

Microsoft System Center 2012 R2

Runbook Activity Reference for System Center 2012 R2 Orchestrator

Microsoft Corporation

Published: November 1, 2013

Applies To

System Center 2012 - Orchestrator

Orchestrator in System Center 2012 SP1

System Center 2012 R2 Orchestrator

Feedback

Send suggestions and comments about this document to sc2012docs@microsoft.com

Copyright Information

This document is provided "as-is". Information and views expressed in this document, including URL and other Internet website references, may change without notice.

Some examples depicted herein are provided for illustration only and are fictitious. No real association or connection is intended or should be inferred.

This document does not provide you with any legal rights to any intellectual property in any Microsoft product. You may copy and use this document for your internal, reference purposes. You may modify this document for your internal, reference purposes.

© 2013 Microsoft Corporation. All rights reserved.

Microsoft, Access, Active Directory, ActiveSync, ActiveX, Authenticode, Bing, BitLocker, Excel, Forefront, Hyper-V, Internet Explorer, JScript, Microsoft Press, MSDN, Outlook, SharePoint, Silverlight, SoftGrid, SQL Server, Visio, Visual Basic, Visual C++, Visual Studio, Win32, Windows, Windows Intune, Windows Mobile, Windows PowerShell, Windows Server, Windows Server System, and Windows Vista are trademarks of the Microsoft group of companies. All other trademarks are property of their respective owners.

Revision History

Release Date	Changes
October 17, 2013	Original release of this guide.
November 1, 2013	Minor updates for this guide.

Contents

Runbook Activity Reference for System Center 2012 - Orchestrator.....	6
Standard Activities.....	6
Alphabetical List of Standard Activities.....	7
Ports and Protocols of Standard Activities	10
System	11
Run Program	12
Run .Net Script	16
End Process	19
Start/Stop Service.....	20
Restart System	22
Save Event Log	23
Query WMI	26
Run SSH Command.....	27
Get SNMP Variable	30
Monitor SNMP Trap.....	31
Send SNMP Trap	34
Set SNMP Variable.....	36
Scheduling	38
Monitor Date/Time	38
Check Schedule	41
Monitoring	41
Monitor Event Log	42
Monitor Service.....	45
Get Service Status.....	46
Monitor Process.....	47
Get Process Status.....	49
Monitor Computer/IP	50
Get Computer/IP Status	51
Monitor Disk Space	52
Get Disk Space Status	53
Monitor Internet Application.....	54
Get Internet Application Status.....	58
Monitor WMI	64
File Management	66
Compress File	67
Copy File	69
Create Folder.....	72
Decompress File.....	72
Delete File	74

Delete Folder	75
Get File Status	76
Monitor File	78
Monitor Folder	80
Move File	82
Move Folder	85
PGP Decrypt File	85
PGP Encrypt File	87
Print File	90
Rename File	91
Email	93
Send Email	93
Notification	96
Send Event Log Message	96
Send Syslog Message	97
Send Platform Event	98
Utilities	99
Apply XSLT	100
Query XML	101
Map Published Data	102
Compare Values	105
Write Web Page	107
Read Text Log	109
Write to Database	112
Query Database	115
Monitor Counter	119
Get Counter Value	119
Modify Counter	120
Invoke Web Services	121
Format Date/Time	124
Generate Random Text	128
Map Network Path	129
Disconnect Network Path	129
Get Dial-up Status	130
Connect/Disconnect Dial-up	131
Text File Management	132
Append Line	133
Delete Line	134
Find Text	136
Get Lines	138
Insert Line	139
Read Line	140
Search and Replace Text	142

Runbook Control	144
Invoke Runbook.....	144
Initialize Data	146
Junction	147
Return Data	148

Runbook Activity Reference for System Center 2012 - Orchestrator

System Center 2012 - Orchestrator includes an extensive set of standard activities that enable you to create runbooks to automate your data center procedures. This guide contains detailed information about using each of the standard activities

Standard Activities

- [Standard Activities](#)
Describes all of the Orchestrator Standard Activities.

Privacy

Orchestrator is committed to protecting your privacy, while delivering software that brings you the performance, power, and convenience you want. For more information, see the **Privacy Statement for System Center 2012 - Orchestrator**.

For more information about the Orchestrator Release Candidate, see **Release Notes for System Center 2012 - Orchestrator Release Candidate**.

Other resources for this product

1. TechNet Library main page for **System Center Orchestrator 2012**
2. **Getting Started with System Center 2012 - Orchestrator Release Candidate**
3. **Deploying System Center 2012 - Orchestrator Release Candidate**
4. **Administering System Center 2012 - Orchestrator Release Candidate**
5. **Integration Packs for System Center 2012 - Orchestrator Release Candidate**
6. **Using Runbooks in System Center 2012 - Orchestrator Release Candidate**
7. **Using the Orchestration Console in System Center 2012 - Orchestrator Release Candidate**

Standard Activities

Activities are organized into categories to help you find the appropriate activity for the task you want to perform. The following table provides a brief description of tasks you can accomplish with each activity category.

Tasks	Categories
Run system commands.	System

Tasks	Categories
Perform schedule-based activities.	Scheduling
Monitor processes or system-level events.	Monitoring
Manage file interactions such as copying and moving files.	File Management
Send e-mail notifications.	Email
Support other notification types.	Notification
Search for or modify data within a workflow.	Utilities
Manipulate text files.	Text File Management
Manage workflows.	Runbook Control

See Also

- **Common Tabs**
Learn how to configure common tab settings.
- [Alphabetical List of Standard Activities](#)
View all activities in alphabetical order.

Alphabetical List of Standard Activities

All standard activities are listed below.

A

[Append Line](#)

[Apply XSLT](#)

C

[Check Schedule](#)

[Compare Values](#)

[Compress File](#)

[Copy File](#)

[Create Folder](#)

D

[Decompress File](#)

[Delete File](#)

[Delete Folder](#)

[Delete Line](#)

[Disconnect Network Path](#)

E

[End Process](#)

F

[Find Text](#)

[Format Date/Time](#)

G

[Generate Random Text](#)

[Get Computer/IP Status](#)

[Get Counter Value](#)

[Get Disk Space Status](#)

[Get File Status](#)

[Get Internet Application Status](#)

[Get Lines](#)

[Get Process Status](#)

[Get Service Status](#)

[Get SNMP Variable](#)

I

[Initialize Data](#)

[Insert Line](#)

[Invoke Runbook](#)

[Invoke Web Services](#)

J

[Junction](#)

M

[Map Network Path](#)

[Map Published Data](#)

[Modify Counter](#)

[Monitor Computer/IP](#)

[Monitor Counter](#)

[Monitor Date/Time](#)

[Monitor Disk Space](#)

[Monitor Event Log](#)

[Monitor File](#)

[Monitor Folder](#)

[Monitor Internet Application](#)

[Monitor Process](#)

[Monitor Service](#)

[Monitor SNMP Trap](#)

[Monitor WMI](#)

[Move File](#)

[Move Folder](#)

P

[PGP Decrypt File](#)

[PGP Encrypt File](#)

[Print File](#)

Q

[Query Database](#)

[Query WMI](#)

[Query XML](#)

R

[Read Line](#)

[Read Text Log](#)

[Rename File](#)

[Restart System](#)

[Return Data](#)

[Run .Net Script](#)

[Run Program](#)

[Run SSH Command](#)

S

[Save Event Log](#)

[Search and Replace Text](#)

[Send Email](#)

[Send Event Log Message](#)

[Send Platform Event](#)

[Send SNMP Trap](#)

[Send Syslog Message](#)

[Set SNMP Variable](#)

[Start/Stop Service](#)

W

[Write to Database](#)

[Write Web Page](#)

Ports and Protocols of Standard Activities

Orchestrator standard activities can communicate between the runbook servers where the runbook is deployed and any resource. If you have firewalls in your environment, when you use a standard activity, you must enable the ports between the runbook servers and resource as indicated in the following table.

Standard activity	Port on runbook server	Port on resource server	Notes
Query Database		Any port the target database requires.	
Write to Database		Any port the target database requires.	
Invoke Web Services	HTTP or HTTPS	HTTP or HTTPS	
Map Network Path			Activity uses Microsoft Windows file sharing.
Set SNMP Variable	SNMP	SNMP	
Get SNMP Variable	SNMP	SNMP	
Monitor SNMP Trap	SNMP	SNMP	
Send SNMP Trap	SNMP	SNMP	
Run Program			Activity uses Microsoft

Standard activity	Port on runbook server	Port on resource server	Notes
			Windows file sharing and I/O pipes.
Send Email	SMTP	SMTP	
Monitor Internet Application	HTTP/SMTP/POP3/FTP/DNS	HTTP/SMTP/POP3/FTP/DNS	
Get Internet Application Status	HTTP/SMTP/POP3/FTP/DNS/Custom	HTTP/SMTP/POP3/FTP/DNS/Custom	Custom can be anything.
Send Syslog Message	syslog	syslog	

Other resources for this product

- TechNet Library main page for **System Center Orchestrator 2012**
- [Runbook Activity Reference for System Center 2012 - Orchestrator](#)
- [Alphabetical List of Standard Activities](#)

See Also

TCP Port Requirements

System

The following table provides a brief description of tasks you can accomplish when using each System activity.

Tasks	System Activities
Run any program or command on any computer in your domain.	Run Program

Tasks	System Activities
Run scripts that parse data or run functions against available APIs.	Run .Net Script
End processes that are running on the runbook server or on a remote computer.	End Process
Start, stop, pause, or restart a Windows service.	Start/Stop Service
Restart a computer on your network.	Restart System
Save entries from an event log so that they can be used later.	Save Event Log
Send a Windows Management Instrumentation (WMI) query to a system that you specify and then return the results.	Query WMI
Open an SSH connection to a remote server and run shell commands on that server.	Run SSH Command
Query a network device for the value of variable that is assigned to the Management Information Base (MIB) address you specify.	Get SNMP Variable
Wait for an event to occur either in the Microsoft SNMP Trap Service or on a port that you specify.	Monitor SNMP Trap
Raise an SNMP event that can be detected by a network systems manager application.	Send SNMP Trap
Modify a variable that is specified by its Management Information Base (MIB).	Set SNMP Variable

Run Program

The Run Program activity runs any program or command on any computer in your domain in interactive or background mode. Use this activity to run backup applications or a batch script that runs a set of complex commands.

Configuring the Run Program Activity

Before you configure the Run Program activity, you need to determine the following:

- The command line argument or program that will run and which computer it will run on.

- You also need to determine whether a user on the target computer will need to interact with the program when it is run. The user account that will run the program or command must have administrator rights to run programs on the target computer.

Use the following information to configure the Run .NET Script activity.

Details

Settings	Configuration Instructions
Program execution	Select this mode to run a program in the same way as a Windows shortcut or the Windows Run dialog box. You can also use the ellipsis (...) button to browse for the computer.
Command execution	Select this mode to run a command in the same way as the Windows Command Prompt.
Computer	Type the computer where this program or command will run.
Program path	<ul style="list-style-type: none"> If you selected the Program execution mode, this element appears as Program path. Type the full path to the location of the program that you want to run. Then, to pass parameters to the program, type them in the Parameters box. If you selected the Command run mode, this element appears as Command. Type the path of the command that you want to run, and include the parameters that you want to pass to the command on the same line in the Command box.
Parameters	Type the parameters that will be passed to the program that you want to run. This option is only available when you select the Program execution mode.
Working folder	Type the full path of the working folder that the program or command will use. The command or program will behave as if it was run from the working folder.

Advanced

Settings	Configuration Instructions
Execution mode	Select one of the following execution options

Settings	Configuration Instructions
	<p>for the program:</p> <ul style="list-style-type: none"> • Interactive: Select this option to display a user interface on the computer where the command or program is run. A user interface, if available, appears in a user session that is defined by the user credentials specified in the Run as boxes (User name, Password) on the Advanced tab. • Background, normal priority: Select this option to run the command or program in the background with the process priority set to normal. In this mode no user interface will be displayed. • Background, low priority: Select this option to run the command or program in the background with the process priority set to low. In this mode no user interface will be displayed. Some programs may not function correctly when set to low priority. If this is the case, use the Interactive or Background, normal priority settings instead.
Wait for the completion of the program	<p>Select this option to cause the Run Program to wait for the program or command to finish running before moving to the next activity in the runbook. If you have set the Execution mode to Interactive, then the user must close the program before the Run Program activity is able to move to the next activity in the runbook.</p>
Terminate after	<p>Type the maximum number of minutes to wait for the program or command to complete. Set this value to 0 to have the Run Program activity to wait indefinitely for the completion of the program or command. If the time has expired and the program or command has not completed running, the Run Program activity will shut down the program or command and report a failure.</p>
Do not wait for the completion of the program	<p>Select this option to cause the Run Program activity to run the program or command and not</p>

Settings	Configuration Instructions
	wait for it to complete. When this option is selected, the published data items generated by the Run Program activity will not be available to other activities.
User name	<p>To use a different account name to log in to a computer and run a program, type the account number in the User name box.</p> <p> Note This user name only logs in to the computer where the Run Program activity runs, and uses the interactive logon type. If the program that the Run Program activity launches accesses resources on other computers, the same user name is used on the remote computer, but with the network logon type.</p>
Password	Type the password associated with the user name to run the program on the remote computer.

Published Data

The following table lists the published data items.

Item	Description
Program path	The program path or command that was entered.
Program parameters	The parameters that were passed to the program. This option is only available when Program run is selected on the Details tab.
Working folder path	The path of the working folder.
Process ID	The process ID of the application that was started when the Run Program activity runs. If you are using Command run , this will be the process ID of the Windows Command Prompt application.
Program exit code	The return code of the application that was run

Item	Description
	by the Run Program activity.
Computer	The name of the computer where the application was started.
Program output	The text that was sent to the console when the program was run.
Pure Output	The unmodified output of the program.
Program output file	The name of the local file where the program output was saved.
UNC program output file	The name of the file where the program output was saved in UNC format.

Security

The Run Program activity is based on PsExec. PsExec lets you execute processes on other systems, complete with full interactivity for console applications. For more information on PsExec, go to [PsExec](#).

The Run Program activity inherits certain security concerns from PsExec. Specifically, PsExec uses named pipes. This can be a security concern, as credentials can be sent through this tool.

A work-around for customers concerned about security vulnerabilities is to create a mapped drive to the server that is the target of the Run Program activity. This establishes a security context for the Run Program activity.

Run .Net Script

The Run .Net Script activity runs scripts written in VB.NET, JScript, C#, and Windows PowerShell. This activity is compatible with .NET CLR version 2.0 and later. Use the Run .Net Script activity to run scripts that parse data or run functions against available APIs.

Configuring the Run .Net Script Activity

Before you configure the Run .Net Script activity, you need to determine the following:

- The code you want to run.
- The libraries you want to use.
- The data you want to publish.

Use the following information to configure the Run .Net Script activity.



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Details Tab

Settings	Configuration Instructions
Type	Select the script language. Use the ellipsis (...) button to browse for the language.
Script	Type the code that will run when the activity runs.

Advanced Tab

Settings	Configuration Instructions
Namespace	Add a Namespace for each .NET namespace that will be used within your code. This allows you to call the code without using fully qualified names for each of the classes. Orchestrator recommends adding System namespace to every Run .Net Script activity.
References	Add each of the Assembly (DLL) references that contain the libraries that you want to use. Add the System.dll located in the Windows\Microsoft.NET\Framework\<.NET Version> directory.

Published Data

Add the published data items that you want this activity to publish. Every published data item that you add will be available on the Data bus. It is important to determine if a published data item will be multi-valued. The Run .Net Script activity automatically correlates multi-valued data from different items by aligning them. For example, if you choose to publish two items labeled "Name" and "Email" as Collections, the Run .Net script will try to line up each item in the Name collection with each item in the Email collection. If the collections are not equally sized, then the Run .Net Script activity will create blank values for the collection that has fewer items. For a list of data items and the corresponding description published by this activity, see the following Published Data table.

Published Data Tab

Settings	Configuration Instructions
Name	Enter the Name of the published data. This will be the name that appears when other activities subscribe to the data published by the Run .Net Script activity.

Settings	Configuration Instructions
Type	You can select Date/Time , Integer , or String . If the type you want is not available, select String . Use the ToString method of the activity to assign a value to this published data.
Collection	If your data is multi-valued data, select Collection . When using a collection you must use the Add method to add items to the collection. If you are not using the collection you can use the assignment operator (=) to assign the value.
Variable name	<p>Use unique naming to make sure that your variable name does not collide with existing variables within your script or with classes and keywords available in .NET. We recommend prefixing variables with "OPD_". For example, if you want to name your variable "myString", you would name it "OPD_myString".</p> <p>The Run .Net Script activity will automatically create a .NET Property for this item. If this variable is a collection it will be created using a List<T>, where T is the Type that you selected. If it is not a collection the property will be created using a String, Integer, or Date/Time based on the Type that you selected.</p>

Published Data

Item	Description
Standard Error	Any standard error output published by the Run .Net Script activity.
Namespaces	The namespaces used.
Standard Output	The standard output published by the Run .Net Script activity.
References	The Assemblies used in the activity.
Script Body	The script that was run.
Script Language	The language that was selected for the script.

End Process

The End Process activity ends processes that are running on the runbook server or on a remote computer. The End Process activity can be used to shut down an application that is not responding. The activity returns **success** if the named process is successfully ended or if the name process is not running. This activity uses a satellite license.

Configuring the End Process Activity

Before you configure the End Process activity, you need to determine the following:

- Name or ID of the process
- Computer on which it is running

Use the following information to configure the End Process activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the computer where this process is running. Enter localhost to specify the runbook server where the runbook is being processed. You can also use the ellipsis (...) button to browse for the computer.
Process	Type the name or process ID of the process that you are ending. You can also use the ellipsis (...) button to browse for the process. Browsing is only available if you have specified a valid Computer .
End all instances	Select to end all processes that match the Process that you have specified when multiples are found.
Fail if there is more than one instance	Select to cause the end process to fail if it finds more than one process matching the name you specified.
Terminate in	Type the number of seconds to wait for the process to be shut down gracefully before it is shut down forcefully.

Published Data

The following table lists the published data items.

Item	Description
Number of instances	The number of processes that matched the

Item	Description
	Process you specified.
Process ID	The process ID of each of the processes that matched the Process you specified.

Start/Stop Service

The Start/Stop Service activity will start, stop, pause, or restart a Windows service. The Start/Stop Service activity can be used to restart a service that has stopped responding or shut down a service in preparation for a backup. This activity uses a satellite license.

Configuring the Start/Stop Service Activity

Before you configure the Start/Stop Service activity you need to determine the following:

- The service name
- The computer where the service is running
- Parameters that are required to start the service.



Note

This depends on the service you are interacting with; it may not be required.

Use the following information to configure the Start/Stop Service activity.

Details Tab

Settings	Configuration Instructions
Action	<p>Select one of the following actions that you want to take on the service:</p> <ul style="list-style-type: none"> • Start service: Start the service if it is stopped. This action is ignored if the service is already running. • Stop service: Stop a running service. This action is ignored if the service is already stopped. • Pause service: Pause a running service. This action is ignored if the service is already stopped or paused. • Restart service: Stop then start a running service. If the service is already stopped it will only be started.
Computer	Type the computer where this service is running. Type localhost to specify the runbook server where the runbook is being processed.

Settings	Configuration Instructions
	You can also use the ellipsis (...) button to browse for the computer.
Service	Type the name of the service. You can also use the ellipsis (...) button to browse for the service. Browsing is only available if you have specified a valid Computer .
Parameters	Type any parameters that are required to interact with the Service .
Action must complete in less than	Specify the maximum amount of time in which the action must complete. After the time has expired, the Start/Stop Service activity will timeout and return a failure.

Published Data

The following table lists the published data items.

