

Workflows

Universal Controller 7.9.x

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Table of Contents

1	Workflows.....	7
2	Creating and Maintaining Workflows	8
2.1	Overview	10
2.2	Built-In Variables	10
2.3	Creating a Workflow Task	11
2.3.1	Workflow Task Details	12
2.3.2	Workflow Task Details Field Descriptions	14
2.4	Viewing a Workflow Task Instance.....	26
2.4.1	Workflow Task Instance Details	26
2.4.2	Workflow Task Instance Details Field Descriptions	28
2.5	Designing a Workflow.....	39
2.5.1	Designing, Modifying, or Viewing Multiple Workflows	40
2.5.2	Workflow Editor Modes.....	40
2.5.3	Workflow Editor Toolbar	41
2.5.4	Workflow Editor Tools	41
2.5.5	Searching For and Adding Tasks.....	45
2.5.6	Task Details	46
2.5.7	Task Actions	46
2.5.8	Task Actions for Workflow.....	48
2.5.9	Specifying Critical Endpoints for Critical Paths.....	51
2.5.10	Specifying Connections	51
2.5.11	Connector Details	52
2.5.12	Connector Actions.....	53
2.5.13	Connector Properties	54
2.5.14	Specifying Conditions on Connections	54
2.5.15	Specifying a Condition Expression.....	62
2.5.16	Moving Workflow Elements	79
2.5.17	Deleting Workflow Elements.....	81
2.5.18	Copying Workflow Elements.....	82

2.5.19	Undoing and Redoing Workflow Changes	82
2.5.20	Zooming In and Out	82
2.5.21	Panning Around in Large Workflows	82
2.5.22	Automatically Formatting a Workflow	83
2.5.23	Displaying Workflow Documentation	83
2.5.24	Displaying Processing Messages.....	83
2.5.25	Saving/Updating a Workflow	84
2.5.26	Switching Between Workflows	84
2.6	Adding Skip/Run Criteria for Specific Tasks.....	85
2.6.1	Creating Skip/Run Criteria.....	85
2.6.2	Skip/Run Criteria Field Descriptions.....	86
2.6.3	Copying Skip/Run Criteria	89
2.7	Launching/Triggering a Workflow to Run Specific Paths/Vertices.....	90
2.8	Specifying When a Workflow Runs	91
2.9	Monitoring Workflow Execution.....	92
2.10	Modifying an Existing Workflow	92
2.11	Cloning a Workflow.....	92
2.12	Deleting a Workflow.....	93
2.13	Finding a Task in a Workflow	93
2.13.1	Workflow Coordinates.....	94
2.14	Viewing a Task Instance in a Workflow from the Activity Monitor or Task Instances List	94
2.15	Inserting a Task in an Active Workflow	95
2.15.1	Insert Non-Workflow Task as Predecessor	95
2.15.2	Insert Workflow Task as Predecessor	96
2.15.3	Insert Non-Workflow Task as Successor.....	97
2.15.4	Insert Workflow Task as Successor	98
2.15.5	Insert Task with Multiple Predecessors/Successors.....	99
2.16	Viewing Children Tasks	101
2.16.1	Viewing Children Tasks of a Workflow Task	101
2.16.2	Viewing Children Tasks of a Workflow Task Instance.....	102

2.17	Viewing a Workflow Tree.....	102
2.17.1	Viewing a Workflow Tree for a Workflow Task.....	102
2.17.2	Viewing a Workflow Tree for a Workflow Task Instance	103
2.17.3	Expanding/Collapsing the Tree View	104
2.17.4	Refreshing the Tree View	104
2.18	Viewing a Timeline for a Workflow Task Instance	104
2.18.1	Refreshing the Timeline View	106
2.19	Viewing Task Predecessors/Successors.....	106
2.19.1	Viewing Predecessors/Successors of a Single Task Instance from the Activity Monitor or Task Instances List.....	106
2.19.2	Viewing Predecessors/Successors of a Single Task from the Workflow Editor .	107
2.19.3	Viewing Predecessors/Successors of a Single Task Instance from the Workflow Monitor	109
2.19.4	Viewing Detailed Status of Predecessors/Successors of a Single Task Instance from Workflow Monitor	110
2.19.5	Viewing Predecessors/Successors of All Tasks in a Workflow Task.....	111
2.19.6	Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance.....	116
2.20	Editing Task Predecessors/Successors	117
2.21	Viewing Blocking Ancestors.....	118
2.21.1	View Blocking Ancestors - List	119
2.21.2	View Blocking Ancestors - Tree.....	120
2.21.3	View Blocking Ancestors - Graph	121
2.22	Forecasting a Workflow for a Specific Date/Time	121
2.22.1	Forecasting with Override Calendar Options	124
2.23	Modifying Tasks in a Workflow.....	124
3	Monitoring Workflows	126
3.1	Overview	126
3.2	Monitoring a Running Workflow	126
3.2.1	Workflow Monitor Modes	127
3.3	Viewing Predecessors/Successors of Task Instances in a Workflow.....	128
3.4	Viewing Blocking Ancestors of Task Instances in a Workflow.....	128

3.5	Viewing a Timeline for a Workflow Task Instance	128
3.6	Workflow Monitor Toolbar	129
3.6.1	Workflow Monitor Tools.....	129
3.7	Workflow Monitor Display Mode	130
3.7.1	Task Name.....	131
3.7.2	Task Type.....	131
3.7.3	Task Instance Status.....	132
3.7.4	Task Instance Details	132
3.7.5	Task Instance Actions.....	133
3.7.6	Task Instance Actions for Workflow	134
3.7.7	Task Instance Properties	136
3.7.8	Connector Details	136
3.7.9	Connector Actions.....	137
3.7.10	Connector Properties	137
3.7.11	Displaying Task Instance Status Icons	138
3.8	Manually Intervening in a Workflow.....	139
3.9	Monitoring the Critical Path in a Workflow	139
3.9.1	Critical Path Settings.....	140
3.9.2	Running a Workflow Enabled for Critical Path.....	140
3.9.3	Critical Path Status.....	141

1 Workflows

[Creating and Maintaining Workflows](#)

[Monitoring Workflows](#)

2 Creating and Maintaining Workflows

- [Overview](#)
- [Built-In Variables](#)
- [Creating a Workflow Task](#)
 - [Workflow Task Details](#)
 - [Workflow Task Details Field Descriptions](#)
- [Viewing a Workflow Task Instance](#)
 - [Workflow Task Instance Details](#)
 - [Workflow Task Instance Details Field Descriptions](#)
- [Designing a Workflow](#)
 - [Designing, Modifying, or Viewing Multiple Workflows](#)
 - [Workflow Editor Modes](#)
 - [Workflow Editor Toolbar](#)
 - [Workflow Editor Tools](#)
 - [Searching For and Adding Tasks](#)
 - [Task Details](#)
 - [Task Actions](#)
 - [Task Actions for Workflow](#)
 - [Specifying Critical Endpoints for Critical Paths](#)
 - [Specifying Connections](#)
 - [Connector Details](#)
 - [Connector Actions](#)
 - [Connector Properties](#)
 - [Specifying Conditions on Connections](#)
 - [Specifying a Condition Expression](#)
 - [Moving Workflow Elements](#)
 - [Deleting Workflow Elements](#)
 - [Copying Workflow Elements](#)
 - [Undoing and Redoing Workflow Changes](#)
 - [Zooming In and Out](#)
 - [Panning Around in Large Workflows](#)
 - [Automatically Formatting a Workflow](#)
 - [Displaying Workflow Documentation](#)
 - [Displaying Processing Messages](#)
 - [Saving/Updating a Workflow](#)
 - [Switching Between Workflows](#)
- [Adding Skip/Run Criteria for Specific Tasks](#)

- Creating Skip/Run Criteria
- Skip/Run Criteria Field Descriptions
- Copying Skip/Run Criteria
- Launching/Triggering a Workflow to Run Specific Paths/Vertices
- Specifying When a Workflow Runs
- Monitoring Workflow Execution
- Modifying an Existing Workflow
- Cloning a Workflow
- Deleting a Workflow
- Finding a Task in a Workflow
- Viewing a Task Instance in a Workflow from the Activity Monitor or Task Instances List
- Inserting a Task in an Active Workflow
 - Insert Non-Workflow Task as Predecessor
 - Insert Workflow Task as Predecessor
 - Insert Non-Workflow Task as Successor
 - Insert Workflow Task as Successor
 - Insert Task with Multiple Predecessors/Successors
- Viewing Children Tasks
 - Viewing Children Tasks of a Workflow Task
 - Viewing Children Tasks of a Workflow Task Instance
- Viewing a Workflow Tree
 - Viewing a Workflow Tree for a Workflow Task
 - Viewing a Workflow Tree for a Workflow Task Instance
 - Expanding/Collapsing the Tree View
 - Refreshing the Tree View
- Viewing a Timeline for a Workflow Task Instance
 - Refreshing the Timeline View
- Viewing Task Predecessors/Successors
 - Viewing Predecessors/Successors of a Single Task Instance from the Activity Monitor or Task Instances List
 - Viewing Predecessors/Successors of a Single Task from the Workflow Editor
 - Viewing Predecessors/Successors of a Single Task Instance from the Workflow Monitor
 - Viewing Detailed Status of Predecessors/Successors of a Single Task Instance from Workflow Monitor
 - Viewing Predecessors/Successors of All Tasks in a Workflow Task
 - Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance
- Editing Task Predecessors/Successors
- Viewing Blocking Ancestors
 - View Blocking Ancestors - List
 - View Blocking Ancestors - Tree
 - View Blocking Ancestors - Graph
- Forecasting a Workflow for a Specific Date/Time
 - Forecasting with Override Calendar Options

- [Modifying Tasks in a Workflow](#)

2.1 Overview

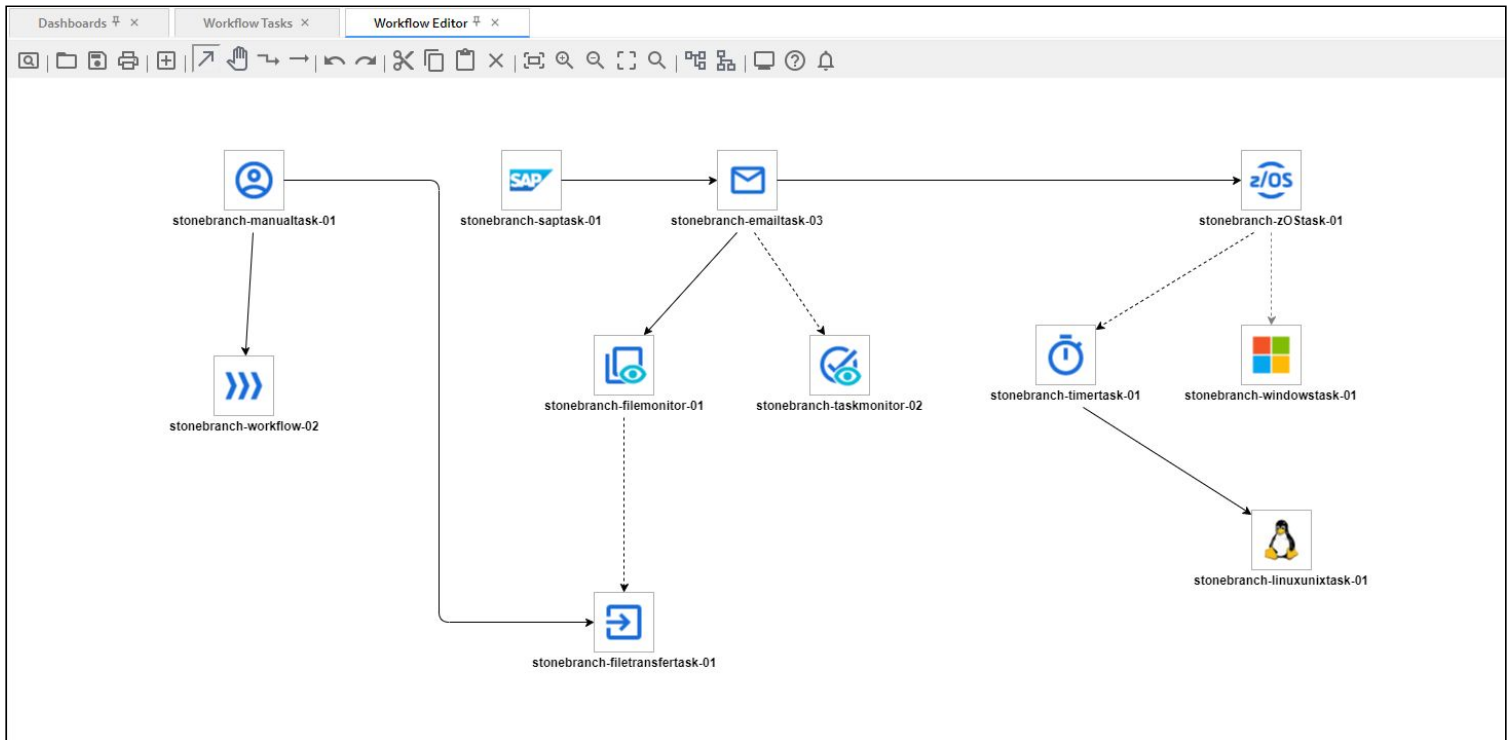
A Workflow is a task comprised of one or more tasks of one or more [task types](#), including other Workflows.

To create a Workflow, you enter [task Details](#) just as you would for any task, and then design the Workflow on the [Workflow Editor](#), where you add, connect, and organize the tasks that will comprise the Workflow.

During and after a Workflow run, you can view detailed results of the run in the [Workflow Task Instance Details](#), and monitor the status of the Workflow on the [Workflow Monitor](#).

Although a typical Workflow is a single group of tasks, a Workflow can contain multiple groups of tasks and/or individual tasks. Each task in a group of tasks is connected to one or more other tasks in that group. Each connection is made from one task (the predecessor) to another task (the successor). There is no limit to the number of connections that can be made to or from a task.

The following sample Workflow contains a single group of tasks.



When you launch a Workflow, the first predecessor task in all task groups, and all individual tasks, begin to run. In this example, task **stonebranch-saptask-01** would begin to run.

2.2 Built-In Variables

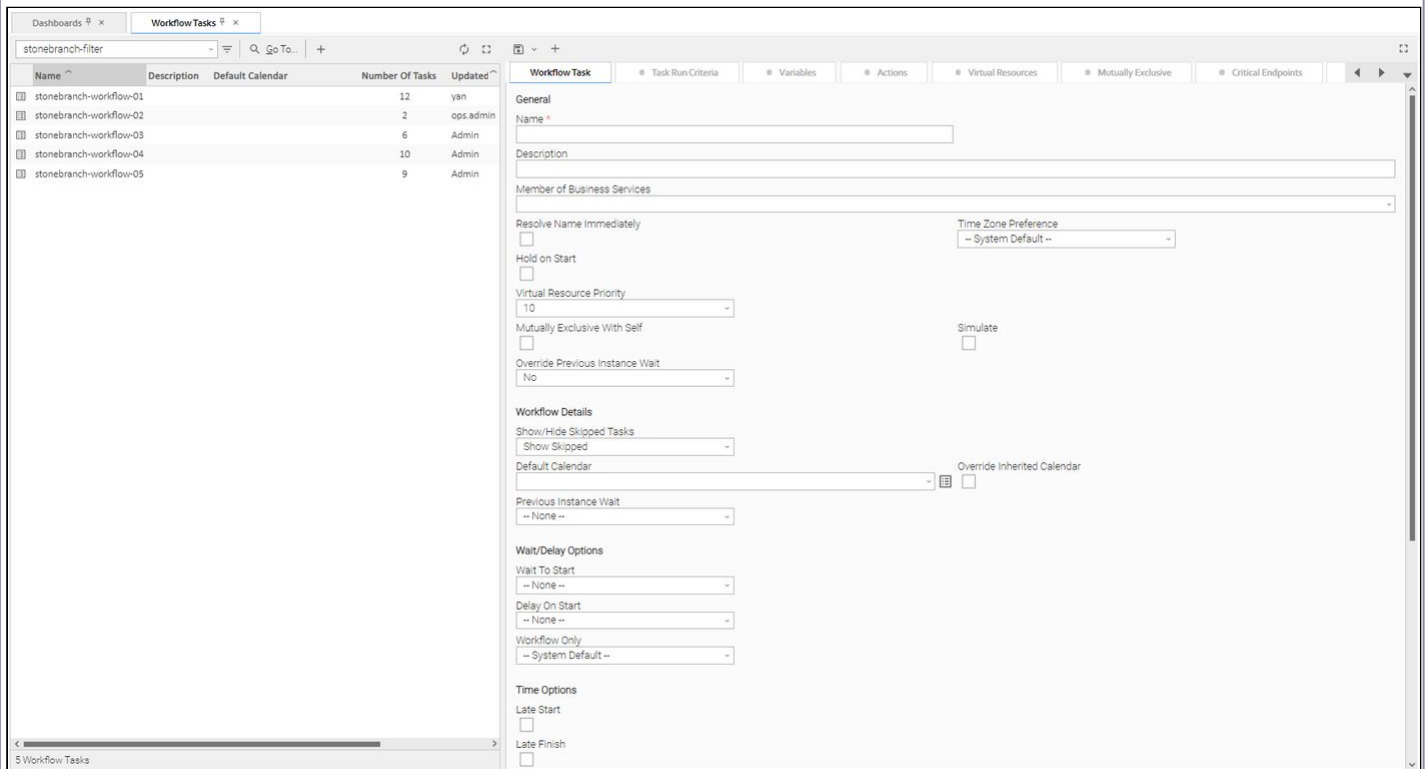
The following [built-in variables](#) can be used in a Workflow task to pass data where appropriate:

- [Task Instance variables](#)

2.3 Creating a Workflow Task

Step 1 From the [Automation Center](#) navigation pane, select **Tasks > Workflow Tasks**. The Workflow Tasks list displays a list of all currently defined Workflow tasks.


Below the list, Workflow Task Details for a new Workflow task displays.




Step 2 Enter/select Details for a new Workflow 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 Workflow task is added to the database, and all buttons and tabs in Workflow Task Details are enabled.

Step 4 Click the **Edit Workflow** button to display a blank Workflow Editor canvas.

Step 5 Follow the instructions provided below for [designing the Workflow](#) in the Workflow Editor.

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 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](#)).

2.3.1 Workflow Task Details

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

Depending on the values that you enter / select for these fields, and whether or not the Workflow 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 Workflow Task Details.

Launch With Variables... Launch View Parents Edit Workflow

Workflow Task Task Run Criteria Variables Actions Virtual Resources Mutu

General

Name * Version

Description

Member of Business Services

Resolve Name Immediately Time Zone Preference

Hold on Start

Virtual Resource Priority Virtual Resource Priority Variable

Mutually Exclusive With Self Simulate

Override Previous Instance Wait

Workflow Details

Show/Hide Skipped Tasks

Default Calendar Override Inherited Calendar

Previous Instance Wait

Wait/Delay Options

Wait To Start

Delay On Start

Workflow Only

Time Options

Late Start

Late Finish

Early Finish

Now Estimated Duration

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

2.3.2 Workflow Task Details Field Descriptions

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

Field Name	Description
General	This section contains general information about the Workflow 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 length is 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: <ul style="list-style-type: none"> – 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.
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: <ul style="list-style-type: none"> • 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.
Workflow Details	This section contains assorted detailed information about the Workflow task.
Show/Hide Skipped Tasks	Specification to either show or hide tasks that have been skipped in a Workflow (see Skipping a Task). Options: <ul style="list-style-type: none"> • Show Skipped • Hide Skipped
Auto Layout	If Show/Hide Skipped Tasks = Hide Skipped ; specification for the layout of the Workflow Monitor. Options: <ul style="list-style-type: none"> • -- None -- • Horizontal Layout • Vertical Layout
Default Calendar	Default calendar used by the Workflow. If the Workflow is launched by a trigger, the trigger calendar overrides this default calendar.
Override Inherited Calendar	If enabled, uses the selected Default Calendar for this Workflow instead of the calendar used in the trigger or parent Workflow.
Previous Instance Wait	Specification for which previous task instance(s) a task instance of the same task needs to wait to complete before starting. Applies to every task instance directly in the workflow. Options: <ul style="list-style-type: none"> • -- 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.

<p>Previous Instance Wait Lookup Option</p>	<p>If Previous Instance Wait is not – None –; Specification for which field(s) to use to look up qualifying previous task instances.</p> <p>Applies to every task instance directly in the workflow.</p> <p>Options:</p> <ul style="list-style-type: none"> • Task • Task / Instance Name <p>Selecting Task / Instance Name will automatically enable Resolve Name Immediately for all task instances in the workflow, unless Previous Instance Wait Resolved is – None –.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>Each sub-workflow determines the behavior of its own children.</p> </div>
<p>Wait / Delay Options</p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> • – None – • Time • Relative Time • Duration • Seconds
<p>Wait Time</p>	<p>If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.</p>
<p>Wait Day Constraint</p>	<p>If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • – None – <ul style="list-style-type: 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. <p>Default is – None –.</p>

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	<p>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.</p> <p>Options are:</p> <ul style="list-style-type: none"> • – 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	<p>Specification for whether or not to apply the Wait To Start and Delay On Start specifications only if the task is in a Workflow.</p> <p>Options are:</p> <ul style="list-style-type: none"> • -- 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	<p>Required if Late Start is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> • 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.

<p>Late Start Day Constraint</p>	<p>If Late Start Type = Time; Specification for whether or not to advance the late start time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • -- 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. <p>Default is -- None --.</p>
<p>Late Start Nth Amount</p>	<p>If Late Start Day Constraint = Nth Day; Number of days to advance.</p>
<p>Late Start Duration</p>	<p>If Late Start Type = Duration; Duration (amount of relative time) after which the task is considered to have started late.</p> <p>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.</p> <p>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.</p>
<p>Late Finish</p>	<p>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.</p>
<p>Late Finish Type</p>	<p>Required if Late Finish is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> • 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.
<p>Late Finish Offset Type</p>	<p>If Late Finish Type = Average Duration;</p> <p>Options:</p> <ul style="list-style-type: none"> • Percentage • Duration

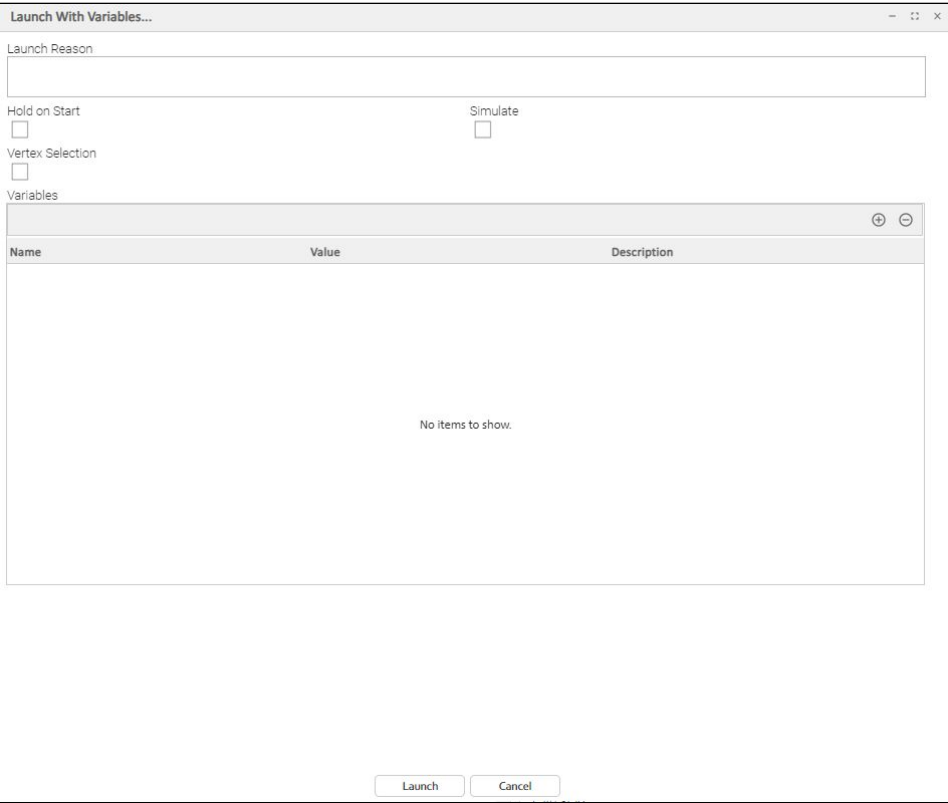
Late Finish Percentage Offset (+)	Required if Late Finish Offset Type = <i>Percentage</i> ; Percentage of Average Duration to use as an offset. The late finish time is calculated by adding the offset to the Average Duration . (Minimum = 0 and Maximum = 1000)
Late Finish Duration Offset (+)	Required if Late Finish Offset Type = <i>Duration</i> ; 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 = <i>Duration</i> ; Options: <ul style="list-style-type: none"> • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = <i>Time</i> ; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = <i>Time</i> ; Specification for whether or not to advance the late finish time to another day. Valid values: <ul style="list-style-type: none"> • -- 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 = <i>Nth Day</i> ; Number of days to advance.
Late Finish Duration	If Late Finish Type = <i>Duration</i> ; 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = <i>Percentage</i> ; 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 = <i>Duration</i> ; 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 = <i>Duration</i> ; Options: <ul style="list-style-type: none"> • Seconds • Minutes • Hours
Early Finish Time	If Early Finish Type = <i>Time</i> ; 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 = <i>Time</i> ; Specification for whether or not to advance the early finish time to another day. Valid values: <ul style="list-style-type: none"> • -- 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 = <i>Nth Day</i> ; Number of days to advance.
Early Finish Duration	If Early Finish Type = <i>Duration</i> ; Shortest amount of time this task instance should take to run.
User Estimated Duration	Required if Early Finish Type or Late Finish Type = <i>Average Duration</i> ; 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.

<p>Calculate Critical Path</p>	<p>If enabled (checked), the Controller calculates the Critical Path of this Workflow and, by default, displays it in the Workflow Monitor. You can toggle between the normal view and the Critical Path view by using the Toggle Critical Path View icon on the Workflow Monitor toolbar.</p> <p>If disabled (unchecked), the Controller does not calculate the Critical Path of this Workflow and display it in the Workflow Monitor, and the Toggle Critical Path View icon on the Workflow Monitor toolbar is disabled.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>This field displays only if the Critical Path Calculations Permitted Universal Controller system property is set to true.</p> </div> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>The Calculate Critical Path option on the workflow will be ignored when the Simulate option is on.</p> <p>If the Simulate option on the workflow is off, but on for one or more tasks within the workflow, the Calculate Critical Path option will be honored.</p> </div>
<p>CP Duration</p>	<p>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.</p>
<p>CP Duration (Resolved)</p>	<p>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.</p>
<p>CP Duration Unit</p>	<p>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.</p> <p>Options:</p> <ul style="list-style-type: none"> • Seconds • Minutes • Hours <p>Default is Minutes.</p>
<p>Workflow Execution Options</p>	<p>This section contains Execution Restriction specifications for the task if it is within a Workflow.</p>

Execution Restriction	<p>Specification for whether or not there is a restriction for this task to be run, skipped, or held.</p> <p>Options are:</p> <ul style="list-style-type: none"> • – 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. <p>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.</p>
Restriction Period	<p>If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted.</p> <p>Options are:</p> <ul style="list-style-type: none"> • – 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 Workflow 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 redisplay empty Details so that you can create another new record.
Save & Edit	Saves a new record in the Controller database and opens the workflow editor.
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.
View Parents	Displays a list of any parent Workflow tasks for this task.

<p>Launch With Variables...</p>	<p>Opens a Launch With Variables... dialog.</p>  <p>Optionally, you can:</p> <ul style="list-style-type: none"> • Specify one or more variables for the execution of this Workflow. • Specify Hold on Start and Hold Reason. • Specify if the Workflow should run in Simulation mode. • Specify if Workflow should run with only specific path(s) and/or specific vertices included. See Launching/Triggering a Workflow to Run Specific Paths/Vertices.
<p>Launch</p>	<p>Manually launches the task.</p>
<p>Edit Workflow</p>	<p>Displays the Workflow Editor for this task.</p>
<p>Copy</p>	<p>Creates a copy of this task, which you are prompted to rename.</p>
<p>Delete</p>	<p>Deletes the current record.</p> <div style="border: 2px solid yellow; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>You cannot delete a task if it is either:</p> <ul style="list-style-type: none"> • Specified in an enabled Trigger. • The only task specified in a disabled Trigger. </div>
<p>Refresh</p>	<p>Refreshes any dynamic data displayed in the Details.</p>
<p>Close</p>	<p>For pop-up view only; closes the pop-up view of this task.</p>
<p>Tabs</p>	<p>This section identifies the tabs across the top of the Workflow Task Details that provide access to additional information about the task.</p>
<p>Workflow Task</p>	<p>Displays details about this Workflow task.</p>

Task Run Criteria	Workflows only. Allows you to specify skip and run criteria for specific tasks in the workflow.										
Step Conditions	Lists all step conditions defined for this task.										
Variables	Lists all user-defined variables associated with this record; that is, variables that have been defined for this specific record.										
Actions	<p>Allows you to specify actions that the Controller will take automatically based on events that occur during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> • Task instance status • Exit codes • Late start • Late finish • Early finish <p>Actions are:</p> <table border="1"> <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>	Abort Action	Abort the task if certain events occur. For details, see Abort Actions .	Email Notification	Send an email if certain events occur. For details, see Email Notification Actions .	Set Variable	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 .	SNMP Notification	Send an email if certain events occur. For details, see SNMP Notification Actions .	System Operation	Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions .
Abort Action	Abort the task if certain events occur. For details, see Abort Actions .										
Email Notification	Send an email if certain events occur. For details, see Email Notification Actions .										
Set Variable	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 .										
SNMP Notification	Send an email if certain events occur. For details, see SNMP Notification Actions .										
System Operation	Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions .										
Virtual Resources	<p>Lists all Virtual Resources to which this task is assigned.</p> <p>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.</p>										
Mutually Exclusive	Lists all tasks that have been set to be mutually exclusive of this task.										
Critical Endpoints	Lists all critical endpoints defined for this task.										
Step Actions	Lists all step actions created for this task.										
Instances	Lists all instances of this Workflow.										
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 .										

2.4 Viewing a Workflow Task Instance

When a Workflow task is launched, the Controller creates a task instance record of that Workflow (and task instance records of all tasks in that Workflow).

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

You can access a Workflow task instance from:

- **Instances tab** on the [Workflow Task Details](#) for that task
- [Activity Monitor](#)
- [Task Instances list](#)

2.4.1 Workflow Task Instance Details

The following Workflow Task Instance Details contains information on the execution of the Workflow shown in the [Workflow Task Details](#).

Dashboards ↕ ×
Workflow Tasks ↕ ×
Workflow Task Instance Details: stonebranch-workflow-01 ↕ ×

View Workflow
↻

Workflow Task Instance
● Actions
● Virtual Resources
● Exclusive Requests
● Step Conditions
● Notes

General

Instance Name stonebranch-workflow-01	Instance Number 1
Description	
Member of Business Services	
Task stonebranch-workflow-01	Source Version 38
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	
Mutually Exclusive With Self <input type="checkbox"/>	Simulate <input type="checkbox"/>
Previous Instance Wait Resolved -- None --	

Status

Status
Finished

Status Description
State was forced from RUNNING to FINISHED

Progress
100%

Operational Memo

Critical <input type="checkbox"/>	Critical Endpoint <input type="checkbox"/>
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 7 Seconds	
Workflow Progress 12/12	

Workflow Details

Show/Hide Skipped Tasks
Show Skipped

Previous Instance Wait
Wait For All

Wait/Delay Options

Wait To Start
-- None --

Delay On Start
-- None --

Critical Path Options

Calculate Critical Path

Statistics

User Estimated End Time	Average Estimated End Time 2023-09-18 12:06:24 -0400
Lowest Estimated End Time	Highest Estimated End Time

2.4.2 Workflow Task Instance Details Field Descriptions

The following table describes the fields, buttons, and tabs that display in Workflow 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 length is 255 characters.
Member of Business Services	<p>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.)</p> <p>You can select up to 62 Business Services for any record type, and enter a maximum of 2048 characters for each Business Service.</p> <p>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.</p>
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	<p>System-supplied; Source from which this task was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> • 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	<p>System-supplied; UUID of the source instance.</p> <ul style="list-style-type: none"> • 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	<p>System-supplied; how the task instance was launched.</p> <p>Options:</p> <ul style="list-style-type: none"> • 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	<p>User-defined; Allows you to specify the time zone that will be applied to the task.</p> <p>Options:</p> <ul style="list-style-type: none"> • – 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	<p>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.</p> <p>Options: 1 (high) - 100 (low).</p> <p>Default is 10.</p>
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	<p>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.</p> <p>Options:</p> <ul style="list-style-type: none"> • -- 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.

Previous Instance Wait Lookup Option Resolved	System-supplied; If Previous Instance Wait Resolved is not -- None --; Specification for which field(s) to use to look up qualifying previous task instances. Options: <ul style="list-style-type: none"> • Task • Task / Instance Name
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.
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.
Progress	Number of tasks in the Workflow that are in Success, Skipped, or Finished status / Total number of tasks in the Workflow.
Workflow Details	This section contains assorted detailed information about the task instance.
Show/Hide Skipped Tasks	Specification to either show or hide tasks that have been skipped in a Workflow (see Skipping a Task). Options: <ul style="list-style-type: none"> • Show Skipped • Hide Skipped

<p>Previous Instance Wait</p>	<p>Specification for which previous task instance(s) a task instance of the same task needs to wait to complete before starting. Applies to every task instance directly in the workflow.</p> <p>Options:</p> <ul style="list-style-type: none"> • -- 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.
<p>Previous Instance Wait Lookup Option</p>	<p>If Previous Instance Wait is not -- None --; Specification for which field(s) to use to look up qualifying previous task instances. Applies to every task instance directly in the workflow.</p> <p>Options:</p> <ul style="list-style-type: none"> • Task • Task / Instance Name <p>Selecting Task / Instance Name will automatically enable Resolve Name Immediately for all task instances in the workflow, unless Previous Instance Wait Resolved is -- None --.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Each sub-workflow determines the behavior of its own children.</p> </div>
<p>Wait / Delay Options</p>	<p>This section contains specifications for waiting to start and/or delaying on start the task.</p>
<p>Wait To Start</p>	<p>Amount of time to wait before starting a task from the time that it was launched.</p> <p>Options are:</p> <ul style="list-style-type: none"> • -- None -- • Time • Relative Time • Duration • Seconds
<p>Wait Time</p>	<p>If Wait To Start = Time or Relative Time; Time of day (in 24-hour time) to wait until before starting the task.</p>

Wait Day Constraint	<p>If Wait To Start = Time or Relative Time; Specification for whether or not to advance the wait time to another day.</p> <p>Valid values:</p> <ul style="list-style-type: none"> • -- None -- <ul style="list-style-type: 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. <p>Default is -- None --.</p>
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	<p>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.</p> <p>Options are:</p> <ul style="list-style-type: none"> • -- 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 information on 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.
Late Start Type	<p>Required if Late Start is enabled.</p> <p>Options:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • -- 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.
Late Finish Type	Required if Late Finish is enabled. Options: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 = <i>Duration</i> ; 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 = <i>Duration</i> ; Options: <ul style="list-style-type: none"> • Seconds • Minutes • Hours
Late Finish Time	If Late Finish Type = <i>Time</i> ; Time after which the task finish time is considered late. Use HH:MM, 24-hour time.
Late Finish Day Constraint	If Late Finish Type = <i>Time</i> ; Specification for whether or not to advance the late finish time to another day. Valid values: <ul style="list-style-type: none"> • -- 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 = <i>Nth Day</i> ; Number of days to advance.
Late Finish Duration	If Late Finish Type = <i>Duration</i> ; 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.
Early Finish Type	Required if Early Finish is enabled. Options: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Percentage • Duration
Early Finish Percentage Offset (-)	Required if Early Finish Offset Type = <i>Percentage</i> ; 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 = <i>Duration</i> ; 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • -- 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.
Calculate Critical Path	<p>If enabled (checked), the Controller calculates the Critical Path of this Workflow and, by default, displays it in the Workflow Monitor. You can toggle between the normal view and the Critical Path view by using the Toggle Critical Path View icon on the Workflow Monitor toolbar.</p> <p>If disabled (unchecked), the Controller does not calculate the Critical Path of this Workflow and display it in the Workflow Monitor, and the Toggle Critical Path View icon on the Workflow Monitor toolbar is disabled.</p> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>This field displays only if the Critical Path Calculations Permitted Universal Controller system property is set to true.</p> </div> <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>The Calculate Critical Path option on the workflow will be ignored when the Simulate option is on.</p> <p>If the Simulate option on the workflow is off, but on for one or more tasks within the workflow, the Calculate Critical Path option will be honored.</p> </div>
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	<p>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.</p> <p>Options:</p> <ul style="list-style-type: none"> • Seconds • Minutes • Hours <p>Default is Minutes.</p>
Workflow Execution Options	This section contains Execution Restriction specifications for the task if it is within a Workflow.
Execution Restriction	<p>Specification for whether or not there is a restriction for this task to be run, skipped, or held.</p> <p>Options are:</p> <ul style="list-style-type: none"> • -- 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. <p>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.</p>

Restriction Period	<p>If Execution Restriction = Run, Skip, or Hold; Period of time when the task is restricted.</p> <p>Options are:</p> <ul style="list-style-type: none"> • – 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.
Replicated	If using a Universal Reporting Server , this field is automatically set to true if this record was replicated from another Controller.
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 Workflow 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 .										
Release Recursive	Releases the entire held workflow and its tasks (see Releasing a Task From Hold).										
View Parent	Displays the task instance Details for the parent Workflow of this task instance.										
View Workflow	Displays the graphical workflow.										
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 Workflow Task Instance Details that provide access to additional information about the task instance.										
Workflow Task Instance	Displays details about this Workflow task instance.										
Actions	<p>Actions that the Controller took automatically based on events that occurred during the execution of this task.</p> <p>Events are:</p> <ul style="list-style-type: none"> • Task instance status • Exit codes • Late start • Late finish • Early finish <p>Actions are:</p> <table border="1"> <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>	Abort Action	Abort the task if certain events occur. For details, see Abort Actions .	Email Notification	Send an email if certain events occur. For details, see Email Notification Actions .	Set Variable	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 .	SNMP Notification	Send an email if certain events occur. For details, see SNMP Notification Actions .	System Operation	Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions .
Abort Action	Abort the task if certain events occur. For details, see Abort Actions .										
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SNMP Notification	Send an email if certain events occur. For details, see SNMP Notification Actions .										
System Operation	Run an Universal Controller system operation based on specified conditions. For details, see System Operation Actions .										

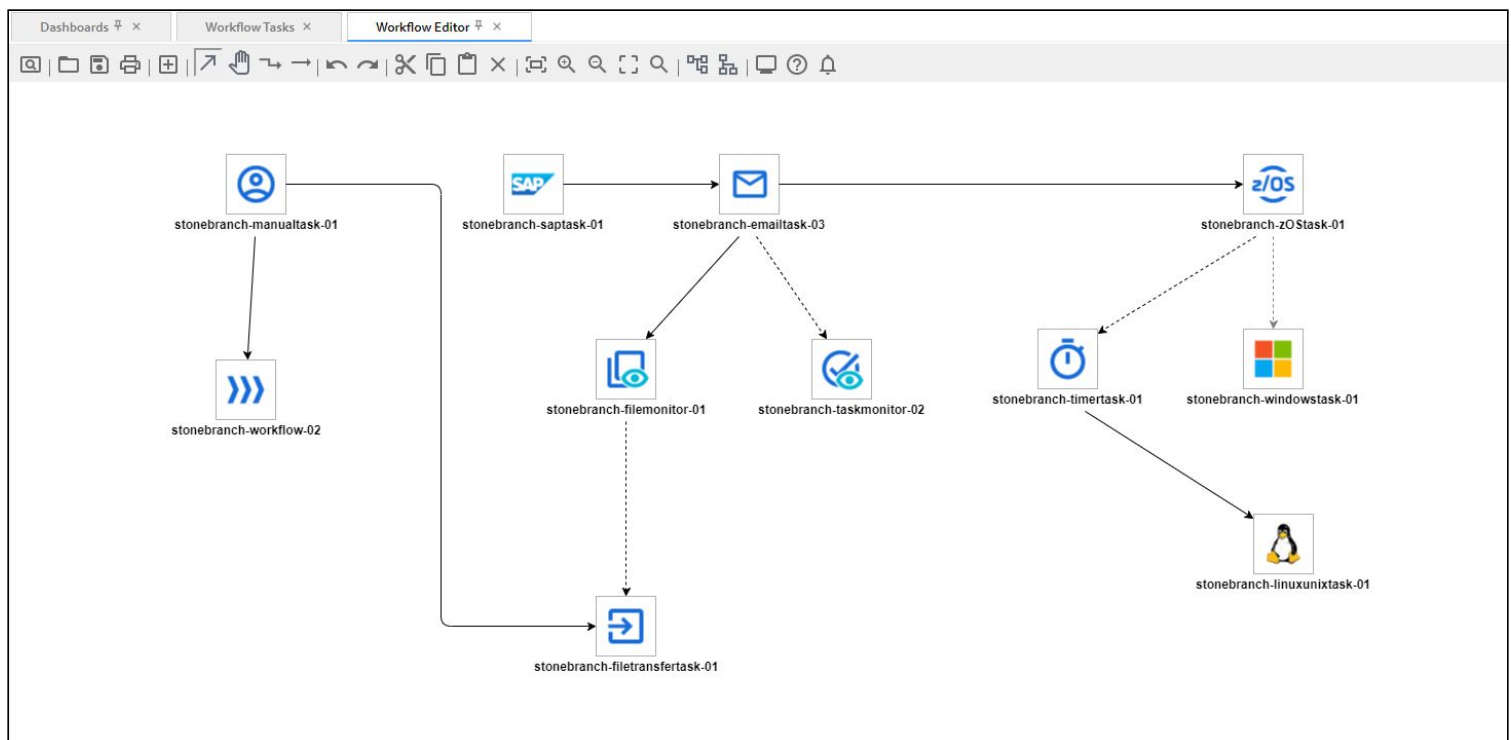
Virtual Resources	<p>Lists all Virtual Resources to which this task is assigned.</p> <p>If you want to create a Task Virtual Resource for this task, you can select an existing Virtual Resource (or, optionally, first create a new Virtual Resource and then select it as the Task Virtual Resource) or enter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

2.5 Designing a Workflow

The Workflow Editor lets you select tasks for a Workflow, position them within the Workflow, and specify dependency relationships between the tasks.

