**Microsoft System Center**

Guide to System Center Management Pack for Windows Server Failover Cluster

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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# System Center Management Pack for Windows Server Failover Cluster

The Windows Server Failover Cluster Management Pack provides both proactive and reactive monitoring of your Windows Server Failover Cluster deployments. It monitors Cluster services components—such as nodes, networks, resources, and resource groups—to report issues that can cause downtime or poor performance.

The monitoring provided by this management pack includes availability and configuration monitoring. In addition to health monitoring capabilities, this management pack includes dashboard views, extensive knowledge with embedded inline tasks, and views that enable near real-time diagnosis and resolution of detected issues.

With this management pack, Information Technology (IT) administrators can automate one-to-many management of users and computers, simplifying administrative tasks and reducing IT costs. Administrators can efficiently implement security settings, enforce IT policies, and distribute software consistently across a given site, domain, or range of organizational units.

## Document Version

This guide was written based on the 10.0.6.6 version of the Windows Server Failover Cluster Management Pack.

## Changes History

| **Release Date** | **Changes** |
| --- | --- |
| February, 2021 | * Added language packs for version 10.0.6.6 and removed 10.0.6.0. |
| November, 2018 | * Added topic “Changes in version 10.0.6.6”. |
| February, 2017 | * Added topic “Changes in version 10.0.6.0”. * Added topic “Appendix: Display Strings Changes History” * Updated topic “Appendix: Management Pack Objects and Workflows” * Updated Changes History |
| November, 2014 | * Added topic “Changes in version 6.0.7230.0” * Updated Changes History |
| October, 2013 | * Added topic “Changes in version 6.0.7063.0” * Updated Changes History |
| March, 2013 | Original release of this guide |

## Get the Latest Management Pack and Documentation

You can find the Windows Server Failover Cluster Management Pack for System Center Operations Manager on the [Download Center](http://go.microsoft.com/fwlink/?LinkId=717049).

## Changes in Version 10.0.6.6

* Fixed Issue: WMI Health monitor doesn't work if SPN http://*servername* is set to a user account.
* Fixed Issue: WMI Health monitor doesn't work if WINRM is configured to use *https* only.
* Fixed Issue: Cluster Discovery fails if there are no CSV resources

## Changes in Version 10.0.6.0

* Fixed issue: resources group view displayed 2012 and 2012 R2 Clusters simultaneously.
* Changed Availability Storage group monitoring logic:
  + If the group state was empty or offline, the monitor did not change state to Critical.
  + If the group state was in partially online state, the monitor did not change to Warning state.
  + If physical disk was in offline state, the monitor did not change state from Healthy to Critical.
* Fixed issue with Network and Network Interfaces discovery in case Cluster Network Interface name was longer than ~40 characters and contained ‘-’ characters.
* Fixed issue: Cluster Resource tasks execution was failing if cluster.exe was not installed.
* Fixed issue: Cluster Network Interfaces were not discovered on Windows Server 2008 Core.
* Fixed issue: "Pause Node" and "Resume Node" tasks had unexpected output.
* Added support for resource groups’ tasks with names containing WMI reserved symbols.
* Fixed issue: Cluster Resources were not discovered if the Cluster had File Server role.
* Fixed issue: Cluster Resource groups could not be moved to another node due to failure of "Move Group" task. The logic was changed, see “[Move Group” Task Specifics](#MoveGroup)” section.
* Fixed issue: “Check Cluster Group” diagnostic task did not work on Windows Server 2003-2008 R2 platforms without PowerShell, and on Windows Server 2012 and higher without PowerShell and Cluster cmdlets installed.
* Fixed issue: If a cluster object name contained WMI reserved symbols, monitoring of this cluster object did not work.
* Added support for resources with long names (up to 4000 symbols).
* Fixed issue: “10000” warning event occurred on all platforms if the discovery did not return the data.
* Fixed issue: Several resource tasks do not work if Cluster.exe is not installed.
* Updated the display strings.

## Changes in Version 6.0.7230.0

* Fixed a bug that was preventing discovery of 2008/2003 servers.
* Added an override for 2008 R2 called “Resource Group Type Filter”.
* Fixed a problem that was preventing the import of 2012 R2 language packs.

## Changes in Version 6.0.7063.0

* Updated for 2012 R2 support

## Supported Configurations

This management pack requires System Center 2012 Operations Manager or later.

The Windows Server Failover Cluster Management Pack for System Center 2012 Operations Manager supports failover clusters on the following configurations:

* Windows Server 2003 operating systems with Service Pack 2 (SP2), Windows Server 2003 R2 operating systems with Service Pack 2 (SP2) on 32-bit and 64-bit servers.
* Windows Server 2008 Enterprise, Windows Server 2008 R2 Enterprise, Windows Server 2008 Datacenter, and Windows Server 2008 R2 Datacenter operating systems on 32-bit and 64-bit servers.
* Windows Server 2012 and Windows Server 2012 R2 all editions.

This management pack is also supported on the Server Core installation option of the Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, and Windows Server 2012 R2 operating systems.

This management pack requires installation of the latest version (10.0.8.0) of BaseOS 2016 management pack.

Note

The Windows Server Failover Cluster Management Pack for System Center 2012 – Operations Manager is not supported on the Windows Server 2008 R2 Web and Standard operating systems because the Cluster service is not supported on these editions.

All support is subject to Microsoft’s overall [support lifecycle](http://go.microsoft.com/fwlink/?Linkid=26134) (http://go.microsoft.com/fwlink/?Linkid=26134) and the [Supported Configurations for System Center 2012](http://go.microsoft.com/fwlink/?LinkId=717050).

By default, this management pack supports monitoring of a maximum of 300[[1]](#footnote-2) resource groups per monitored cluster; you may change it by the override for “Windows Server 20XX Cluster Discovery”. In Hyper-V clusters with more than 300 resource groups, it is strongly recommended that you also use the System Center Virtual Machine Manager Management Pack to complement the monitoring provided by the Windows Server Failover Cluster Management Pack.

The management pack is configured to check the health of clustered resource groups every five minutes. During this time, the CPU will briefly spike while the management pack communicates with the Cluster service and calculates the health state of the monitored resource groups. The five-minute polling interval can be changed for the Resource Group State monitor by using overrides, but an interval less than 60 seconds is not recommended, especially if you are monitoring many resource groups. In tests with 300 resource groups, CPU spikes that last for 2-3 seconds with an overall CPU utilization increase of less than 3% have been observed.

