expression	XPath Expression (if Output Type = XML) or JSON Path Expression (if Output Type = JSON) to be used when evaluating the response output. Refer to https://www.w3schools.com/xml/xpath_intro.asp and https://github.com/json-path/JsonPath respectively for more details.
Strategy	If Output Type = XML or JSON; Strategy to take when applying the condition Operator and Value against the Path Expression matches. Options: • Match Any • Match All • Match None • Count Default is Match Any.
Operator	If Response Processing = Success Output Contains or Failure Output Contains; Condition operator to evaluate in combination with the specified condition Value. Options: • = • != • > • >= • < • <= • regex Default is =.
Value	If Response Processing = Success Output Contains or Failure Output Contains; Condition value to evaluate in combination with the specified condition Operator.
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/ Problems status.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for task instances of the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.

Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration

Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.

Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Critical Path Options	This section contains Critical Path-related specifications for the task.

CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.

Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.

<table>
<tr><td>Delete</td><td>Deletes the current record.

Note
You cannot delete a task if it is either:
• Specified in an enabled Trigger.
• The only task specified in a disabled Trigger.</td></tr>
<tr><td>Refresh</td><td>Refreshes any dynamic data displayed in the Details.</td></tr>
<tr><td>Close</td><td>For pop-up view only; closes the pop-up view of this task.</td></tr>
<tr><td>Tabs</td><td>This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.</td></tr>
<tr><td>Variables</td><td>Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.</td></tr>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
• Task instance status
• Exit codes
• Late start
• Late finish
• Early finish
Actions are:
<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
</table>

Instances	Lists all instances of the task.
Triggers	List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.
Notes	Lists all notes associated with this record.
Versions	Stores copies of all previous versions of the current record. See Record Versioning.

5.23.6 Viewing a Web Service Task Instance

When a Web Service task is launched, the Controller creates a task instance record of that task.

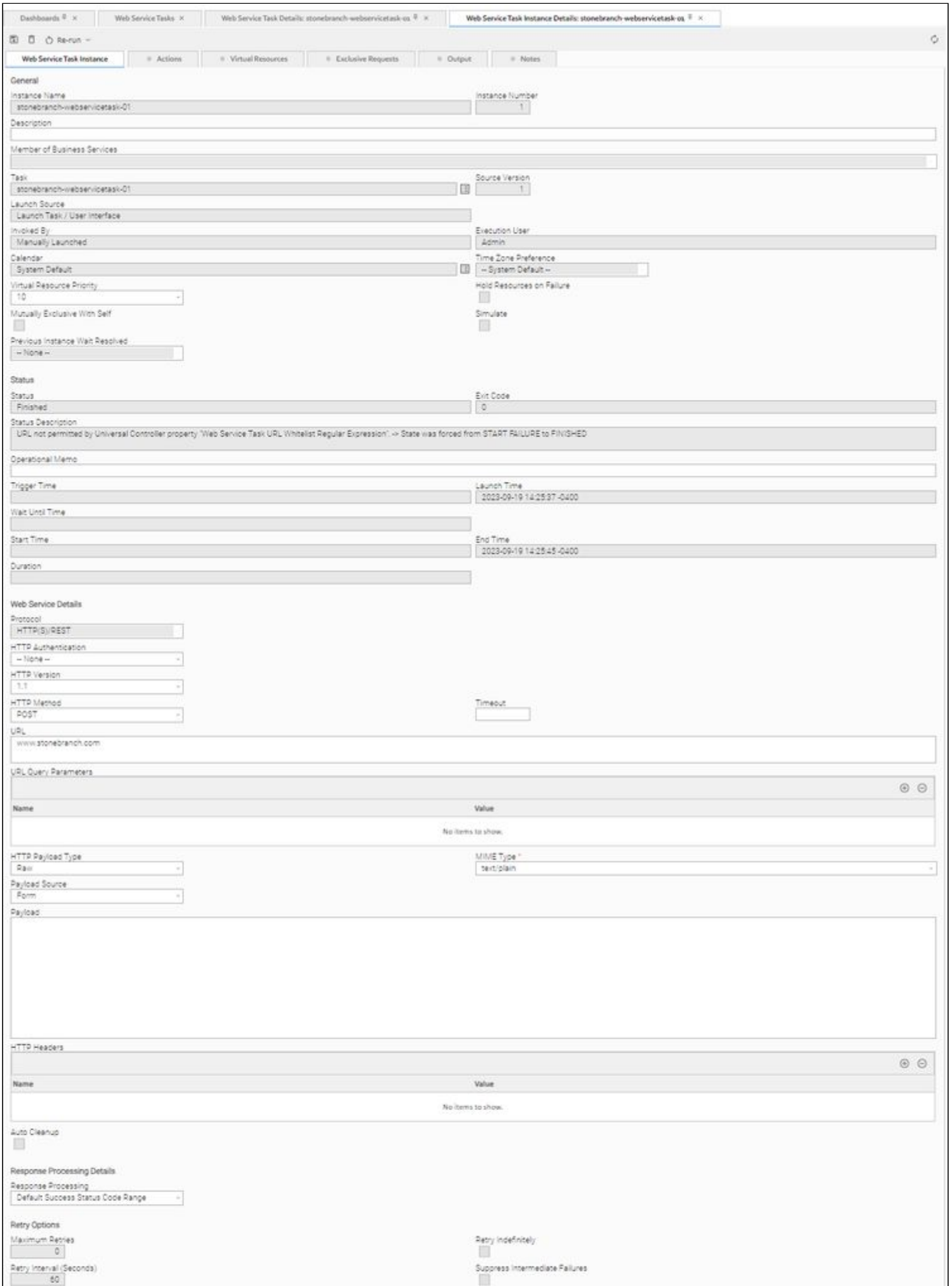
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Web Service Task Details for that task
- Activity Monitor
- Task Instances list

5.23.6.1 Web Service Task Instance Details

The following Web Service Task Instance Details contains information on the execution of the task shown in the Web Service Task Details.


Dashboards
Web Service Tasks
Web Service Task Details: stonebranch-webservicetask-01
Web Service Task Instance Details: stonebranch-webservicetask-01
Re-run
Web Service Task Instance
Actions
Virtual Resources
Exclusive Requests
Output
Notes
General
Instance Name
stonebranch-webservicetask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-webservicetask-01
Source Version
1
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Finished
Exit Code
0
Status Description
URL not permitted by Universal Controller property 'Web Service Task URL Whitelist Regular Expression'. -> State was forced from START FAILURE to FINISHED
Operational Memo
Trigger Time
Launch Time
2023-09-19 14:25:37 -0400
Wait Until Time
Start Time
End Time
2023-09-19 14:25:45 -0400
Duration
Web Service Details
Protocol
HTTP(S)/REST
HTTP Authentication
-- None --
HTTP Version
1.1
HTTP Method
POST
Timeout
URL
www.stonebranch.com
URL Query Parameters
Name
Value
No items to show.
HTTP Payload Type
Raw
MIME Type *
text/plain
Payload Source
Form
Payload
HTTP Headers
Name
Value
No items to show.
Auto Cleanup
Response Processing Details
Response Processing
Default Success Status Code Range
Retry Options
Maximum Retries
0
Retry Indefinitely
Retry Interval (Seconds)
60
Suppress Intermediate Failures

5.23.6.2 Web Service Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Web Service Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Source Instance	System-supplied; UUID of the source instance. • If the instance was directly launched by a **Trigger Now** command; the UUID of the instance invoking the System Operation. • If the instance was launched by a workflow; the UUID of the workflow instance. • If the instance was directly launched by the **Launch Task** command; the UUID of the instance invoking the System Operation. • If the instance was directly launched by a **Recurring Task Instance;** the UUID of the **Recurring Task Instance**.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.

Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.

Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)
Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Trigger	Trigger, if any, on whose behalf the Task Monitor task is monitoring other tasks.
Task Instance Matched	Last task that matched the specifications of the task(s) being monitored.
Web Service Details	This section contains assorted detailed information about the task instance.
Protocol	Protocol to use for the operation. Options: • HTTP(S)/REST • SOAP Default is HTTP(S)/REST.
HTTP Authentication	HTTP authentication scheme to use. Options: • - - None - - • Basic Default is - - None - -.
Credentials	If HTTP Authentication = Basic; Credentials used when invoking the Web Service.

Credentials Variable	If Credentials Variable - Web Service#HTTP Authentication = Basic; Indication of whether the Credentials Variable - Web Service#Credentials field is a reference field for selecting a specific Credential (unchecked) or a text field for specifying the Credentials Variable - Web Service#Credential as a variable (checked). Use the format: `${variable name}.` The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Credentials reference to using a Credentials variable, you must change the **Credentials Variable** field to **Yes** and specify the Credentials variable in the **Credentials Unresolved** field. Conversely, to change from using a Credentials variable to using a Credentials reference, you must change the **Credentials Variable** field to **No** and specify the Credentials reference in the **Credentials** field.
HTTP Version	Version of the HTTP protocol to use. Options: • 1.0 • 1.1 Default is 1.1.
Insecure	Allows the Web Service task to use a TLS/SSL connection that is considered to be insecure. **Note** The Insecure field displays only if: • Protocol is HTTP(S)/RES. • Web Service Task Insecure Permitted (HTTP) Universal Controller system property is set to true.
HTTP Method	If Protocol = HTTP(S)/REST; Type of HTTP request method to use. Options: • GET • POST • PUT • PATCH • DELETE Default is POST.
SOAP Version	If Protocol = SOAP; Version of the SOAP protocol to use. Options: • 1.1 • 1.2 Default is 1.2.
Timeout	Number of seconds to wait for the request to complete. If no value is specified, the value defaults to the Web Service Task Timeout Universal Controller property value.

URL	URL of the target service, excluding query parameters. Optionally, you can include query parameters directly on the URL; however, the query string must be properly URL-encoded. In other words, the URL must be valid. For specifying unencoded query parameters, use URL Query Parameters. **Note** The Web Service Task URL Whitelist Regular Expression Universal Controller system property specifies which URLs are supported by the Web Service task. (The default allows all URLs to be supported.) If a task instance attempts to run, but this URL does not match a URL specified by Web Service Task URL Whitelist Regular Expression, the task instance transitions to a Start Failure with an appropriate Status Description.
URL Query Parameters	Any query parameters to be encoded as a query string and appended to the URL. Parameter values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
HTTP Payload Type	If Protocol = HTTP(S)/REST and HTTP Method = POST, PUT, or PATCH; Type of HTTP payload. Options: • Raw • Form Data Default is Raw.
MIME Type	If Protocol = HTTP(S)/REST; MIME type of the message body. Options: • application/javascript • application/json • application/xml • text/html • text/plain • text/xml • Other... No default. **Note** If HTTP Payload Type = Form Data, MIME Type is automatically assigned a value of **application/x-www-form-urlencoded** and becomes read only.
Form Data	If HTTP Payload Type = Form Data; Any parameters to be encoded and added to the message body. Parameter values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.

SOAP Payload Type	If Protocol = SOAP; Type of SOAP payload. Options: • Body • Envelope Default is Body.
SOAP Action	If Protocol = SOAP; Value of: • SOAPAction HTTP Header field in SOAP 1.1 • action parameter in SOAP 1.2
Payload Source	If HTTP Payload Type = Raw; Specification for whether the payload is defined directly in this form (task Details) or if it is a reference to a script that contains the content of the request payload. Options: • Form • Script Default is Form.
Payload	If Payload Source = Form; Request payload. Supports Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
HTTP Headers	HTTP headers Values support Resolvable Credential functions if both Web Service Task Resolvable Credentials Functions Permitted and Resolvable Credentials Permitted system properties are true.
SOAP Response Output	If Protocol = SOAP; Element of the SOAP response to be captured as output. Options: • Body/First Element • Body • Envelope Default is Body/First Element.
Auto Cleanup	Specification for whether or not to enable the auto clean-up of Web Service response output upon task instance completion or, if the task instance is within a workflow, when the top-level workflow instance completes.
Response Processing Details	This section contains assorted detailed information about response processing for this task.
Response Processing	Specification for how to process the response in order to determine success or failure. Options: • Default Success Status Code Range • Success Status Code Range • Failure Status Code Range • Success Output Contains • Failure Output Contains Default is Default Success Status Code Range.
Status Codes	If Response Processing = Success Status Code Range or Failure Status Code Range; Qualifying status codes. Format: 200-299,503.

Output Type	If Response Processing = Success Output Contains or Failure Output Contains; Output type that the Response Processing mechanism should assume when evaluating the output. If the expected output is XML or JSON, it is valid to specify Text. However, when specifying XML or JSON, the output must be XML or JSON, respectively; otherwise, the parsing will fail and the path expression evaluation will return no matches. Options: • Text • XML • JSON Default is Text.
Path Expression	XPath Expression (if Output Type = XML) or JSON Path Expression (if Output Type = JSON) to be used when evaluating the response output. Refer to https://www.w3schools.com/xml/xpath_intro.asp and https://github.com/json-path/JsonPath respectively for more details.
Strategy	If Output Type = XML or JSON; Strategy to take when applying the condition Operator and Value against the Path Expression matches. Options: • Match Any • Match All • Match None • Count Default is Match Any.
Operator	If Response Processing = Success Output Contains or Failure Output Contains; Condition operator to evaluate in combination with the specified condition Value. Options: • = • != • > • >= • < • <= • regex Default is =.
Value	If Response Processing = Success Output Contains or Failure Output Contains; Condition value to evaluate in combination with the specified condition Operator.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.

Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.

Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.

Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.

Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.

Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task instance.
Tabs	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.

<table>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table>
<tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr>
<tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr>
<tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr>
<tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr>
<tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr>
</table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.23.7 Running a Web Service Task

You can run a Web Service task:

- Manually, by clicking the Launch or Launch with Variables button in the Web Service Tasks list or Web Service Task Details Action menu .
- As part of a workflow .
- Specify triggers that run the task automatically based on times or events.

5.23.8 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

5.24 Recurring Task

5.24.1 Overview

The Recurring Task allows you to specify a target task, of any task type, along with recurrence options, to control when and how many times the target task is launched by that Recurring task.

5.24.2 Built-In Variables

The following built-in variables can be used in a Recurring task to pass data where appropriate:

- Task Instance variables
- Recurring Task Instance variables

5.24.3 Creating a Recurring Task

Step 1	From the Automation Center navigation pane, select **Tasks > Recurring Tasks**. The Recurring Tasks list displays a list of all currently defined Recurring tasks. To the right of the list, Recurring Task Details for a new Recurring task displays.
Step 2	Enter/select Details for a new Recurring task, using the field descriptions below as a guide. • Required fields display an asterisk (*) after the field name. • Default values for fields, if available, display automatically. To display more of the Details fields on the screen, you can either: • Use the scroll bar. • Temporarily hide the list above the Details. • Click the + button above the list to display a pop-up version of the Details.
Step 3	Click the save button. The task is added to the database, and all buttons and tabs in the Task Details are enabled.