Item	Description
Service display name	The name of the service as it appears in the Windows Services control panel utility.
Service real name	The name of the ran file that the service is running.
Service status	The current status of the service.
Service computer	The name of the computer where the service is located.
Control Parameters	The parameters that were passed to the service when it was started, stopped, paused or restarted.
Control Time Allowance	The maximum amount of time that was specified to complete the Start, Stop, Pause, or Restart of service action.
Control Action	The action that was taken on the service: Start, Stop, Pause, or Restart.

Restart System

The Restart System activity will restart a computer on your network. The Restart System activity can either wait for applications to shut down gracefully or you can configure the activity to forcefully shut down any running applications. You also can send a message to notify your users of the reason for the disruption.

Some applications may consume memory and hard disk space and will not relinquish them without restarting the system. The Restart System activity can be used to restart these systems during maintenance windows to maintain service during business hours.

Configuring the Restart System Activity

Before you configure the Restart System activity, you will need to determine the following:

- The computer you want to restart.
- Whether you want to forcefully shut down any running applications.

Use the following information to configure the Restart System activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the computer that you are restarting. You can also use the ellipsis (...) button to browse for the computer.
Message	Type a message that will be displayed to users of the Computer before it is shut down.
Wait	Type the number of seconds after sending the Message to the users before the system will be shut down.
Force applications to close	Select to forcefully shut down any applications that are running when the system is restarted.

Published Data

The following table lists the published data items.

Item	Description
Computer	The computer that was restarted.
Message to display	The message that was sent to the computer before restarting.
Shutdown delay	The number of seconds of delay between the message being sent and the computer restart.

Item	Description
Force open apps to close	Determines whether open applications were forced to shut down when the computer was restarted. This value can be either True or False.

Save Event Log

The Save Event Log activity is used to save entries from an event log so that they can be used later. The Save Event Log activity saves the event log entries to a delimited text file in a format that you specify. The activity allows you to choose which fields will be saved and allows you to filter against the fields to only allow particular event log entries to be saved. This activity uses a satellite license.

The Save Event Log activity can be used to create audit trails of problems that occur with a particular application or specific categories of event log entries. These saved files can later be used to track the performance of servers and applications in your network.

Configuring the Save Event Log Activity

Before you configure the Save Event Log activity, you need to determine the following:

- The event log that you are saving from
- The computer where it is located
- The fields that you want to include
- The format of the file



Note

If you require only specific entries to be saved and not the entire event log, you will need to know what fields to filter against as well as what values to filter.

Use the following information to configure the Save Event Log activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the computer where the event log is located. Type localhost to specify the runbook server where the runbook is being processed. You can also use the ellipsis (...) button to browse for the computer.
Event log	Type the name of the Windows Event Log where the entries that you are saving are located. You can also use the ellipsis (...) button to browse for the event log name.

Settings	Configuration Instructions
	Browsing is only available if you have specified a valid Computer .
Include	Select all the event Log fields that you want to save to the file. You have the option to select Event ID, Source, Category, Description, Type, Computer, and Date/time .

Filters Tab

Settings	Configuration Instructions
Event ID	Select and type the specific event ID of the event log entry that you want to save.
Source	Select and type the value that the Source field of the event log entries will need to match.
Category	Select and type the value that the Category field of the event log entries will need to match.
Description	Select and type the value that the Description field of the event log entries will need to match.
Type	Select and specify the value that the Type field of the event log entries will need to match.
Computer	Select and specify the value that the Computer field of the event log entries will need to match.
Date from	Select and specify the ranges of dates that the events will need to be from to be included.

Output Tab

Settings	Configuration Instructions
File name	Type the name of the file where the event log entries will be saved. This file will be saved on the computer where the event log resides.
If the file exists	Select the action that you want to take if a file with the same name already exists: <ul style="list-style-type: none"> • Create a file with a unique name: Select to append a value to the filename to create a unique name that does not conflict with

Settings	Configuration Instructions
	<p>an existing name.</p> <ul style="list-style-type: none"> • Append: Select to append the entries that are being saved to the file. • Overwrite: Select to overwrite the existing file with the file that is being created. • Fail: Select to cause the Save Event Log activity to fail if the filename already exists.
File format	<p>Select the format that will be used to save the event log entries to the file:</p> <ul style="list-style-type: none"> • CSV Delimited: Select to use the CSV format to write each log entry. • TAB Delimited: Select to separate fields in each entry using the TAB character. • Custom Delimited: Select to separate fields in each entry using a custom character that you specify in the Delimiter box.
Delimiter	<p>Type the delimiter that you want to use to separate the fields of each entry.</p>
Create column headings	<p>Select to save the column header information when saving a set of entries to a file. The header information contains meta data such as the field names.</p>

Published Data

The following table lists the published data items.

Item	Description
Event log name	The name of the event log that was saved.
Computer	The computer where the event log that was saved resides.
Name and path of the file where entries are saved	The full path of the file where the event log was saved.
Number of Entries	The number of entries that were saved.

Query WMI

The Query WMI activity will send a WMI query to a system that you specify and return the results. This activity also can be used to check statistics on a remote server to create audit trails that can be reviewed later.

Configuring the Query WMI Activity

Before you configure the Query WMI activity, you need to determine the following:

- The computer you are querying.
- The WMI query statement you want to run.

Use the following information to configure the Query WMI activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that you are running the WMI query against. You can also use the ellipsis (...) button to browse for the computer.
Namespace	Type the name of the WMI namespace that you want to query.
WMI query	Type the WMI query that will be used to query the Computer . For more information about Windows Management Instrumentation, see Windows Management Instrumentation (http://go.microsoft.com/fwlink/?LinkId=221343).

Published Data

The following table lists the published data items.

Item	Description
Computer where the WMI query is performed	The name of the computer where the WMI query was ran.
WMI Query	The WMI query that was sent to the computer.
WMI Query Result as a string	The result of the WMI query.
WMI Namespace	The WMI namespace that you queried.

Run SSH Command

The Run SSH Command activity opens an SSH connection to a remote server and runs shell commands on that server. Use the Run SSH Command activity to run backup applications or a batch script that runs a set of complex commands on a non-Windows computer. The Run SSH Command activity can run any command in a Secure Shell.

Run SSH Command activity is based on PuTTY beta .61. The implementation of SSH in "Run SSH Command" has certain limitations:

- The Run SSH Command activity does not work against all SSH-1 and SSH-2 servers. In general, this activity functions with most SSH servers, but it does not work for all SSH server implementations.
- You must download and use the PuTTY key generation tool to create keys for the Run SSH Command activity. The key generation tool is available at [Download PuTTY - a free SSH and telnet client for Windows](#).
- The Run SSH Command activity supports SSH-1. Microsoft does not recommend the use of SSH-1. If you want to prevent The Run SSH Command activity from using SSH-1, you should use a key file that contains keys that do not support SSH-1. Do not use a username and password pair use a key file.
- The property **Accept Host Key Change** is not a recommended setting. This property should only be used to establish the initial connection to a computer when the key is stored on the runbook server. Runbooks that contain the Run SSH Command activity should be configured with **Accept Host Key Change** disabled. When you use this property it disables the validation of the identity of the SSH server and represents a security risk.
- You should review the list of cryptographic ciphers supported by PuTTY, which is found at [Encryption algorithm selection](#).
- PuTTY beta .61 uses a pseudorandom number generator suitable for most cryptographic purposes. It is not recommended for the generation of long-term cryptographic keys.

For more information about PuTTY, go to [Download PuTTY - a free SSH and telnet client for Windows](#).

Configuring the Run SSH Command Activity

Before you configure the Run SSH Command activity, you need to determine the following:

- Connection information for the computer that hosts the SSH server that you want to connect to.
- Commands that you want to run.
- Whether you require a key file to log into the server before you are able to run commands; this depends on your SSH server.

Use the following information to configure the Run SSH Command activity.

Details

Settings	Configuration Instructions
Computer	Type the name of the computer or IP address where the SSH server is running. You can also

Settings	Configuration Instructions
	use the ellipsis (...) button to browse for the computer.
Port	Type the port number that you need to use to connect to the SSH server.
Run Command	Select this option and type the command that you want to run on the SSH server after the connection has been established.
Command Set File	Select this option and specify a file that contains a set of commands that will be run on the SSH server when the connection has been established. The command set file must use the scripting language of the native shell on the SSH server.
Accept Host Key Change	<p>Select this option to accept host key changes when they occur.</p> <p> Security</p> <p>It is recommended that you do not use this setting because it can cause a runbook to accept any change in a server, including any that are for malicious purposes. By selecting this option, you are instructing the activity to connect to any server, regardless of the host key. Only use this option for testing purposes.</p>
Connection Timeout	<p>Specify the amount of time, in seconds, that the Run SSH Command activity will wait for the SSH command to complete. Configure a value of 0 (zero), or leave the box blank, to wait indefinitely.</p> <p>After the timeout period has elapsed, the Run SSH Command activity times out and returns a warning. The command that you ran may continue running, regardless of whether the Run SSH Command activity times out.</p>

Advanced

Settings	Configuration Instructions
Username	Type the username that you need to log into the SSH server.
Password	Select this option and type the password that is associated with the Username that you specified.
Key File	Select this option to specify a key file to use. You must use the PuTTY key file generator to create a key file. You can download this tool from Download PuTTY - a free SSH and telnet client for Windows .
Passphrase	Type the passphrase that is associated with the key file that you specified.

Published Data

The following table lists the published data items.

Item	Description
Command	The command that ran on the SSH server. This data is not available when the Command Set File option is selected.
Command Set file	The command set file that was used to run commands on the SSH server. This option is not available when the Run Command option is selected.
Computer name	The name or IP address of the SSH server.
Execution Result	The text that was published as output from the commands that were run on the SSH server.
Exit Code	The exit code published by the command. When using a command set file, this will be the exit code of the last command in the file.
Key file path	The path of the key file that was used to authenticate with the SSH server.
Port	The port used to connect to the SSH server.
Username	The username used to log into the SSH server.

Get SNMP Variable

The Get SNMP Variable activity will query a network device for the value of variable that is assigned to the Management Information Base address that you specify. You can use the Get SNMP Variable activity to retrieve information about a network device to determine if an administrator needs to be notified.

Configuring the Get SNMP Variable Activity

Before you configure the Get SNMP Variable activity, you need to determine the following:

- The IP address of the device, as well as the port number, SNMP MIB, and SNMP version
- The community string required to retrieve the variable.



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Get SNMP Variable activity.

Details Tab

Settings	Configuration Instructions
IP address	Type the IP address of the device hosting the MIB variable.
Port	Type port used to communicate with the network device. The default port is 161.
Object identifier	Type the MIB identifier of the variable whose value you want to retrieve.
SNMP Version	Select the SNMP version to use when connecting to the network device.
Community string	Type the community string that will be used to authenticate against the network device. The community should have rights of Read only or higher. This field is case-sensitive and supports only alphanumeric characters.

Advanced Tab

Settings	Configuration Instructions
Timeout	Type the number of seconds the Get SNMP

Settings	Configuration Instructions
	Variable will wait for a response from the network device. If the operation times out, then it will attempt to retry the action. The number of retries is specified in the Retry box.
Retry	Type the number of times to attempt to retrieve the SNMP variable

Published Data

The following table lists the published data items.

Item	Description
MIB identifier	The MIB identifier of the variable that was retrieved.
MIB value	The value of the variable that was retrieved.
Device IP address	The IP address of the device where the variable was retrieved.
Timeout	The timeout period specified in the Get SNMP variable operator interface.
Retry attempts	The number of attempts made to retrieve the SNMP Variable.
SNMP Version	The SNMP version that was specified to retrieve this variable. This value can be SNMPv1 or SNMPv2c .
Community string	The community string that was used to authenticate against this SNMP variable.
Request port	The port used to communicate to the SNMP device.

Monitor SNMP Trap

The Monitor SNMP Trap activity waits for an event to occur either in the Microsoft SNMP Trap Service, or on a port that you specify. Using filters, you can invoke your runbooks according to the device that raised the event or the enterprise, generic, or specific identifiers of the SNMP trap. Use the Monitor SNMP Trap activity to monitor a network device for critical errors, automatically create a trouble ticket, and perform level 1 diagnostics on the device.

Configuring the Monitor SNMP Trap Activity

Before you configure the Monitor SNMP Trap activity, you need to determine the following:

- Version of SNMP that you are using
- Source host IP address
- Enterprise identifier of the device
- Generic or specific identifier of the device that you are monitoring

Use the following information to configure the Monitor SNMP Trap activity.

Details Tab

Settings	Configuration Instructions
Microsoft SNMP Trap Service (SNMPv1, SNMPv2c)	Select this option to use the Microsoft SNMP Trap Service. This service is only compatible with SNMP versions SNMPv1 and SNMPv2c.
No dependency (SNMPv1, SNMPv2c, SNMPv3)	Select this option to monitor SNMP traps using a port rather than the Microsoft SNMP Trap Service.
Port	If you select the No dependency option, type the communication port number that will be monitored for SNMP traps. If you select port 162 , the Microsoft SNMP Trap Service must be disabled because it uses the same port when it runs.
Source host	Select to specify the IP address of the device where the event originates.
Enterprise identifier	Select to specify the enterprise identifier of the event raised by the device.
Generic identifier	Select to specify the generic identifier of the SNMP trap. There are six options available: coldStart(0) : Select to filter for a cold start of the network device. This option has a numerical value of 0. warmStart(1) : Select to filter for a warm start of the network device. This option has a numerical value of 1. linkDown(2) : Select to filter for a severed connection to the network device. This option has a numerical value of 2. linkUp(3) : Select to filter for a re-established

Settings	Configuration Instructions
	<p>connection to the network device. This option has a numerical value of 3.</p> <p>authenticationFailure(4): Select to filter for a failed SNMP authentications to the network device. This option has a numerical value of 4.</p> <p>egpNeighborLoss(5): Select to filter for a lost connection to an EGP neighbor. This option has a numerical value of 5.</p> <p>enterpriseSpecific(6): Select to filter based on an enterprise specific ID. This option has a numerical value of 6. You must specify this option to filter based on a Specific identifier.</p>
Specific identifier	<p>Select to specify an enterprise specific identifier for the SNMP trap. This setting becomes active when you select the enterpriseSpecific(6) option in the Generic identifier box.</p>

Published Data

The following table lists published data items.

Item	Description
Source IP address	The IP address of the device where the trap originated.
Enterprise Id	The enterprise ID of the trap.
Generic Id	The generic ID of the trap.
Specific Id	The specific ID of the trap. The value of the specific identifier is published when using the enterpriseSpecific(6) option of the Generic identifier box. Otherwise, a value of 0 (zero) is published.
Trap port	The port where the trap was received.
Varbind count	The number of variable bindings received.
SNMP Version	The SNMP version specified for this trap.

Send SNMP Trap

The Send SNMP Trap activity will raise an SNMP event that can be detected by a network systems manager application. By using an enterprise identifier of a known network device, you can send SNMP Traps on behalf of a network device in your system. Use the Send SNMP Trap to create events for runbooks that need to be tracked using an SNMP monitoring product.

Configuring the Send SNMP Trap Activity

Before you configure the Send SNMP Trap activity you need to determine the following:

- IP address of the device where you will send your SNMP trap
- Identifiers of the trap
- The SNMP version you will use
- The agent address you want to identify as the sender of the SNMP trap information.



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Send SNMP Trap activity.

You can also add more information to the SNMP trap. Each item that you add becomes a published data item.

Details Tab

Settings	Configuration Instructions
IP address	Type the name of the computer or IP address where you are sending the SNMP trap.
Port	Type the port to use to send the SNMP trap.
Enterprise identifier	Specify the enterprise identifier of the event being raised by the Send SNMP Trap activity.
Generic identifier	Specify the generic identifier of the SNMP trap. There are six options available: coldStart(0) : Select to signify a cold start of the network device. This option has a numerical value of 0. warmStart(1) : Select to signify a warm start of the network device. This option has a numerical value of 1. linkDown(2) : Select to signify a severed connection to the network device. This option

Settings	Configuration Instructions
	<p>has a numerical value of 2.</p> <p>linkUp(3): Select to signify a re-established connection to the network device. This option has a numerical value of 3.</p> <p>authenticationFailure(4): Select to signify a failed SNMP authentications to the network device. This option has a numerical value of 4.</p> <p>egpNeighborLoss(5): Select to signify a lost EGP peer connection to the network device. This option has a numerical value of 5.</p> <p>enterpriseSpecific(6): Select to specify an enterprise specific id. This option has a numerical value of 6. You must specify this option to specify a specific identifier.</p>
Specific identifier	<p>Type the enterprise specific identifier for the SNMP trap. This setting becomes active when you select the enterpriseSpecific(6) option of the Generic identifier box.</p>
SNMP Version	<p>Select the SNMP version to use when generating the SNMP trap.</p>
Community string	<p>Type the community string that will be used to authenticate against the network device. This field is case-sensitive and supports only alphanumeric characters.</p> <p>The Send SNMP Trap activity does not verify the content of community strings, nor whether the strings are received. It sends whatever data you provide, whether it is valid or not. The activity returns a status of Success if it was able to send the data, regardless of whether the data were correct or readable.</p>

Advanced Tab

Settings	Configuration Instructions
Address	<p>If you want to identify another computer as the agent that sends the SNMP trap information, type the agent address in the box. Otherwise,</p>

Settings	Configuration Instructions
	leave the box blank. The activity will use the agent address of the runbook server that runs the runbook. This setting can only be used with version SNMPv1.

Published Data

The following table lists the published data items.

Item	Description
Destination IP address	The IP address of the device where the trap is sent.
Enterprise Id	The enterprise ID of the trap.
Generic Id	The generic ID of the trap.
Trap port	The port where the trap was sent.
SNMP Version	The SNMP version that was specified for this trap. This value can be SNMPv1 or SNMPv2c.
Community string	The community string that will be needed to retrieve this SNMP trap.
Origin address	The address of the device that generated the trap.
Specific Id	The specific ID of the trap.

Set SNMP Variable

The Set SNMP Variable activity will modify a variable, specified by its MIB, on a network device. Use the Set SNMP Variable to update a variable that reports on the failure or success of a critical runbook.

Configuring the Set SNMP Variable Activity

Before you configure the Set SNMP Variable activity you need to determine the following:

- IP address of the device as well as the port number, SNMP MIB, and the SNMP version
- Community string required to update the variable



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance

of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Set SNMP Variable activity.

Details Tab

Settings	Configuration Instructions
IP address	Type the IP address of the device hosting the MIB variable.
Port	Type port used to communicate with the network device.
Object identifier	Type the MIB identifier of the variable whose value you want to change.
Object value	Type the new value of the variable you are changing. Make sure that the new value matches the constraints that are set out by device manufacturer. This field is case-sensitive and supports only alphanumeric characters.
SNMP version	Select the SNMP version to use when connecting to the network device. You can select SNMPv1 or SNMPv2c .
Community string	Type the community string that will be used to authenticate against the network device. The community should have rights of Read write or higher. This field is case-sensitive and supports only alphanumeric characters.

Advanced Tab

Settings	Configuration Instructions
Timeout	Type the number of seconds the Set SNMP Variable will wait for a response from the network device. If the operation times out, then it will attempt to retry the action. The number of retries is specified in the Retry box.
Retry	Type the number of times to attempt to set the SNMP variable.

Published Data

The following table lists the published data items.

Item	Description
MIB identifier	The MIB identifier of the variable that was set.
MIB value	The new value of the variable that was set.
Device IP address	The IP address of the device where the variable was set.
Timeout	The timeout period specified in the Set SNMP variable operator interface.
Retry attempts	The number of attempts made to set the SNMP variable.
SNMP Version	The SNMP version that was specified to set this variable. This value can be SNMPv1, or SNMPv2c.
Community string	The community string that was used to authenticate against this SNMP variable.
Request port	The port used to communicate to the SNMP device.

