

Guide to System Center Management Pack for Microsoft Windows Server 2016 Storage Spaces Direct

**Microsoft Corporation**

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If you have an idea or suggestion about this management pack, the Operations Manager team encourages you to share it at the [SCOM Feedback site](http://systemcenterom.uservoice.com/forums/293064-general-operations-manager-feedback/filters/top).

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Contents

[Changes History 4](#_Toc484462601)

[Get Started 5](#_Toc484462602)

[Supported Configurations 5](#_Toc484462603)

[Prerequisites 6](#_Toc484462604)

[Before You Import the Management Pack 6](#_Toc484462605)

[Files in this Management Pack 7](#_Toc484462606)

[Management Pack Scope 7](#_Toc484462607)

[Monitoring Scenarios 7](#_Toc484462608)

[Objects Relations 8](#_Toc484462609)

[Configure the Management Pack 8](#_Toc484462610)

[Best Practice: Create a Management Pack for Customizations 9](#_Toc484462611)

[How to import a Management Pack 9](#_Toc484462612)

[Run As Profiles 9](#_Toc484462613)

[View Information in the Operations Manager Console 10](#_Toc484462614)

[Microsoft Windows Server 2016 Storage Spaces Direct views 10](#_Toc484462615)

[Icon Legend 10](#_Toc484462616)

[Links 11](#_Toc484462617)

[Appendix: Known Issues 11](#_Toc484462618)

[Appendix: Display Strings Changes History 13](#_Toc484462619)

[Appendix: Management Pack Objects and Workflows 14](#_Toc484462620)

# Guide to System Center Management Pack for Microsoft Windows Server 2016 Storage Spaces Direct

This guide is based on version 1.0.46.0 of the Management Pack for Microsoft Windows Server 2016 Storage Spaces Direct.

## Changes History

| **Release Date** | **Changes** |
| --- | --- |
| June, 2017 (version 1.0.46.0) | * Added Fault Object Location to all fault alerts * Fixed issue: Faults Alert Data Source had incorrect logic in case of an error inside the script; therefore, incorrect fault alerts might be closed. * Optimized Close Fault alert workflows for large environments. * Fixed discovery issues: not all important properties of S2D 2016: Storage Virtual Disk (“Is Clustered”, “disk name”) and Storage Sub System (“Manufacturer”, “Firmware Version”, “Model”, “Serial Number”) were populated. * Improved discovery when S2D volume goes offline. * Fixed issue: alerts duplicating when Fault Sync Alert rules are enabled. * Reduced script-based workflows’ noise. * Fixed issue: sync rules created alerts with wrong severity. * Added debug messaging option in the discoveries and Fault workflows; it is disabled by default (may be changed by the override). * Updated the display strings (see [Appendix: Display Strings Changes History](#_Appendix:_Display_Strings)). |
| January, 2017 (version 1.0.40.0) | Original release of this management pack |

## Get Started

In this section:

* [Supported Configurations](#_Supported_Configurations)
* [Prerequisites](#_Prerequisites)
* [Files in this Management Pack](#_Files_in_this)
* [Management Pack Scope](#_Management_Pack_Scope)

For details on the monitoring topology, rollups, metrics, presentation and reporting provided in this Management pack, see [Appendix: Management pack Objects and Workflows](#Appendix1).

For more information regarding Storage Spaces Direct specifics, see [Storage Spaces Direct in Windows Server 2016](https://docs.microsoft.com/en-us/windows-server/storage/storage-spaces/storage-spaces-direct-overview) page.

### Supported Configurations

This management pack is designed for the following versions of System Center Operations Manager:

* System Center Operations Manager 2016

A dedicated Operations Manager management group is not required.

The following table details the supported configurations for Microsoft Windows Server 2016 Storage Spaces Direct Management Pack:

|  |  |
| --- | --- |
| **Configuration** | **Support** |
| Operation system | Windows Server 2016 Datacenter Edition |
| Operation system updates | Starting from KB3216755 |
| Windows Server 2016 Nano Server installation option | Not supported |
| Clustered servers | Yes |
| Agentless monitoring | Not supported |
| Virtual environment | Yes |

### Prerequisites

This management pack has the following dependencies:

* Data Warehouse Library
* Instance Group Library
* Microsoft System Center Library
* Microsoft System Center Visualization Component Library
* Microsoft System Center Visualization Configuration Library
* Microsoft System Center Visualization Library
* Microsoft Windows Library
* Performance Library
* System Health Library
* System Library
* System Software Library
* Windows Cluster Library

### Before You Import the Management Pack

Before you import the Windows Server Failover Cluster Management Pack, note the following limitations of the management pack:

* Agentless monitoring is not supported.
* All cluster nodes must have an Operations Manager Agent installed.