Note

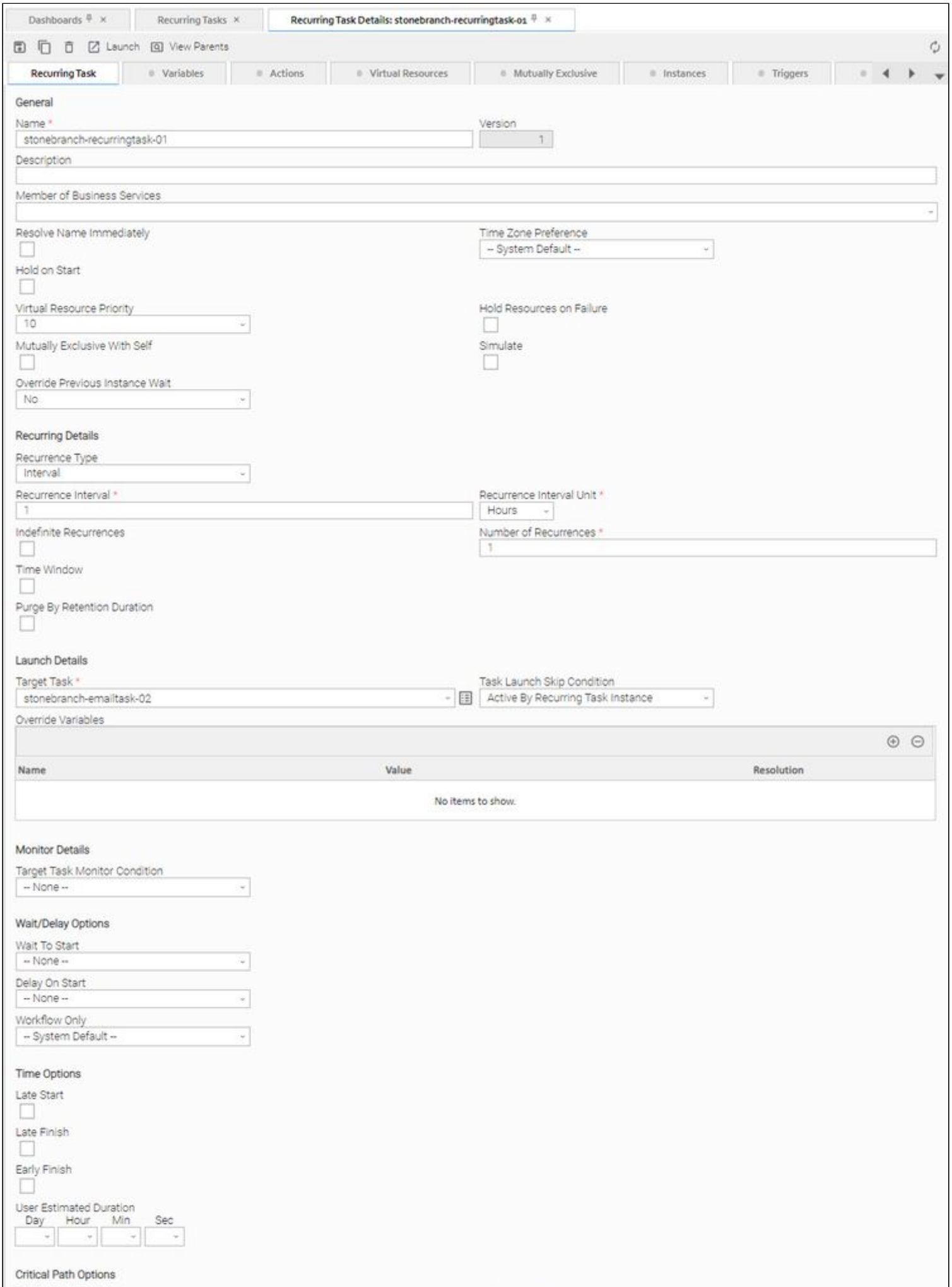
To open an existing record on the list, either:

- Click a record in the list to display its record Details below the list. (To clear record Details below the list, click the **New** button that displays above and below the Details.)
- Clicking the Details icon next to a record name in the list, or right-click a record in the list and then click **Open** in the Action menu that displays, to display a pop-up version of the record Details.
- Right-click a record in the a list, or open a record and right-click in the record Details, and then click **Open In Tab** in the Action menu that displays, to display the record Details under a new tab on the record list page (see Record Details as Tabs).

5.24.3.1 Recurring Task Details

The following Recurring Task Details is for an existing Recurring task.

Depending on the values that you enter / select for these fields, and whether or not the Recurring task has ever been launched, more (or less) fields may display. See the field descriptions, below, for a description of all fields that may display in the Recurring Task Details.


Dashboards
Recurring Tasks
Recurring Task Details: stonebranch-recurringtask-01
Launch
View Parents
Recurring Task
Variables
Actions
Virtual Resources
Mutually Exclusive
Instances
Triggers
General
Name *
stonebranch-recurringtask-01
Version
1
Description
Member of Business Services
Resolve Name Immediately
Time Zone Preference
-- System Default --
Hold on Start
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Override Previous Instance Wait
No
Recurring Details
Recurrence Type
Interval
Recurrence Interval *
1
Recurrence Interval Unit *
Hours
Indefinite Recurrences
Number of Recurrences *
1
Time Window
Purge By Retention Duration
Launch Details
Target Task *
stonebranch-emailtask-02
Task Launch Skip Condition
Active By Recurring Task Instance
Override Variables
Name
Value
Resolution
No items to show.
Monitor Details
Target Task Monitor Condition
-- None --
Wait/Delay Options
Wait To Start
-- None --
Delay On Start
-- None --
Workflow Only
-- System Default --
Time Options
Late Start
Late Finish
Early Finish
User Estimated Duration
Day
Hour
Min
Sec
Critical Path Options

5.24.3.2 Recurring Task Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in the Recurring Task Details.

Field Name	Description
General	This section contains general information about the task.
Name	User-defined name of this task (Maximum = 255 alphanumeric characters); variables supported. It is the responsibility of the user to develop a workable naming scheme for tasks.
Version	System-supplied; version number of the current record, which is incremented by the Controller every time a user updates a record. Click the Versions tab to view previous versions. For details, see Record Versioning.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Resolve Name Immediately	If enabled, the Instance Name of the task instance will be resolved immediately at trigger/ launch time.
Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Hold on Start	If enabled, when the task is launched it appears in the Activity Monitor with a status of **Held**. The task runs when the user releases it.
Hold Reason	Information about why the task will be put on hold when it starts.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.

Simulate	Specifies if the instance should execute under simulation mode.
Override Previous Instance Wait	Specifies whether or not to override the parent workflow's **Previous Instance Wait** configuration. This option only applies for an instance running within a workflow. Options: • No Behavior determined by the parent workflow configuration. • Yes / -- None -- Regardless of the parent workflow configuration, the task instance will never wait for a previous instance to complete. • Yes / Wait for Last Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Yes / Wait for Last / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Yes / Wait for All Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Yes / Wait for All / Same Workflow Regardless of the parent workflow configuration, the task instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Recurring Details	This section contains assorted detailed information about the task.
Recurrence Type	Type of recurrence. Valid values: • Interval Recurrence will occur on the interval specified by Recurrence Interval, Recurrence Interval Unit, and/or Indefinite Recurrences / Number of Recurrences. • On Recurrence will occur on the day and time specified in Recurrence Time List.
Recurrence Time List	If Recurrence Type = On; List of Times and Days on which runs of the Target Task will recur.
Recurrence Interval	Amount of time to wait - based on the time unit specified in Recurrence Interval Unit - between runs of the specified Target Task. The default value, as specified in the Recurring Task Minimum Frequency In Seconds Universal Controller system property, is 5 (seconds). The minimum value is 0.
Recurrence Interval Unit	Units of time to wait - based on the time specified in Recurrence Interval - between runs of the specified Target Task. Options: • Seconds • Minutes • Hours
Indefinite Recurrences	Indication that the recurrence of runs for the specified Target Task will occur indefinitely.
Number of Recurrences	If Indefinite Occurrences is not selected; Number of times that runs of the specified Target Task will occur.
Time Window	If Indefinite Occurrences is not selected; Indication that the Target Task will run within a specified time frame.
Purge By Retention Duration	Specification for whether task instances launched by the Recurring Task instance can be purged by retention duration.

Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.
Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366. If Retention Duration Unit = Hours, valid values are 1 to 24.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Interval Start Time (HH:MM)	If Time Window is selected; Starting time of day that runs of the specified Target Task will occur.
Interval End Time (HH:MM)	If Time Window is selected; Ending time of day that runs of the specified Target Task will recur.
Interval Start Day Constraint	If Time Window is selected; Specification for whether or not to advance the start day of the recurrence to another day. Valid values: • -- None -- Advance to the next day if the Interval Start Time is after the time of the current day. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. Default is – None –.

Interval End Day Constraint	If Time Window is selected; Specification for whether or not to advance the end day of the recurrence to another day. Valid values: • -- None -- Advance to the next day if the Interval Start Time is after the time of the current day. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. Default is – None –.
Launch Details	This section contains information about the target task being launched.
Target Task	Name of the task for which you want to specify recurrence details. Click the icon to display Task Details for the task.
Task Launch Skip Condition	User-defined; Controls when launching a target task for recurrence will be skipped. The Recurring Task Launch Skip Condition Default Universal Controller system property value is used as the default value for this field. Options: • None Do not skip the target task launch. • Active Skip the target task launch if there are any target task instances running. • Active By Recurring Task Instance Skips the target task launch if there are any target task instances running for the same Recurring task.

Override Variables	List of task variables to override. • Name Name of the variable to override. • Value Value of the variable to override. • Resolution Type of resolution for the override: ◦ Disabled Variable is passed to the launched Target Task unresolved and will remain unresolved in the Recurring Task Instance Details. ◦ Enabled Variable is resolved when the Recurring Task Instance is started (running); therefore, it is passed to the launched Target Task resolved and will remain resolved in the Recurring Task Instance Details. If an Enabled variable cannot be resolved when the Recurring Task Instance is being started, the Recurring Task Instance will transition to a Start Failure with the following Status Description: Override Variable "*variable-name*" with Resolution "*variable-resolution*" is unresolved. ◦ Enabled Every Recurrence Variable is resolved and passed each time the Target Task is being launched and will remain unresolved in the Recurring Task Instance Details.
Monitor Details	This section contains specifications for monitoring the target task.
Target Task Monitor Condition	Specification for which target task instance(s) will be monitored. Options: • --None-- • First Recurrence • Last Recurrence • All Recurrences
Status To Monitor	If Target Task Monitor Condition is not --None--; Status being monitored for. When the target task instance(s) being monitored go to the status specified here, the Recurring Task Instance will complete successfully. Options: • Finished • Success • Skipped
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None --.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.

Workflow Only	Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. Options are: • - - System Default - - Apply the Wait To Start and Delay On Start specifications as defined by the System Default Wait/Delay Workflow Only system property. (Default is **yes**.) • Yes Apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow. • No Apply the Wait To Start and Delay On Start specifications whether or not the task is in a Workflow.
Time Options	This section contains time-related specifications for task instances of the task.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.

Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.

Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.

Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.
Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.

Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.
Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Self-Service Options	This section contains Self-Service specifications for the task.
Enforce Variables	Specifies whether or not to enforce **Launch with Variables...** when launching a task using the User Interface.
Lock Variables	Specifies whether or not to prevent editing variables when using **Launch with Variables...** from the User Interface.
Statistics	This section contains time-related statistics for task instances of the task.
First Execution	System-supplied; End Time of the first instance of this task to complete.
Last Execution	System-supplied; End Time of the last instance of this task to complete.
Last Instance Duration	System-supplied; Amount of time the task took to run the last time it ran.
Lowest Instance Time	System-supplied; Lowest amount of time this task has taken to run.
Average Instance Time	System-supplied; Average amount of time this task takes to run.
Highest Instance Time	System-supplied; Highest amount of time this task has taken to run.
Number of Instances	System-supplied; Number of instances in the database for this task.

Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Buttons	This section identifies the buttons displayed above and below the Task Details that let you perform various actions.
Save	Saves a new task record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new task.
Update	Saves updates to the record.
Launch	Manually launches the task.
View Parents	Displays a list of any parent Workflow tasks for this task.
Copy	Creates a copy of this task, which you are prompted to rename.
Delete	Deletes the current record. **Note** You cannot delete a task if it is either: • Specified in an enabled Trigger. • The only task specified in a disabled Trigger.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.
Tabs	This section identifies the tabs across the top of the Task Details that provide access to additional information about the task.
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.

<table>
<tr><td>Actions</td><td>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.

If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Mutually Exclusive</td><td>Lists all tasks that have been set to be mutually exclusive of this task.</td></tr>
<tr><td>Instances</td><td>Lists all instances of the task.</td></tr>
<tr><td>Triggers</td><td>List of all triggers that reference this task in the Task(s) field of the trigger Details; that is, a list of all triggers that have been defined to launch this task. Also allows you to add new triggers. If you add a new trigger from this location, the Controller automatically constructs a default trigger name as follows: <current task name>#TRIGGER#. You can change the default name if desired. For instructions on creating triggers, see Triggers.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
<tr><td>Versions</td><td>Stores copies of all previous versions of the current record. See Record Versioning.</td></tr>
</table>

5.24.4 Viewing a Recurring Task Instance

When a Recurring task is launched, the Controller creates a task instance record of that task.

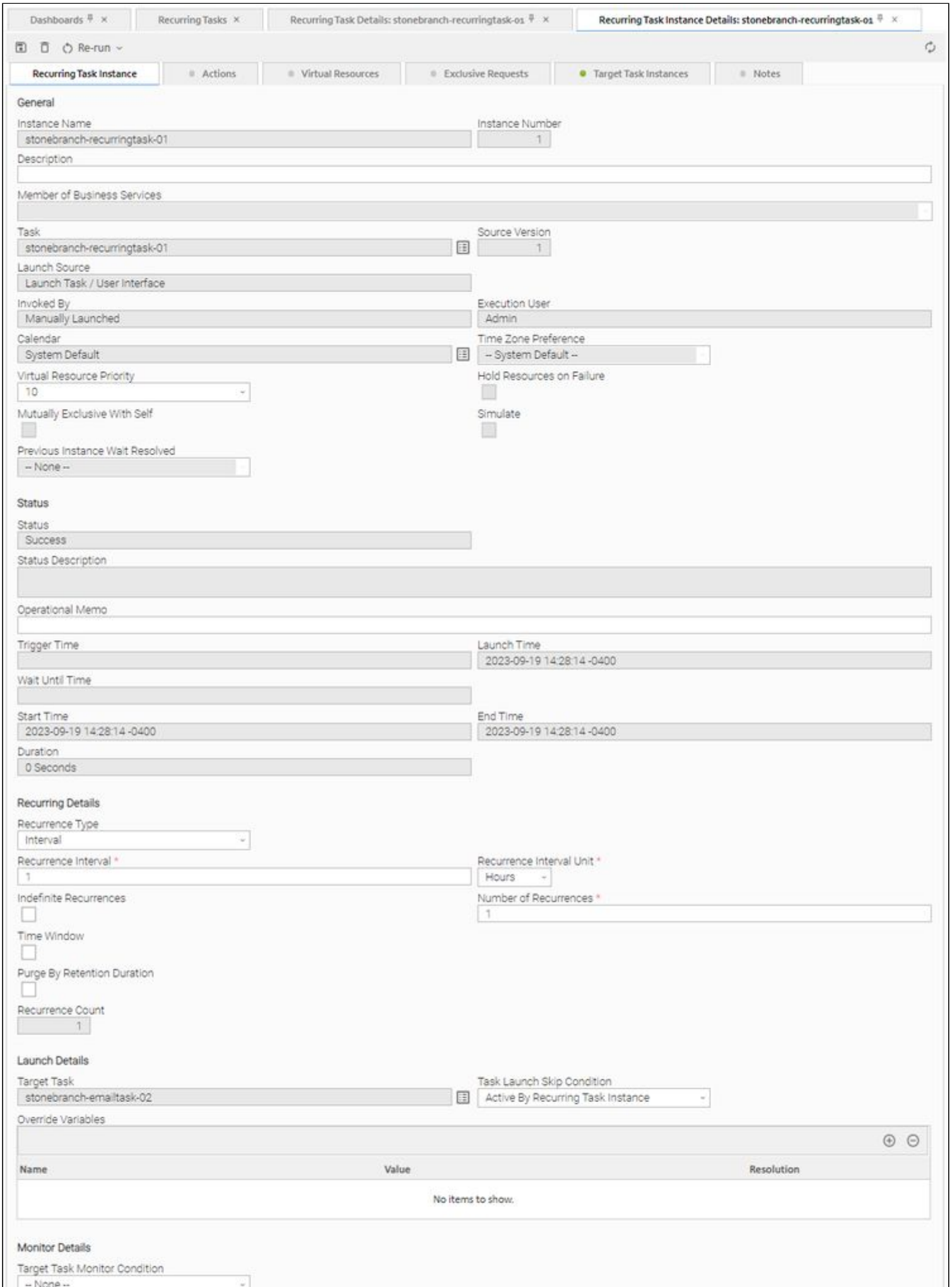
A task instance contains detailed information about a single execution of that task.

You can access a task instance from:

- **Instances tab** on the Recurring Task Details for that task
- Activity Monitor
- Task Instances list

5.24.4.1 Recurring Task Instance Details

The following Recurring Task Instance Details contains information on the execution of the task shown in the Recurring Task Details.