Scheduling

The following table provides a brief description of tasks you can accomplish when using each Scheduling activity.

Tasks	Scheduling Activities
Invoke a runbook at a scheduled time.	Monitor Date/Time
Verify that a runbook can run at its scheduled time.	Check Schedule

Monitor Date/Time

The Monitor Date/Time activity invokes runbooks at a time or interval that you specify. Use the Monitor Date/Time activity to invoke your runbooks at a specific time once a day, week, or month. You can also schedule runbooks to be invoked when a specific number of seconds have passed since it was last invoked, or immediately after the runbook is deployed.

The Monitor Date/Time activity uses the system clock of the operating system on the computer that runs the runbook server, not Coordinated Universal Time (UTC), to verify the runbook's launch time. This enables the Monitor Date/Time activity to function in virtual machine environments, and to continue running even when the system clock is adjusted because of the move into or out of Daylight Saving Time. However, if a runbook is scheduled to start during an hour that is skipped when the system clock is adjusted forward by one hour, that starting time is skipped, and the runbook starts at the next scheduled time. If a runbook is scheduled to start during an hour that occurs twice because the system clock is adjusted backwards by one hour, the runbook launches twice.

Depending on the practices in your time zone, the usual official time to change the system clocks at the start or finish of Daylight Saving Time is 2:00 A.M., or 02:00. We recommend that you configure a schedule to prevent your runbooks from being skipped or processed twice when the system clock changes.

The Monitor Date/Time activity becomes inactive when the schedule does not allow the runbook to run.

The Monitor Date/Time activity is best suited for scenarios where you need to run routines regularly that do not rely on events in other systems. For example, nightly backup procedures or periodically reading and processing mail in a customer service inbox.

Additional Use Cases

The Monitor Date/Time activity starts according to its configured interval and passes the runbook run to the Check Schedule activity. The Check Schedule activity verifies that the runbook is allowed to run at the current time.

If the runbook is permitted to run at that time, the Check Schedule activity publishes a published data value of True. It passes the runbook run to the next activity if there is a link to the next activity with a invoke condition of "Conforms to schedule from Check Schedule equals true". If the runbook is not permitted to run at that time, the Check Schedule activity publishes a published data value of False. It passes the runbook run to the next activity if there is a link to the next activity with an invoke condition of "Conforms to schedule from Check Schedule equals false." This is useful when you want to implement conditional link branches according to the results of the Schedule verification.

Configuring the Monitor Date/Time Activity

Before you configure the Monitor Date/Time activity, you need to determine the time or interval you want to use to invoke the runbook.

Use the following the information to configure the Monitor Date/Time activity.

Details Tab

Settings	Configuration Instructions
At	Select an absolute time for the runbook to run. The Monitor Date/Time activity will invoke every

Settings	Configuration Instructions
	day at the time that you specify.
Every [x] days [y] hours [z] minutes	<p>Select to specify intervals of days, hours, and minutes for the runbook to run.</p> <p>Starting: Select to specify the number of minutes past the hour to invoke the runbook. This option is only available if you have specified 0 minutes and at least 1 Day or 1 hour .</p> <p>At time slices within the hour: Select to invoke the runbook at times that are multiples of minutes you have specified. This option is only available when 0 days and 0 hours are specified. For example, if minutes is set to 15 then the Monitor Date/Time activity will invoke at 0, 15, 30, 45 minutes past each hour.</p> <p>Trigger immediately: Select to invoke the runbook immediately after deploying.</p>
Every [x] seconds	Select to specify the interval, in seconds, between each time the runbook is ran.

The Monitor Date/Time activity accepts the following inputs when configuring times and intervals:

Configuring Time and Intervals

Unit	Accepted Input
Seconds	5 - 300
Minutes	0 - 59 (0 is allowed only when hours/days are also specified)
Hours	0 - 23 (0 is allowed when days/minutes are also specified)
Days	0 - 48 (0 is allowed when hours/minutes are also specified)
Time slices	1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30

Published Data

This activity does not generate published data items.

Check Schedule

The Check schedule activity verifies that a runbook is allowed to run at the current time according to the permitted times or interval configured in a schedule. To use this activity, you can create a schedule and configure the permitted times, denied times, or interval at which the runbook can run. Then you can insert the activity into a runbook following a [Monitor Date/Time](#) activity and configure it to check the schedule to verify whether a runbook is allowed to run at the current time. You can also use the Check Schedule activity in a runbook that monitors systems for availability. If a problem is encountered, the Check Schedule activity can verify whether the current time is during business hours, or in or out of a maintenance window.

Configuring the Check Schedule Activity

Use the following information to configure the Check Schedule activity.

To configure the Check Schedule activity

1. From the **Activity pane**, drag a **Check Schedule** activity to the runbook.
2. Double-click the **Check Schedule** activity icon to open the **Properties** dialog box.
3. Select the **Details** tab, and next to the **Schedule Template** box, click the ellipsis (...) button and in the **Select a Schedule** dialog box, select the **Schedule** that you want to verify.

Published Data

The following table lists published data items.

Item	Description
Conforms to schedule	Determines whether the current time is within the schedule specified. This value can be either True or False.

Monitoring

The following table provides a brief description of tasks you can accomplish when using each Monitoring activity.

Tasks	Monitoring Activities
Invoke a runbook when new events that match a filter appear in the Windows Event Log.	Monitor Event Log
Invoke a runbook when a service has been started or stopped.	Monitor Service
Check the status of a service on any computer.	Get Service Status

Tasks	Monitoring Activities
Invoke a runbook when a process has been started or stopped.	Monitor Process
Check the status of a running process on any computer.	Get Process Status
Send a ping to a remote computer or IP address and wait for a response.	Monitor Computer/IP
Send a ping to a remote computer or IP address and wait for a response.	Get Computer/IP Status
Invoke a runbook when the disk space on a computer passes a critical threshold.	Monitor Disk Space
Retrieve the current amount of available disk space.	Get Disk Space Status
Invoke a runbook when an internet application server becomes available or unavailable.	Monitor Internet Application
Check the availability of a Web, Email (POP3 or SMTP), FTP, DNS, or custom server.	Get Internet Application Status
Invoke a runbook when a Windows Management Instrumentation (WMI) event is received as a result of the WMI event query you specified.	Monitor WMI

Monitor Event Log

The Monitor Event Log activity invokes runbooks when new events that match a filter that you specify appear in the Windows Event Log. You can use the Monitor Event Log activity to run runbooks that will escalate, investigate, or correct any issues in response to events being generated to the Windows Event Log. For example, a security audit failure appears in the security log which will send an email to an administrator to notify them of the problem. The second mode invokes your runbook when the size of the Windows Event Log reaches the maximum size allowed.

Configuring the Monitor Event Log Activity

Before you configure the Monitor Event Log activity, you need to determine the following:

- Name of the event log you are monitoring
- Details about the events that will invoke the runbook

Use the following steps to configure the Monitor Event Log activity.

▶ **To configure the Monitor Event Log activity**

1. From the **Activity pane**, drag a **Monitor Event Log** activity to the runbook.
2. Double-click the **Monitor Event Log** activity icon to open the **Properties** dialog box.
3. Configure the settings on the **Details** tab and on the **Advanced** tab. Configuration instructions are listed in the following tables.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that stores the Windows Event Log that you want to monitor. You can also browse for the computer using the ellipsis (...) button. The runbook server that runs this activity must have the appropriate rights to monitor the Windows Event Log on that computer.
Event log	Type the name of the Windows Event Log that you are monitoring. You can also browse for the Windows Event Log using the ellipsis (...) button. Windows includes three Event Logs by default: Application, Security, and System. The computer that you are connecting to may contain other Event Logs.
Message filters	<p>The list shows all the filters that have been configured to filter the events that are generated in the log that you have specified. To edit or remove an item in the list, select it and click Edit or Remove as applicable.</p> <p>▶ To add an event filter</p> <ol style="list-style-type: none"> 1. Click Add to open the Filter Properties dialog box. 2. Select the property of the event log entry that you are filtering against. You can filter against the Category, Description, Event ID, Source, and Type that is attributed to the event. 3. Specify the relation you are using to compare the value of the event

Settings	Configuration Instructions
	<p>property to the filter value. If you select Category, Description, Type, and Source you can specify Contains or Does not contain. For Event ID you can specify is different than, is equal to, is lower than, is lower than or equals, is more than, and is more than or equals.</p> <p>4. Specify the filter value that you are comparing the event property against. For Category, Description, and Source, enter the string that is contained within the property. For Event ID, enter the numeric value that will be compared against the ID of the event. For the Type condition, select the specific type of event that you want to filter for such as Error, Warning, Information, Success Audit, or Failure Audit.</p>

Published Data

The following table lists the published data items.

Item	Description
Event log name	The name of the Windows Event Log being monitored.
Computer	The name of the computer where the Windows Event Log is stored.
Log entry description	The text that is contained in the Event Log entry description.
Log Entry ID	The ID of the Event Log entry.
Log Entry source	The source of the event.
Log Entry computer	The computer where the event occurred.
Log Entry type	The type of event.
Log Entry date	The date the event was logged.
Log Entry time	The time the event was logged.

Monitor Service

The Monitor Service activity invokes runbooks when a service has been started or stopped. You can use the Monitor Service activity to monitor services on any remote computer. Use the Monitor Service activity to create runbooks that take corrective actions when services unintentionally shut down. For example, if a SQL Server service that hosts critical data stops responding, you can use a Monitor Service activity with a [Start/Stop Service](#) activity to automatically restart the service.

Configuring the Monitor Service Activity

Before you configure the Monitor Service activity, you need to determine the following:

- Which computer hosts the service that you are monitoring
- Which service you want to monitor
- Whether the runbook will run when the service is started or stopped

Use the following information to configure the Monitor Service activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the service that you are monitoring is located. You can also browse for the computer using the ellipsis (...) button. The runbook server that runs this activity must have the appropriate rights to monitor the services on that computer.
Service	Type the name of the service that you are monitoring. To open the Choose a Service dialog box, click the ellipsis (...) button.
Service is started	Select to invoke the Monitor Service activity when the selected service has been started.
Service is stopped or paused	Select to invoke the Monitor Service activity when the selected service has been stopped or paused. When a service is restarted using the Windows Service Control Manager it is stopped and then started in succession. This will cause the Monitor Service activity to be invoked regardless of whether you have specified to invoke when the Service is started or Service is stopped or paused .
Restart stopped service	Select the Restart stopped service box to restart a service that has stopped. You can also use the Start/Stop Service activity instead of

Settings	Configuration Instructions
	selecting this option.
Test frequency	Select the amount of time to wait between each time that the Monitor Service activity checks the status of the service.

Published Data

The following table lists the published data items.

Item	Description
Service display name	The name of the service as it appears in the Windows Services control panel utility.
Service real name	The name of the file that the service is running.
Service status	The current status of the service.
Service computer	The name of the computer where the service is located.
Test interval	The number of seconds between each check of the service status.
Restart stopped service	Determines whether the service is automatically restarted when it is found to be stopped. This value can be either True or False.

Get Service Status

The Get Service Status activity will check the status of a service on any computer. Use the Get Service Status to check the status of service before performing another action. For example, if you have an SQL Server backup runbook that requires that SQL Server is stopped before performing the backup, you can check the status and then stop the service using the [Start/Stop Service](#) activity.

Configuring the Get Service Status Activity

Before you configure the Get Service Status activity, you need to determine the following:

- The computer where the service is located
- The name of the service

Use the following information to configure the Get Service Status activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the service that you are checking is located. You can also use the ellipsis (...) button to browse for the computer. The runbook server that runs this runbook must have the appropriate rights to monitor the services on that computer.
Service	Type the name of the service that you are checking. You can also browse for the service using the ellipsis (...) button.

Published Data

The following table lists the published data items.

Item	Description
Service display name	The name of the service as it appears in the Windows Services control panel utility.
Service real name	The name of the ran file that the service is running.
Service status	The current status of the service.
Service computer	The name of the computer where the service is located.

Monitor Process

The Monitor Process activity invokes runbooks when a process has been started or stopped. A process is any executable file that is running. You can use the Monitor Process activity to monitor processes on any remote computer.

The Monitor Process activity can be used to create runbooks that take corrective actions when a process has been started but has not stopped. For example, if an application that has a tendency to stop responding and remain resident in memory even though it has completed, it can be shut down automatically by using a Monitor Process activity in a runbook with a [Get Process Status](#) activity to retrieve the status of the process and an [End Process](#) activity to shut it down.

Configuring the Monitor Process Activity

Before you configure the Monitor Process activity, you will need to determine the following:

- Which computer will run the process that you are monitoring
- Which process you want to monitor

- Whether the runbook will be ran when the process is started or stopped

Use the following information to configure the Monitor Process activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the process that you are monitoring is located. You can also browse for the computer using the ellipsis (...) button. The runbook server that runs this runbook must have the appropriate rights to monitor the process on that computer.
Process	Type the name of the process that you are monitoring. You can also browse for the process using the ellipsis (...) button.
Process is started	Select to invoke the Monitor Process activity when the selected process has been started.
Process is stopped	Select to invoke the Monitor Process activity when the last running instance of the selected process has been stopped.
Test frequency	Select the amount of time to wait between each time that the Monitor Process activity checks the status of the process.

Published Data

The following table lists the published data items.

Item	Description
Computer	The name of the computer where the process is located.
Process name	The name of the process ran.
Number of instances for the process	The number of running occurrences of the process.
Test interval	The number of seconds between each check of the process status.
Invokes on process start	Determines whether the runbook will be invoked if the process is started.
Invokes on process end	Determines whether the runbook will be

Item	Description
	invoked if the process is stopped.

Get Process Status

The Get Process Status activity checks the status of a running process on any computer. Use the Get Process Status activity to check the status of a process before performing another action. For example, you can check that a process that was detected by the [Monitor Process](#) activity is still running before shutting it down with the [End Process](#) activity.

Important

The Get Process Status activity returns a status of **failed** if the named process is not running. If the activity returns **failed**, the overall status of the runbook is set to **warning** or **failed**, depending on the number of activities in the runbook.

Configuring the Get Process Status Activity

Before you configure the Get Process Status activity, you need to determine the following:

- The computer where the process is located.
- The file name that will run the process.

Use the following information to configure the Get Process Status activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the process that you are checking is located. You can also browse for the computer using the ellipsis (...) button. The runbook server that runs this runbook must have the appropriate rights to check the process on that computer.
Process	Type the name of the process that you are checking. You can also browse for the process using the ellipsis (...) button.

Published Data

The following table lists the published data items.

Item	Description
Computer	The name of the computer where the process is located.

Item	Description
Process name	The name of the process ran.
Process ID	The ID of the process.
Number of instances for the process	The number of running occurrences of the process.

Monitor Computer/IP

The Monitor Computer/IP activity will send a ping to a remote computer or IP address and wait for a response. You can configure the Monitor Computer/IP activity to invoke your runbook if the computer is either reachable or unreachable. The Monitor Computer/IP activity can be used to invoke runbooks that will automatically notify administrators when a vital system has become unreachable on the network.

Configuring the Monitor Computer/IP Activity

Before you configure the Monitor Computer/IP activity, you will need to determine the following:

- The computer you are monitoring.
- Whether you are waiting for the computer to become reachable or waiting for it become not reachable.

Important

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Monitor Computer/IP activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that you are monitoring. You can also browse for the computer using the ellipsis (...) button.
The computer is not reachable	Select to invoke the Monitor Computer/IP activity when the computer that you are monitoring cannot be reached using a ping.
The computer is reachable	Select to run the Monitor Computer/IP activity when the computer that you are monitoring can be reached using a ping.
Test frequency	Specify the amount of time between each ping

Settings	Configuration Instructions
	to the Computer .

Published Data

The following table lists the published data items.

Item	Description
Computer to ping	The computer that is being monitored.
Percentage of packets received	The percentage of packets that were received back from the ping.

Get Computer/IP Status

The Get Computer/IP Status activity will send a ping to a remote computer or IP address and wait for a response. If a response is received, then the Get Computer/IP Status activity will succeed. If a response is not received, the activity will fail.

The Get Computer/IP Status activity can be used to confirm that a computer is available before performing an action on that computer. You can also use the Get Computer/IP Status activity to check the availability of a computer as part of the level 1 diagnostic step when performing problem management processes.

Configuring the Get Computer/IP Status Activity

Before you configure the Get Computer/IP Status activity, you need to determine the computer name or IP address of the computer that you are monitoring.

Important

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Get Computer/IP Status activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that you are checking. You can also use the ellipsis (...) button to browse for the computer.

Published Data

The following table lists the published data items.

Item	Description
Computer to ping	The computer that is being monitored.
Percentage of packets received	The percentage of packets that were received back from the ping.

Monitor Disk Space

The Monitor Disk Space activity will invoke a runbook when the disk space on a computer passes a critical threshold. You can monitor multiple drives on different computers with a single Monitor Disk Space activity. The Monitor Disk Space activity can be used to invoke runbooks that will automatically backup and purge files on a hard drive that is running out of space

Configuring the Monitor Disk Space Activity

Before you configure the Monitor Disk Space activity, you need to determine the following:

- The drives that you want to monitor
- The computer where those drives are located

The runbook server that runs this runbook must have the appropriate rights to check the process on the computer that you are monitoring.

Use the following information to configure the Monitor Disk Space activity.

Test frequency example: Monitor Disk Space activity is set to test every 30 seconds

Time	All Disks are Passed Threshold?	Result
30s	No	Do not trigger runbook
60s	Yes	Trigger runbook
90s	Yes	Do not trigger runbook
120s	No	Do not trigger runbook
150s	Yes	Trigger runbook

Published Data

The following table lists the published data items.

Item	Description
Computer	The name of the computer where the drive is being monitored.
Drive	The drive that is being monitored.

Item	Description
Percentage of Space available	The percentage of the entire drive capacity that is available.
MB available	The number of megabytes available on the drive.
GB available	The number of gigabytes available on the drive.
Test interval	The number of seconds between each test of the disk space.

Get Disk Space Status

The Get Disk Space Status activity will retrieve the current amount of available disk space on a UNC path or local disk drive that you specify. This activity can be used to check the space of a destination folder before transferring files to that location.

Configuring the Get Disk Space Status Activity

Before you configure the Get Disk Space Status activity, you need to determine the UNC path or local drive that you want to check.

Use the following information to configure the Get Disk Space Status activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that you are checking. You can also use the ellipsis (...) button to browse for the computer.
Drive	Type the drive path you want to check. To specify a local drive path include the colon and backslash. For example, to specify the Local Disk (C:), type " C:\ ". If you specify a local drive path, the runbook server that runs the runbook will check its local drive. The runbook server that runs this runbook must have the appropriate rights to check the process on the computer on which you are checking the disk space status.

Published Data

The following table lists the published data items.

Item	Description
Drive	The drive that is being monitored.
Percentage of Space available	The percentage of the entire drive capacity that is available.
MB available	The number of megabytes available on the drive.
GB available	The number of gigabytes available on the drive.

Monitor Internet Application

The Monitor Internet Application activity will invoke a runbook when an internet application server becomes unavailable or becomes available. You can monitor a Web, Email (POP3 or SMTP), FTP, or DNS server. You can also configure your external FTP or Web servers to be reachable through the internet and then automatically restart the server if it is found to be unavailable.

Configuring the Monitor Internet Application Activity

Use the following information to configure the Monitor Internet Application activity.



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

General Tab

Settings	Configuration Instructions
Name	Type a descriptive name for the activity.
Description	Type a detailed description of the actions of the activity.
Type	Select the Type that matches the server that you want to monitor. The options include the following: <ul style="list-style-type: none"> • Web (HTTP) • E-mail (SMTP) • E-mail (POP3) • FTP • DNS Configuration instructions for each Details tab

Settings	Configuration Instructions
	Type are listed in the following tables.