Workflows can be as simple or elaborate as necessary. Zooming and scrolling features are provided that allow you to work on small areas of a very large Workflow, or to create simple ad hoc Workflows.

The following is a sample Workflow Editor for a Workflow consisting of a variety of task types. There are no restrictions on the types of tasks that can be included as part of a single Workflow; you can also put other Workflows into a Workflow.



Note

The name of the workflow that you are editing is shown:

1. At the bottom right corner of the Workflow Editor.

2. By hovering over the Workflow Editor tab at the top of the Workflow Editor.

See [Workflow Editor toolbar](#) for a guide to the editing tools available for designing Workflows; for more detailed instructions, see the individual topics in this section, below.

2.5.1 Designing, Modifying, or Viewing Multiple Workflows




You can design, modify, or simply view multiple Workflows in the Workflow Editor at the same time.


Step 1	From the Workflow Tasks list, open the Workflow task for which you want to design, modify, or view the Workflow.
Step 2	Click the Edit Workflow button to display the Workflow Editor for the Workflow.
Step 3	Click the Workflow Tasks tab at the top of the Workflow Editor (next to the Workflow Editor tab) to redisplay the Workflow Tasks list.
Step 4	Open another Workflow task for which you want to design, modify, or view the Workflow.
Step 5	Click the Edit Workflow button to display the Workflow Editor for this second Workflow under a second tab.
Step 6	Open and display as many Workflows as desired, clicking the appropriate tab to create, modify, and view each one.

2.5.2 Workflow Editor Modes

The actions you can perform within the Workflow Editor depend on the Workflow Editor mode.

The Workflow Editor has three modes. Each mode, which you select by clicking the appropriate icon in the [Workflow Editor toolbar](#), allows you to use one or more specific Workflow Editor [tools](#).

Icon	Mode	Description
	Select	Clicking the Select icon on the Workflow Editor toolbar places the Workflow Editor in Select mode, which allows you to use all Workflow Editor tools except Connect and Pan . The Select mode is the default mode for the Workflow Editor.
	Connect	Clicking a Connect icon on the Workflow Editor toolbar places the Workflow Editor in Connect mode, which allows you to create connections between tasks.
		In Connect mode, you also can use all other Workflow Editor tools except Connect .

Icon	Mode	Description
	Pan	<p>Clicking the Pan icon on the Workflow Editor toolbar places the Workflow Editor in Pan mode, which allows you to scroll around in the Workflow. (You also can use the Outline tool in any mode) to scroll around in the Workflow.</p> <p>In Pan mode, you also can use all other Workflow Editor tools except Connect.</p> <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Pan mode does not allow you to use the drag and drop method for moving, deleting, and copying groups of Workflow elements.</p> </div>

2.5.3 Workflow Editor Toolbar

The Workflow Editor toolbar, which displays above the Workflow Editor, contains icons for every tool that you need to design a Workflow.

A shadowed outline around the icon in the toolbar indicates the currently selected [Workflow Editor mode](#).


The following example shows that the Workflow Editor is in **Select** mode.


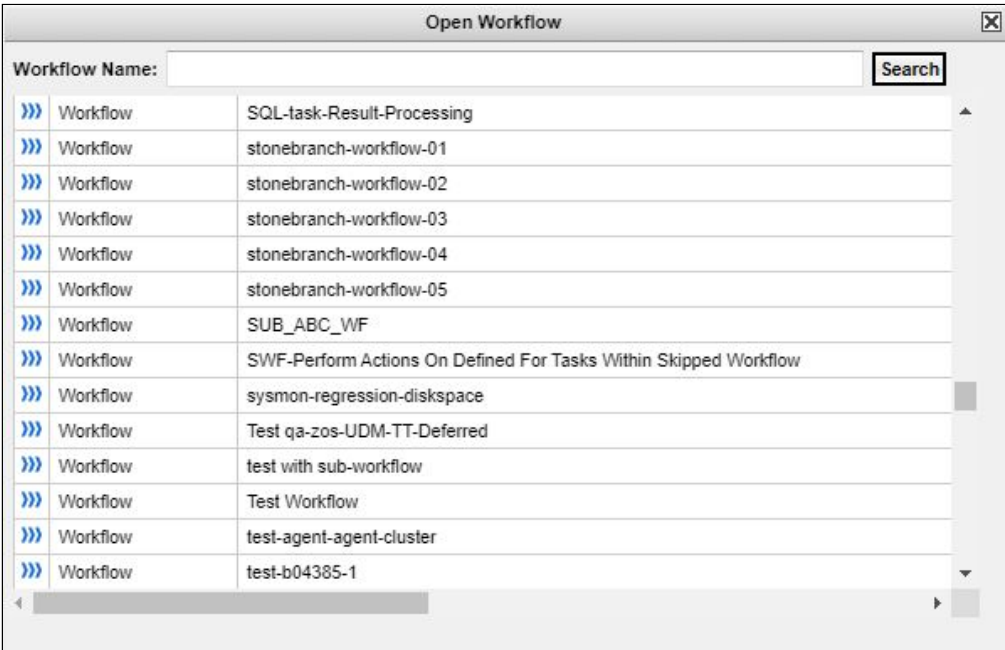


















You also can perform all [task actions](#) and [connector actions](#) in any mode.



2.5.4 Workflow Editor Tools

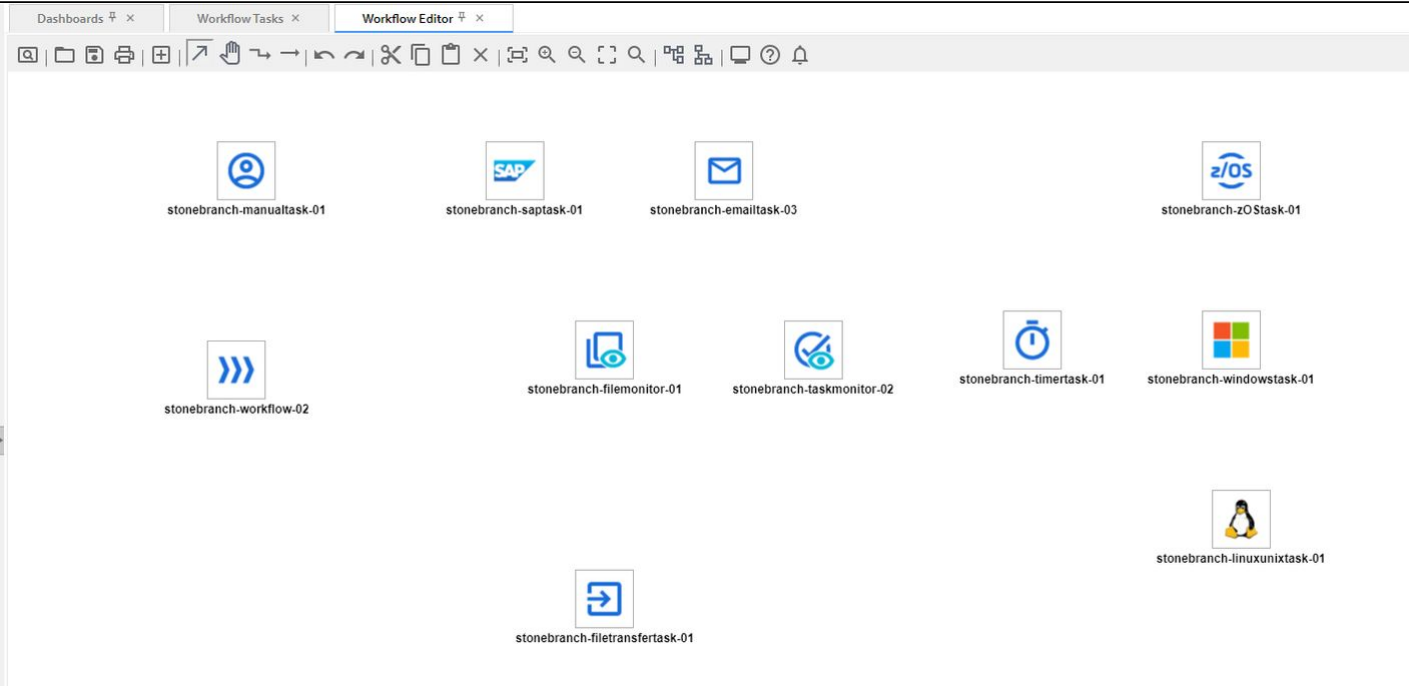
The following table describes the tools used to define Workflows, including the tools associated with the three [Workflow Editor modes](#). The tools are listed by icon, as they appear - left to right - in the [Workflow Editor toolbar](#).

Icon	Tool	Description
	Go to Parent	<p>If this Workflow is embedded in another Workflow, navigates to the parent. If this Workflow has more than one parent, clicking this icon displays a list of all parent Workflows; in this case, to navigate to a parent Workflow, double-click the Workflow's icon. To return to your original Workflow, click its name. (The current Workflow name displays in the lower right corner of the editor.)</p> <div style="border: 1px solid yellow; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>To open an embedded Workflow (sub-Workflow) from its Parent Workflow, double-click the embedded Workflow.</p> </div>

Icon	Tool	Description
	<p>Open Workflow</p>	<p>Displays an Open Workflow pop-up dialog from which you can select a Workflow to replace the Workflow currently displayed in the Workflow Editor. (Make sure to save the current Workflow before replacing it.)</p> <div data-bbox="421 367 1430 1014" style="border: 1px solid gray; padding: 5px;">  </div> <p>The Workflow Search Result Limit Universal Controller system property defines how many Workflows display on the list.</p> <p>To replace the current Workflow, either double-click a Workflow name or you click and drag a Workflow icon into the Workflow Editor canvas.</p> <div data-bbox="421 1232 1541 1413" style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>If you want to open another Workflow without replacing the current Workflow, see Designing, Modifying, or Viewing Multiple Workflows.</p> </div>
	<p>Save</p>	<p>Saves the current Workflow.</p>
	<p>Print</p>	<p>Prints the current Workflow.</p>
	<p>Add Task</p>	<p>Displays the Task Find dialog, which allows you to search for and select tasks for the Workflow from a searchable list of defined tasks. (The Workflow Search Result Limit Universal Controller system property defines how many tasks display on the list.)</p> <p>To search for and select tasks:</p> <ol style="list-style-type: none"> 1. Click the Add Task icon. 2. Optionally, enter a task name, a partial string, optionally using * or ? as wildcards, or select the type of task you are searching for. 3. Click Search. Universal Controller displays the tasks that meet your selection criteria. 4. To bring a task onto the Workflow Editor canvas, click and drag the task's icon out of the window and onto the canvas. 5. To close the Task Find window, click the X in the upper right corner.

Icon	Tool	Description
	Select	Places the Workflow Editor in Select mode .
	Pan	Places the Workflow Editor in Pan mode . To pan around the Workflow, click any white space in the Workflow Editor canvas and drag your cursor to display any section of the Workflow. To return to your original location, click the Actual Size icon.
 	Connect (bent) Connect (straight)	Places the Workflow Editor in Connect mode . To create a connection: <ol style="list-style-type: none"> 1. Click either icon. 2. Click a predecessor task. If you are using Firefox, click the center of the task icon. 3. Drag the cursor to the successor task. You will see a colored line as you drag. 4. When you reach the successor task, release the cursor. The connector appears as a straight or bent line, depending on which icon you selected.
	Undo	Click to undo the most recent change.
	Redo	Click to redo the most recent change that you undid by clicking Undo .
	Cut	Deletes the selected element(s): tasks, connectors, or both. Use Ctrl+Click to select and cut multiple elements. You can paste cut tasks into the same Workflow Editor or into the Workflow Editor of any other Workflow. If you cut a connector, and include its source and target tasks in the cut, you can paste the cut connector (and the tasks) into the same Workflow Editor or into the Workflow Editor of any other Workflow. <div style="border: 1px solid orange; padding: 5px;">Note Do not use cut and paste to move Workflow elements; use select and drag.</div>
	Copy	Copies the selected element(s): tasks, connectors, or both. Use Ctrl+Click to select and copy multiple elements. You can paste copied tasks into the same Workflow Editor or into the Workflow Editor of any other Workflow. If you copy a connector, and include its source and target tasks in the copy, you can paste the copied connector (and the tasks) into the same Workflow Editor or into the Workflow Editor of any other Workflow.
	Paste	Pastes the copied or cut element(s) into the currently open Workflow Editor or into the Workflow Editor of any other Workflow. If you want to paste a cut or copied connector, you must include the source and target tasks of the connector in the cut or copy.
	Delete	Permanently deletes the selected elements. Delete does not keep a copy of the deleted elements in memory.
	Fit	Fits the Workflow into the display. If necessary, this shrinks the icons and size of the Workflow in order to make it fit. You can undo a Fit by clicking the Actual Size icon.
	Zoom In	Zooms in (enlarges) the Workflow. To return the Workflow to its default size, click the Actual Size icon.
	Zoom Out	Zooms out (diminishes) the Workflow. To return the Workflow to its default size, click the Actual Size icon.

Icon	Tool	Description
	Actual Size	Returns the Workflow to its default size after a Fit or Zoom .
	Zoom	Opens a window that allows you to specify a zoom ratio. For example, to double the size of the Workflow, enter 200 and click OK . To return the Workflow to its default size, click the Actual Size icon.
	Horizontal Layout	Reformats the Workflow into a horizontal layout.
	Vertical Layout	Reformats the Workflow into a vertical layout.
	Toggle Vertex Style	For running Workflows, switches the icon display between status-related icons and task-related icons (see Monitoring Workflows). This icon only appears on the icon bar when you are monitoring a running Workflow.
	Outline	For large Workflows, the outline provides a way of positioning a specific area of the Workflow in the display, without using the Pan mode . <ol style="list-style-type: none"> 1. Click the Outline icon. The Outline window opens. 2. In the Outline window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions to show only the area within the blue box.
	Help	Displays help documentation for Workflows.
	Console	While a Workflow is running, you can click the Console icon to display processing messages.

<p>Step 3</p>	<p>To add a task to the Workflow Editor canvas, click the icon to the left of the task and drag it onto the canvas.</p> <p>You can add any task to a Workflow multiple times. To differentiate between multiple additions of the same task in a Workflow, you can assign each of them a unique name used only within the Workflow; the name of the task in the Task Details will not change. To change the name of a task within a Workflow, display the Task Properties menu and select a new name in the name field.</p>
<p>Step 4</p>	<p>Repeat these steps until you have added all the tasks you need.</p>
<p>Step 5</p>	<p>Position the tasks on the canvas as desired. The connections that you will make between the tasks determine the order in which the tasks run, so position the tasks accordingly. For example:</p>  <p>The screenshot shows the Workflow Editor interface with a toolbar at the top and a canvas containing several task icons. Each icon has a unique name below it: stonebranch-manualtask-01, stonebranch-saptask-01, stonebranch-emailtask-03, stonebranch-zOSTask-01, stonebranch-workflow-02, stonebranch-filemonitor-01, stonebranch-taskmonitor-02, stonebranch-timertask-01, stonebranch-windowtask-01, and stonebranch-linuxixtask-01. There is also a task named stonebranch-filetransfertask-01 at the bottom.</p>
<p>Step 6</p>	<p>To close the Task Find window, click the X in the upper right corner. Or, to keep the window open but minimized, click the minimize icon.</p>

2.5.6 Task Details

You can display the following detailed information for any task by hovering your mouse over the task.

Task Name: stonebranch-workflow-02

Task UUID: d579188e223c4b8abee53e5047b242d6

Vertex Id: 4

2.5.7 Task Actions

For each task in a Workflow, the Controller provides a menu of actions that you can take on that task. You can perform task actions in any [Workflow Editor mode](#).

To display the menu of task actions, right-click a task.

View/Edit View/Edit In Tab
Cut Copy Paste
Delete
View/Edit Run Criteria
View Predecessors/Successors Edit Predecessors/Successors
Details ▶
Properties

The following table describes each action in the menu:

Action	Description
View/Edit	Allows you to view and edit the Task Details for this task.
View/Edit In Tab	Allows you to view and edit the Task Details for this task in a new tab.
Cut	Cuts the task from its location in the Workflow. You can paste a cut task back into the same Workflow Editor or into the Workflow Editor of any other Workflow.
Copy	Creates a copy of the task for inclusion in the same Workflow Editor or for inclusion in the Workflow Editor of any other Workflow.
Paste	Pastes a copy of the task into the Workflow or into the Workflow Editor of any other Workflow.
Delete	Deletes the task from the Workflow. You cannot paste a deleted task back into the Workflow.
View/Edit Run Criteria	Allows you to view and edit any run criteria that has been created for this task. (This action is disabled for tasks that have been added to a Workflow but not saved.)
View/Edit Critical Endpoint	Allows you to view and edit any critical endpoint that has been created for this workflow.
View/Edit z/OS Step Actions	z/OS Tasks only; Allows you to view and edit any z/OS step actions that have been created for this task. (This action is disabled for tasks that have been added to a Workflow but not saved.)
View Predecessors/Successors	Allows you to view all predecessors and successors of this task in the Workflow.
Details > Show Details	Allows you to display complete database details for this task.
Properties	Displays a menu of properties for the task.

2.5.7.1 Task Properties

One of the [task actions](#) available for any task in a Workflow is to display a list of properties for that task.

Properties	
ID	<input type="text" value="9"/>
top	<input type="text" value="30"/>
left	<input type="text" value="226.625"/>
width	<input type="text" value="58"/>
height	<input type="text" value="58"/>
Style	<input type="text"/>
name	<input type="text" value="Sleep 20"/>
sys_class_name	<input type="text" value="ops_task_sleep"/>
sys_id	<input type="text" value="da44198dc0a8016500f"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

You can change the name of a task within a Workflow by entering a new name in the **name** field. By Default, the **name** of a task is its name in the Task Details. Changing the **name** of a task within a Workflow does not change its name in the Task Details.

2.5.8 Task Actions for Workflow

For the workflow displayed in the Workflow Editor, the Controller provides a menu of actions that you can take on that workflow. You can perform task actions in any [Workflow Editor mode](#).

To display the menu of workflow task actions, right-click any white space in the Workflow Editor canvas.

New Task...
View/Edit View/Edit In Tab
View Children View Tree
Paste
Launch Workflow Launch Workflow with Variables...
Find In Workflow... Pan To Top
Details ▶

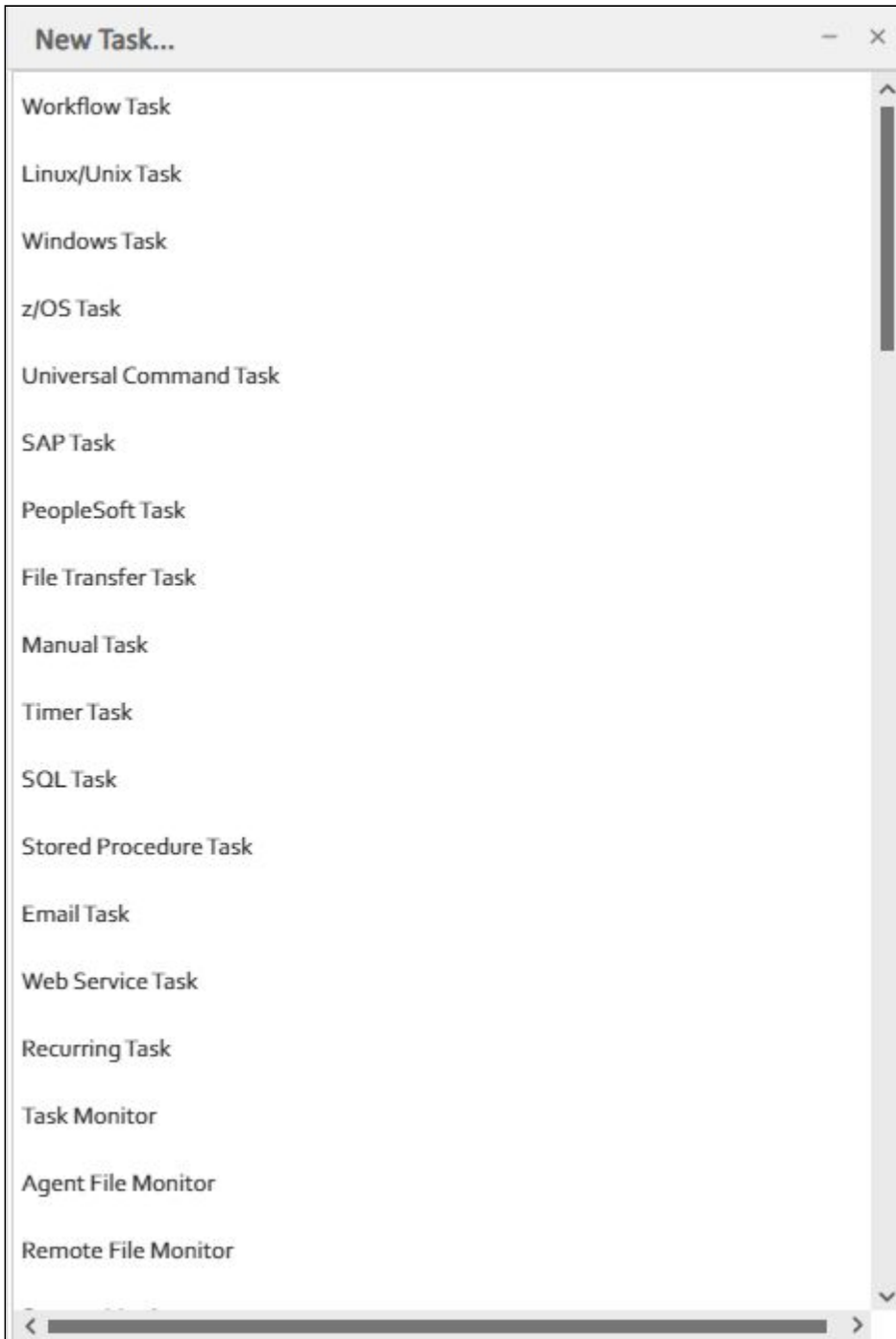
The following table describes each action in the menu:

Action	Description
New Task...	Allows you to create and insert a new task into a Workflow and connect it to other tasks in the Workflow.
View/Edit	Allows you to view and edit the Task Details for this workflow task.
View/Edit In Tab	Allows you to view and edit the Task Details for this workflow task in a new tab.
View Children	Allows you to view a list of child tasks of this workflow task.
Paste	Allows you to paste cut or copied elements from this workflow or any other workflow into the Workflow Editor.
Launch Workflow	Allows you to launch this workflow task
Find In Workflow...	Allows you to find a task in this workflow task.
Pan To Top	Allows you to restore the displayed Workflow Editor for this workflow task to its default, top-left position.
Details > Show Details	Allows you to display complete database details for this workflow task.

2.5.8.1 Create and Insert Task

One of the [task actions](#) available for a Workflow displayed in the Workflow Editor is **New Task...**, which lets you create and insert a new task into the Workflow Editor.

Step 1 Select **New Task...** in the [Task Actions for Workflow](#) menu to display a list of task types.



Step 2 Select a task type and, in the task Details for that task type, create a new task.

Step 3 Click the **Save** button to insert the new task into the Workflow Editor where the Action menu is created (the right-click location).


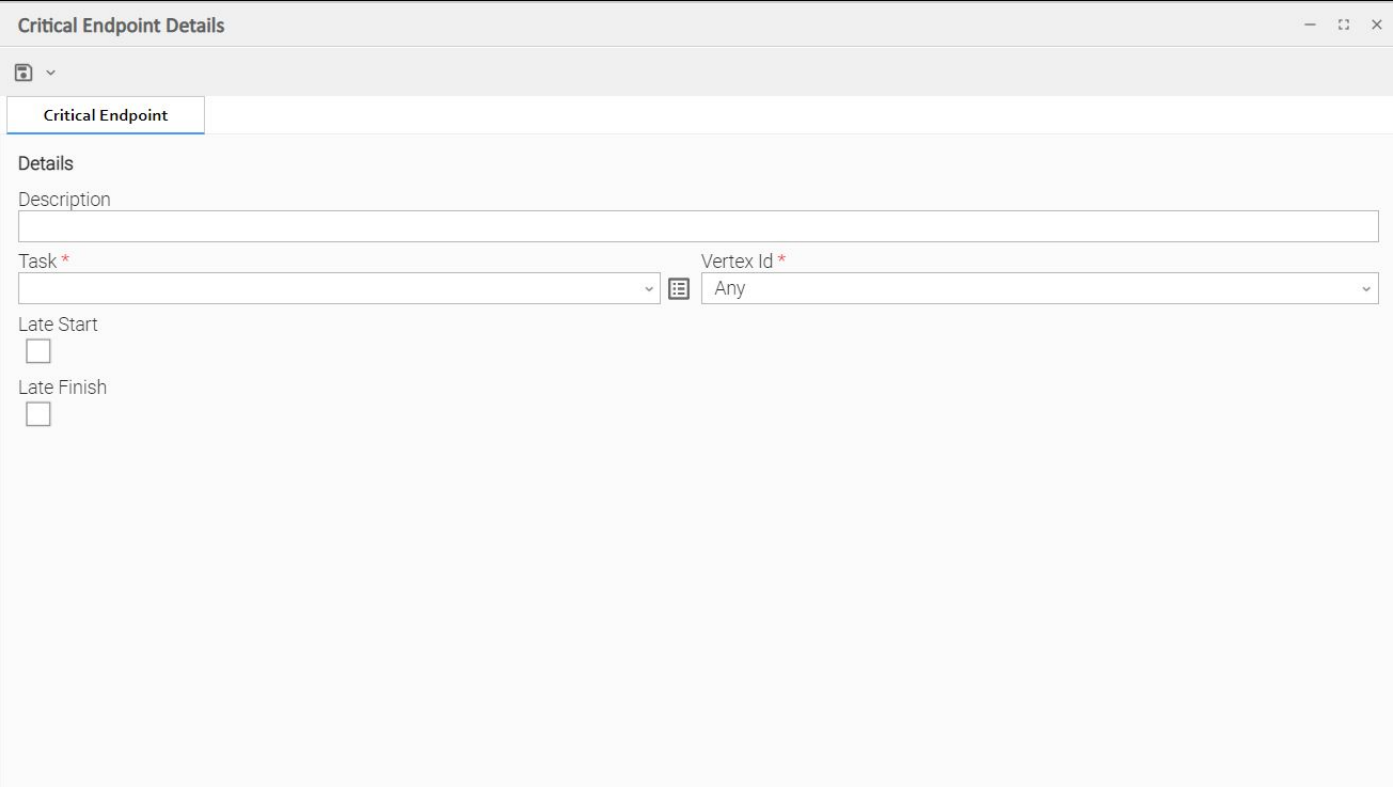

Step 4 Locate and connect the new task to other tasks in in the Workflow and click the Save icon.

2.5.9 Specifying Critical Endpoints for Critical Paths

You can add special instructions that can identify specific tasks within a workflow or sub-workflow as **Critical Endpoints** used when computing the critical path(s) of a workflow.


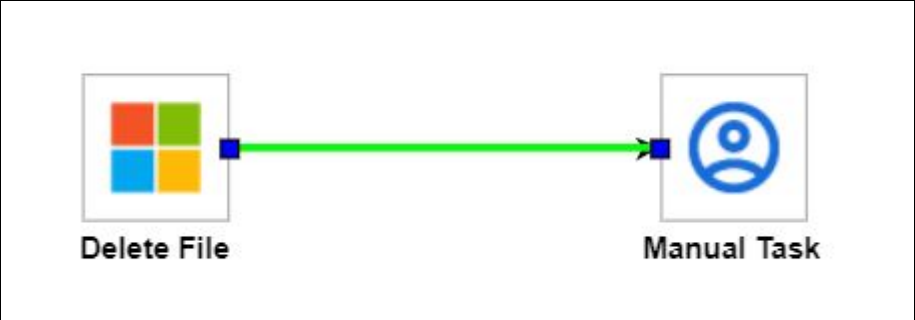
When a workflow is launched or triggered, each task within the workflow specified as a Critical Endpoint will be identified in the task instance with a **Critical Endpoint** flag. The **Critical Endpoint** flag instructs the workflow to compute the critical path(s) to the **Critical Endpoints** instead of leaf nodes within the workflow.

Additionally, when specifying a **Critical Endpoint**, you can optionally override the task-level **Late Start** and **Late Finish** conditions. If you leave the **Late Start** and **Late Finish** options unchecked, the task-level conditions will remain unchanged.

Step 1	Display the Details of the Workflow for which you want to specify a critical endpoint.
Step 2	Click the Critical Endpoints tab. The critical endpoint list displays a list of any existing critical endpoints for that task.
Step 3	<p>Click the . Critical Endpoint Details displays:</p> 
Step 4	Select a Task from the drop-down menu to be a Critical Endpoint in the workflow. Enable Late Start or Late Finish to override task level Late Start and Late Finish conditions. If you leave the Late Start and Late Finish options unchecked, the task-level conditions will remain unchanged.
Step 5	Click the  to save the record.

2.5.10 Specifying Connections

After you have added tasks and positioned them on the Workflow Editor canvas, you must connect the tasks.

<p>Step 1</p>	<p>Click one of the Connect icons to place the Workflow Editor in Connect mode.</p>
<p>Step 2</p>	<p>Click the predecessor task; that is, the task whose status will trigger the next task.</p> <ul style="list-style-type: none"> For Firefox, make sure you click the center of the task icon.
<p>Step 3</p>	<p>Drag your mouse to the successor task; that is, the task that will be triggered. As you drag your mouse, a red line display. Drag your mouse all the way to the center of the successor task; the red line becomes a dotted, green line - the connector between the tasks - and the successor task is highlighted.</p> 
<p>Step 4</p>	<p>Release the mouse button. The connector becomes a highlighted, solid green line (identifying it as a default Success condition).. Optionally, you can reposition the connection by dragging it to a new location. Arrows on the connectors indicate the direction of the Workflow.</p> 
<p>Step 5</p>	<p>Repeat this process for other connectors to be added.</p>

2.5.11 Connector Details

You can display detailed information for any connector by hovering your mouse over it.

For example:

```

Condition(s): Success

Source {
Task Name: stonebranch-manualtask-01
Task UUID: 8edb2a9696fc4c408b2e62042f726778
Vertex Id: 14
}

Target {
Task Name: stonebranch-workflow-02
Task UUID: d579188e223c4b8abee53e5047b242d6
Vertex Id: 4
}
    
```

2.5.12 Connector Actions

For each connector in a Workflow, the Controller provides a menu of actions that you can take on that connector. You can perform connector actions in any [Workflow Editor mode](#).

To display the menu of connector actions, right-click a connection.

Conditions
Go To Source Go To Target
Cut Copy Paste
Delete
Properties

The following table describes each action in the menu:

Action	Description
Conditions	Allows you to select a dependency condition for the connection.
Go To Source	Highlights the predecessor task for the connector and moves it to the center of the Workflow Editor display.
Go To Target	Highlights the successor task for the connector and moves it to the center of the Workflow Editor display.
Cut	Cuts the connector from its location in the Workflow. If you include the source and target tasks of a connector in the cut, you can paste the cut connector (and the tasks) into the same Workflow Editor or into the Workflow Editor of any other Workflow.
Copy	Creates a copy of the connector for inclusion in the Workflow if you include the source and target tasks of the connector in the copy. You can paste the copied connector (and the tasks) into the same Workflow Editor or into the Workflow Editor of any other Workflow.
Paste	Pastes a copy of the connector (if you also copied the source and target tasks of the connector) into the Workflow.

Action	Description
Delete	Deletes the connector from the Workflow. You cannot paste a deleted connector back into the Workflow.
Properties	Displays a menu of properties for the connector.

2.5.13 Connector Properties

One of the [connector actions](#) available for any connector in a Workflow is to display a list of properties for that connector.

The 'Properties' dialog box shows the following fields:

- ID: 11
- Style: straightEdge
- label: (empty text box)
- description: (empty text box)
- condition: SUCCESS

Buttons: OK, Cancel

The information in the connector properties is view-only.

2.5.14 Specifying Conditions on Connections

The 'Conditions' dialog box shows the following options:

- Success
- Failure
- Success/Failure
- Variable
- Exit Code(s)

Buttons: OK, Cancel

When you create a connection between the tasks in a Workflow, you can specify a dependency condition between the predecessor and successor task. The successor task will run if the condition that you specify matches the condition of the predecessor task.

Note

If the predecessor is an [Approval task](#):

- Success condition: the successor task will run if the Approval task is Approved.

- Failure condition: the successor task will run if the Approval task is Rejected.

By default, a Success condition is specified automatically for a connection when you create it; if the predecessor task runs to Success, the successor task will run.

The dependency condition that you select for a connection, as allowed for the task type of the predecessor task (see [Conditions per Task Type](#), below), determines the format of the connector in the Workflow Editor.

Condition	Connector Format	Description
Success	Solid black line	Run the successor task if the predecessor task goes to Success.
Failure	Dotted black line	Run the successor task if the predecessor task goes to Failure.
Success/ Failure	Dotted black line	Run the successor task if the predecessor task goes to Success or Failure.
Variable	Dotted black line	Run the successor task if the variable condition specified in the variable window is met. <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> For workflow edge variable conditions that use functions to evaluate STDOUT, STDERR, FILE, or JOBLOG output, you must enable Wait For Output when setting up Automatic Output Retrieval. Furthermore, the evaluation of workflow edge variable conditions can happen prior to performing Set Variable Actions on task instance Success and Failed statuses, depending on how the Perform Set Variable Actions Before Workflow Dependency Evaluation system property is configured. Therefore, evaluation may not take these updates into consideration. </div>
Exit Code(s)	Dotted black line	Run the successor task if the predecessor task returns one of the specified exit code(s). Format: Numeric. Use commas to list a series of exit codes; use hyphens to specify a range. Example: 1,5, 22-30.
Step Conditions	Dotted gray line	For predecessor z/OS tasks only: Run the successor task if the running predecessor z/OS task has a step end matching the specified Step Condition(s).

[Connector Graphics for All Condition Types](#), below, illustrates a Workflow containing connectors for all condition types.

2.5.14.1 Conditions per Task Type

The following table identifies the dependency conditions that are supported for each type of task:

Task Type	Success	Failure	Success/Failure	Step Condition(s)	Variable	Exit Code(s)
Workflow	✓				✓	✓
Linux/Unix	✓	✓	✓		✓	✓
Windows	✓	✓	✓		✓	✓
IBM i	✓	✓	✓		✓	✓
z/OS	✓	✓	✓	✓	✓	✓

Task Type	Success	Failure	Success/Failure	Step Condition(s)	Variable	Exit Code(s)
Universal Command	✓	✓	✓		✓	✓
PeopleSoft	✓	✓	✓		✓	✓
SAP	✓	✓	✓		✓	✓
File Transfer	✓	✓	✓		✓	✓
Manual	✓				✓	✓
Approval	✓	✓	✓		✓	✓
Timer	✓				✓	✓
SQL	✓	✓	✓		✓	✓
Stored Procedure	✓	✓	✓		✓	✓
Email	✓	✓	✓		✓	✓
Web Service	✓	✓	✓		✓	✓
Recurring	✓	✓	✓		✓	✓
Task Monitor	✓	✓	✓		✓	✓
Agent File Monitor	✓	✓	✓		✓	✓
Remote File Monitor	✓	✓	✓		✓	✓
System Monitor	✓	✓	✓		✓	✓
Variable Monitor	✓	✓	✓		✓	✓
Email Monitor	✓	✓	✓		✓	✓
Universal Monitor	✓	✓	✓		✓	✓
z/OS Monitor	✓	✓	✓		✓	✓
Application Control	✓	✓	✓		✓	✓
Universal	✓	✓	✓		✓	✓

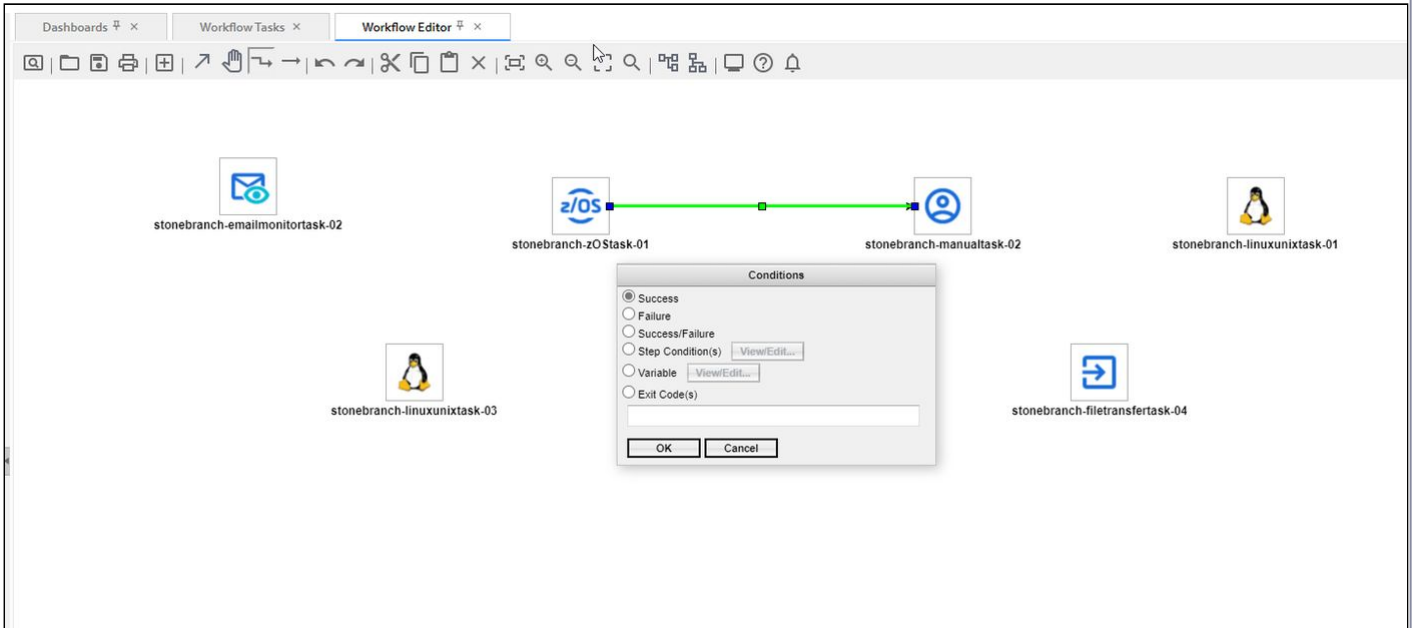
2.5.14.2 Specifying a Condition

To specify a dependency condition for a connection between a predecessor and successor task:

Step 1	Hover your mouse over the connection to view the currently selected condition. If you want to change the condition, right-click the connection to display a Connector Actions menu.
---------------	---

Step 2

Select **Conditions**. The Conditions dialog displays.

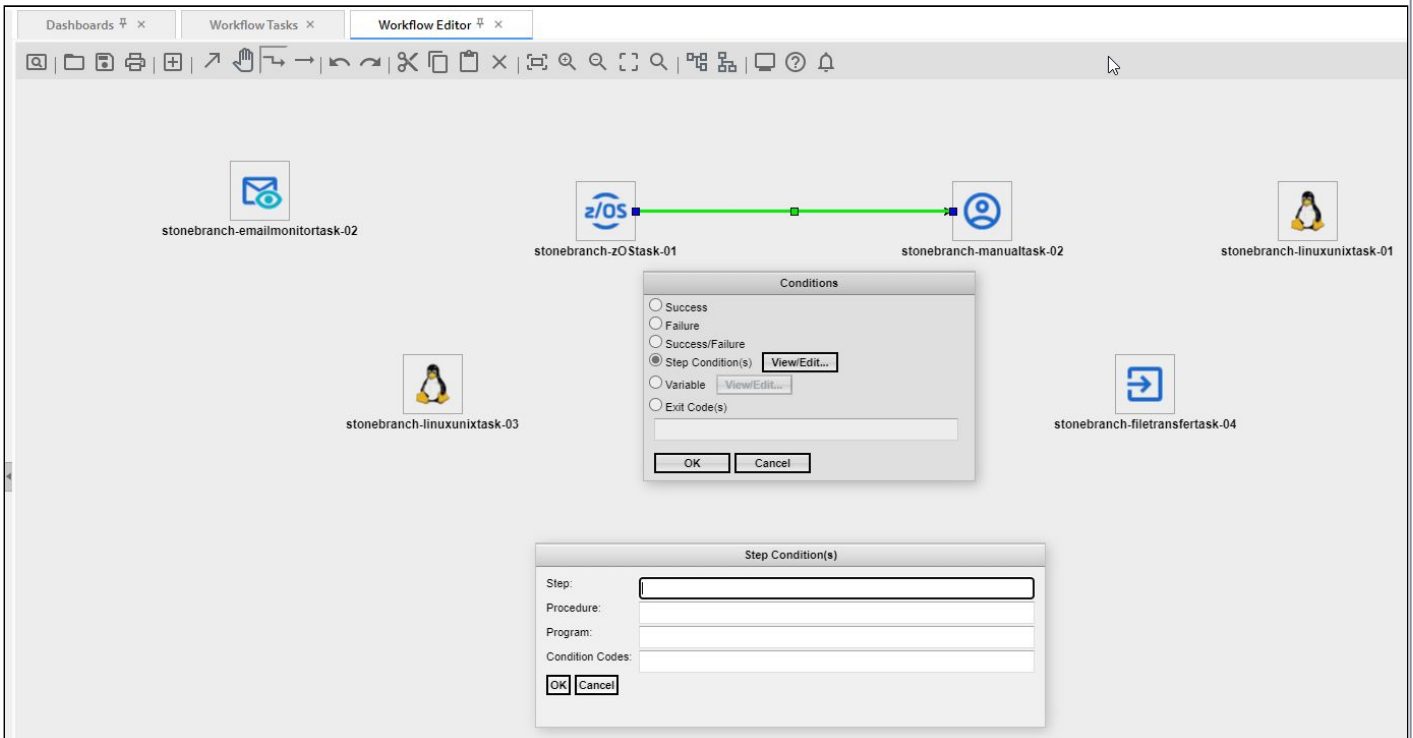


Step 3

Specify a condition (as [supported](#) for each task type).