## Get Started

This section describes the actions you should take before you import the management pack, any steps you should take after you import the management pack, and information about customizations.

### 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, take the following actions:

* Ensure that System Center Operations Manager is installed.
* You must import the Windows Server Operating System Management Pack.
* Download and import the following up-to-date management packs from the Windows Server Operating System Management Pack:
  + Microsoft.Windows.Server.Library.mp
  + Microsoft.Windows.Server.2008.Discovery.mp
  + Microsoft.Windows.Server.2003.mp
* Enable the Agent Proxy setting on all agents that are 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

|  |
| --- |
| 1. Open the Operations console, and then 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 that is installed on a clustered server.  If you have version 6.0.6277.0 of the Windows Server 2003 Cluster Management Pack  If you have installed the Windows Server 2003 Cluster Management Pack 6.0.6277.0, remove the following management pack files prior to importing this management pack:   Microsoft.Windows.2003.Cluster.Management.Monitoring   Microsoft.Windows.2003.Cluster.Management.Library   Microsoft.Windows.Cluster.Management.Monitoring   Microsoft.Windows.Cluster.Management.Library  Notes :   * If you have any other version of the Windows Server Failover Cluster Management Pack, you can upgrade the management pack without performing the previous steps. * An in-place upgrade is supported for Windows Server 2003 Cluster Management Pack versions 6.0.6277.1 and higher. |

### Files in this Management Pack

The Windows Server Failover Cluster Management Pack includes the following files:

* Microsoft.Windows.2012.R2.Cluster.Management.Library.mp: Displayed as “Windows Server 2012 R2 Cluster Management Library,” this management pack contains the class definitions, relationships, and discoveries that are specific to the Windows Server 2012 R2 Cluster services management.

 Microsoft.Windows.2012.R2.Cluster.Management.Monitoring.mp: Displayed as “Windows Server 2012 R2 Cluster Management Monitoring,” this management pack defines monitoring that is used specifically for Windows Server 2012 R2 Cluster services.

 Microsoft.Windows.2012.R2.Cluster.Management.Monitoring.Overrides.mp: Displayed as “Windows Server 2012 R2 Cluster Management Monitoring Overrides,” this management pack contains overrides recommended specifically for Windows Server 2012 R2 Cluster services.

 Microsoft.Windows.2012.Cluster.Management.Library.mp: Displayed as “Windows Server 2012 Cluster Management Library,” this management pack contains the class definitions, relationships, and discoveries that are specific to the Windows Server 2012 Cluster services management.

 Microsoft.Windows.2012.Cluster.Management.Monitoring.mp: Displayed as “Windows Server 2012 Cluster Management Monitoring,” this management pack defines monitoring that is used specifically for Windows Server 2012 Cluster services.

 Microsoft.Windows.2008.Cluster.Management.Library.mp: Displayed as “Windows Server 2008 Cluster Management Library,” this management pack contains the class definitions, relationships, and discoveries that are specific to the Windows Server 2008 and Windows Server 2008 R2 Cluster services management.

 Microsoft.Windows.2008.Cluster.Management.Monitoring.mp: Displayed as “Windows Server 2008 Cluster Management Monitoring,” this management pack defines monitoring that is used specifically for Windows Server 2008 and Windows Server 2008 R2 Cluster services.

 Microsoft.Windows.2003.Cluster.Management.Library.mp: Displayed as “Windows 2003 Cluster Management Library,” this management pack contains the class definitions, relationships, and discoveries that are specific to the Windows Server 2003 Cluster services management.

 Microsoft.Windows.2003.Cluster.Management.Monitoring.mp: Displayed as “Windows 2003 Cluster Management Monitoring,” this management pack defines monitoring that is used specifically for Windows Server 2003 Cluster services.

 Microsoft.Windows.Cluster.Management.Library.mp: Displayed as “Windows Cluster Management Library”, this is the base library. It contains definitions and discoveries that are generically used for Windows Cluster services management. This management pack contains no monitoring configuration and is a prerequisite for all other Windows Server Cluster management packs. Therefore, this management pack must be imported at the same time or prior to the version-specific management packs.

 Microsoft.Windows.Cluster.Management.Monitoring.mp: Displayed as “Windows Cluster Management Monitoring,” this management pack implements general monitoring and views generically used across all versions of Windows Cluster services. This management pack is a prerequisite for the version-specific monitoring management pack.

## How to Import the Windows Server Failover Cluster Management Pack

For instructions about importing a management pack, see [How to Import an Operations Manager Management Pack](http://go.microsoft.com/fwlink/?LinkID=219431) (http://go.microsoft.com/fwlink/?LinkID=219431).

After the Windows Server Failover Cluster Management Pack is imported, do the following to finish your initial configuration:

1. Enable the Agent Proxy setting on all agents that are installed on servers that are members of a cluster.

Warning

Discoveries and monitoring will not function unless proxy is enabled. See [Before You Import the Management Pack](#zc19a82554d254aceb1d299dfcabe045b) for more information.

2. Create a new management pack in which you store overrides and other customizations.

## Create a New Management Pack for Customizations

Most vendor management packs are sealed so that you cannot change any of the original settings in the management pack file. However, you can create customizations, such as overrides or new monitoring objects, and save them to a different management pack.

Creating a new management pack for storing overrides has the following advantages:

 It simplifies the process of exporting customizations that were created in your test and pre-production environments to your production environment. For example, instead of exporting a default management pack that contains customizations from multiple management packs, you can export just the management pack that contains customizations of a single management pack.

 It allows you to delete the original management pack without preliminary deletion of the default management pack. A management pack that contains customizations is dependent on the original management pack. This dependency requires you to delete the management pack with customizations before you can delete the original management pack. If all of your customizations are saved to the default management pack, you must delete the default management pack before you can delete an original management pack.

 It is easier to track and update customizations to individual management packs.

For more information about sealed and unsealed management packs, see [Management Pack Formats](http://go.microsoft.com/fwlink/?LinkId=108355) (http://go.microsoft.com/fwlink/?LinkId=108355).