Web (HTTP) Details Tab

Settings	Configuration Instructions
URL	Type the URL that will be used to contact the web server.
Port	Select to specify a port to use to connect to the web server. The default port is 80.
Timeout	Type the number of seconds to wait for a response from the web server. If the timeout expires without a response, the server will be considered unavailable.
Test frequency	Specify the amount of time to wait between each connection test to the server.
Check that the page contains this string	Select and type a string to search for when the page is retrieved from the web server. When this option is selected, the server is only considered available if the string can be found on the page that is specified by the URL .
Search is case sensitive	Select to make the string search case sensitive.

Email (SMTP) Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the SMTP server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the SMTP server. The default port is 25.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be considered unavailable.
Test frequency	Specify the amount of time to wait between each connection test to the server.

Settings	Configuration Instructions
Send test email	Select to send a test email using the SMTP server. When this option is selected, the server is only considered available if the email can be sent to the server.
To	Type the address to send the email to.
From	Type the address that the email is being sent from.

Email (POP3) Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the POP3 server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the POP3 server. The default port is 110.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be considered unavailable.
Test frequency	Specify the amount of time to wait between each connection test to the server.
Test connection	Select to use a username and password to test the connection to the POP3 server. When this option is selected, the server is only considered available if the credentials are successfully used to log into the server.
Username	Type the username to use to log into the POP3 server.
Password	Type the password that is associated with the Username that you have specified.

FTP Details Tab

Settings	Configuration Instructions
Computer	Enter the name of the computer where the FTP

Settings	Configuration Instructions
	server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the FTP server. The default port is 21.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be considered unavailable.
Test frequency	Specify the amount of time to wait between each connection test to the server.
Test connection	Select to use a username and password to test the connection to the FTP server. When this option is selected, the server is only considered available if the credentials are successfully used to log into the server.
Username	Type the username to use to log into the FTP server.
Password	Type the password that is associated with the Username that you have specified.

DNS Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the DNS server is located. You can also browse for the computer using the ellipsis (...) button. This field is not required to test the availability of a DNS server.
Port	Select to use the default port of 53 to connect to the DNS server.
Port	Select to specify the port to use to connect to the DNS server.
Test DNS table IP Address	Select to specify a computer name and the IP address that should be associated with that IP address. When this option is selected, the server is only considered available if the IP address is assigned to the computer that you

Settings	Configuration Instructions
	specify.
Test frequency	Specify the amount of time to wait between each connection test to the server.

Advanced Tab

Settings	Configuration Instructions
Trigger if test succeeds	Select to invoke the Monitor Internet Application activity when the server that you are checking becomes available.
Trigger if test fails	Select to invoke the Monitor Internet Application activity when the server that you are checking becomes unavailable.

Published Data

The following table lists the published data items.

Item	Description
Computer	The name of the computer where the Internet application resides.
Port	The port used to communicate with the Internet application.
Protocol	The protocol of the Internet application. For example, HTTP or FTP.
Server Greeting	The greeting message received from the Internet application.
Web page	The HTML of the web page that was retrieved when in Web (HTTP) mode.

Get Internet Application Status

The Get Internet Application Status activity checks the availability of an internet application server. You can check the availability of a Web (HTTP), Email (SMTP), Email (POP3), FTP, DNS, or custom server. You can also configure a server so it is available after a power outage or a restart.

Configuring the Get Internet Application Status Activity

Use the following information to configure the Get Internet Application Status activity.



Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

General Tab

Settings	Configuration Instructions
Name	Type a descriptive name for the activity.
Description	Type a detailed description of the actions of the activity.
Type	Select the Type that matches the server that you want to monitor. The options include the following: <ul style="list-style-type: none">• Web (HTTP)• E-mail (SMTP)• E-mail (POP3)• FTP• DNS• Custom Configuration instructions for each Details tab Type are listed in the following tables.

Web (HTTP) Details Tab

Settings	Configuration Instructions
URL	Type the URL that will be used to contact the web server.
Port	Select to specify a port to use to connect to the web server. The default port is 80.
Timeout	Type the number of seconds to wait for a response from the web server. If the timeout expires without a response, the server will be considered unavailable.
Check that the page contains this string	Select and type a string to search for when the page is retrieved from the web server. When

Settings	Configuration Instructions
	this option is selected, the server is only considered available if the string can be found on the page that is specified by the URL .
Search is case sensitive	Select to make the string search case sensitive.

Email (SMTP) Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the SMTP server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the SMTP server. The default port is 25.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be considered unavailable.
Send test email	Select to send a test email using the SMTP server. When this option is selected, the server is only considered available if the email can be sent to the server.
To	Type the address to send the email to.
From	Type the address that the email is being sent from.

Email (POP3) Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the POP3 server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the POP3 server. The default port is 110.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be

Settings	Configuration Instructions
	considered unavailable.
Test connection	Select to use a username and password to test the connection to the POP3 server. When this option is selected, the server is only considered available if the credentials are successfully used to log into the server.
Username	Type the username to use to log into the POP3 server.
Password	Type the password that is associated with the Username that you have specified.

FTP Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the FTP server is located. You can also browse for the computer using the ellipsis (...) button.
Port	Select to specify a port to use to connect to the FTP server. The default port is 21.
Timeout	Type the number of seconds to wait for a response from the server. If the timeout expires without a response, the server will be considered unavailable.
Test connection	Select to use a username and password to test the connection to the FTP server. When this option is selected, the server is only considered available if the credentials are successfully used to log into the server.
Username	Type the username to use to log into the FTP server.
Password	Type the password that is associated with the Username that you have specified.

DNS Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer where the DNS server is located. You can also browse for the computer using the ellipsis (...) button. This field is not required to test the availability of a DNS server.
Port	Use the default port of 53 to connect to the DNS server.
Port	Select to specify the port to use to connect to the DNS server.
Test DNS table IP address	Select to specify a computer name and the IP address that should be associated with that IP address. When this option is selected, the server is only considered available if the IP address is assigned to the computer that you specify.

Custom Details Tab

Settings	Configuration Instructions
Actions	<p>Click Add or Insert to open the Action Properties dialog box. Configure the rest of the settings described in this table.</p> <p> Tip Click the Up or Down buttons to change the order of the actions. Click Remove to remove an action. Click Edit to edit an action.</p>
Open port	Type the port number and the computer where the Internet application resides.
Send data	Type the data that you will send to the Internet application. To specify a file that contains the data you want to send, click Send data from file .
Receive data	Click Publish as execution data and click the name of the variable where the received data will be saved. Click Save data , specify the File

Settings	Configuration Instructions
	where you want to save the data received from the Internet application. Click the action you want to specify in the If the Destination File Exists box. You can select Create a file with a unique name , Append data to the existing file , or Overwrite the existing file .
Close port	You must configure the Open port action before you can select this action.

You can use a sequence of actions to test a custom Internet application that is not part of the predefined list. You can perform actions such as opening and closing a port as well as communicating with the Internet application by sending and receiving information.

Published Data

The following table lists the published data items.

Item	Description
Computer	The name of the computer where the Internet application resides.
Port	The port used to communicate with the Internet application.
Protocol	The protocol of the Internet application. For example, HTTP or FTP.
Server Greeting	The greeting message received from the Internet application. This published data is only available in FTP, Email (POP3), and Email (SMTP).
Web page	The HTML of the web page that was retrieved when in Web (HTTP) mode.
Receive variable 1	The first variable retrieved when in Custom mode.
Receive variable 2	The second variable retrieved when in Custom mode.
Receive variable 3	The third variable retrieved when in Custom mode.
Receive variable 4	The fourth variable retrieved when in Custom mode.

Item	Description
Receive variable 5	The fifth variable retrieved when in Custom mode.
Receive variable 6	The sixth variable retrieved when in Custom mode.
Receive variable 7	The seventh variable retrieved when in Custom mode.
Receive variable 8	The eighth variable retrieved when in Custom mode.
Receive variable 9	The ninth variable retrieved when in Custom mode.
Receive variable 10	The tenth variable retrieved when in Custom mode.

Monitor WMI

The Monitor WMI activity invokes a runbook when a WMI event is received as a result of the WMI event query that you specify. You can check for changes in devices that are attached to the server and invoke runbooks that take corrective action when errors occur.

Configuring the Monitor WMI Activity

Before you configure the Monitor WMI activity, you need to determine the following:

- The computer that you are monitoring
- The WMI event query that you want to run



Warning

A WMI event query differs from a standard WMI query.

Use the following information to configure the Monitor WMI activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that you are monitoring for new WMI events. You can also use the ellipsis (...) button to browse for the computer.
Namespace	Type the name of the WMI namespace that you want to query.
WMI query	Type the WMI event query that will be used to

Settings	Configuration Instructions
	query the computer that you specified in the Computer box.

Syntax Examples

Here is the syntax of a simple notification query: `SELECT * FROM [EventClass] WITHIN [interval] WHERE TargetInstance ISA [object]`

When you submit this WMI query, you are submitting a job to be notified of all occurrences of the event represented by [EventClass]. The WITHIN clause denotes how the test is performed, which is at an interval of seconds denoted by [interval]. The WHERE clause is used to narrow down your query and can include activities, properties of embedded activities and condition statements.

Monitor for the Addition of a Modem: The following query submits a notification job to monitor for the addition of a modem and will cause the WMI event to invoke if a modem is added. The test is performed at an interval of every 10 seconds. `SELECT * FROM __InstanceCreationEvent WITHIN 10 WHERE TargetInstance ISA "Win32_POTSModem"`

Monitor for the Deletion of a Modem: The following query submits a notification job to monitor for the deletion of a modem and will cause the WMI event to invoke if a modem is deleted. The test is performed at an interval of every 50 seconds. `SELECT * FROM __InstanceDeletionEvent WITHIN 50 WHERE TargetInstance ISA "Win32_POTSModem"`

Monitor for the Modification of a Display Configuration: The following query submits a notification job to monitor for the modification of a display configuration and will cause the WMI event to invoke if the display frequency is greater than 70. The test is performed at an interval of every 20 seconds. `SELECT * FROM __InstanceModificationEvent WITHIN 20 WHERE TargetInstance ISA "Win32_DisplayConfiguration" AND TargetInstance.DisplayFrequency > 70`

Monitor for a Modification in a Processor value: The following query submits a notification job to monitor for a modification in a Processor value and will cause the WMI event to invoke if the CPU utilization is greater than 50. The test is performed at an interval of every 5 seconds. `SELECT * FROM __InstanceModificationEvent WITHIN 5 WHERE TargetInstance ISA "Win32_Processor" AND TargetInstance.LoadPercentage > 50`



Tip

A query can be rejected by WMI if it is too complex or becomes resource-intensive for evaluation.

Published Data

The following table lists the published data items.

Item	Description
Computer where the WMI query is performed	The name of the computer where the WMI query was ran.
WMI Query	The WMI query that was sent to the computer.

Item	Description
WMI Query Result as a string	The result of the WMI query.
WMI Namespace	The WMI namespace that you queried.

File Management

The following table provides a brief description of tasks you can accomplish when using each File Management activity.

Tasks	File Management Activities
Compress files into zip archives.	Compress File
Copy files from one directory to another.	Copy File
Create new folders.	Create Folder
Decompress files contained in a zip archive file.	Decompress File
Delete files.	Delete File
Delete a folder, sub-folder, or the entire folder tree of a directory.	Delete Folder
Verify that a file exists.	Get File Status
Invoke a runbook when files in folders and sub-folder change.	Monitor File
Invoke a runbook when a folder or files within a folder change.	Monitor Folder
Move a file from one directory to another.	Move File
Move a folder and its sub-folders from one directory to another.	Move Folder
Decrypt a file or an entire folder tree.	PGP Decrypt File
Encrypt a file or an entire folder tree.	PGP Encrypt File
Print text files.	Print File
Rename files.	Rename File



Caution

If permissions on the Orchestrator installation path are changed and the activity's Security Credentials has a custom user account that does not include **Read/Execute** permissions to **ExecutionData.dll** on the Runbook server, the activity will fail.

Compress File

The Compress File activity compresses files into zip archives. You can use the Compress File activity to archive log files before storage or before sending them to another location using FTP or email.

Configuring the Compress File Activity

Before you configure the Compress File activity, you need to know which files you will compress. Use the following information to configure the Compress File activity.

Details Tab

Settings	Configuration Instructions
Folder	Type the path to the file, or to the folder that contains the files, that you want to compress, or click the ellipsis (...) button and browse for the files. You can use wildcards in filenames. You cannot browse for the folder name; you must type in the full folder name and location and include a trailing slash.
Include files in sub-folders	Select this option to include any files that are found within sub-folders of the folder that you specified.
File	Type the path and filename of the archive that you are creating. This field will only accept characters from the current system locale. If you use other characters, the activity will fail.
Store relative path in archive	Select this option to store the files within the same sub-folders that they were found in. When this option is unselected, the files will be added to the archive with the full path. For example: Selected: ..\subfolder1\file.txt, and ..\subfolder1\subfolder2\file.txt Unselected: C:\files\subfolder1\file.txt, and C:\files\subfolder1\subfolder2\file.txt
If the destination archive already exists	Select the action that you want to take if a file with the same name as the archive being

Settings	Configuration Instructions
	<p>created already exists in the destination folder:</p> <p>Add files to the existing archive: Select this option to add the files that you specified to the existing archive.</p> <p>Overwrite the existing archive: Select this option to overwrite the existing file with the archive that you are creating.</p> <p>Fail if the archive exists: Select this option to cause the Compress File activity to fail if the filename already exists.</p> <p>Create a unique named archive: Select this option to append a value to the filename to create a unique filename that does not conflict with the existing filename.</p>
Compression level	<p>Select the level of compression that you want to use to compress the files into the archive. You can select one of the following levels.</p> <ul style="list-style-type: none"> • None • Low • Medium • High <p>Higher compression levels take more time to complete but usually result in smaller files. Lower compression levels create larger archives, but take less time to complete.</p>

Published Data

The following table lists the published data items.

Item	Description
Archive name and path	The name and path of the archive file that was created.
Number of files within archive	The number of files inside the archive file.
Size of archive	The size of the archive file.

Copy File

The Copy File activity copies a file from one directory to another. You can also copy files to network shares that are available using UNC paths. Use the Copy File activity to copy important files that have been created or modified in a folder that is being monitored by the Monitor Folder activity to a backup location.

Configuring the Copy File Activity

Before you configure the Copy File activity, you need to know which files you are copying and the destination path where you will put the copies.

Use the following information to configure the Copy File activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to copy. You can use the * and ? wildcards to specify the file name or path. These wildcards behave the same way as in the Windows Command Prompt.
Include sub-folders	Select this option to copy any files within the sub-folders of the path you have specified that match the filename that you have specified.
Folder	Type the path of the folder where you want the files to be copied to.
If the destination exists	Select the action that you want to take if a file with the same name already exists in the destination folder: Overwrite: Select this option to overwrite the existing file with the file that is being copied. Fail: Select this option to cause the Copy File activity to fail if the filename already exists. Create a file with a unique name: Select this option to append a value to the filename to create a unique name that does not conflict with an existing name.

Advanced Tab

Settings	Configuration Instructions
File age	Specify Is less than or Is more than to copy

Settings	Configuration Instructions
	the files that are older or newer, respectively, than the number of days that you specify.
days	Enter the number of days that you will use with the File age measure.
Date of transfer	Set the date of the file at the destination to the date when it was copied to the folder.
Same as original	Set the date of the file at the destination to the date of the original file.

Published Data

The following table lists the published data items.

Item	Description
Origin folder	The path of the base folder where the file was copied from.
Destination folder	The destination folder where the file was copied to.
Total number of files to be transferred	The number of files that matched the criteria that you specified.
Number of successful file operations	The number of files that were successfully copied.
Number of failed file operations	The number of files that failed to copy.
File operation status	Determines whether the copy succeeded or failed.
File path	The path of the file that was copied.
File name	The name of the file that was copied.
Name and path of the file relative to the origin folder	The relative path of the file starting from the origin folder.
If destination exists	The option that was selected to handle the operation if the destination file already exists.
File age date options	The option that was selected to evaluate the file age.
File age days	The number of days that was provided to evaluate the file age.

Item	Description
Modified date option	The option that was selected for the date to be assigned to the destination file.
Name and path of the destination file	The name and path that the file was copied to.
Name and path of the origin file	The name and path that the file was copied from.
Include sub-folders	Indicates whether the Include sub-folders check box was selected.
Origin folder	The path of the base folder where the file was copied from.
Destination folder	The destination folder where the file was copied to.
Total number of files to be transferred	The number of files that matched the criteria that you specified.
Number of successful file operations	The number of files that were successfully copied.
Number of failed file operations	The number of files that failed to copy.
File operation status	Determines whether the copy succeeded or failed.
File path	The path of the file that was copied.
File name	The name of the file that was copied.
Name and path of the file relative to the origin folder	The relative path of the file starting from the origin folder.
If destination exists	The option that was selected to handle the operation if the destination file already exists.
File age date options	The option that was selected to evaluate the file age.
File age days	The number of days that was provided to evaluate the file age.
Modified date option	The option that was selected for the date to be assigned to the destination file.
Name and path of the destination file	The name and path that the file was copied to.
Name and path of the origin file	The name and path that the file was copied

Item	Description
	from.
Include sub-folders	Indicates whether the Include sub-folders check box was selected.

Create Folder

The Create Folder activity creates a new folder on the local file system or a network location specified using a UNC path. Use the Create Folder activity to create folders dynamically with names that represent the context in which they were created. For example, on August 25 you can create "**C:\backupfolderAug25**".

Configuring the Create Folder Activity

Before you configure the Create Folder activity, you need to know the name of the folder that you are creating.

Use the following information to configure the Create Folder activity.

Published Data

The following table lists the published data items.

Item	Description
Folder path	The path of the folder that was created.

Decompress File

The Decompress File activity decompresses the files contained in a zip archive file. You can extract files from zip archives that are downloaded using email or FTP.

Configuring the Decompress File Activity

Before you configure the Decompress File activity, you need to determine the following:

- The archive file name that you want to decompress.
- The files names within the archive that you want to extract.

Use the following information to configure the Decompress File activity.

Details Tab

Settings	Configuration Instructions
File	Type the path of the archive file that you want to extract files from.
Files to extract	Type the name of the file that you want to

Settings	Configuration Instructions
	extract. You can use the * and ? wildcards to specify the file name. These wildcards behave in the same way as in the Windows Command Prompt.
Folder	Type the folder name to which the files will be extracted, or click the ellipsis (...) button and browse for it.
Reproduce tree	Select this option to extract the files to the same relative paths that they were saved in. To use this feature, the relative paths must have been stored in the zip archive when it was created.
If the destination file exists	<p>Select the action that you want to take if a file with the same name as the file being extracted exists in the destination folder:</p> <p>Create a file with a unique name: Select this option to append a value to the filename to create a unique filename that does not conflict with an existing filename.</p> <p>Overwrite: Select this option to overwrite the existing file with the file that you are extracting.</p> <p>Fail: Select this option to cause the Decompress File activity to fail if the file name already exists.</p>

Published Data

The following table lists published data items.

Item	Description
Archive name and path	The name of the archive file that was decompressed.
Number of files within archive	The total number of files that are inside the archive file.
Size of archive	The size of the archive file.
Size of the decompressed files	The total size of the files decompressed.

Delete File

The Delete File activity deletes files from the local file system or from a network location specified using a UNC path. You can purge a folder that contains old log files.

Configuring the Delete File Activity

Before you configure the Delete File activity, you need to know which files you are deleting.

Use the following information to configure the Delete File activity.

Details Tab

Settings	Configuration Instructions
Path	Type the path and name of the file that you want to delete. You can use the * and ? wildcards to specify the file name. These wildcards behave in the same way as the Windows Command Prompt.
Delete files from sub-folders	Select this option to delete any files within the sub-folders of the path you have specified that match the file name that you have specified.
File age	Select the Is less than or Is more than option from the drop-down list to delete the files that are older or newer, respectively, than the number of days that you specify.
days	Type the number of days that you will use with the file age measure.