Dashboards
Recurring Tasks
Recurring Task Details: stonebranch-recurringtask-01
Recurring Task Instance Details: stonebranch-recurringtask-01
Re-run
Recurring Task Instance
Actions
Virtual Resources
Exclusive Requests
Target Task Instances
Notes
General
Instance Name
stonebranch-recurringtask-01
Instance Number
1
Description
Member of Business Services
Task
stonebranch-recurringtask-01
Source Version
1
Launch Source
Launch Task / User Interface
Invoked By
Manually Launched
Execution User
Admin
Calendar
System Default
Time Zone Preference
-- System Default --
Virtual Resource Priority
10
Hold Resources on Failure
Mutually Exclusive With Self
Simulate
Previous Instance Wait Resolved
-- None --
Status
Status
Success
Status Description
Operational Memo
Trigger Time
Launch Time
2023-09-19 14:28:14 -0400
Wait Until Time
Start Time
2023-09-19 14:28:14 -0400
End Time
2023-09-19 14:28:14 -0400
Duration
0 Seconds
Recurring Details
Recurrence Type
Interval
Recurrence Interval *
1
Recurrence Interval Unit *
Hours
Indefinite Recurrences
Number of Recurrences *
1
Time Window
Purge By Retention Duration
Recurrence Count
1
Launch Details
Target Task
stonebranch-emailtask-02
Task Launch Skip Condition
Active By Recurring Task Instance
Override Variables
Name
Value
Resolution
No items to show.
Monitor Details
Target Task Monitor Condition
-- None --

5.24.4.2 Recurring Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Recurring Task Instance Details.

Field Name	Description
General	This section contains general information about the task instance.
Instance Name	Name of this task instance.
Instance Number	System-supplied; Sequentially assigned number, maintained per task, representing the creation order of the instance.
Description	Description of this record. (Maximum = 255 characters.)
Member of Business Services	User-defined; Allows you to select one or more Business Services that this record belongs to. (You also can Check All or Uncheck All Business Services for this record.) You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service. If the Business Service Visibility Restricted Universal Controller system property is set to true, depending on your assigned (or inherited) Permissions or Roles, Business Services available for selection may be restricted.
Task	Name of the task that was run to create this task instance. Click the icon to display Task Details for the task.
Source Version	Version of the task that was run to create this task instance.

Launch Source	System-supplied; Source from which this task was launched. Options: • Scheduled Trigger If the instance was directly launched by a scheduled trigger, the Trigger (trigger_id) column is assigned the UUID of the scheduled trigger. • Trigger Monitor If the instance is a monitor associated with monitor trigger, the Trigger (trigger_id) column is assigned the UUID of the monitor trigger. • Trigger Now / User Interface If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / System Operation If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger and the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Trigger Now / Web Service If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Trigger Now / Command Line If the instance was directly launched by a Trigger Now command, the Trigger (trigger_id) column is assigned the UUID of the trigger. • Workflow If the instance was launched by a workflow, the Workflow (workflow_id) column is assigned the UUID of the workflow instance. Likewise, the Source Instance (source_instance) column will also be assigned the UUID of the workflow instance. • Launch Task / User Interface If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / System Operation If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be assigned the UUID of the instance invoking the System Operation. • Launch Task / Web Service If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Launch Task / Command Line If the instance was directly launched by the Launch Task command, the Source Instance (source_instance) column will be null. • Recurring If the instance was directly launched by a Recurring Task Instance, the Source Instance (source_instance) column will be assigned the UUID of the Recurring Task Instance.
Invoked by	System-supplied; how the task instance was launched. Options: • Trigger: (Trigger Name) Instance was launched by the named trigger. • Workflow: (Workflow Name) Instance was launched by the named workflow. • Manually Launched Instance was launched by a user. To identify the user, check the Execution User column for that task instance on the Task Instances screen or, on most task instance screens, the Execution User field.
Execution User	System-supplied; If the task was launched manually; ID of the user who launched it.
Calendar	Calendar associated with the task instance.

Time Zone Preference	User-defined; Allows you to specify the time zone that will be applied to the task. Options: • – System Default – Time zone is based on the value of the Task Time Zone Preference Universal Controller system property: Server or Inherited. • Server (xxx) Where (xxx) is the time zone ID of the server; time zone is evaluated in the time zone of the server. • Inherited Time zone is evaluated in the time zone of the Parent Workflow or Trigger / Launch specification in the case there is no Parent Workflow.
Virtual Resource Priority	Priority for acquiring a resource when two or more tasks are waiting for the resource. This priority applies to all resources required by the task. Options: 1 (high) - 100 (low). Default is 10.
Hold Resources on Failure	If enabled, the task instance will continue to hold Renewable resources if the task instance fails. Renewable resources will be returned only if the task instance status is either Complete, Finished, or Skipped.
Mutually Exclusive With Self	If enabled, the task will not be allowed to run concurrently with itself. Task will not start until the instance that is running finishes. An instance will transition to Exclusive Wait status if it cannot start due to another instance already running.
Simulate	Specifies if the instance should execute under simulation mode.
Previous Instance Wait Resolved	System-supplied; If the Override Previous Instance Wait field for the task is set to No, the Previous Instance Wait Resolved field will be set to the value of the Previous Instance Wait field of the parent workflow. Otherwise, it will be set to the value specified by the Override Previous Instance Wait. Options: • -- None -- • Wait for Last Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task has completed. • Wait for Last / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until the most recent prior instance of the same task, within an instance of the same workflow, have completed. • Wait for All Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task has completed. • Wait for All / Same Workflow Every task instance directly within the workflow instance will remain in **Instance Wait** until all prior instances of the same task, within an instance of the same workflow, have completed.
Status	This section contains information about the current status of the task instance.
Status	System-supplied; see Task Instance Statuses.
Exit Code	System-supplied; the exit code captured by the Agent when executing the task (for example, a command or script).
Status Description	System-supplied; additional information, if any, about the status of the task instance.
Operational Memo	User-defined operational memo.
Evaluation Time	If time zone of user is different than time zone of task instance; Time at which Execution Restrictions and Run Criteria were evaluated based upon the requested time zone. (Time zone of task instance displays in parentheses.)

Critical	Indicates that this task is in the Critical Path of a workflow.
Critical Endpoint	Indicates that this task was defined as a Critical Endpoint of a Critical Path in a workflow.
Wait Until Time	Amount of time calculated to wait before the task was started, based on Wait To Start and Delay On Start times.
Queued Time	System-supplied; Date and time the task was queued for processing.
Trigger Time	System-supplied; Date and time the task instance was triggered.
Launch Time	System-supplied; Date and time the task instance was launched.
Start Time	System-supplied; Date and time the task instance started.
End Time	System-supplied; Date and time the task instance completed.
Duration	System-supplied; amount of time the task instance took to run.
Recurring Details	This section contains assorted detailed information about the task instance.
Recurrence Type	Type of recurrence. Valid values: • Interval Recurrence will occur on the interval specified by Recurrence Interval, Recurrence Interval Unit, and/or Indefinite Recurrences / Number of Recurrences. • On Recurrence will occur on the day and time specified in Recurrence Time List.
Recurrence Time List	If Recurrence Type = On; List of Times and Days on which runs of the Target Task will recur.
Computed Recurrence Time List	If Recurrence Type = On; List of computed Days and Times on which runs of the Target Task will recur. The corresponding recurrence Time and Day Constraint, from the Recurrence Time List, displays for each Computed Recurrence Time. Skipped recurrence times will be marked as (Skipped).
Recurrence Interval	Amount of time to wait - based on the time unit specified in Recurrence Interval Unit - between runs of the specified Target Task. The default value, as specified in the Recurring Task Minimum Frequency In Seconds Universal Controller system property, is 5 (seconds). The minimum value is 0.
Recurrence Interval Unit	Units of time to wait - based on the time specified in Recurrence Interval - between runs of the specified Target Task. Options: • Seconds • Minutes • Hours
Indefinite Recurrences	Indication that the recurrence of runs for the specified Target Task will occur indefinitely.
Number of Recurrences	If Indefinite Occurrences is not selected; Number of times that runs of the specified Target Task will occur.
Time Window	If Indefinite Occurrences is not selected; Indication that the Target Task will run within a specified time frame.
Purge By Retention Duration	Specification for whether task instances launched by the Recurring Task instance can be purged by retention duration.
Exclude Backup	If Purge By Retention Duration is selected; Specification for whether qualifying task instances can be excluded from the backup when being purged by retention duration.

Retention Duration	If Purge By Retention Duration is selected; Minimum retention duration for the selected Retention Duration Unit before triggered task instances can qualify for purge. If Retention Duration Unit = Days, valid values are 1 to 366. If Retention Duration Unit = Hours, valid values are 1 to 24.
Retention Duration Unit	If Purge By Retention Duration is selected; Retention duration unit. Options: • Hours • Days
Interval Start Time (HH:MM)	If Time Window is selected; Starting time of day that runs of the specified Target Task will occur.
Interval End Time (HH:MM)	If Time Window is selected; Ending time of day that runs of the specified Target Task will recur.
Interval Start Day Constraint	If Time Window is selected; Specification for whether or not to advance the start day of the recurrence to another day. Valid values: • -- None -- Advance to the next day if the Interval Start Time is after the time of the current day. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. Default is – None –.

Interval End Day Constraint	If Time Window is selected; Specification for whether or not to advance the end day of the recurrence to another day. Valid values: • -- None -- Advance to the next day if the Interval Start Time is after the time of the current day. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. Default is – None –.
Recurrence Count	Current number of runs of the Target Task that have recurred.
Next Recurrence Time	Date and time when the next run of the Target Task will recur.
Computed Interval Start	If Recurrence Type is Interval and Time Window is selected; Computed time at which the interval has been designated as starting at (it can be in the past).
Computed Interval End	If Recurrence Type is Interval and Time Window is selected; Computed time at which the interval will end.
Launch Details	This section contains information about the target task being launched.
Target Task	Name of the task for which you want to specify recurrence details. Click the icon to display Task Details for the task.
Task Launch Skip Condition	User-defined; Controls when launching a target task for recurrence will be skipped. The Recurring Task Launch Skip Condition Default Universal Controller system property value is used as the default value for this field. Options: • None Do not skip the target task launch. • Active Skip the target task launch if there are any target task instances running. • Active By Recurring Task Instance Skips the target task launch if there are any target task instances running for the same Recurring task.

Override Variables	List of task variables to override.
	• Name
	Name of the variable to override.
	• Value
	Value of the variable to override.
	• Resolution
	Type of resolution for the override:
	  • Disabled
	Variable is passed to the launched Target Task unresolved and will remain unresolved in the Recurring Task Instance Details.
	  • Enabled
	Variable is resolved when the Recurring Task Instance is started (running); therefore, it is passed to the launched Target Task resolved and will remain resolved in the Recurring Task Instance Details. If an Enabled variable cannot be resolved when the Recurring Task Instance is being started, the Recurring Task Instance will transition to a Start Failure with the following Status Description: Override Variable "*variable-name*" with Resolution "*variable-resolution*" is unresolved.
	  • Enabled Every Recurrence
	Variable is resolved and passed each time the Target Task is being launched and will remain unresolved in the Recurring Task Instance Details.

Monitor Details	This section contains specifications for monitoring the target task.
Target Task Monitor Condition	Specification for which target task instance(s) will be monitored. Options: • --None-- • First Recurrence • Last Recurrence • All Recurrences
Status To Monitor	If Target Task Monitor Condition is not --None--; Status being monitored for. When the target task instance(s) being monitored go to the status specified here, the Recurring Task Instance will complete successfully. Options: • Finished • Success • Skipped
Monitored Target Task Instance	System-supplied, Read only; If there is more than one target task instance to monitor (for example, when using a Broadcast Cluster), the Monitored Target Task Instance(s) field is shown instead with a list of monitored target task instances.
Wait / Delay Options	This section contains specifications for waiting to start and/or delaying on start the task.
Wait To Start	Amount of time to wait before starting a task from the time that it was launched. Options are: • – None – • Time • Relative Time • Duration • Seconds
Wait Time	If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.

Wait Day Constraint	If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.
	Valid values:
	• -- None --
	  • If Wait To Start = Time; Advance to the next day if the specified wait time is before the time that the task instance is eligible to start; that is, all dependencies have been met. For example: it is not being held, and it is not waiting on any predecessors.
	  • If Wait To Start = Relative Time; Advance to the next day if the specified wait time is before the task instance Trigger Time or, if there is no Trigger Time, before the task instance Launch Time. In the latter case, when a task instance is within a workflow, it will inherit the Launch Time of the top-level parent workflow task instance.
	• Same Day
	Do not advance day.
	• Next Day
	Advance to the next day.
	• Next Business Day
	Advance to the next business day.
	• Sunday
	If today is not Sunday, advance to next Sunday.
	• Monday
	If today is not Monday, advance to next Monday.
	• Tuesday
	If today is not Tuesday, advance to next Tuesday.
	• Wednesday
	If today is not Wednesday, advance to next Wednesday.
	• Thursday
	If today is not Thursday, advance to next Thursday.
	• Friday
	If today is not Friday, advance to next Friday.
	• Saturday
	If today is not Saturday, advance to next Saturday.
	Default is – None –.

Wait Duration	If Wait To Start = Duration; Number of days, hours, minutes, and seconds to wait before starting the task.
Wait Duration In Seconds	If Wait To Start = Seconds; Number of seconds to wait before starting the task.
Delay On Start	Amount of time to delay the start of a task, after it has been launched, from the time that it is eligible to start; that is, all dependencies have been met. For example: it is not being held, it is not waiting on any predecessors, or there is no wait time specified. Options are: • – None – • Duration • Seconds
Delay Duration	If Delay On Start = Duration; Number of days, hours, minutes, and seconds to delay after starting the task.
Delay Duration In Seconds	If Delay On Start = Seconds; Number of seconds to delay after starting the task.
Time Options	This section contains time-related specifications for the task instance.
Late Start	If enabled, and if the task instance starts after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late start (see Late Start Type). To determine whether a task instance started late, open the task instance and locate the Started Late field; the field is checked if the instance started after the specified time. The Started Late field displays in the task instance Details only if the user specified a Late Start in the task Details.
Started Late	System-supplied; this field is flagged if the task started later than the time specified in the Late Start fields.

Late Start Type	Required if Late Start is enabled. Options: • Time - Flag the task if it starts after the specified time. • Duration - Flag the task if it starts a certain amount of time after the programmed start time. The task must have a specific start time.
Late Start Time	If Late Start Type = Time; Time after which the task start time is considered late. Use HH:MM, 24-hour time.
Late Start Day Constraint	If Late Start Type = Time; Specification for whether or not to advance the late start time to another day. Valid values: • -- None -- Advance to the next day if the specified late start time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None --.
Late Start Nth Amount	If Late Start Day Constraint = Nth Day; Number of days to advance.
Late Start Duration	If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late. For a task within a workflow, the duration is the period between the time the workflow starts and the time the task itself starts. For example, a task might have a Late Start Duration of 60 minutes. If the workflow starts at 9:00 a.m. but the task itself does not start until 10:30, the task has started late. For a task that is not within a workflow, Late Start Duration has meaning only if the task has been held upon starting. For example, if a task has a Late Start Duration of 60 minutes and the Hold on Start field is enabled, if the task is not released from hold within the amount of time specified in the Late Start Duration field, the task has started late.
Computed Late Start Time	If Late Start is enabled, the computed Date/Time for when the task instance will be Late Started.
Late Finish	If enabled, and if the task instance finishes after the time or period specified, the task instance is flagged as late. You can specify a time or duration to determine a late finish (see Late Finish Type). To determine whether a task instance finished late, open the task instance and locate the Finished Late field; the field is checked if the instance finished after the specified time or lasted longer than expected. This field only appears on the task instance if the user specified a Late Finish in the task definition.
Finished Late	System-supplied; this field is flagged if the task finished later than the time or duration specified in the Late Finish fields.

Late Finish Type	Required if Late Finish is enabled. Options: • Time - Flag the task if it finishes after the specified time (see Late Finish Time). • Duration - Flag the task if it finishes a certain amount of time after the programmed finish time (see Late Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Late Finish Offset Type), if specified.
Late Finish Offset Type	If Late Finish Type = Average Duration; Options: • Percentage • Duration
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**. (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = *Duration*; Duration to use as an offset. The late finish time is calculated by adding the offset to the **Average Duration**.
Late Finish Duration Offset Unit	If Late Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = Time; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = Time; Specification for whether or not to advance the late finish time to another day. Valid values: • -- None -- Advance to the next day if the specified late finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Late Finish Nth Amount	If Late Finish Day Constraint = Nth Day; Number of days to advance.
Late Finish Duration	If Late Finish Type = Duration; Longest amount of time this task instance should take to run.

