



OnCommand® Plug-in 4.1.2 for Microsoft®

# Administration Guide

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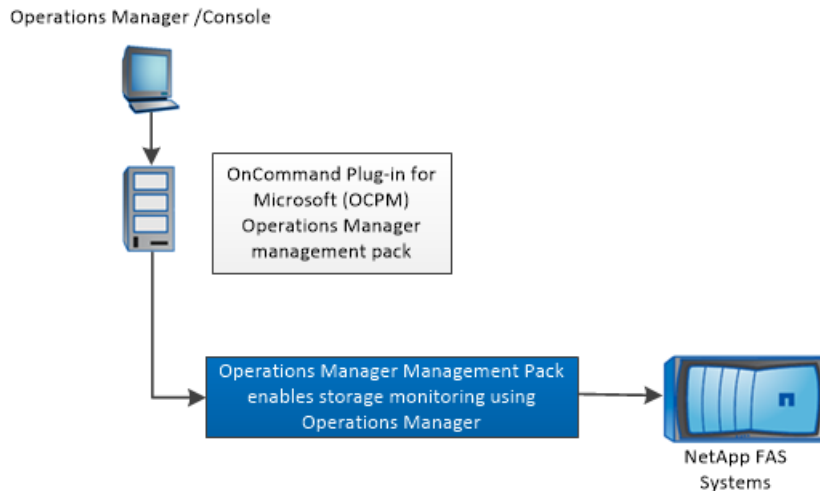
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## Product overview

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The NetApp OnCommand Plug-in for Microsoft is an enterprise-class storage monitoring and application that integrates with Microsoft System Center Operations Manager (SCOM). The plug-in enables administrators to monitor, manage, and report on NetApp storage.



## OnCommand Plug-in for Microsoft features

Before you use OnCommand Plug-in for Microsoft, it might be helpful to understand OnCommand Plug-in for Microsoft features.

OnCommand Plug-in for Microsoft includes the following features:

- Simplified management of servers and storage systems using Microsoft System Center
- Support for clustered Data ONTAP
- Support for NetApp MetroCluster monitoring
- Support for discovery and monitoring of the following:
  - Data ONTAP 8.2 and later clusters and Storage Virtual Machines (SVMs, formerly known as Vservers)
  - SMB shares in clustered Data ONTAP
  - VMs and virtual hard disk files on LUNs and SMB shares in clustered Data ONTAP
- Plots of system performance metrics and alerts when those metrics exceed thresholds

## OnCommand Plug-in for Microsoft components

NetApp OnCommand Plug-in for Microsoft uses Microsoft System Center components to monitor Data ONTAP storage. System Center is a set of Microsoft management products that help you manage physical and virtual IT environments.

OnCommand Plug-in for Microsoft uses the following System Center products:

Component	Description
System Center Operations Manager (SCOM)	<p>A member of the System Center family of products. The end-to-end service management product that works with Microsoft software and applications, helping organizations increase efficiency while enabling greater control of the IT environment.</p> <p>SCOM includes the following components:</p> <p><b>SCOM agent</b></p> <p>The location where the SCOM SDKs and connectors are installed but not the SCOM software. This installation does not have the user interface and is used on systems that must communicate monitoring and other information to the SCOM server. The agent can be installed remotely on systems using the SCOM console on the SCOM server.</p> <p><b>SCOM console or server</b></p> <p>User interface used to view managed objects and perform administrative tasks. The server refers to the computer where the SCOM console is installed.</p> <p><b>SCOM console integration</b></p> <p>A feature that enables you to perform tasks on a SCOM system remotely.</p> <p><b>SCOM management packs</b></p> <p>Options that enable agents to monitor a specific service or application. Management packs might also contain tasks, reports, views, diagnostics, and recovery tools.</p>

## How the plug-in works with SCOM

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System Center Operations Manager (SCOM) is a data center management system for operating systems and hypervisors. The plug-in provides an interface through SCOM that you can use to view state, health, and performance information about your monitored objects. The plug-in also generates alerts for particular availability, performance, configuration, or security situations that affect your storage system.

## How the plug-in works with the management pack for clustered Data ONTAP

There are several tasks you can perform with the management pack for clustered Data ONTAP. These tasks include adding storage systems including clusters in a MetroCluster configuration, discovering and configuring the storage systems, and defining the management pack rules.