Published Data

The following table lists the published data items.

Item	Description
File age days	The number of days that was provided to evaluate the file age.
File age option	The option that was selected to evaluate the file age.
Name and path of the file	The name and path of the file that was deleted.
File name	The name of the file that was deleted.
Name and path of the file relative to the origin folder	The relative path of the file starting from the origin folder.

Item	Description
File operation status	Determines whether the delete operation succeeded or failed.
Origin folder	The path of the base folder where the file was deleted from.
Number of failed file operations	The number of files that were not deleted.
Number of successful file operations	The number of files that were successfully deleted.
Total number of files	The number of files that matched the file that you specified.
File path	The path of the file that was deleted.
Delete files from sub-folders	Indicates whether the Delete files from sub-folders check box was selected.

Delete Folder

The Delete Folder activity deletes a folder, sub-folders, or the entire folder tree of a directory on the local file system or a network location specified using a UNC path. You can delete temporary folders that were created when a runbook runs or you can use this activity to purge data that has been recently archived.

Configuring the Delete Folder Activity

Before you configure the Delete Folder activity, you need to determine the following:

- The folder name you are targeting.
- Whether you are going to delete the entire tree; delete the sub-folders only; or delete just the directory.

Use the following information to configure the Delete Folder activity.

Details Tab

Settings	Configuration Instructions
Path	Type the path of the folder that you are targeting.
Delete the folder only if it is empty	Select this option to delete the folder only if there are no files or sub-folders in it.
Delete all files and sub-folders	Select this option to delete the specified folder and all sub-folders and files contained in that folder.

Published Data

The following table lists the published data items.

Item	Description
Folder path	The path of the folder that was deleted.
Folder pattern to match	The pattern used to find the sub-folder that was deleted.
Base Folder to start deletion from	The Path that was specified on the Details tab.
Delete folder options	The option that you selected for the delete folder operation.
Name and path of the folder	The name and path of the folder that was deleted.

Get File Status

The Get File Status activity verifies that a file exists on the local file system or a network location using a UNC path. You can check that a file is available before copying to another location or before starting any services that depend on the existence of the file. If the file does not exist, you can take corrective action using the [Copy File](#) activity to copy the file from another location.

Configuring the Get File Status Activity

Before you configure the Get File Status activity, you need to determine the file name and path name you are checking.

Use the following information to configure the Get File Status activity.

Details Tab

Settings	Configuration Instructions
File	Type the name and path of the file that you are checking the status of, or click the ellipsis (...) button and browse for it.
Include sub-folders	Select this option to copy any files within the sub-folders of the path you have specified that match the filename that you have specified.
File age	Select Is less than or Is more than to specify the files that are older or newer, respectively, than the number of days that you specify.
days	Type the number of days that you will use with

Settings	Configuration Instructions
	the File age measure.

Published Data

The following table lists the published data items.

Item	Description
Date and time the file was created	The local date and time on which the file was created.
UTC date and time the file was created	The UTC date and time on which the file was created.
File age days	The number of days that was provided to evaluate the file age.
Modified date option	The option that was selected to search for files according to a date range.
File exists	Indicates whether the file exists or not.
File name extension	The extension, or file type, of the file.
File folder	The folder that the file was found in.
File name	The name of the file.
File owner	The name of the owner of the file.
File size (bytes)	The size of the file in bytes.
Name and path of the origin file	The file name and path that was provided.
Last accessed date and time	The date and time on which the file was created in localized format.
Last accessed UTC date and time	The date and time on which the file was created in UTC format.
Last modified date and time	The date and time on which the file was created in localized format.
Last modified UTC date and time	The date and time on which the file was created in UTC format.
Include sub-folders	Indicates whether the Include sub-folders check box was selected.
File path	The source file name and path.

Item	Description
Encoding type (text files only)	The file encoding format used by the file, if the file is a text file.

Monitor File

The Monitor File activity invokes a runbook when files that you specify in folders and sub-folders have changed. You can monitor a file that indicates the completion of a transaction. For example, there are nightly transfers sent to your runbook server, and when the transfer is complete a file with the name "Complete" is written to the folder. This activity can automatically invoke a runbook that processes all the files in the folder when the "Complete" file is created.

Configuring the Monitor File Activity

Use the following information to configure the Monitor File activity.

Details Tab

Settings	Configuration Instructions
In folder	Type the path to the file that you are monitoring, or use the ellipsis (...) button to browse for it.
Include sub-folders	Select this option to copy any files within the sub-folders of the path you have specified that match the filename that you have specified.
Filters	<p>Create filters with custom criteria for the files that you want to monitor. Perform the following for each filter that you want to create:</p>  <ol style="list-style-type: none"> 1. Click Add to open the Filter Settings dialog box. 2. From the Name drop-down list, select the criteria that you want to use. The Relation and Value menu options present custom options according to the criteria that you select from the Name list. 3. Select options from the Relation and Value items. 4. Click OK.

Triggers Tab

Settings	Configuration Instructions
Trigger if one of the files was	Select a condition to invoke the activity if the condition in the monitored file is true.
Trigger if file properties changed	Select a condition to invoke the activity if the condition in the monitored file is true.

Authentication Tab

Settings	Configuration Instructions
User name	Type the user name required to access the folder if it is on a remote computer.
Password	Type the password required to access the folder if it is on a remote computer.

Published Data

The following table lists the published data items.

Item	Description
Change type	The type of changed that was detected on the file.
Name and path of the file	The name and path of the file that was monitored.
Include sub-folders	Indicates that the Include sub-folders check box was selected.
Notify if changed	Indicates that the Changed check box was selected.
Notify if created	Indicates that the Created check box was selected.
Notify if deleted	Indicates that the Deleted check box was selected.
Notify if renamed	Indicates that the Renamed check box was selected.
Origin Folder	The folder that the monitored file was stored in.
Notify if file attributes changed	Indicates that the Attributes check box was selected.

Item	Description
Notify if file creation time changed	Indicates that the Creation time check box was selected.
Notify if file last access time changed	Indicates that the Last access time check box was selected.
Notify if file last write time changed	Indicates that the Last write time check box was selected.
Notify if file security changed	Indicates that the Security check box was selected.
User name	The user name used to access the folder if it was on a remote computer.

Monitor Folder

The Monitor Folder activity invokes a runbook when the folder that you specified has changed, or if the files within that folder have been changed. You can monitor the size of log files in a folder. If the files grow too large, the Monitor Folder activity can invoke a runbook that will archive, backup, and then purge the log files to clean up the folder.

Configuring the Monitor Folder Activity

Before you configure the Monitor Folder activity, you need to determine the following:

- The folder name you are monitoring.
- What condition invokes the runbooks.
- Optionally, you may need to know what file types you want to monitor.

Use the following information to configure the Monitor Folder activity.

Details Tab

Settings	Configuration Instructions
Path	Type the path to the folder that you are monitoring. You can use the ellipsis (...) button to browse for the folder.
Include sub-folders	Select this option to monitor the files and folders in sub-folders in the Folder that you specified.
File Filters	Create filters with custom criteria for the files that you want to monitor. Perform the following for each filter that you want to create:

Settings	Configuration Instructions
	 <ol style="list-style-type: none"> 1. Click Add to open the Filter Settings dialog box. 2. From the Name menu list, select the criteria that you want to use. The Relation and Value menu options present custom options according to the criteria that you select from the Name menu items. 3. Select from the Relation and Value menu items. 4. Click OK.

Triggers Tab

Settings	Configuration Instructions
Number of files is	Select this option to invoke the Monitor Folder activity if the number of files is greater than, equal to, or less than the value that you provide. Select the criteria from the drop-down list and type the value in the field.
Total file size is	Select this option to invoke the Monitor Folder activity if the total file size of the folder is greater than or less than the value that you provide. Select the criteria from the first drop-down list, type the value in the field, and select the unit of measure from the last drop-down list.

Authentication Tab

Settings	Configuration Instructions
User name	Type the user name required to access the folder if it is on a remote computer.
Password	Type the password required to access the folder if it is on a remote computer.

Published Data

The following table lists the published data items.

Item	Description
Include sub-folders	Indicates that the Include sub-folders check box was selected.
Trigger if number of files changed	Indicates that the Number of files is check box was selected.
Trigger if total file size changed	Indicates that the Total file size is check box was selected.
Number of files	The number of files given to evaluate the Number of files is option.
Number of files relation	The relation that was used to evaluate the Number of files is option.
Number of files limit	
Origin Folder	The folder that was monitored.
Total file size measure	The unit of measure selected to evaluate the Total file size is option.
Total file size relation	The relation that was used to evaluate the Total file size is option.
Total file size limit	
Total file size number	The number given to evaluate the Total file size is option.
User name	The user name used to access the folder if it was on a remote computer.

Move File

The Move File activity moves a file from one directory to another. You can move files to network shares that are available using UNC paths. You can also move files from a local or publicly available network folder, such as an FTP location, to an internal folder.

Configuring the Move File Activity

Before you configure the Move File activity, you need to determine the following:

- The files you are moving.
- The destination path where you will move the files.

Use the following information to configure the Move File activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to move. You can use the * and ? wildcards to specify the filename and path. These wildcards behave the same way as in the Windows Command Prompt.
Include sub-folders	Select this option to move any files within the sub-folders of the path you have specified that match the filename that you have specified.
Folder	Type the path of the folder where you want the files to be moved to.
If the destination exists	Select the action that you want to take if a file with the same name already exists in the destination folder: Overwrite: Select this option to overwrite the existing file with the file that is being moved. Fail: Select this option to cause the Move File activity to fail if the filename already exists. Create a file with a unique name: Select this option to append a value to the filename to create a unique name that does not conflict with an existing name.

Advanced Tab

Settings	Configuration Instructions
File age	Select Is less than or Is more than from the drop-down list to move the files that are older or newer, respectively, than the number of days that you specify.
days	Enter the number of days that you will use with the File age measure.
Date of transfer	Set the file date at the destination to the date when it was copied to the folder.
Same as original	Set the date of the file at the destination to the date of the original file.

Published Data

The following table lists the published data items.

Item	Description
Origin folder	The path of the base folder where the file was moved from.
Destination folder	The destination folder where the file was moved to.
Total number of files to be transferred	The number of files that matched the file that you specified.
Number of successful file operations	The number of files that were successfully moved.
Number of failed file operations	The number of files that failed to move.
File operation status	Determines whether the move operation succeeded or failed.
File path	The path of the file that was moved.
File name	The name of the file that was moved.
Name and path of the file relative to the origin folder	The relative path of the file starting from the origin folder.
If destination exists	The option that was selected to handle the operation if the destination file already exists.
File age date option	The option that was selected to evaluate the file age.
File age days	The number of days that was provided to evaluate the file age.
Modified date option	The option that was selected for the date to be assigned to the destination file.
Name and path of the destination file	The name and path that the file was moved to.
Name and path of the origin file	The name and path that the file was moved from.
Include sub-folders	Indicates whether the Include sub-folders check box was selected.

Move Folder

The Move Folder activity moves a folder and its sub-folders from one directory to another. You can also move folders to network shares that are available using UNC paths. In addition, you can take files from a local or network folder that are made publicly available as an FTP location and move them to an internal folder.

Configuring the Move Folder Activity

Use the following information to configure the Move Folder activity.

Details Tab

Settings	Configuration Instructions
Source	Type the path of the folder that you want to move, or click the ellipsis (...) button to browse for it. The Move Folder activity does not support the * and ? wildcards.
Destination	Type the path and name that you want to move the folder to, or click the ellipsis (...) button to browse for it.

Published Data

The following table lists the published data items.

Item	Description
Origin name of the folder	The path of the original folder that was moved.
Destination name of the folder	The destination folder where the folder was moved to.
New folder path	The new path of the folder that was moved.

PGP Decrypt File

The PGP Decrypt File activity decrypts a file or entire folder tree using a PGP key file and passphrase that you have created. When decrypting an entire folder, the folder tree is preserved from the root folder down. For example, if you decrypt C:\Documents and Settings\Administrator\My Documents*. * and all subfolders, all files in My Documents are decrypted as well as all the files in the folders under My Documents. All files in subfolders will be in the same subfolder in the Output folder.

You can use the PGP Decrypt File activity to decrypt files that were encrypted as part of a backup operation. To use this activity you must install the Gpg executable. To install the Gpg executable, see [Install GnuPG](http://go.microsoft.com/fwlink/?LinkId=219849) (<http://go.microsoft.com/fwlink/?LinkId=219849>).

Configuring the PGP Decrypt Activity

Use the following information to configure the PGP Decrypt File activity.

Details Tab

Settings	Configuration Instructions
Path	Type the path of the files that you want to decrypt. You can use wildcards ? and * to specify the files that you are decrypting. This field will only accept characters from the current system locale. If you use other characters, the activity will fail.
Include sub-directories	Select this option to find all files that match the file name that you specified in all sub-directories under the folder that you specified in the path.
Output folder	Type the path of the folder where you want the decrypted files to be stored.
Skip	Select this option to skip decrypting a file when a file with the same name is found in the Output folder .
Overwrite	Select this option to overwrite any files with the same name as a resulting decrypted file.
Create unique name	Select this option to give the decrypted file a unique name if a file with the same name already exists.

Advanced Tab

Settings	Configuration Instructions
Keyring folder	Type the location of the keyring folder that contains the secret keyring file that you will use to decrypt the files. The secret keyring file (*.skr) may be renamed with a *.gpg extension.
Passphrase	Type the passphrase that is associated with the keyring file.

Published Data

The following table lists the published data items.

Item	Description
Keyring folder	The path of Keyring folder that contains the key used to decrypt the files.
Output folder	The path of the folder where the decrypted files were saved.
Files to decrypt	The number of files that Orchestrator attempted to decrypt.
Files decrypted	The number of files that were successfully decrypted.
Decrypted filename	The path and filename of the resulting decrypted file.

PGP Encrypt File

The PGP Encrypt File activity encrypts a file or an entire folder tree using a PGP key file that you have created. When encrypting an entire folder, the folder tree is preserved from the root folder down. For example, if you encrypt C:\Documents and Settings\Administrator\My Documents*. * and all subfolders, all files in My Documents are encrypted as well as all files in folders under My Documents. All files that are in subfolders will be in the same subfolder in the Output folder. Use the PGP Encrypt File activity to encrypt files before backing them up.

To use this activity you must install the Gpg executable. To install the Gpg executable, see [Install GnuPG](#).



Important

This activity supports DSS and RSA4 keys.

RSA keys are not supported by this activity.

Configuring the PGP Encrypt File Activity

Before you configure the PGP Encrypt File activity, you need to determine the following:

- The path of the files that you want to encrypt.
- The output folder where the encrypted files will be stored.

Use the following information to configure the PGP Encrypt File activity.

Details

Settings	Configuration Instructions
Path	Type the path of the files that you want to encrypt. You must use the full path name. You can use wildcards ? and * to specify the files that you want to encrypt. This field only accepts

Settings	Configuration Instructions
	characters from the current system locale.
Include sub-directories	Select this option to find all the files that match the filename that you specified in all the subfolders of the folder that you specified in the path.
Output folder	Type the path of the folder where you want the encrypted files to be stored.
Skip	Select this option to skip encrypting a file when a file with the same name is found in the Output folder.
Overwrite	Select this option to overwrite any files with same name as the resulting encrypted file.
Create unique name	Select this option to give the encrypted file a unique name if a file with the same name already exists.
File extension	Type the file name extension that you want to appended to the file name when it is encrypted. The default extension is gpg.

Advanced

Settings	Configuration Instructions
Key file	Type the location of the PGP key file that you will use to encrypt the files. If you leave this field blank, the PGP Encrypt File activity uses the file that you specify in the Keyring folder field. Files can have any file name extension, but *.asc is the standard.
Keyring folder	Type the location of the folder that contains the keyring that you will use to encrypt the files. The public keyring file (*.pkr) may be renamed with a *.gpg file name extension.  Important The PGP Encrypt File activity creates files in the keyring folder. The Orchestrator Runbook Service account, or the user account used to run the

Settings	Configuration Instructions
	runbook, requires read and write permissions on the keyring folder.
User	Type the user name that was specified when the encryption key was created. This is a required field.
Comment	Type the comment that was specified when the encryption key was created. If this field was completed when the encryption key was created, you must provide this information when using this activity.
Email	Type the email address that was specified when the encryption key was created. This is a required field.

Published Data

The following table lists the published data items.

Item	Description
Key file	The path of the key file used to encrypt the files.
Keyring folder	The path of keyring folder that contains the key used to encrypt the files.
User	The name of the user that was used to encrypt the files.
Comment	The comment that was used to encrypt the files.
Email	The email address that was used to encrypt the files.
Output folder	The path of the folder where the encrypted files were saved.
Files to encrypt	The number of files that Orchestrator attempted to encrypt.
Files encrypted	The number of files that successfully encrypted.
Encrypted filename	The path of the resulting encrypted file.

Print File

The Print File activity prints text files to a printer that you specify. You can use this activity to print log files for paper filing before the data is moved or deleted from a server.

Configuring the Print File Activity

Before you configure the Print File activity, you need to determine the following:

- File name you are printing.
- Printer name

Use the following information to configure the Print File activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to print.
Printer	Type the path of the printer that will print the file.
Age	Specify is less than or is more than to print the files that are older or newer, respectively, than the number of days that you specify.
days	Enter the number of days that you will use with the Age measure.

Published Data

The following table lists the published data items.

Item	Description
Origin folder	The path of the base folder where the file was printed from.
Number of successful file operations	The number of files that were successfully printed.
Number of failed file operations	The number of files that failed to print.
For each file:	
Name and path of the file	The path of the file that was printed.
Name of the printer	The printer that was used to print the file.

Rename File

The Rename File activity renames files on the local file system or on a network location specified using a UNC path. You can automatically rename files to a standard format according to your data center procedures.

Configuring the Rename File Activity

Before you configure the Rename File activity, you need to determine the following:

- The original file name you are renaming.
- The new name of the file

Use the following information to configure the Rename File activity.

Details Tab

Settings	Configuration Instructions
Folder	Type the path of the folder that contains the files that you want to rename.
Include sub-folders	Select this option to rename any files in the subfolders of the folder that you specified that match the file names that you want to rename.
Destination	This list displays all the file names that will be renamed when this activity runs. To add a filename, click Add to open the Rename Properties dialog box, and specify the Old name and then specify the file New name . To edit the list of file names, click Edit . To remove file names, click Remove .

Advanced Tab

Settings	Configuration Instructions
File age	Specify Is less than or Is more than to rename the files that are older or newer, respectively, than the number of days that you specify.
days	Type the number of days that you will use with the File age measure.
Date of rename	Select this option to set the date of the file at the destination to the date when it was renamed.

Settings	Configuration Instructions
Same as original	Select this option to set the date of the file at the destination to the date of the original file.
Destination already exists	Select the action that you want to take if a file with the same name already exists in the folder: Overwrite: Select this option to overwrite the existing file with the file that is being renamed. Fail: Select this option to cause the Rename File activity to fail if the filename already exists. Create a file with a unique name: Select this option to append a value to the filename to create a unique name that does not conflict with an existing name.

Published Data

The following table lists the published data items.

Item	Description
File path	The path of the file that was renamed.
Include sub-folders	Indicates whether this option was selected.
Destination folder	The destination folder of the file that was renamed.
If destination exists	The option that was selected for handling the filename if the file existed in the destination folder.
Modified date option	The option that was selected for assigning a modified date to the file in the destination folder.
File age days	The number of days used in the File age filter.
Destination date	The option that was selected for assigning a destination date to the file in the destination folder.
Total number of files to be renamed	The number of files that were renamed by the operation.
Number of successful file operations	The number of successful operations that occurred.