Step 4

If you selected **Step Condition(s)** for a connection to a predecessor z/OS task, click the **View/Edit...** button to display a Step Conditions dialog that lets you define the step conditions.



Using the field descriptions [below](#) as a guide, complete the fields and click **OK**.

Step 5

Click **OK** on the Conditions dialog.

Step 6	To see the condition that is specified for a connection, hover your cursor over the connector (see Connector Graphics for All Condition Types , below).
---------------	---

2.5.14.3 Step Conditions

A Step Condition - for a z/OS task only - is an intermediate condition that is evaluated immediately after each z/OS step end. In other words, it does not specify a condition to be met when the z/OS task completes.

In this way, Step Conditions allow a successor task to run before its predecessor task has completed. The successor task may require only that a step in the z/OS task completes, not the entire task.

Step Condition connectors display in gray to distinguish the difference between intermediate Step Conditions and task completion Conditions.

On z/OS task instance completion - specifically, Failed, Success or Finished - Step Conditions are not relevant and are not evaluated. If one or more non-Step Condition dependencies were satisfied, all remaining unsatisfied dependencies, including Step Condition dependencies, become unreachable and their associated paths are skipped.

2.5.14.4 Step Condition(s) Field Descriptions

The following table describes the fields on the Step Condition(s) 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	<p>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.</p> <p>For example: 1,6-4095,Sxxx,Unnnn,JCLERR</p>

2.5.14.5 Variable Conditions

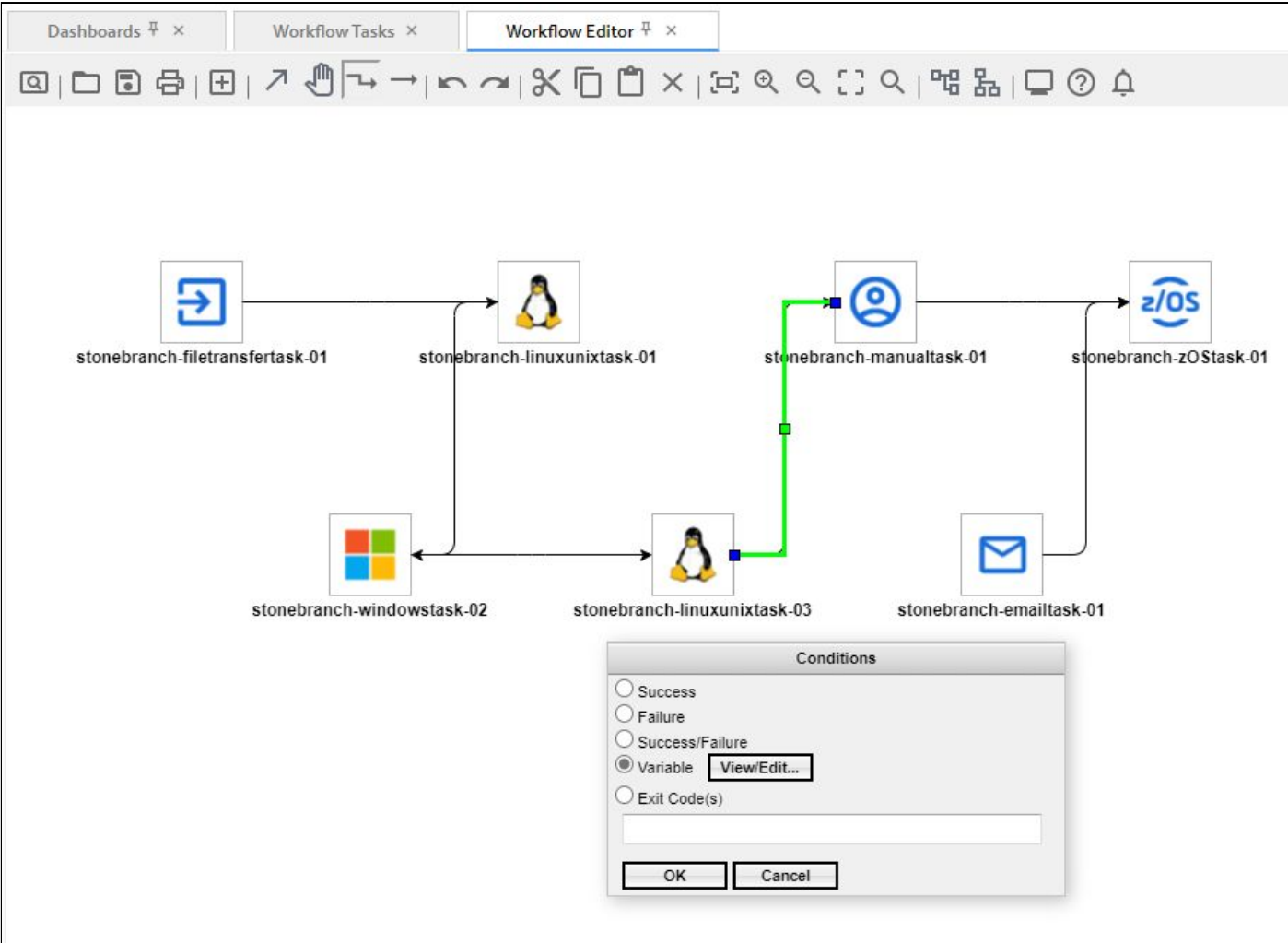
Variable Conditions are available for all task types. Variable Conditions support Variables and Functions.

At runtime, the First Value and Second Value will be resolved and evaluated based on the Operator specified. If the First Value and/or Second Value stay unresolved, the edge will be skipped automatically, without further evaluation.

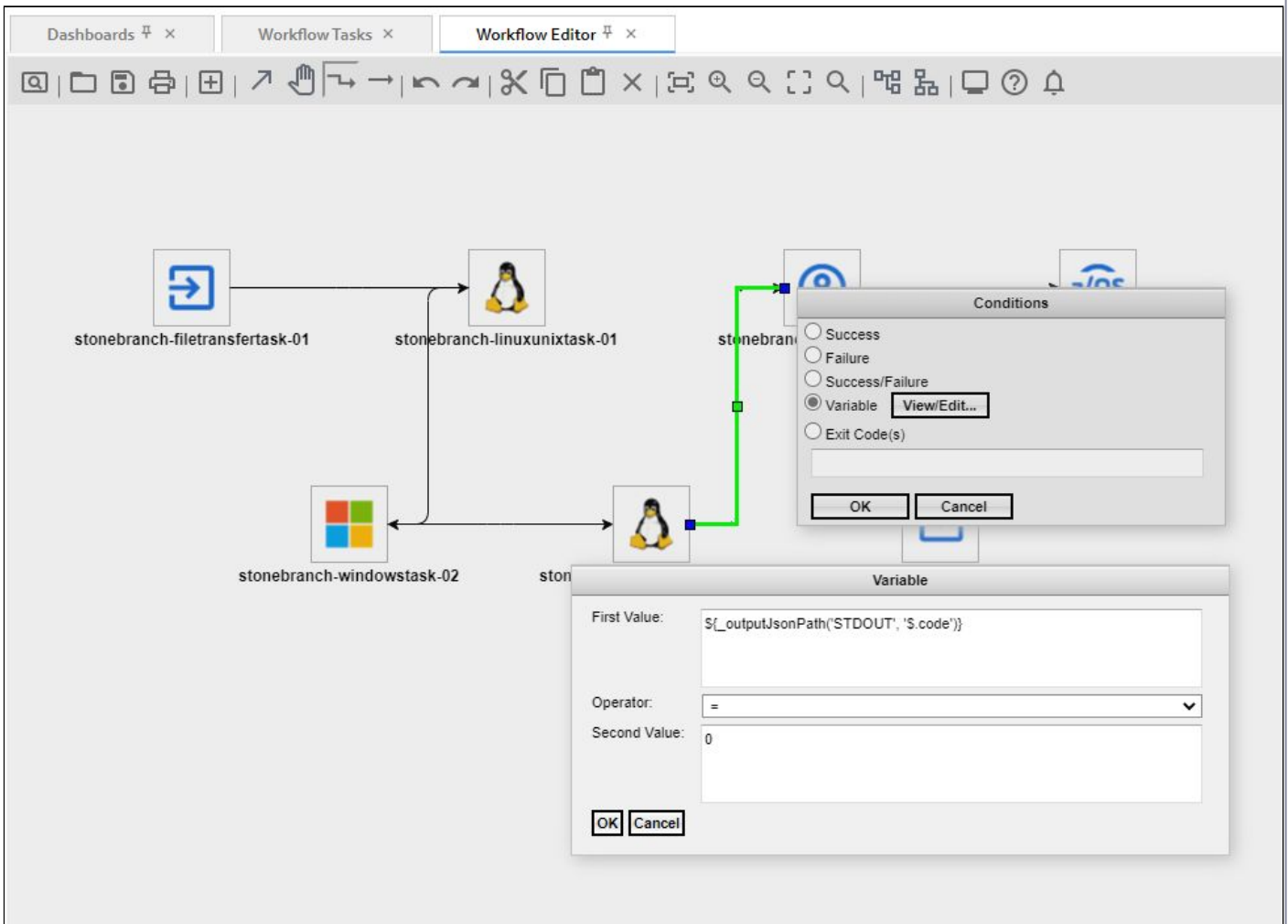
For workflow edge variable conditions that use functions to evaluate STDOUT, STDERR, FILE, or JOBLOG output, you must enable **Wait For Output** when setting up **Automatic Output Retrieval**. Furthermore, the evaluation of workflow edge variable conditions can happen prior to performing **Set Variable Actions** on task instance **Success** and **Failed** statuses, depending on how the [Perform Set Variable Actions Before Workflow Dependency Evaluation](#) system property is configured. Therefore, evaluation may not take these updates into consideration.

2.5.14.6 Specifying a Variable Condition

To specify a dependency condition for a connection between a predecessor and successor task:

Step 1	Hover your mouse over the connection to view the currently selected condition. To change the condition, right-click the connection to display a Connector Actions menu.
Step 2	<p>Select Conditions. The Conditions dialog displays.</p> 
Step 3	Select Variable and click View/Edit... button to display a Variable dialog that lets you define the Variable Condition.

Step 4 Using the field descriptions [below](#) as a guide, complete the fields and click **OK**.



Step 5 Click **OK** on the Conditions dialog.

Step 6 To see the condition that is specified for a connection, hover your cursor over the connector (see [Connector Graphics for All Condition Types](#), below).

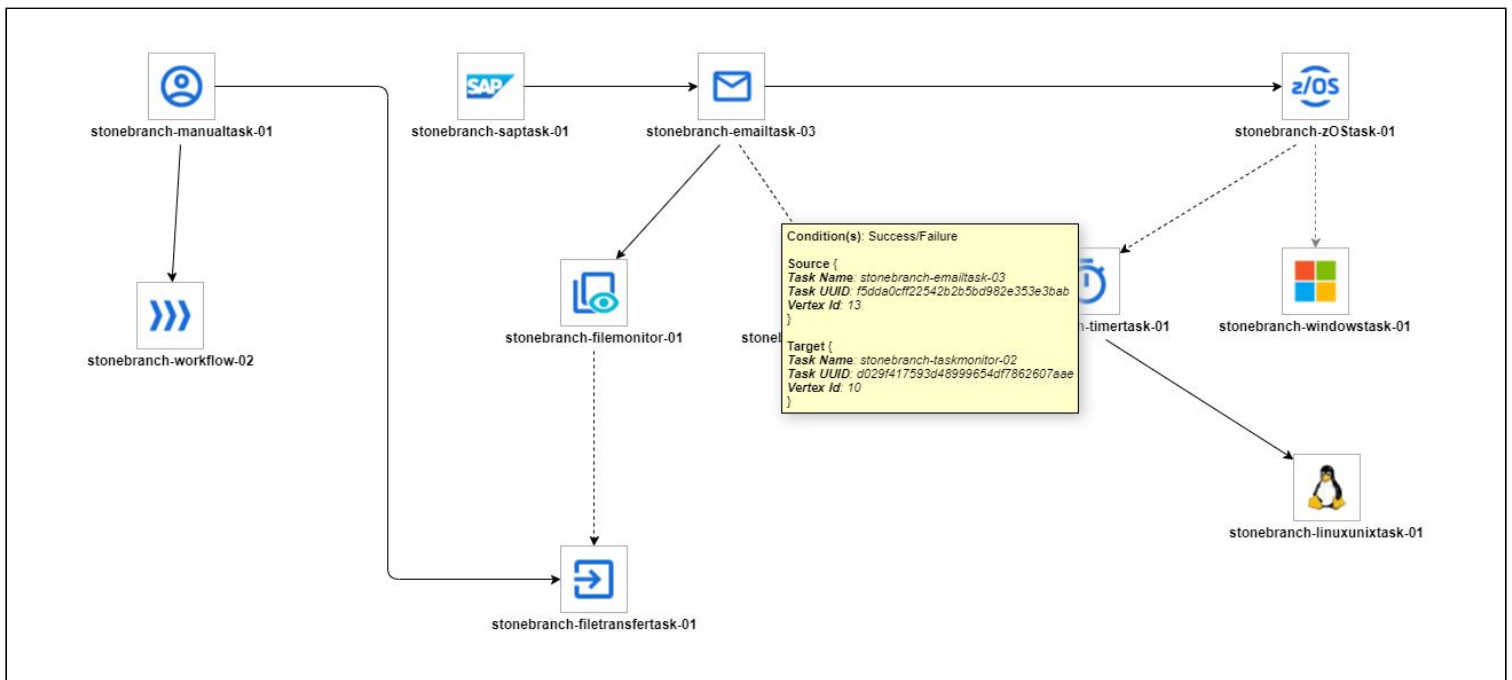
2.5.14.7 Variable Condition Field Descriptions

Field Name	Description
First Value	Variable and Function supported.

Field Name	Description
Operator	Available options: <ul style="list-style-type: none"> • = (default) • != • > • >= • < • <= • regex • contains
Second Value	Variable and Function supported.

2.5.14.8 Connector Graphics for All Condition Types

The following illustration shows the connector formats for all [condition types](#) and the [details](#) that displays for each condition type (in this case, Success/Failure) when you hover your cursor over the connector.



2.5.14.9 Creating Conditional Paths

The Controller allows you to specify a separate processing path for each possible condition between a predecessor task and a successor task. The Controller selects the appropriate conditional path when the predecessor task goes to a finished status (Success or Failure). As a result, at least one successor dependency is satisfied and at least one successor dependency is not satisfied.

For example, you could specify a conditional path containing a group of tasks that will run if the predecessor task goes to Success, and a second conditional path containing a group of tasks that will run if the predecessor task goes to Failure. When the predecessor task has run to completion, the tasks in the path whose condition meets the condition of the predecessor task

will run, and the tasks in the path whose condition does not meet the condition of the predecessor task will go to a Skipped status.

Further examples:

Example 1

Task A is at the top of the Workflow. Three conditional paths have been specified for Task A: one for Failure and two for Success. Task A executes and goes to Success status. The Controller places all of the tasks in the Failure conditional path into Skipped status and the tasks in the two Success conditional paths begin running.

Example 2

Task A is at the top of the Workflow. Two conditional paths have been specified: one for exit codes 1 through 10, the second for exit codes 11 through 20.

- If Task A completes with exit code 5, the tasks in the first path run and the second path is skipped.
- If Task A completes with exit code 15, the first path is skipped and the tasks in the second path run.
- If Task A completes with exit code 25, neither condition is satisfied and both paths remain in Waiting status.

2.5.14.10 Conditions for Multiple Connections

If a task is connected to multiple predecessor tasks, that successor task remains in Waiting status until the condition of each of its immediate predecessor tasks is evaluated. If all of its immediate predecessor tasks have been Skipped, the successor task is Skipped. If at least one of its immediate predecessor tasks has run to completion, the successor task will run if the specified dependency condition matches the condition of the predecessor task.

For example, if a task has four immediate predecessor tasks, and three of the immediate predecessor tasks have been Skipped and the fourth predecessor task has failed, and the dependency condition between the fourth predecessor task and the successor task is Failure, the successor task will run. (Likewise, if the fourth predecessor task has run to Success, and the dependency condition between the fourth predecessor task and the successor task is Success, the successor task will run.)

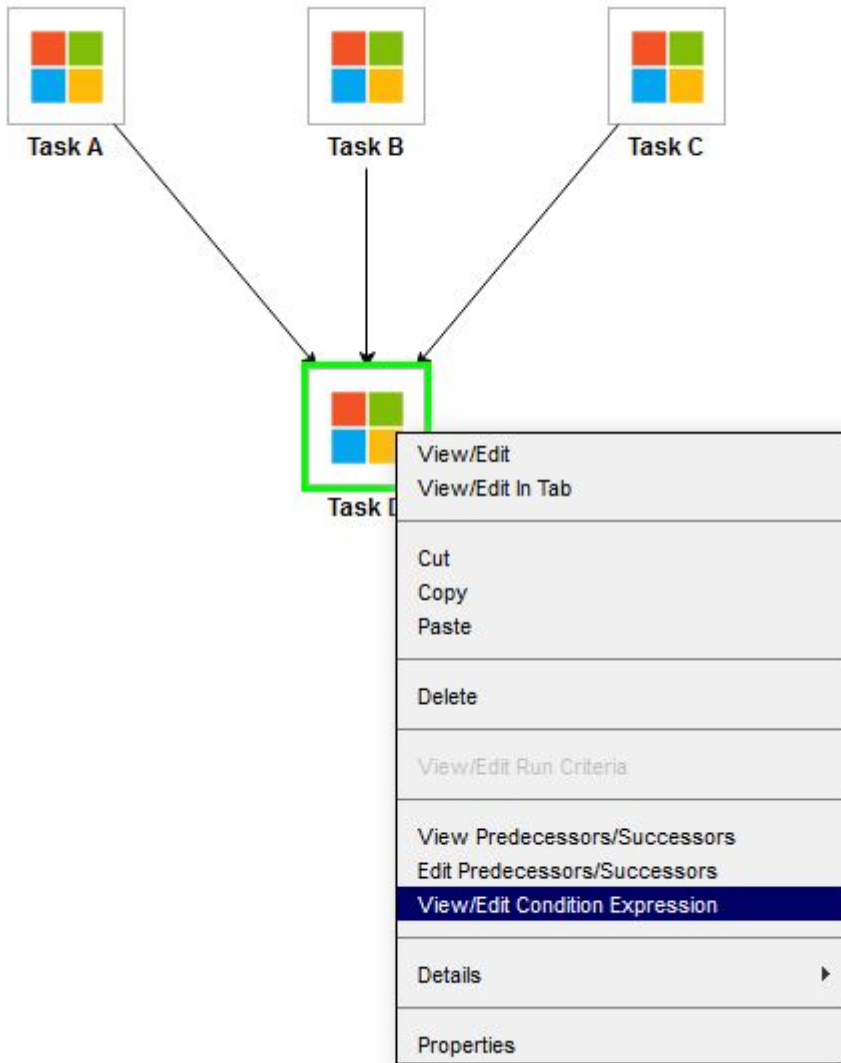
The status of the tasks in the conditional paths leading to the immediate predecessor tasks do not affect whether or not the successor tasks will run. All tasks leading to an immediate predecessor tasks do not have to have run in order for the successor task to run.

2.5.15 Specifying a Condition Expression

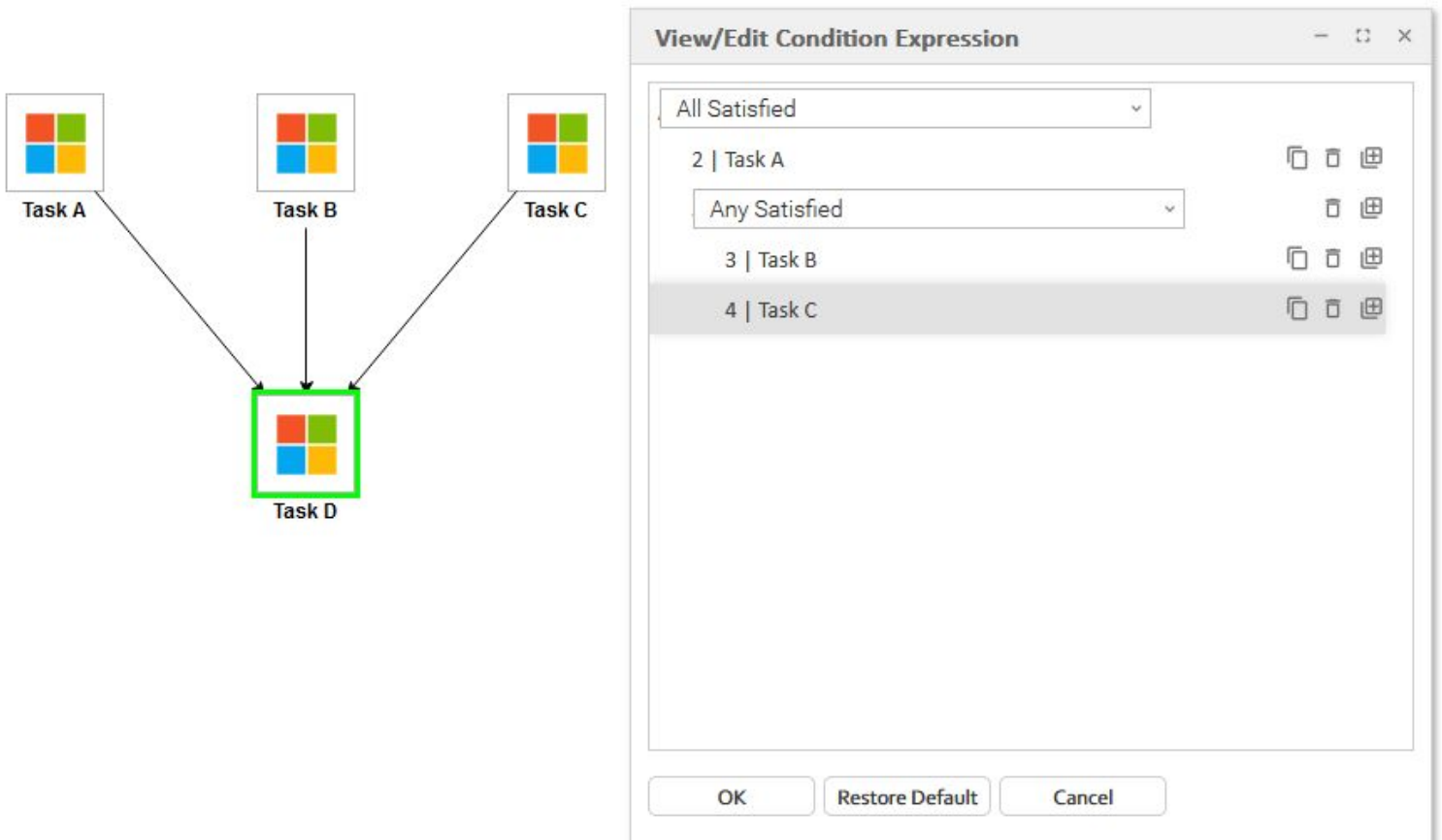
In the Workflow Editor, you can specify a **Condition Expression** for the direct predecessor dependencies of a Task vertex.

An incoming edge from a vertex denotes a predecessor condition. By default, all predecessor conditions must be satisfied before a task can start.

To change the default behavior, you can specify a custom **Condition Expression** by clicking **View/Edit Condition Expression**.



You can then use the **Condition Expression** builder to specify your desired expression.



For the **Condition Expression** above, the predecessor dependencies of **Task D** will be satisfied when the following conditions have been met.

(Task A is Success, Finished or Skipped) and ((Task B is Success, Finished or Skipped) or (Task C is Success, Finished or Skipped))

2.5.15.1 Condition Expressions

A Condition Expression consists of conditions and/or subexpressions joined by a logical operator.

Valid logical operator values are:

- All Satisfied (And)
- Any Satisfied (Or)

The Condition Expression tree will always have a root node for the top-level expression. The root node cannot be deleted. By default, the root node will have the vertex's predecessors as children and the logical operator will be set to "All Satisfied". This represents the default behavior prior to UC 7.9.0.0.


The Condition Expression window will only support editing for the Workflow editor. The tree will be marked read-only for the version and monitor views.

When viewing an existing Condition Expression, the Condition Expression may be altered based on the following rules:

- Invalid conditions will be removed.
- Missing conditions will be added to the top-level (outer) expression.

- Subexpressions without any conditions will be removed.

2.5.15.1.1 Conditions


You can copy a condition by clicking the  icon if you need to include it in more than one subexpression.

You can delete a condition by clicking the  icon. Prohibited if last remaining condition for the predecessor.


You can drag a condition under a new subexpression to make it a child of the subexpression.


You can drag a condition to a change its position.

2.5.15.1.2 Subexpressions

You can add a subexpression by clicking the  icon.

You can delete a subexpression by clicking the  icon. Prohibited if the subexpression has children.

Clicking the  icon on a condition will insert the subexpression below the condition.

Clicking the  icon on a subexpression will add the subexpression to the end of the children list.

You can drag a subexpression under a new subexpression to make it a child of the subexpression.

You can drag a subexpression to a change its position.

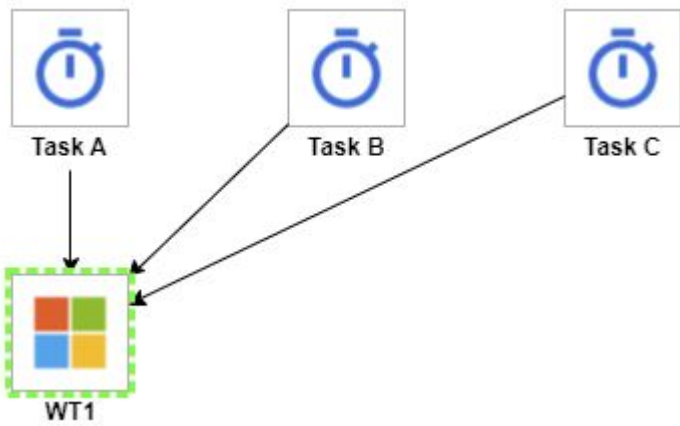
2.5.15.2 Cluster Broadcast

There are 3 scenarios to consider when using cluster broadcast.

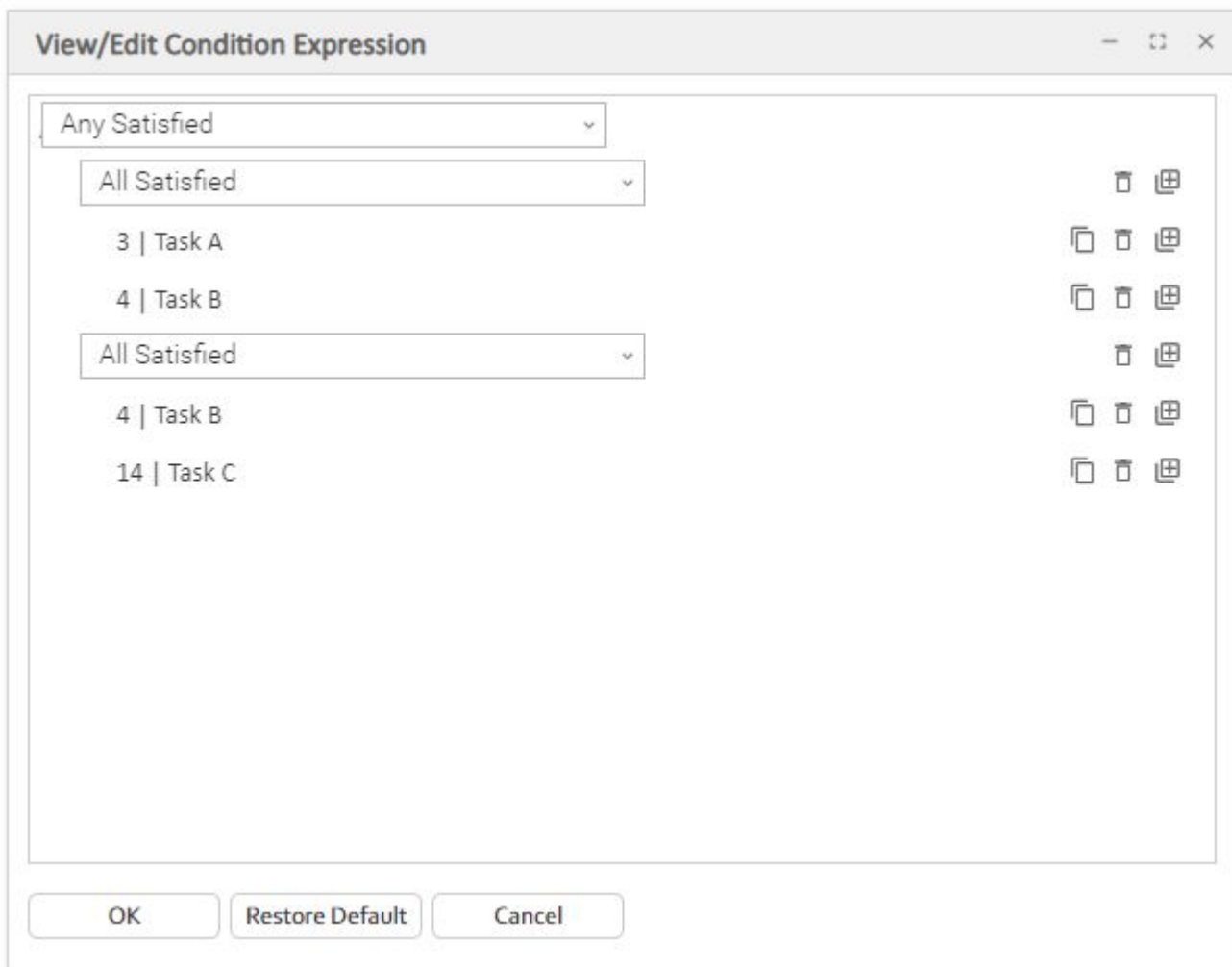
1. Task with cluster broadcast.
2. Predecessor task with cluster broadcast.
3. Task and predecessor task with cluster broadcast.

2.5.15.2.1 Task With Cluster Broadcast

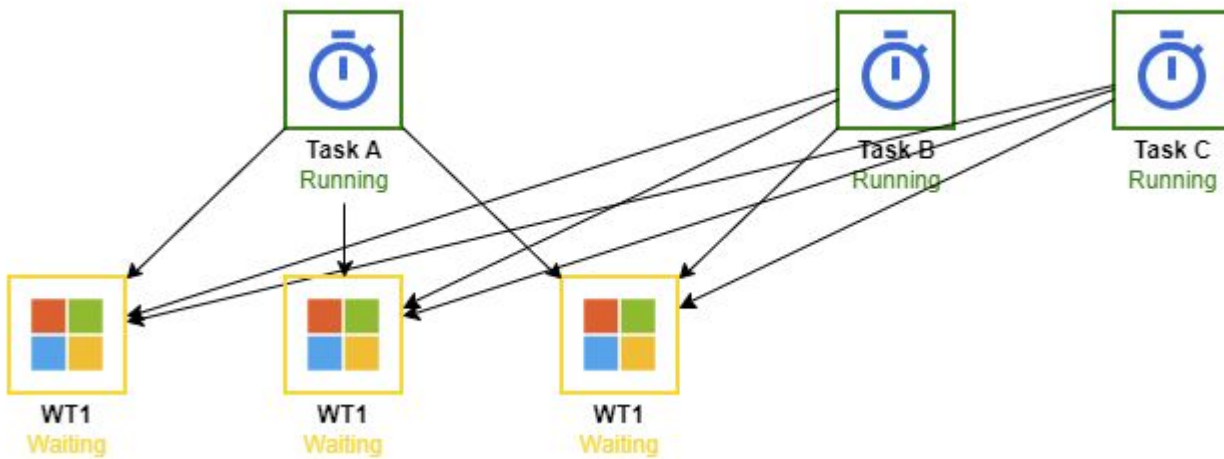
In the following Workflow task, WT1 is the task with cluster broadcast.



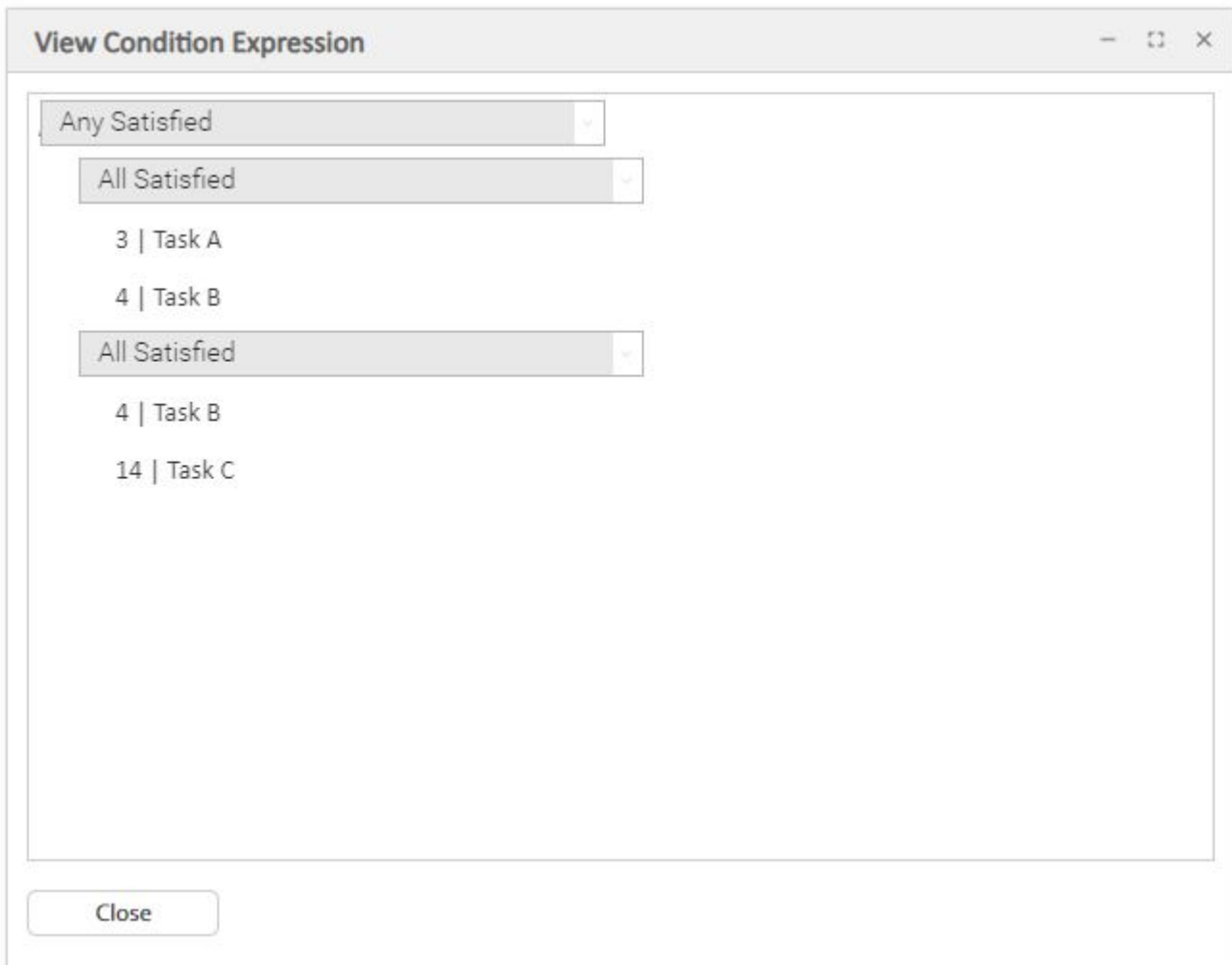
The Condition Expression for WT1 is shown below.



After launching the Workflow task, 2 dynamic vertices will be generated for WT1 as shown below since there are 3 agents in the cluster.

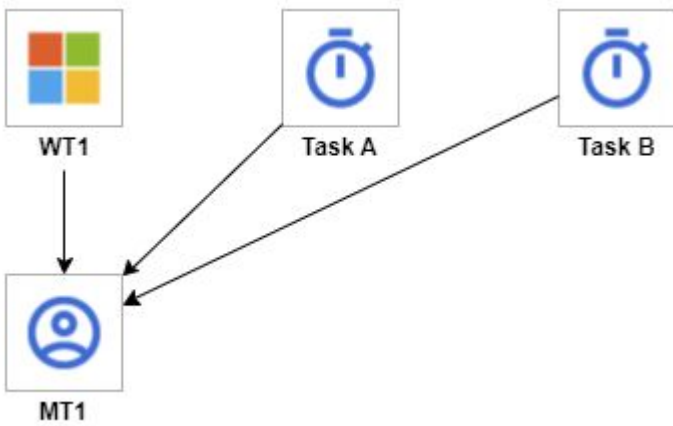


When launching the Workflow task, the server will copy the Condition Expression to the dynamic vertices when they are created. All 3 vertices for WT1 should have the following Condition Expression.

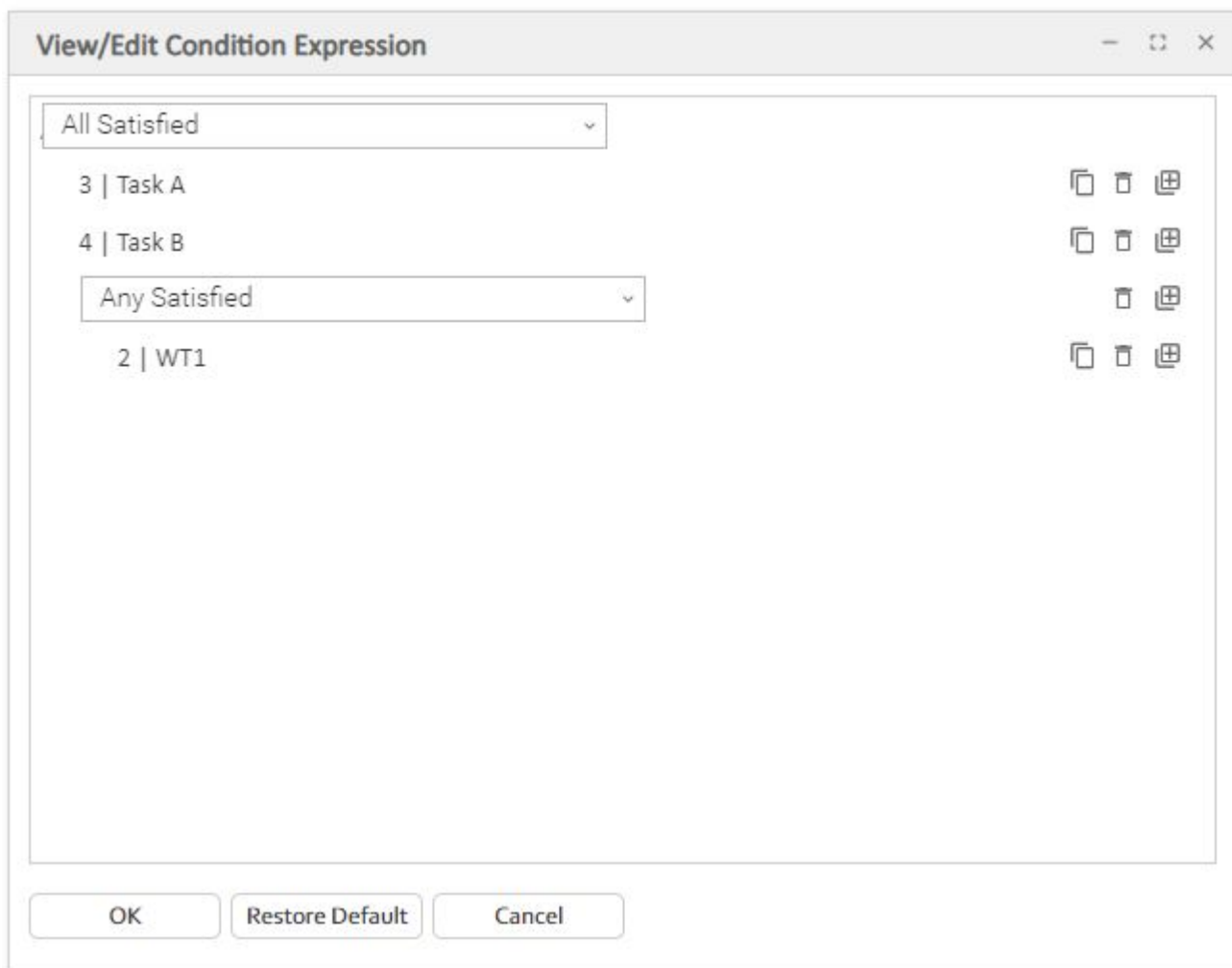


2.5.15.2.2 Predecessor Task With Cluster Broadcast

In the following Workflow task, WT1 is the predecessor task with the cluster broadcast.