## Discovery and Monitoring of Resources and Resource Groups

For scalability reasons, discovery and monitoring of resource groups is limited by default to a maximum of 300 resource groups. It is possible but not recommended to override this for specific clusters. An alert (Resource Group Discovery Limit Exceeded) will be generated if a cluster containing more than 300 resource groups is discovered. If you override the limit for specific clusters, CPU utilization for the Operations Manager agent will increase.

Resource discovery and monitoring is disabled by default because the resource group monitors provide sufficient monitoring. It is not recommended to enable resource discovery and monitoring, but it is possible to do so by using the Discover Cluster Resources override on the Windows Server 2003, 2008, 2008 R2, 2012, and 2012 R2 Cluster Discovery. By default, this has a value of false.

## Security Considerations

This section provides information about using a low-privilege account with the Windows Server Failover Cluster Management Pack.

Certain monitors, rules, discoveries, tasks, and recoveries cannot be run in a low-privilege environment or must have minimum permissions.

### Low-Privilege Environments

The Windows Server Failover Cluster Management Pack uses the agent action account to perform discovery and run monitors, rules, and tasks. The agent action account can run as Local System or as a named account. When running as Local System, the agent action account has the privileges needed to perform discovery and run monitors, rules, and tasks.

If the action account for the agent is using a low-privilege account, you will need to configure the Windows Cluster Action Account Run As profile with an account that has the administrative credentials to access the cluster. If you do not perform this configuration, discovery, monitoring, tasks, and recoveries will not function.

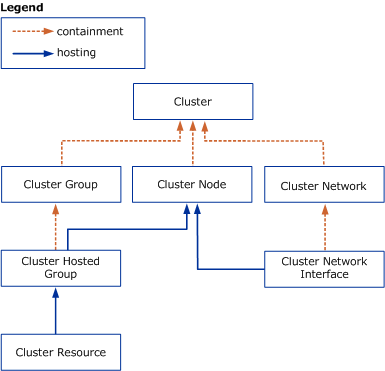
The management pack elements in the following tables are configured to use the Windows Cluster Action Account Run As profile.

## Understand Management Pack Operations

This section provides information about the types of objects the Windows Server Failover Cluster Management Pack discovers; information about classes, how health rolls up, and the management pack’s monitoring scenarios.

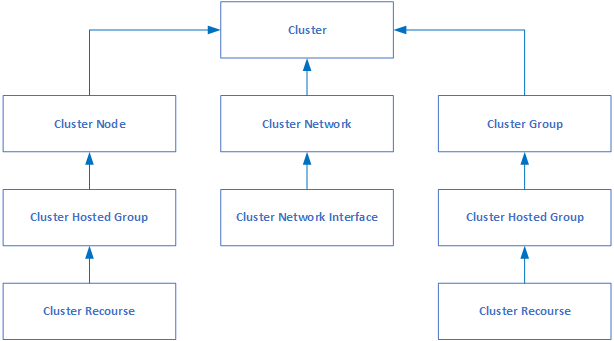
### Classes

The following diagram shows the classes defined in this management pack.



### How Health Rolls Up

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



### View Information in the Operations Manager Console

All Windows Server Failover Cluster service objects are contained in the Microsoft Windows Failover Cluster folder.

Active Alerts (Microsoft.Windows.Cluster.Alert.View): This Alert View will display all active alerts for Cluster classes.

Active Alerts (Microsoft.Windows.Cluster.Group.Alert.View): This Alert View will display active alerts for cluster resource group.

Active Alerts (Microsoft.Windows.Cluster.Network.Alert.View): This Alert View will display active alerts for cluster network.

Active Alerts (Microsoft.Windows.Cluster.Node.Alert.View): This Alert View will display active alerts from machines that serve as cluster nodes.

Cluster Service State (Microsoft.Windows.Cluster.Service.State.View): This State View will display State and Attributes for the Cluster NT Service.

Cluster State (Microsoft.Windows.Cluster.State.View): This State View will display State and Attributes for cluster.

Clusters (Microsoft.Windows.Clusters.Diagram.View): This Diagram View will display discovered clusters.

## Key Monitoring Scenarios

The Windows Server Failover Cluster Management Pack includes a number of key monitoring scenarios that are configurable.

Some of the conditions monitored by this management pack are as follows:

 Configuration or hardware issues that interfere with starting the Cluster service

 Connectivity problems that affect communication between cluster nodes or between a node and a domain controller

 Active Directory Domain Services (AD DS) settings that affect the cluster; for example, permissions needed by the computer account that is used by the cluster

 Configuration issues with the network infrastructure needed by the cluster; for example, issues with Domain Name System (DNS)

 Issues with the availability of a cluster resource, such as a clustered file share

 Issues with the cluster storage

## Place Monitored Objects in Maintenance Mode

When a monitored object, such as a computer or distributed application, goes offline for maintenance, Operations Manager detects that no agent heartbeat is being received and, as a result, might generate numerous alerts and notifications. To prevent alerts and notifications, place the monitored object into maintenance mode. In maintenance mode, alerts, notifications, rules, monitors, automatic responses, state changes, and new alerts are suppressed at the agent.

For general instructions on placing a monitored object in maintenance mode, see [How to Suspend Monitoring Temporarily by Using Maintenance Mode](http://go.microsoft.com/fwlink/?LinkId=717051) (http://go.microsoft.com/fwlink/?LinkId=717051).

## Appendix: Known Issues and Troubleshooting

Cluster Administrator task results in error

In Cluster Resource Group Tasks, the Cluster Administrator task opens the Cluster Administrator Microsoft Management Console (MMC) snap-in (also known as Failover Cluster Manager). If the Cluster Administrator snap-in is not installed on the computer running the Operations console, the Cluster Administrator task will fail.

Virtual Server instances are not monitored

In the Windows Server State view, instances of Virtual Server are not monitored. This is because there are no monitors to set the state of the Virtual Server instances.

Alerts that have not been generated by the Failover Cluster Management Pack show up in the Node\Active Alerts View

You may find that alerts that are not generated by the Failover Cluster Management Pack are shown in the Node\Active Alerts view. This is by design since the node is derived from Windows Computer and will therefore show all alerts generated on the computer.

Node State Monitor cannot be switched to “Critical” state

Due to implementation peculiarities, Node State Monitor cannot be switched to “Critical” state.

“Windows Time service Status” and “Networking Connections service status” monitors are not initialized

“Windows Time service Status” and “Networking Connections service status” monitors are displayed as enabled, but not initialized. By default, these monitors are disabled by override in “Windows Server 20XX Cluster Management Monitoring” management packs.  
**Resolution:** Override the monitors: disable and enable them again. You can also create custom monitors with the same conditions.