Computed Late Finish Time	If Late Finish is enabled, the computed Date/Time for when the task instance will be Late Finished.
Early Finish	If enabled, and if the task instance finishes before the time or period specified, the task instance is flagged as early. You can specify a time or duration to determine an early finish (see Early Finish Type). To determine whether a task instance finished early, open the task instance and locate the Finished Early field; the field is checked if the instance finished before the specified time or did not last as long as expected. This field only appears on the task instance if the user added Early Finish specifications to the task definition.
Finished Early	System-supplied; this field is flagged if the task finished earlier than the time specified in the Early Finish fields.
Early Finish Type	Required if Early Finish is enabled. Options: • Time - Flag the task if it finishes before the specified time (see Early Finish Time). • Duration - Flag the task if it finishes a certain amount of time before the programmed finish time (see Early Finish Duration). The task must have a specific finish time. • Average Duration - Flag the task if it finishes before the average duration (see Average Instance Time) for the task, less an offset (see Early Finish Offset Type), if specified.
Early Finish Offset Type	If Early Finish Type = Average Duration; Options: • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = *Percentage*; Percentage of **Average Duration** to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**. (Minimum = 0 and Maximum = 100)
Early Finish Duration Offset (-)	Required if Early Finish Offset Type = *Duration*; Duration to use as an offset. The early finish time is calculated by subtracting the offset from the **Average Duration**.
Early Finish Duration Offset Unit	If Early Finish Offset Type = Duration; Options: • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = Time; Time before which the task finish time is considered early. That is, enter a time at which the task should still be running. Use HH:MM, 24-hour time.

Early Finish Day Constraint	If Early Finish Type = Time; Specification for whether or not to advance the early finish time to another day. Valid values: • -- None -- Advance to the next day if the specified early finish time is before the Created time of the task instance. • Same Day Do not advance day. • Next Day Advance to the next day. • Next Business Day Advance to the next business day. • Sunday If today is not Sunday, advance to next Sunday. • Monday If today is not Monday, advance to next Monday. • Tuesday If today is not Tuesday, advance to next Tuesday. • Wednesday If today is not Wednesday, advance to next Wednesday. • Thursday If today is not Thursday, advance to next Thursday. • Friday If today is not Friday, advance to next Friday. • Saturday If today is not Saturday, advance to next Saturday. • Nth Day Advance to a specific number of days in the future. Default is – None –.
Early Finish Nth Amount	If Early Finish Day Constraint = Nth Day; Number of days to advance.
Early Finish Duration	If Early Finish Type = Duration; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = Average Duration; Estimated amount of time it should normally take to run this task. The Controller uses this information to calculate the User Estimated End Time on a task instance record. **User Estimated Duration** is used when the Average Duration is not available; for example, on the first launch of a task.
Projected Late	System-provided if Late Start Time, Late Start Duration, or Late Finish Time is specified; This field is flagged if the task instance is projected to be late based on critical path projected end times (see Critical Path Projected Late Action Maximum and Critical Path Projected Late Threshold In Minutes Universal Controller system properties). .
Retry Options	This section contains specifications for retrying the task.
Maximum Retries	User-defined; maximum number of times that the Controller should retry this task after it has started and gone to a failed state.
Retry Indefinitely	User-defined; indicates whether the Controller should continue trying indefinitely to run this task. If you enable this field, it overrides any value placed in the Maximum Retries field.
Retry Interval (Seconds)	User-defined; number of seconds between each retry.
Current Retry Count	System-supplied; current number of times that the Controller has retried the task after it first went to failure status.

Suppress Intermediate Failures	User-defined; If the task instance is in the Failed status, indicates whether or not the following will be suppressed until all scheduled retry attempts (a Maximum Retries value has been entered or Retry Indefinitely has been enabled) have been made: • All Actions (Abort, Email Notification, Set Variable, SNMP Notification, and System Operation) defined for the task instance on a Failed status. • Workflow conditional path processing; any Successors waiting on a failure path will not be released. • Task Monitors will not be notified of the Failed status. Also, any Task Monitor task that has a Time Scope in the past will disqualify any matching task instance in the past with a Failed status if the task instance is scheduled for automatic retry and for which **Suppress Intermediate Failures** has been enabled. • Any Workflow containing the Failed task instance will not transition to the Running/Problems status.
Next Retry Time	System-supplied for a task instance in the Failed status that is scheduled for automatic retry; Next time that a retry will be made. If a task instance is not scheduled for automatic retry, Next Retry Time does not display in the task instance Details.
Critical Path Options	This section contains Critical Path-related specifications for the task.
CP Duration	Optional; Allows you to override the estimated Critical Path Duration of the task when running in a Workflow; used in conjunction with the CP Duration Unit field. In most cases, this field should be left blank, which implies that the Controller will estimate the Critical Path Duration based on historical executions. Valid values are any integer equal to or greater than 0. Variables and Functions are supported.
CP Duration (Resolved)	Displays the current resolved value of the CP Duration field, which may contain variables or functions that will be displayed as unresolved until the task instance starts. The CP Duration (Resolved) field can continue to change value until the task instance starts, at which time CP Duration will display as resolved and CP Duration (Resolved) will no longer be visible unless there was an issue resolving the variables and/or functions contained within CP Duration. If the Controller is unable to resolve CP Duration or it resolves to an invalid value, CP Duration will be ignored and the Controller will estimate the Critical Path Duration based on historical executions.
CP Duration Unit	Type of CP Duration; used in conjunction with the CP Duration field. For example, for a CP Duration of two minutes, specify 2 in the CP Duration field and select **Minutes** in this field. Options: • Seconds • Minutes • Hours Default is Minutes.
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	Specification for whether or not there is a restriction for this task to be run, skipped, or held. Options are: • -- None -- No restriction for this task. • Run Restriction for when this task will be run. • Skip Restriction for when this task will be skipped. • Hold Restriction for when this task will be held. If Execution Restriction on a task is Run or Skip, then when it is part of a Workflow that is being launched, the Restriction Period is evaluated. The task instance will be skipped if Execution Restriction is Skip and the date is within the Restriction Period or Execution Restriction is Run and the date is not within the Restriction Period. Execution Restriction can be set to Skip with a Restriction Period of - None -, meaning the restriction is always active and the task will be skipped when it is part of a Workflow.

Restriction Period	If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted. Options are: • – None – No period of restriction for this task. • Before Restriction is valid if the date is before the Before Date value. • After Restriction is valid if the date is after the After Date value. • Span Restriction is valid if the date is before the Before Date value and after After Date value. • On Restriction is valid if the date is one of the Date List values.
Before Date	If Restriction Period = Before or Span; Date before which the restriction is valid.
Before Time	If Restriction Period = Before or Span; Time on the selected date before which the restriction is valid.
After Date	If Restriction Period = After or Span; Date after which the restriction is valid.
After Time	If Restriction Period = After or Span; Time on the selected date after which the restriction is valid.
Date List	If Restriction Period = On; Date(s) on which the restriction is valid.
Statistics	This section contains time-related statistics for the task instance.
User Estimated End Time	System-supplied; If the user entered information into the User Estimated Duration field in the task Details, the Controller uses this information to calculate an end time for the task instance, based on the date/time the task instance started.
Lowest Estimated End Time	System-supplied; Lowest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Average Estimated End Time	System-supplied; Average estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Highest Estimated End Time	System-supplied; Highest estimated end time of the task instance, calculated by the Controller based on the date/time the task instance started.
Projected Start Time	System-supplied; projected start time of the task instance, calculated by the Controller based on Projected End Time minus Projected Duration.
Projected End Time	System-supplied; projected end time of the task instance, calculated by the Controller based on the projected end time of its predecessor (or the maximum projected end time of all its predecessors, if more than one path exists to that task instance) plus its estimated critical path duration.
Metadata	This section contains Metadata information about this record.
UUID	Universally Unique Identifier of this record.
Updated By	Name of the user that last updated this record.
Updated	Date and time that this record was last updated.
Created By	Name of the user that created this record.
Created	Date and time that this record was created.
Status History	History of all statuses that the task instance has gone through.
Operational Memo History	History of all Operational Memos for the task.

Buttons	This section identifies the buttons displayed above and below the Task Instance Details that let you perform various actions.
Update	Saves updates to the record.
Force Finish	See Force Finishing a Task.
Hold	Places the task instance on Hold (see Putting a Task on Hold).
Skip	For tasks loaded into the schedule that have not yet run; allows you to tell the Controller to skip this task. See Skipping a Task.
Re-run	See Re-running a Task Instance. **Note** If the Re-run (Suppress Intermediate Failures) Permitted Universal Controller system property is set to true, the Re-run button is a drop-down list containing the following options: • Re-run • Re-run (Suppress Intermediate Failures) The Re-run button does not display if the task instance does not qualify for Re-run. If the task instance qualifies for Re-run, but already has Retry Options enabled, Re-run (Suppress Intermediate Failures) displays as disabled in the drop-down list.
View Parent	Displays the task instance Details for the parent Workflow of this task instance.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task instance.
Tabs	This section identifies the tabs across the top of the Task Instance Details that provide access to additional information about the task instance.

<table>
<tr><td>Actions</td><td>Actions that the Controller took automatically based on events that occurred during the execution of this task.
Events are:
Task instance status
Exit codes
Late start
Late finish
Early finish
Actions are:<table><tr><td>Abort Action</td><td>Abort the task if certain events occur. For details, see Abort Actions.</td></tr><tr><td>Email Notification</td><td>Send an email if certain events occur. For details, see Email Notification Actions.</td></tr><tr><td>Set Variable</td><td>Used in tasks and workflows to set a variable based on the occurrence of certain events. For details, see Creating a Set Variable Action within a Task or Workflow.</td></tr><tr><td>SNMP Notification</td><td>Send an email if certain events occur. For details, see SNMP Notification Actions.</td></tr><tr><td>System Operation</td><td>Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions.</td></tr></table></td></tr>
<tr><td>Virtual Resources</td><td>Lists all Virtual Resources to which this task is assigned.
If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter a Virtual Resource variable. The variable must be a supported type as described in Variables and Functions.</td></tr>
<tr><td>Exclusive Requests</td><td>Lists all records in the Exclusive Requests table (<code>ops_exclusive_order</code>) for this task instance.</td></tr>
<tr><td>Target Task Instances</td><td>All instances of the Target Task launched by the Recurring Task within a specified time constraint. The default time constraints is 48 hours.
The Target Task Instances Tab Time Constraint User Preference enables you to override the default time constraint.</td></tr>
<tr><td>Notes</td><td>Lists all notes associated with this record.</td></tr>
</table>

5.24.5 Running a Recurring Task

You can run a Recurring task:

- Manually, by clicking the Launch or Launch with Variables button in the Recurring Tasks list or Recurring Task Details Action menu.
- As part of a workflow.
- Specify triggers that run the task automatically based on times or events.

5.24.6 Monitoring Task Execution

You can monitor all system activity from the Activity Monitor and can view activity history from the History list.

6 Creating Task Virtual Resources

6.1 Overview

Universal Controller lets you create Task Virtual Resource records by assigning Virtual Resources to tasks via a Virtual Resources tab in the task Details.

(You also can assign Virtual Resources to tasks via the Tasks tab in a Virtual Resource Details.)

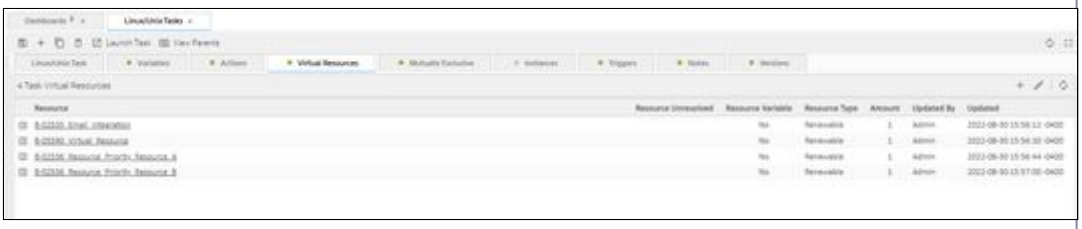
A Task Virtual Resource defines a Virtual Resource dependency for a task.

6.2 Creating a Task Virtual Resource

There are two methods for creating Task Virtual Resources:

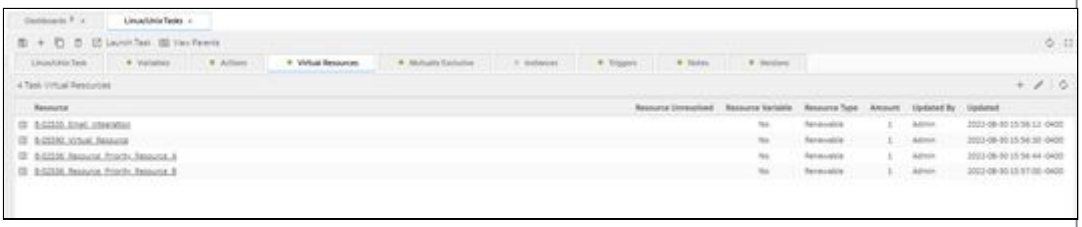
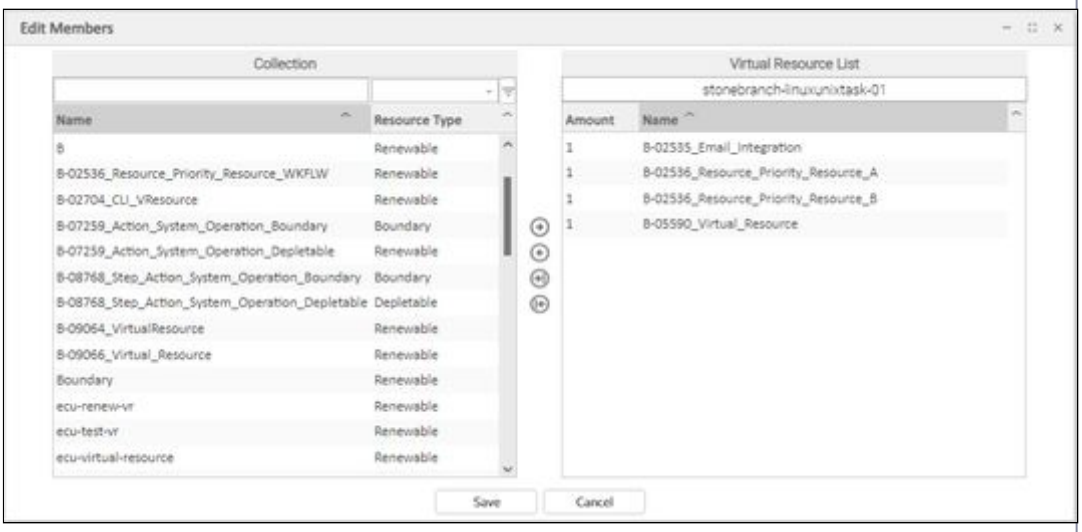
1. The New button above a Task Virtual Resources list lets you either create a Task Virtual Resource by selecting a specific Virtual Resource or by specifying the Virtual Resource as a variable..
2. The Edit button button above a Task Virtual Resources list lets you create and/or delete Task Virtual Resources for a task by selecting and/or de-selecting specific Virtual Resources.

6.2.1 New Task Virtual Resource

Step 1	Select a task from a Tasks list and, in the task Details for that task, click the **Virtual Resources** tab. The Task Virtual Resources list displays. 
Step 2	Click the **New** button. The Task Virtual Resources Details dialog displays.
Step 3	Using the field descriptions , below, as a guide, complete the fields as needed.

Step 4	Click a **Save** button to save the record and return to the Task Virtual Resources list.
Step 5	If appropriate, repeat these steps for any additional Task Virtual Resources that you want to add.

6.2.2 Edit Task Virtual Resources

Step 1	Select a task from a Tasks list and, in the task Details for that task, click the **Virtual Resources** tab. The Task Virtual Resources list displays. 
Step 2	Click the button to display the Edit Member dialog.  • The Collection window displays all Virtual Resources that have not been assigned to this task. • The Virtual Resource List window displays all Virtual Resources that have been assigned to this task.
Step 3	If you want to filter the tasks in the Collection window, click the filter icon (see Filtering for information about how to construct a filter.)
Step 4	Move virtual resources from the **Collection** window to the **Virtual Resource List** window: • To move a single virtual resource, double-click it or click it once and then click the **>** arrow. • To move multiple virtual resources, Ctrl-click them and then click the **>** arrow. • To move all virtual resources, click the **>>** arrow. To move virtual resources from the **Virtual Resource List** window to the **Collection** window: • To move a single virtual resource, double-click it or click it once and then click the **<** arrow. • To move multiple virtual resources, Ctrl-click them and then click the **<** arrow. • To move all virtual resources, click the **<<** arrow.
Step 5	Click **Save**.