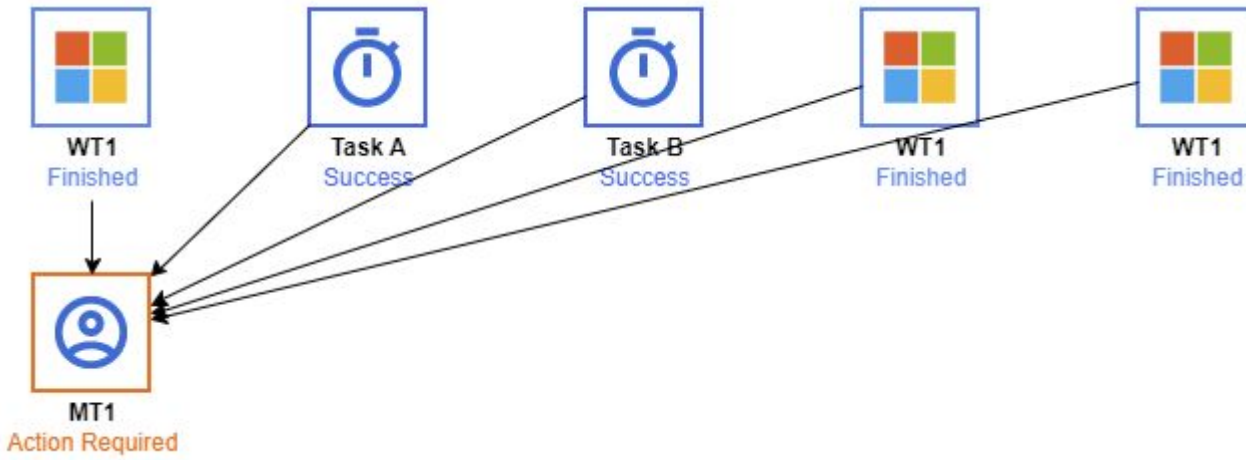


The Condition Expression for MT1 is shown below.

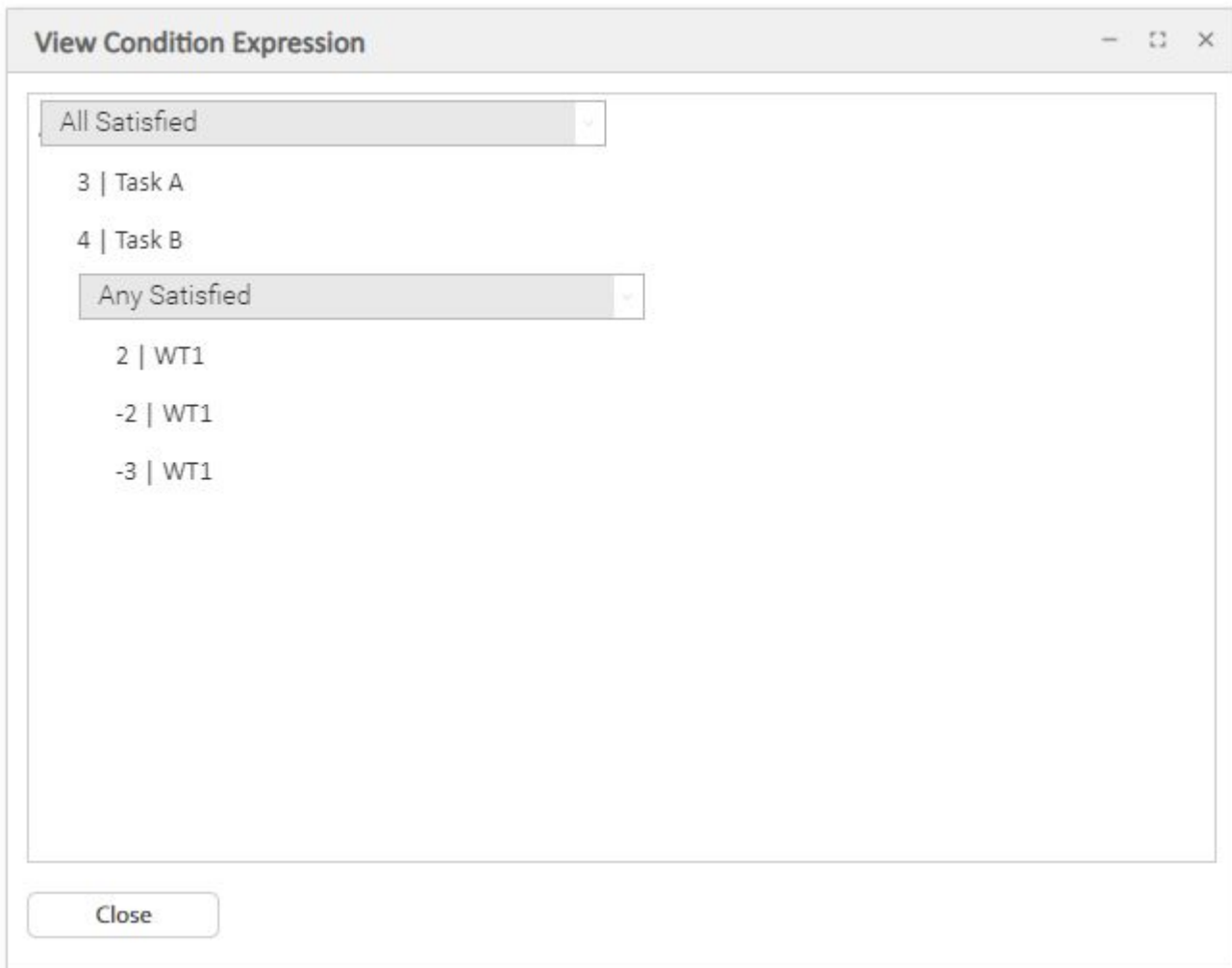


You can create a subexpression with a single condition. This is useful if you want to join the conditions for the vertex and its dynamic vertices with a logical operator.

When launching the Workflow task, the server will modify the Condition Expression for MT1 to insert a condition for the dynamic vertices wherever the original vertex is specified. Since dynamic vertices have a negative vertex ID, it is easy to identify them when viewing the Condition Expression.

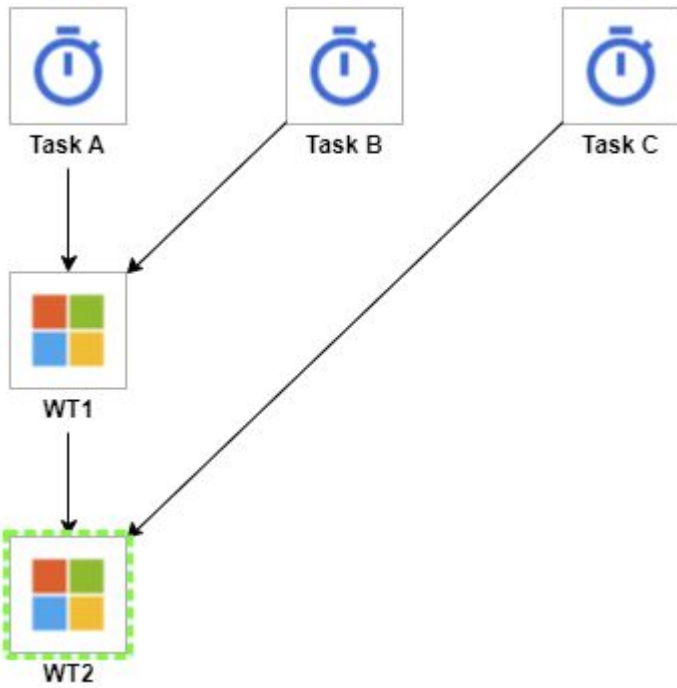


The Condition Expression for MT1 should include original vertex and the dynamic vertices for WT1 under the subexpression.

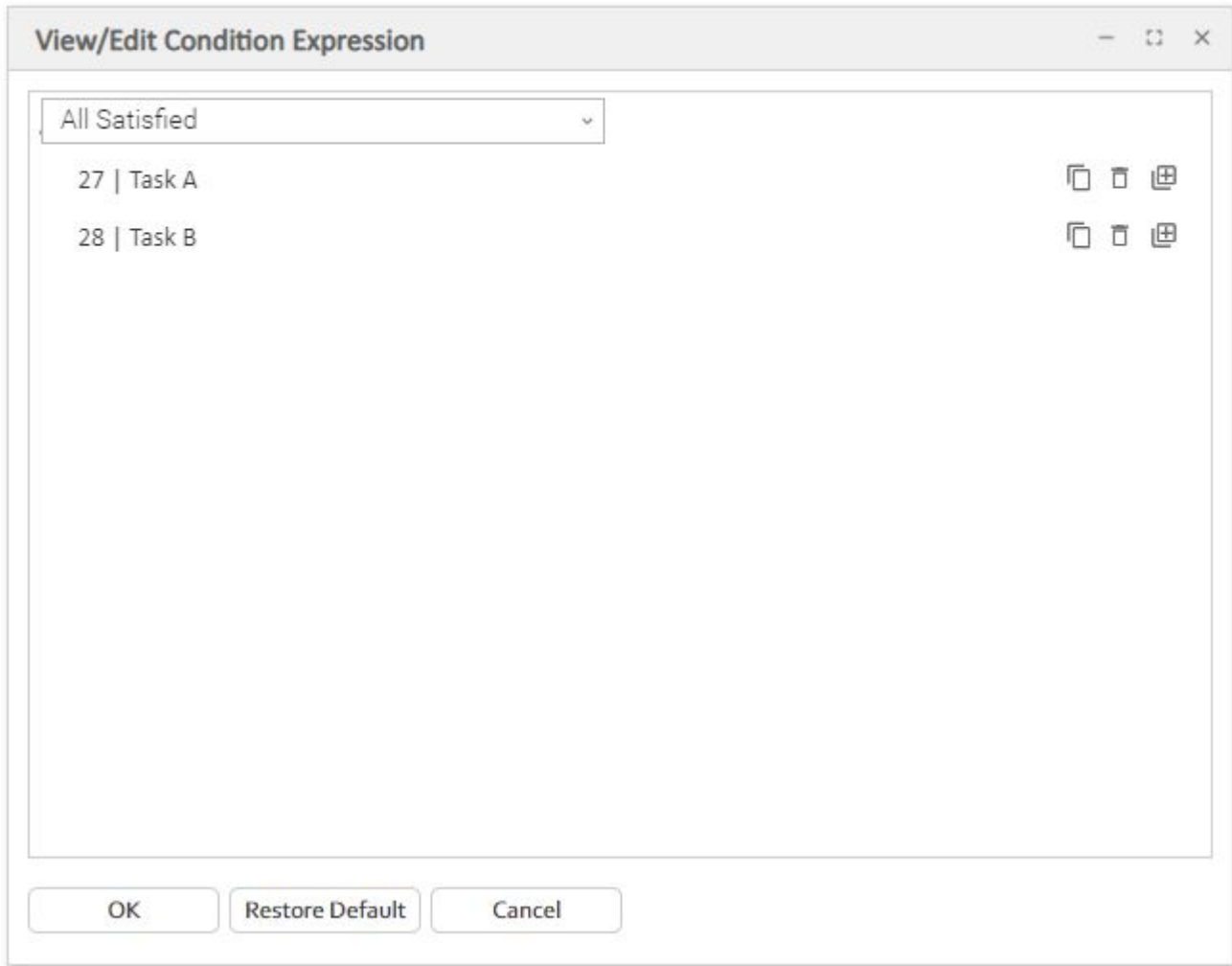


2.5.15.2.3 Task and Predecessor Task With Broadcast Cluster

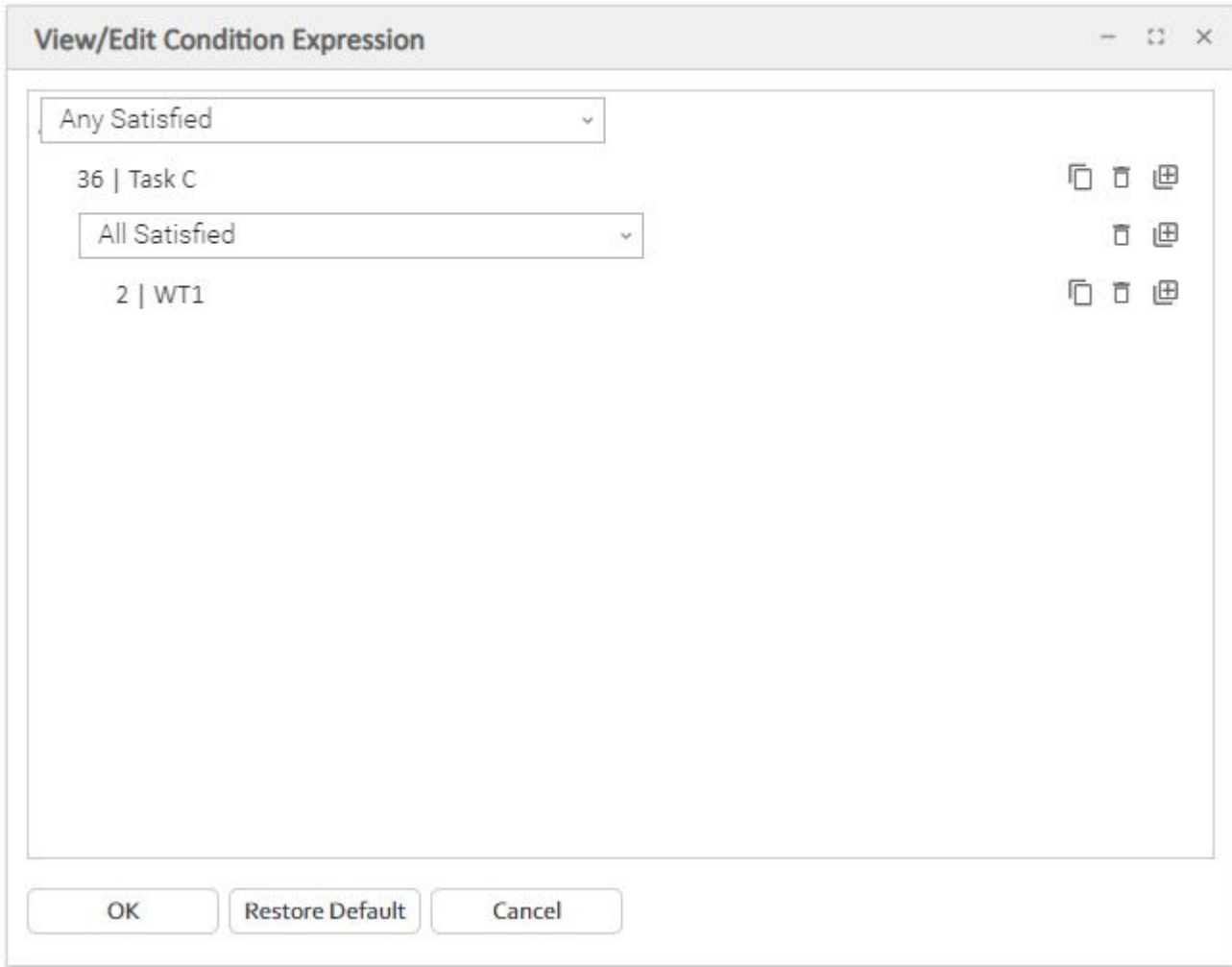
In the following Workflow task, WT2 is the task with the cluster broadcast and WT1 is the predecessor task with cluster broadcast.



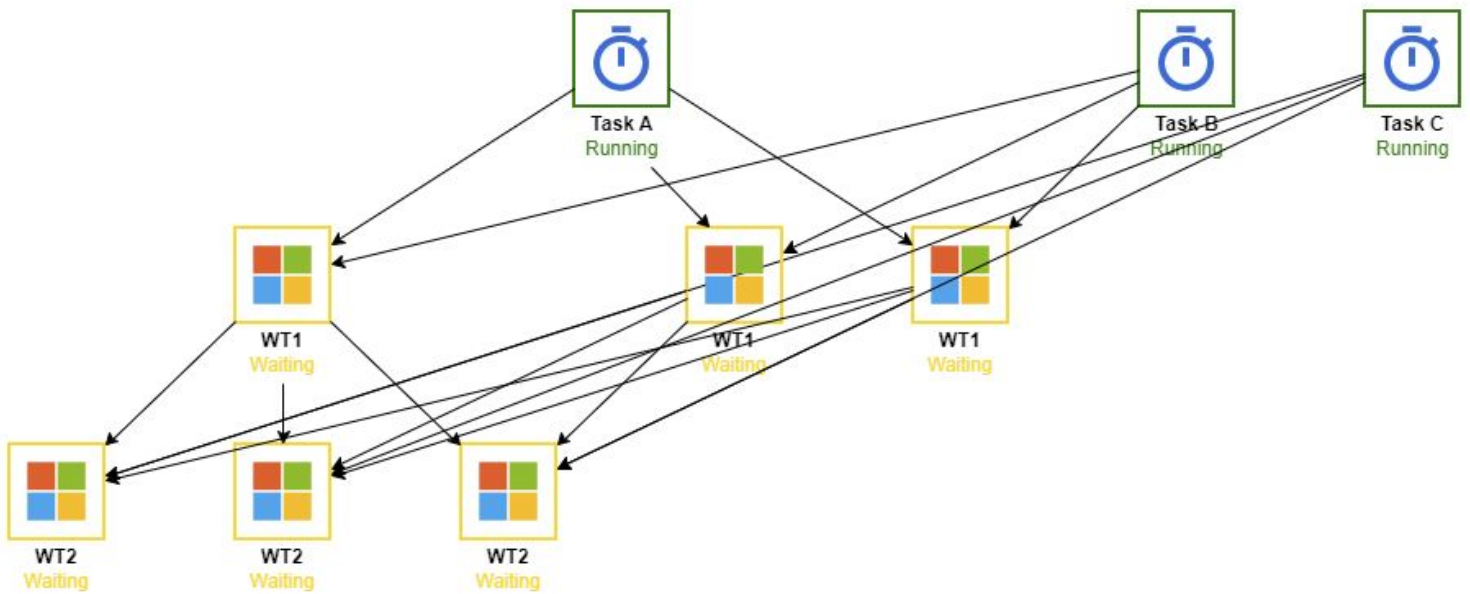
WT1 has the default Condition Expression shown below.



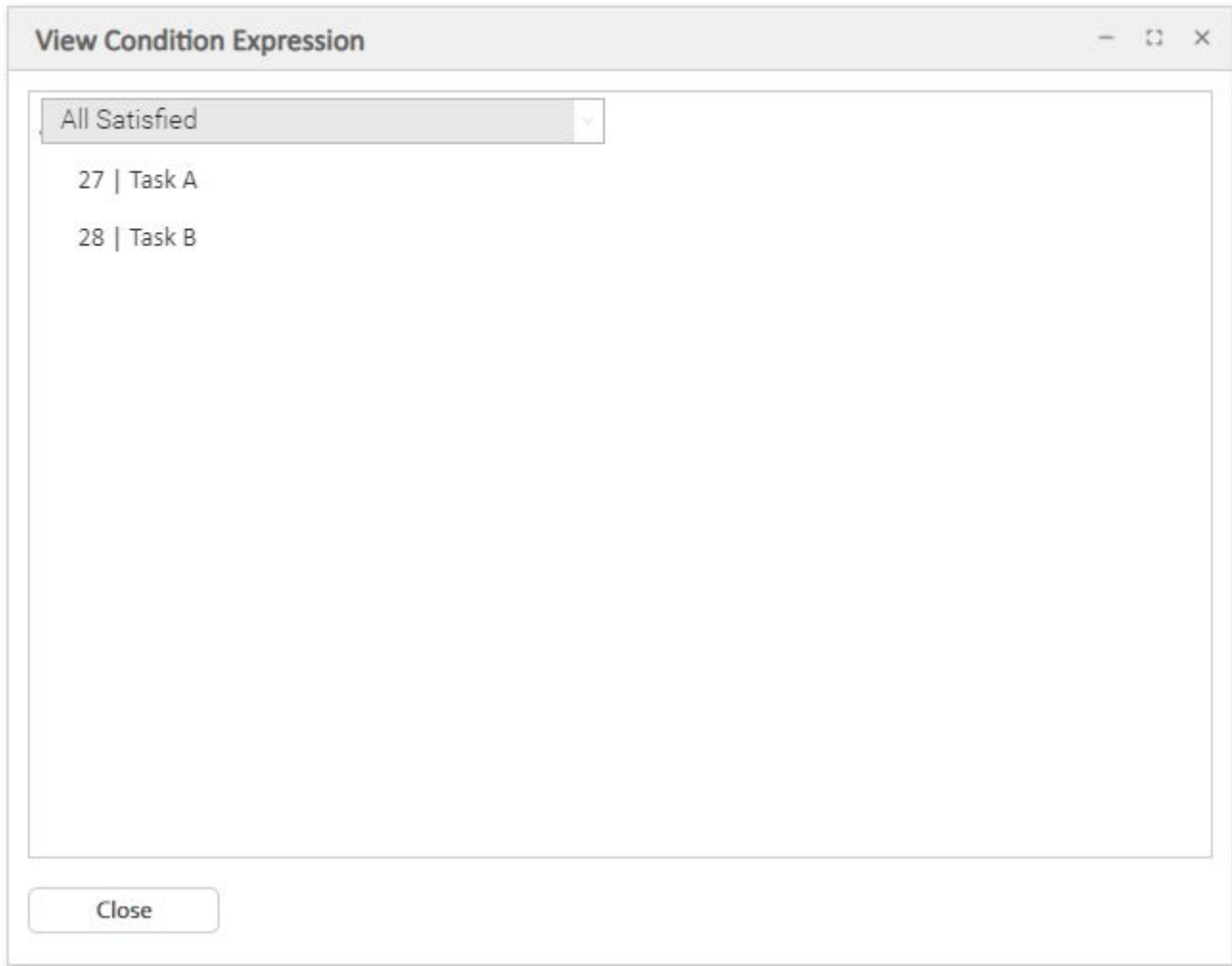
The Condition Expression for WT2 is shown below.



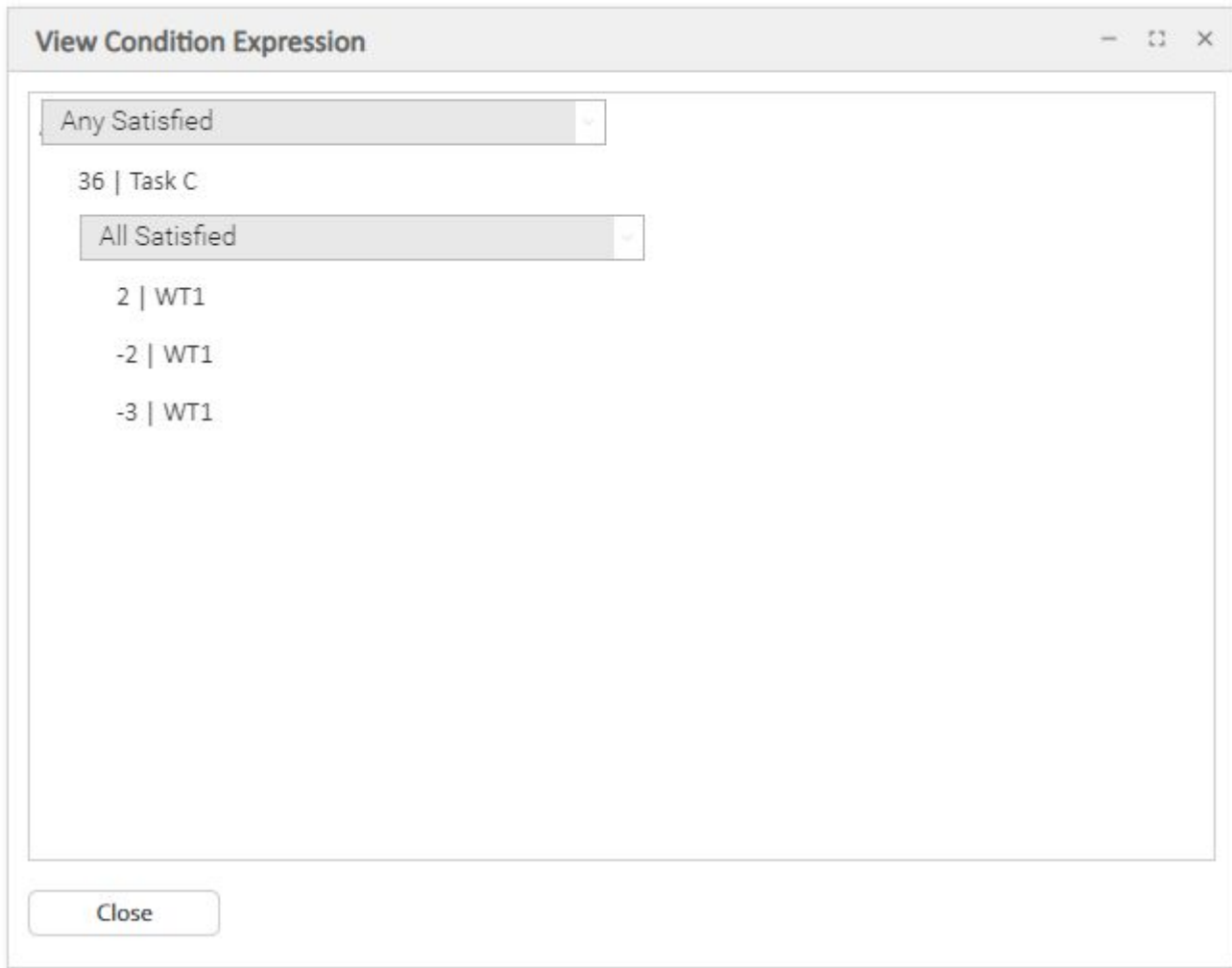
Launching the Workflow task, results in the following.



All the WT1 vertices should have the default Condition Expression.



All the WT2 vertices should have the following Condition Expression. The Condition Expression will be copied from the original WT2 vertex to its dynamic vertices and modified to add the dynamic vertices of WT1.

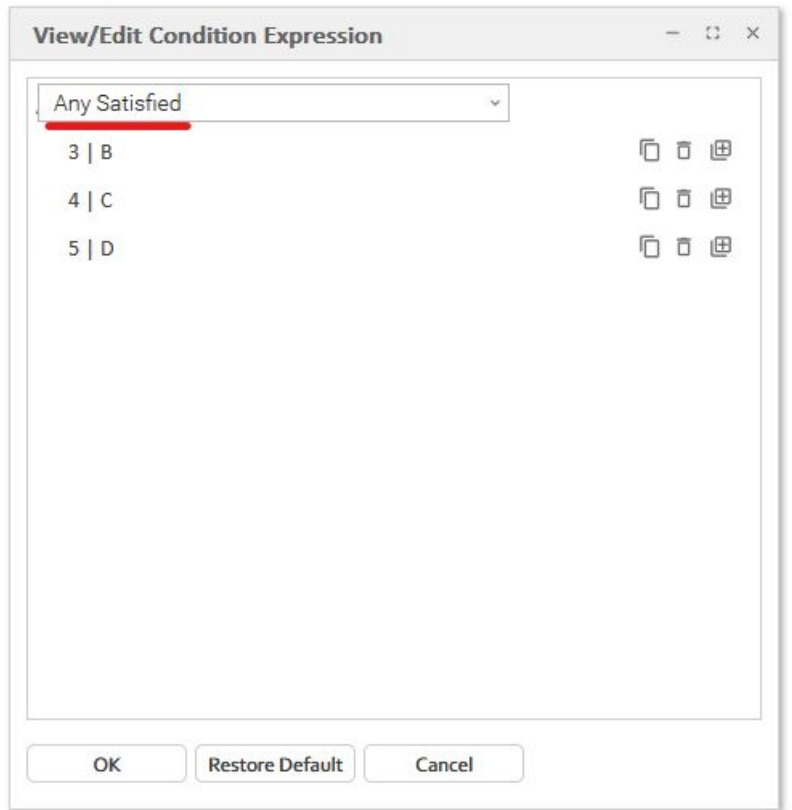
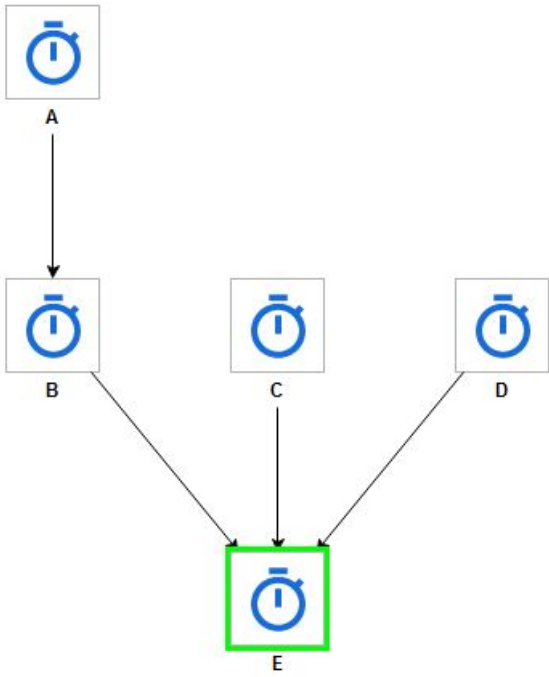


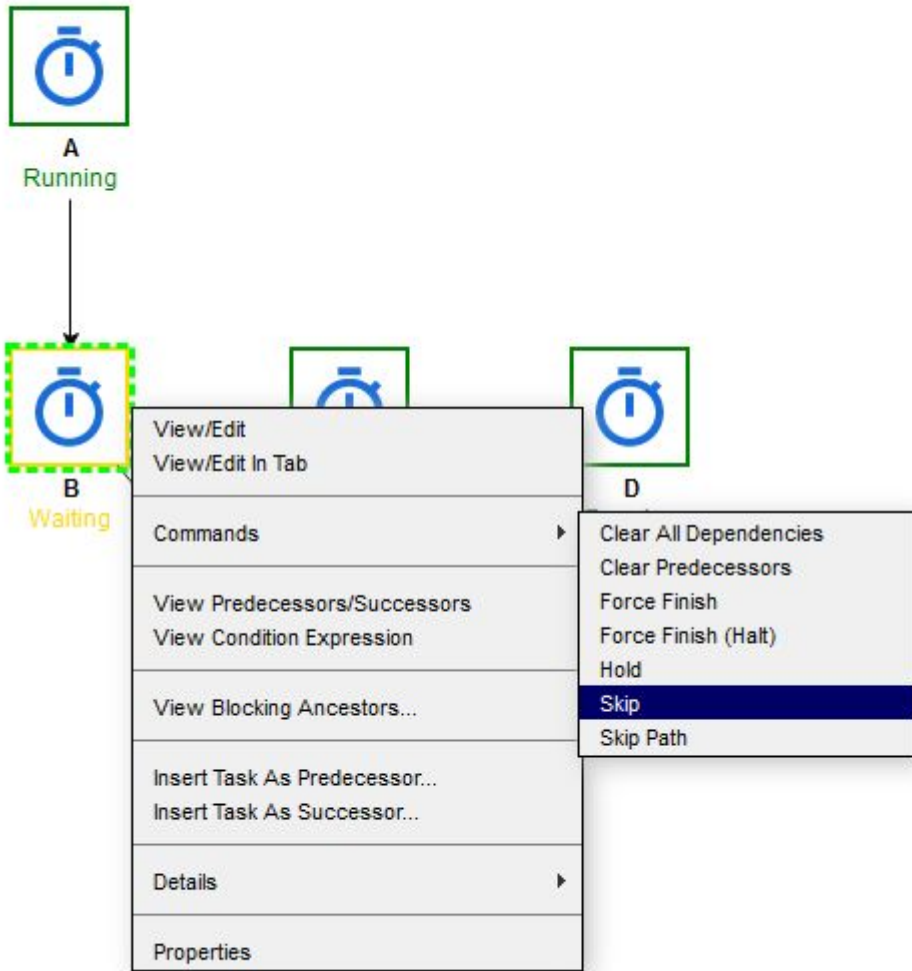
2.5.15.3 Inheritance

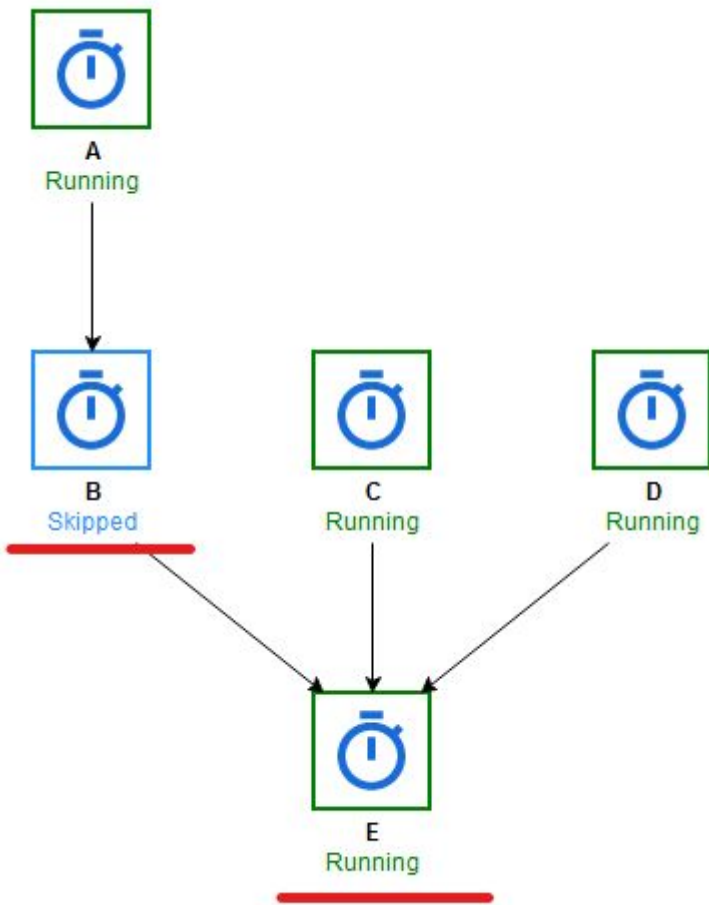
Condition Expressions are defined against *direct* dependencies. Leave the Condition Expression as All Satisfied (default) to keep the dependency evaluation behavior unchanged.

The predecessor dependencies of a Skipped vertex in a Condition Expression are not applicable if a Condition Expression is specified as anything other than All Satisfied (default), specifically, when a vertex specified in the Condition Expression is Skipped, this is equivalent to the vertex being Success or Finished with respect to Condition Expression evaluation.

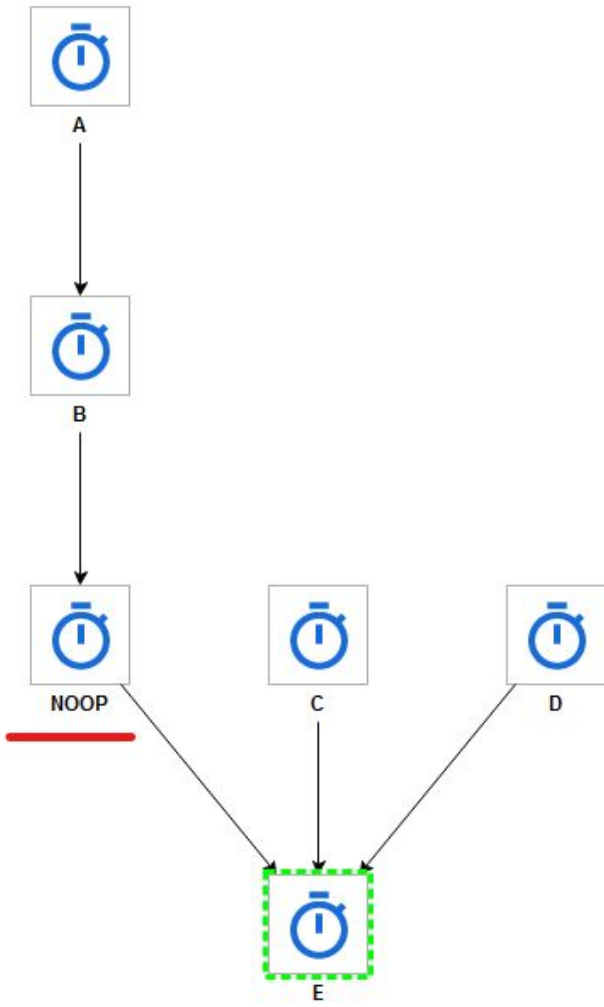
An example is provided below.







In the example above, if you need to be able to skip B and still inherit the dependencies of B, you can add a NOOP task (i.e. Timer 0) between B and E, accordingly.

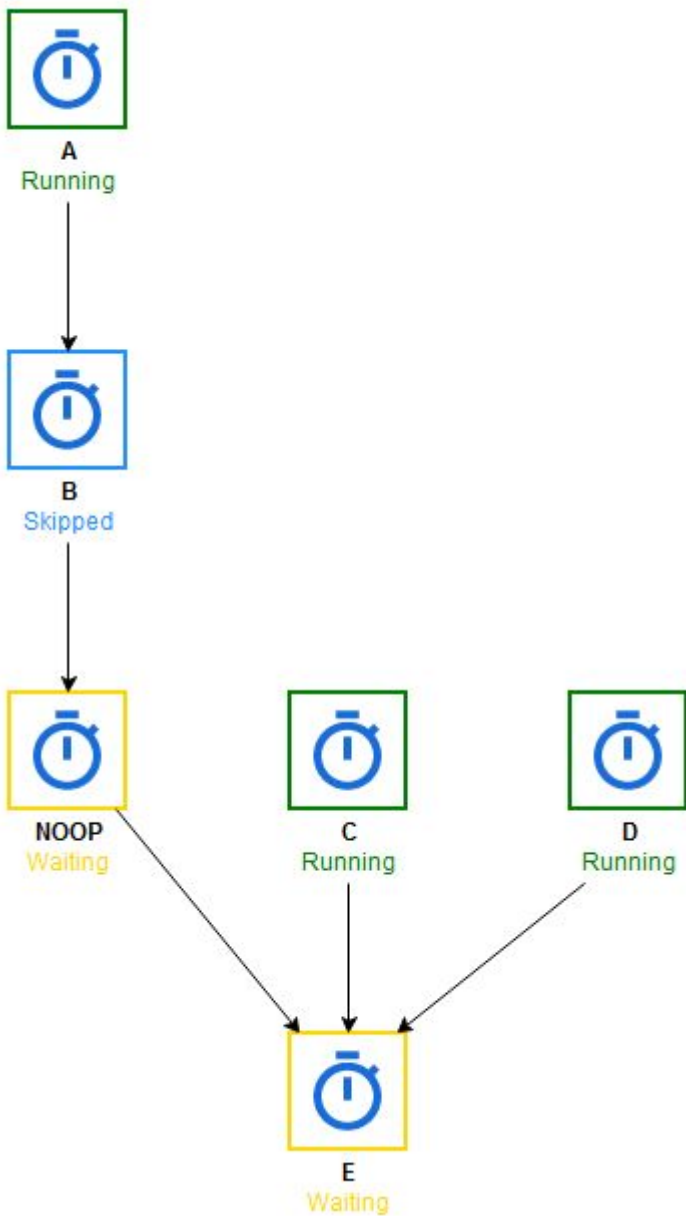


View/Edit Condition Expression

Any Satisfied

4 C	Copy	Delete	Insert
5 D	Copy	Delete	Insert
20 NOOP	Copy	Delete	Insert

OK Restore Default Cancel



The example above demonstrated using the Skip command, however, there are other ways a task can be skipped, such as task run/skip criteria. The same would apply, regardless of how the task instance is skipped. You could also use runtime run/skip criteria to defer skipping B until all of its predecessor dependencies have been satisfied.

2.5.16 Moving Workflow Elements

After you have positioned tasks and connectors on the Workflow Editor canvas, you can move these elements as needed.