Resource Group State Monitor and Resource Group Rollup Monitor do not work for Available Storage Group by default.  
Resource Group State Monitor and Resource Group Rollup Monitor do not work for Available Storage Group by default. To fix Available Storage Group monitoring, create additional “enforced” overrides for the following objects depending on the used platform:

* “Windows Server 2012 Available Storage Cluster Resource Group”
* “Windows Server 2012 R2 Available Storage Cluster Resource Group”
* “Windows Server 2008 Available Storage Cluster Resource Group”
* “Windows Server 2008 R2 Available Storage Cluster Resource Group”

Windows Server 2008 Cluster objects are displayed along with Windows Server 2008 R2 Cluster objects

Windows Server 2008 Cluster objects are displayed in SCOM along with Windows Server 2008 R2 Cluster objects. The list of objects is as follows:

* Windows Server 2008 Cluster Network
* Windows Server 2008 Monitoring Cluster Service
* Windows Server 2008 Cluster Node
* Windows Server 2008 Cluster Resource Group
* Windows Server 2008 Core Cluster Resource Group
* Windows Server 2008 Available Storage Cluster Resource Group

Windows Server 2012 Cluster objects are displayed along with Windows Server 2012 R2 Cluster objects

Windows Server 2012 Cluster objects are displayed in SCOM along with Windows Server 2012 R2 Cluster objects. The list of objects is as follows:

* Windows Server 2012 Cluster Network
* Windows Server 2012 Monitoring Cluster Service
* Windows Server 2012 Cluster Node

**Several resource tasks do not work if Cluster.exe is installed and resource names contain special symbols**

The following resource tasks do not work if Cluster.exe is installed and resource names contain special symbols:

* Bring Resource Offline
* Bring Resource Online
* List Resource Dependencies
* List Resource Properties
* List Resource Status

“Bring Group Online”, “Take Group Offline” and “Delete Group” tasks cannot be performed for some Cluster Resource groups

“Bring Group Online”, “Take Group Offline” and “Delete Group” tasks cannot be performed for the following Cluster Resource groups by design:

* Core Cluster Resource Group
* Cluster Available Storage Cluster Resource Group

**Cluster objects may be discovered incorrectly if their names contain non-Latin symbols**

Cluster objects may be discovered incorrectly if their names contain non-Latin symbols and the Operation System has incorrect settings for non-Unicode programs.

**Cluster objects may be discovered incorrectly if their names contain quote symbols**

Cluster objects may be discovered incorrectly if their names contain quote symbols.

**Cluster Node Hosted Cluster Resource Group may not be discovered on all Nano Server Cluster nodes**

Cluster Node Hosted Cluster Resource Group may not be discovered on all Nano Server Cluster nodes. Such issue is caused by WMI specifics on Nano Server; there is no workaround available.

**Resources with long names (more than 4000 symbols) will be truncated**

Resources with long names (more than 4000 symbols) will be truncated; therefore, it may lead to names’ collisions.

**“10000” warning event may occur on Nano Server**

“10000” warning event may occur on Nano Server; there is no workaround available.

## Appendix: Management Pack Objects and Workflows

This section provides detailed procedures and scripts that allow you to display rules and other information about the management packs you import.

### How to View Management Pack Details

For more information about a monitor and the associated override values, see the knowledge for the monitor.

To view knowledge for a monitor

|  |
| --- |
| 1. In the Operations console, click Authoring.  2. Expand Management Pack Objects, and then click Monitors.  3. In the Monitors pane, expand the targets until you reach the monitor level. Alternatively, you can use the Search box to find a particular monitor.  4. Click the monitor, and in the Monitors pane, click View knowledge.  5. Click the Product Knowledge tab. |

### Non-Event Log Rules

Non-Event Log Rules are used by the Windows Server Failover Cluster Management Pack to trigger rediscovery of the cluster in case the cluster properties change.

The tables display information about the Non-Event Log Rules for Windows Server Failover Cluster deployments in this management pack.

The following applies to all Non-Event Log Rules listed in the tables below:

 All rules are disabled by default

 No alert is generated

#### Non-Event Log Rules: Microsoft Failover Cluster Service (MS FCS)

| **Name** | **Target** |
| --- | --- |
| Cluster object added | Monitoring Cluster service |
| Cluster object property changed | Monitoring Cluster service |
| Cluster object removed | Monitoring Cluster service |

#### Non-Event Log Rules: Windows Server 2003 Cluster

| **Name** | **Target** |
| --- | --- |
| Cluster object changed property value | Windows 2003 Monitoring Cluster service |
| Cluster object space changed due some addition | Windows 2003 Monitoring Cluster service |
| Cluster object space changed due some deletion | Windows 2003 Monitoring Cluster service |

### Aggregate Monitors

The following table displays the aggregate monitors in this management pack for Microsoft Cluster Service (MSCS) and Microsoft Failover Cluster Service (MS FCS) deployments.

| **Name** | **Target** | **Algorithm** | **Enabled** | **Generate Alert** |
| --- | --- | --- | --- | --- |
| Resource Group Availability | Cluster Node Hosted Cluster Resource Group | BestOf | True | False |

### Unit Monitors

| **Name** | **Target** |
| --- | --- |
| Network Interface State Monitor | Windows 2003 Cluster Network Interface |
| Network Interface State Monitor | Windows 2008 Cluster Network Interface |
| Network Interface State Monitor | Windows 2012 Cluster Network Interface |
| Resource Group State Monitor | Cluster Node Hosted Cluster Resource Group |
| Node State Monitor | Cluster Node |
| Resource State Monitor | Cluster Resource |
| Cluster service status | Monitoring Cluster Service |
| Networking Connections service status | Cluster Node Role |
| RPC service status | Cluster Node Role |
| Windows Time service Status | Cluster Node Role |
| WMI service Status | Cluster Node Role |

