

Guide for System Center Management Pack for Storage Spaces

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The Operations Manager team encourages you to provide feedback on the management pack by providing a review on the management pack’s page in the [Management Pack Catalog](http://go.microsoft.com/fwlink/?LinkID=82105) (http://go.microsoft.com/fwlink/?LinkID=82105).

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Guide for System Center Management Pack for Storage Spaces

This guide was written based on version 1.1.270.0 of the Microsoft System Center Storage Spaces Monitoring MP.

Guide History

|  |  |
| --- | --- |
| Release Date | Changes |
| March 2015 | Original release of this guide |
| March 2016 | Added alerts for Event ID 500 and 502 |

Supported Configurations

This management pack requires System Center Operations Manager 2012 SP1 or later. A dedicated Operations Manager management group is not required.

The following table details the supported configurations for the Management Pack for Storage Spaces:

|  |  |
| --- | --- |
| Configuration | Support |
| Virtual Machine Manager  | 2012 R2 with Update Rollup 4 or later installed |
| Windows Server File Servers | 2012 R2 with KB 3000850 (November 2014 update rollup) or later |
| Clustered servers | Yes  |
| Agentless monitoring | Not supported |
| Virtual environment | Yes |

Management Pack Scope

This management pack supports up to:

16 Storage Nodes
12 Storage Pools
120 File Shares.

Prerequisites

The following requirements must be met to run this management pack:

 Operations Manager Connector for Virtual Machine Manager installed and configured.

 <https://technet.microsoft.com/en-us/library/hh427287.aspx>

 Configuring this connection will install the required VMM Management Packs.

 Storage Spaces managed by Virtual Machine Manager.

* [KB2913766](http://support.microsoft.com/kb/2913766) “Hotfix improves storage enclosure management for Storage Spaces” must be installed on the VMM server and file server nodes

Files in this Management Pack

The Management Pack for Storage Spaces includes the following files:

 Microsoft.SystemCenter.OperationsManager.Storage.Spaces.Monitoring.mp (required)

Management Pack Purpose

In this section:

 [Monitoring Scenarios](#z5a9ff008734b4183946f840ae0464ab0)

 [How Health Rolls Up](#zb8b3e32eb8154a8da8b18b606568e65d)

For details on the discoveries, rules, monitors, views, and reports contained in this Management pack, see [Appendix: Management Pack Contents](#zf475f3cc57b84a049d89cda7b1f37ba8).

Monitoring Scenarios

This Management Pack contains rules to monitor physical disk and enclosure state in storage spaces.

Health is calculated by the storage service and is passed to Virtual Machine Manager (VMM) using the Storage Management API (SM-API), and is in turn passed to Operations Manager (OM) through the OM connector for VMM.

|  |  |  |  |
| --- | --- | --- | --- |
| Monitoring scenario | Description | Associated rules and monitors | Alert Auto Resolve |
| Enclosure Health | 1. Collects Storage Spaces event 402 and inspects the health parameter values. The rule will generate a warning if the enclosure is unhealthy.
2. Collects Storage Spaces event 402 and inspects the health parameter value. The rule will reset the health of enclosure and storage pool but does not resolve the alert.
3. Collects Storage Spaces event 401. The rule will generate a warning if the enclosure is disconnected.
4. Collects Storage Spaces event 400. The rule will reset the health of enclosure and storage pool but does not resolve alert.
 | 1. (alerting rule) Microsoft System Center Operations Manager Storage Enclosure Unhealthy Event Collection Rule
2. (Monitor Reset rule) Microsoft System Center Operations Manager Storage Enclosure Recovery Event Collection Rule
3. (alerting rule) Microsoft System Center Operations Manager Storage Enclosure Path Removal Event Collection Rule
4. (Monitor Reset rule) Microsoft System Center Operations Manager Storage Enclosure Path Detected Event Collection Rule
 | NoNo |
| Physical Disk Health | 1. Collects Storage Spaces event 203. The rule will generate an alert for physical disk failures.
2. Collects Storage Spaces event 204. The rule will generate an alert for physical disks that report an impending failure.
 | 1. (alerting rule) Microsoft System Center Operations Manager Physical Disk I/O error Event Collection Rule
2. (alerting rule) Microsoft System Center Operations Manager Physical Disk Impending Failure Event Collection Rule
 | NoNo |
| Spaces Health | 1. Checks the capacity of the Storage Pool and generates an alert whenever Storage Spaces event 103 is detected. Recovery event 104 resets the monitor and resolves the alert.
2. The rule checks the status property on storage logical unit object as seen from VMM. Alerts on warning and unhealthy status.
 | 1. (alerting monitor) Storage Spaces Virtual Disk Monitor
2. (alerting monitor) Spaces Health State Monitor
 | YesYes |
| File Share Health | 1. This monitor alerts if the capacity usage of the File Share’s underlying volume has exceeded its threshold.
 | 1. (alerting monitor) VHD Oversubscription Monitor
 | Yes |

There are no state or alert visualizations as part of this MP.