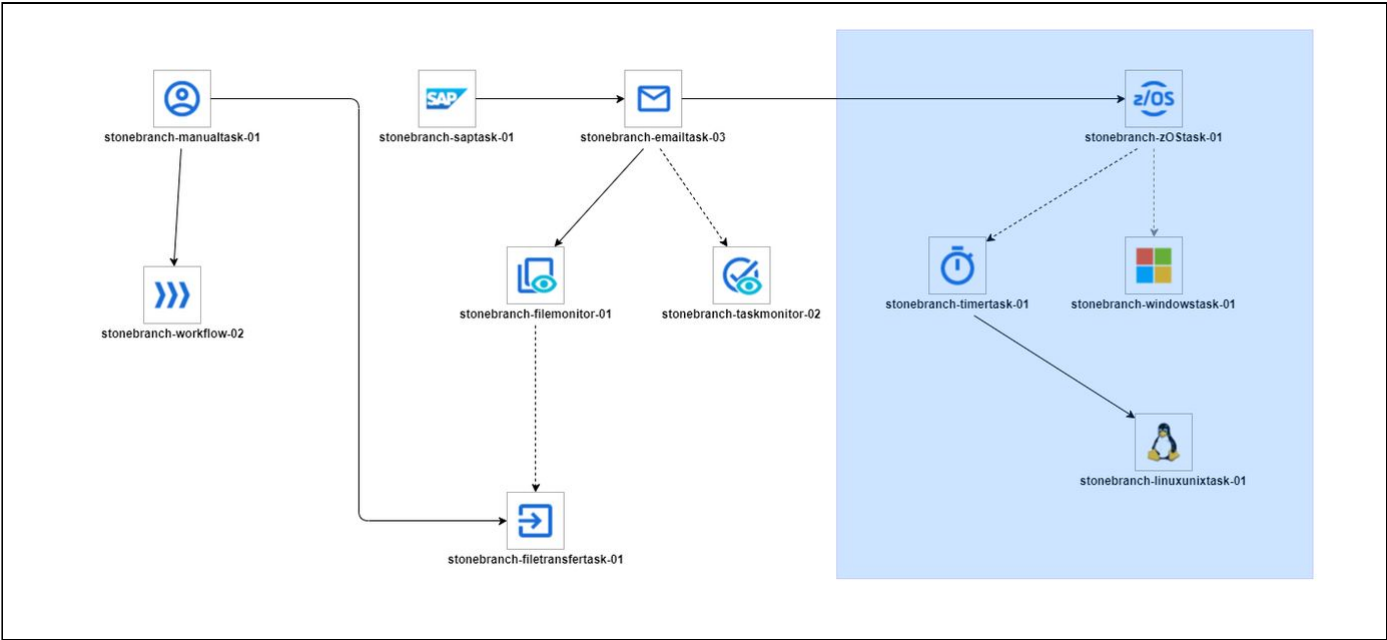
2.5.16.1 Move a Single Task

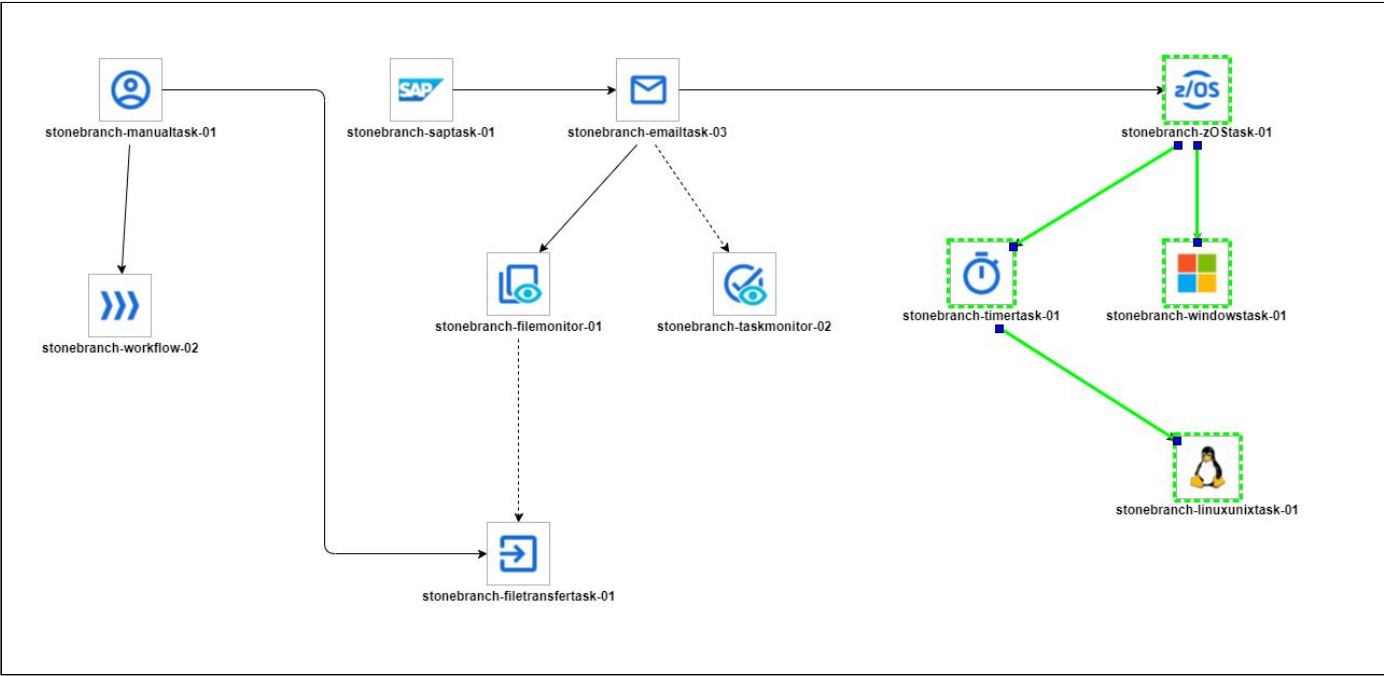
Click a task and drag it to a new location. If the task has any connectors attached, they remain connected, and lengthen or shorten as necessary. |

2.5.16.2 Move a Single Connector

Step 1	Click the connector you want to move.
Step 2	Position your cursor over either end of the connector (at the predecessor or successor task) and, when the cursor changes to a "pointing hand" icon, drag that end of the connector so that it connects to a different task.
Step 3	As desired, repeat Step 2 for the other end of the connector.

2.5.16.3 Move a Group of Tasks and Connectors

Step 1	Click the Select icon or either Connect icon.
Step 2	Position the cursor near the group that you want to move.
Step 3	Click the Workflow Editor canvas and begin dragging. A blue shaded box appears. This identifies the selection area.
Step 4	<p>Drag the selection area over the tasks you want to select, as shown in the following example:</p> 

<p>Step 5</p>	<p>When you have selected the group of tasks and connectors that you want to move, release the mouse. The tasks and connectors included in the group are highlighted, as shown:</p> 
<p>Step 6</p>	<p>Hover your cursor over any element in the group until the Move cursor displays, then click that element and drag the group to the new location. All selected elements are moved.</p>
<p>Step 7</p>	<p>To deselect the group, click elsewhere in the Workflow Editor canvas.</p>

Note

You also can use Ctrl+click to select a group of elements or a selection of individual elements and drag them to a new location.

2.5.17 Deleting Workflow Elements

<p>Step 1</p>	<p>Click an element, drag your cursor across the Workflow Editor canvas to select a group of elements, or use Ctrl+click to select one element, a group of elements, or a selection of individual elements.</p> <p>(You cannot drag your cursor across the Workflow Editor canvas in Pan mode.)</p>
<p>Step 2</p>	<p>Click the Delete icon. The selected element or group of elements is deleted.</p>

2.5.18 Copying Workflow Elements

Step 1	Click an element, drag your cursor across the Workflow Editor canvas to select a group of elements, or use Ctrl+click to select one element, a group of elements, or a selection of individual elements. (You cannot drag your cursor across the Workflow Editor canvas in Pan mode .)
Step 2	Click the Copy icon to create a copy of the selected elements.
Step 3	Click the Paste icon to paste the copied element(s) into the Workflow next to the original element(s).
Step 4	Click the copied element (or any element in a copied group) and drag it to a new location. <div style="border: 1px solid orange; padding: 10px;">Note: You can paste copied (or cut) element(s) into the same Workflow or into the Workflow Editor of any other Workflow.</div>

2.5.19 Undoing and Redoing Workflow Changes

To undo the most recent change, click the [Undo](#) icon. To redo a change you just undid, click the [Redo](#) icon.

2.5.20 Zooming In and Out

Several features are available for zooming in and out on large Workflows:

- Click the [Fit](#) icon to fit the entire Workflow onto the display.
- Click the [Zoom In](#) icon to increase the size of the Workflow (to view details).
- Click the [Zoom Out](#) icon to decrease the size of the Workflow (to view the entire Workflow)
- Click the [Actual Size](#) icon to return the Workflow to its actual (original) size.
- Click the [Zoom](#) icon to enter a zoom percentage.

2.5.21 Panning Around in Large Workflows

For large Workflows that cannot be viewed entirely on your screen, you can pan around from area to area.

Two methods are provided:

- [Pan mode](#)
- [Outline](#) tool (in any mode)

2.5.21.1 Pan Mode Method

Step 1	Click the Pan icon to enter Pan mode .
Step 2	Click the Workflow Editor canvas and drag the Workflow so that it displays the area you want to work on.

2.5.21.2 Outline Tool Method

Step 1	Click the Outline icon icon to open the Outline window.
Step 2	In the Outline window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions itself as indicated in the Outline window.

Note

You also can move to different areas of a Workflow by using the [Find in Workflow...](#) tool.

2.5.21.3 Workflow Coordinates

If you use [Pan mode](#) (or [Find in Workflow...](#)) to view different areas of a Workflow, the Controller preserves the coordinates of the last area that you viewed. If you leave the Workflow and return to it in the same browser session, the last viewed area of the Workflow displays.

To restore the displayed Workflow to its default, top-left position, you can either:

- Right-click anywhere in the Workflow Editor canvas to display a [pop-up menu](#) and click **Pan To Top**.
- Start a new browser session.

2.5.22 Automatically Formatting a Workflow

You can apply automatic formatting to your Workflow. This process does not change any connections or content, but reorganizes the Workflow into a more legible display.

- To create a horizontal layout, click the [Horizontal Layout](#) icon.
- To create a vertical layout, click the [Vertical Layout](#) icon.

2.5.23 Displaying Workflow Documentation

To display documentation on [monitoring Workflows](#), click the [Help](#) icon.

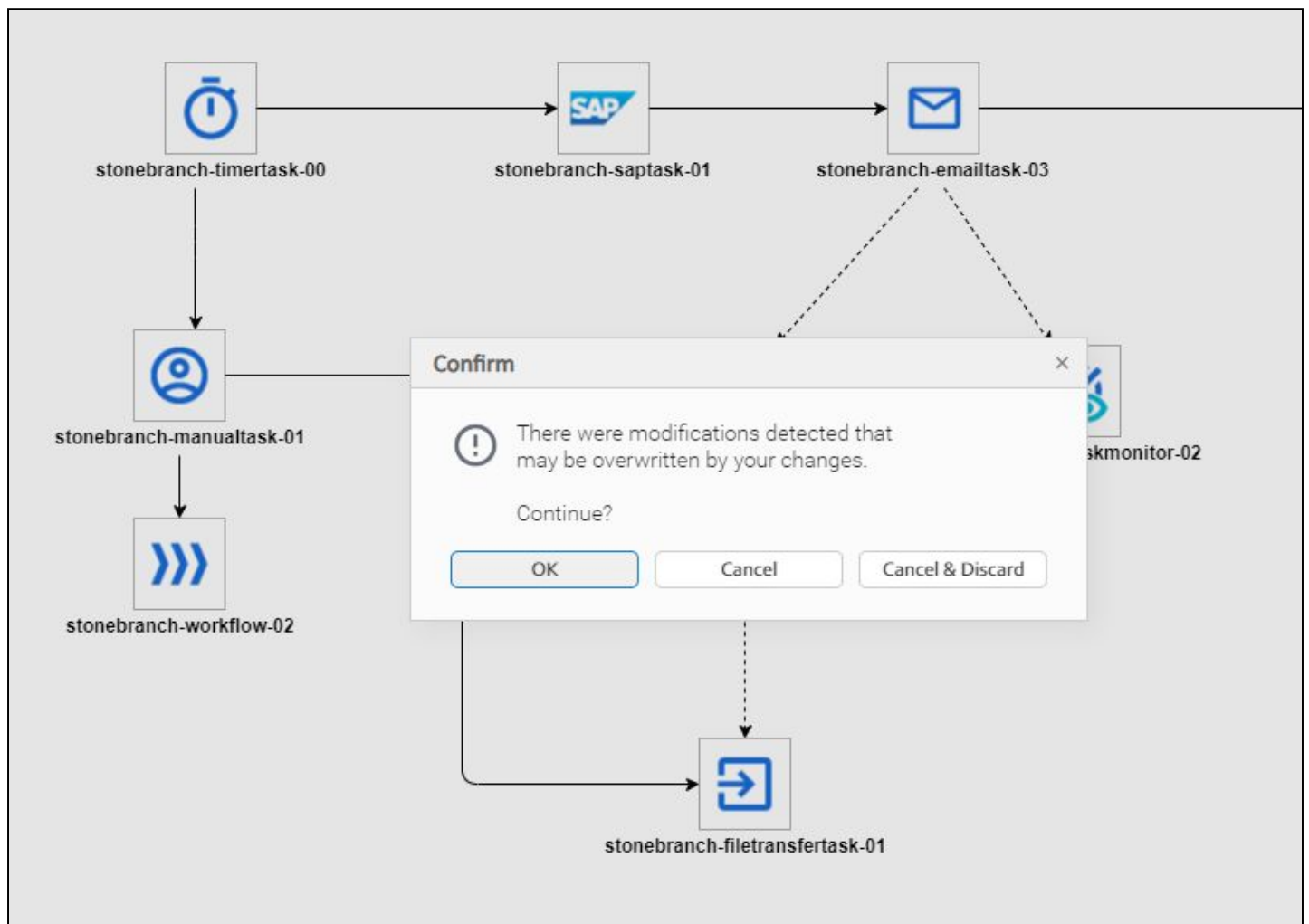
2.5.24 Displaying Processing Messages

While a Workflow is running, you can click the [Console](#) icon to display processing messages. For more details, see [Monitoring Workflows](#).

2.5.25 Saving/Updating a Workflow

Click the  icon.

The Controller checks if other users have made changes before updating the workflow. If other modifications were made, a dialog box will appear, giving you options to proceed with the update and overwrite the modifications, cancel the update and return to the workflow editor, or cancel and discard your changes.



The [Automatically Create Versions](#) system property must be true for the Controller to check for changes made by other users.

2.5.26 Switching Between Workflows

You can switch between Workflows without using the navigation pane (see [Designing, Modifying, or Viewing Multiple Workflows](#)).

2.6 Adding Skip/Run Criteria for Specific Tasks

You can add special instructions that specify conditions under which a specific task (or sub-Workflow) within the Workflow should be run or skipped. The Controller evaluates these instructions when determining whether to run each task within a Workflow.

For example, you might want to skip a specific task in a Workflow on a certain day or date, or you might want to run a specific task only if a certain variable is set to a specific value.

Note

Calendar-based criteria are always evaluated using the task instance [Trigger Time](#) (or the task instance [Created](#) time, if the workflow was launched manually).

When a workflow is launched or triggered, the Task Run Criteria provide a mechanism to decide whether a specific task (or sub-Workflow) within the Workflow should be run or skipped. If no Task Run Criteria are specified, a task will always run when the Workflow is launched or triggered. If Task Run Criteria are specified to run or skip a task, these will be evaluated as follows:

- Skip criteria will run the task unless the skip criteria is met. For example, a workflow is triggered every business day, and a task has a skip criteria of Tuesday. The task will run Monday, Wednesday, Thursday, and Friday. The task will not run on Tuesday.
- Run criteria will only run the task when the run criteria is met. For example, a workflow is triggered every business day and a task has a run criteria of Tuesday. The task will run on Tuesday. The task will be skipped on Monday, Wednesday, Thursday, and Friday.

Multiple conditions can be specified in a single Task Run Criteria definition. In this case, all of the conditions need to be met. For example, if in a single Task Run Criteria you specify for the task to run on a specific day of Tuesday, and if the variable RUN_ME resolves to the value YES at Run Time, the task will be skipped unless both of these conditions are true.

When multiple Task Run Criteria definitions are specified for a single task, these are evaluated independently.

Note

If skip criteria and run criteria both are met (true) on a given day, the skip criteria will take precedence.

2.6.1 Creating Skip/Run Criteria

Step 1	Display the Details of the Workflow for which you want to specify skip/run criteria.
Step 2	Click the Task Run Criteria tab. The Task Run Criteria list displays a list of any existing skip/run criteria for that task.

<p>Step 3</p>	<p>Click New. Task Run Criteria Details displays:</p> <div data-bbox="148 280 1544 1294" style="border: 1px solid black; padding: 5px;"> <p>Task Run Criteria Details - [] x</p> <p>Task Run Criteria</p> <p>Details</p> <p>Type * Evaluate At</p> <p>Run Criteria Trigger Time</p> <p>Description</p> <p>Task * Vertex Id *</p> <p>Any</p> <p>Business Day <input type="checkbox"/></p> <p>Holiday <input type="checkbox"/></p> <p>Specific Day(s) <input type="checkbox"/></p> <p>Custom Day <input type="checkbox"/></p> <p>Complex <input type="checkbox"/></p> <p>Variable <input type="checkbox"/></p> </div>
<p>Step 4</p>	<p>Using the field descriptions, below, as a guide, complete the fields as needed. For example, to tell the Controller not to run a specific task on business days or holidays, select Skip Criteria in the Type field, select the task and enable Business Day and Holiday.</p>
<p>Step 5</p>	<p>Click the Save button to save the record.</p>

2.6.2 Skip/Run Criteria Field Descriptions

The following table provides descriptions for each field in the Task Run Criteria Details.

Field Name	Description
Type	<p>User-defined; indicates whether this is providing instructions on when to run or not run the task.</p> <p>Options:</p> <ul style="list-style-type: none"> • Run Criteria - Provides instructions on when to run the task. • Skip Criteria - Provides instructions on when to skip the task.

Evaluate At	<p>Allows you to specify when you want the Controller to evaluate the run criteria.</p> <p>Options:</p> <ul style="list-style-type: none"> • Trigger Time (default) – Evaluate the run criteria when the Workflow is triggered. • Run Time – Evaluate the run criteria when the task is about to run.
Description	Description of this record. Maximum length is 255 characters.
Task	User-defined; task for which you are specifying run or skip criteria. Select a task from the drop-down list of all tasks in this Workflow.
Vertex ID	Vertex ID of the task selected in the Task field. Each task within a Workflow has a unique Vertex ID, which distinguishes it from other tasks of the same name, if any.
Business Day	If enabled, the task runs or skips on all business days.
Holiday	If enabled, the task runs or skips on holidays.
Adjustment	<p>If Holiday is enabled; Specification for adjusting a Holiday by a less or plus number of days or business days.</p> <p>Options:</p> <ul style="list-style-type: none"> • -- None -- • Less • Plus <p>Default is -- None --</p>
Adjustment Amount	<p>If Adjustment is Less or Plus; Number of days or business days to adjust a Holiday.</p> <p>Default is 1.</p>
Adjustment Type	<p>If Adjustment is Less or Plus; Type of day by which to adjust a Holiday.</p> <p>Options:</p> <ul style="list-style-type: none"> • Day • Business Day <p>Default is Day.</p>
Specific Day(s) – Sunday through Saturday	If enabled, the task runs or skips on the day(s) you select in the right-hand column.
Custom Day	<p>If enabled, the task runs or skips on the day you select in the Custom Day Choice field.</p> <div style="border: 2px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>The Custom Day and Custom Day Choice fields display in the Task Run Criteria Details only if the Custom Day Global Permitted Universal Controller system property is set to true (the default).</p> </div>

<p>Custom Day Choice</p>	<p>If Custom Day is enabled, select the custom day for which you are specifying run or skip criteria. Enter the name of an existing Custom Day, select a Custom Day from the drop-down list of all existing Custom Days, or click the Details icon to create a new Custom Day.</p> <p>Only a global custom day can be selected for a Custom Day Choice. Use Complex run criteria to use a local custom day.</p> <p>If a workflow is launched using a calendar which does not contain the custom day specified for the Custom Day Choice, the following applies:</p> <ul style="list-style-type: none"> • Run Criteria with the specified custom day will evaluate to false. If no other criteria was specified, the task will be skipped. • Skip Criteria with the specified custom day will evaluate to false. If no other criteria was specified, the task will not be skipped. <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>You cannot use a custom day defined as a period as part of the task run criteria.</p> </div>
<p>Complex</p>	<p>If enabled, the task runs or skips on the day(s) indicated in the Adjective, Noun, and Qualifier fields.</p>
<p>Adjective</p>	<p>If Complex is enabled, you can use this field to specify which in a series of days you want to select. Used in conjunction with the Noun, Qualifier, and Nth Amount (if Adjective = Nth) fields. For example, to specify "the 15th business day of the month," select Adjective: Nth, Noun: Business Day, Qualifier: Month, Nth Amount: 15.</p> <p>Options:</p> <ul style="list-style-type: none"> • Every • 1st • 2nd • 3rd • 4th • Nth • Last
<p>Noun(s)</p>	<p>If Complex is enabled, you can use this field to specify the type of day(s) you want to select.</p> <p>Used in conjunction with the Adjective, Qualifier, and Nth Amount (if Adjective = Nth) fields. For example, to specify "the 1st business day of the month," select Adjective: 1st, Noun: Business Day, Qualifier: Month.</p> <p>Options:</p> <ul style="list-style-type: none"> • Sunday through Saturday • Day = any day • Business Day = The business days specified in the calendar selected in the Workflow definition Default Calendar field. • Custom Days specified in the calendar selected in the Workflow definition Default Calendar field. <ul style="list-style-type: none"> • If the Custom Day Strict Mode Universal Controller system property is set to true, the calendar used for the Workflow must contain the custom day that you specify in the Custom Day Choice field; otherwise, the task will not run or skip as expected on the custom day: <ul style="list-style-type: none"> • If you launch a Workflow manually, the Workflow Default Calendar is used. If a Default Calendar is not specified, the System Default calendar is used. • If you launch a Workflow using a trigger, the calendar specified in the trigger is used unless Override Inherited Calendar is enabled.
<p>Qualifier(s)</p>	<p>If Complex is enabled, you can use this field to specify the period(s) for your selection formula.</p> <p>Used in conjunction with the Adjective, Noun, and Nth Amount (if Adjective = Nth) fields. For example, to specify "the 1st business day of the month," select Adjective: 1st, Noun: Business Day, Qualifier: Month.</p> <p>Options:</p> <ul style="list-style-type: none"> • Month • Year • Week • Quarter • January through December • Custom Period (see Creating Custom Days)
<p>Nth Amount</p>	<p>If Adjective = Nth; Sequential occurrence of the day selected in Noun within the selected Qualifier.</p>

Adjustment	If Complex is enabled; Specification for adjusting a complex day by a less or plus number of days or business days. Options: <ul style="list-style-type: none"> • -- None -- • Less • Plus Default is -- None --
Adjustment Amount	If Adjustment is Less or Plus; Number of days or business days to adjusting a complex day. Default is 1.
Adjustment Type	If Adjustment is Less or Plus; Type of day by which to adjust a complex day. Options: <ul style="list-style-type: none"> • Day • Business Day Default is Day.
Variable	If enabled, instructs the Controller to run or not run the task, depending on the value of a specific variable. Used in conjunction with fields: Evaluate At , Name , Operator , and Value .
Name	If Variable = enabled; Specifies the name of the variable being evaluated. The variable does not need to exist when this record is created.
Operator	If Variable = enabled; Allows you to select the operator to be used in the evaluation. Options: =, !=, >, >=, <, <=, regex (regular expression) .
Value	If Variable = enabled; Allows you to specify the value or regular expression (up to 255 alphanumeric characters) that the Controller should look for when evaluating the variable.
Buttons	This section identifies the buttons displayed above and below the Task Run Criteria that let you perform various actions.
Save	Saves a new record in the Controller database.
Update	Saves updates to the record.
New	Displays empty (except for default values) Details for creating a new Database Connection.
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 Database Connection.

2.6.3 Copying Skip/Run Criteria

You can copy the skip/run criteria of a task in a Workflow and copy it to any other task in that Workflow.

Step 1	Display the Details of the Workflow task for which you want to copy the skip/run criteria of one of its tasks.
Step 2	Click the Task Run Criteria tab. The Task Run Criteria list displays a list of any existing skip/run criteria for that task.
Step 3	Click the Details icon for the skip/run criteria that you want to copy. The Task Run Criteria Details for that task displays.
Step 4	Click the Task field drop-down list to display a list of all tasks in the Workflow.

Step 5 Select a task from the drop-down list and then right-click anywhere in the Task Run Criteria Details to display an [Action menu](#).

The screenshot shows the 'Task Run Criteria Details' window. The 'Task' dropdown is set to 'stonebranch-windowstask-01'. A context menu is open over the dropdown, listing actions: Open In Tab, Update, Update & View, Insert, Insert & View, Delete, Close, Details, and Refresh. The 'Details' option is highlighted with a right-pointing arrow. Other fields include 'Type' (Run Criteria), 'Evaluate At' (Trigger Time), 'Description', 'Vertex Id' (2 | stonebranch-windowstask-01), and several checkboxes for scheduling options like Business Day, Holiday, Specific Day(s), Custom Day, Complex, and Variable. An 'Adjustment' dropdown is set to '-- None --'.

Step 6 Click **Insert** to copy the skip/run criteria to the selected task and re-display the Task Run Criteria list, or click **Insert & View** to copy the skip/run criteria to the selected task and continue viewing the Task Run Criteria Details for that task, which you can Update or Close.

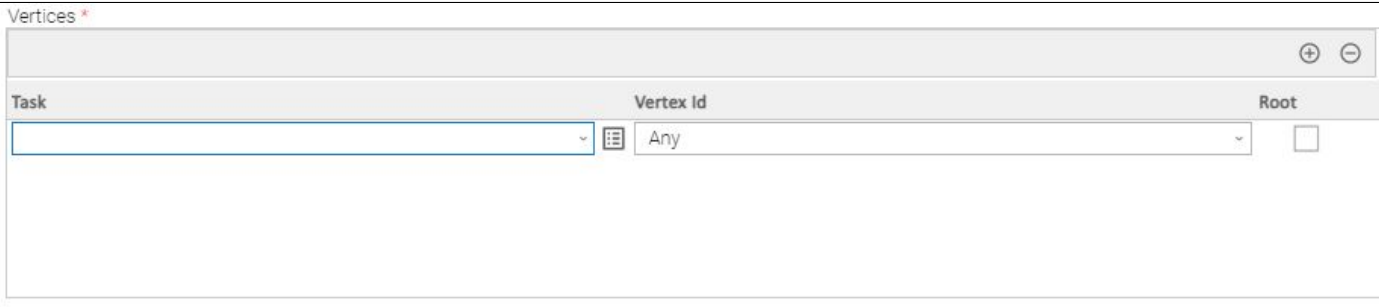
2.7 Launching/Triggering a Workflow to Run Specific Paths/Vertices

You can run a Workflow with only specific path(s) and/or specific vertices included when using the **Launch With Variables...** or **Trigger Now...** commands.

The **Trigger Now...** command dialog will only allow specifying **Vertex Selection** if the trigger references a single Workflow.

When running a Workflow along specific paths/vertices;

- Any run/skip criteria associated with a root vertex, or a specific vertex, will be ignored, and the vertex will always run.
- Any run/skip criteria associated with an included vertex that is not a root vertex, or a specific vertex, will be applied as usual.
- Sub-workflows are included in their entirety. You cannot select vertices within a sub-workflow.

Step 1	<p>Either</p> <ul style="list-style-type: none"> Click the Launch With Variables... button on the Workflow form or click Launch With Variables... from the Workflow action menu. For a Trigger that references a single Workflow, click the Trigger Now... button on the Trigger form or click Trigger Now... from the Trigger action menu. <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>The Trigger Now and Launch Task operations for System Operation Step Actions and System Operation Actions also support Vertex Selection.</p> </div>
Step 2	<p>The Launch With Variables... or Trigger Now... dialog displays.</p>
Step 3	<p>Enable the Vertex Selection checkbox to reveal the Vertices table.</p>
Step 4	<p>Click the + button to add vertices to run in the Workflow.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;">  </div>
Step 5	<p>Select a Task in the Workflow from the Task dropdown menu.</p> <p>Select a specific vertex from the Vertex ID dropdown or Any to include all vertices referencing the selected task within the Workflow.</p> <div style="border: 2px solid #ffcc00; padding: 10px; margin-top: 10px;"> <p>If there is a path (direct or indirect) between a specific vertex and another included vertex, the dependencies will be preserved, specifically, for any vertex not included along the path, dependency inheritance will apply.</p> </div> <p>To specify the entry as Root, enable the Root checkbox. A Root vertex, along with any downstream vertices and edges reachable by the root vertex, will be included in the execution.</p>
Step 6	<p>Either</p> <ul style="list-style-type: none"> Click Submit on the Trigger Now... dialog. Click Launch on the Launch With Variables... dialog.

2.8 Specifying When a Workflow Runs

As with other task types, you can [run a Workflow manually](#) or [specify triggers](#) that run the Workflow task automatically based on times or events.

You also can specify [skip and run criteria](#) for specific tasks within the Workflow.

2.9 Monitoring Workflow Execution

You can monitor all Controller activity from the [Activity Monitor](#).

2.10 Modifying an Existing Workflow

Step 1	From the Automation Center navigation pane, select Tasks > Workflow Tasks . The Workflow Tasks list displays.
Step 2	Click the Task Name of the Workflow task that you want to modify. Workflow Task Details for that task displays.
Step 3	Click Edit Workflow to display the Workflow Editor .
Step 4	Modify the Workflow and click the Save icon.

2.11 Cloning a Workflow

You can clone a Workflow to create a copy of it and a copy of every task in the Workflow. Optionally, cloning a Workflow will also create a copy of its Virtual Resources.

Step 1	From the Automation Center navigation pane, select Tasks > Workflow Tasks . The Workflow Tasks list displays.
Step 2	Right-click the Workflow that you want to clone, or open the Workflow and right-click anywhere in the Details, to display an action menu for that Workflow.
Step 3	Click Clone... in the Action menu to display the Clone Workflow Task pop-up: <div data-bbox="140 1294 1548 1794" style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <p>Clone Workflow Task – ×</p> </div> <p>Enter a new name prefix/suffix for the Workflow Task and click Submit.</p> <p>Apply Name Prefix <input style="width: 100%;" type="text"/></p> <p>Apply Name Suffix <input style="width: 100%;" type="text"/></p> <p>Clone Virtual Resources <input type="checkbox"/></p> <div style="text-align: right; margin-top: 10px;"> <input type="button" value="Submit"/> <input type="button" value="Cancel"/> </div> </div>
Step 4	Enter a Prefix and/or Suffix, which will be applied to the Workflow clone and all of its tasks.
Step 5	If you want to clone all Virtual Resources of the Workflow, click the Clone Virtual Resources check box.
Step 6	Click Submit to clone the Workflow. The Workflow clone will display in the Workflows list. In the Workflow Editor, each task clone will have the same prefix and/or suffix as the Workflow clone, and the task clones will display in the task lists for those task types.

2.12 Deleting a Workflow

Step 1	From the Automation Center navigation pane, select Tasks > Workflow Tasks . The Workflow Tasks list displays.
Step 2	Right-click the Workflow that you want to delete to display an Action menu . (If you want to delete multiple Workflows, use Ctrl+click to select each one and then right-click any of the selected Workflows.)
Step 3	Click Delete .

2.13 Finding a Task in a Workflow

For any Workflow task, or any Workflow task instance (running or complete), you can find the location of any task (or multiple tasks) within that Workflow:

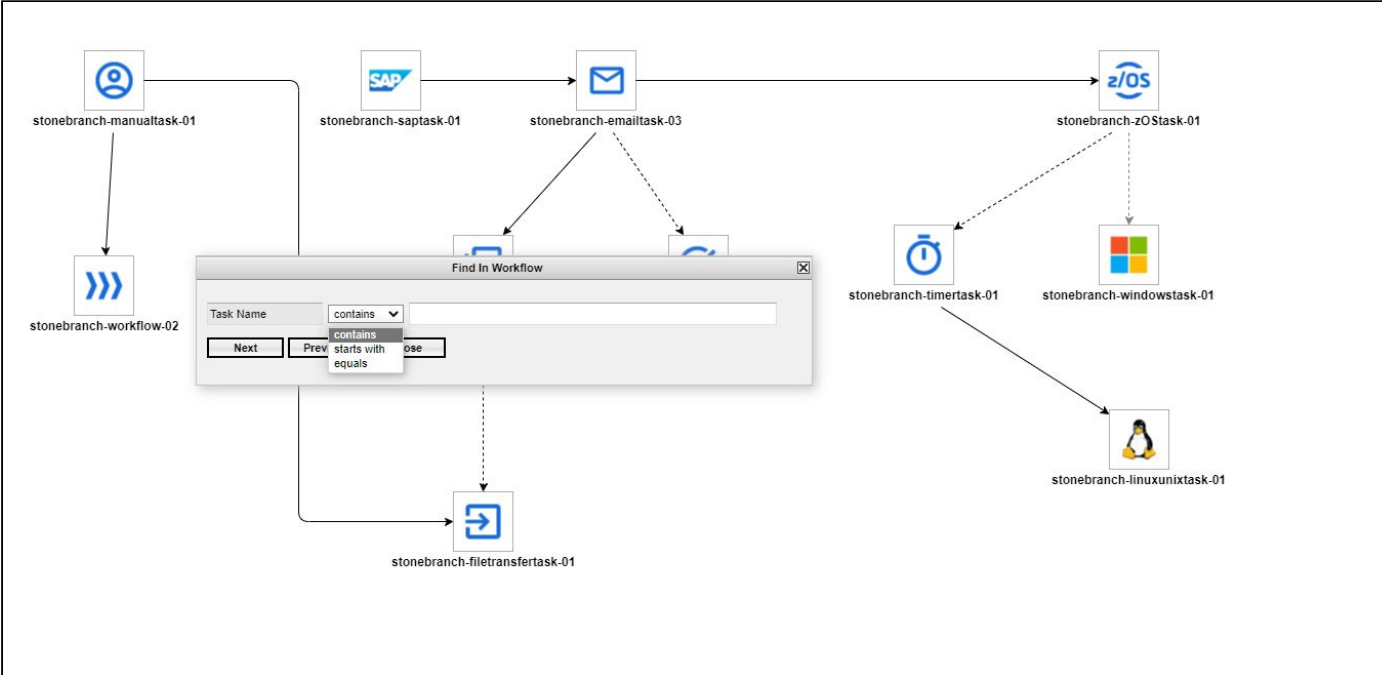
Step 1	On the Workflow Tasks list , right-click a Workflow task to display an Action menu .
Step 2	Click Edit Workflow to display the Workflow Editor for that Workflow.
Step 3	Right-click any white space in the Workflow Editor canvas. A pop-up menu displays.

The screenshot shows a workflow editor canvas with several tasks connected by arrows. The tasks are:

- stonebranch-manualtask-01 (person icon)
- stonebranch-workflow-02 (three arrows icon)
- stonebranch-saptask-01 (SAP logo icon)
- stonebranch-filetransfer-01 (file transfer icon)
- stonebranch-filemonitor-01 (file monitor icon)
- stonebranch-emailtask-03 (envelope icon)
- stonebranch-zOS-task-01 (z/OS logo icon)
- stonebranch-timertask-01 (clock icon)
- stonebranch-windowtask-01 (Windows logo icon)
- stonebranch-linuxunixtask-01 (Linux penguin icon)

 A context menu is open over the canvas, listing options:

- New Task...
- View/Edit
- View/Edit In Tab
- View Children
- View Tree
- Paste
- Launch Workflow
- Find In Workflow...
- Pan To Top
- Details

Step 4	<p>Click Find in Workflow... to display a Find in Workflow dialog.</p> 
Step 5	<p>Select an operator for the search (contains, starts with, or equals), enter the full or partial name of the task(s) that you want to find, and press enter. The Controller locates and displays the first task within the Workflow that matches the search criteria. Click the Next and/or Previous buttons to find any other tasks that match the search criteria.</p>

Note

You also can locate a task in a Workflow by using the [Pan](#) tool.

2.13.1 Workflow Coordinates

If you use [Find in Workflow...](#) (or [Pan mode](#)) to view different areas of a Workflow, the Controller preserves the coordinates of the last area that you viewed. If you leave the Workflow and return to it in the same browser session, the last viewed area of the Workflow displays.

To restore the displayed Workflow to its default, top-left position, you can either:

- Right-click any white space in the Workflow Editor canvas to display a [pop-up menu](#) and click **Pan To Top**.
- Start a new browser session.

2.14 Viewing a Task Instance in a Workflow from the Activity Monitor or Task Instances List

From the Activity Monitor or Task Instances list, you can view the location and status of a task instance in a Workflow.

Step 1	Open the Activity Monitor or Task Instances List .
---------------	--

Step 2	Right-click a task instance to display the Action menu .
Step 3	Click View in Workflow . The parent Workflow of the selected task instance displays, with that task instance highlighted.

Note

You also can view any predecessor or successor task instance of a task instance in a Workflow from the [View Predecessors/Successors](#) pop-up dialog.

2.15 Inserting a Task in an Active Workflow

After a Workflow has been launched, you can insert a new task (including a Workflow task) into an active Workflow task instance.

Note

If the [Task Launch Permission Required For Insert Task](#) property is enabled, you must have [permission to Launch](#) the task in order to insert it into a Workflow.

When inserting a new task into a Workflow, the [Previous Instance Wait Lookup Option](#) field from the Workflow task instance is used to set the **Previous Instance Wait Lookup Option Resolved** field on the inserted task instance.

You can insert the task as a predecessor or successor of another task instance within the Workflow instance using the **Insert Task as Predecessor** or **Insert Task as Successor** command, respectively. Alternatively, you can use the [Insert Task...](#) command to insert a task with any number of predecessors and successors.

If you are inserting a Workflow task into an active Workflow task instance, and that Workflow task (or any sub-Workflow within that Workflow task) has the [Calculate Critical Path](#) field enabled, that field will be disabled automatically. However, if the active Workflow task instance has the [Calculate Critical Path](#) field enabled, and any task (including a Workflow task) that you are inserting into the Workflow task instance impacts the Critical Path of the Workflow task instance, the Critical Path will adjust accordingly.

See the following sections:

- [Insert Non-Workflow Task as Predecessor](#)
- [Insert Workflow Task as Predecessor](#)
- [Insert Non-Workflow Task as Successor](#)
- [Insert Workflow Task as Successor](#)
- [Insert Task with Multiple Predecessors/Successors](#)

2.15.1 Insert Non-Workflow Task as Predecessor

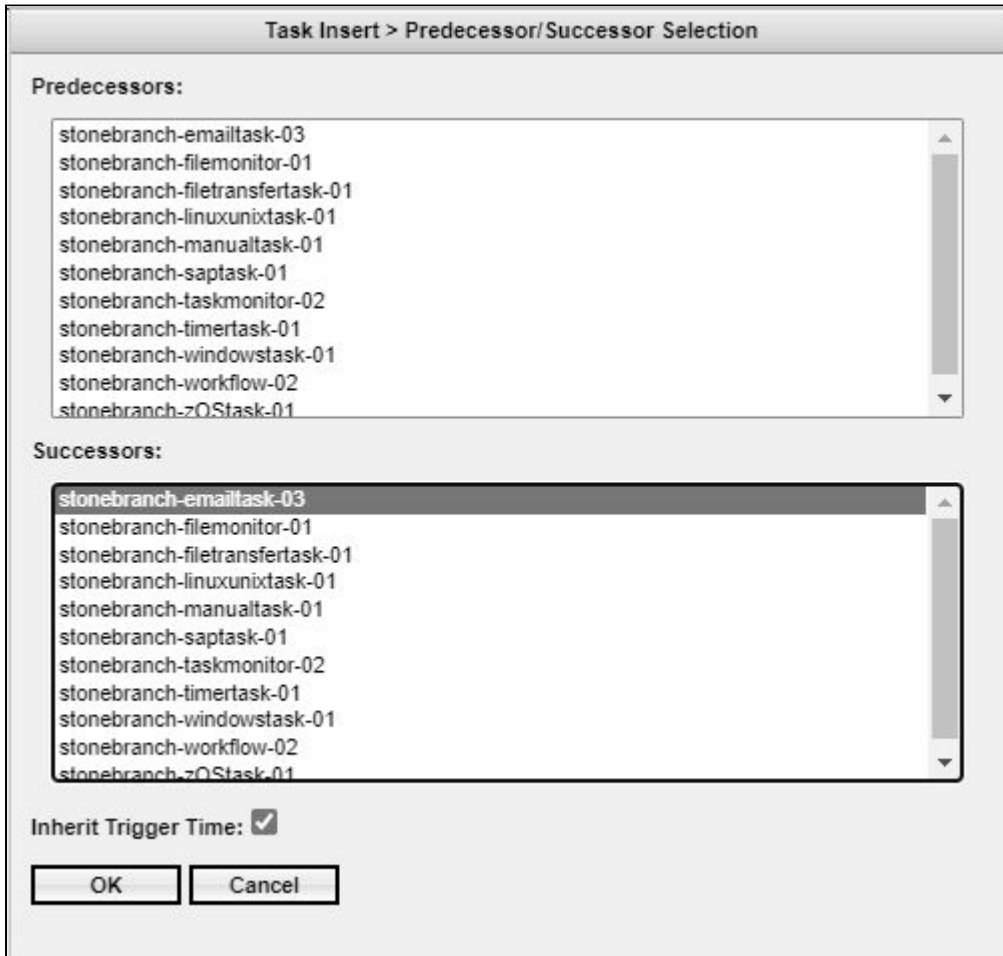
Step 1	In the Workflow Monitor, right-click a task instance.
---------------	---

Step 2	Click Insert Task As Predecessor.... The Task Insert > Task Selection dialog displays.
Step 3	<p>Find the task you want to insert (see Searching For and Adding Tasks) and drag the task's icon onto the Workflow Editor canvas where you would like it to be inserted.</p> <p>The Controller inserts the task as a predecessor to the task instance that you right-clicked, and the inserted task will start to run when all of its dependencies (for example, virtual resources) have been met. If the selected task instance had not already started, it will wait until the inserted task completes and all of its other dependencies have been satisfied.</p> <p>For inheritance of actions on Defined status, refer to Universal Controller property Inherit Actions On Defined For Insert Task.</p>
Step 4	<p>By default, the inserted task will inherit the Trigger Time of the parent Workflow. If the Trigger Time of the parent Workflow is undefined, the Launch Time will be inherited as the Trigger Time instead.</p> <p>If you do not want the task to inherit the Trigger Time of the parent Workflow, use the Insert Task command to insert the task and de-select the Inherit Trigger Time field.</p>

2.15.2 Insert Workflow Task as Predecessor

Step 1	In the Workflow Monitor, right-click a task instance.
Step 2	Click Insert Task As Predecessor.... The Task Insert > Task Selection dialog displays.

Step 3 Find the Workflow that you want to insert (see [Searching For and Adding Tasks](#)) and drag the Workflow's icon onto the Workflow Editor canvas where you would like it to be inserted. The Task Insert > Predecessor/Successor Selection dialog displays and identifies the task that you right-clicked, which the selected Workflow will be the Predecessor of.



Step 5 Optionally, you can modify the selection of Predecessors and Successors before proceeding.