### Discoveries

| **Name** | **Target** |
| --- | --- |
| Cluster Node Roles Discovery | Cluster Roles |
| Cluster Service Discovery | Windows Cluster Service |
| Clusters Group Discovery | Windows Clusters |
| Windows Server 2003 Cluster Service Discovery | Monitoring Cluster Service |
| Windows Server 2003 Cluster Discovery | Windows Server 2003 Monitoring Cluster service |
| Windows Server 2003 Cluster Group Discovery | Cluster Groups by Nodes |
| Windows Server 2008 Cluster Service Discovery | Monitoring Cluster Service |
| Windows Server 2008 Cluster Discovery | Windows Server 2008 Monitoring Cluster service |
| Windows Server 2008 Cluster Node Discovery | Windows 2008 Monitoring Cluster Service |
| Windows Server 2008 Cluster Resource Group discovery | Windows 2008 Cluster Service |
| Windows Server 2008 Cluster Group Discovery | Cluster Groups by Nodes |
| Windows Server 2008 R2 Cluster Service Discovery | Monitoring Cluster Service |
| Windows Server 2008 R2 Cluster Discovery | Windows Server 2008 R2 Monitoring Cluster service |
| Windows Server 2008 R2 Cluster Node Discovery | Windows 2008 R2 Monitoring Cluster Service |
| Windows Server 2012 Cluster Service Discovery | Monitoring Cluster Service |
| Windows Server 2012 Cluster Discovery | Windows Server 2012 Monitoring Cluster service |
| Windows Server 2012 Cluster Node Discovery | Windows 2012 Monitoring Cluster Service |
| Windows Server 2012 Cluster Resource Group discovery | Windows 2012 Cluster Service |
| Windows Server 2012 Cluster Group Discovery | Cluster Groups by Nodes |
| Windows Server 2012 R2 Cluster Service Discovery | Monitoring Cluster Service |
| Windows Server 2012 R2 Cluster Discovery | Windows Server 2012 R2 Monitoring Cluster service |
| Windows Server 2012 R2 Cluster Node Discovery | Windows 2012 R2 Monitoring Cluster Service |
| Windows Server 2012 R2 Cluster Resource Group discovery | Windows 2012 R2 Cluster Service |
| Windows Server 2012 R2 Cluster Group Discovery | Cluster Groups by Nodes |

### Tasks

| **Name** | **Target** |
| --- | --- |
| Pause cluster node | Cluster Node |
| Resume cluster node | Cluster Node |
| Bring Online | Cluster Node Hosted Cluster Resource Group |
| Bring resource offline | Cluster Resource |
| Bring resource online | Cluster Resource |
| List resource dependencies | Cluster Resource |
| List resource properties | Cluster Resource |
| List resource status | Cluster Resource |
| Bring Online | Cluster Resource Group |
| Delete Group | Cluster Resource Group |
| Move Group | Cluster Resource Group |
| Take Group Offline | Cluster Resource Group |
| Start the Cluster service | Monitoring Cluster service |
| Stop the Cluster service | Monitoring Cluster service |
| Discover the Windows Server 2003 Cluster Components | Windows 2003 Cluster Management Library |
| Discover the Windows Server 2008 Cluster Components | Windows 2008 Cluster Management Library |
| Discover the Windows Server 2008 R2 Cluster Components | Windows2008 R2 Cluster Management Library |
| Discover the Windows Server 2012 Cluster Components | Windows 2012 Cluster Management Library |
| Discover the Windows Server 2012 R2 Cluster Components | Windows 2012 R2 Cluster Management Library |

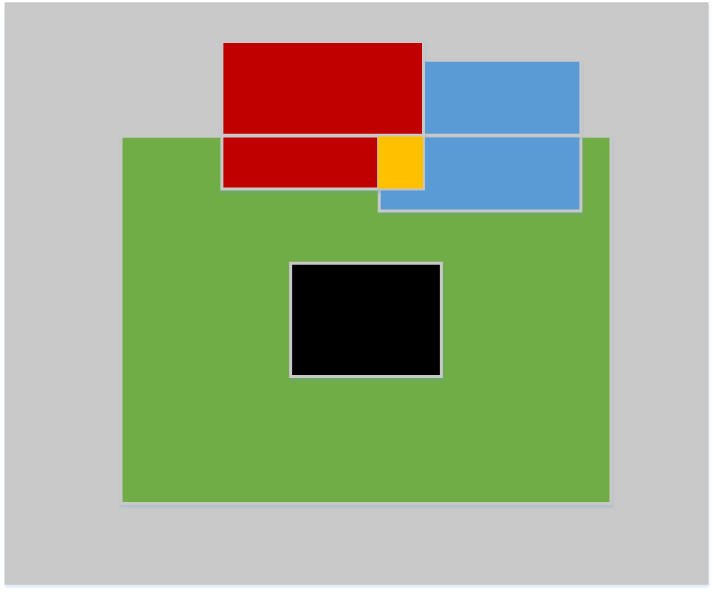
#### “Move Group” Task Specifics

The logic of this task is as follows:

* **Node Set 1**: Find all online Nodes, which do not own the resource group.
* **Node Set 2**: Find all possible owners of each resource in this resource group. Then, get full intersection of these nodes: (**Owners of Resource1**) (**Owners of Resource2**) … (**Owners of ResourceN**).
* **Node Set 3**: Find all preferred owners.
* **Node Set 4**: Get intersection of (**Node Set 1**) and (**Node Set 2**).

If **Node Set 3** is not empty, then get intersection of (**Node Set 4**) and (**Node Set 3)**. If the result is empty, get the first Node from (**Node Set 4**).

See the graphical interpretation below:



**Legend:**

**Grey** – all cluster nodes

**Black** – node owner of the group

**Green** – all nodes in online state (except the owner of the group)

**Blue** – all possible owners of the group

**Red** – preferred owners of the group

**Orange** – cluster nodes to move the group to

### Groups

You can delegate authority to a precise level by using user roles.

For example, use the Windows Clusters group to delegate access to managing Windows clusters. This group contains all Windows clusters. For every cluster, this group contains all resources, resource groups, networks, and cluster nodes. The group is populated automatically with any newly discovered clusters.

For more information about user roles, see the "[Implementing User Roles](http://go.microsoft.com/fwlink/?LinkID=221238)" topic in the System Center 2012 Operations Manager Help (http://go.microsoft.com/fwlink/?LinkId=221238).

The following computer groups can be used for scoping and roles authorization:

 Cluster Roles: This discovery rule populates the “Cluster Roles” group with instances of Cluster Node Role.

 Windows Clusters: This discovery rule populates the “Windows Clusters” group with instances of windows clusters.