Item	Description
Number of failed file operations	The number of failed operations that occurred.
Origin folder	The folder where the file originated from.
Name and path of the destination file	The name and path of the destination file.
File name	The filename of the origin file.
Name and path of the file relative to the origin folder	The relative path of the file, relative to the origin folder.
Name and path of the origin file	The name and path of the origin file.
File operation status	The status of the rename operation.
Pattern that matched file	The pattern that the user entered that matched the file or files that were found.
Pattern file renamed to	The pattern that the file or files were renamed.

Email

The following table provides a brief description of tasks you can accomplish when using an Email activity.

Tasks	Email Activities
Send an email message.	Send Email

Send Email

The Send Email activity sends an email message using the standard SMTP protocol or an Exchange server. You can use this activity to notify an administrator of problems that have occurred with a system.

Important

If you put more than 1 MB of text directly into the message body, the activity can fail during initialization. To avoid this issue, enter no more than 1 MB of text directly into the message body or save the text to a file, and provide the file name as the message you want to send.

Configuring the Send Email Activity

Before you configure the Send Email activity, you will need to determine the following:

- Your SMTP server information
- The recipient who will receive the email message.
- The email message you want to send.

Use the following information to configure the Send Email activity.

Details

Settings	Configuration Instructions
Subject	Type the subject of the email.
Recipients	<p>The list displays the email addresses that the email will be sent to. To add a recipient, click Add to open the Recipients Properties dialog box, specify the Email address and from the Recipient type box, select To, Cc, or Bcc, and then click OK.</p> <p>To remove a recipient, select the recipient in the Recipients and click Remove. To edit a recipient, double-click the recipient in the Recipients box.</p>
Message	<p>Select how you want the message to be entered for this email:</p> <p>Text: Type the message body. To use HTML formatting, you will need to select HTML as the Format on the Advanced tab.</p> <p>File: Type the name of the file that contains the message body. To browse for the file name, click the ellipsis (...) button next to the Message box.</p>
Attachments	<p>The list displays the attachments that will be sent with the email. To add an attachment, click Add to open the Attachment Properties dialog box, specify the path of the attachment or click the ellipsis (...) button next to the File box, and then click OK.</p> <p>To remove an attachment, select the attachment in the Attachments box, and click Remove. To edit an attachment, double-click the attachment in the Attachments box.</p>
Task fails if an attachment is missing	Select this box to cause the Send Email activity to fail if any of the attachments cannot be found

Settings	Configuration Instructions
	when the email is being sent.

Advanced

Settings	Configuration Instructions
Priority	Select the priority of the email from the drop-down list. You can select Normal , Low , or High .
Format	Select the format that will be used for the message body. You can select Rich Text , ASCII , or HTML .  Note Some SPAM filters may not allow Rich Text or HTML email.
User Id	If your SMTP server requires authentication, you will need to type the user ID that will be used to send the email.
Password	The password that is associated with the User ID.
Domain	The domain associated with the User ID.

Connect

Settings	Configuration Instructions
Email address	Type the email address that will be inserted into the From: field of the email.
Computer	Type the name of the SMTP server. You can also use the ellipsis (...) button to browse for the server.
Port	Select to change the port that will be used to connect to the SMTP server. The default port is 25.
Enable SSL	Select to indicate that the SMTP connection requires SSL.

Published Data

The following table lists the published data items.

Item	Description
Subject of the email	The subject of the email that was sent.
The email message Recipient	The address of the recipient of the email.
Body of the email message	The body of the email.
Name and path of the attached file	The full path of the file that was attached.
Email account	The SMTP account that was used to send the email.
Outgoing mail server (SMTP)	The name of the SMTP server used to send the email.
Outgoing mail server port number	The port used to communicate with the SMTP server.
Outgoing mail server SSL enabled	Indicates whether the mail server has SSL enabled.

Notification

The following table provides a brief description of tasks you can accomplish when using each Notification activity.

Tasks	Notification Activities
Create an entry in the Application Windows Event Log.	Send Event Log Message
Create a message on the Syslog server.	Send Syslog Message
Create an entry in the Application Windows Event Log.	Send Platform Event

Send Event Log Message

The Send Event Log Message activity creates an entry in the Windows Event Log within the Application folder. This activity can be used to create audit logs in the Windows Event Log that document any problems that occur while trying to correct issues by using an automated runbook.

Configuring the Send Event Log Message Activity

Before you configure the Send Event Log Message activity, you will need to determine the following:

- The event message you are creating.
- The severity of the event

Use the following information to configure the Send Event Log Message activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that contains the Windows Event Log that you are writing to. You can also use the ellipsis (...) button to browse for the computer.
Message	Type the message text of the event log entry.
Severity	Select the severity level that is appropriate for this event. You can select Information , Warning , or Error .

Published Data

The following table lists the published data items.

Item	Description
Computer	The computer where the event log message was created.
Log entry description	The description of the event log message.

Send Syslog Message

The Send Syslog Message activity creates a message on the Syslog server that you specify. You can use this activity to create audit logs on the Syslog server that document any problems that occur while trying to correct issues using an automated runbook.

Configuring the Send Syslog Message Activity

Use the following information to configure the Send Syslog Message activity.

Details Tab

Settings	Configuration Instructions
Computer	Type the name of the computer that contains the Syslog server that you are writing the message to. You can also use the ellipsis (...) button to browse for the computer.
Text	Type the message of the event log entry.
Priority	Select the priority from the drop-down menu that is appropriate for this message.
Facility	Select the facility from the drop-down menu that is appropriate for this message.

Published Data

The following table lists the published data items.

Item	Description
Computer	The computer where the Syslog server is located.
Priority	The priority of the message.
Facility	The facility that the message belongs to.
Message	The text of the message.

Send Platform Event

The Send Platform Event activity creates an activity event with text that you specify. You can use the Send Platform Event activity to create notifications of any problems or general information that occur in the runbook.

For more information about activity events, see **Activity Events**.

Activity Properties

Details Tab

Settings	Configuration Instructions
Type	Type of event to create. You can select from the following values: <ul style="list-style-type: none">• Information• Warning

Settings	Configuration Instructions
	<ul style="list-style-type: none"> Error
Summary	Summary of the event that displays in the list in the Events tab of the Runbook Designer. This has a limit of 200 characters.
Details	Details of the event that displays when the event is opened. This has a limit of 2,000 characters.



Warning

The Runbook Designer does not warn you when you configure this activity and you exceed the limits for the **Summary** or **Details** settings . If you exceed these limits, the Runbook Designer does not allow you to check-in the runbook and a generic error is shown. The runbook server generates an error if it attempts to process data that exceeds these limits.

Published Data

Item	Description
Type	The type of event that was generated.
Summary	The summary text of the event.
Details	The detailed description of the event.

Utilities

The following table provides a brief description of tasks you can accomplish when using each Utilities activity.

Tasks	Utilities Activities
Transform XML files.	Apply XSLT
Perform an XPath query on an XML file.	Query XML
Transform existing published data or variable items into new content.	Map Published Data
Compare two text values or two numerical values and determine whether or not they are equal.	Compare Values

Tasks	Utilities Activities
Create or add information to an HTML file.	Write Web Page
Read lines in a structured text log file.	Read Text Log
Write a row into a database table.	Write to Database
Query a database and return the resulting rows as published data.	Query Database
Invoke a runbook when a counter has reached a specific value.	Monitor Counter
Retrieve the value of a counter and return it as a published data item.	Get Counter Value
Increment and decrement a counter and reset it to its default value.	Modify Counter
Run a web service with XML parameters you specify.	Invoke Web Services
Transform existing date and time formats into customized formats.	Format Date/Time
Generate random strings of text.	Generate Random Text
Map a network path.	Map Network Path
Disconnect a network path.	Disconnect Network Path
Connect to a dial-up or VPN network.	Connect/Disconnect Dial-up
Get the status of a dial-up or VPN network.	Get Dial-up Status

Apply XSLT

The Apply XSLT activity enables you to transform the content of an XML file according to the rules in an XSLT file that you specify. You can use the Apply XSLT activity to transform the content of an XML file to an HTML file.

Configuring the Apply XSLT Activity

Before you configure the Apply XSLT activity, you need to determine the following:

- The name of the XML file that will be converted.
- The name that you want to assign to the XML file that results from the transformation.
- The name of the XSLT file that you will use to transform the XML file.

Use the following information to configure the Apply XSLT activity.

Details Tab

Settings	Configuration Instructions
Input XML file	Type the path and file name of the XML file that you want to transform, or click the ellipsis button (...) and browse for it.
Output XML file	Type the path, filename, and file name extension for the file that will hold the results of the transformation. Alternatively, click the ellipsis button (...) and browse for the folder where you will save the file. From the Windows Open dialog box, enter the file name and file name extension in the File name box.
XSLT file	Type the path and name of the XSLT file that you want to use to transform the input XML file, or click the ellipsis button (...) and browse for it.

Published Data

The following table lists the published data items.

Item	Description
Input XML	The path and file name of the XML file that will be transformed.
Output XML	The path and file name of the XML file that will contain the result of the transformation.
XSLT file	The path and file name of the XSLT file used to transform the input XML file.

Query XML

The Query XML activity is used to perform an XPath query on an XML file. You can use this activity to search for a string in an XML file.

Configuring the Query XML Activity

Before you configure the Query XML activity, you need to determine the following:

- The XML file name or Block of XML that you want to search.
- The query you will use to perform the search.

Use the following information to configure the Query XML activity.

Details Tab

Settings	Configuration Instructions
XML File	Select either this option or the XML Text option. Type the path or URL of the XML file that you want to search in, or click the ellipsis button (...) and browse for it.
XML Text	Select either this option or the XML File option. Type the name of the element in the XML text that you want to search in.
XPath Query	Type the XPath query for your search.

Published Data

The following table lists the published data items.

Item	Description
Escaped Query Result	The result of the query.
Escaped XML Attributes	The attributes found in the element tag of the query result.
The input XML file	The name of the XML file that you are searching in. This item is blank if you used the Block of XML option.
The input XML text	The XML text that you searched in. This item is blank if you used the XML File option.
The XPath query.	The XPath query that was used in the search.
Node count	The number of results published from the query.

Map Published Data

The Map Published Data activity transforms the existing Published Data items or variable values into new values according to the rules that you specify. You can use this activity to convert numeric values to word values, simplify multiple versions of software program names into one name, or perform other string conversion activities within a runbook.

When you place this activity in a runbook, you must place it after the activities that create the Published Data items that you want to transform, and you must place it before activities that will use the new transformed items. . If you use the Map Published Data activity to transform variable items, you can place it at the beginning of the runbook.

Configure the Map Published Data Activity

Before you configure the Map Published Data activity, you need to determine the following:

- The names of the Published Data or variables that you want to transform.
- The method you want to use to transform the Published Data or variable.

Use the following procedure to configure the Map Published Data activity.

► To configure the Map Published Data activity

1. From the **Activity pane**, drag a **Map Published Data** activity to the runbook.
2. Double-click the **Map Published Data** activity icon to open the **Properties** dialog box.
3. Configure the settings on the **Mapping rules** tab. Configuration instructions are listed in the following table.

Mapping rules

Settings	Configuration Instructions
Add	Click Add to open the Add Mapping dialog box.
Output Published Data	Type the name that you want to assign to the new Published Data item that you are creating.
Source data	Insert Published Data or variable items to map to the new Published Data item. To insert items, right-click the edit box and select Subscribe , select Published Data or Subscribe , and then select Variable . You can insert as many items as you want. You can also type text to transform to a new Published Data item.
Pattern	Type the existing pattern that you want to transform.
Map To	Type the new text that replaces the text of those items that match Pattern. Click OK to return to the Map Published Data Properties dialog box.
Add, Edit, Remove	If you want to add more rules, click Add and repeat the Pattern and Map To configuration instructions. On the Mapping rules tab, you will see a list of all transformations you created. To remove items from the rules list, click Remove . To edit an item in the rules list, click

Settings	Configuration Instructions
	Edit.

Examples

The following examples describe how to use the Map Published Data activity.

- Single Published Data or variable item

The [Read Line](#) activity creates a Published Data item called File and path name. If the path in this item is expressed as a drive letter, you can create a mapping to convert it to a UNC path.

▶ To map a drive letter to a UNC path

1. In the **Source data** field, insert the File and path name Published Data item from the [Read Line](#) activity.
 2. In the **Pattern** field, type the drive letter and a colon, such as **Y:**
 3. In the **Map to** field, type the UNC path that will replace Y:, such as **\\servername\folder**.
 4. Click **Add**, then **OK**.
- Convert output of one system to be compatible with another system's formatting
You use two software programs that express severity levels with the following methods:
 - Numerically: 0, 1, 2, and so on.
 - Descriptions: High, Medium, or Low

▶ To convert the numbers expressed by one software program to the words used by another

1. In the **Source data** field, insert the Published Data item for the severity level from the software program that expresses severity levels in numbers.
2. In the **Pattern** field, type **1**.
3. In the **Map to** field, type **High**.
4. Click **Add**.
5. Repeat for each severity level, such as 2, 3, and 4, match the appropriate word to each numeric value.
6. Click **OK**.

To transfer severity levels to the software program that expresses them in words, insert the Published Data item that you created in the field. Items from the originating software program with a severity level of 1 are placed into the receiving software program with a severity level of High.

- Wildcards

You can replace strings of words with wildcards combined with words. For example, a Published Data item can describe Windows Server 2008 R2 inconsistently, as either Win2K8R2, or W2K8R2.

There are two wildcards available:

* - use the asterisk to search for any number of characters after your alpha-numeric search character. For example, a* will produce aa, aaa, aaaa, aaabbb, and so on.

? - use the question mark to find a specified number of characters after your alpha-numeric search character. For example, a?? will produce aaa, abb, abc, aac, but not aaaa or aaabbb, and so on.

▶ To change variations in the data to a single value

1. In the **Source data** field, insert the Published Data item that represents the inconsistent names.
2. In the **Pattern** field, type **W*K8**.
3. In the **Map to** field, type **Windows Server 2008**
4. Click **Add**, and then click **OK**.

- Multiple Published Data or Variable Items

Operating system names are usually composed of multiple parts, such as manufacturer, platform, version year, and release. In Orchestrator, each part of a name can be represented by an individual Published Data item. You can combine multiple Published Data items into one new item, such as Windows Server.

▶ To map multiple values to a single value

1. In the **Source data** field, insert each Published Data item that you want to combine into the new item, separated by spaces.
2. In the **Pattern** field, type **Windows Server***.
3. In the **Map to** field, type **Windows Server**.
4. Click **Add**, then **OK**. All references are changed to Windows Server.

Published Data

This activity only generates Published Data that you specify.

Compare Values

The Compare Values activity compares two text values or two numerical values and then determines whether or not they are equal. This activity can also be used to test error messages or numbers against known issues and automatically route the runbook to the appropriate activity.

Configuring the Compare Values Activity

Before you configure the Compare Values activity, you need to determine what type of values you want to compare.

Use the following information to configure the Compare Values activity.

General Tab

Settings	Configuration Instructions
Name	Type a descriptive name for the activity.
Description	Type a detailed description of the actions of the activity.
Type	Select the Type from the drop-down list that matches the server you want to monitor. The options include the following: <ul style="list-style-type: none">• Compare Strings• Compare Numeric Values Configuration instructions for each Details tab Type are listed in the following tables.

Details Tab Compare Strings

Settings	Configuration Instructions
Test	Type the first text, select how you want the first to be compared to the second text, and then type the second text. From the drop-down menu, when selecting the matches the pattern or does not match pattern comparisons, use the wildcards ? and * to specify the pattern.
Case sensitive test	Select to cause the comparison to be case sensitive.

Details Tab Compare Numeric Values

Settings	Configuration Instructions
Test that	Type the first number, select how you want the first to be compared to the second number, and then type the second number.

Published Data

The following table lists the published data items.

Item	Description
String to compare	The first string that was entered for the comparison. This published data is only available when Compare Strings is selected on the General tab.
String to compare to	The second string that was entered for the comparison. This published data is only available when Compare Strings is selected on the General tab.
Case sensitive comparison	Determines whether the comparison was case sensitive. This value can be either true or false.
Value to compare	The first value that was entered for the comparison. This published data is only available when Compare Numeric Values is selected on the General tab.
Value to compare to	The second value that was entered for the comparison. This published data is only available when Compare Numeric Values is selected on the General tab.
Comparison result	The result of the comparison. This value will be true if the two strings or numeric values match and false otherwise.

Write Web Page

The Write Web Page activity will create or add information to an HTML file. When creating new web pages with the Write Web Page activity, you can use templates that can contain any of the formatting that you require. When using the Write Web Page activity to create web pages, all occurrences of the tags <DOC-TITLE> and <DOC-TEXT> will be replaced by the title and text that you specify, respectively.

When using the Write Web Page activity to append to an existing web page, you will specify an HTML tag that will mark the position where the page will be appended. The Write Web Page activity will append the text above the HTML tag that you have specified.

The Write Web Page activity can be used to output the entire audit log of a runbook that was run to correct a problem on the network. You can also use the Write Web Page activity to keep a constant update of what maintenance runbooks are running and their status.

Configuring the Write Web Page Activity

Use the following information to configure the Write Web Page activity.

General Tab

Settings	Configuration Instructions
Name	Type a descriptive name for the activity.
Description	Type a detailed description of the actions of the activity.
Type	Select the Type from the drop-down list that matches the server you want to monitor. The options include the following: <ul style="list-style-type: none">• Create Web Page• Append to Web Page Configuration instructions for each Details tab Type are listed in the following tables.

Details Tab Create Web Page

Settings	Configuration Instructions
Title	Type the title of the web page. If you are using a template, this value will replace <DOC-TITLE> anywhere it appears in the template file. If you are not using a template, this value will be used within the <TITLE> tag in the header of the HTML file.
Text	Type the text of the web page. If you are using a template, this value will replace <DOC-TEXT> anywhere it appears in the template file. If you are not using a template, this value will be used within the <BODY> tag in the header of the HTML file.
Template	Type the path and file name of the template file that you are using. You can also use the ellipsis (...) button to browse for the file.
Folder	Type the path of the folder where you want the web page to be created.
File name	Select to specify the file name of the web page that will be created.
Create a file with a unique name	Select to automatically generate a unique name for the web page when it is created. This file will have the extension .html.

Details Tab Append to Web Page

Settings	Configuration Instructions
Tag	Type the tag that will mark the point where the page will be appended. It is recommended to use the default tag <OP-TAG-APPEND-WEB>.
Text	Type the text that will be appended to the web page.
Web page	Type the path and file name of the web page file that you are appending. You can also use the ellipsis (...) button to browse for the file.

Published Data

The following table lists the published data items.

Item	Description
Full path and name of Web Page	The full path of the HTML file that was created or appended.
Source text of the web page created	The text contained within the HTML file.
Title to add to the created web page	The title that was added to the web page. This published data is only available when Create Web Page is selected on the General tab.
Text to add to the web page	The text that was added to the web page. This value is determined by the Text field in both the Create Web Page and Append to Web Page modes.

Read Text Log

The Read Text Log activity will read lines in a structured text log file. If you have log files that change names, you can configure the Read Text Log activity to read from the newest file in a folder that matches a file name pattern. The Read Text Log activity can be used to check a log for errors and then take corrective action on the server that is creating the log or send an email to an administrator to escalate the issue.

Important

For the Read Text Log activity to work correctly, every line in the text log file must begin with a timestamp.

Configuring the Read Text Log Activity

Before you configure the Read Text Log activity, you need to determine the following:

- The log file name you are reading.
- The timestamps format in the log.

Use the following information to configure the Read Text Log activity.