Step 6 By default, the inserted Workflow will inherit the Trigger Time of the parent Workflow. If the Trigger Time of the parent Workflow is undefined, the Launch Time will be inherited as the Trigger Time instead. Therefore, by default, for task instances within an inserted Workflow, Run Criteria will be evaluated using the inherited Trigger Time.

If you do not want the inserted Workflow to inherit the Trigger Time of the parent Workflow, de-select the Inherit Trigger Time field (by default, it is pre-selected).

For task instances within an inserted Workflow that did not inherit the Trigger Time of the parent Workflow, Run Criteria will be evaluated using the Created Time.

Step 7 Click **OK**. The Controller inserts the Workflow task as a predecessor to the selected task instance.

For inheritance of actions on Defined status, refer to Universal Controller property [Inherit Actions On Defined For Insert Task](#).

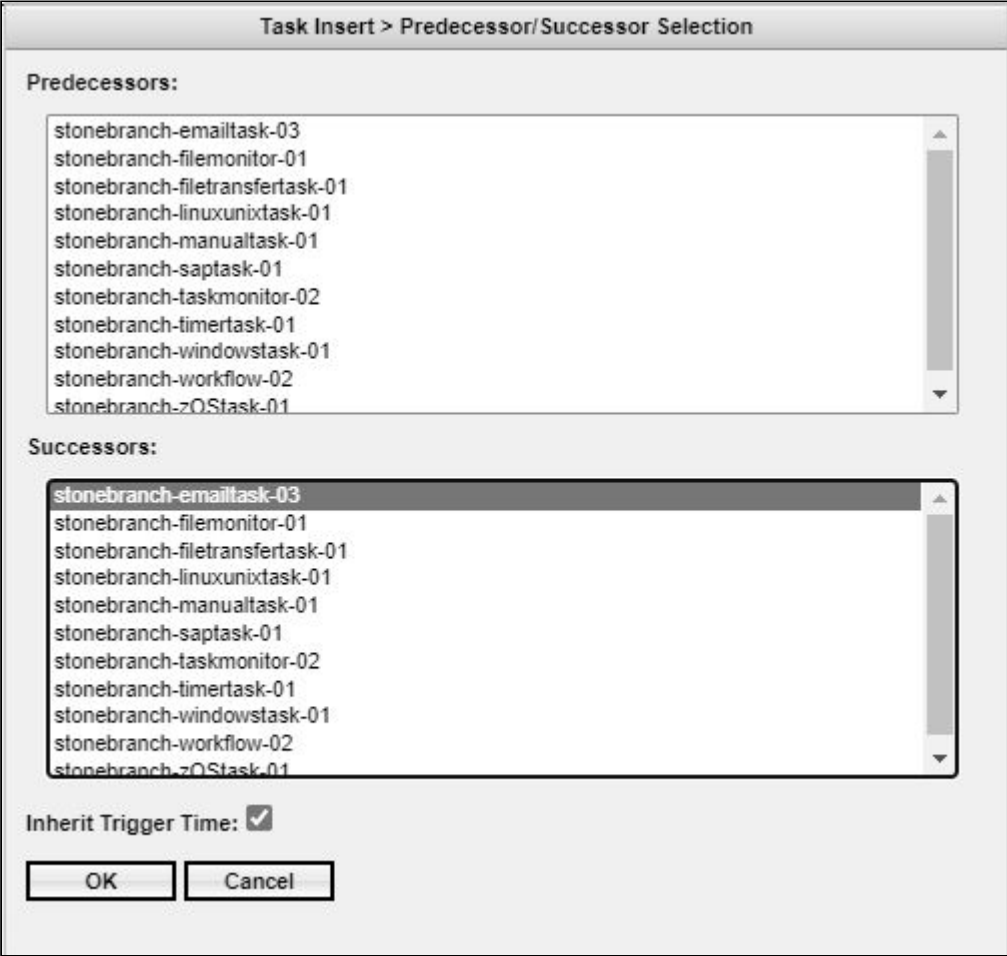
2.15.3 Insert Non-Workflow Task as Successor

Step 1 In the Workflow Monitor, right-click a task instance.

Step 2	Click Insert Task As Successor.... The Task Insert > Task Selection dialog displays.
Step 3	<p>Find the task you want to insert (see Searching For and Adding Tasks) and drag the task's icon onto the Workflow Editor canvas where you would like it to be inserted.</p> <p>The Controller inserts the task as a successor to the task instance that you right-clicked. When that task instance completes, the inserted task will start to run, assuming that all of its dependencies (for example virtual resources) have been met.</p> <p>For inheritance of actions on Defined status, refer to Universal Controller property Inherit Actions On Defined For Insert Task.</p>
Step 4	<p>By default, the inserted task will inherit the Trigger Time of the parent Workflow. If the Trigger Time of the parent Workflow is undefined, the Launch Time will be inherited as the Trigger Time instead.</p> <p>If you do not want the task to inherit the Trigger Time of the parent Workflow, use the Insert Task command to insert the task and de-select the Inherit Trigger Time field.</p>

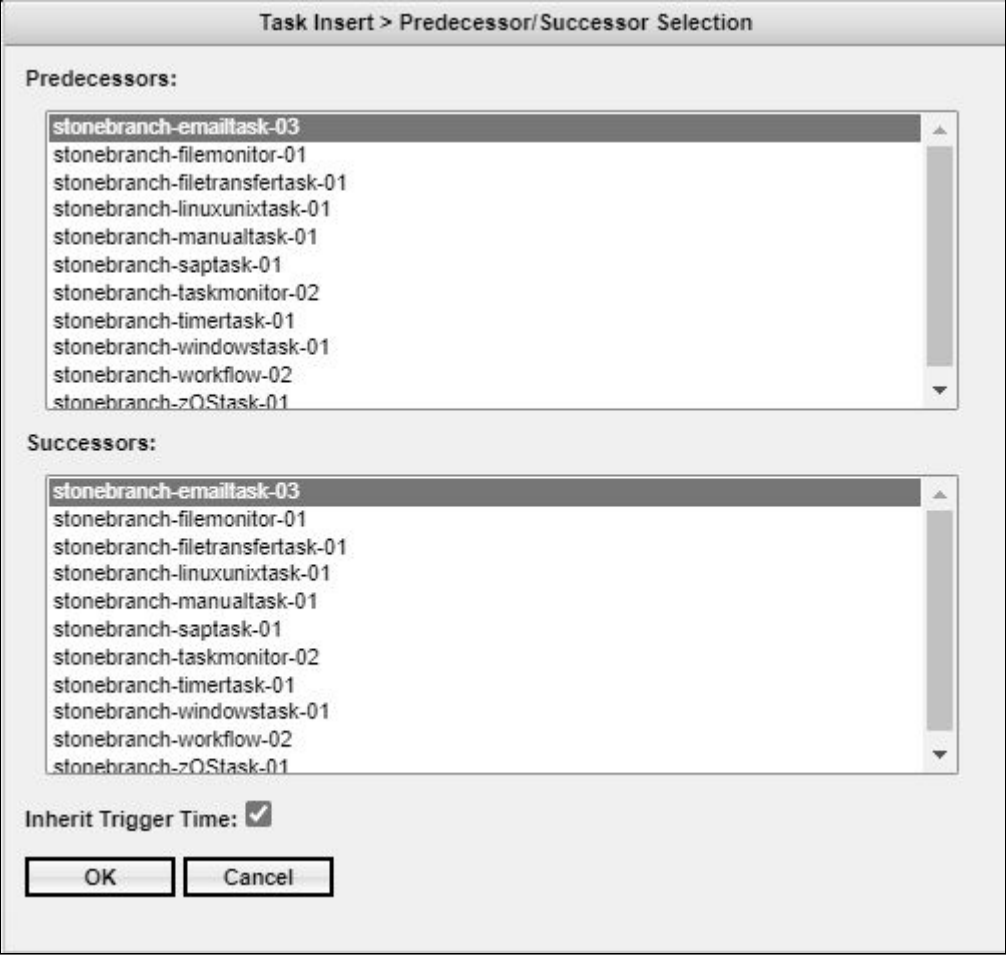
2.15.4 Insert Workflow Task as Successor

Step 1	In the Workflow Monitor, right-click a task instance.
Step 2	Click Insert Task As Successor.... The Task Insert > Task Selection dialog displays.

Step 3	Find the Workflow that you want to insert (see Searching For and Adding Tasks) and drag the Workflow's icon onto the Workflow Editor canvas where you would like it to be inserted. The Task Insert > Predecessor/Successor Selection dialog displays and identifies the task that you right-clicked, which the selected Workflow will be the Successor of.
	
Step 5	Optionally, you can modify the selection of Predecessors and Successors before proceeding.
Step 6	By default, the inserted Workflow will inherit the Trigger Time of the parent Workflow. If the Trigger Time of the parent Workflow is undefined, the Launch Time will be inherited as the Trigger Time instead. Therefore, by default, for task instances within an inserted Workflow, Run Criteria will be evaluated using the inherited Trigger Time. If you do not want the inserted Workflow to inherit the Trigger Time of the parent Workflow, de-select the Inherit Trigger Time field (by default, it is pre-selected). For task instances within an inserted Workflow that did not inherit the Trigger Time of the parent Workflow, Run Criteria will be evaluated using the Created Time.
Step 7	Click OK . The Controller inserts the Workflow task as a successor to the selected task instance. For inheritance of actions on Defined status, refer to Universal Controller property Inherit Actions On Defined For Insert Task .

2.15.5 Insert Task with Multiple Predecessors/Successors

Step 1	In the Workflow Monitor, right-click any white space in the Workflow Editor canvas.
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Step 2	Click Insert Task.... The Task Insert > Task Selection dialog displays.
Step 3	Find the task you want to insert (see Searching For and Adding Tasks) and drag the task's icon onto the Workflow Editor canvas where you would like it to be inserted.
Step 4	<p>The Task Insert > Predecessor/Successor Selection dialog displays.</p> 
Step 5	Select zero or more predecessors and zero or more Successors for the inserted task.
Step 6	<p>By default, the inserted task will inherit the Trigger Time of the parent Workflow. If the Trigger Time of the parent Workflow is undefined, the Launch Time will be inherited as the Trigger Time instead. For task instances within an inserted Workflow, Run Criteria will be evaluated using the inherited Trigger Time.</p> <p>If you do not want the inserted task to inherit the Trigger Time of the parent Workflow, de-select the Inherit Trigger Time field (by default, it is pre-selected).</p> <p>For task instances within an inserted Workflow that did not inherit the Trigger Time of the parent Workflow, Run Criteria will be evaluated using the Created Time.</p>

Step 7 Click **OK**. The Controller inserts the task as a successor to the selected predecessor task instance(s) and as a predecessor to the selected successor task instance(s).

- When the selected predecessor task instances complete, the inserted task will start to run, assuming that all of its dependencies (for example, virtual resources) have been met.
- If the selected successor task instances had not already started, they will wait until the inserted task completes and all of their other dependencies have been satisfied.

Note

Any predecessor task that is in a SUCCESS, FINISHED, or SKIPPED status will not prevent the inserted task from running.

For inheritance of actions on Defined status, refer to Universal Controller property [Inherit Actions On Defined For Insert Task](#).

2.16 Viewing Children Tasks

You can view workflow children tasks for a Workflow task and a Workflow task instance.

2.16.1 Viewing Children Tasks of a Workflow Task

You can view all children tasks of a Workflow task (and children tasks of any sub-workflow) from any of the following locations:

All Tasks list	Right-click any workflow task in the list to access the View Children action from the Workflow Task Commands menu.
Workflow Tasks List	Right-click any workflow task in the list to access the View Children action from the Workflow Task Commands menu.
Workflow Task Details	Right-click anywhere in the Details to access the View Children action from the Workflow Task Commands menu.
Workflow Editor	Right-click any white-space or workflow task vertex to access the View Children action.
Workflow Forecast	Right-click any white-space or workflow task vertex to access the View Children action.

Vertex Name ^	Task	Vertex Id ^
▶ stonebranch-emailtask-03	stonebranch-emailtask-03	13
▶ stonebranch-filemonitor-01	stonebranch-filemonitor-01	8
▶ stonebranch-filetransfertask-01	stonebranch-filetransfertask-01	9
▶ stonebranch-linuxunixtask-01	stonebranch-linuxunixtask-01	6
▶ stonebranch-manualtask-01	stonebranch-manualtask-01	14
▶ stonebranch-saptask-01	stonebranch-saptask-01	11
▶ stonebranch-taskmonitor-02	stonebranch-taskmonitor-02	10
▶ stonebranch-timertask-01	stonebranch-timertask-01	3
▶ stonebranch-windowstask-01	stonebranch-windowstask-01	5
▶ stonebranch-workflow-02	stonebranch-workflow-02	4
▶ stonebranch-zOstask-01	stonebranch-zOstask-01	7

2.16.2 Viewing Children Tasks of a Workflow Task Instance

You can view all children tasks of a Workflow task instance (and children tasks of any sub-workflow) from any of the following locations:

Activity Monitor	Right-click any workflow task instance in the list to access the View Children action from the Workflow Task Commands menu.
Task Instances list	Right-click any workflow task instance in the list to access the View Children action from the Workflow Task Commands menu.
Workflow Task Instance Details	Right-click anywhere in the Details to access the View Children action from the Workflow Task Commands menu.
Workflow Monitor	Right-click any white-space or workflow task instance vertex to access the View Children action.
Workflow Task Details	Click the Instances tab of any workflow task, then right-click any workflow task instance in the list to access the View Children action from the Workflow Task Commands menu.

Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated
▶ stonebranch-emailtask-03	Email	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-filemonitor-01	Agent File Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-filetransfertask-01	File Transfer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-linuxunixtask-01	Linux/Unix	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-manualtask-01	Manual	Action Required	Workflow: stonebranch-workflow-01	2022-10-17 10:26:28 -0400		2022-10-17 10:26:28 -0400
▶ stonebranch-saptask-01	SAP	Undeliverable	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-taskmonitor-02	Task Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-timertask-01	Timer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-windowstask-01	Windows	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-workflow-02	Workflow	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400
▶ stonebranch-zOSTask-01	z/OS	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 10:26:28 -0400

2.17 Viewing a Workflow Tree

You can view a Workflow tree (that is, a hierarchical display of the workflow and its tasks) for a Workflow task and a Workflow task instance.

Note

You can apply the same [layout](#) to a Workflow Tree as you can to any list.

2.17.1 Viewing a Workflow Tree for a Workflow Task

You can view a Workflow Tree for a workflow task from any of the following locations.

All Tasks list	Right-click any workflow task in the list to access the View Tree action from the Workflow Task Commands menu.
Workflow Tasks List	Right-click any workflow task in the list to access the View Tree action from the Workflow Task Commands menu.

Workflow Task Details	Right-click anywhere in the Details to access the View Tree action from the Workflow Task Commands menu.
Workflow Editor	Right-click any white-space or workflow task vertex to access the View Tree action.
Workflow Forecast	Right-click any white-space or workflow task vertex to access the View Tree action.
Tree View	Right-click any workflow task within a Tree View to access the View Tree action from the Workflow Task Commands menu. The Tree View for that workflow task will display in a new tab.

Name	Vertex Id	Type	Updated
stonebranch-workflow-01		Workflow	2022-10-12 15:25:04 -0400
stonebranch-emailtask-03	13	Email	2014-09-05 10:56:42 -0400
stonebranch-filemonitor-01	8	Agent File Mon...	2015-11-12 14:02:00 -0500
stonebranch-manualtask-01	14	Manual	2014-08-21 17:01:46 -0400
stonebranch-saptask-01	11	SAP	2014-06-13 14:04:18 -0400
stonebranch-taskmonitor-02	10	Task Monitor	2014-06-13 14:18:54 -0400
stonebranch-timertask-01	3	Timer	2015-09-21 11:02:41 -0400
stonebranch-workflow-02	4	Workflow	2015-01-08 16:35:18 -0500
stonebranch-filetransfertask-01	9	File Transfer	2022-05-17 12:54:28 -0400
stonebranch-windowstask-01	5	Windows	2022-05-17 14:32:02 -0400
stonebranch-zostask-01	7	z/OS	2022-05-17 14:19:09 -0400
stonebranch-linuxunixtask-01	6	Linux/Unix	2022-08-30 15:57:00 -0400

2.17.2 Viewing a Workflow Tree for a Workflow Task Instance

You can view a Workflow Tree for a workflow task instance from any of the following locations.

Activity Monitor	Right-click any workflow task instance in the list to access the View Tree action from the Workflow Task Commands menu.
Task Instances list	Right-click any workflow task instance in the list to access the View Tree action from the Workflow Task Commands menu.
Workflow Task Instance Details	Right-click anywhere in the Details to access the View Tree action from the Workflow Task Commands menu.
Workflow Monitor	Right-click any white-space or workflow task instance vertex to access the View Tree action.
Workflow Task Details	Click the Instances tab of any workflow task, then right-click any workflow task instance in the list to access the View Tree action from the Workflow Task Commands menu.
Tree View	Right-click any workflow task instance within a Tree View to access the View Tree action from the Workflow Task Commands menu. The Tree View for that workflow task instance will display in a new tab.

Instance Name ^	Type	Status	Start Time	End Time	Updated	UUID
stonebranch-workflow-01	Workflow	Running/Problems	2022-10-17 10:26:27 -0400		2022-10-17 10:26:28 -0400	16658861562547412291E0PALFYRUAP1
stonebranch-emailtask-03	Email	Waiting			2022-10-17 10:26:28 -0400	1665886156254750229RAUWAJ2N0845R
stonebranch-filemonitor-01	Agent File Mon...	Waiting			2022-10-17 10:26:28 -0400	166588615625479122978JN8A8BIYR6J
stonebranch-filetransfertask-01	File Transfer	Waiting			2022-10-17 10:26:28 -0400	1665886156254794229KROCJOSH9XX4Y
stonebranch-linuxunixtask-01	Linux/Unix	Waiting			2022-10-17 10:26:28 -0400	1665886156254777229MRC6VUOVACBUA
stonebranch-manualtask-01	Manual	Action Required	2022-10-17 10:26:28 -0400		2022-10-17 10:26:28 -0400	16658861562547532299FKLQ40Z07D9W
stonebranch-saptask-01	SAP	Undeliverable			2022-10-17 10:26:28 -0400	1665886156254747229O9KB23IXEKA25
stonebranch-taskmonitor-02	Task Monitor	Waiting			2022-10-17 10:26:28 -0400	1665886156254744229H50LPNJNZUH8
stonebranch-timertask-01	Timer	Waiting			2022-10-17 10:26:28 -0400	16658861562547562290J5QECRIB6534
stonebranch-windowstask-01	Windows	Waiting			2022-10-17 10:26:28 -0400	166588615625477122900WMI43AKPNZO
stonebranch-workflow-02	Workflow	Waiting			2022-10-17 10:26:28 -0400	166588615625476022994KSG54A7E54Q
stonebranch-zostask-01	z/OS	Waiting			2022-10-17 10:26:28 -0400	1665886156254786229BL0IEY77VJKSU

Note

If the [Critical Path Calculations Permitted](#) Universal Controller system property is set to true, the Details icon for any task instance on the Critical Path will display in red.

2.17.3 Expanding/Collapsing the Tree View

To view the child tasks of any sub-Workflow in a tree, click the + to expand the tree view for that sub-Workflow.

To hide the child tasks of any sub-Workflow in a tree, click the - to collapse the tree view for that sub-Workflow.

Additionally, you can use the **Expand**, **Expand All**, **Collapse**, and **Collapse All** buttons in the toolbar along the top of the Tree View.

Expand	Expands any collapsed and visible workflow nodes one level.
Expand All	Expands all nodes in the tree.
Collapse	Collapses one level of workflow nodes, starting from the open workflow node at the deepest level.
Collapse All	Collapses all open workflow nodes, excluding the root-level workflow node.

2.17.4 Refreshing the Tree View

To refresh the Tree View, click the refresh icon in the toolbar along the top of the Tree View.

2.18 Viewing a Timeline for a Workflow Task Instance

You can display the progress of a Workflow task instance in a timeline format from any of the following locations.

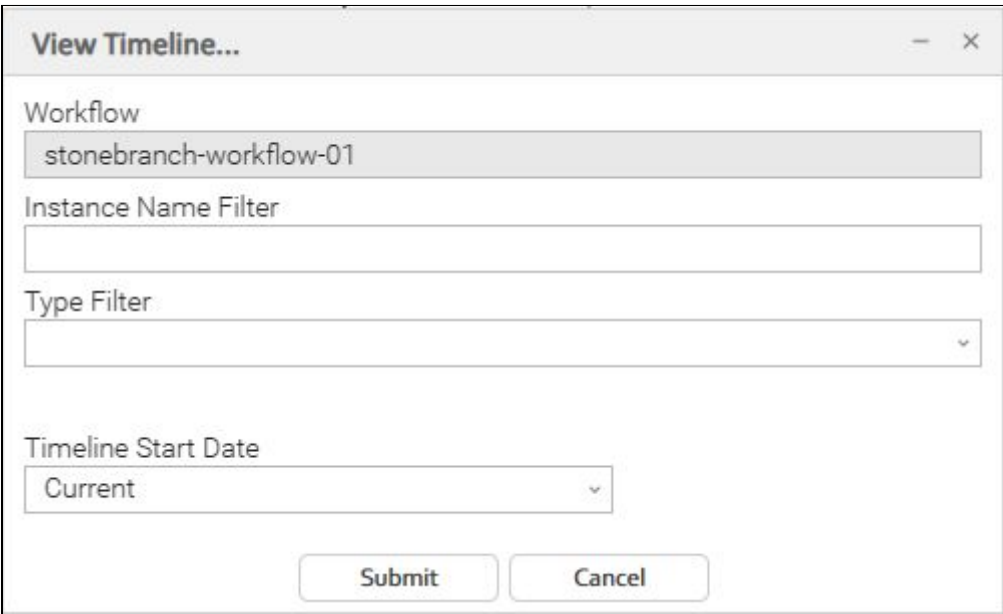
Activity Monitor	Right-click any workflow task instance in the list to access the View Timeline... action from the Workflow Task Commands menu.
-------------------------	---

Task Instances list	Right-click any workflow task instance in the list to access the View Timeline... action from the Workflow Task Commands menu.
Workflow Task Instance Details	Right-click anywhere in the Details to access the View Timeline... action from the Workflow Task Commands menu.
Workflow Monitor	Right-click any white-space or workflow task instance vertex to access the View Timeline... action.

Step 1 Display the [Activity Monitor](#), [Task Instances List](#), [Workflow Task Instance Details](#), or [Workflow Monitor](#).

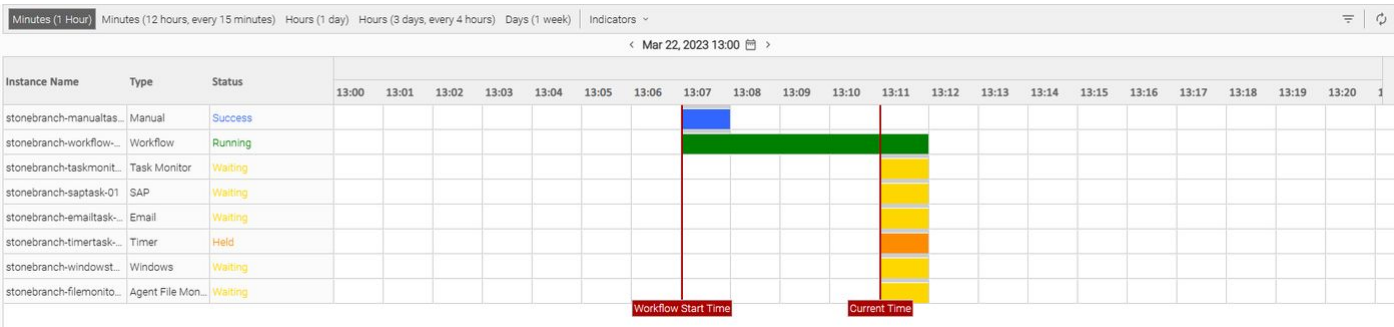
Step 2 Right-click to display an [Action menu](#).

Step 3 Click **View Timeline...** to display the View Timeline... pop-up dialog.



Step 4 Use the **Instance Name Filter** and **Type Filter** fields to reduce the number of task instances that are included in the Timeline. **Instance Name Filter** supports [wildcard characters](#) (* and ?) to specify Instance Name patterns. If specified, only task instances that match both the **Instance Name Filter** and the **Type Filter** will be included.

Step 5 Click **Submit**. The Timeline for the Workflow task instance displays.



Instance Name	Type	Status
stonebranch-manualtas...	Manual	Success
stonebranch-workflow...	Workflow	Running
stonebranch-taskmonit...	Task Monitor	Waiting
stonebranch-saptask-01	SAP	Waiting
stonebranch-emailtask...	Email	Waiting
stonebranch-timertask...	Timer	Held
stonebranch-windowst...	Windows	Waiting
stonebranch-filemonit...	Agent File Mon...	Waiting

Step 6	<p>Use the toolbar along the top of the Timeline View to specify the resolution of the timeline.</p> <ul style="list-style-type: none"> • Days (1 week) • Hours (3 days, every 4 hours) • Hours (1 day) • Minutes (12 hours, every 15 minutes) • Minutes (1 hour)
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2.18.1 Refreshing the Timeline View

To refresh the Timeline View, click the refresh icon in the toolbar along the top of the Timeline View.

2.19 Viewing Task Predecessors/Successors

You can view all predecessors and successors of a task (or task instance) in a Workflow from:

- Activity Monitor
- Task Instances list
- Workflow Editor
- Workflow Monitor

You also can view all predecessors and successors of all tasks (or task instances) in a Workflow from:

- Workflows list
- Workflow task Details
- Activity Monitor
- Task Instances list
- Workflow task instance Details

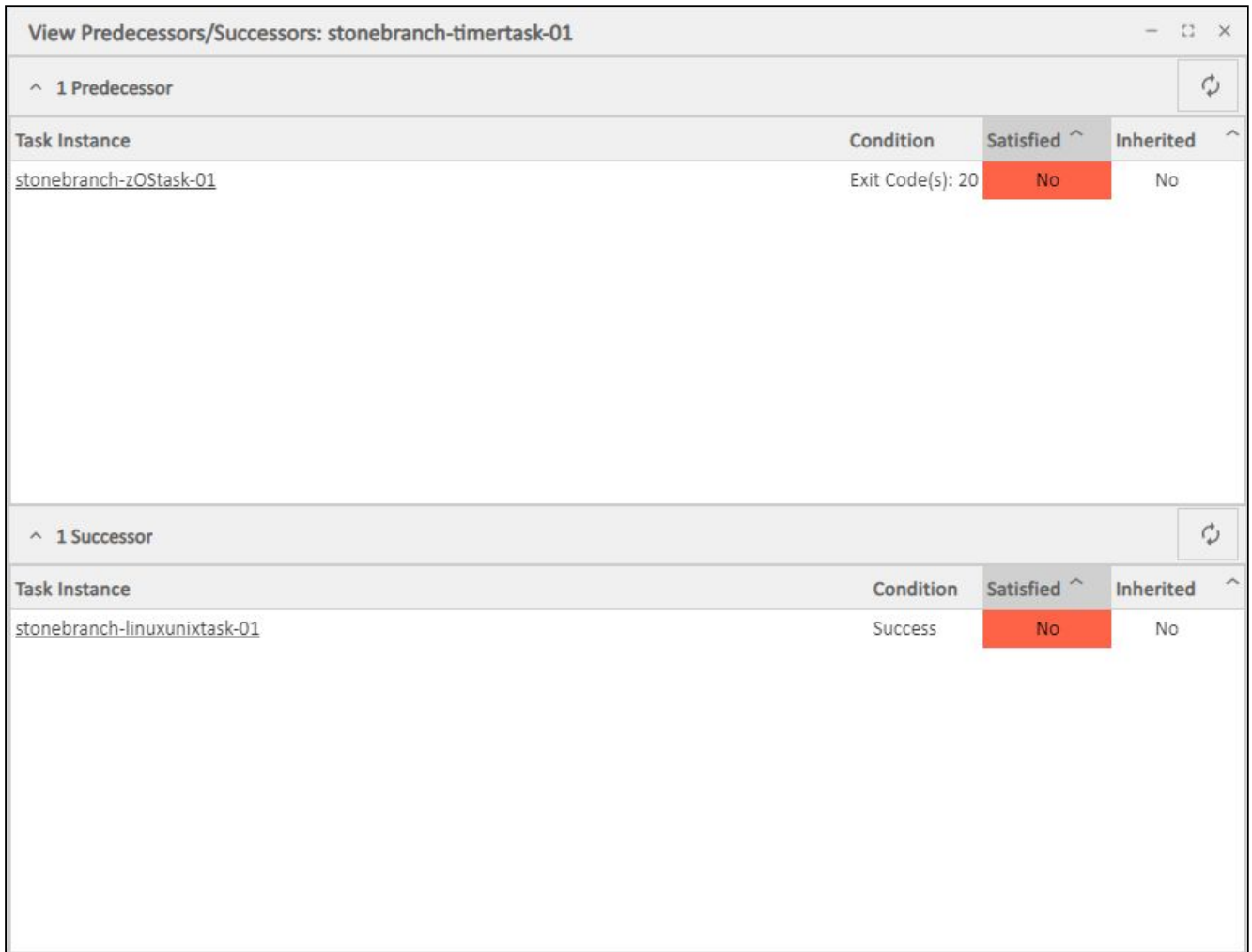
See the following sections:

- [Viewing Predecessors/Successors of a Single Task Instance from the Activity Monitor or Task Instances List](#)
- [Viewing Predecessors/Successors of a Single Task from the Workflow Editor](#)
- [Viewing Predecessors/Successors of a Single Task Instance from the Workflow Monitor](#)
- [Viewing Detailed Status of Predecessors/Successors of a Single Task Instance from Workflow Monitor](#)
- [Viewing Predecessors/Successors of All Tasks in a Workflow Task](#)
- [Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance](#)

2.19.1 Viewing Predecessors/Successors of a Single Task Instance from the Activity Monitor or Task Instances List

Step 1	Display the Activity Monitor or Task Instances List .
Step 2	Right-click a task instance to display an Action menu .

Step 3 Click **View Predecessors/Successors** to display the View Predecessors/Successors pop-up dialog.



The View Predecessors/Successors pop-up dialog provides separate lists of all predecessor and successor task instances of the selected task instance in the Workflow, and status information for each of the predecessor/successor dependencies.

Step 4 If you want to view the task instance Details of any predecessor or successor task instance, click that task instance.

Step 5 If you want to view a predecessor or successor task instance of the selected task instance within the Workflow, right-click that task instance to display an **Action menu**, and then click **View Workflow**.

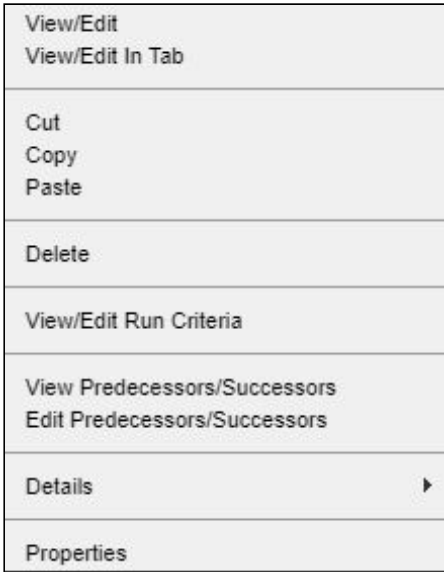


The parent Workflow of the selected task instance displays, with the selected predecessor or successor task instance highlighted.

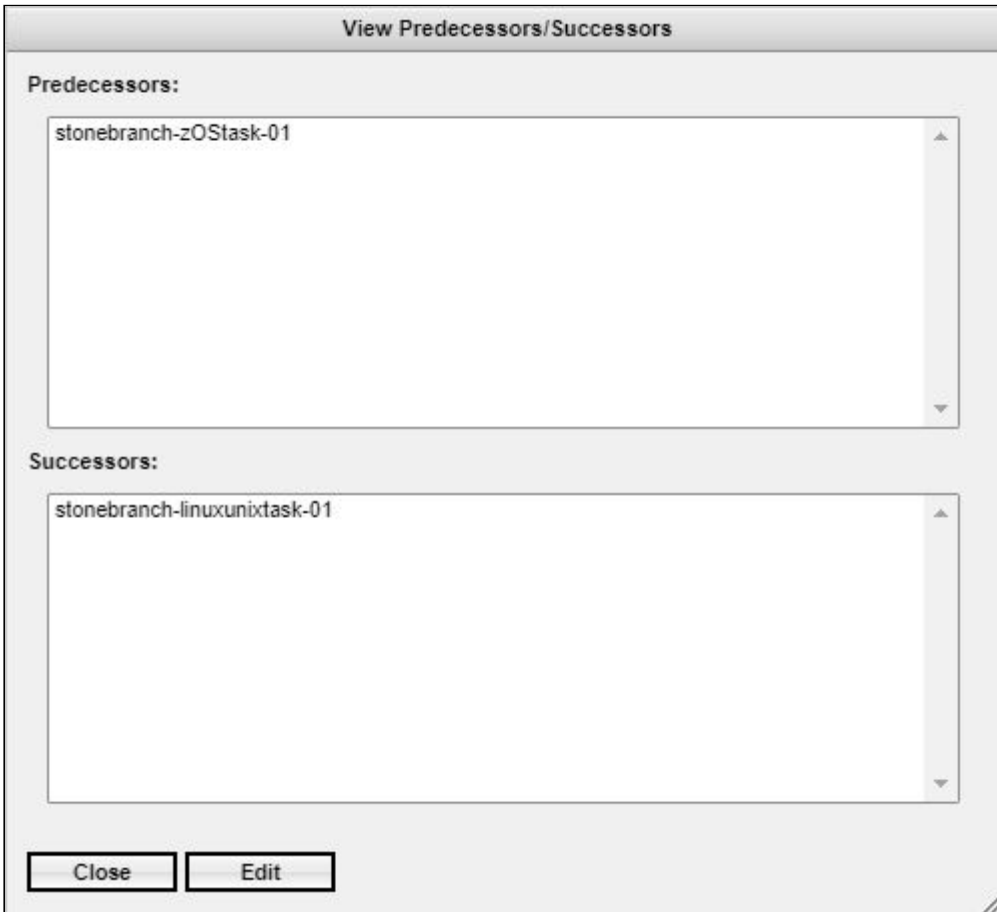
2.19.2 Viewing Predecessors/Successors of a Single Task from the Workflow Editor

Step 1 Open the Workflow Editor.

Step 2 Right-click a task to display an [Action menu](#).



Step 3 Right-click **View Predecessors/Successors** to display the View Predecessors/Successors pop-up.



The View Predecessors/Successors pop-up provides separate lists of all predecessor and successor tasks of the selected task in the Workflow.


- Click a task in either list to select and center it within the Workflow Editor display.
- Double-click a task in either list to select and center it within the Workflow Editor display and close the View Predecessors/Successors pop-up.
- To resize the pop-up, hover over the window resize icon at the bottom right of the pop-up and drag the icon up or down.

Step 4	Click Edit if you want to edit the predecessors and successors of this task in the workflow.
---------------	---

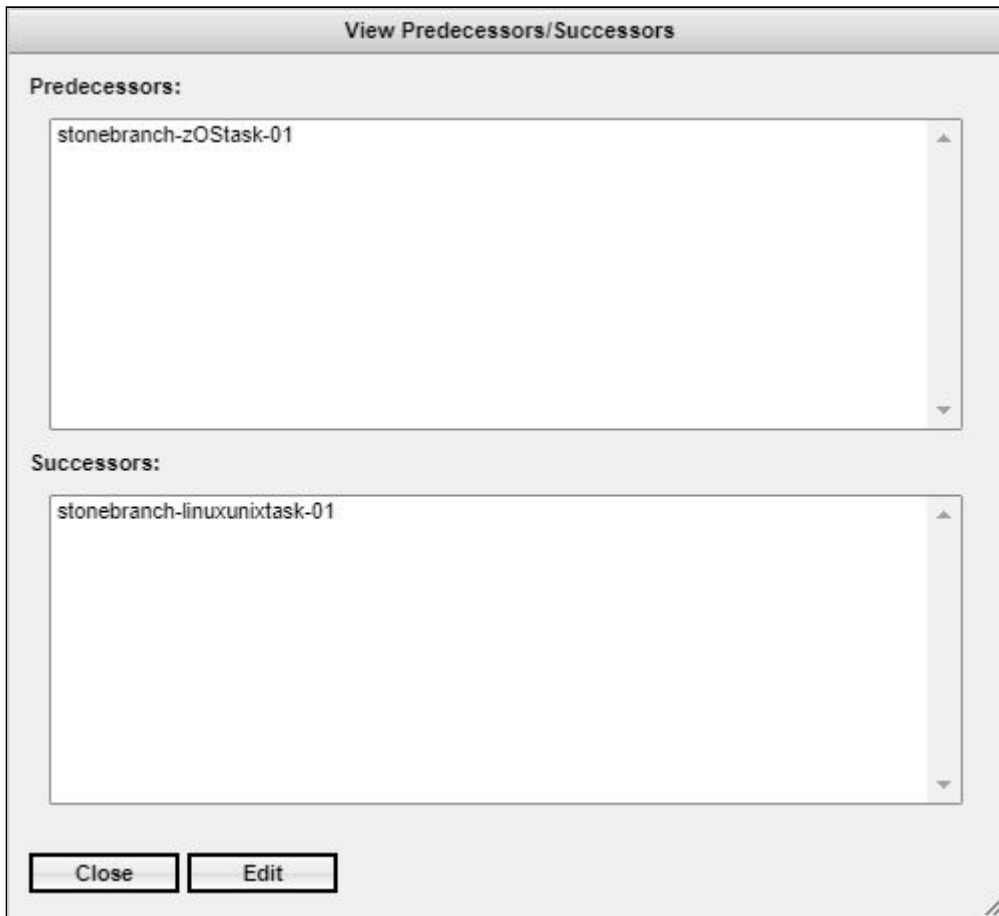
2.19.3 Viewing Predecessors/Successors of a Single Task Instance from the Workflow Monitor

Note

To view more detailed task instance predecessor/successor information from the Workflow Monitor than is available via this procedure, see [Viewing Detailed Status of Predecessors / Successors of a Single Task Instance from Workflow Monitor](#), below.

Step 1	Open the Workflow Monitor.
Step 2	<p>Right-click a task instance to display an Action menu.</p> 

Step 3 Right-click **View Predecessors/Successors** to display the View Predecessors/Successors pop-up.



The View Predecessors/Successors pop-up provides separate lists of all predecessor and successor task instances of the selected task instance in the Workflow.

- Click a task in either list to select and center it within the Workflow Monitor display.
- Double-click a task in either list to select and center it within the Workflow Monitor display and close the View Predecessors/Successors pop-up.
- To resize the pop-up, hover over the window resize icon at the bottom right of the pop-up and drag the icon up or down.

2.19.4 Viewing Detailed Status of Predecessors/Successors of a Single Task Instance from Workflow Monitor

Step 1	Open the Workflow Monitor.
Step 2	Double-click a task instance, or right-click and select View/Edit , to see its Task Instance Details.
Step 3	Right-click in the Task Instance Details to display an Action menu .

Step 4 Click **View Predecessors/Successors** to display a detailed view of the View Predecessors/Successors pop-up dialog.

The screenshot shows a dialog box titled "View Predecessors/Successors: stonebranch-emailtask-03". It contains two sections: "1 Predecessor" and "3 Successors". Each section has a table with columns: Task Instance, Condition, Satisfied, and Inherited. In the "1 Predecessor" section, the task instance is "stonebranch-saptask-01" with condition "Success", "Satisfied" is "No" (highlighted in red), and "Inherited" is "No". In the "3 Successors" section, the tasks are "stonebranch-zOStask-01" (Success, Satisfied: No), "stonebranch-taskmonitor-02" (Success/Failure, Satisfied: No), and "stonebranch-filemonitor-01" (Success, Satisfied: No). All "Satisfied" values are highlighted in red.

Task Instance	Condition	Satisfied ^	Inherited ^
stonebranch-saptask-01	Success	No	No

Task Instance	Condition	Satisfied ^	Inherited ^
stonebranch-zOStask-01	Success	No	No
stonebranch-taskmonitor-02	Success/Failure	No	No
stonebranch-filemonitor-01	Success	No	No

The View Predecessors/Successors pop-up dialog provides separate lists of all predecessor and successor task instances of the selected task instance in the Workflow, and status information for each of the predecessor/successor dependencies.

Step 5 If you want to view the task instance Details of any predecessor or successor task instance, click that task instance.

Step 6 If you want to view a predecessor or successor task instance of the selected task instance within the Workflow, right-click that task instance to display an **Action menu**, and then click **View Workflow**.



The parent Workflow of the selected task instance displays, with the selected predecessor or successor task instance highlighted.