### Related tasks

[Adding a clustered Data ONTAP storage system](#) on page 10

[Running discovery on clustered Data ONTAP](#) on page 16

[Running virtualization discovery on clustered Data ONTAP](#) on page 16

[Initiating clustered Data ONTAP storage discovery in SCOM](#) on page 15

[Overriding clustered Data ONTAP management pack rules](#) on page 12

## Management pack features for clustered Data ONTAP

When you install OnCommand Plug-in for Microsoft, the installation wizard installs only the components that you select. Each management pack and its associated features are installed on the specified server.

You can install the following management pack and then use its associated features:

Management pack	Feature	Subfeature
System Center Operations Manager (SCOM) Management Packs	Storage Monitoring	Reporting
	Hyper-V storage Monitoring and Management	Reporting
	Clustered Data ONTAP management pack	Clustered Data ONTAP Virtualization management pack MetroCluster Data ONTAP management pack Reporting

## List of OnCommand Plug-in for Microsoft permissions needed to discover and monitor in clustered Data ONTAP

To discover and monitor components of your array, you need to have a specific set of permissions on the storage array.

You can use the administrator or root login to perform all storage discovery and monitoring; however, it is a good practice to use the role-based access control (RBAC) feature provided by Data ONTAP to create one or more custom accounts with limited access privileges.

You can create a user who has the permissions required to discover and monitor all of the objects in clustered Data ONTAP. The following example shows the clustered Data ONTAP CLI commands necessary to create the user “ocpm” who is assigned the “ocpm” role:

```
security login role create -role ocpm -access readonly "command"
```

The role “ocpm” must have permissions set for all of the following commands:

- cluster-identity-show
- cluster-peer-get-iter
- cluster-peer-show
- cluster-show
- diagnosis-alert-get-iter ClusterSeveredAllLinksAlert
- diagnosis-alert-get-iter ClusterInSwitchedOverStateAlert
- diagnosis-alert-get-iter InterclusterBrokenConnectionAlert
- diagnosis-alert-get-iter RaidLeftBehindAggrAlert
- diagnosis-alert-get-iter RaidLeftBehindSpareAlert
- diagnosis-alert-get-iter StorageFCAdapterOfflineAlert
- lun-show
- metrocluster-check-aggregate-get-iter
- metrocluster-check-get-iter
- metrocluster-interconnect-adapter-get-iter
- metrocluster-interconnect-mirror-get-iter
- metrocluster-node-get-iter
- metrocluster-vserver-get-iter
- network-interface-show
- network-port-show
- snapmirror-policy-show
- snapmirror-show
- statistics-show
- storage-aggregate-show
- storage-bridge-cooling-info temperature-sensor-operational-status



- `storage-bridge-fc-port-info administrative-state`
- `storage-bridge-fc-port-info operational-state`
- `storage-bridge-get-iter`
- `storage-bridge-info is-being-monitored`
- `storage-bridge-info status`
- `storage-bridge-sas-port-info administrative-state`
- `storage-bridge-sas-port-info operational-state`
- `storage-disk-show`
- `storage-failover-show`
- `system-node-show`
- `version`
- `volume-efficiency-show`
- `volume-get-iter`
- `volume-qtrees-show`
- `volume-quota-report`
- `volume-show`
- `vserver-cifs-share-access-control-show`
- `vserver-cifs-share-show`
- `vserver-cifs-show`
- `vserver-fcp-show`
- `vserver-iscsi-show`
- `vserver-peer-show`
- `vserver-show`

The user “ocpm” with the role “ocpm” must have permissions set for the following parameters:

- `-application http`
- `-application ontapi`

The following example illustrates the proper assignment of these permissions:

```
security login role create -role ocpm -access readonly -cmddirname
"cluster-identity-show"
...
security login role create -role ocpm -access readonly "vserver-show"
create -username ocpm -role ocpm -application http -authmethod password
create -username ocpm -role ocpm -application ontapi -authmethod password
```

## Monitoring your clustered Data ONTAP storage

The System Center Operations Manager (SCOM) monitors the health and performance data that it collects from the discovered storage systems running clustered Data ONTAP. SCOM generates events when the status is abnormal or when a predefined threshold has been reached. If configured to do so, SCOM sends a notification when an event triggers an alert.