Details Tab

Settings	Configuration Instructions
File	Select and type the name of the log file that will be read. You can also use the ellipsis (...) button to browse for the file.
The most recent file in this folder	Select and type the folder where the most recent file that matches the pattern that you specify will be read. You can also use the ellipsis (...) button to browse for the folder.
Matching this pattern	Type the file name pattern that will be used to find the log file that will be read. You can use the * and ? wildcards to specify the pattern. These wildcards behave in the same way as the Windows Command Prompt.
Read	Select and specify the dates that the lines you are reading are from: lines between the dates...: Select and specify the begin date and end date that make up the range that will be read. The dates that you specify must match the Timestamp format . lines more recent than...: Select and specify the oldest date of the logs that will be read. The date that you specify must match the entered Timestamp format . new lines: Select to read all the logs that have not previously been read by the Read Text Log activity.
Timestamp format	Specify the format of the timestamp of the logs. For more information on how to specify the timestamp format, see the following Timestamp Format Codes table.
Read the last lines	Enter the number of lines.

Timestamp Format Codes

Code	Description
%y	Year in two digits. For example, in this format '2005' would be represented as '05'.
%Y	Year in four digits.
%m	Month in two digits. For example, in this format 'September' would be represented as '09'.
%d	Day in two digits.
%H	Hour in two digits in the 24 hour format. For example, in this format '1 pm' would be represented as '13'
%M	Minutes in two digits.
%S	Seconds in two digits.
%s	Milliseconds in three digits.

Here are some examples of dates and their corresponding timestamp format.

Date	Format
03/26/2010 14:07:46	%m/%d/%Y %H:%M:%S
[03/26/2010] [14:07:46]	[%m/%d/%Y] [%H:%M:%S]
15-11-10 02:09:45:056	%d-%m-%y %H:%M:%S:%s

Published Data

The following table lists the published data items.

Item	Description
Full path and name of the log file	The full path of the log file that is being read.
Number of lines matching the condition	The number of lines that were read.
For each line read	
Full line matching the filter, including timestamp	The entire line as it appears in the log file.
Timestamp of matching line	The timestamp of the line that was read.
Message of matching line	The log message of the line that was read.

Write to Database

The Write to Database activity writes a row into a database table. This activity interacts with the following databases:

- Access
- ODBC
- Oracle
- SQL Server

The Write to Database activity can be used to replicate important Windows Event Log Events to a database table that is able to be queried and maintained.

Configuring the Write to Database Activity

Before you configure the Write to Database activity, you need to determine the following:

- The database you are connecting to.
- The table and fields you are updating.

Use the following information to configure the Write to Database activity.

Details Tab

Settings	Configuration Instructions
Table name	Type the name of the database table that you are adding the row to.
Data	The list displays all the fields in the table that will be set. To add a field, click Add and enter the Field name and Value . To remove a field, select it and click Remove . To edit a field, double-click the field name.

Connection Tab

Settings	Configuration Instructions
Database type	Select the Database type from the drop-down list. The options include the following: <ul style="list-style-type: none">• Access• ODBC• Oracle• SQL Server Configuration instructions for each Connection tab Database type are listed in the following tables.

Access Connections Tab

Settings	Configuration Instructions
File	Type the name of the Access database file that you want to access.
Workgroup file	Type the name of the Access workgroup file that is associated with this database.
User name	Type the user name for the workgroup file.
Password	Type the password for the workgroup file.
DB password	Type the password for the Access database.

ODBC Connections Tab

Settings	Configuration Instructions
DSN	Enter the data source name.
User name	Enter the user name for this database.
Password	Enter the password for this database.

Oracle Connections Tab

Settings	Configuration Instructions
Service Name	Enter the service name.
User name	Enter the user name for this database.
Password	Enter the password for this database.

SQL Server Connections Tab

Settings	Configuration Instructions
Authentication	Select either Windows Authentication or SQL Server Authentication .
Server	Enter the name of the SQL Server that you want to access.
Initial catalog	Enter the name of the initial catalog. If you selected the SQL Server Authentication option, type the user name and password used to access the SQL Server in the User name

Settings	Configuration Instructions
	and Password boxes.

Timeout Tab

Settings	Configuration Instructions
Timeout	Enter the amount of time that the Query Database activity will wait for the database operation to complete. Set this value to 0 to wait indefinitely.

Security Credentials Tab

Settings	Configuration Instructions
Use the security of the account assigned to the service	Select this option if you want to run the Query Database activity using the same account that the runbook server uses.
This account	Use this option to specify a different account. Enter the User name and Password .  Note If you specify an invalid user name or password, the account assigned to the runbook server will be used to run the activity.

Published Data

The following table lists the published data items.

Item	Description
Initial Catalog	The initial catalog that was used when connecting to the database. This published data will only be available when SQL Server is selected on the Connection tab.
Database server	The name of the database server. This published data will only be available when SQL Server is selected on the Connection tab.
Table name	The name of the table that was written to.

Item	Description
Database user	The name of the user used to connect to the database server.
ODBC DSN	The name of the ODBC DSN. This published data will only be available when ODBC is selected on the Connection tab.
Oracle Service Name	The service name. This published data will only be available when Oracle is selected on the Connection tab.
Access file	The Access database file that was modified. This published data will only be available when Access is selected on the Connection tab.
Access workgroup information file	The Access workgroup file that is associated with the Access database file. This published data will only be available when Access is selected on the Connection tab.

Query Database

The Query Database activity queries a database and returns the resulting rows as published data. This activity supports the following database types:

- Access
- ODBC
- Oracle
- SQL Server

The Query Database activity can be used to query a database for the detailed description of an error code that has appeared on one of the systems in the data center and then that description is sent to an administrator in an email message.

Configuring the Query Database Activity

Before you configure the Query Database activity you will need to determine the following:

- The database that you are connecting to
- The SQL query that you are running

Use the following information to configure the Query Database activity.

Details

Settings	Configuration Instructions
Query	Type the SQL query in the Query field

 **Warning**

The Query Database activity does not support queries that return data as XML, such as queries that use the **FOR XML** clause in SQL Server.

Connection

Settings	Configuration Instructions
Database type	Select the Database type from the drop-down list. The options include the following: <ul style="list-style-type: none">• Access• ODBC• Oracle• SQL Server

 **Important**

When Orchestrator is installed on a non-English operating system, and you set the **Connection** for **Database type** to **SQL Server**, the Server input value cannot be **localhost**. You must use the actual computer name.

Configuration instructions for each **Connection** tab **Database type** are listed in the following tables.

Access Connections

Settings	Configuration Instructions
File	Type the name of the Access database file that you want to access.
Workgroup file	Type the name of the Access workgroup file that is associated with this database.
User name	Type the user name for the workgroup file.
Password	Type the password for the workgroup file.
DB password	Type the password for the Access database.

ODBC Connections

Settings	Configuration Instructions
DSN	Enter the data source name.

Settings	Configuration Instructions
User name	Enter the user name for this database.
Password	Enter the password for this database.

Oracle Connections

Settings	Configuration Instructions
Service Name	Enter the service name.
User name	Enter the user name for this database.
Password	Enter the password for this database.

SQL Server Connections

Settings	Configuration Instructions
Authentication	Select either Windows Authentication or SQL Server Authentication .
Server	Enter the name of the SQL Server that you want to access.
Initial catalog	Enter the name of the initial catalog. If you selected the SQL Server Authentication option, type the user name and password used to access the SQL Server in the User name and Password boxes.

Timeout

Settings	Configuration Instructions
Timeout	Enter the amount of time that the Query Database activity will wait for the database operation to complete. Set this value to 0 to wait indefinitely.

Security Credentials

Settings	Configuration Instructions
Use the security of the account assigned to the service	Select this option if you want to run the Query Database activity using the same account that

Settings	Configuration Instructions
	the runbook server uses.
This account	<p>Use this option to specify a different account. Enter the User name and Password.</p> <p> Note If you specify an invalid user name or password, the account assigned to the runbook server will be used to run the activity.</p>

Published Data

The following table lists the published data items.

Item	Description
Numeric return value of the query	When a query that returns a numeric value is used, this will be the value. For example, "Select COUNT(*) where FirstName=John"
Database query	The database query that was sent to the database.
Initial Catalog	The initial catalog that was used when connecting to the database. This published data will only be available when SQL Server is selected on the Connection tab.
Database server	The name of the database server. This published data will only be available when SQL Server is selected on the Connection tab.
Database user	The name of the user used to connect to the database server.
ODBC DSN	The name of the ODBC DSN. This published data will only be available when ODBC is selected on the Connection tab.
Oracle Service Name	The service name. This published data will only be available when Oracle is selected on the Connection tab.
Access file	The Access database file that was queried. This published data will only be available when Access is selected on the Connection tab.

Item	Description
Access workgroup information file	The Access workgroup file that is associated with the Access database file. This published data will only be available when Access is selected on the Connection tab.
For each row published	
Full line as a string with fields separated by ;	The entire the row that was published with each field in the row separated by a semi-colon (;). Use the Field data manipulation function to obtain the values of a field within the row

Monitor Counter

The Monitor Counter activity invokes a runbook when a counter has reached a value that you specify. Each Monitor Counter activity monitors one counter.

Use the Monitor Counter activity to monitor a counter that counts the number of times that a runbook has attempted to start a service. When that number reaches the number that you configure in the Monitor Counter activity, the Monitor Counter activity can invoke a [Send Email](#) activity to notify an administrator to investigate the problem.

Configuring the Monitor Counter Activity

Before you configure the Monitor Counter activity, you need to determine the following:

- The **Counter** you will be monitoring.

Warning

Before you can use this activity, you must configure a **Counter**.

- The value that will invoke the runbook

Use the following information to configure the Monitor Counter activity.

Published Data

The following table lists the published data items.

Item	Description
Counter Value	The value of the counter being monitored

Get Counter Value

The Get Counter Value activity retrieves the value of a counter and returns it as a published data item. Wherever you need to use the value of a counter, use the published data that is published by the Get Counter Value to retrieve that value.

Configuring the Get Counter Value Activity

Before you configure the Get Counter Value activity, you need to determine which counter you will retrieve.

Warning

Before you can use this activity, you must configure a Counter. To modify a counter, use the [Modify Counter](#) activity

Use the following information to configure the Get Counter Value activity.

Details Tab

Settings	Configuration Instructions
Counter	Click the ellipsis (...) button to select the Counter that you are retrieving.

Published Data

The following table lists the published data items.

Item	Description
Counter Value	The value of the counter.

Modify Counter

The Modify Counter increments and decrements a counter, as well as resets it to its default value. It also sets it to a value you specify. Wherever you need to update the value of a counter, use the Modify Counter activity to update its value.

The current value of a counter is specific for every runbook that uses that counter. The first time a counter is used, the default value that has been specified in the counters configuration will be used. You can only modify the value of counters in a runbook using the Modify Counter activity.

Configuring the Modify Counter Activity

Before you configure the Modify Counter activity, you need to determine the following:

- The counter you are updating.
- The type of update that will be made.

Use the following information to configure the Modify Counter activity.

Details Tab

Settings	Configuration Instructions
Counter	Click the ellipsis (...) button to select the Counter that you are retrieving.

Settings	Configuration Instructions
Action	<p>Select how you want the value of the counter to be changed:</p> <p>Increment: add the Step value to the value of the counter.</p> <p>Decrement: subtract the Step value from the value of the counter.</p> <p>Set: set the value of the counter to the Step value.</p> <p>Reset: reset the value of the counter to the default value.</p>
Value	The value used by the Increment , Decrement , or Set action.

Published Data

The following table lists the published data items.

Item	Description
Counter Value	The value of the counter

Invoke Web Services

The Invoke Web Services activity runs a web service with XML parameters you specify.

Configuring the Invoke Web Services Activity

Before you configure the Invoke Web Services activity, you need to determine the following:

- WSDL file of the web service
- Web service method name
- Input SOAP message body format
- Output SOAP message body format

Use the following information to configure the Invoke Web Services activity.

Details

Settings	Configuration Instructions
WSDL	Type the path of the WSDL file or use the ellipsis (...) button to browse for the file.
Method	Type the name of the method that you are invoking on the web service, or click the ellipsis

Settings	Configuration Instructions
	button (...) and browse for it. Make sure that you match the casing of the method.
XML Request Payload	Type the parameters that you are sending to the web service method. Make sure that the format matches what is described in the WSDL document.
Format Hint	Click this button to receive hints on formatting the XML job payload. Replace the placeholder values with your own.

Advanced

Settings	Configuration Instructions
Save	To save the responses, select the Save check box and specify the folder where the responses will be saved.
URL	To specify the URL location of the web service, select the URL check box and type the URL location.
Value	Select the SOAP protocol that the web service uses. The Value options include the following: <ul style="list-style-type: none"> • SOAP 1.1 • SOAP 1.2

Security

Settings	Configuration Instructions
Enable	Select the Enable check box to enable HTTP authentication, and fill in the fields.
User name	Type the user name to access the secured web service.
Password	Type the password to access the secured web service.

HTTPS certificate options

Orchestrator allows you to configure HTTPS certificate options in cases where certificate validation fails.

Use the following steps to configure HTTPS certificate options.

▶ **To configure HTTPS certificate options**

1. In the Runbook Designer, click the **Options** menu, and select **Invoke Web Services** to open the **Invoke Web Services** dialog box.
2. Configure the settings on the **Details** tab. Configuration instructions are listed in the following table.

Details

Settings	Configuration Instructions
HTTPS Options	<p>Select one of the following HTTPS Options:</p> <ul style="list-style-type: none"> • Accept all certificates • Accept certificates from trusted hosts <p>Configuration instructions for each of the HTTPS Options are listed in the following tables.</p>

Accept all certificates Details

Settings	Configuration Instructions
Accept all certificates	<p>Accepts certificates from all hosts.</p> <p>After you select this HTTPS option, click Finish.</p>

Accept certificates from trusted hosts Details

Settings	Configuration Instructions
Accept certificates from trusted hosts	<p>Specifies the hosts you want to accept the certificates from.</p> <ol style="list-style-type: none"> 1. Click Add to open the Trusted Host dialog box. 2. Type the trusted host name in the Value box, and click OK. The host is then added to the list. <p>To edit hosts, click Edit.</p> <p>To remove hosts, click Remove.</p>

Published Data

The following table lists the published data items.

Item	Description
WSDL Path	The WSDL path.
Method Name	The name of the web method.
XML Job Payload	The text of the XML job payload.
XML Response Payload	The text of the XML response payload.
Response File	The path and filename of the response.
Web Service URL	The URL of the web service.
Web Service protocol	The protocol that the web service uses.

Publishing web services

The Invoke Web Service object builds an assembly at **C:\ProgramData\Microsoft System Center 2012\Orchestrator\Activities\WebServices2** or **C:\Users\USERNAME\AppData\Local\Microsoft System Center 2012\Orchestrator\Activities\WebServices2**. The assembly is identified by the web service location. For example, **http://localhost/TestService/DylanService.asmx?WSDL**.

If you publish additional services, or update an existing service, you must clean the cache, except for the **wspkey.snk** file. After cleaning the cache, the web service changes are correctly published.

Format Date/Time

The Format Date/Time activity enables you to transform existing date and time formats into custom formats that you create.

Configuring the Format Date/Time Activity

Before you configure the Format Date/Time activity, you need to determine the following:

- The existing date and time format you want to transform.
- The new date and time format you want it to become.

Use the following information to configure the Format Date/Time activity.

Details Tab

Settings	Configuration Instructions
Date/Time	Type the time that you want to convert.
Format	Type the format of the time that you want to convert. See the Date/Time Format Codes table for format codes and examples.
Format	Type the format that you want to convert the

Settings	Configuration Instructions
	input time to.
Output Adjustments	<p>Type a number in any of the following fields to adjust the output time from the input time. For example, if the input time is coming from a server that is three hours ahead of your local time, type -3 in the Hours field to set the output time (your local time) to three hours behind the input time. If the input time is three hours behind your local time, type 3 to set the output time to three hours ahead of the input time.</p> <p>You can adjust the output time using the following time units:</p> <ul style="list-style-type: none"> Days Months Years Hours Minutes Seconds

To specify a date/time format, you must enter the codes that represent each part of the date and time.

Date/Time Format Codes

Code	Description
y	The last digit of the year. For example, 2005 would be represented as 5.
yy	The last two digits of the year number. For example, in this format 2005 would be represented as 05.
yyyy	The year number in four digits. For example, in this format 2005 would be represented as 2005.
M	Month as a number from 1 to 12. If the month number is a single-digit number, it is displayed without a leading zero.
MM	Month in two digits. If the month number is a single-digit number, it is displayed with a leading zero.

Code	Description
MMM	The name of the month in three letters. For example, August would be represented as Aug.
MMMM	<p>The name of the month spelled in full. This format is supported only for output time.</p> <p> Note This format is only supported for the output format.</p>
d	Day as a number from 1 to 31. If the day number is a single-digit number, it is displayed without a leading zero.
dd	Day in two digits. If the day number is a single-digit number, it is displayed with a leading zero.
ddd	The abbreviated name of the day of the week in three letters. For example, Saturday is abbreviated as “Sat”.
dddd	<p>The full name of the day of the week. For example, Saturday is displayed in full.</p> <p> Note This format is only supported for the output format.</p>
h	Hour as a number from 1 to 12 when using the 12-hour clock. If the hour number is a single-digit number, it is displayed without a leading zero.
hh	Hour in two digits using the 12-hour clock. If the hour number is a single-digit number, it is displayed with a leading zero.
H	Hour as a number from 0 to 23 when using the 24-hour clock. For example, in this format 1 pm would be represented as 13. If the hour number is a single-digit number, it is displayed without a leading zero.
HH	Hour in two digits using the 24-hour clock. For

Code	Description
	example, in this format 1 pm would be represented as 13. If the hour number is a single-digit number, it is displayed with a leading zero
m	Minutes as a number from 0 to 59. If the minute number is a single-digit number, it is displayed without a leading zero.
mm	Minutes in two digits. If the minute number is a single-digit number, it is displayed with a leading zero.
s	Seconds as a number from 0 to 59. If the second number is a single-digit number, it is displayed without a leading zero.
ss	Seconds in two digits. If the second number is a single-digit number, it is displayed with a leading zero.
tt	A.M. or P.M. as two letters: A.M. or P.M. as defined on your system.

Here are some examples of dates and times and their corresponding format:

Format	Date
MM/dd/yyyy hh:mm:ss tt	08/05/2006 03:05:15 PM
M/d/yy h:m:s tt	8/5/06 3:5:15 PM
ddd MMM dd yyyy	Sat Aug 05 2006
dddd, MMMM dd yyyy	Saturday, August 05 2006

Published Data

The following table lists the published data items.

Item	Description
Format Result	The result of the format in the specified form.
Format Result without adjustments	The formatted result, but without any adjustments made to it.
Input Time	The input time.

Item	Description
Input Format	The format of the date and time that was entered as the input time.
Output Format	The format of the date and time that was entered as the output time.

Generate Random Text

The Generate Random Text activity generates random strings of text.

Configuring the Generate Random Text Activity

Before you configure the Generate Random Text activity, you need to determine the random text string attributes you want to generate.

Use the following information to configure the Generate Random Text activity.

Details Tab

Settings	Configuration Instructions
Text Length	Type the number of characters that you want the string to include, for example, 45.
Text Contents	Select the options for the items that you want the Generate Random Text activity to include in the random text string. In the Minimum Quantity field for each option that you select, type the minimum number of these characters that you want to include in the string. The total of all Minimum Quantity fields must not be more than the number you typed in the Text Length field. Lower-Case Characters Upper-Case Characters Numbers Symbols

Published Data

The following table lists the published data items.

Item	Description
Random text	The string of random text that this activity creates.

Item	Description
Random text length	The length of the text that was generated.

Map Network Path

The Map Network Path activity enables you to map a network path using a UNC path.

Configuring the Map Network Path Activity

Before you configure the Map Network Path activity, you need to determine the following:

- The UNC path you want to map.
- The user account and password you need to log into that path; if required.

Use the following information to configure the Map Network Path activity.