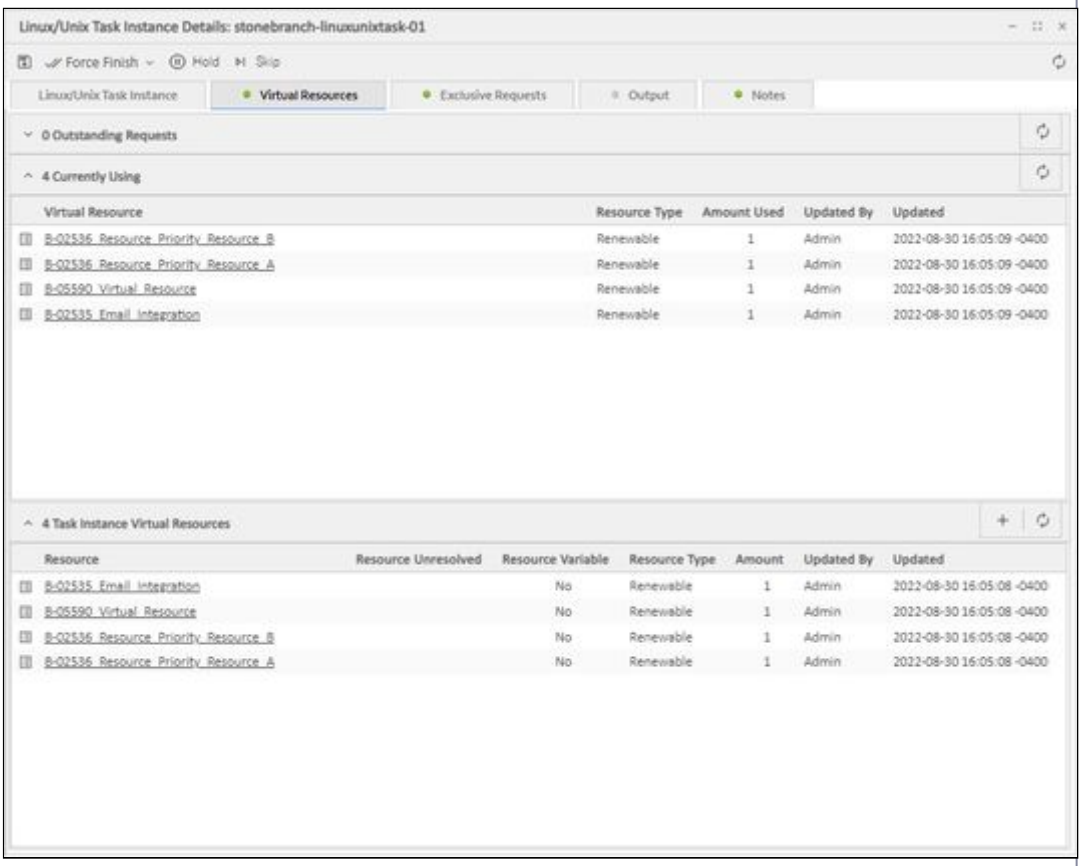
6.3 Task Virtual Resources Field Descriptions

The following table describes the fields and buttons in the Task Virtual Resources Details.

Field Name	Description
Details	This section contains details for the task virtual resource.
Resource	Allows you to select an existing Virtual Resource as a Task Virtual Resource for this task. Clicking the Virtual Resources Details icon next to the Resource field allows you to create a new Virtual Resource, but that does not automatically add it to the list of Task Virtual Resources for this task.
Resource Variable	Indication of whether the Resource field is a reference field for selecting a specific Virtual Resource (unchecked) or a text field for specifying the Resource as a variable (checked). Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions.
Amount	Number of resource units required from the Virtual Resource .
Buttons	This section identifies the buttons displayed above and below the Step Action Details that let you perform various actions.
Save	Saves the new System Operation Step Action Details record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	For pop-up view only; closes the pop-up view of this task.

6.4 Task Instance Details Virtual Resources Tab

Step 1	Open a task instance Detail.

Step 2	Click the **Virtual Resources** tab on the task instance Details to display the Virtual Resources lists for the task instance: • Outstanding Requests • Currently Using • Task Instance Virtual Resources 
Step 3	Click the Details icon next to any resource on these list to view details about the resource.

6.4.1 Outstanding Requests

Outstanding requests by this task instance for the Virtual Resource.

Field Name	Description
Virtual Resource	Name of the Virtual Resource.
Resource Type	Type of Virtual Resource: • Renewable • Boundary • Depletable
Amount Requested	Number of Virtual Resource units requested for this task.
Updated By	User that last updated this record.

Field Name	Description
Updated	Date and time this record was last updated.

Note

To see Outstanding Requests, the task instance must be in in a Resource Wait state. For example, if a Virtual Resource has 10 units and the task requires all 10 units, launching the task twice will cause the second Task Instance to go into Resource Wait with an Outstanding Request for 10 units of the Virtual Resource.

6.4.2 Currently Using

Virtual Resources that this task instance is currently using.

Field Name	Description
Virtual Resource	Name of the Virtual Resource.
Resource Type	Type of Virtual Resource: • Renewable • Boundary • Depletable
Amount Requested	Number of Virtual Resource units requested.
Updated By	User that last updated this record.
Updated	Date and time this record was last updated.

6.4.3 Task Instance Virtual Resources

Task Instance Virtual Resources defined for this task instance.

Note

You also can create a Task Instance Virtual Resource for a task instance.

Field Name	Description
Resource	Name of the task instance virtual resource.

Field Name	Description
Resource Unresolved	Name of a variable that will be resolved at run time to the name of the Virtual Resource.
Resource Variable	Indication of whether the Resource field of this task instance virtual resource specifies a variable (Yes) or a Virtual Resource (No).
Resource Type	Type of Virtual Resource: • Renewable • Boundary • Depletable
Amount	Number of Virtual Resource units used.
Updated By	User that last updated this record.
Updated	Date and time this record was last updated.

Note:

Virtual Resource variables will be resolved by the Task Instance at run-time when checking if resources are required. The resolved values will not be saved; the Task Instance Virtual Resource List will continue to show unresolved values.

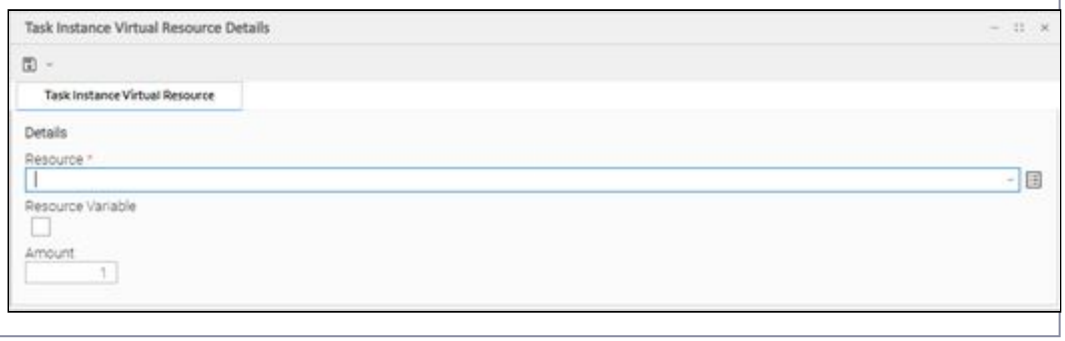
If a Virtual Resource variable cannot be resolved, the Task Instance will transition to a Start Failure status.

If a resolved Virtual Resource does not exist, the Task Instance will transition to a Start Failure status.

If there are duplicate Virtual Resources with conflicting Amount values, the Task Instance will transition to a Start Failure status.

6.5 Creating a Task Instance Virtual Resource

To create a virtual resource for a task instance:

Step 1	Display the Virtual Virtual Resources lists for a task instance.
Step 2	At the top of the Task Instance Virtual Resources list, click the + button to display a Task Instance Virtual Resource Details dialog. 

Step 3	Select / enter values for the task instance virtual resource (see Task Virtual Resources Field Descriptions).
STep 4	Click the Save button to assign the virtual resource to this task instance.

7 Copying Tasks

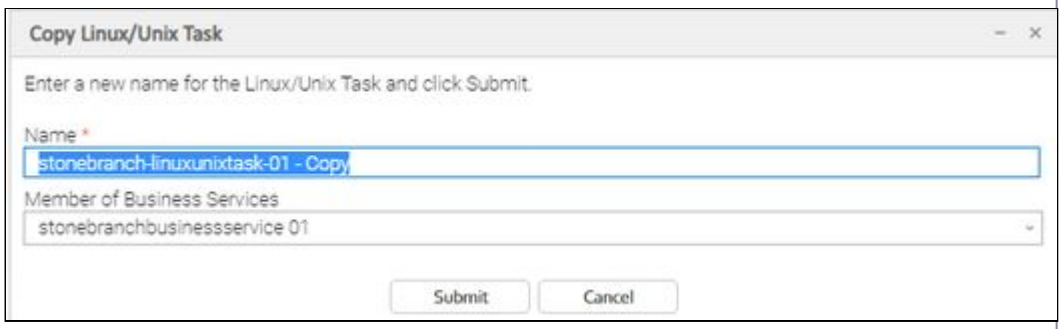
7.1 Overview

You can make copies of all Universal Controller records, including tasks, using the standard method for Copying a Record: selecting **Insert** on the Action menu.

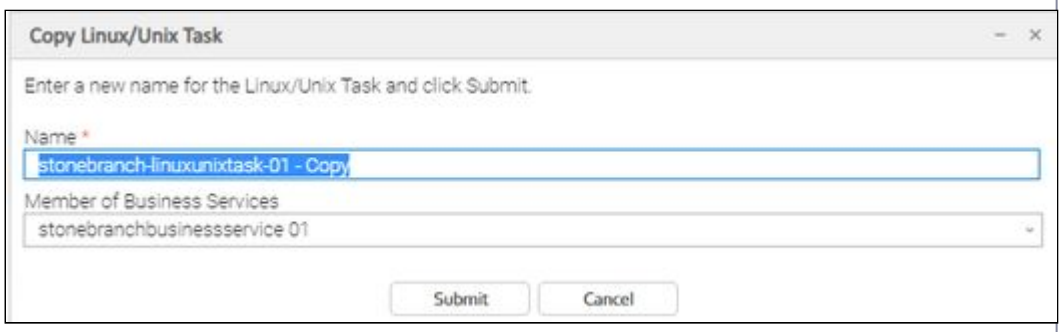
However, this method does not make copies of any records that are associated with the copied record. For tasks, **Insert** does not make copies of any Variables, Actions, and Notes that are associated with the task.

The Copy option allows you to make a complete copy of a task, including all of its associated records. It does not copy referenced records, such as virtual resources, but retains the relationship to these records for the copied task.

7.2 Copying One or More Tasks from a Tasks List

Step 1	From the Automation Center navigation pane, select **Tasks > <task type>**. The Tasks list for that task type displays.
Step 2	Locate the task(s) you want to copy (see Filtering).
Step 3	Copy the task(s): **Copy One Task** 1. Right-click the **Task Name**. 2. On the Action menu, select **Copy**. A Copy Task pop-up dialog displays.  3. Enter a new name for the task and, optionally, select any Business Services that you want the task assigned to. 4. Click **Submit** to create a copy of the task. **Copy Multiple Tasks** 1. Ctrl-Click the tasks you want to copy. 2. Right-click any of the selected tasks. 3. On the Action menu, select **Copy**. 4. On the Confirmation pop-up that displays, click **OK**. The copied tasks are added to the list, with **- Copy** added as a suffix to the Task Name for each task. If a task with that **- Copy** name already exists, another copy is not created.

7.3 Copying a Task from the Task Details

Step 1	Select a task from a Tasks list. The Task Details for that task displays.
Step 2	Either: • Click the **Copy** button. • Right-click the Details to display the Action menu, and then click **Copy**. A Copy Task pop-up dialog displays. 
Step 3	Enter a new name for the task and, optionally, select any Business Services that you want the task assigned to.
Step 4	Click **Submit** to create a copy of the task.

7.4 Copy Permissions

To copy a Task, you must have both Read permission and Copy command permission for the Task you are copying, in addition to having Create permission for the copied Task.

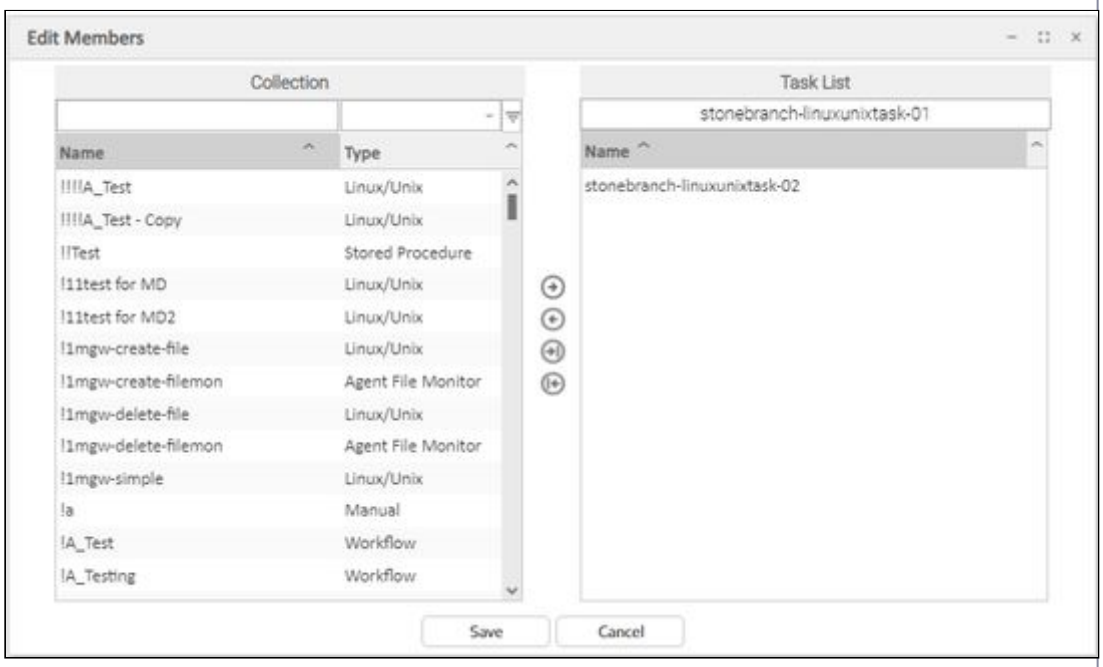
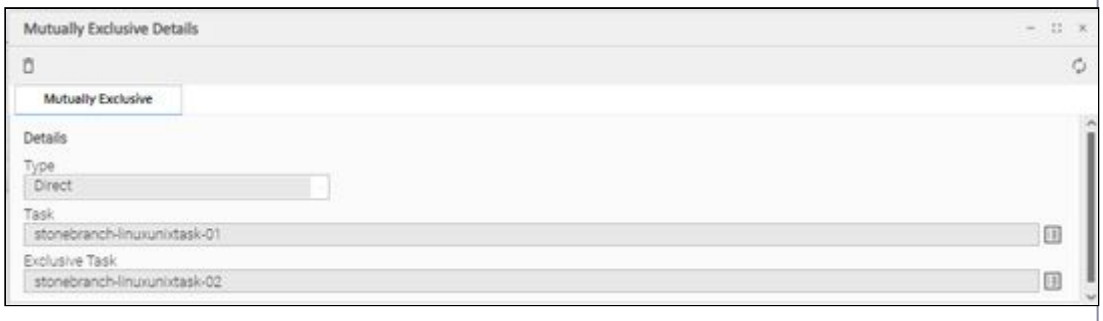
8 Setting Mutually Exclusive Tasks

8.1 Setting Mutually Exclusive Tasks

You can set a task to be mutually exclusive with one or more other tasks. Universal Controller does not permit mutually exclusive tasks to run at the same time; if one is running, the other(s) will wait before running.