### Unit Monitors

The following tables display the unit monitors for Windows Server 2003 and Windows Server 2008 failover cluster deployments in this management pack.

The following applies to all unit monitors listed in the tables below:

 All monitors are enabled by default

 Default interval (in seconds): 60. This can be changed by creating an override.

 All monitors generate an alert by default (unless otherwise noted). This can be changed by creating an override.

#### Unit monitors: Microsoft Cluster Service (MSCS) and Microsoft Failover Cluster Service (MS FCS)

| **Name** | **Target** | **Severity** | **Note** |
| --- | --- | --- | --- |
| All State Monitor | Cluster Node Hosted Cluster Resource Group |  | By default, no alert is generated |
| Node State Monitor | Cluster Node | MatchMonitorHealth |  |
| Networking Connections service status | Cluster Node Role | Error | Disabled by default |
| RPC service status | Cluster Node Role | Error |  |
| Windows Time service Status | Cluster Node Role | Error |  |
| WMI service Status | Cluster Node Role | Error |  |
| Resource State Monitor | Cluster Resource |  | By default, no alert is generated |
| Cluster service status | Monitoring Cluster Service | Error |  |

#### Unit monitors: Windows Server 2003 Cluster

| **Name** | **Target** | **Severity** |
| --- | --- | --- |
| Network Interface State Monitor | Windows 2003 Cluster Network Interface | MatchMonitorHealth |

#### Unit monitors: Windows Server 2008 Failover Cluster Services

| **Name** | **Target** | **Severity** |
| --- | --- | --- |
| Network Interface State Monitor | Windows Server 2008 Cluster Network Interface | MatchMonitorHealth |

#### Unit monitors: Windows Server 2012 Failover Cluster Services

| **Name** | **Target** | **Severity** |
| --- | --- | --- |
| Network Interface State Monitor | Windows Server 2012 Cluster Network Interface | MatchMonitorHealth |

### Dependency Monitors

The following tables display the dependency monitors for Microsoft Cluster Service (MSCS) and Microsoft Failover Cluster Service (MS FCS) deployments in this management pack.

The following applies to all dependency monitors listed in the tables below:

 Algorithm: WorstOf (unless otherwise noted)

 All monitors are enabled by default

 No alert is generated (unless otherwise noted)

#### Dependency monitors: Microsoft Cluster Service (MSCS) and Microsoft Failover Cluster Service (MS FCS)

| **Name** | **Target** | **Alert Severity** | **Note** |
| --- | --- | --- | --- |
| Resource Group By Node Monitor | Cluster Node Hosted Cluster Resource Group |  | Alerts generation for this monitor is disabled by default. |
| Resource Group Rollup Monitor | Cluster Resource Group | MatchMonitorHealth |  Algorithm: BestOf   By default, an alert is generated |
| Roles Monitor | Cluster Roles |  | Alerts generation for this monitor is disabled by default. |
| Networks Monitor | Microsoft Windows Cluster |  | Alerts generation for this monitor is disabled by default. |
| Nodes Monitor | Microsoft Windows Cluster |  | Alerts generation for this monitor is disabled by default. |
| All Resource Groups Rollup Monitor | Microsoft Windows Cluster |  | Alerts generation for this monitor is disabled by default. |
| Clusters Monitor | Windows Clusters |  | Alerts generation for this monitor is disabled by default. |

#### Dependency monitors: Windows Server 2003 Cluster

| **Name** | **Target** |
| --- | --- |
| Network Interfaces Monitor | Cluster Network |

#### Dependency monitors: Windows Server 2008 Failover Cluster services

| **Name** | **Target** |
| --- | --- |
| Network Interfaces Monitor | Cluster Network |

#### Dependency monitors: Windows Server 2012 Failover Cluster services

| **Name** | **Target** |
| --- | --- |
| Network Interfaces Monitor | Cluster Network |

### Event Collection Rules (Windows Server 2003 and 2008)

The following table displays the event collection rules for Windows Server 2003 and Windows Server 2008 cluster deployments in this management pack.

| **Name** | **Target** | **Enabled** | **Generate Alert** |
| --- | --- | --- | --- |
| Event Collection for Cluster Server | Monitoring Cluster Service | True | False |

### Event Log Rules (Windows Server 2003 and 2008)

The following tables display information about the event log rules for Windows Server 2003 and Windows Server 2008 cluster deployments in this management pack.

#### Event Log Rules: Windows Server 2003 Cluster

The following list applies to the event log rules in this table:

 All rules are enabled by default

 All rules generate an alert

 Target: Windows 2003 Monitoring Cluster Service

 Event Source: ClusSvc

 Event Log: System

 Alert Severity: Error (unless otherwise noted)

| **Name** | **Event ID** | **Note** |
| --- | --- | --- |
| Account Deletion Problem | 1191, 1192 |  |
| Active Directory Problem | 1211, 1212, 1218, 1219, 1220, 1221 |  |
| Communication Failure | 1156, 1157, 1158, 1075, 1083, 1109 |  |
| Disk Mount Error | 1035, 1037 |  |
| Disk Mount Point Error | 1161, 1162, 1163, 1208, 1167 |  |
| Disk Mount Point Warning | 1165, 1166 | Alert Severity: Warning |
| Disk not responding to SCSI command | 1036 |  |
| Disk Signature Mismatch | 1034 |  |
| Disk Space Alert | 1170, 1171, 1172, 1021, 1022, 1080 |  |
| DNS Record Deleted | 1149, 1150, 1151, 1152 | Alert Severity: Warning |
| DNS Registration Error | 1195,1196 |  |
| File Share Check Failed | 1055 |  |
| File Share Failed | 1053, 1054, 1068 |  |
| Generic Script Error | 1232, 1233 |  |
| Generic Service Failed | 1040, 1041, 1042 |  |
| Invalid Command Line | 1008 |  |
| IP Address Conflict | 1049 |  |
| IP Address Failed | 1223, 1047, 1045, 1046, 1077, 1044 |  |
| Kerberos Authentication Error | 1210, 1225 |  |
| Kerberos Error | 1226, 1227 |  |
| NetBIOS Error | 1078 |  |
| Network Adapter Alert | 1096 |  |
| Network Communication Failure | 1123, 1124, 1126, 1127, 1130, 1144 | Alert Severity: Warning |
| Network Name Failed | 1214, 1052, 1051, 1050, 1116, 1140 |  |
| Network Name Not Registered | 1215 |  |
| Network Partitioned | 1215 | Alert Severity: Warning |
| Node Communication Failure | 1106, 1107 |  |
| Password Update Failed | 1188 |  |
| Permission Error | 1193, 1194, 1206, 1207 |  |
| Reservation for a cluster disk has been lost | 1038 |  |
| Resource Group Failed | 1205, 1069, 1065, 1145 |  |
| Resource load or init problem | 1058, 1059 |  |
| Resource offline failed | 1182, 1117 |  |
| Resource online failed | 1181 |  |