2.19.5 Viewing Predecessors/Successors of All Tasks in a Workflow Task

You can view the predecessors/successors of all tasks in a Workflow task from:

- Workflow task on Workflows list


- Workflow task Details
- Workflow Editor
- Workflow Forecast
- Workflow Vertex in Workflow Editor and Workflow Forecast

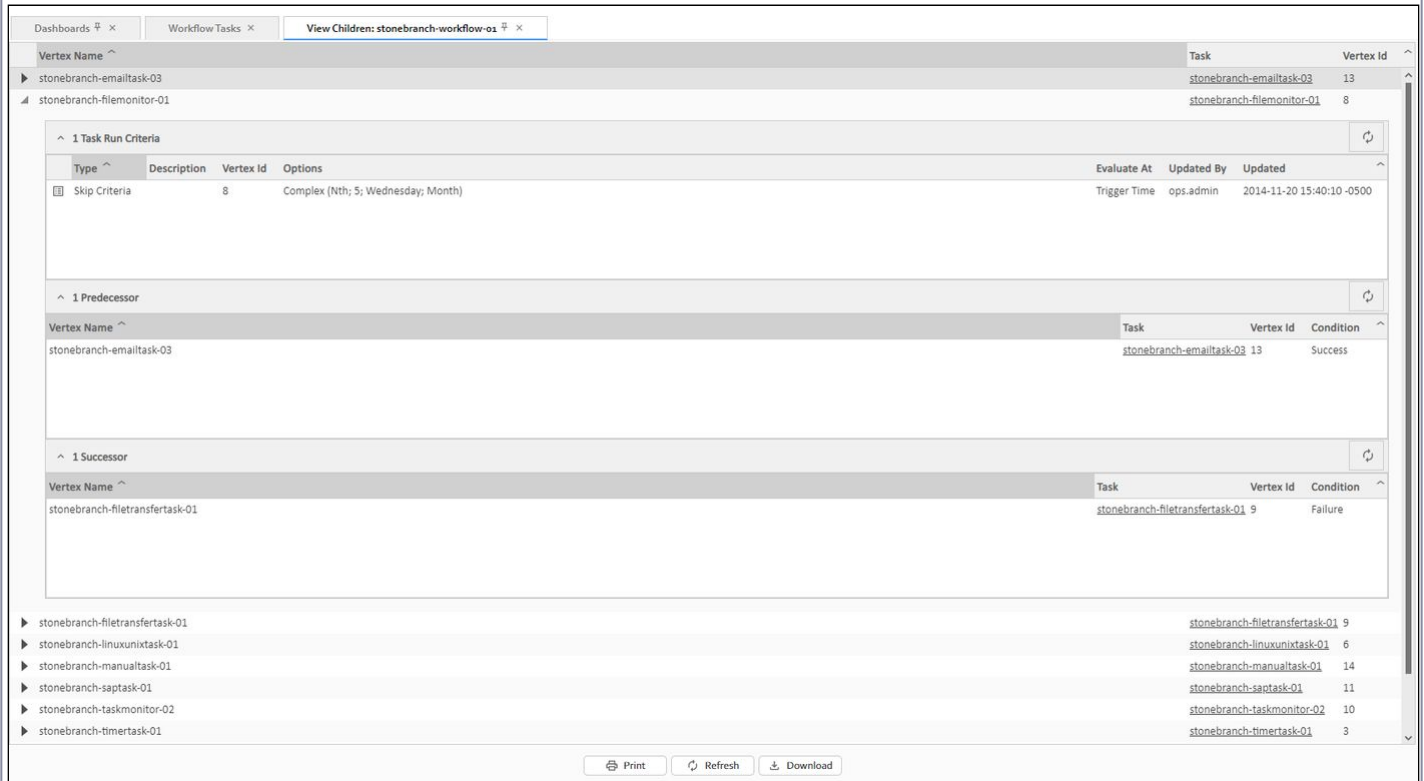
Viewing predecessors/successors of all tasks in a Workflow task also lets you:

- View task run criteria for all tasks in the Workflow.
- View and/or download a list of predecessors/successors and task run criteria for all tasks in the Workflow.

Step 1	Display the Workflows list.																																				
Step 2	<p>Right-click a Workflow on the list and select View Children from the Action menu, or right-click within the task Details for the Workflow and select View Children. A list of child tasks within that Workflow displays.</p>  <table border="1"> <thead> <tr> <th>Vertex Name</th> <th>Task</th> <th>Vertex Id</th> </tr> </thead> <tbody> <tr><td>▶ stonebranch-emailtask-03</td><td>stonebranch-emailtask-03</td><td>13</td></tr> <tr><td>▶ stonebranch-filemonitor-01</td><td>stonebranch-filemonitor-01</td><td>8</td></tr> <tr><td>▶ stonebranch-filetransfertask-01</td><td>stonebranch-filetransfertask-01</td><td>9</td></tr> <tr><td>▶ stonebranch-linuxunixtask-01</td><td>stonebranch-linuxunixtask-01</td><td>6</td></tr> <tr><td>▶ stonebranch-manualtask-01</td><td>stonebranch-manualtask-01</td><td>14</td></tr> <tr><td>▶ stonebranch-saptask-01</td><td>stonebranch-saptask-01</td><td>11</td></tr> <tr><td>▶ stonebranch-taskmonitor-02</td><td>stonebranch-taskmonitor-02</td><td>10</td></tr> <tr><td>▶ stonebranch-timertask-01</td><td>stonebranch-timertask-01</td><td>3</td></tr> <tr><td>▶ stonebranch-windowstask-01</td><td>stonebranch-windowstask-01</td><td>5</td></tr> <tr><td>▶ stonebranch-workflow-02</td><td>stonebranch-workflow-02</td><td>4</td></tr> <tr><td>▶ stonebranch-zOSTask-01</td><td>stonebranch-zOSTask-01</td><td>7</td></tr> </tbody> </table>	Vertex Name	Task	Vertex Id	▶ stonebranch-emailtask-03	stonebranch-emailtask-03	13	▶ stonebranch-filemonitor-01	stonebranch-filemonitor-01	8	▶ stonebranch-filetransfertask-01	stonebranch-filetransfertask-01	9	▶ stonebranch-linuxunixtask-01	stonebranch-linuxunixtask-01	6	▶ stonebranch-manualtask-01	stonebranch-manualtask-01	14	▶ stonebranch-saptask-01	stonebranch-saptask-01	11	▶ stonebranch-taskmonitor-02	stonebranch-taskmonitor-02	10	▶ stonebranch-timertask-01	stonebranch-timertask-01	3	▶ stonebranch-windowstask-01	stonebranch-windowstask-01	5	▶ stonebranch-workflow-02	stonebranch-workflow-02	4	▶ stonebranch-zOSTask-01	stonebranch-zOSTask-01	7
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▶ stonebranch-zOSTask-01	stonebranch-zOSTask-01	7																																			

Step 3

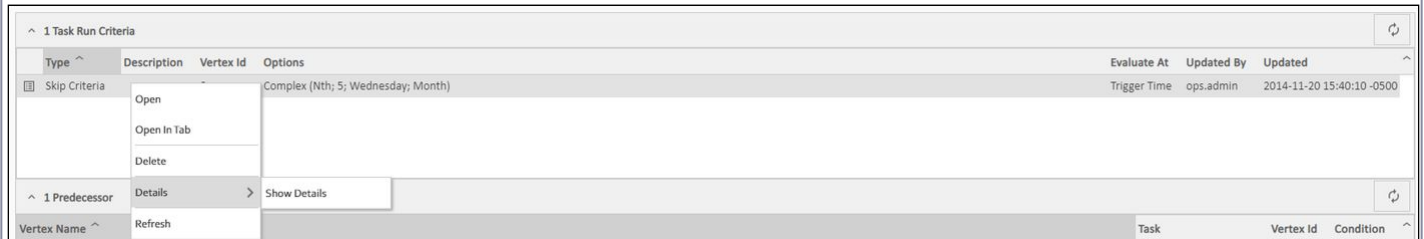
Click the Expand icon () next to any child task to display additional content for that child task, including Task Run Criteria, Predecessors, and Successors.



Vertex Name	Task	Vertex Id				
stonebranch-emailtask-03	stonebranch-emailtask-03	13				
stonebranch-filemonitor-01	stonebranch-filemonitor-01	8				
^ 1 Task Run Criteria						
Type	Description	Vertex Id	Options	Evaluate At	Updated By	Updated
Skip Criteria		8	Complex (Nth; 5; Wednesday; Month)	Trigger Time	ops.admin	2014-11-20 15:40:10 -0500
^ 1 Predecessor						
Vertex Name	Task	Vertex Id	Condition			
stonebranch-emailtask-03	stonebranch-emailtask-03	13	Success			
^ 1 Successor						
Vertex Name	Task	Vertex Id	Condition			
stonebranch-filetransfertask-01	stonebranch-filetransfertask-01	9	Failure			
stonebranch-filetransfertask-01	stonebranch-filetransfertask-01	9				
stonebranch-linuxunixtask-01	stonebranch-linuxunixtask-01	6				
stonebranch-manualtask-01	stonebranch-manualtask-01	14				
stonebranch-saptask-01	stonebranch-saptask-01	11				
stonebranch-taskmonitor-02	stonebranch-taskmonitor-02	10				
stonebranch-timertask-01	stonebranch-timertask-01	3				

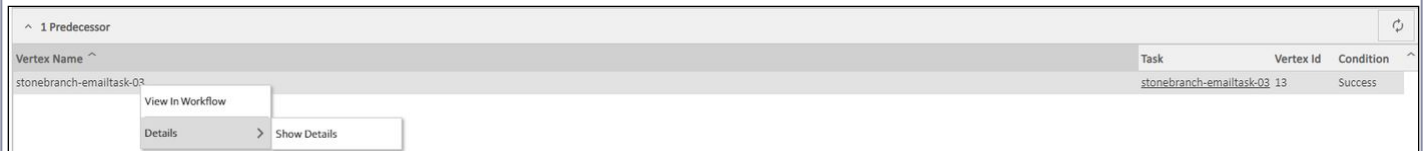
Step 4

For any Task Run Criteria on the list, click the Details icon to displays its record Details, or right-click it to display a menu of options available for that Task Run Criteria.



Step 5

For any Predecessor / Successor on the list, right-click it to display a menu of options available for that predecessor/successor.



Step 6

To view and/or save a list of all predecessors/successors and task run criteria for all child tasks within the Workflow, click the **Download** button on the View Children list.



```

stonebranch-workflow-01 {Number Of Tasks=11}

stonebranch-emailtask-03 {Vertex Id=13}
  1 Predecessor
    stonebranch-saptask-01 {Vertex Id=11, Condition=Success}
  3 Successors
    stonebranch-filemonitor-01 {Vertex Id=8, Condition=Success}
    stonebranch-taskmonitor-02 {Vertex Id=10, Condition=Success/Failure}
    stonebranch-zOStask-01 {Vertex Id=7, Condition=Success}

stonebranch-filemonitor-01 {Vertex Id=8}
  1 Task Run Criteria
    Complex (Nth, 5, Wednesday, Month) {Type=Skip Criteria, Vertex Id=8, Evaluate At=Trigger Time}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}
  1 Successor
    stonebranch-filetransfertask-01 {Vertex Id=9, Condition=Failure}

stonebranch-filetransfertask-01 {Vertex Id=9}
  1 Predecessor
    stonebranch-filemonitor-01 {Vertex Id=8, Condition=Failure}

stonebranch-linuxunixtask-01 {Vertex Id=6}
  1 Predecessor
    stonebranch-timertask-01 {Vertex Id=3, Condition=Success}

stonebranch-manualtask-01 {Vertex Id=14}
  1 Predecessor
    stonebranch-saptask-01 {Vertex Id=11, Condition=Success}
  1 Successor
    stonebranch-workflow-02 {Vertex Id=4, Condition=Success}

stonebranch-saptask-01 {Vertex Id=11}
  2 Successors
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}
    stonebranch-manualtask-01 {Vertex Id=14, Condition=Success}

stonebranch-taskmonitor-02 {Vertex Id=10}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success/Failure}

stonebranch-timertask-01 {Vertex Id=3}
  1 Predecessor
    stonebranch-zOStask-01 {Vertex Id=7, Condition=Exit Code(s): 20}
  1 Successor
    stonebranch-linuxunixtask-01 {Vertex Id=6, Condition=Success}

stonebranch-windowstask-01 {Vertex Id=5}
  1 Predecessor
    stonebranch-zOStask-01 {Vertex Id=7, Condition=Step Condition(s): STEP2:PS1:USAP:220}

stonebranch-workflow-02 {Vertex Id=4}
  1 Predecessor
    stonebranch-manualtask-01 {Vertex Id=14, Condition=Success}

stonebranch-zOStask-01 {Vertex Id=7}
  1 Predecessor
    stonebranch-emailtask-03 {Vertex Id=13, Condition=Success}
  2 Successors
    stonebranch-timertask-01 {Vertex Id=3, Condition=Exit Code(s): 20}
    stonebranch-windowstask-01 {Vertex Id=5, Condition=Step Condition(s): STEP2:PS1:USAP:220}


```

Step 7	To print all currently displayed information on the list, click the Print button.
Step 8	To refresh all information on the list, click the Refresh button.


2.19.6 Viewing Predecessors/Successors of All Task Instances in a Workflow Task Instance

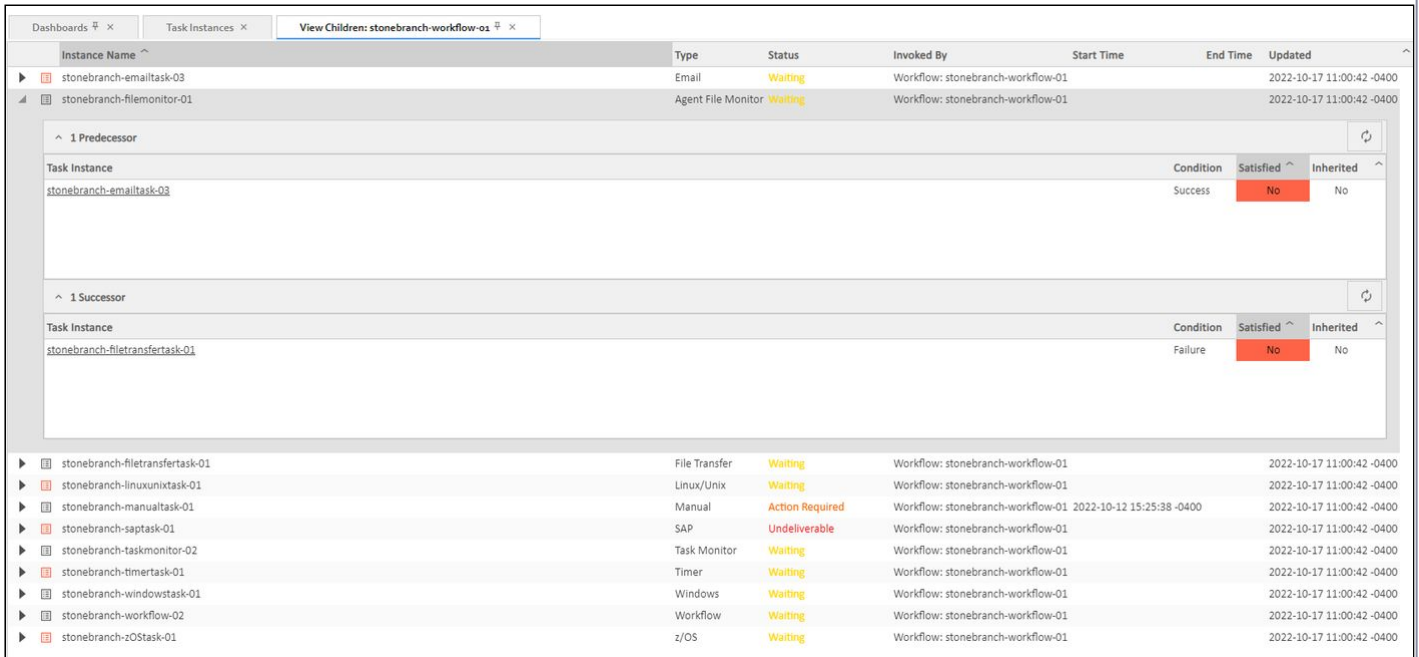
You can view the predecessors/successors of all task instances in a Workflow task instance from:

- Activity Monitor
- Task Instances list
- Workflow task instance Details
- Workflow Monitor

Step 1	Display the Activity Monitor or Task Instances list .																																																																																				
Step 2	Right-click a Workflow on the Activity Monitor or Task Instances list, or open a Workflow on the Activity Monitor or Task Instances list and then right-click within that Workflow Details, to display an Action menu .																																																																																				
Step 3	<p>Select Workflow Task Commands > View Children to display a list of child task instances within that Workflow.</p>  <table border="1" data-bbox="129 1059 1544 1391"> <thead> <tr> <th>Instance Name</th> <th>Type</th> <th>Status</th> <th>Invoked By</th> <th>Start Time</th> <th>End Time</th> <th>Updated</th> </tr> </thead> <tbody> <tr> <td>▶ stonebranch-emailtask-03</td> <td>Email</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-filemonitor-01</td> <td>Agent File Monitor</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-filetransfertask-01</td> <td>File Transfer</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-linuxunixtask-01</td> <td>Linux/Unix</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-manualtask-01</td> <td>Manual</td> <td>Action Required</td> <td>Workflow: stonebranch-workflow-01</td> <td>2022-10-12 15:25:38 -0400</td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-saptask-01</td> <td>SAP</td> <td>Undeliverable</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-taskmonitor-02</td> <td>Task Monitor</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-timertask-01</td> <td>Timer</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-windowstask-01</td> <td>Windows</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-workflow-02</td> <td>Workflow</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> <tr> <td>▶ stonebranch-zOSTask-01</td> <td>z/OS</td> <td>Waiting</td> <td>Workflow: stonebranch-workflow-01</td> <td></td> <td></td> <td>2022-10-17 11:00:42 -0400</td> </tr> </tbody> </table>	Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated	▶ stonebranch-emailtask-03	Email	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-filemonitor-01	Agent File Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-filetransfertask-01	File Transfer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-linuxunixtask-01	Linux/Unix	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-manualtask-01	Manual	Action Required	Workflow: stonebranch-workflow-01	2022-10-12 15:25:38 -0400		2022-10-17 11:00:42 -0400	▶ stonebranch-saptask-01	SAP	Undeliverable	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-taskmonitor-02	Task Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-timertask-01	Timer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-windowstask-01	Windows	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-workflow-02	Workflow	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400	▶ stonebranch-zOSTask-01	z/OS	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400
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▶ stonebranch-zOSTask-01	z/OS	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400																																																																															

Step 4

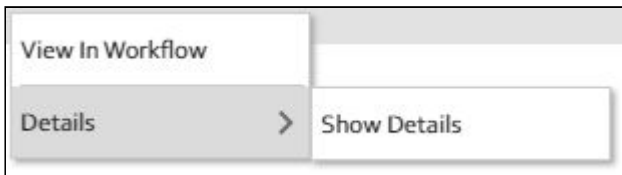
Click the Expand icon () next to any child task instance to display additional content for that child task instance, including Predecessors and Successors.



Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated								
▶ stonebranch-emailtask-03	Email	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
▲ stonebranch-filemonitor-01	Agent File Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
<p>^ 1 Predecessor</p> <table border="1"> <thead> <tr> <th>Task Instance</th> <th>Condition</th> <th>Satisfied</th> <th>Inherited</th> </tr> </thead> <tbody> <tr> <td>stonebranch-emailtask-03</td> <td>Success</td> <td>No</td> <td>No</td> </tr> </tbody> </table>							Task Instance	Condition	Satisfied	Inherited	stonebranch-emailtask-03	Success	No	No
Task Instance	Condition	Satisfied	Inherited											
stonebranch-emailtask-03	Success	No	No											
<p>^ 1 Successor</p> <table border="1"> <thead> <tr> <th>Task Instance</th> <th>Condition</th> <th>Satisfied</th> <th>Inherited</th> </tr> </thead> <tbody> <tr> <td>stonebranch-filetransfertask-01</td> <td>Failure</td> <td>No</td> <td>No</td> </tr> </tbody> </table>							Task Instance	Condition	Satisfied	Inherited	stonebranch-filetransfertask-01	Failure	No	No
Task Instance	Condition	Satisfied	Inherited											
stonebranch-filetransfertask-01	Failure	No	No											
▶ stonebranch-filetransfertask-01	File Transfer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
▶ stonebranch-linuxunixtask-01	Linux/Unix	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
▶ stonebranch-manualtask-01	Manual	Action Required	Workflow: stonebranch-workflow-01	2022-10-12 15:25:38 -0400		2022-10-17 11:00:42 -0400								
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▶ stonebranch-windowstask-01	Windows	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
▶ stonebranch-workflow-02	Workflow	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								
▶ stonebranch-zostask-01	z/OS	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 11:00:42 -0400								

Step 5

For any Predecessor / Successor on the list, right-click it to display a menu of options available for that predecessor/successor.



Step 6

To print all currently displayed information on the list, click the **Print** button.

Step 7

To refresh all information on the list, click the **Refresh** button.

2.20 Editing Task Predecessors/Successors

You can edit all predecessors and successors of a task in a Workflow from the Workflow Editor.

Editing predecessors and successors refers to adding predecessors and successors to a selected task and/or removing predecessors and successors from a selected task.

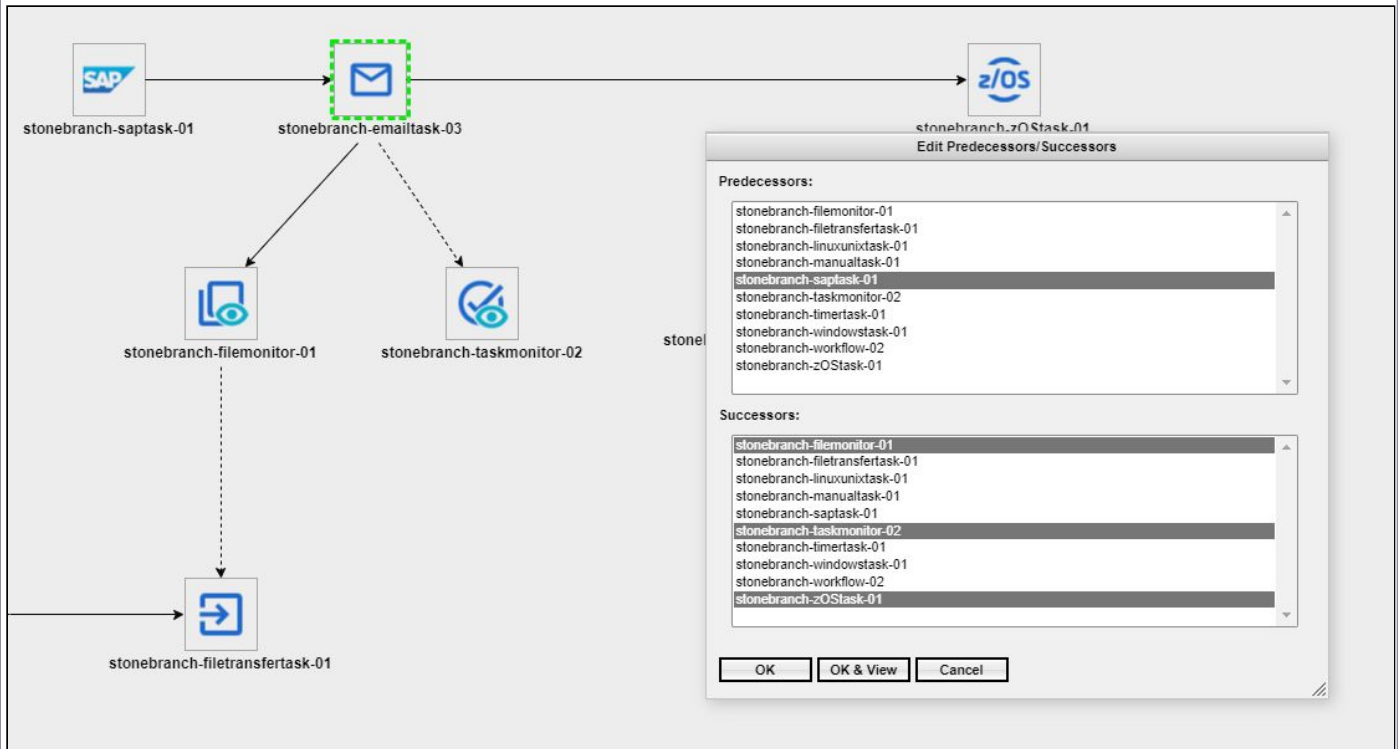
When adding a predecessor or successor through the Edit Predecessors/Successors dialog, the condition for the dependency will always be added as a Success condition, using a straight edge.

Conditions for any existing predecessor or successor dependencies will be preserved, assuming the predecessor or successor dependencies are not removed.

Step 1 Open the Workflow Editor.

Step 2 Right-click a Task to display an [Action menu](#).

Step 3 Click **Edit Predecessors/Successors** to display the Edit Predecessors/Successors pop-up dialog.



All predecessor and successor tasks of the selected task are highlighted; all other tasks are not highlighted.

To resize the pop-up, hover over the window resize icon at the bottom right of the pop-up and drag the icon up or down.

Note

You also can choose to edit predecessors and successors from the [View Predecessors/Successors](#) dialog.

Step 4 To add a task as a predecessor or successor to the selected task, hold the Ctrl key and click the name of that task.

To remove a task as a predecessor or successor to the selected task, hold the Ctrl key and click the name of that task.

Step 5 To add a task as a predecessor or successor to the selected task and remove all other predecessors or successors, click the name of that task.

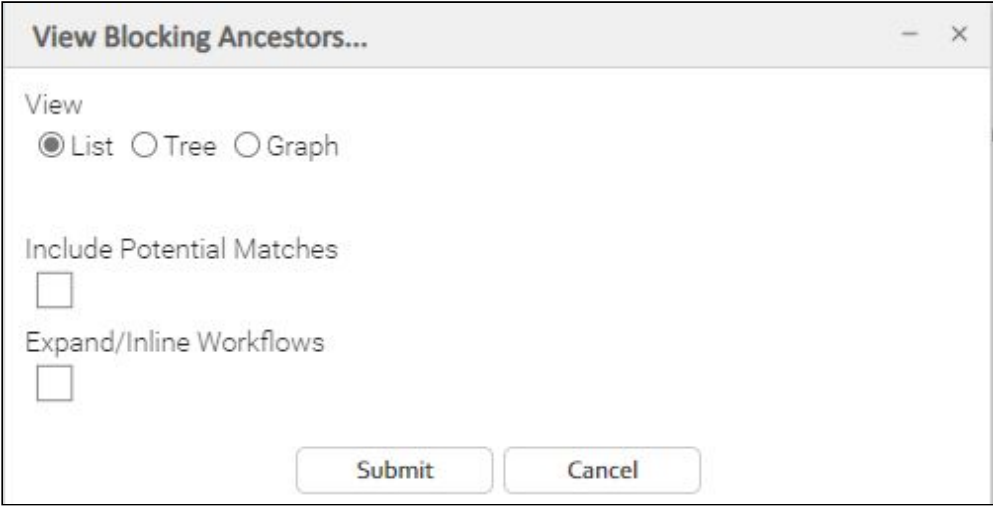
2.21 Viewing Blocking Ancestors

You can view the blocking ancestors of task instances in a Workflow task instance from:

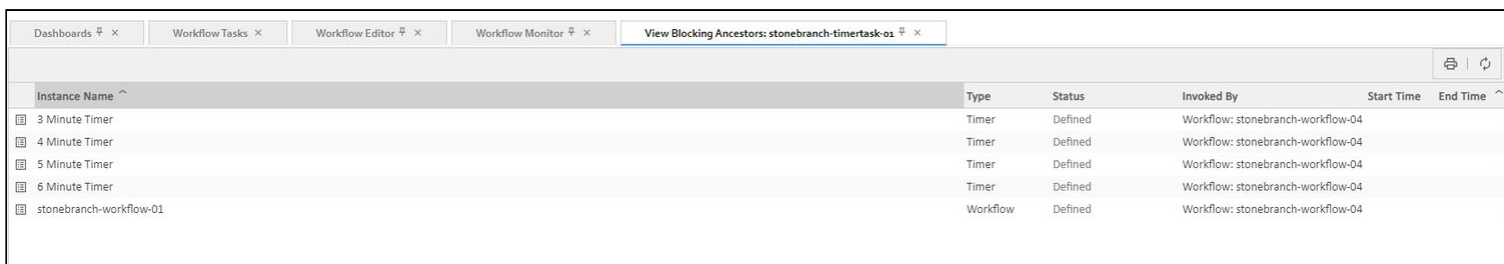
- Activity Monitor
- Task Instances list
- Workflow Monitor

Only task instances that have not started (that is: Defined, Waiting or Held status) will qualify.

Step 1 Display the [Activity Monitor](#), [Task Instances list](#), or [Workflow Monitor](#).

Step 2	Right-click a task instance on the Activity Monitor or Task Instances list, or open a Workflow and then right-click within that Workflow Details, to display an Action menu .
Step 3	<p>Select View Blocking Ancestors... to display a View Blocking Ancestors dialog.</p> 
Step 4	Select how you want to view the blocking ancestors.
Step 5	<p>Select Include Potential Matches if you want to include potential matches for blocking task instances. (By default, Include Potential Matches is not be selected.)</p> <p>If you select Include Potential Matches, the dialog will displays a Qualifying From Date field that lets you specify a date from which potential matches may qualify (in other words, how far back to look for a potential match).</p>
Step 6	Select Expand/Inline Workflows if you want to expand/inline workflow task instances when displaying blocking ancestors as a List or Graph.
Step 7	Click Submit to display the blocking ancestors in your selected view.

2.21.1 View Blocking Ancestors - List

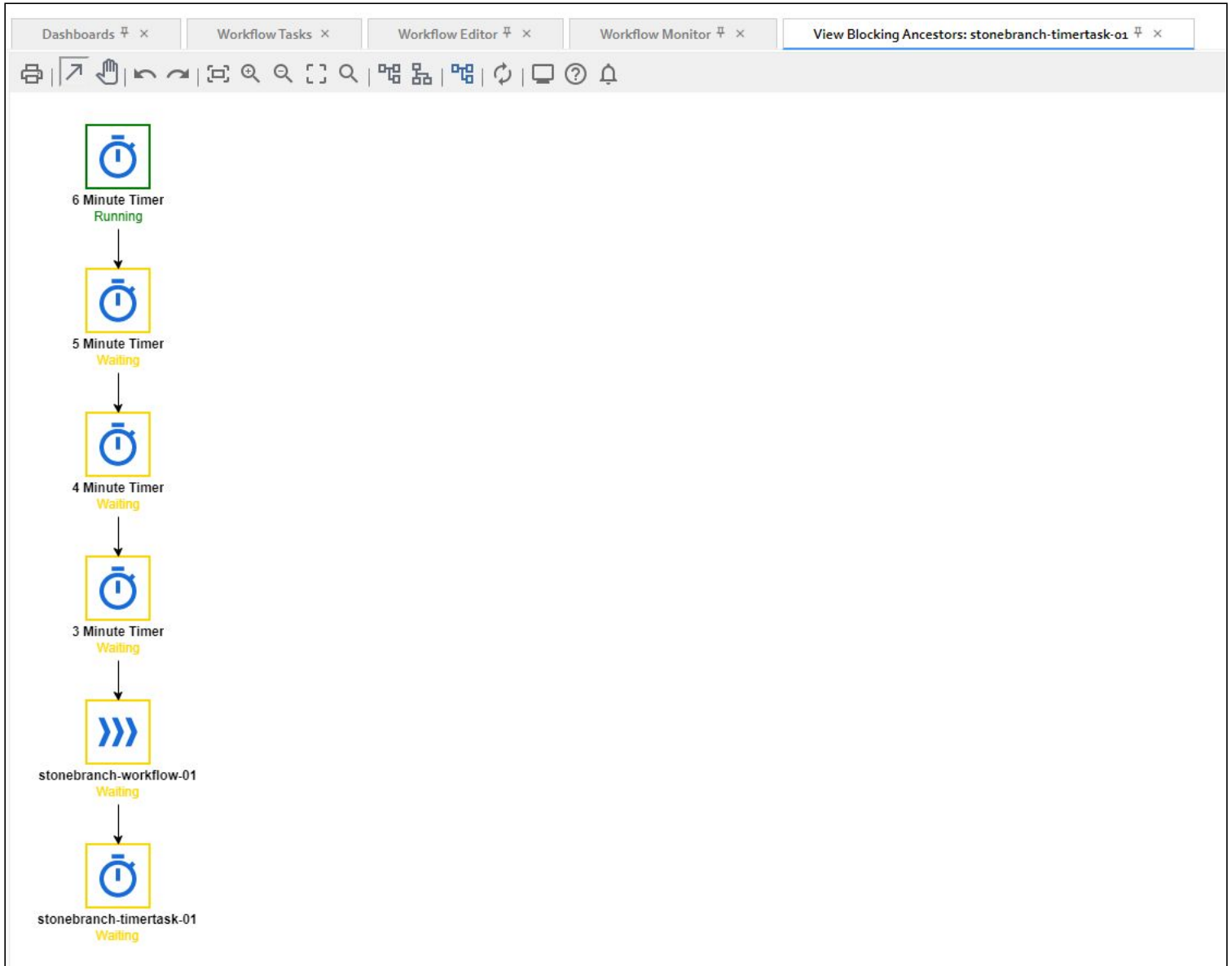


Instance Name	Type	Status	Invoked By	Start Time	End Time
3 Minute Timer	Timer	Defined	Workflow: stonebranch-workflow-04		
4 Minute Timer	Timer	Defined	Workflow: stonebranch-workflow-04		
5 Minute Timer	Timer	Defined	Workflow: stonebranch-workflow-04		
6 Minute Timer	Timer	Defined	Workflow: stonebranch-workflow-04		
stonebranch-workflow-01	Workflow	Defined	Workflow: stonebranch-workflow-04		

2.21.2 View Blocking Ancestors - Tree

Dashboards ×					
Workflow Tasks ×					
Workflow Editor ×					
Workflow Monitor ×					
View Blocking Ancestors: stonebranch-timertask-01 ×					
+ Expand Expand All - Collapse Collapse All					
Instance Name ^	Type	Status	Start Time	End Time	Updated ^
3 Minute Timer	Timer	Defined			2022-10-17 12
4 Minute Timer	Timer	Defined			2022-10-17 12
5 Minute Timer	Timer	Defined			2022-10-17 12
6 Minute Timer	Timer	Defined			2022-10-17 12
- stonebranch-workflow-01	Workflow	Defined			2022-10-17 12
stonebranch-emailtask-03	Email	Defined			2022-10-17 12
stonebranch-filemonitor-01	Agent File Mon...	Defined			2022-10-17 12
stonebranch-filetransfertask-01	File Transfer	Defined			2022-10-17 12
stonebranch-linuxunixtask-01	Linux/Unix	Defined			2022-10-17 12
stonebranch-manualtask-01	Manual	Defined			2022-10-17 12
stonebranch-saptask-01	SAP	Defined			2022-10-17 12
stonebranch-taskmonitor-02	Task Monitor	Defined			2022-10-17 12
stonebranch-timertask-01	Timer	Defined			2022-10-17 12
stonebranch-windowstask-01	Windows	Defined			2022-10-17 12
- stonebranch-workflow-02	Workflow	Defined			2022-10-17 12
ecu-sleep-30	Timer	Defined			2022-10-17 12
FOREVER	Timer	Defined			2022-10-17 12
stonebranch-zOSTask-01	z/OS	Defined			2022-10-17 12

2.21.3 View Blocking Ancestors - Graph

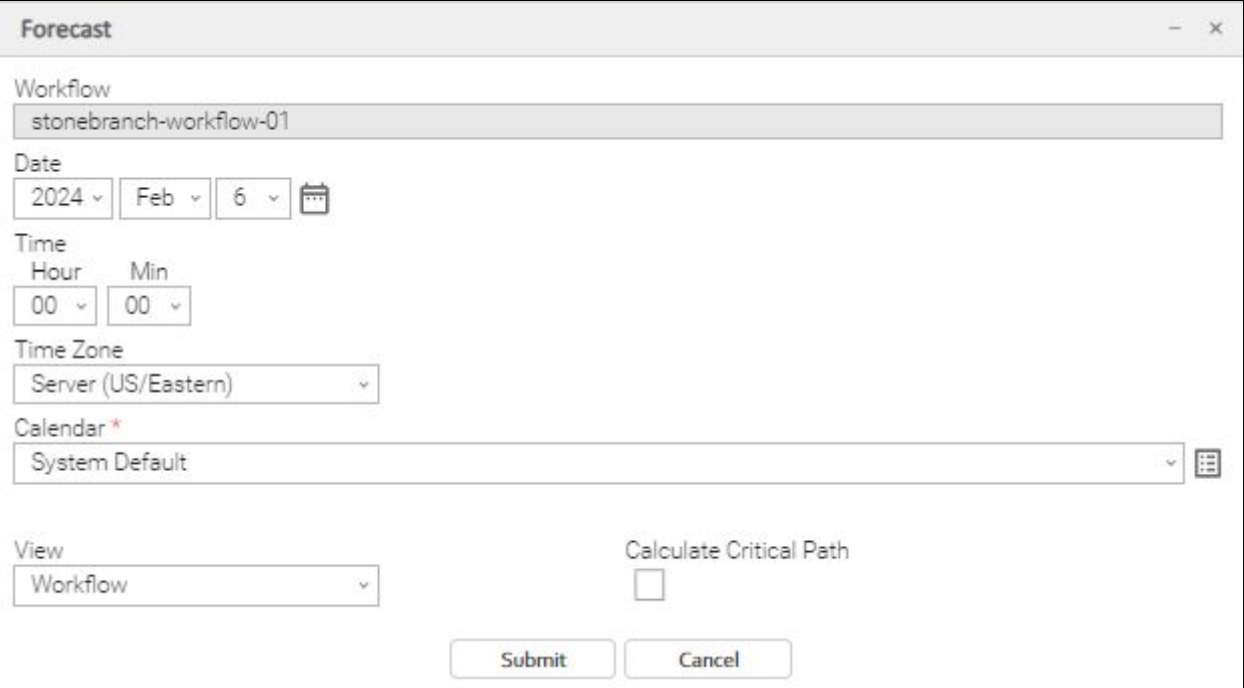


2.22 Forecasting a Workflow for a Specific Date/Time

You can display forecast information for a Workflow for a specific date and time. This provides a view of how a Workflow will look based on the Run/Skip Criteria for that date and time.

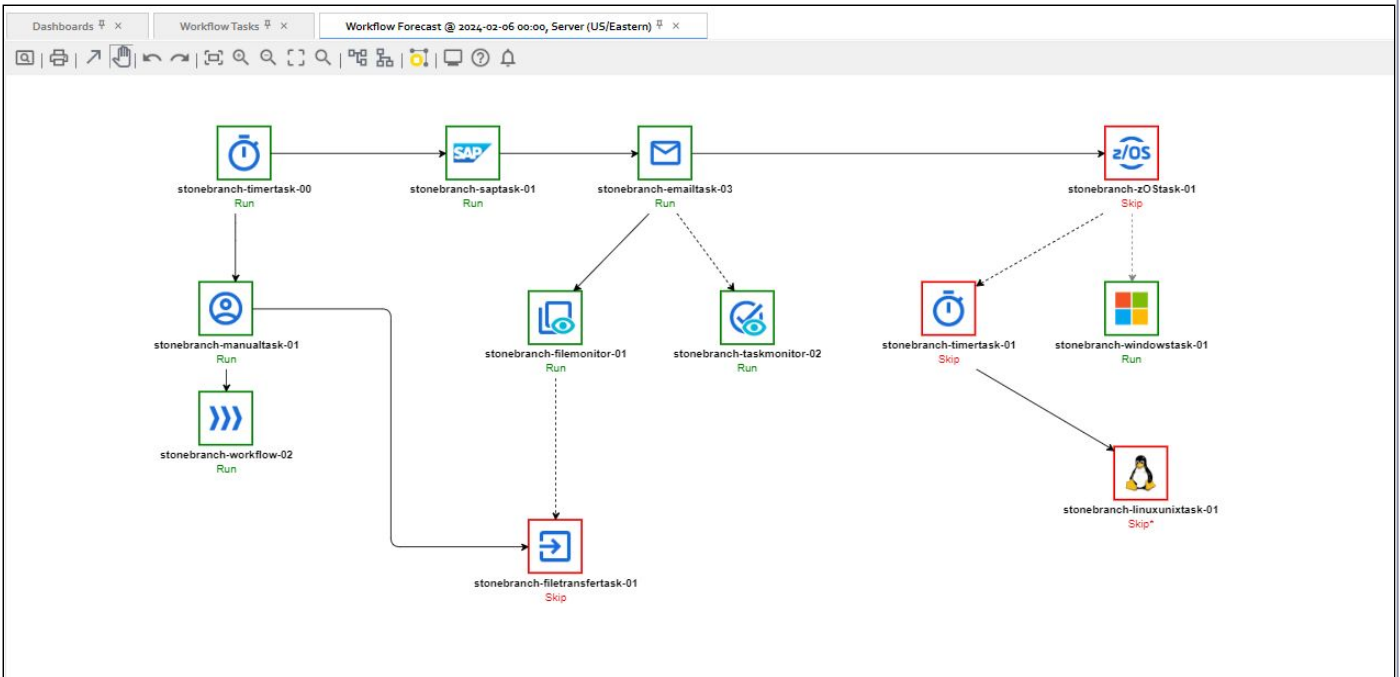
You can forecast a Workflow, without requiring a Trigger or Trigger forecast data, for any date/time within a span of five years in the past and 10 years in the future.

Step 1	From the Automation Center navigation pane, select Tasks > All Tasks or Tasks > Workflow Tasks .
---------------	---

<p>Step 2</p>	<p>Display an Action menu either of three ways:</p> <ul style="list-style-type: none"> • Right-click the Workflow in the All Tasks or Workflow Tasks list. • Open the Workflow and right-click in the Details. • Open the Workflow, click the Triggers tab, and right-click a Trigger on the list.
<p>Step 3</p>	<p>Display a Forecast dialog.</p> <ul style="list-style-type: none"> • If you opened the Action menu from the All Tasks or Workflow Tasks list, or by right-clicking the Details of a Workflow task, select Workflow Task Commands > Forecast... • If you opened the Action menu from Triggers tab, select Forecast... 
<p>Step 4</p>	<p>Select a Date, Time, Time Zone, and Calendar for when you want to forecast the Workflow (and all of its sub-Workflows, if any).</p> <ul style="list-style-type: none"> • If you selected Forecast from the All Tasks list, Workflow Tasks list, or Workflow Details, the default Calendar of the Workflow displays. • If you selected Forecast from the Triggers tab list, the default Calendar of the selected Trigger displays.
<p>Step 5</p>	<p>Select a View in which you want to display the Forecast: Workflow or List.</p>
<p>Step 6</p>	<p>If you selected Workflow View, a Calculate Critical Path field displays. Enable/disable this field depending on whether or not you want to calculate the Critical Path of the Workflow.</p>

Step 7 Click **Submit** to display the Forecast in the selected View.