To set mutually exclusive tasks:

Step 1	Select a task from a Tasks list and, in the Task Details for that task, click the **Mutually Exclusive Tasks** tab. The Mutually Exclusive Tasks list displays a list of any tasks that have been set to be mutually exclusive with this task: For each **Exclusive Task** on the list, the **Type** field indicates how the mutually exclusive dependency on the **Exclusive Task** was added to this task: • **Direct** indicates that the mutually exclusive dependency on the **Exclusive Task** was added to this task manually in these task Details. • **Indirect** indicates that the mutually exclusive dependency on the **Exclusive Task** was added to this task automatically when mutually exclusive dependency on this task was added manually to the **Exclusive Task** in its task Details. You only can delete **Direct** mutually exclusive tasks.

Step 2	Click the button to display the Edit Members dialog.  • The **Collection** window displays all Controller tasks. To display only a specific type of task, select that task type from the drop-down field at the top of the **Collection** window. • The **Tasks List** window displays all tasks that are to be run mutually exclusive with this task.
Step 3	If you want to filter the tasks in the Collection window, click the filter icon (see Filtering for information about how to construct a filter.)
Step 4	Move tasks from the **Collection** window to the **Tasks List** window: 1. To move a single task, double-click it or click it once and then click the **>** arrow. 2. To move multiple tasks, Ctrl-click them and then click the **>** arrow. 3. To move all tasks, click the **>>** arrow. To move tasks from the **Tasks List** window to the **Collection** window: 1. To move a single task, double-click it or click it once and then click the **<** arrow. 2. To move multiple tasks, Ctrl-click them and then click the **<** arrow. 3. To move all tasks, click the **<<** arrow.
Step 5	Click **Save**. All of the tasks in the **Tasks List** window will be listed as Type **Direct** on the Mutually Exclusive list for this task, and all of the tasks in the **Tasks List** window will list this task as Type **Indirect** on *their* Mutually Exclusive Tasks lists.
Step 6	Click the Details icon for any task on the list to display its Mutually Exclusive Details.  See the field descriptions, below, for a description of all fields that display in the Mutually Exclusive Details.

8.1.1 Mutually Exclusive Task Field Descriptions

The following table describes the fields that display in the Mutually Exclusive Task Details.

Field Name	Description
Type	Type of Mutually Exclusive task: Direct or Indirect.
Task	Name of the task for which this task was made Mutually Exclusive.
Exclusive Task	Name of this Mutually Exclusive task.

9 Creating Notes

9.1 Introduction

You can create a note for any Universal Controller task or script. The note can consist of information needed by operations personnel or other instructions or tips.

9.2 Adding a Note

Step 1	Open the task or script to which you want to attach a note.
Step 2	Click the **Notes** tab. The Notes list displays a list of notes (if any) that have been created for this task or script.
Step 3	Click the **New** button. The Note Details displays.
Step 4	Enter a **Title** and **Text** for the note.
Step 5	Click a **Save** button to save the record in the Controller database.

9.3 Note Details Field Descriptions

Field Name	Description
Details	This section contains detailed information about the note.

Title	Title of this note. Displays in the Title column on the Notes list.
Text	Text of the note.
Buttons	This section identifies the buttons displayed above and below the Note Details that let you perform various actions.
Save	Saves a new record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Refresh	Refreshes any dynamic data displayed in the Details.
Delete	Deletes the current record.
Close	For pop-up view only; closes the pop-up view of this task.

9.4 Deleting a Note

To delete a note, either:

- Right-click the note in the Notes list and then click **Delete**.
- Open the note you want to delete and click the **Delete** button.

10 Creating Task Actions

Universal Controller lets you create the following actions for tasks and workflows:

Action Type	Description
Abort	Allows you to abort a waiting or running task instance
Email Notification	Allows you to generate email notifications based on various events and statuses.
Set Variable	Allows you to set a variable to a specific value for a task or workflow.
SNMP Notification	Allows you to generate SNMP notifications to be sent to an SNMP Manager.
System Operation	Allows you to run a Universal Controller system operation based on specified conditions.

10.1 Abort Actions

10.1.1 Overview

The Abort Action allows you to abort a task instance under the following circumstances:

- If a task instance is in a status less than Queued (40), the task instance is eligible for being skipped, and an Abort Action will skip that task instance.
- If a task instance is in a status greater than or equal to Queued (40) and less than Skipped (180), the task instance is not eligible for being skipped, and an Abort Action will Force Finish the task instance (with halt and cancel options configurable).

(For more details on the statuses and their numerical ordering, see Task Instance Status Types.)

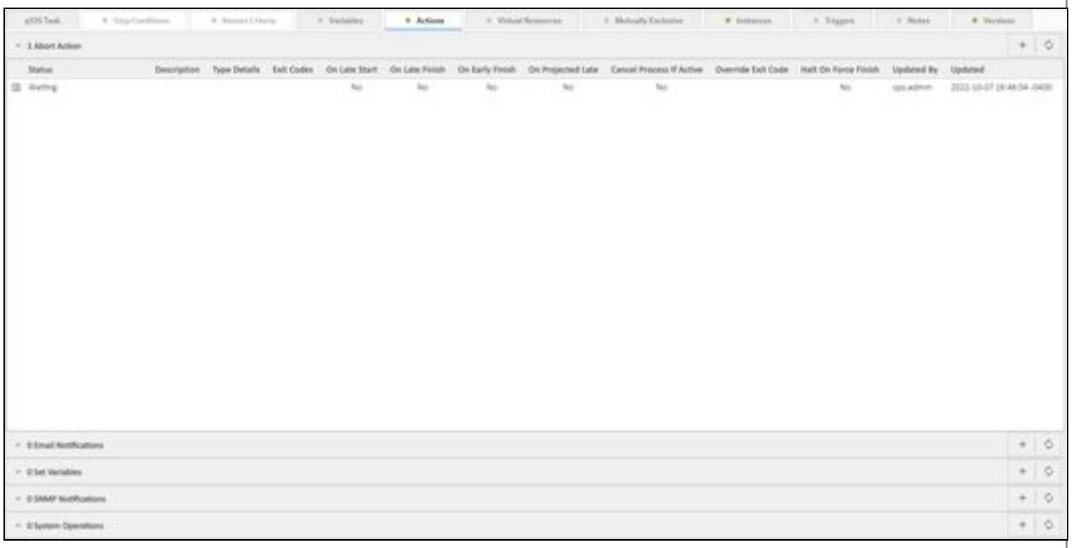
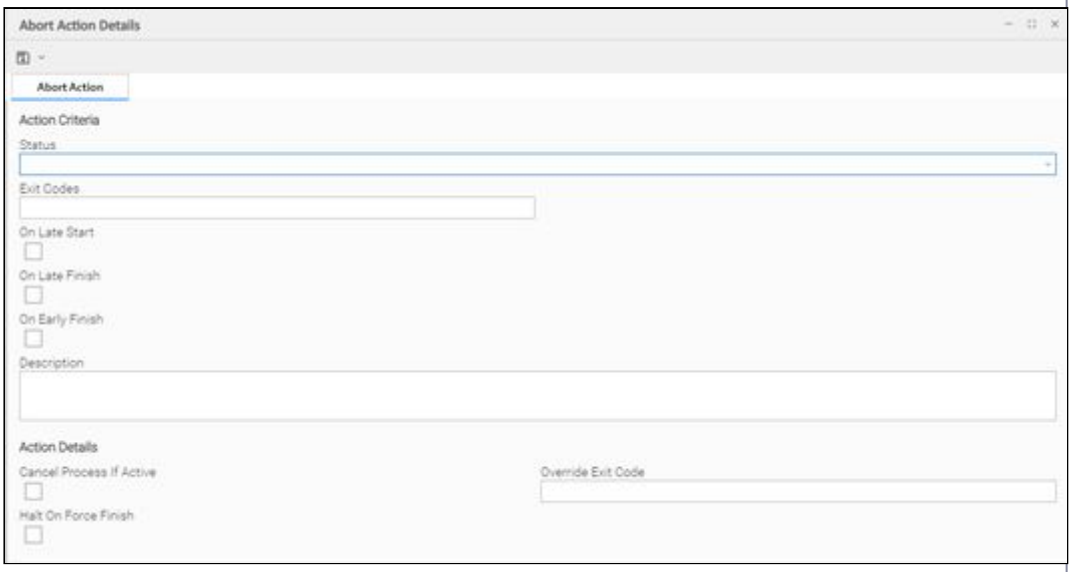
Additionally, for running task instances, the Abort Action provides the ability to Force Finish and Cancel by using the Cancel Process if Active option and/or override the exit code of the Force Finished task instance by using the Override Exit Code option.

You can trigger this action based on one or more of the following events associated with the task instance:

- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

You can create one or more Abort Actions for any Universal Controller task. For Workflow tasks, you can also specify whether you want the Abort Action instructions to apply to the workflow itself, the workflow and/or its tasks, or to the tasks only.

10.1.2 Creating an Abort Action

Step 1	Display the Task Details of the task for which you are creating the Abort Action.
Step 2	Click the **Actions** tab. A list of any defined Actions for that task displays. 
Step 3	Click the + button that displays on the Abort Actions row. The Abort Action Details pop-up displays. 
Step 4	Using the field descriptions, below, as a guide, complete the fields as needed.
Step 5	Click the save button to save the record in the Controller database.
Step 6	If appropriate, repeat these steps for any additional Abort Actions you want to create.

10.1.3 Abort Action Details Field Descriptions

The following table describes the fields and buttons that display in the Abort Actions Details.

Field Name	Description
Action Criteria	This section contains criteria for performing the action.
Action Inheritance	For Workflow tasks only; the records that this action applies to. Options: • Self The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the Defined status, when the workflow where the action is specified transitions into the Defined status, the action will run for the workflow. When children tasks within this workflow transition into the Defined status, the action will not run. • Self/Children The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the Defined status, the action will run. • Children This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the Defined status, the action will run. However, when the workflow where this action is specified transitions into the Defined status, this action will not run.
Status	The status of this task, by itself or together with an exit code, that will trigger the Abort action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.
On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
On Projected Late	Execute the Action when the task instance is projected to be late based on critical path projected end times. Only applicable when a Late Start Time, Late Start Duration, or Late Finish Time is specified for the task instance. **Note** This field displays in the Details only if the Controller is configured for critical path calculations with an enabled Critical Path Calculations Permitted Universal Controller system property.
Description	Description of this action.
Action Details	This section contains additional details about the action.

Cancel Process if Active	If enabled, instructs the Controller to Cancel the process that was launched by this task before Force Finishing the task.
Halt On Force Finish	If enabled, instructs the Controller to Force Finish (Halt) a running task instance, rather than just Force Finish.
Override Exit Code	Overrides the exit code returned by the process with the exit code specified in this field. This enables you to you Force Finish a task instance with a specific exit code so that you can force the workflow to take a conditional path using Conditions. **Note** If you run the Abort Action against a task that has not yet started, the task will be skipped, and the **Override Exit Code** is not applicable.
Buttons	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
Save	Saves a new Action record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	Closes the Details pop-up of this action.

10.2 Email Notification Actions

10.2.1 Overview

You can create one or more Email Notifications for any Universal Controller task. For workflow tasks, you can also specify whether you want the email to be triggered by the workflow itself, the workflow and/or its tasks, or by the tasks only.

In order to generate Email Notifications, there must be an Email connection defined, which provides the Email server name and other pertinent information.

10.2.1.1 Notifications Based on Events

You can generate notifications based on one or more of the following events associated with the task instance of the task for which you create the notification:

- Status or statuses of the task instance

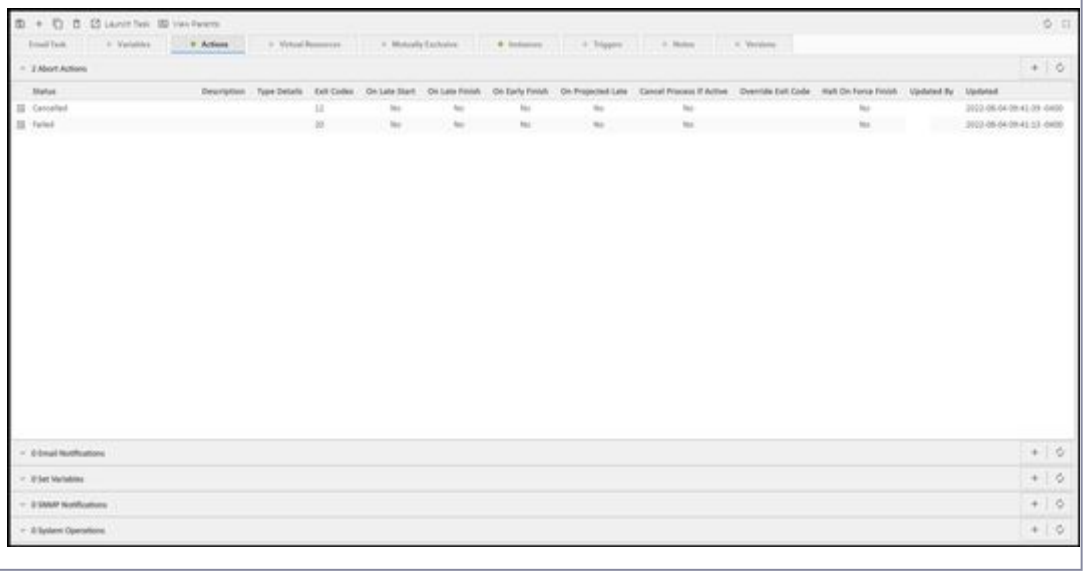
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

10.2.1.2 Notifications Based on Status

You also can generate notifications based on the status of:

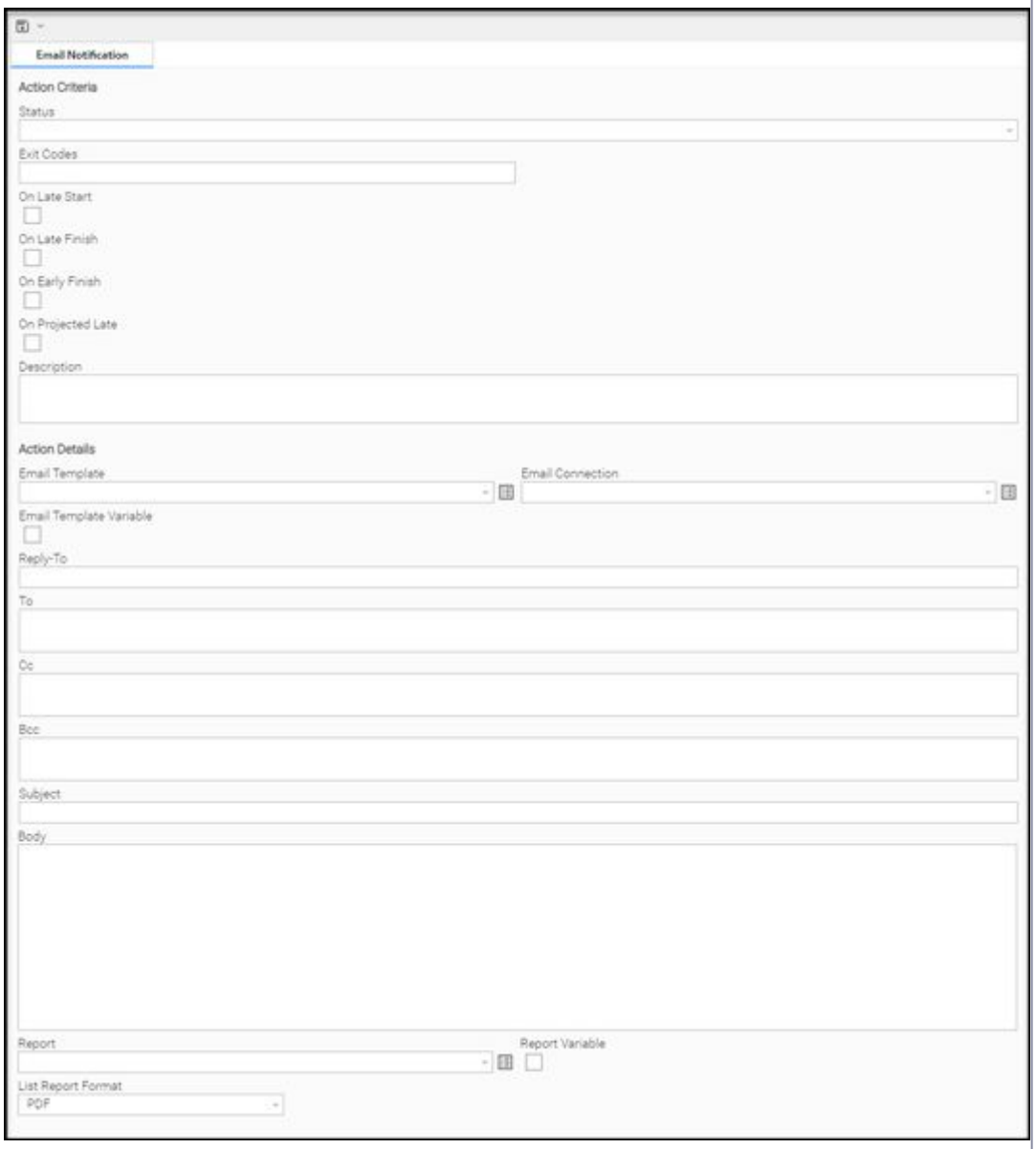
- Agents and Agent clusters
- Cluster nodes
- OMS Servers