## Adding a clustered Data ONTAP storage system

Before you can monitor the performance and health of your clustered Data ONTAP storage, you must add a Storage Virtual Machine (SVM), a cluster, or clusters in a MetroCluster configuration.

### About this task

When you add a clustered Data ONTAP storage system, the storage objects for the system are automatically discovered or you can initiate discovery by clicking **Discover** in the Manage Storage Systems dialog box.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Manage Storage System**.  
The Manage Storage Systems dialog box opens.
4. Click **Add**.  
The Add Storage System dialog box opens.
5. Type the name or IP address of the storage system, whether it is a cluster or a Storage Virtual Machine (SVM), and the user credentials of the system that you want to add.
6. If the specified cluster is in a MetroCluster configuration, the dialog box expands and automatically populates the name and user credentials of the second cluster.  
**Note:** If the storage system name of the second cluster does not resolve to an IP address, then you have to specify the IP address of the system.
7. Click **Add**.

### After you finish

If you cannot connect to the controller entered into the Manage Storage System, the run-as action account might need to be configured:

- Add the OnCommand Plug-in for Microsoft Run As Action Account as an administrator on the local host.
- Change the credentials of the OnCommand Plug-in for Microsoft Run As Action Account to a user with privileges that will allow it to run.  
The credentials can be edited by navigating **SCOM Administration > Run As Configuration > Accounts > Action Account**.

### Related tasks

*Initiating clustered Data ONTAP storage discovery in SCOM* on page 15

## Modifying the user credentials for a clustered Data ONTAP storage system

You can modify the user credentials for a clustered Data ONTAP storage system at any time by updating the IP address, user name, and password.

### About this task

You can modify the user credentials for multiple storage systems if you want the credentials to be the same for all systems. If a storage system has multiple management LIFs, you can select the LIF you want to change from the drop-down list.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Manage Storage System**.  
The Manage Storage Systems dialog box opens.
4. Select a storage system for which you want to modify the user credentials and click **Modify**.
5. To change the user credentials for the selected storage system, type the IP address, user name, or password for the system and click **Save**.

## Removing a clustered Data ONTAP storage system

You can remove a clustered Data ONTAP storage system when you no longer need to monitor it. After it has been added, you should keep your storage system in the database, but if you want to stop monitoring the storage system or clusters in a MetroCluster configuration with OnCommand Plug-in for Microsoft, you can remove it.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Manage Storage System**.  
The Manage Storage Systems dialog box opens.
4. Select the storage system or cluster in a MetroCluster configuration that you want to remove and click **Remove**.
5. Click **Remove** in response to the confirmation prompt for a storage system or a cluster and click **Close** to close the dialog box.  
**Note:** Clusters in a MetroCluster configuration are removed at the same time when one of the selected clusters is removed.
6. Click **Close** to close the dialog box.

## Overriding clustered Data ONTAP management pack rules

After you verify that the clustered Data ONTAP management pack rules have been successfully imported into System Center Operations Manager (SCOM), you can override any rules to enable or disable, alter the frequency, or change the start time for a rule.

### Steps

1. Click **Authoring**.
2. In the navigation pane, select **Management Pack Objects > Rules**.
3. In the search field, type **Clustered Data ONTAP** and click **Find Now**.
4. Select the rule that you want to override.
5. Right-click the selected rule and click **Overrides > Override the Rule > For all objects of class: Clustered Data ONTAP: Rule**.

You can set the overrides for all objects or specific objects, or to the entire group.

6. Select the overrides that you want to set depending on whether you want to enable or disable the rule, alter the frequency, or change the start time for the rule.
7. Save the changes to the management pack.

You can create a new management pack for your overrides or one management pack for all of your overrides. However, you should not save changes to the default management pack.

### Related tasks

[Modifying or overriding clustered Data ONTAP monitor thresholds](#) on page 24

### Related information

[Microsoft TechNet](#)

## Lists of clustered Data ONTAP management pack rules

OnCommand Plug-in for Microsoft includes virtualization, management server, and MetroCluster rules from the clustered Data ONTAP Virtualization management pack and the MetroCluster Data ONTAP management pack that enable you to more effectively manage your storage resources.