### Event Log Rules (Windows Server 2008, 2008 R2, 2012, and 2012 R2)

The following list applies to the event log rules in this table:

 All rules are enabled by default (unless otherwise noted)

 All rules generate an alert

 Target: Monitoring Cluster Service

 Event Source: Microsoft-Windows-FailoverClustering

 Event Log: System (unless otherwise noted)

| **Name** | **Event ID** | **Alert Severity** | **Note** |
| --- | --- | --- | --- |
| Attempting to use IPv4 for network adapter failed due to a failure to disable auto-configuration and DHCP | 1555 | Warning |  |
| Cluster backup aborted | 1541 | Error |  |
| Cluster configuration information is missing or corrupt | 1057, 1090, 1575 | Error |  |
| Cluster disk resource found the disk identifier to be stale | 1568 | Warning | Event Log: Microsoft-Windows-FailoverClustering/Operational |
| Cluster File Share cannot be brought online due to a share creation error | 1068,1053 | Error |  |
| Cluster file share resource has detected shared folder conflicts | 1560 | Warning |  |
| Cluster IP address resource cannot be brought online because of a duplicate IP address | 1049 | Error |  |
| Cluster IP address resource cannot be brought online because the address value is invalid | 1047 | Error |  |
| Cluster IP address resource cannot be brought online because the cluster network is not configured to allow client access | 1223 | Warning |  |
| Cluster IP address resource cannot be brought online because the subnet mask value is invalid | 1046 | Error |  |
| Cluster IP address resource cannot be brought online because WINS registration failed | 1078 | Error |  |
| Cluster IP address resource encountered an error with a leased address | 1240, 1243, 1245 | Warning |  |
| Cluster IP address resource failed to come online | 1360 | Error |  |
| Cluster IP address resource failed to come online due to a configuration problem | 1362, 1048 | Error |  |
| Cluster network interface for cluster node failed | 1127 | Warning | Disabled by default. Note that this rule may generate many alerts if you decide to enable it. |
| Cluster network interface is unreachable by at least one other cluster node attached to the network | 1126 | Warning |  |
| Cluster network is down | 1130 | Warning |  |
| Cluster network is partitioned | 1129 | Warning |  |
| Cluster network name resource cannot be brought online due to a timeout | 1566 | Error | Event Log: Microsoft-Windows-FailoverClustering/Operational |
| Cluster network name resource failed a health check | 1215 | Error |  |
| Cluster network name resource failed to create its associated computer object | 1193, 1194 | Error |  |
| Cluster network name resource failed to delete its associated computer object | 1192, 1191 | Error |  |
| Cluster network name resource failed to register DNS name | 1196, 1195, 1119 | Error |  |
| Cluster node cleanup error | 4624, 4622, 4620, 4618, 4615, 4613, 4611, 4609 | Error |  |
| Cluster node cleanup warning | 4625, 4616 | Warning |  |
| Cluster node has been evicted from the failover cluster | 1011 | Warning |  |
| Cluster node network connectivity problem detected | 1553, 1554, 1572 | Error |  |
| Cluster physical disk resource cannot be brought online because the associated disk could not be found | 1034 | Error |  |
| Cluster resource failed | 1069 | Error |  |
| Cluster service account is missing one or more from the required set of privileges | 1234 | Error |  |
| Cluster service cannot identify a node as a member of failover cluster | 1093 | Error |  |
| Cluster service could not write to a file | 1080 | Warning |  |
| Cluster service failed to change the trace log size | 1567 | Warning | Event Log: Microsoft-Windows-FailoverClustering/Operational |
| Cluster service failed to start the cluster log trace session | 4868 | Warning |  |
| Cluster service has determined that this node does not have the latest copy of cluster configuration data | 1561 | Error |  |
| Cluster service suffered an unexpected fatal error | 1000 | Error |  |
| Computer object associated with a network name resource could not be updated | 1206, 1207 | Error |  |
| Disabled network is the only possible network that the node can communicate with other nodes | 1569 | Warning |  |
| Disabling version compatibility checking is not supported | 1550, 1551 | Warning |  |
| Encountered a failure when attempting to create a new NetBIOS interface while bringing a resource online | 1044 | Warning |  |
| Encrypted settings for cluster resource could not be successfully applied | 1121 | Error |  |
| Failed to add required credentials to the LSA | 1227, 1226 | Error | Local Security Authority (LSA) |
| Failed to join or form a cluster | 1070, 1092 | Error |  |
| Generic application could not be brought online due to a service startup error | 1041 | Error |  |
| Generic application could not be brought online due to process creation error | 1039 | Error |  |
| Generic script resource error | 1233, 1232 | Warning |  |
| Generic service could not be brought online due to an error attempting to open the service | 1040 | Error |  |
| Generic service failed | 1042 | Error |  |
| Health check for file share resource failed | 1054 | Error |  |
| Health check for file share resource failed as the share does not exist | 1055 | Error |  |
| Health check for IP interface failed | 1077 | Warning |  |
| IPv6 tunnel address resource failed to come online | 1363 | Error |  |
| IPv6 Tunnel address resource failed to come online because it does not depend on an IP Address (IPv4) resource | 1361 | Error |  |
| Lease of IP address associated with cluster IP address resource cannot be renewed | 1242 | Error |  |
| No matching network interface found for IP address | 1045 | Warning |  |
| One or more cluster disk volumes may be corrupt | 1066, 1037 | Error |  |
| Ownership of cluster disk has been unexpectedly lost | 1038 | Warning |  |
| Potentially incompatible versions of cluster service | 1546, 1547, 1548, 1570, 1571 | Error |  |
| The backup operation for the cluster configuration data has been canceled due to an abort request | 1544 | Warning |  |
| The cluster service encountered an unexpected problem and will be shut down | 1556 | Error |  |
| The cluster service failed to start due a miniport adapter initialization failure | 4871 | Error |  |
| The Cluster service is shutting down because quorum was lost | 1177 | Error |  |
| The failover cluster database could not be unloaded | 1574 | Error |  |
| The failover cluster virtual adapter failed to generate a unique MAC address | 4872 | Error |  |
| The restore operation for the cluster configuration data has failed due to insufficient privileges | 1545 | Error |  |
| The restore operation of the cluster configuration data has failed | 1542, 1543 | Error |  |
| Unable to access witness resource | 1557, 1558, 1562, 1563, 1564, 1573 | Error |  |
| User mode health monitoring has detected that the system is not being responsive | 4870, 4869 | Error |  |
| Volume shadow copy service task resource failed | 4867, 4866, 4865, 4864 | Warning |  |