10.2.2 Creating an Email Notification

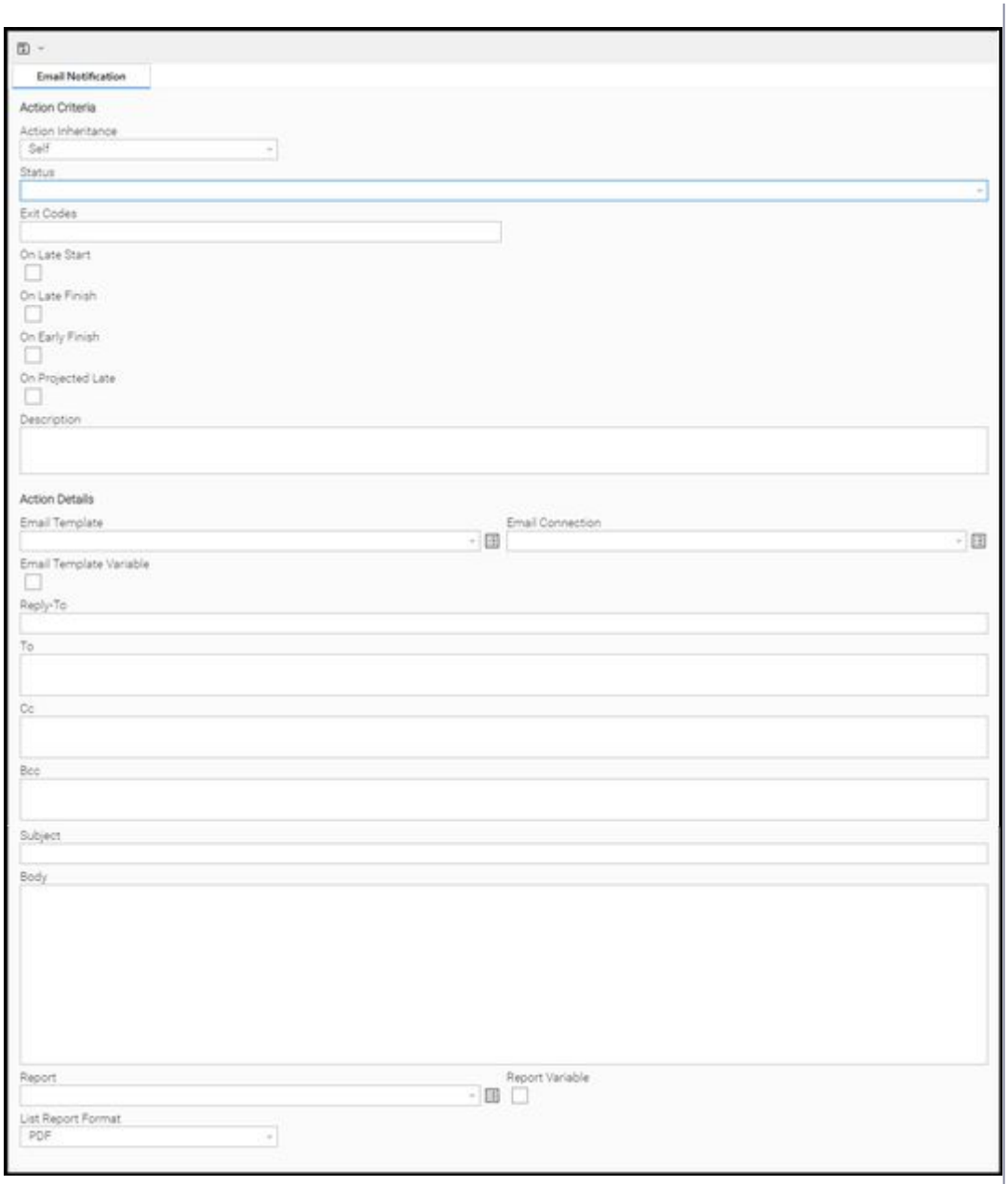
Step 1	Display the Task Details of the task for which you are creating the Email Notification.
Step 2	Click the **Actions** tab. A list of any defined Actions for that task displays. 

Step 3

Click the + button that displays on the Email Notifications row. The Email Notification Details pop-up displays. Using the field descriptions , below, as a guide, complete the fields as needed.



For **Workflow tasks**, the Email Notification Details includes the Action Inheritance field:

	
Step 5	Click the button to save the record in the Controller database.
Step 6	If appropriate, repeat these steps for any additional Email Notifications you want to create.

10.2.3 Email Notification Details Field Descriptions

The table below describes the fields and buttons that display in the Email Notification Details.

Field Name	Description

Action Inheritance	For Workflow tasks only; the records that this action applies to. Options: • Self The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the Defined status, when the workflow where the action is specified transitions into the Defined status, the action will run for the workflow. When children tasks within this workflow transition into the Defined status, the action will not run. • Self/Children The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the Defined status, the action will run. • Children This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the Defined status, the action will run. However, when the workflow where this action is specified transitions into the Defined status, this action will not run.
Status	The status of this task, by itself or together with an exit code, that will trigger this Email Notification action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.
On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
On Projected Late	Execute the Action when the task instance is projected to be late based on critical path projected end times. Only applicable when a Late Start Time, Late Start Duration, or Late Finish Time is specified for the task instance. **Note** This field displays in the Details only if the Controller is configured for critical path calculations with an enabled Critical Path Calculations Permitted Universal Controller system property.
Description	Description of this action.
Action Criteria	This section contains criteria for performing the action.
Action Details	This section contains additional details about the action.

Email Template	Name of an Email template defined in an Email Template Details. An Email template allows you to specify standard recipients and text for outgoing emails. Enter the name of an existing Email template, select an Email template from the drop-down list, or click the Details icon to create a new Email template. Every Email template specifies an Email connection. If you do not specify an Email template in this field, you must specify an Email connection in the Email Connection field. If you specify both an Email template (in this field) and an Email Connection, the Email server specified in the Email Connection field overrides the Email server specified in this field. **Note** Any information specified in an Email task (or Email Notification) overrides what is specified in an Email template.
Email Template Variable	Indication of whether the Email Template field is a reference field for selecting a specific Email Template (unchecked) or a text field for specifying the Email Template as a variable (checked). Use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions. **Note** When updating multiple Tasks, to change from using a Email Template reference to using a Email Template variable, you must change the **Email Template Variable** field to **Yes** and specify the Email Template variable in the **Email Template Unresolved** field. Conversely, to change from using an Email Template variable to using an Email Template reference, you must change the **Email Template Variable** field to **No** and specify the Email Template reference in the **Email Template** field.
Email Connection	Required if an Email Template is not specified in the Email Template field; Name of an outgoing Email Connection (Type = Outgoing). An Email Connection specifies information about an outgoing or incoming email server. Enter the name of an existing outgoing Email Connection, select an existing outgoing Email Connection from the drop-down list, or clear the Email Connection field and click the Details icon to create a new Email Connection (Outgoing will be pre-selected in the Type field). If you specify both an Email Template and an Email Connection (in this field), the Email Connection specified in this field overrides the Email Connection specified in the Email Template field.
Reply-To	Email address of the sender. Use commas to separate multiple recipients. Variables and functions supported.
To	Email address of the recipient. Use commas to separate multiple recipients. Variables and functions supported.
CC	Email address of the party being sent a copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
BCC	Email address of the party being sent a blind (hidden) copy of the email, if any. Use commas to separate multiple recipients. Variables and functions supported.
Subject	Subject line of the email. Variables and functions supported.

Body	Text of the email message. Variables and functions supported. **Note** If both the Email Template and the Email Task (or Email Notification) contain text in the Body, the text in the Email Template is appended to the text in the Email Task (or Email Notification).
Report	Report to attach to this notification.
Report Variable	Indication of whether the Report field is a reference field for selecting a specific Report (unchecked) or a text field for specifying the Report as a variable (checked). Use the format: `${variable name}` The variable must be a supported type as described in Variables and Functions.
List Report Format	Report format Options: • PDF • XML • JSON • CSV • TSV If the attached report is not a List type report, this option will be ignored.
Attach Local File	If the uc.email.attachments.local.path Universal Controller Start-Up Property specifies a local directory; specification for whether or not to attach a local file to the notification.
Local Attachments Path	If Attach Local File is selected; Read-Only field showing the location of Local Attachments for the connected Node.
Local Attachment	If Attach Local File is selected; Name of the file(s) to attach. Supports variables as well as comma-separated list of file names.
Attach Standard Output	For Agent-based tasks only (except z/OS tasks); attach any standard output generated by the associated task.
Attach Standard Error	For Agent-based tasks only (except z/OS tasks); attach standard error data generated by the associated task.
Attach Remote File	For Agent-based tasks only; attach any single text file that is accessible by the Agent. Full path name is required. Wildcards are NOT supported. The Controller will request the file from the agent. If the file does not exist, the Agent will return a file output type with the content: OPSWISE WARNING - File is not available.
Attach Job Log	For z/OS tasks only; attach any job logs generated by the associated task.

Start Line	If Attach Standard Output, Attach Standard Error, and/or Attach Remote File is selected; Attach data beginning at the line indicated. • If a **Start Line** value is not specified, the default is 1. • If the **Start Line** value is **-1**, data will be retrieved starting at the end of the file.
Number of Lines	If Attach Standard Output, Attach Standard Error, and/or Attach Remote File is selected; Allows you to limit the retrieved data to the number of lines specified. If a Number of Lines value is not specified, the default is the value of the Retrieve Output Default Number Of Lines Universal Controller system property.
Scan Text	If Attach Standard Output, Attach Standard Error, and/or Attach Remote File is selected; Regex pattern that the Controller will search for a match for in STDOUT/STDERR or a specified file. The Controller will include the **Number of Lines** above and below the first line matched. if the Regex pattern is not found, the following message is returned: OPSWISE WARNING - Scan text string not found.
File Name	If Attach Remote File is selected; path and file name of the file you want to attach to the email notification.
Buttons	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
Save	Saves a new Action record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	Closes the Details pop-up of this action.

10.2.3.1 Report Variable Resolution

Reports do not have to be unique by Title . However, Reports with the same Title must be unique per visibility : per User, per Group, and per Everyone.

Accordingly, the following applies regarding Report Variable field resolution.

Once resolved, the Report Variable field value could match multiple Reports with the same Title, but with different visibilities. Therefore, there is an order of precedence to choosing the report by Title:

1. User visibility (execution user).
2. Group visibility (execution user's groups).
3. Everyone visibility.
4. Any other report(s). (This is applicable only in the case of an administrator who can view all reports.)

If the execution user belongs to more than one Group, and there is more than one report matching the Title visible to those Groups, the first report found will be chosen.

If multiple reports are found by resolved report Title, the following will be logged:

```
Found more than one report with name <report-title> visible to execution user <execution-user>.
```

If the resolved report Title does not match any report visible to the execution user, the notification will be delivered containing the following error message:

```
Could not find report with name <report-title> visible to execution user <execution-user>.
```

If the report variable cannot be resolved, the notification will be delivered containing the following error message:

```
Report variable not resolved.
```

A Report Variable that resolves to blank implies that no report should be included. This is not considered an error; the notification will proceed as normal.

10.3 Set Variable Actions

For information on how to create Set Variable actions for use within a task or workflow, see Creating a Set Variable Action within a Task or Workflow in Variables and Functions.

10.4 SNMP Notification Actions

10.4.1 Overview

You can create one or more SNMP notifications for any Universal Controller task. For workflow tasks, you can also specify whether you want the SNMP notification to be triggered by the workflow itself, the workflow and/or its tasks, or by the tasks only.

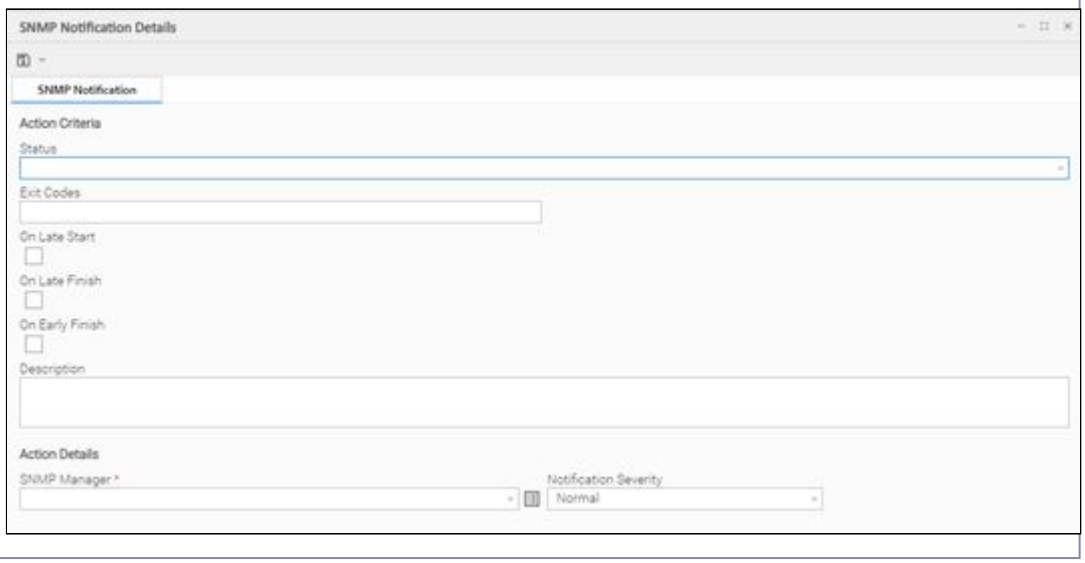
You can trigger the notification based on one or more of the following events associated with the task instance to which you attach the notification:

- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

In order to generate SNMP notifications, there must be an SNMP Manager defined, which provides the server name and other pertinent information of the SNMP Manager that will receive the notification.

You also can generate notifications based on the status of Agents and Agent clusters, Cluster nodes, and OMS Servers.

10.4.2 Creating an SNMP Notification

Step 1	Display the Task Details of the task for which you are creating the SNMP Notification.
Step 2	Click the **Actions** tab. A list of any defined Actions for that task displays.
Step 3	Click the + button that displays on the SNMP Notifications row. The SNMP Notification Details pop-up displays. 

Step 4	Using the field descriptions, below, as a guide, complete the fields as needed.
Step 5	Click the button to save the record in the Controller database.
Step 6	If appropriate, repeat these steps for any additional Email Notifications you want to create.

10.4.3 SNMP Notification Details Field Descriptions

The table below describes the fields and buttons that display in the SNMP Notification Details.

Field Name	Description
Action Criteria	This section contains criteria for performing the action.
Action Inheritance	For Workflow tasks only; the records that this action applies to. Options: • Self The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the Defined status, when the workflow where the action is specified transitions into the Defined status, the action will run for the workflow. When children tasks within this workflow transition into the Defined status, the action will not run. • Self/Children The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the Defined status, the action will run. • Children This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the Defined status, the action will run. However, when the workflow where this action is specified transitions into the Defined status, this action will not run.
Status	The status of this task, by itself or together with an exit code, that will trigger this SNMP Notification action. You can specify as many statuses as needed.
Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.
On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.