Before you import the Windows Server Failover Cluster Management Pack, perform the following actions:

* Ensure that System Center Operations Manager is installed.
* Enable the Agent Proxy setting on all agents installed on servers that are members of a cluster.

Warning

Discoveries and monitoring will not function unless proxy is enabled.

To enable the Agent Proxy setting on all agents, follow the steps below:

1. Open the Operations console and click “Administration”.
2. In the Administrator pane, click “Agent Managed”.
3. Double-click an agent in the list.
4. Click the Security tab.
5. Select “Allow this agent to act as a proxy and discover managed objects on other computers”.
6. Repeat steps 3 through 5 for each agent installed on the clustered server.

### Files in this Management Pack

The management pack includes the following files:

| **File** | **Description** |
| --- | --- |
| Storage Spaces Direct 2016 | Microsoft Windows Server 2016 Storage Spaces Direct Management Pack. |
| Storage Spaces Direct 2016 Presentation | This Management Pack adds views and dashboards for the management pack. |
| Microsoft System Center Operations Manager Storage Visualization Library | This Management Pack contains basic visual components required for the management pack dashboards. |
| Microsoft Storage Library | A set of common classes for Microsoft Storage management packs. |

### Management Pack Scope

The purpose of this Management Pack is to provide in-depth discovery and monitoring of Microsoft Windows Server 2016 Storage Spaces Direct objects.

In this section:

* [Monitoring Scenarios](#_Monitoring_Scenarios)
* [Objects Relations](#_Objects_Relations)

#### Monitoring Scenarios

The following table lists the main monitoring scenarios provided by this management pack.

|  |  |  |
| --- | --- | --- |
| Monitoring scenario | Description | Associated rules and monitors |
| Monitoring related to File Shares. | Monitoring of health, ongoing jobs and storage fault events of File Shares. | * Monitor: File Share Health State * Rule: File Share Ongoing Jobs * Rule: Storage File Share |
| Monitoring related to Volumes. | Monitoring of health, ongoing jobs and storage fault events of Volumes. | * Monitor: Clustered Shared Volume Health State * Rule: Volume Ongoing Jobs * Rule: File Server Volume |
| Monitoring related to Storage Subsystems. | Monitoring of health, ongoing jobs and storage fault events of Storage Subsystems. | * Monitor: Storage Subsystem Health State * Rule: Storage Subsystem Ongoing Jobs * Rule: Storage Subsystem |

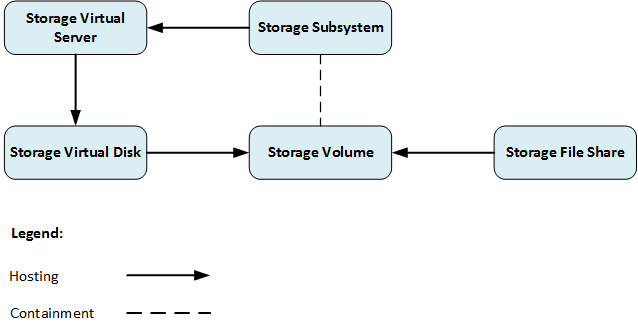
**Note:** The rules above generate corresponding fault alerts using special internal parameters: “Custom Field 1” and “Custom Field 2”. **Do not change these parameters** in order to avoid failures of the rules.

**Note:** Clustered Shared Volumes are discovered only.

For more details, see [Appendix: Management pack Objects and Workflows](#Appendix1).

#### Objects Relations

The following diagram shows how the S2D entities are related in this management pack:



## Configure the Management Pack

This section provides guidance on configuring and tuning this management pack.

### Best Practice: Create a Management Pack for Customizations

By default, the Operations Manager saves all customizations such as overrides to the Default Management Pack. As a best practice, you should instead create a separate management pack for each sealed management pack you want to customize.

When you create a management pack for storing customized settings for a sealed management pack, it is helpful to base the name of the new management pack on the name of the management pack that it is customizing.