### Clustered Data ONTAP: LUN rule

- Clustered Data ONTAP: LUN Average Latency Rule

### Clustered Data ONTAP: Management Server Resource Pool rules

- Clustered Data ONTAP: Discovery Rule
- Clustered Data ONTAP: Virtualization Discovery Rule
- Clustered Data ONTAP: Initial Storage Virtual Machine Discovery Rule
- Clustered Data ONTAP: Initial Cluster Discovery Rule
- Clustered Data ONTAP: Storage Virtual Machine Discovery Rule
- Clustered Data ONTAP: Cluster Discovery Rule

**Clustered Data ONTAP: Node rules**

- Clustered Data ONTAP: Aggregate Performance Data Collection Rule
- Clustered Data ONTAP: Node Disk State Monitoring Rule
- Clustered Data ONTAP: Node State Monitoring Rule
- Clustered Data ONTAP: Port State Rule

**Clustered Data ONTAP: Performance rules**

- Clustered Data ONTAP: Average Latency Performance Rule
- Clustered Data ONTAP: CIFS Operations Performance Rule
- Clustered Data ONTAP: CPU Average Utilization Performance Rule
- Clustered Data ONTAP: CPU Resource Utilization Performance Rule
- Clustered Data ONTAP: CPU Total Utilization Performance Rule
- Clustered Data ONTAP: Disk Data Read Performance Rule
- Clustered Data ONTAP: Disk Data Written Performance Rule
- Clustered Data ONTAP: Enclosure State Monitoring Rule
- Clustered Data ONTAP: FCP Operations Performance Rule
- Clustered Data ONTAP: HTTP Operations Performance Rule
- Clustered Data ONTAP: iSCSI Operations Performance Rule
- Clustered Data ONTAP: Network Data Received Performance Rule
- Clustered Data ONTAP: Network Data Sent Performance Rule
- Clustered Data ONTAP: NFS Operations Performance Rule
- Clustered Data ONTAP: Read Latency Performance Rule
- Clustered Data ONTAP: Read Operations Performance Rule
- Clustered Data ONTAP: SNMP Trap Performance Rule
- Clustered Data ONTAP: Total Operations Performance Rule
- Clustered Data ONTAP: Write Latency Performance Rule
- Clustered Data ONTAP: Write Operation Performance Rule

**Clustered Data ONTAP: SMB Server rule**

- Clustered Data ONTAP: SMB Server State Rule

**Clustered Data ONTAP: Storage System rules**

- Clustered Data ONTAP: LIF Performance Data Collection Rule
- Clustered Data ONTAP: LIF State Rule
- Clustered Data ONTAP: Storage System Connection Rule
- Clustered Data ONTAP: Storage Efficiency Rule

### **Clustered Data ONTAP: Storage Virtual Machine (SVM) rules**

- Clustered Data ONTAP: Storage Virtual Machine (SVM) FCP Performance Statistics Collection Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) iSCSI Performance Statistics Collection Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Performance Statistics Collection Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) SMB Performance Statistics Collection Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) State Monitoring Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Volume LUN State Rule
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Volume State Monitoring Rule
- Clustered Data ONTAP: Volume Performance Data Collection Rule

### **Clustered Data ONTAP MetroCluster: MetroCluster rules**

- Clustered Data ONTAP MetroCluster: Cluster Peer Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Aggregate Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Health Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Node Interconnect Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Node Monitoring Rule
- Clustered Data ONTAP MetroCluster: Storage Virtual Machine (SVM) DR Replication Monitoring Rule
- Clustered Data ONTAP MetroCluster: MetroCluster Version Rule

### **Clustered Data ONTAP Virtualization: Hyper-V Virtual Hard Disk rules**

- Clustered Data ONTAP: Virtual Hard Disk LUN Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk SMB Share Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk Volume Monitoring Rule

### **Clustered Data ONTAP Virtualization: Virtual Hard Disk on LUN rules**

- Clustered Data ONTAP: Virtual Hard Disk LUN Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk SMB Share Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk Volume Monitoring Rule

### **Clustered Data ONTAP Virtualization: Virtual Hard Disk on SMB Share rules**

- Clustered Data ONTAP: Virtual Hard Disk LUN Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk SMB Share Monitoring Rule
- Clustered Data ONTAP: Virtual Hard Disk Volume Monitoring Rule

## Storage discovery for clustered Data ONTAP

You must first discover your clustered Data ONTAP storage before you can view all of your clustered Data ONTAP storage objects, such as Storage Virtual Machines (SVMs), volumes, aggregates, and disks. Then you can monitor your entire cluster storage infrastructure in System Center Operations Manager (SCOM).