On Projected Late	Execute the Action when the task instance is projected to be late based on critical path projected end times. Only applicable when a Late Start Time, Late Start Duration, or Late Finish Time is specified for the task instance. **Note** This field displays in the Details only if the Controller is configured for critical path calculations with an enabled Critical Path Calculations Permitted Universal Controller system property.
Description	Description of this action.
Action Details	This section contains additional details about the action.
SNMP Manager	The SNMP Manager that will receive the SNMP notification. Enter the name of an existing SNMP Manager, select an existing SNMP Manager from the drop-down list, or clear the SNMP Manager field and click the Details icon to create a new SNMP Manager.
Notification Severity	Severity of this notification. Options: • Normal (1) • Warning (2) • Minor (3) • Major (4) • Critical (5)
Buttons	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
Save	Saves a new Action record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	Closes the Details pop-up of this action.

10.5 System Operation Actions

10.5.1 Overview

A System Operation allows you to run a Universal Controller system operation based on specified conditions.

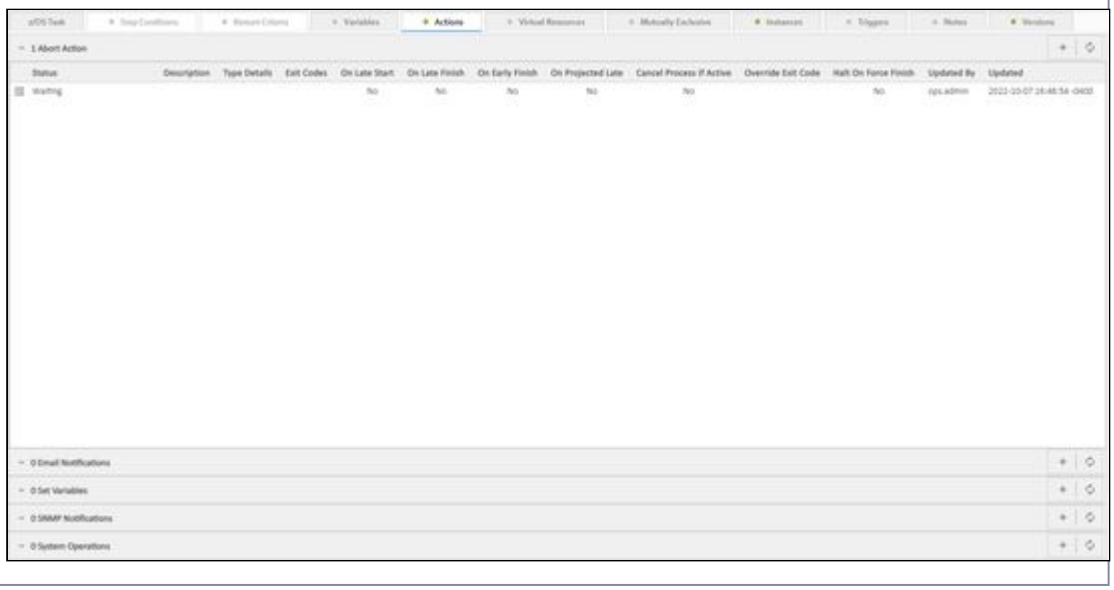
You can trigger the operation based on one or more of the following events associated with the task instance:

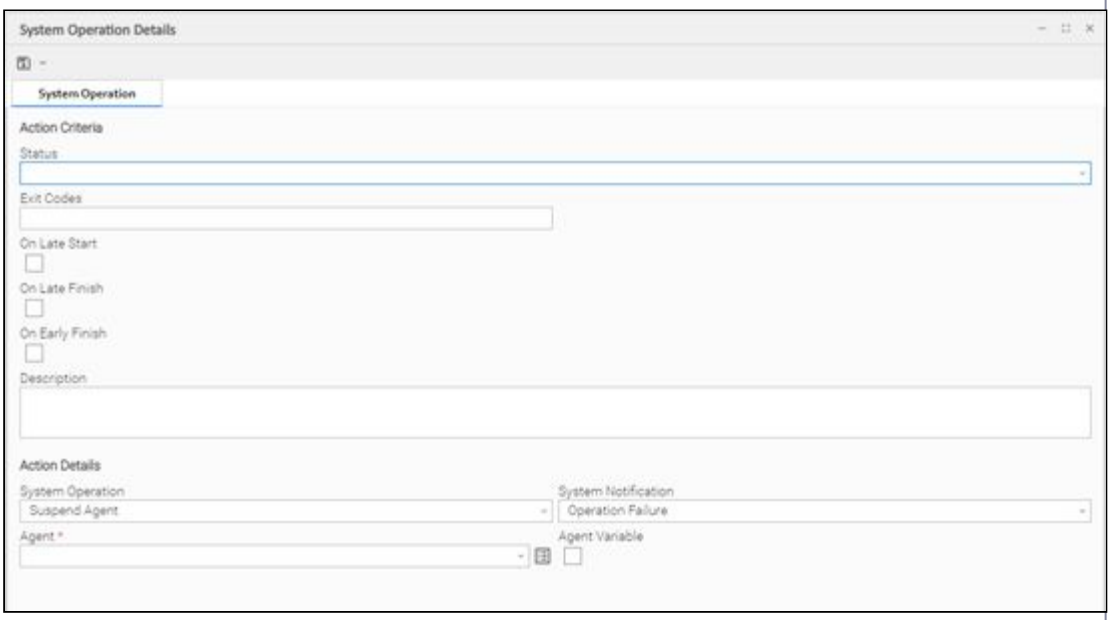
- Status or statuses of the task instance
- Exit code(s) generated by the program (along with at least one status)
- Late start
- Early or late finish

You can create one or more System Operations for any Controller task. For Workflow tasks, you can also specify whether you want a System Operation action to apply to the workflow itself, the workflow and/or its tasks, or to the tasks only.

System Operations will run under the security context of the of the task instance Execution User, which must have the appropriate privileges for the specified Operation Type; otherwise, the System Operation will be prohibited.

10.5.2 Creating a System Operation

Step 1	Display the Task Details of the task for which you are creating the System Operation.
Step 2	Click the **Actions** tab. A list of any defined Actions for that task displays. For example, the following Actions list shows that one Abort Actions have been created for this task. 

Step 3	Click the + button that displays on the System Operations row. The System Operation Details pop-up displays. 
Step 4	Using the field descriptions, below, as a guide, complete the fields as needed.
Step 5	Click the save button to save the record in the Controller database.
Step 6	If appropriate, repeat these steps for any additional System Operations you want to create.

10.5.3 System Operation Details Field Descriptions

The table below describes the fields and buttons that display in the System Operation Details.

Field Name	Description
Action Criteria	This section contains criteria for performing the action.
Action Inheritance	For Workflow tasks only; the records that this action applies to. Options: • Self The action applies only to the workflow; it is not inherited by its children tasks. For example, if the action is defined for the Defined status, when the workflow where the action is specified transitions into the Defined status, the action will run for the workflow. When children tasks within this workflow transition into the Defined status, the action will not run. • Self/Children The action applies to the workflow and any children under the workflow (it is as if each child under the workflow had the action specified on itself). For example, if the workflow or any of its children transition into the Defined status, the action will run. • Children This action applies only to the children under the workflow and not the workflow itself. For example, if any child of this workflow transitions into the Defined status, the action will run. However, when the workflow where this action is specified transitions into the Defined status, this action will not run.
Status	The status of this task, by itself or together with an exit code, that will trigger this System Operation action. You can specify as many statuses as needed.

Exit Codes	Specifies one or more exit codes that will trigger the event. If you specify an exit code, you must also specify at least one status. Use commas to separate multiple exit codes; use a hyphen to specify a range. Example: 1, 5, 22-30.
On Late Start	Generates the action or notification if the task started late, based on the Late Start Time specified in the task.
On Late Finish	Generates the action or notification if the task finishes late, based on the Late Finish time specified in the task.
On Early Finish	Generates the action or notification if the task finishes early, based on the Early Finish Time specified in the task.
On Projected Late	Execute the Action when the task instance is projected to be late based on critical path projected end times. Only applicable when a Late Start Time, Late Start Duration, or Late Finish Time is specified for the task instance. **Note** This field displays in the Details only if the Controller is configured for critical path calculations with an enabled Critical Path Calculations Permitted Universal Controller system property.
Description	Description of this action.
Action Details	This section contains additional details about the action.
System Operation	Specific system operation to perform. Options: • Suspend Agent • Resume Agent • Suspend Agent Cluster • Resume Agent Cluster • Suspend Cluster Membership • Resume Cluster Membership • Set Agent Task Execution Limit • Set Cluster Task Execution Limit • Set Virtual Resource Limit • Run Task Instance Command • Launch Task • Trigger Now • Enable Trigger • Disable Trigger **Note** For the Suspend Agent and Resume Agent operations, the user must have the following Agent permissions: • Explicit Read permission, if the Strict Business Service Membership Read Constraints Universal Controller system property is true. • Suspend Agent and Resume Agent commands permission. For the Suspend Agent Cluster, Resume Agent Cluster, Suspend Agent Cluster Membership, and Resume Agent Cluster Membership operations, the user must have the following Agent Cluster permissions: • Explicit Read permission, if the Strict Business Service Membership Read Constraints Universal Controller system property is true. • Suspend Agent, Resume Agent, Suspend Agent Membership, and Resume Agent Membership commands permission.

System Notification	Status of the specified system operation (see above) that will trigger a system notification. Options: • None • Operation Failure (default) • Operation Success/Failure • Operation Success **Note** The Controller must be configured for system notifications in order for system notifications to be triggered.
Agent	If System Operation is Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit; Agent for which the system operation is to be performed.
Agent Variable	If System Operation is Suspend Agent, Resume Agent, Suspend Cluster Membership, Resume Cluster Membership, or Set Agent Task Execution Limit: If enabled, the Agent field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions.
Agent Cluster	If System Operation is Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit; Agent Cluster for which the system operation is to be performed.
Agent Cluster Variable	If System Operation is Suspend Agent Cluster, Resume Agent Cluster, Suspend Cluster Membership, Resume Cluster Membership, or Set Cluster Task Execution Limit; If enabled, the Agent Cluster field converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}` The variable must be a supported type as described in Variables and Functions.
Task Execution Limit	If System Operation is Set Agent Task Execution Limit or Set Cluster Task Execution Limit; Specification for whether a Limited or Unlimited number of task instances can be run concurrently on the specified Agent / Agent Cluster. (Default is Unlimited.)
Virtual Resource	If System Operation is Set Virtual Resource Limit; Virtual resource for which a virtual resource limit is to be set. **Note** If the Strict Business Service Membership Read Constraints Universal Controller system property is true, the drop-down list displays only Virtual Resources for which the user has explicit Read permission.
Virtual Resource Variable	If System Operation is Set Virtual Resource Limit; the Virtual Resource field (if enabled) converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: `${variable name}` The variable must be a supported type as described in Variables and Functions.
Limit	If System Operation is Set Agent Task Execution Limit or Set Cluster Task Execution Limit, and Task Execution Limit is Limited; Number of tasks that can be run concurrently by the specified Agent / Agent Cluster. If System Operation is Set Virtual Resource Limit; Virtual resource limit to be set for the specified virtual resource.

Command	If System Operation is Run Task Instance Command; Type of task instance command to run. Options: • Cancel • Force Finish • Force Finish (Halt) • Force Finish/Cancel • Force Finish/Cancel (Halt) • Skip • Skip Path • Unskip • Hold • Release • Release Recursive • Clear All Dependencies • Clear Exclusive • Clear Predecessors • Clear Resources • Clear Timewait • Re-run **Caution** If you choose to re-run a task instance, care must be taken to not create unintended loop situations. For example, if a task contains a System Operation that specifies the re-run of that same task if the task instance ends in the Failed status, this will cause an endless loop of re-runs. If the task also contains a System Notification / Email Notification that sends an email if the task instance ends in Failed status, the emails could flood the recipient's mail server.
Workflow Instance Name Condition	If System Operation is Run Task Instance Command; Optional. Type of condition for the name of the parent workflow task instance that contains the task on which to perform the specified action. The action will be performed only on a task instance in a parent workflow task instance meeting the specified condition value. Options: • Equals • Starts With • Contains • Ends With For the selected condition (the default is Equals), a corresponding field displays (see below) that allows you to enter a value for that condition.
Workflow Instance Name Equals	If Workflow Instance Name Condition = Equals; Exact name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Starts With	If Workflow Instance Name Condition = Starts With; Character string at the start of the name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Contains	If Workflow Instance Name Condition = Contains; Character string in the name of a parent workflow task instance containing the task. Variables are supported.
Workflow Instance Name Ends With	If Workflow Instance Name Condition = Ends With; Character string at the end of the name of a parent workflow task instance containing the task. Variables are supported.

Instance Lookup Option	If System Operation is Run Task Instance Command; Specification for how to search for the task instance to run a command against. Options: • Instance Name • Instance Name/Task • Instance Id • Task
Instance Name	If Instance Lookup Option is Instance Name or Instance Name/Task; Required. Name of the task instance to run the command against. Variables supported.
Instance Criteria	If Instance Lookup Option is Instance Name, Instance Name/Task, or Task; Additional criteria for selecting a specific task instance if multiple task instances have matching names. • Oldest Active Instance (default) • Newest Active Instance • Newest Instance (Re-run and Unskip commands only) • Oldest Instance (Re-run and Unskip commands only) (An Active task instance is an instance that is not in any of these statuses: Skipped, Finished, Success.)
Task Reference	• If Instance Lookup Option is Instance Name/Task or Task; Required. Name of the task for which the task instance was run. • If System Operation is Launch Task; Name of the task to launch.
Task Reference Variable	If Instance Lookup Option is Instance Name/Task or Task, or if System Operation is Launch Task; the Task field (above) converts from a reference field (where you browse and select a record) into a text field that allows you to enter a variable. Use the format: ${variable name}. The variable must be a supported type as described in Variables and Functions.
Instance Id	If Instance Lookup Option is Instance Id; ID of task instance to run the command against. The instance Id (sysid) is a 32-character universally unique identifier. You can use the **${ops_task_id}** variable or **${_siblingid('mytask')}** function to get the instance Id.
Trigger Reference	If System Operation is Trigger Now, Enable Trigger, or Disable Trigger; Name of the trigger.
Trigger Reference Variable	If System Operation is Trigger Now, Enable Trigger, or Disable Trigger; Indication of whether the **Trigger Reference** field is a reference field for selecting a specific Trigger (unchecked) or is a text field for specifying the trigger as a variable (checked). For a variable, use the format: `${variable name}`. The variable must be a supported type as described in Variables and Functions.
Vertex Selection	If System Operation is Launch Task or Trigger Now; Specifies to Launch/Trigger Workflow to Run Specific Paths/Vertices. To enable Vertex Selection, either • The Task Reference field must be populated by a Workflow, for the Launch Task System Operation. • The Trigger Reference field must be populated by a Trigger that triggers a single Workflow, for the Trigger Now System Operation.
Vertices	If Vertex Selection is enabled; Specification of paths/vertices to be included in workflow execution. See Launching/Triggering a Workflow to Run Specific Paths/Vertices.
Override Variables	If System Operation is Launch Task or Trigger Now; Variables to override.

Override Variables Resolution Disabled	If System Operation is Launch Task or Trigger Now; Indication of whether or not Override Variables resolution should be disabled to allow for passing unresolved variable values. • If enabled (checked), Override Variables will be left unresolved. Any unresolved variables will be resolved in the context of the launched or triggered task instance. • If disabled (unchecked), Override Variables will be resolved prior to the execution of the Launch Task or Trigger Now System Operation.
Override Trigger Date/Time	If System Operation is Trigger Now, Indication of whether or not to override the date/time of the trigger.
Override Date Offset	If Override Trigger Date Time is selected; Override date offset.
Override Time	If Override Trigger Date Time is selected; Override time.
Buttons	This section identifies the buttons displayed above and below the Action Details that let you perform various actions.
Save	Saves a new Action record in the Controller database.
Save & New	Saves a new record in the Controller database and redisplays empty Details so that you can create another new record.
Save & View	Saves a new record in the Controller database and continues to display that record.
New	Displays empty (except for default values) Details for creating a new record.
Update	Saves updates to the record.
Delete	Deletes the current record.
Refresh	Refreshes any dynamic data displayed in the Details.
Close	Closes the Details pop-up of this action.