Creating a new management pack for storing customizations of each sealed management pack makes it easier to export the customizations from a test environment to a production environment. It also makes it easier to delete a management pack, because you must delete any dependencies before you can delete a management pack. If customizations for all management packs are saved in the Default Management Pack and you need to delete a single management pack, you must first delete the Default Management Pack, which also deletes customizations to other management packs.

For more information about sealed and unsealed management packs, see [Management Pack Formats](http://go.microsoft.com/fwlink/?LinkId=108355) article. For more information about management pack customizations and the default management pack, see [About Management Packs](http://go.microsoft.com/fwlink/?LinkId=108356) article.

How to Create a New Management Pack for Customizations

|  |
| --- |
| 1. Open the Operations console, and then click the Administration button.  2. Right-click Management Packs, and then click Create New Management Pack.  3. Enter a name, and then click Next.  4. Click Create. |

### How to import a Management Pack

For more information about importing a management pack, see [How to Import a Management Pack](http://go.microsoft.com/fwlink/p/?LinkID=219431) article.

### Run As Profiles

This Management Pack engages the following Run As profiles, described in the table below:

|  |  |
| --- | --- |
| Run As profile | Description |
| Microsoft Storage Library: RunAs Account | Run As profile, which requires a Run As account with Cluster Administrator privileges to work with PowerShell cmdlets interacting with Microsoft Windows Server 2016 Storage Spaces Direct. |
| Microsoft System Center Operations Manager Storage Visualization Library SCOM SDK Rule Run As Profile | This Run As profile allows accessing all SCOM objects and rules. |

## View Information in the Operations Manager Console

### Microsoft Windows Server 2016 Storage Spaces Direct views

The Management Pack for Microsoft Windows Server 2016 Storage Spaces Direct introduces the comprehensive set of state, performance and alert views, which can be found in the dedicated folder:

 Root

 Storage

 Storage Spaces Direct 2016

 Active Alerts

 Active Faults

 File Shares

 Ongoing Jobs

 Performance

 Storage Spaces Direct 2016

 Storage Subsystems

 Volumes

#### Icon Legend

 Folder

 Alert

 Task

 State

 Performance

 Diagram

 Dashboard

Advanced dashboard



This management pack also includes a set of rich dashboards, which provide detailed information about S2D 2016 instances.

Links

The following links connect you to information about common tasks that are associated with System Center management packs:

System Center Operations Manager

* [Management Pack Life Cycle](http://go.microsoft.com/fwlink/p/?LinkID=232986)
* [How to Import a Management Pack](http://go.microsoft.com/fwlink/p/?LinkID=219431)
* [Tuning Monitoring by Using Targeting and Overrides](http://go.microsoft.com/fwlink/p/?LinkID=217065)
* [How to Create a Run As Account](http://go.microsoft.com/fwlink/p/?LinkId=232988)
* [How to Export a Management Pack](http://go.microsoft.com/fwlink/p/?LinkId=232990)
* [How to Remove a Management Pack](http://go.microsoft.com/fwlink/p/?LinkId=232991)

## Appendix: Known Issues

##### Alerts regarding S2D scripts’ failures may occur in SCOM.

**Issue:** Rule “SCOM S2D 2016: Script was failed” now is disabled by default. If it’s enabled, alerts regarding S2D scripts’ failures may occur in SCOM due to workflow scripts’ errors.

**Resolution:** No resolution available.

##### Some workflows may work unexpectedly.

**Issue:** If any workflows work unexpectedly, it may be related to absence or belated occurring of the required WMI events.

**Resolution:** Install the latest OS updates. For more information, see [Storage Spaces Direct in Windows Server 2016](https://docs.microsoft.com/en-us/windows-server/storage/storage-spaces/storage-spaces-direct-overview) page.

##### Version 1.0.40.0 issue: some fault event alerts may seem to be duplicated.

**Issue:** Some fault event alerts may seem to be duplicated if Fault Sync Alert rules are enabled. Do not enable those rules unless you have problems with missing faults events.

**Resolution:** Fixed in version 1.0.46.0.

##### If a volume is offline at the time of the discovery launch, the corresponding objects disappear from SCOM.

**Issue:** If a volume is offline at the time of the discovery launch, the objects related to this volume (fileshares, volumes) may disappear from SCOM (the issue is often reproducible on OS with KB3216755 patch installed).