You can see file share and storage pool health on the VMM Fabric Dashboard or you can build your own views in a custom MP.

All alerts for physical disks and enclosures must be manually closed and any health state impact manually reset.

How Health Rolls Up

The following diagram shows how the health states of objects roll up in this management pack.







Key:



Configuring the Management Pack for Storage Spaces

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

 [Best Practice: Create a Management Pack for Customizations](#z2)

 [Security Configuration](#z3)

 [Tuning Performance Threshold Rules](#z4)

Best Practice: Create a Management Pack for Customizations

By default, 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 the purpose of 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.

Security Configuration

This Management Pack does not include any Run As profiles. The following Management Pack rules and unit monitors either directly use, or rely on, the “Virtual Machine Manager Connection Account” Run As Profile in the VMM Management Pack.

Where a Management Pack rule or unit monitor does not directly use the Run As profile bullet points are used to show the dependency.

|  |  |
| --- | --- |
| **Object** | **Display Name** |
| Rule | Microsoft System Center Operations Manager Storage Enclosure Path Removal Event Collection Rule* Microsoft System Center Operations Manager Enclosure Paths Monitoring Datasource
 |
| Rule | Microsoft System Center Operations Manager Storage Enclosure Path Detected Event Collection Rule* Microsoft System Center Operations Manager Enclosure Paths Monitoring Datasource
 |
| Unit Monitor | Storage Spaces Virtual Disk Monitor* Spaces Health Monitor Type
	+ Microsoft.SystemCenter.StorageSpaces.EventWatcherDSType
 |
| Unit Monitor | VHD Oversubscription Monitor* VHD Oversubscription Monitor Type
	+ VHD Oversubscription Probe uses Profile
 |
| Rule | Microsoft System Center Operations Manager Physical Disk I/O error Event Collection Rule |
| Rule | Microsoft System Center Operations Manager Physical Disk Impending Failure Event Collection Rule |
| Rule | Microsoft System Center Operations Manager Storage Enclosure Unhealthy Event Collection Rule |
| Rule | Microsoft System Center Operations Manager Storage Enclosure Recovery Event Collection Rule |
| Unit Monitor | Spaces Health State Monitor |
| Unit Monitor | Storage Pool Physical Disk Monitor* + Storage pool monitor based on physical disk health
 |
| Unit Monitor  | File Share Physical Disk Health Monitor* + File share spaces monitor based on physical disk health
 |
| Unit Monitor | Enclosure Health Monitor |
| Unit Monitor | Enclosure Paths Monitor |
| Unit Monitor | Microsoft SystemCenter DiskPerfCollection* + Rule to collect disk perf.
 |

**OM Agents setting**

If OM agent proxy setting is not enabled for file server nodes and VMM server, it needs to be turned on. This can be done from Administration space in OM console.

Tuning Performance Threshold Rules

There are no performance threshold rules in this Management Pack.

Links

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

System Center 2012 - 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)

Operations Manager 2007 R2

 [Administering the Management Pack Life Cycle](http://go.microsoft.com/fwlink/?LinkId=211463)

 [How to Import a Management Pack in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkID=142351)

 [How to Monitor Using Overrides](http://go.microsoft.com/fwlink/?LinkID=117777)

 [How to Create a Run As Account in Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkID=165410)

 [How to Modify an Existing Run As Profile](http://go.microsoft.com/fwlink/?LinkID=165412)

 [How to Export Management Pack Customizations](http://go.microsoft.com/fwlink/?LinkId=209940)

 [How to Remove a Management Pack](http://go.microsoft.com/fwlink/?LinkId=209941)

For questions about Operations Manager and management packs, see the [System Center Operations Manager community forum](http://go.microsoft.com/fwlink/?LinkID=179635).

A useful resource is the [System Center Operations Manager Unleashed blog](http://go.microsoft.com/fwlink/?LinkId=246391), which contains “By Example” posts for specific management packs.

For additional information about Operations Manager, see the [System Center 2012 - Operations Manager Survival Guide](http://go.microsoft.com/fwlink/?LinkId=246383) and [Operations Manager 2007 Management Pack and Report Authoring Resources](http://go.microsoft.com/fwlink/?LinkId=246388)

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Appendix: Management Pack Contents

The Management Pack for Storage Spaces does not discover any objects, it instead targets objects discovered in the Virtual Machine Manager Storage Library and Virtual Machine Manager Storage 2012 Discovery management packs.

Microsoft.SystemCenter.VirtualMachineManager.Storage.FileServer Discovery Information

The discovery of Microsoft.SystemCenter.VirtualMachineManager.Storage.FileServer is defined in Virtual Machine Manager Storage Library Management Pack

Related Monitors

There are no related monitors.