Details Tab

Settings	Configuration Instructions
Network path	Type the network path that you want to connect to in UNC format (\\servername\foldername), or click the ellipsis button (...) and browse for it. Verify that the network path that you want to map does not already exist.
User account	Type the user account that you need to access the network path.
Password	Type the password that you need to access the network path.

Published Data

The following table lists the published data items.

Item	Description
Network path	The network path that you are mapping.
User account	The user account that you used to access the network path.

Disconnect Network Path

The Disconnect Network Path activity allows you to disconnect a network path. You can disconnect network paths you mapped using the [Map Network Path](#) activity or using another method.

Configuring the Disconnect Network Path Activity

Before you configure the Disconnect Network Path activity, you need to determine the network path you want to disconnect.

Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Use the following information to configure the Disconnect Network Path activity.

Details Tab

Settings	Configuration Instructions
Network path	Type the name of the network path that you want to disconnect, or click the ellipsis button (...) and browse for it.

Published Data

The following table lists the published data items.

Item	Description
Network path	The network path you are disconnecting.

Get Dial-up Status

The Get Dial-up Status activity retrieves the status of a dial-up or VPN network connection on the Runbook server. For more information on creating a network connection in Windows Server 2008, see [Establish Network Connections](#)

Configuring the Get Dial-up Status Activity

Use the following information to configure the Get Dial-up Status activity.

Note

You cannot set individual security credentials for this activity. It will run under the service account configured for the Runbook Service on the Runbook server where the instance of the activity is running. This account must have the authority to access the resources and perform the actions required by this activity.

Connection Tab

Settings	Configuration Instructions
Dial-up or VPN entry	Type the name of the entry as entered in the address book, or click the ellipsis (...) button and select the entry from the Remote Access Phone Book.

Published Data

The following table lists the published data items.

Item	Description
Dial-up or VPN name	The name assigned to the dial-up connection
Line status	Indicates whether the network connection is connected or disconnected

Connect/Disconnect Dial-up

The Connect/Disconnect Dial-up activity connects or disconnects a dial-up connection or VPN. The connection must be configured on the Runbook server before the activity can use it. For more information on creating a network connection in Windows Server 2008, see [Establish Network Connections](#)

Configuring the Connect/Disconnect Dial-up Activity

Use the following information to configure the Connect/Disconnect Dial-up activity.

Connection Tab

Settings	Configuration Instructions
Dial-up or VPN entry	Type the name of the entry as entered in the address book, or click the ellipsis (...) button and select the entry from the Remote Access Phone Book.
Connect/Disconnect	Select whether to connect to or disconnect from the dial-up connection or VPN
Attempts	Enter the number of times the activity should attempt to connect to the remote network before quitting.
Delay	Enter the amount of time, in seconds, that the activity should wait between retry attempts.

Authentication Tab

Settings	Configuration Instructions
Domain	Enter the name of the domain for the username.
Username	Enter the username to logon to the remote network.
Password	Enter the password for the username.

Published Data

The following table lists the published data items.

Item	Description
Dial-up or VPN name	The name assigned of the network connection
Number of retries attempted	Indicates how many times the activity attempted to establish the connection before succeeding or failing.
Domain name credential	The domain name used by the activity when establishing a connection
User name credential	The user name used by the activity when establishing a connection

Text File Management

The following table provides a brief description of tasks you can accomplish when using each Text File Management activity.



Caution

If permissions on the Orchestrator installation path are changed and the activity's Security Credentials has a custom user account that does not include **Read/Execute** permissions to **ExecutionData.dll** on the Runbook server, the activity will fail.

Tasks	Text File Management Activities
Append a line of text into a text file.	Append Line
Delete lines from a text file.	Delete Line
Find lines in a text file.	Find Text

Tasks	Text File Management Activities
Get multiple lines from a text file.	Get Lines
Insert lines into a text file on a line number you specify.	Insert Line
Read lines from a text file.	Read Line
Search for and replaces text in a file.	Search and Replace Text

Append Line

The Append Line activity appends a line of text into a text file. Use the Append Line activity to append lines to a log file to create audits trails of runbooks.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Append Line Activity

Before you configure the Append Line activity, you need to determine the following:

- The file name you want to append to.
- The type of file encoding that the file you are appending to uses.
- Text you append.

Use the following information to configure the Append Line activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to append the text to, or click the ellipsis button (...) and browse for it.
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format. If the file uses a different encoding format, the activity fails.
Text	Type the text that you want to append to the file that you specified.

Published Data

The following table lists the published data items.

Item	Description
File path	The path and file name of the text file to which the line is appended.
File encoding	The file encoding format that you selected in the File encoding field.
Line text	The text of the line that was appended to the text file.
Line number	The line number where the text was appended.

Delete Line

The Delete Line activity deletes lines from a text file. Use the Delete Line activity to delete outdated lines of text from a text file.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Delete Line Activity

Before you configure the Delete Line activity you need to determine the following:

- The name of the file that you want to delete the line from.
- The file encoding type that the file you want to delete the line from uses.
- The line numbers of the lines that you want to delete.

Use the following information to configure the Delete Line activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to delete the text from, or click the ellipsis button (...) and browse for it.
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format. If the file uses a different encoding format, the activity fails.
Line numbers	Type the line numbers of the text that you want to delete from the file that you specified. To specify a range of lines, use a hyphen: 1-3. This deletes lines 1 to 3. To specify specific lines, use a comma: 5,7,9.

Settings	Configuration Instructions
	<p>This deletes lines 5, 7, and 9.</p> <p>Combine the range and specific lines: 1-3,5,7,9. This deletes lines 1 to 3, and lines 5, 7, and 9.</p> <p>To specify from a specific line to the last line of the file, type the line number, hyphen, and END: 4-END. This deletes lines 4 to the last line of the file.</p> <p>To specify from a specific line to a line relative to the last line of the file, type the line number, hyphen, the less-than sign, and the line number relative to the end line: 4-END<3. If the file has 20 lines, this deletes lines 4 to 17 from the file. <3 represents the third line from the end.</p> <p>To specify the last number of lines, type LASTLINES, colon, and the last number of lines that you want to delete: LASTLINES:10. This deletes the last 10 lines of the file.</p> <p>Combine different types of operations: 1-5, 8, 10-END<20, LASTLINES:10. This deletes lines 1 to 5, line 8, line 10 to the 20th line from the end, and the last 10 lines. Do not overlap lines or line ranges when combining operations. For example, 5-END, LASTLINES:10 fails because the 5-END operation already deletes to the end, so the LASTLINES:10 operation cannot succeed because the lines are already deleted, and the activity fails.</p> <p> Important Do not specify lines numbers that do not exist in the file, and do not specify a line number more than once, or the activity fails.</p>

Published Data

The following table lists the published data items.

Item	Description
File name	The file name of the text file from which the line

Item	Description
	is deleted.
File encoding	The file encoding format that you selected in the File encoding field.
Line number	The line number of each line that was deleted. A Published Data item is created for each line that was deleted.
Line numbers	The line number range that the user typed in the field.
Deleted text	The text that was deleted from the file.
Number of deletions	The number of deletions that occurred.

Find Text

The Find Text activity finds lines in a text file. Use the Find Text activity to find according to a search string that you specify.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Find Text Activity

Before you configure the Find Text activity, you need to determine the following:

- The name of the file that you want to search in.
- The encoding type of the file you want to search in uses.
- The text that you want to search for.

Use the following information to configure the Find Text activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to find the text in, or click the ellipsis button (...) and browse for it.
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format: if the file uses a different encoding format, the activity fails.
Search text	Type the text that you are searching for in the file.

Settings	Configuration Instructions
Case sensitive	Select this option to search only for lines where the case of the words matches the text from the Search text field exactly.
Use regular expressions	Select this option to use regular expressions in your search. For more information on regular expressions, see Using Regular Expressions .
Result	Select one of the following options for your results: Only the first line that matches the text will be returned All lines that match the text will be returned

Published Data

The following table lists the published data items.

Item	Description
Case sensitive	Indicates whether the Case sensitive check box was selected.
File encoding	The file encoding format that you selected in the File encoding field.
File name	The name of the file that was searched for text.
Return first line or all lines	Indicates whether the Only the first line that matches the text will be published or All lines that match the text will be published option was selected.
Line number of match	The line number where matching text was found.
Match end	The character offset position that the match ends on.
Match start	The character offset position that the match starts on.
Matched text	The text that matched the search string.
Number of lines matched	The number of lines where matching text was found.

Item	Description
Number of matches	The number of matching items that were found.
Original line	The entire line that contains the matching item.
Search text	The search string that was used for the search.
Use Regex	Indicates whether the Use regular expressions check box was selected.

Get Lines

The Get Lines activity gets multiple lines from a text file according to criteria that you specify. You can use the Get Lines activity to get specific lines from any location in a text file.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Get Lines Activity

Before you configure the Get Lines activity, you need to determine the following:

- The name of the file you want to get lines from.
- The encoding type that the file you want to get the lines from uses.
- The criteria you use to filter the lines.

Use the following information to configure the Get Lines activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to get the text from, or click the ellipsis button (...) and browse for it.
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format. If the file uses a different encoding format, the activity fails.
Lines	Click Add to open the Add Line dialog box and create filters for the lines that you want to get from the file: Name: Search for lines by their name. Range: Search for lines by their range.

Published Data

The following table lists the published data items.

Item	Description
File path	The filename and path of the file that the lines were taken from.
File encoding	The file encoding format that you selected in the File encoding field.
#Name# line text	For each item that you add in the lines list of the dialog, a new published data item is created. This item displays the line text of each item in the Lines list. #Name# represents the name that you assigned in the Name field.
#Name# line numbers	For each item that you add in the Lines list of the dialog, a new published data item is created. This item displays the line numbers where text was found from each item in the Lines list. #Name# represents the name that you assigned in the Name field.
Total Number of Lines in the Ranges Specified	The total number of lines that were found in the ranges that were specified.

Insert Line

The Insert Line activity inserts lines into a text file on a line number that you specify.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Insert Line Activity

Before you configure the Insert Line File activity, you need to determine the following:

- The name of the file you want to insert text into.
- The file encoding type of the file you want to insert text into.
- The line number location where you want to insert the text.

Use the following information to configure the Insert Line activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to insert the text into, or click the ellipsis button (...) and browse for it.

Settings	Configuration Instructions
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format. If the file uses a different encoding format, the activity fails.
Text	Type the text that you want to insert into the file.
Line number	Type the line number where the text will be inserted.

Published Data

The following table lists the published data items.

Item	Description
File name	The name of the file that the text was inserted into.
File encoding	The file encoding format that you selected in the File encoding field.
Line text	The text of the line that was inserted.
Line number	The line number that was inserted, if only one line was inserted.

Read Line

The Read Line activity reads lines from a text file. You can use the Read Line activity to read lines from a text file and pass them to another activity using published data.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Read Line Activity

Use the following information to configure the Read Line activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to read the text from, or click the ellipsis button (...) and browse for it.

Settings	Configuration Instructions
File encoding	Click the ellipsis button (...) and select the format that the file is encoded in from the File encoding drop-down list. Verify that you select the correct encoding format. If the file uses a different encoding format, the activity fails.
Line numbers	<p>Type the line numbers of the text that you want to read from the file that you specified.</p> <ul style="list-style-type: none"> • To specify a range of lines, use a hyphen: 1-3. This reads lines 1 to 3. • To specify specific lines, use a comma: 5,7,9. This reads lines 5, 7, and 9. • Combine the range and specific lines: 1-3,5,7,9. This reads lines 1 to 3, and lines 5, 7, and 9. • To specify from a specific line to the last line of the file, type the line number, hyphen, and END: 4-END. This reads lines 4 to the last line of the file. • To specify from a specific line to a line relative to the last line of the file, type the line number, hyphen, the less-than sign, and the line number relative to the end line: 4-END<3. If the file has 20 lines, this reads lines 4 to 17 from the file. <3 represents the third line from the end. • To specify the last number of lines, type LASTLINES, colon, and the last number of lines that you want to delete: LASTLINES:10. This reads the last 10 lines of the file. • Combine different types of operations: 1-5, 8, 10-END<20, LASTLINES:10. This reads lines 1 to 5, line 8, line 10 to the 20th line from the end, and the last 10 lines. Do not overlap lines or line ranges when combining operations. For example, 5-END, LASTLINES:10 fails because the 5-END operation already reads to the end, so the LASTLINES:10 operation cannot succeed because the lines are already read, and the activity fails.

Settings	Configuration Instructions
	 Important Do not specify lines numbers that do not exist in the file, and do not specify a line number more than once, or the activity will fail.

Published Data

The following table lists the published data items.

Item	Description
File name	The file name of the text file that was read.
File encoding	The file encoding format that you selected in the File encoding field.
Line text	The text of the line that was read.
Line number	The line number of the text that was read. A published data item is created for each line that was read.
Line numbers	The line number range that the user typed in the field.

Search and Replace Text

The Search and Replace Text activity searches for and replaces text that you specify in a text file.

This activity replaces functionality in the Manage Text File legacy activity from Opalis 6.3.

Configuring the Search and Replace Text Activity

Before you configure the Search and Replace Text activity, you need to determine the following:

- The file name you want to search in.
- The encoding that the file you want to search in uses.
- The text you want to search for.
- The replacement text

Use the following information to configure the Search and Replace Text activity.

Details Tab

Settings	Configuration Instructions
File	Type the path and name of the file that you want to read the text from, or click the ellipsis button (...) and browse for it.
File encoding	Click the ellipsis button (...) to open the File Encoding dialog box and select the format that the file is encoded in from the File Encoding drop-down list. Verify that you select the correct encoding format: if the file uses a different encoding format, the activity fails.
Search text	Type the text that you are searching for in the file.
Case sensitive	Select this option to search only for lines where the case of the words matches the text from the Search text field exactly.
Use regular expressions	Select this option to use regular expressions in your search. For more information, see Using Regular Expressions .
Replacement text	Type the text that you want to replace the search text with.

Published Data

The following table lists the published data items.

Item	Description
Case sensitive	Indicates whether the Case sensitive check box was checked or not.
File encoding	The file encoding format that you selected in the File encoding field.
File name	The name of the file that was searched for text.
Line number of match	The line number where matching text was found.
Modified line	The entire line of text as it was written after the replace operations occurred.
Number of lines matched	The number of lines where matching text was

Item	Description
	found.
Number of matches	The number of matching items that were found.
Original line	The entire line of text as it was written before the replace operation occurred.
Replace text	The text that was used to replace the search text.
Search text	The search string that was used for the search.
Use Regex	Indicates whether the Use regular expressions check box was checked or not.

Runbook Control

The following table provides a brief description of tasks you can accomplish with each activity.

Tasks	Activity
Create a starting point in your runbook.	Initialize Data
Return data from your runbook to another runbook or to an external system.	Return Data
Publish data from any branch.	Junction
Run a runbook.	Invoke Runbook

See Also

[Standard Activities](#)

Invoke Runbook

The Invoke Runbook activity launches a runbook that you have specified. You can transfer data to runbooks by configuring an [Initialize Data](#) activity in the invoked runbook. You can return data from the invoked runbook by configuring a [Return Data](#) activity.

You can use the Invoke Runbook activity to invoke generic runbooks that only perform specific actions that do not depend on how the runbook is invoked. For example, you can create a runbook that calls separate runbooks to perform a backup maintenance procedure that in turn calls a runbook to shut down services, another runbook to back up data, and then a final runbook to restart the services.

 **Important**

If you modify the folder name or location of a runbook, you must also re-configure any Invoke Runbook activity that references the modified runbook.

Configuring the Invoke Runbook activity

Before you configure the Invoke Runbook activity, you need to know which runbook you are invoking.

Use the following information to configure the Invoke Runbook activity.

Details

Settings	Configuration Instructions
Runbook	<p>Click the ellipsis (...) button to browse for the runbook that you want to invoke.</p> <p> Important Do not invoke a runbook that starts with a Monitor activity.</p>
Invoke by path	<p>Select to force the Invoke Runbook activity to invoke the runbook by the specific path and name. When selected, any runbook with the same name in the same folder location is invoked. When unselected, the runbook that is invoked can be moved around the environment and the Invoke Runbook activity automatically maps itself to the new location.</p>
Wait for completion	<p>Select to force the Invoke Runbook activity to keep the invoked runbook running until it is completed.</p> <p> Important Do not select Wait for completion if any return data in the invoked runbook is also return data in the invoking runbook.</p>
Parameters	<p>If you have selected a runbook that contains an Initialize Data activity, the list of parameters required to invoke that activity will be displayed. Enter a value for each parameter.</p>
Runbook Servers	<p>Type the list of runbook servers that will run this runbook. Separate each name with a semi-</p>

Settings	Configuration Instructions
	colon (;). The order in which the runbook servers are listed will be the order used for failover and load balancing of the runbook. The runbook server names must correspond to the names that are displayed within the runbook server's tree in the Orchestrator Deployment Manager. Leave this field blank to use the runbook or global defaults for the runbook server assignment.

Published Data

The following table lists the published data items from the Invoke Runbook activity.

Item	Description
Child runbook Job ID	The job ID of the invoked runbook.
Child runbook status	The status published by the child runbook.

The Invoke Runbook activity returns any data that the invoked runbook has defined in the Returned Data tab of the runbook properties. The values of these properties must be populated using [Return Data](#) activity in that workflow. If the current runbook needs to return data from the invoked runbook, then it must have its own [Return Data](#) activity that includes these values.

Credentials

If you use the Invoke Runbook activity and you use **Security Credentials**, the account you use must be a member of the Orchestrator System group to run successfully.

See Also

[Initialize Data](#)

[Return Data](#)

Security Credentials

Initialize Data

The Initialize Data activity is a starting point for runbooks that require parameters from an Invoke Runbook activity. The Initialize Data activity is invoked by an [Invoke Runbook](#) activity. You can use the Initialize Data activity to launch generic runbooks that only perform specific actions. For example, use the Initialize Data activity to specify the files to back up in a runbook that performs backup operations. To return data to the invoking runbook, end the runbook's workflow with a [Return Data](#) activity.

Configuring the Initialize Data activity

Before you configure the Initialize Data activity, you need to know the parameters that you want to use within your runbook.

Use the following information to configure the Initialize Data activity.

Published Data

Each parameter that you have configured is available as published data to the other activities in the runbook while the runbook is running. To pass data back to the invoking runbook, use the [Return Data](#) activity.

See Also

[Invoke Runbook](#)

[Return Data](#)

Junction

The Junction activity allows you to wait for multiple branches in a runbook to complete before continuing past the junction. This activity can also publish data again from any branch so that downstream activities past the Junction activity can consume the data. Data from different branches than the one you selected will not be available.

You can choose to propagate no data from any of the branches previous to the Junction activity. When you select an activity, the junction runs once, regardless of the data provided in previous activities. For example, a Monitor File activity waits for files to be added to a folder. When the files are added, two branches in the runbook will copy the file to a new location and at the same time, read the lines of the files and add them to master file. The Junction activity waits for all these to complete and then propagates the data from the Copy File branch and the Delete File activity will delete the original files.

Configuring the Junction activity

Before you configure the Junction activity, you need to determine which branch will continue on the runbook you are invoking.

Use the following information to configure the Junction activity.

Details Tab

Settings	Configuration Instructions
Return data from	Click the ellipsis (...) button and select the activity whose data you want to publish again to the activities that follow the junction. From the Select an Activity dialog box, choose <None> to propagate no data to the activities following the junction.

Published Data

The following table lists the data items published by this activity.

Item	Description
Selected branch	The activity that was selected to have its data published.

See Also

[Standard Activities](#)

Return Data

The Return Data activity allows you to return data from the current runbook to a runbook that invoked the runbook. You configure the runbook data by configuring the data parameters in the **Runbook Properties** dialog box.

Configuring the Return Data activity

Use the following information to configure the Return Data activity.

Published Data

The available published data items depend on the defined data elements.

See Also

[Invoke Runbook](#)

[Initialize Data](#)