**Resolution:** Check the virtual disk status; if the disk is offline, bring it back online. If there are disk issues revealed, resolve them, and the next discovery cycle will find the virtual disk and all the corresponding objects (volumes and fileshares). Install the latest OS updates.

##### When a volume comes online, outdated alerts may be displayed.

**Issue:** When a volume comes online, outdated alerts may be displayed.

**Resolution:** Check whether the Fault Sync Alert rules are enabled, and reduce their running interval via the overrides.

##### S2D 2016: Storage Subsystem Health State Monitor may switch into incorrect state.

**Issue:** S2D 2016: Storage Subsystem Health State Monitor may occasionally switch the subsystem to healthy state, while the subsystem objects are not healthy.

**Resolution:** No resolution available.

## Appendix: Display Strings Changes History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **ElementID** | **Name** | **Description** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.WorkflowScriptFailed | * SCOM S2D 2016: Script was failed | Changed from **A monitoring or discovery script was failed.** to **This rule generates errors occurred while processing the monitoring or discovery scripts. This rule is disabled by default. If you need to receive more diagnostic data, enable this rule via the overrides. It is also necessary to enable the debug mode for the corresponding workflows via the overrides** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.FileShare.SyncAlert.Rule | SCOM S2D 2016: Storage File Share Sync Alert Rule | Added the following sentence:  **The interval for this rule must be less than the interval for the File Share discovery.** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.Substorage.SyncAlert.Rule | SCOM S2D 2016: Storage Subsystem Sync Alert Rule | Added the following sentence:  **The interval for this rule must be less than the interval for the File Share discovery.** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.Volume.SyncAlert.Rule | SCOM S2D 2016: Storage Volume Sync Alert Rule | Added the following sentence:  **The interval for this rule must be less than the interval for the File Share discovery.** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **ElementID** | **SubElementID** | **Name** | **Description** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.FaultDataSource | IntervalSeconds | There was no name, changed to **Running interval (sec)** | There was no description, changed to **Running interval in seconds.** |

|  |  |  |
| --- | --- | --- |
| **Version** | **ElementID** | **Name** |
| 1.0.46.0 | Microsoft.Windows.Server.10.0.Storage.StorageSpacesDirect.Volume.Rule | **SCOM S2D 2016: File Server Volume Rule** changed to **SCOM S2D 2016: Storage Volume Rule** |

## Appendix: Management Pack Objects and Workflows

The Management pack for Microsoft Windows Server 2016 Storage Spaces Direct discovers the object types described in the following sections.

**Management Server**

This class represents the Management Server.

**Management Server - Rules**

**S2D 2016: Close Alert script was failed**

A close alert script was failed.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | Yes | | Priority | Defines Alert Priority. | 1 | | Severity | Defines Alert Severity. | 2 | |  |
|  |  |  |

**S2D 2016: Seed**

A seed for Storage Spaces Direct Enabled Cluster 2016.

**S2D 2016: Seed - Discoveries**

**S2D 2016: Seed Discovery**

Discovery of Storage Spaces Direct 2016 Seed objects.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Interval (sec) |  | 14400 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 350 | |  |
|  |  |  |

**S2D 2016: Seed - Rules**

**SCOM S2D 2016: Script was failed**

This rule generates errors occurred while processing the monitoring or discovery scripts. The rule is disabled by default.  
If you need to receive more diagnostic data, enable this rule via the overrides. It is also necessary to enable the debug mode for the corresponding workflows via the overrides.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | No | | Generate Alerts | Defines whether the workflow generates an Alert. | Yes | | Priority | Defines Alert Priority. | 1 | | Severity | Defines Alert Severity. | 2 | |  |
|  |  |  |

**S2D 2016: Storage File Share**

Storage Spaces Direct enabled cluster storage File Share.