Related Rules

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rule | Data source | Alert | Notes | Enabled | When to Enable |
| Microsoft SystemCenter DiskPerfCollection | Timed PowerShell Disk Performance | False | Collect every 5 min | Yes | N/A |
| Microsoft System Center Operations Manager Physical Disk I/O error Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | Severity = WarningPriority = Normal | Alert when EventID 203 | Yes | N/A |
| Microsoft System Center Operations Manager Physical Disk Impending Failure Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | Severity = WarningPriority = Normal | EventID 204 | Yes | N/A |
| Microsoft System Center Operations Manager Storage Enclosure Unhealthy Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | Severity = WarningPriority = Normal | EventID 402 | Yes | N/A |
| Microsoft System Center Operations Manager Storage Enclosure Recovery Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | False | EventID 402 | Yes | N/A |
| Microsoft System Center Operations Manager Storage Enclosure Path Removal Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | Severity = WarningPriority = Normal | EventID 401 | Yes | N/A |
| Microsoft System Center Operations Manager Storage Enclosure Path Detected Event Collection Rule | Microsoft Windows StorageSpaces Driver/Operational event log | False | EventID 400 | Yes | N/A |

Related Views

|  |  |  |
| --- | --- | --- |
| View | Description | Rules and Monitors that Populate the View |
| Storage Performance View | Disk performance counters for storage. | Microsoft SystemCenter DiskPerfCollection |

 Related Reports

There are no reports in this Management Pack.

Microsoft.SystemCenter.VirtualMachineManager.Storage.FileShare.Base Discovery Information

The discovery of Microsoft.SystemCenter.VirtualMachineManager.Storage.FileShare.Base is defined in Virtual Machine Manager Storage Library Management Pack

Related Monitors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Monitor | Data source | Interval | Alert | Reset Behavior | Enabled | When to Enable |
| File Share Physical Disk Health Monitor | Event 8000 from the Storage Monitoring Script in the Operations Manager event log | N/A | False | Manual | Yes | N/A  |
| Storage Spaces Virtual Disk Monitor | Microsoft-Windows-StorageSpaces-Driver/Operational Event Log | N/A | Priority = NormalSeverity = MatchMonitorHealth | Automatic | Yes | N/A  |
| VHD Oversubscription Monitor | PowerShell script querying VMM | 15 mins | Priority = NormalSeverity = MatchMonitorHealth | Automatic | Yes | N/A  |

Related Rules

There are no related rules.

Related Views

There are no related views.

Related Reports

There are no reports in this Management Pack.

Microsoft.SystemCenter.VirtualMachineManager.Storage.StoragePool.StorageSpaces

Discovery Information

The discovery of Microsoft.SystemCenter.VirtualMachineManager.Storage.StoragePool.StorageSpaces is defined in Virtual Machine Manager Storage 2012 Discovery Management Pack

Related Monitors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Monitor | Data source | Interval | Alert | Reset Behavior | Enabled | When to Enable |
| Storage Pool Physical Disk Monitor | Event 8000 from the Storage Monitoring Script in the Operations Manager event log | N/A | False | Manual | True | N/A  |

Related Rules

There are no related rules.

Related Views

There are no related views.

Related Reports

There are no reports in this Management Pack.

Microsoft.SystemCenter.VirtualMachineManager.Storage.2012.Enclosure Discovery Information

The discovery of Microsoft.SystemCenter.VirtualMachineManager.Storage.2012.Enclosure is defined in Virtual Machine Manager Storage 2012 Discovery Management Pack

Related Monitors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Monitor | Data source | Interval | Alert | Reset Behavior | Enabled | When to Enable |
| Enclosure Health Monitor | Event 8001/8002 from the Storage Monitoring Script in the Operations Manager event log. | N/A | False | Automatic | True | N/A  |
| Enclosure Paths Monitor | Event 8003/8002 from the Storage Monitoring Script in the Operations Manager event log. | N/A | False | Automatic | True | N/A  |

Related Rules

There are no related rules.

Related Views

There are no related views.

Related Reports

There are no reports in this Management Pack.

Microsoft.SystemCenter.VirtualMachineManager.Storage.StorageLogicalUnit Discovery Information

The discovery of Microsoft.SystemCenter.VirtualMachineManager.Storage.StorageLogicalUnit is defined in Virtual Machine Manager Storage Library Management Pack

Related Monitors

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Monitor | Data source | Interval | Alert | Reset Behavior | Enabled | When to Enable |
| Spaces Health State Monitor | PowerShell Script querying VMM | 15 mins | Priority = NormalSeverity = MatchMonitorHealth | Automatic | True | N/A  |

Related Rules

There are no related rules.

Related Views

There are no related views.

Related Reports

There are no reports in this Management Pack.