Workflow View



In the Workflow View, each task has a Run Criteria evaluation label:

- **Run**
 - A variable condition is not specified, and the forecasted task is scheduled to run based on the criteria.
- **Run***
 - A variable condition is specified, and the forecasted task is tentatively scheduled to run based on the variable data available at the time of the forecast but is subject to change at run time.
- **Skip**
 - A variable condition is not specified, and the forecasted task is scheduled to skip based on the criteria.
- **Skip***
 - A variable condition is specified, and the forecasted task is tentatively scheduled to skip based on the variable data available at the time of the forecast but is subject to change at run time.
- **Not Evaluated**
 - A variable condition is specified, however, an unresolved variable and/or function was detected during the evaluation.

If you enabled **Calculate Critical Path**:

- Task instances and connectors in the Critical Path display in the color specified by the [Critical Path Color](#)

- Run/skip criteria is resolved based upon the date specified in the Forecast option.

Note

You can choose to [show or hide skipped tasks](#) in the Workflow View of the Forecast just as you can on a Workflow Monitor.

If **Calculate Critical Path** is enabled, skipped task instances are hidden, and the Show Skipped/Restore and Hide Skipped context-menu items are not available.

If **Calculate Critical Path** is enabled, but you want to see skipped task instances, you can restore the standard view by clicking the [Toggle Critical Path View](#) icon in the Workflow Forecast toolbar (see [Workflow Editor Toolbar](#) for a description of the tools in this toolbar).

The Workflow View lets you navigate into sub-Workflows (by double-clicking them) and back to the parent Workflow (via the [Go to Parent](#) icon).

List View

stonebranch-workflow-01 @ 2024-02-06 00:00, Server (US/Eastern)					
Task ^ 4	Task Type ^ 3	Workflow ^ 2	Launch Time ^ 1	End Time	Run/Skip Evaluation ^
stonebranch-workflow-01	Workflow		2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-workflow-02	Workflow	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-timertask-01	Timer	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Skip
stonebranch-windowstask-01	Windows	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-linuxunixtask-01	Linux/Unix	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Skip*
stonebranch-zOSTask-01	z/OS	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Skip
stonebranch-filemonitor-01	Agent File Monitor	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-emailtask-03	Email	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-filetransfertask-01	File Transfer	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Skip
stonebranch-taskmonitor-02	Task Monitor	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run
stonebranch-saptask-01	SAP	stonebranch-workflow-01	2024-02-06 00:00:00 -0500	2024-02-06 00:00:00 -0500	Run

The List View displays forecast data for the Workflow and all of its tasks, including all sub-Workflows and their tasks.

2.22.1 Forecasting with Override Calendar Options

A workflow being forecasted by the **Forecast...** command will use the Calendar specified on the Forecast... dialog; the Override Calendar options (Default Calendar and Override Inherited Calendar) on the workflow being directly forecasted do not apply.

Any sub-workflow within the workflow being directly forecasted will honour its own Override Calendar options. If no Override Calendar options are defined, the command-specified Calendar is used.

If the sub-workflow within the workflow being directly forecasted contains a deeper sub-workflow, that deeper sub-workflow will honour its own Override Calendar options or, if none are specified, the Override Calendar options of a parent workflow (excluding the directly forecasted workflow for which the Calendar was specified on the **Forecast...** command). If no Override Calendar options are defined, the command-specified Calendar is used.

2.23 Modifying Tasks in a Workflow

You can make the following modifications for tasks in a Workflow:

- [Changing the Priority of a Task Instance](#)
- [Re-running a Task Instance](#)

- [Cancelling a Task Instance](#)
- [Force Finishing a Task Instance](#)
- [Putting a Task Instance on Hold](#)
- [Releasing a Task Instance from Hold](#)
- [Skipping a Task Instance](#)
- [Showing or Hiding Skipped Task Instances](#)
- [Unskipping a Task Instance](#)
- [Clearing All Predecessor Dependencies for a Task Instance](#)
- [Marking a Task Instance Dependency as Satisfied](#)

3 Monitoring Workflows

- [Overview](#)
- [Monitoring a Running Workflow](#)
 - [Workflow Monitor Modes](#)
- [Viewing Predecessors/Successors of Task Instances in a Workflow](#)
- [Viewing Blocking Ancestors of Task Instances in a Workflow](#)
- [Viewing a Timeline for a Workflow Task Instance](#)
- [Workflow Monitor Toolbar](#)
 - [Workflow Monitor Tools](#)
- [Workflow Monitor Display Mode](#)
 - [Task Name](#)
 - [Task Type](#)
 - [Task Instance Status](#)
 - [Task Instance Details](#)
 - [Task Instance Actions](#)
 - [Task Instance Actions for Workflow](#)
 - [Task Instance Properties](#)
 - [Connector Details](#)
 - [Connector Actions](#)
 - [Connector Properties](#)
 - [Displaying Task Instance Status Icons](#)
- [Manually Intervening in a Workflow](#)
- [Monitoring the Critical Path in a Workflow](#)
 - [Critical Path Settings](#)
 - [Running a Workflow Enabled for Critical Path](#)
 - [Critical Path Status](#)

3.1 Overview

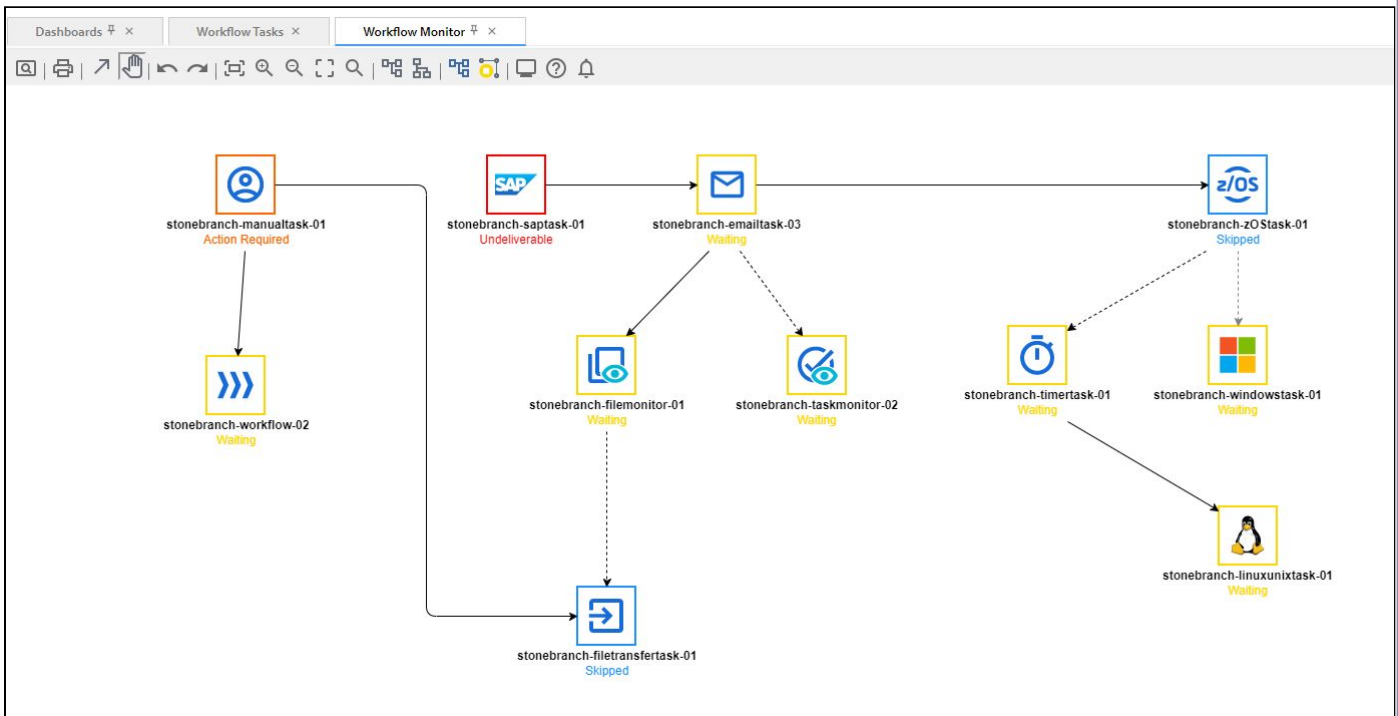
Universal Controller allows you to monitor running Workflows in graphical format. As the Workflow progresses, the display provides up-to-date textual and color-coded status information for each task instance in the Workflow. You can also intervene in processing where necessary.

3.2 Monitoring a Running Workflow

Note

A Workflow already must be running in order for you to monitor its status.

- Step 1** From the [Automation Center](#) navigation pane, select **Task Instances > Activity**.
- Step 2** Click the Details icon for the Workflow you want to monitor. The [Workflow Task Instance Details](#) for that Workflow displays.
- Step 3** Click the view workflow button to display the Workflow Monitor for that Workflow, as shown in the following example.



Note


The name of the workflow that you are monitoring is shown:

1. At the bottom right corner of the Workflow Monitor.
2. By hovering over the Workflow Monitor tab at the top of the Workflow Monitor.

3.2.1 Workflow Monitor Modes

The Workflow Monitor has two modes. Each mode, which you select by clicking the appropriate icon in the [Workflow Monitor toolbar](#), allows you to use one or more specific Workflow Monitor [tools](#).

Icon	Mode	Description
	Select	Clicking the Select icon on the Workflow Monitor toolbar places the Workflow Editor in Select mode, which allows you to use all Workflow Monitor tools except Connect and Pan . The Select mode is the default mode for the Workflow Monitor.

Icon	Mode	Description
	Pan	<p>Clicking the Pan icon on the Workflow Monitor toolbar places the Workflow Monitor in Pan mode, which allows you to scroll around in the Workflow. (You also can use the Outline tool in any mode) to scroll around in the Workflow.</p> <p>In Pan mode, you also can use all other Workflow Monitor tools.</p> <div style="border: 2px solid yellow; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Pan mode does not allow you to use the drag and drop method for moving, deleting, and copying groups of Workflow elements.</p> </div>

3.3 Viewing Predecessors/Successors of Task Instances in a Workflow

You can view the predecessors/successors of all task instances in a workflow from the Activity Monitor, Task Instances list, and the Workflow task instance Details.

You can view the predecessors/successors of a single task instance in a workflow from the Activity Monitor, Task Instances list, and the Workflow Monitor.

(You can also view the predecessors/successors of all task instances in a workflow, or the predecessors/successors of a single task instance in a workflow.)

See [Viewing Task Predecessors/Successors](#).

3.4 Viewing Blocking Ancestors of Task Instances in a Workflow

You can view the blocking ancestors of task instances in a Workflow task instance from:

- Activity Monitor
- Task Instances list
- Workflow Monitor

Only task instances that have not started (that is: Defined, Waiting or Held status) will qualify.

See [Viewing Blocking Ancestors](#).

3.5 Viewing a Timeline for a Workflow Task Instance

You can display the progress of a Workflow task instance in a timeline format from:

- Activity Monitor
- Task Instances list
- Workflow Task Instance Details
- Workflow Monitor

See [Viewing a Timeline for a Workflow Task Instance](#).

3.6 Workflow Monitor Toolbar

The Workflow Monitor toolbar, which displays above the Workflow Monitor, contains icons for every tool that you need to monitor a Workflow.

A shadowed outline around the icon in the toolbar indicates the currently selected [Workflow Monitor mode](#).











The following example shows that the Workflow Monitor is in **Select** mode.



3.6.1 Workflow Monitor Tools

The following table describes the tools used to monitor Workflows, including the tools associated with the two [Workflow Monitor modes](#). The tools are listed by icon, as they appear - left to right - in the [Workflow Monitor toolbar](#).

Icon	Tool	Description
	View Parent	If this Workflow is embedded in another Workflow, navigates to the parent. If this Workflow has more than one parent, clicking this icon displays a list of all parent Workflows; in this case, to navigate to a parent Workflow, double-click the Workflow's icon. To return to your original Workflow, click its name. (The current Workflow name displays in the lower right corner of the editor.) <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>To open an embedded Workflow (sub-Workflow) from its Parent Workflow, double-click the embedded Workflow.</p> </div>
	Print	Prints the current Workflow.
	Select	Places the Workflow Monitor in Select mode .
	Pan	Places the Workflow Monitor in Pan mode . To pan around the Workflow, click anywhere in the Workflow Monitor canvas and drag your cursor to display any section of the Workflow. To return to your original location, click the Actual Size icon.
	Undo	Click to undo the most recent change.
	Redo	Click to redo the most recent change that you undid by clicking Undo .
	Fit	Fits the Workflow into the display. If necessary, this shrinks the icons and size of the Workflow in order to make it fit. You can undo a Fit by clicking the Actual Size icon.
	Zoom In	Zooms in (enlarges) the Workflow. To return the Workflow to its default size, click the Actual Size icon.

Icon	Tool	Description
	Zoom Out	Zooms out (diminishes) the Workflow. To return the Workflow to its default size, click the Actual Size icon.
	Actual Size	Returns the Workflow to its default size after a Fit or Zoom .
	Zoom	Opens a window that allows you to specify a zoom ratio. For example, to double the size of the Workflow, enter 200 and click OK . To return the Workflow to its default size, click the Actual Size icon.
	Horizontal Layout	Reformats the Workflow into a horizontal layout.
	Vertical Layout	Reformats the Workflow into a vertical layout.
	Toggle Vertex Style	For running Workflows, switches the icon display between status-related icons and task-related icons (see Workflow Monitor Display Mode). This icon only appears on the icon bar when you are monitoring a running Workflow.
	Toggle Critical Path View	Toggles between the normal view of the Workflow and the Critical Path View . <div style="border: 1px solid orange; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>This icon displays in the toolbar only if the Critical Path Calculations Permitted Universal Controller system property is set to true.</p> </div>
	Outline	For large Workflows, the outline provides a way of positioning a specific area of the Workflow in the display, without using the Pan mode . <ol style="list-style-type: none"> 1. Click the Outline icon. The Outline window opens. 2. In the Outline window, move and/or resize the blue box to identify the area of the Workflow you want to work on. The display repositions to show only the area within the blue box.
	Help	Displays help documentation for Workflows.
	Console	While a Workflow is running, you can click the Console icon to display processing messages.

3.7 Workflow Monitor Display Mode

The default display mode for the Workflow Monitor identifies each task instance in the workflow by:








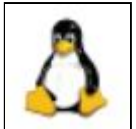











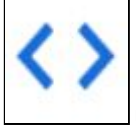







- [Task name](#)
- [Task type](#)
- [Task instance status](#)

3.7.1 Task Name

The task name is the name given to a task when it was created (see [Creating Tasks](#)).

3.7.2 Task Type

The task type of each task instance is represented by an icon that displays above the task instance name.

 Agent File Monitor	 Application Control	 Approval	 Email
 Email Monitor	 File Transfer	 IBM i	 Linux/Unix
 Manual	 PeopleSoft	 Recurring	 Remote File Monitor
 SAP	 SQL	 Stored Procedure	 System Monitor
 Task Monitor	 Timer	 Universal	 Universal Command
 Universal Monitor	 Variable Monitor	 Web Service	 Windows
 Workflow	 z/OS	 z/OS Monitor	

Note

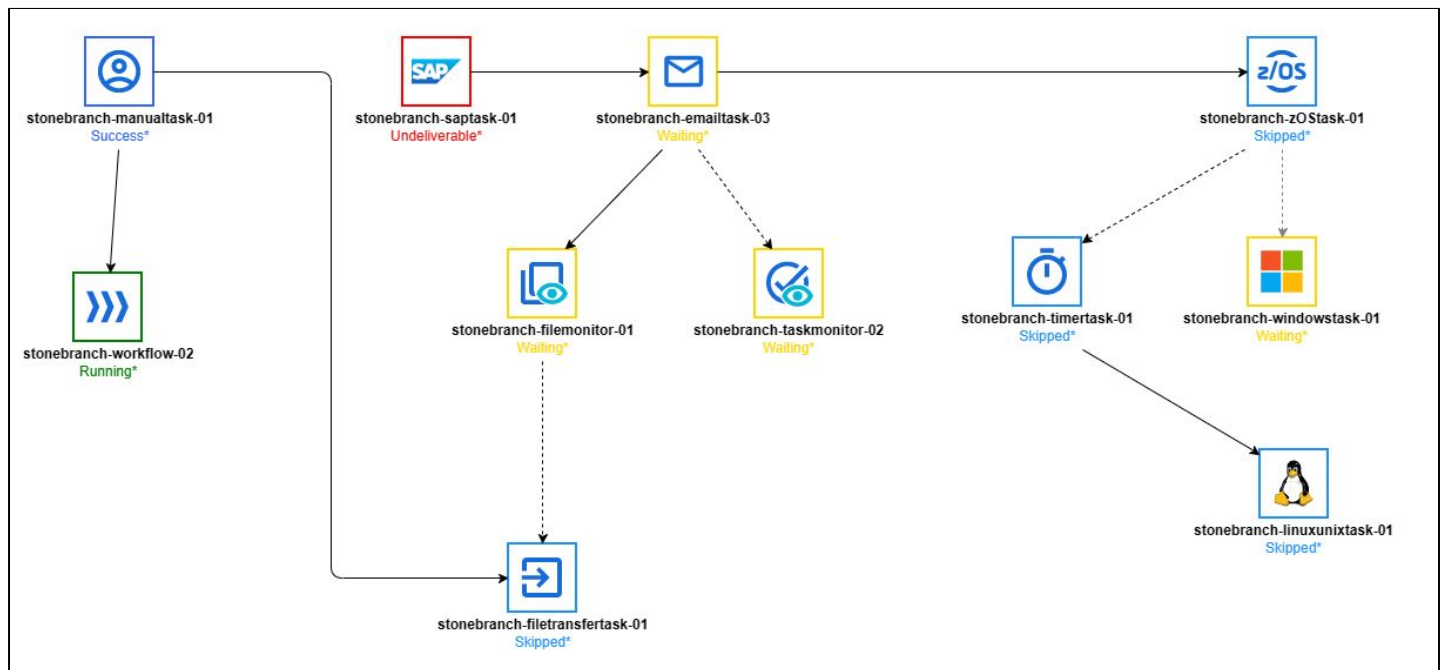
You can change the Workflow Monitor so that the icon above each task instance name represents the current status of that task instance (see [Displaying Task Status Icons](#)).

3.7.3 Task Instance Status

The current status of each task instance displays below the task instance name.

The Controller assigns a default color for each status, which you can change. See [Colors](#) for a list all statuses and the default colors assigned to them, and for information on how to change any of the colors.

In the Activity or Task Instance List, you can add the Simulate field to determine if an instance is running under simulation mode. However, in the Workflow Monitor, the Status is followed by an asterisk if the instance is executed under simulation mode. For example, the instances in this workflow were executed under [simulation mode](#):



3.7.4 Task Instance Details

You can display the following detailed information (including status) for any task instance by hovering your mouse over the task instance.

```

Task Instance Name: stonebranch-manualtask-01
Task Instance UUID: 1677597562633133728BCNSJ2FD3Q4YR
Task UUID: 8edb2a9696fc4c408b2e62042f726778
Vertex Id: 14
Status: Success (0)
    
```

Note

The **Next Retry Time** field displays in the menu only if the task instance is in Failed status and scheduled for retry.

The **Task Description** field displays in the menu only if the [Workflow Monitor Task Description Enabled](#) Universal Controller system property is set to **true**.

The **Exit Code** is displayed in parenthesis only if the instance is in end state (Success, Failed, Finished).

3.7.5 Task Instance Actions

For each task instance in a Workflow, the Controller provides a menu of actions that you can take on that task instance. You can perform task instance actions in either [Workflow Monitor mode](#): Select or Pan.

To display the menu of task instance actions, right-click a task instance.

```

View/Edit
View/Edit In Tab

Commands ▶

View Predecessors/Successors

Insert Task As Predecessor...
Insert Task As Successor...

Details ▶

Properties
    
```

Action	Description
View/Edit	Allows you to view and edit the Task Instance Details for this task instance.
View/Edit In Tab	Allows you to view and edit the Task Instance Details for this task instance in a new tab.
View Children	For a workflow task instance only; Allows you to view a list of children task instances of this workflow task instance.

Action	Description
View Tree	For a workflow task instance only; Allows you to view a tree of this workflow task instance and its tasks, including children tasks of any sub-Workflow task, and, optionally, lets you display the Details for any of those tasks.
Commands	Allows you to run a command against the task instance.
View Predecessors/ Successors	Allows you to view all predecessors and successors of this task instance in the Workflow.
Insert Task As Predecessor	Allows you to insert a task as a predecessor to this task instance.
Insert Task As Successor	Allows you to insert a task as a successor to this task instance.
Details > Show Details	Allows you to display complete database details for this task instance.
Details > Show Variables	Allows you to display a list of all variables available to this task instance.
Properties	Displays a menu of properties for the task instance.

3.7.6 Task Instance Actions for Workflow

For a workflow task instance being monitored, the Controller provides a menu of actions that you can take on that workflow task instance. You can perform these actions in any [Workflow Monitor mode](#).

To display the menu of workflow task instance actions, right-click anywhere in the Workflow Monitor canvas.

View/Edit View/Edit In Tab
View Children View Tree
Commands ▶
Show Skipped/Restore Hide Skipped
Find In Workflow... Pan To Top
Insert Task...
Details ▶

Action	Description
View/Edit	Allows you to view and edit the Task Instance Details for this workflow task instance.
View/Edit In Tab	Allows you to view and edit the Task Instance Details for this workflow task instance in a new tab.
View Children	Allows you to view a list of children task instances of this workflow task instance.
View Tree	Allows you to view a tree of this workflow task instance and its tasks, including children tasks of any sub-Workflow task, and, optionally, lets you display the Details for any of those tasks.
Commands	Allows you to run a command against this workflow task instance.
Show Skipped/ Restore	Allows you to show any skipped tasks for this workflow task instance.
Hide Skipped	Allows you to hide any skipped tasks for this workflow task instance.
Find In Workflow...	Allows you to find a task instance in this workflow task instance.
Pan To Top	Allows you to restore the displayed Workflow Monitor for this workflow task instance to its default, top-left position.
Insert Task...	Allows you to insert a task .
Details > Show Details	Allows you to display complete database details for this workflow task instance.
Details > Show Variables	Allows you to display a list of all variables available to this workflow task instance.

3.7.7 Task Instance Properties

One of the [task actions](#) available for any task instance in a Workflow is to display a list of properties for that task instance.

Properties	
ID	<input type="text" value="13"/>
top	<input type="text" value="70"/>
left	<input type="text" value="690"/>
width	<input type="text" value="58"/>
height	<input type="text" value="58"/>
Style	<input type="text" value="strokeColor=#FFD700;strok"/>
name	<input type="text" value="stonebranch-emailtask-03"/>
sys_class_name	<input type="text" value="ops_task_email"/>
sys_id	<input type="text" value="f5dda0cff22542b2b5b"/>
exec_vertex_id	<input type="text" value="13"/>
exec_sys_id	<input type="text" value="166602485737541122"/>
exec_sys_class_name	<input type="text" value="ops_exec_email"/>
exec_name	<input type="text" value="stonebranch-emailtask-03"/>
exec_desc	<input type="text"/>
status_code	<input type="text" value="10"/>
status_desc	<input type="text"/>
retry_time	<input type="text"/>
tw_enabled	<input type="text" value="false"/>
can_suppress	<input type="text" value="true"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

3.7.8 Connector Details

You can display the following detailed information for any Connector by hovering your mouse over the connector.

```

Condition(s): Success

Source {
  Task Instance Name: stonebranch-manualtask-01
  Task Instance UUID: 1677597562633133728BCNSJ2FD3Q4YR
  Vertex Id: 14
  Status: Success (0)
}

Target {
  Task Instance Name: stonebranch-workflow-02
  Task Instance UUID: 16775975626331407286ELOFIFXHS9YK
  Vertex Id: 4
  Status: Finished (0)
  Status Description: State was forced from RUNNING to FINISHED
}
    
```

3.7.9 Connector Actions

For each connector in a Workflow, the Controller provides a menu of actions that you can take on that connector. You can perform connector actions in any [Workflow Monitor mode](#).

To display the menu of connector actions, right-click a connector.

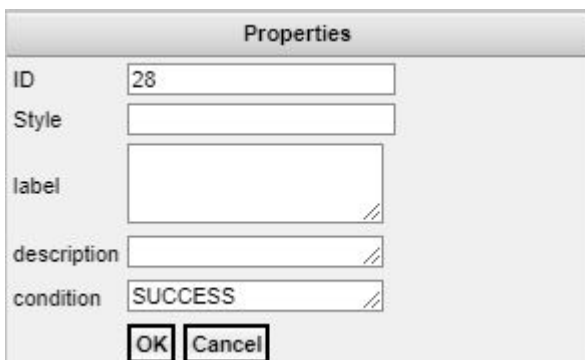


The following table describes each action in the menu:

Action	Description
Conditions	Allows you to select a dependency condition for the connector.
Go To Source	Highlights the predecessor task for the connector and moves it to the center of the Workflow Editor display.
Go To Target	Highlights the successor task for the connector and moves it to the center of the Workflow Editor display.
Commands	Allows you to run a command (Mark as Satisfied) against the connector.
Properties	Displays a menu of properties for the connector.

3.7.10 Connector Properties

One of the [connector actions](#) available for any connector in a Workflow is to display a list of properties for that connector.



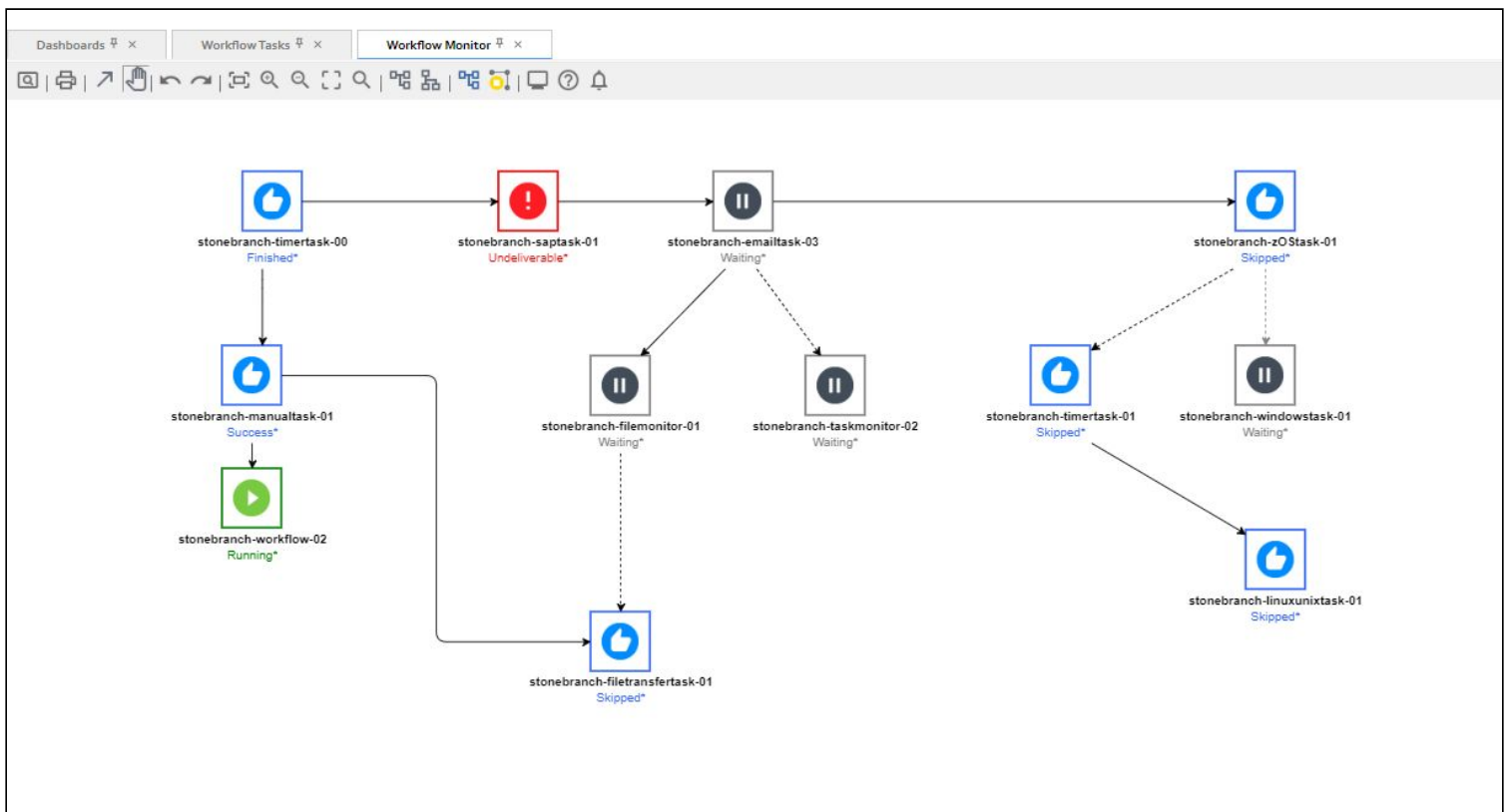
The information in the Connector properties is view-only.


3.7.11 Displaying Task Instance Status Icons

You can switch the Workflow Monitor display mode, which by default shows icons that represent task instance types, so that the icons represent **task instance status** types, as shown in the example below.

In this mode, the border colors that indicate a task instance's status are categorized as following.

Status Type	Border Color
Not Running	Gray #808080
Running	Green #008000
Problem	Red #EE0000
Complete	Blue #3366FF
Unknown	Black #000000



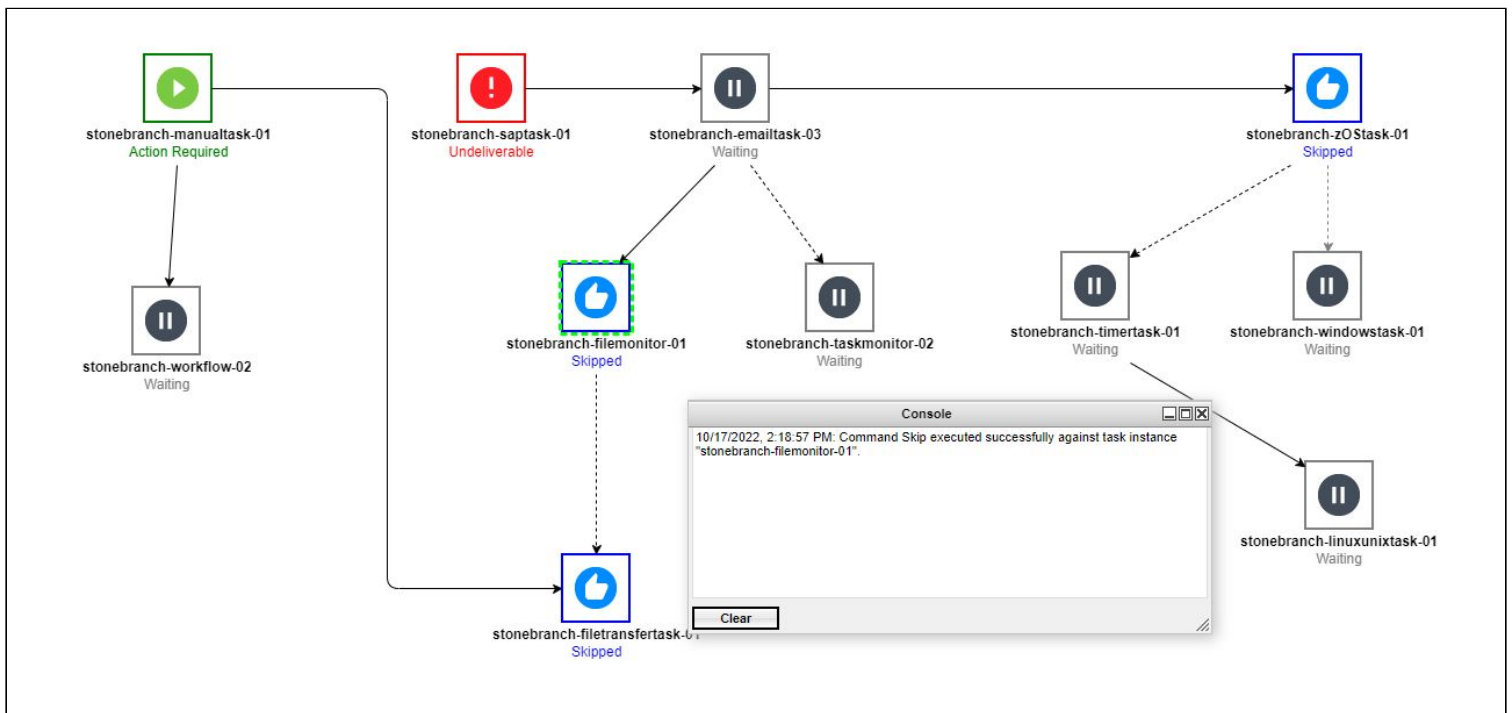
To switch display modes, click the **Toggle Vertex Style** icon .

3.8 Manually Intervening in a Workflow

You can take action on a task instance in a running workflow by right-clicking the task instance and [selecting an action](#) from the Actions menu.

You also can take action on the running workflow itself by right-clicking any white space in the Workflow Monitor canvas and [selecting an action](#) from the Actions menu.

If you select a [command](#) from either Actions menu, the Console window automatically opens and displays processing information.



3.9 Monitoring the Critical Path in a Workflow

You can instruct the Controller to calculate the Critical Path of a Workflow, which is the path of task instances in the Workflow that will take the longest time to complete.

The Controller bases the Critical Path on:

- Current historical average duration statistics for each task in the Workflow. (If no statistics exist for a task - that is, it has never been run - the Controller assigns it a run time of 1 second).
- Critical Path Duration time that you can specify in the task Details for any task in the Workflow, which will override the run-time statistics.

Note

Critical Path settings for tasks and Workflows are not [exported/imported](#).

3.9.1 Critical Path Settings

To monitor the Critical Path of a Workflow, you must set the following:

- In **Configuration > Properties**, set the [Critical Path Calculations Permitted](#) system property to **true**.
- In the Workflow Details, enable the [Calculate Critical Path](#) field.
- In the Workflow Monitor toolbar, click the [Toggle Critical Path View](#) icon.

By default, any Workflow with the [Calculate Critical Path](#) field enabled will be displayed in the Workflow Monitor in Critical Path View. To toggle in and out of Critical Path View, click the [Toggle Critical Path View](#) icon.

Note

If you are using [View In Workflow](#) to open the Workflow Monitor, or the Workflow being opened has a status of Skipped, Critical Path View will be toggled off by default.

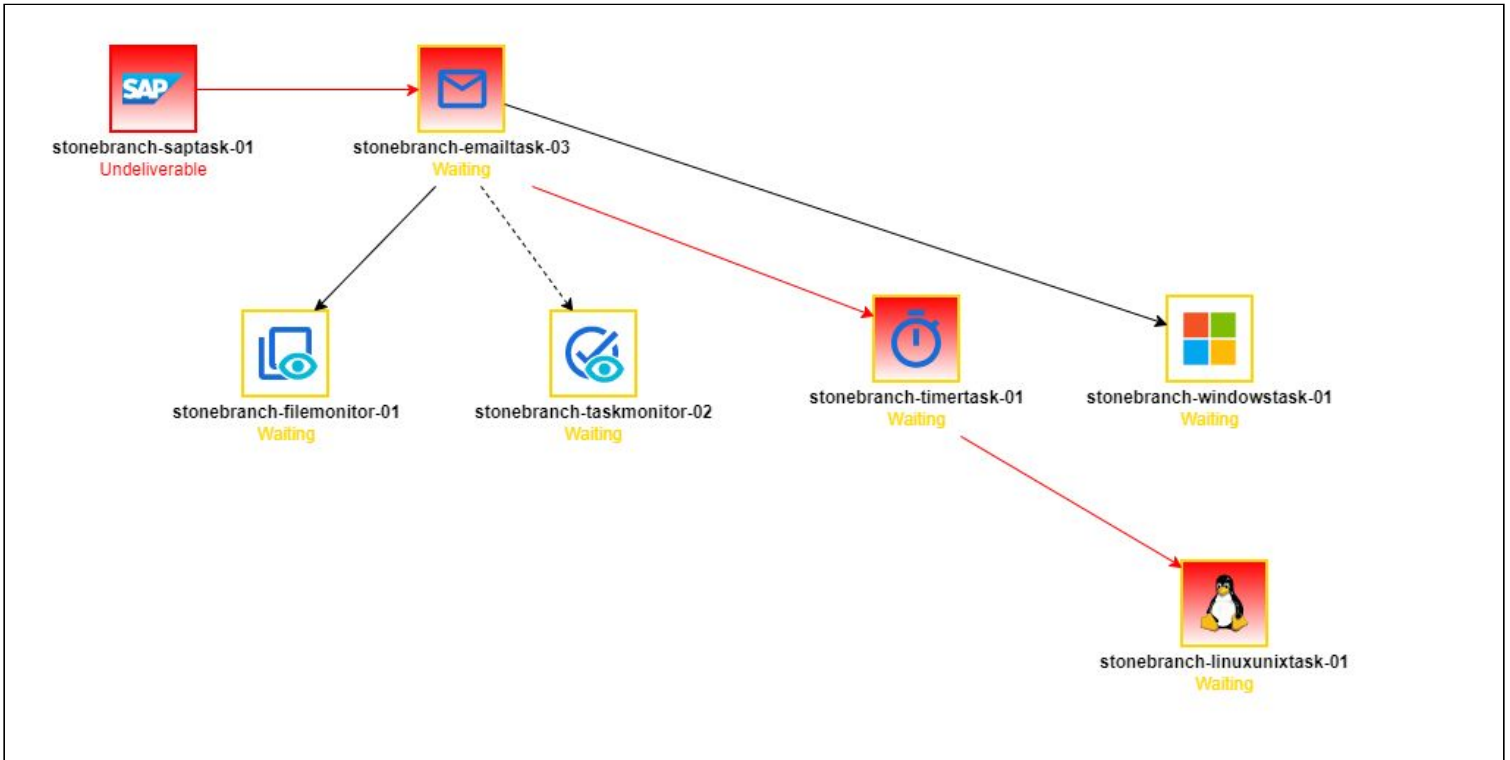
3.9.2 Running a Workflow Enabled for Critical Path

When you run a Workflow enabled for Critical Path, the Workflow Monitor initially displays the Critical Path based on historical average duration statistics and any [CP Duration](#) override values for any tasks in the Workflow. When a task instance completes, the Critical Path could change, based on the actual time it took the task instance to complete. For example, if you specified a Critical Path Duration of 5 minutes for a task, but the task instance completed in 30 seconds, the Controller might adjust the Critical Path to show a path that it now estimates will take the longest to complete.

Note

For a top-level Workflow that has been enabled for Critical Path, its sub-Workflows display Critical Paths only if they themselves have been enabled for Critical Path.

In Critical Path View, Task instances and connectors in the Critical Path display in the color specified by the [Critical Path Color](#) system property.



The Critical Path View is dynamic; if task instances are Skipped in a Workflow, and they no longer are part of the Critical Path, they no longer display on the Workflow Monitor while it is in Critical Path View.

If you are in Critical Path View, but you want to see Skipped task instances, you can restore the standard view by clicking the [Toggle Critical Path View](#) icon in the [Workflow Monitor toolbar](#).

Also, in Critical Path View, [Show Skipped / Restore and Hide Skipped](#) are disabled in the Workflow Monitor pop-up menu of commands and options. When the Workflow completes, the final Critical Path displays.

3.9.3 Critical Path Status

3.9.3.1 Activity Monitor and Task Instances List

You can monitor whether a task instance is critical (or along a critical path) in a Workflow from the [Activity Monitor](#) and [Task Instances List](#).

The task instance Details icon for task instances that are critical (or along in a Critical Path) is tinted red.

265 Task Instances								Last 48 hours	No quick filter	-- No Filter --
Instance Name	Type	Status	Invoked By	Start Time	End Time	Updated				
stonebranch-filemonitor-01	Agent File Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
Email Tutorial	Email	Waiting	Workflow: stonebranch-workflow-03			2022-10-17 14:20:42 -0400				
stonebranch-linuxunixtask-01	Linux/Unix	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
Email Tutorial	Email	Failed	Workflow: stonebranch-workflow-03	2022-10-17 12:45:12 -0400	2022-10-17 12:45:17 -0400	2022-10-17 14:20:42 -0400				
stonebranch-windowstask-01	Windows	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-timertask-02	Timer	Waiting	Workflow: stonebranch-workflow-03			2022-10-17 14:20:42 -0400				
stonebranch-workflow-02	Workflow	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-workflow-03	Workflow	Running/Problems	Manually Launched	2022-10-17 12:45:07 -0400		2022-10-17 14:20:42 -0400				
stonebranch-timertask-01	Timer	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-manualtask-01	Manual	Action Required	Workflow: stonebranch-workflow-01	2022-10-17 14:19:13 -0400		2022-10-17 14:20:42 -0400				
stonebranch-emailtask-03	Email	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-saptask-01	SAP	Undeliverable	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-taskmonitor-02	Task Monitor	Waiting	Workflow: stonebranch-workflow-01			2022-10-17 14:20:42 -0400				
stonebranch-workflow-01	Workflow	Running/Problems	Manually Launched	2022-10-17 14:19:13 -0400		2022-10-17 14:20:42 -0400				

Reports

You can enhance existing Task Instance reports or create new Task Instance reports by utilizing the **Critical** and **Projected End Time** fields. For example, you might want to report on task instances that have not completed and are on the critical path, or you might want to report on task instances that have a failure status and are on the critical path.