**S2D 2016: Storage File Share - Discoveries**

**S2D 2016: File Share Discovery**

Discovery of Storage Spaces Direct 2016 File Share objects.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Enable debug output | Enable debug output | false | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 14400 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage File Share - Unit monitors**

**File Share Health State Monitor**

Monitor for File Share Health State

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | False | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage File Share - Rules**

**SCOM S2D 2016: Storage File Share Rule**

This rule monitors storage fault events for the storage File Share, and generates an alert when a new or updated fault event is raised on the Storage Volume associated with this File Share.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | Yes | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Priority | Defines Alert Priority. | 2 | | Severity | Defines Alert Severity. | $Data/Property[@Name='OM Alert Severity']$ | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage File Share - Rules**

**File Share: Throughput Read (MB/s)**

File Share Throughput Read (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Throughput Write (MB/s)**

File Share Throughput Write (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Physical Capacity Available (GB)**

File Share Physical Capacity Available (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Latency Average (ms)**

File Share Latency Average (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Throughput Total (MB/s)**

File Share Throughput Total (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Latency Write (ms)**

File Share Latency Write (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Physical Capacity Total (GB)**

File Share Physical Capacity Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: IOPS Read (count/s)**

File Share IOPS Read (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: IOPS Total (count/s)**

File Share IOPS Total (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: IOPS Write (count/s)**

File Share IOPS Write (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**File Share: Latency Read (ms)**

File Share Latency Read (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage File Share Sync Alert Rule**

This rule is required to keep the alerts related to storage File Share in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state. The interval for this rule must be less than the interval for the File Share discovery.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug | Enable debug output | false | | Running Interval (sec) | The recurring interval of time in seconds in which to run the workflow. | 12000 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage File Share Refresh Alert Rule**

This rule is required to keep the alerts related to the storage File Share in actual state. Depending on the current condition, it opens new alerts, updates the existing alerts, and closes non-actual alerts.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output | false | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage File Share Ongoing Jobs Sync Alert Rule**

This rule is required to keep the alerts related to Storage File Share ongoing jobs in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 1800 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (sec) for script to close jobs alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage File Share Close Alert Rule**

This rule monitors fault events for the File Share. It closes an Operations Manager alert for an existing fault on the File Share when a close type of the fault is raised.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Subsystem**

Storage Spaces Direct Enabled Cluster 2016 Storage Subsystem.

**S2D 2016: Storage Subsystem - Discoveries**

**S2D 2016: Storage Subsystem Discovery**

Discovery of Storage Spaces Direct 2016 Storage Subsystem objects.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Enable debug output | Enable debug output | false | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 14400 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Subsystem - Unit monitors**

**S2D 2016: Storage Subsystem Health State Monitor**

Monitor for Storage Spaces Direct 2016 Storage Subsystem health state

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | False | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Subsystem - Rules**

**SCOM S2D 2016: Storage Subsystem Rule**

This rule monitors storage fault events for the Storage Subsystem and generates an alert when a new or updated fault event is raised on the Storage Subsystem.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | Yes | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Priority | Defines Alert Priority. | 2 | | Severity | Defines Alert Severity. | $Data/Property[@Name='OM Alert Severity']$ | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Throughput Write (MB/s)**

Storage Subsystem Throughput Write (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Volume Capacity Total (GB)**

Storage Subsystem Volume Capacity Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Latency Read (ms)**

Storage Subsystem Latency Read (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: IOPS Write (count/s)**

Storage Subsystem IOPS Write (count) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Physical Capacity Total (GB)**

Storage Subsystem Physical Capacity Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: IOPS Read (count/s)**

Storage Subsystem IOPS Read (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: IOPS Total (count/s)**

Storage Subsystem IOPS Total (count) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: CPU Utilization (%)**

Storage Subsystem CPU Utilization (%) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Pool Capacity Total (GB)**

Storage Subsystem Pool Capacity Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Pool Capacity Remaining (GB)**

Storage Subsystem Pool Capacity Remaining (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Volume Capacity Remaining (GB)**

Storage Subsystem Volume Capacity Remaining (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Throughput Read (MB/s)**

Storage Subsystem Throughput Read (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Latency Write (ms)**

Storage Subsystem Latency Write (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Memory Available (GB)**

Storage Subsystem Memory Available (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Physical Capacity Remaining (GB)**

Storage Subsystem Physical Capacity Remaining (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Memory Total (GB)**

Storage Subsystem Memory Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Latency Average (ms)**

Storage Subsystem Latency Average (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Storage Subsystem: Throughput Total (MB/s)**

Storage Subsystem Throughput Total (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Subsystem - Rules**

**SCOM S2D 2016: Storage Subsystem Refresh Alert Rule**

This rule is required to keep the alerts related to the Storage Subsystem in actual state. Depending on the current condition, it raises new alerts, updates the existing alerts, and closes non-actual alerts.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output | false | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Subsystem Sync Alert Rule**