The following rules apply to Windows Server 2008 R2, 2012, and 2012 R2 clusters only.

| **Name** | **Event ID** | **Alert Severity** |
| --- | --- | --- |
| Attempt to disable connection security failed | 1583 | Warning |
| Cluster network name resource failed to register dynamic updates for DNS name | 1578 | Warning |
| Cluster network name resource failed to register in a secure DNS zone because record was already registered and owned | 1576 | Warning |
| Cluster network name resource failed to register in a secure DNS zone because registration was refused | 1580 | Error |
| Cluster network name resource failed to update the DNS A record | 1579 | Warning |
| Cluster Service failed to create a cluster identity token for Cluster Shared Volumes | 5200 | Error |
| Cluster Service failed to create root directory to host shared volumes | 5123 | Error |
| Cluster Service failed to set permissions on Cluster Shared Volume directory | 5134 | Warning |
| Cluster Service failed to move cluster hive | 1581 | Warning |
| Cluster Service moved previously existing files in newly-created shared volume directory to new location | 5124 | Warning |
| Cluster Shared Volume is no longer accessible from cluster node | 5142 | Error |
| Cluster Shared Volume redirected access was turned on | 5136 | Warning |
| Communication was lost and reestablished between cluster nodes | 1592 | Warning |
| Error occurred while bringing file server resource online | 1588 | Warning |
| Filter driver(s) are preventing direct I/O on Cluster Shared Volume | 5125 | Warning |
| Health check for file server resource has failed | 1585 | Error |
| Original cluster disk drive letter(s) are already in use and cannot be restored | 5133 | Warning |
| Physical disk resource does not allow disabling short name generation | 5128 | Warning |
| Resource has registered DNS entries that are not providers | 1589 | Warning |
| Shared Volume IO is paused | 5120 | Error |
| Shared Volume IO is resumed in no-direct-io mode | 5121 | Error |
| Volume flush-and-hold IOCTL was detected on clustered shared volume | 1584 | Error |

### Recoveries

The following table displays the recoveries in this management pack for cluster deployments.

| **Name** | **Target** | **Monitor Name** |
| --- | --- | --- |
| Recovery for Cluster service status monitor | Monitoring Cluster service | Cluster service status |

### Overrides

The overrides listed in the following table are enabled by default except for those targets listed in the table below.

| **Monitor/Rule Name** | **Override Name** | **Target** | **Enabled** | **Purpose** |
| --- | --- | --- | --- | --- |
| Resource Group Rollup Monitor | Override For Cluster Groups Rollup State Monitor | Windows Server 2008/2008 R2/2012/2012R2 Available Storage Cluster Resource Group | False | Disables monitoring for Available Storage Resource Group (these disks in the cluster are not used by any clustered application). |
| Resource Group State Monitor | Override For Hosted Cluster Group State Monitor | Windows Server 2008/2008 R2/2012/2012R2 Available Storage Cluster Resource Group | False | Disables monitoring for Available Storage Resource Group (these disks in the cluster are not used by any clustered application). |
| Networking Connections Service Status | Override For NetMan Service Check Monitor | Windows Server 2008/2012 Computers | False | This service does not need to be monitored on Windows Server 2008 clusters, so the monitor is disabled by default. |
| Cluster network name resource cannot be brought online due to a timeout | Disables rule "Cluster network name resource cannot be brought online due to a timeout" on Windows Server 2008 R2/2012 computers | Windows Server 2008 R2/2012 Monitoring Cluster Service | False | The rule was moved to a different event channel on Windows Server 2008 R2. |
| Cluster service failed to change the trace log size | Disable rule "Cluster service failed to change the trace log size" on Windows Server 2008 R2/2012 computers | Windows Server 2008 2008 R2/2012 Monitoring Cluster Service | False | The rule was moved to a different event channel on Windows Server 2008 R2. |

## Appendix: Display Strings Changes History

### New Display Strings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Management Pack** | **ElementID** | **Name** | **Description** |
| 10.0.6.0 | Windows Cluster Management Library | Microsoft.Windows.Cluster.CommandExecuterProbeDiscoveryBase | * Command Executer Probe Action Module | Runs any Windows executable and returns Discovery Data. |
| 10.0.6.0 | Windows Cluster Management Library | Microsoft.Windows.Cluster.Monitoring.Discovery.ScriptProbe.Mapper | Command Executer Discovery Probe Action Module | Runs any Windows executable and returns Discovery Data. |

### Changed Display Strings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Management Pack** | **ElementID** | **Name** | **Description** |
| 10.0.6.0 | Windows Cluster Management Monitoring | Microsoft.Windows.Cluster.HostedGroups.State | * **Resource Group Monitor** changed to **Resource Group Rollup Monitor** | Rollup monitor for resource groups in a cluster |
| 10.0.6.0 | Windows Cluster Management Monitoring | Microsoft.Windows.Cluster.Groups.State | **Resource Groups Monitor** changed to **All Resource Groups Rollup Monitor** | Rollup monitor for resource groups contained within cluster. |
| 10.0.6.0 | Windows Cluster Management Monitoring | Microsoft.Windows.Cluster.Group.TakeOffline | **Take Offline** changed to **Take  Group Offline** | This task takes a Group offline. |

## 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)

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

A useful resource is [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 [System Center 2012 - Operations Manager Survival Guide](http://go.microsoft.com/fwlink/?LinkId=246383)

Important

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1. If you import “Windows Server 2012 R2 Cluster Management Monitoring Overrides” management pack, this limit is changed to 111. [↑](#footnote-ref-2)