This rule is required to keep the alerts related to Storage Subsystem in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state. The interval for this rule must be less than the interval for the Storage Subsystem discovery.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug | Enable debug output | false | | Running Interval (sec) | The recurring interval of time in seconds in which to run the workflow. | 12000 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Subsystem Ongoing Jobs Sync Alert Rule**

This rule is required to keep the alerts related to Storage Subsystem ongoing jobs in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 1800 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (sec) for script to close jobs alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Subsystem Close Alert Rule**

This rule monitors fault events for the Subsystem. It closes an Operations Manager alert for an existing fault on the Subsystem when a close type of the fault is raised.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Virtual Disk**

Storage Spaces Direct enabled cluster storage Virtual Disk.

**S2D 2016: Storage Virtual Disk - Discoveries**

**S2D 2016: Virtual Disk Discovery**

Discovery of Storage Spaces Direct 2016 Virtual Disk objects.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Enable debug output | Enable debug output | false | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 14400 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Volume**

Storage Spaces Direct enabled cluster storage Volume.

**S2D 2016: Storage Volume - Discoveries**

**S2D 2016: Volume Discovery**

Discovery of Storage Spaces Direct 2016 Volume objects.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Enable debug output | Enable debug output | false | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 14400 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Volume - Unit monitors**

**Cluster Shared Volume Health State Monitor**

Monitor for Cluster Shared Volume Health State

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | False | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**S2D 2016: Storage Volume - Rules**

**SCOM S2D 2016: Storage Volume Rule**

This rule monitors storage fault events for the file server Volume, and generates an alert when a new or updated fault event is raised on the Volume.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | Yes | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Priority | Defines Alert Priority. | 2 | | Severity | Defines Alert Severity. | $Data/Property[@Name='OM Alert Severity']$ | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Physical Capacity Available (GB)**

Volume Physical Capacity Available (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Latency Read (ms)**

Volume Latency Read (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Physical Capacity Total (GB)**

Volume Physical Capacity Total (GB) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: IOPS Total (count/s)**

Volume IOPS Total (count/s) performance collection rule

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| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Throughput Read (MB/s)**

Volume Throughput Read (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Latency Average (ms)**

Volume Latency Average (ms) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Throughput Total (MB/s)**

Volume Throughput Total (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: IOPS Read (count/s)**

Volume IOPS Read (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: IOPS Write (count/s)**

Volume IOPS Write (count/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Latency Write (ms)**

Volume Latency Write (ms) performance collection rule

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| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**Volume: Throughput Write (MB/s)**

Volume Throughput Write (MB/s) performance collection rule

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output |  | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 900 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Volume Sync Alert Rule**

This rule is required to keep the alerts related to Storage Volume in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state. The interval for this rule must be less than the interval for the Volume discovery.

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|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug | Enable debug output | false | | Running Interval (sec) | The recurring interval of time in seconds in which to run the workflow. | 12000 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Volume Close Alert Rule**

This rule monitors fault events for the Volume. It closes an Operations Manager alert for an existing fault on the Volume when a close type of the fault is raised.

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|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Volume Refresh Alert Rule**

This rule is required to keep the alerts related to the Storage Volume in actual state. Depending on the current condition, it opens new alerts, updates the existing alerts, and closes non-actual alerts.

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|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Enable debug output | Enable debug output | false | | Polling Interval (sec) | WMI event query polling interval. | 15 | | Timeout (sec) for script to close faults alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |

**SCOM S2D 2016: Storage Volume Ongoing Jobs Sync Alert Rule**

This rule is required to keep the alerts related to Storage Volume ongoing jobs in actual state: it avoids out-of-sync issues when the Operations Manager appears to be in unhealthy state.

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|  | |  |  |  | | --- | --- | --- | | **Name** | **Description** | **Default value** | | Enabled | Enables or disables the workflow. | Yes | | Generate Alerts | Defines whether the workflow generates an Alert. | No | | Interval (seconds) | The recurring interval of time in seconds in which to run the workflow. | 1800 | | Synchronization Time | The synchronization time specified by using a 24-hour format. May be omitted. |  | | Timeout (sec) for script to close jobs alerts | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | | Timeout (seconds) | Specifies the time the workflow is allowed to run before being closed and marked as failed. | 300 | |  |
|  |  |  |