You can launch the discovery process from the Manage Storage Systems dialog box or run discovery for a selected storage system from the Management Servers view.

Some monitored storage object properties such as the state, total space, or used space might be out of sync until the next time storage discovery is run with the default time set at four hours.

### Initiating clustered Data ONTAP storage discovery in SCOM

You can initiate the process of discovering your clustered Data ONTAP storage in case the discovery of a management server fails because OnCommand Plug-in for Microsoft is not installed on the System Center Operations Manager (SCOM) management server or the server was not added to the resource pool.

#### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Manage Storage System**.  
The Manage Storage Systems dialog box opens.
4. Click **Discover**.
5. Select the storage targets that you want to run discovery on and click **Run**.

#### Related tasks

[Adding a clustered Data ONTAP storage system](#) on page 10

### Types of clustered Data ONTAP discovery

There are two types of discovery that you can use to configure your plug-in: clustered Data ONTAP storage discovery and clustered Data ONTAP virtualization discovery.

You can use both clustered Data ONTAP storage discovery and clustered Data ONTAP virtualization discovery to discover storage controllers and their objects connected to servers that are recognized by System Center Virtual Machine Manager (SCVMM). Clustered Data ONTAP virtualization discovery alone discovers storage on all Hyper-V hosts that SCVMM manages.

After you run **Clustered Data ONTAP: Discovery Task**, discovery finishes and might appear to return a low number of objects. As of OnCommand Plug-in 4.1 for Microsoft, discovery is performed using a distributed execution on multiple management servers. The discovery is split into two stages: the first stage discovers only SVMs and clusters, finishing quickly and reporting a low object count. The second stage is distributed among multiple management servers and starts within five minutes after the first stage discovery for each discovered cluster or SVM.

#### Related tasks

[Running discovery on clustered Data ONTAP](#) on page 16

[Running virtualization discovery on clustered Data ONTAP](#) on page 16

## Running discovery on clustered Data ONTAP

You must run discovery for the plug-in to recognize your clustered Data ONTAP systems and add them to the System Center Operations Manager (SCOM) database. All storage objects must be discovered before you can monitor them.

### About this task

If one node of a multinode cluster is down, the discovery task displays `Failed` in the `Task Status` view because the storage system is in an unhealthy state. However, the discovery process continues for other storage objects.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Discovery Task**.  
The Clustered Data ONTAP: Discovery Task dialog box opens.
4. Select the storage targets that you want to run discovery on and click **Run**.

### Result

After you run **Clustered Data ONTAP: Discovery Task**, discovery finishes and might appear to return a low number of objects. As of OnCommand Plug-in 4.1 for Microsoft, discovery is performed using a distributed execution on multiple management servers. The discovery is split into two stages: the first stage discovers only SVMs and clusters, finishing quickly and reporting a low object count. The second stage is distributed among multiple management servers and starts within five minutes after the first stage discovery for each discovered cluster or SVM.

## Running virtualization discovery on clustered Data ONTAP

You must run clustered Data ONTAP virtualization discovery to find storage on all Hyper-V hosts in System Center Virtual Machine Manager (SCVMM) before you can manage that storage.

### Before you begin

You must have established a connection between System Center Operations Manager (SCOM) and SCVMM prior to running virtualization discovery.

You must have added all of your Hyper-V hosts to SCVMM before you run discovery, because clustered Data ONTAP virtualization discovery discovers only those Hyper-V hosts that are monitored by SCVMM.

### About this task

If there are Hyper-V hosts not in the same domain as the SCOM and SCVMM servers, the virtualization discovery task status displays `Failed` but the plug-in discovers and monitors all Hyper-V hosts within the domain.

Virtualization discovery runs automatically after you run discovery or add a new storage system. When you add a new storage system, the discovery task does not appear in the `Task Status` view but a virtualization discovery task does appear. The virtualization discovery task status displays more than once in the `Task Status` view.

### Steps

1. Click **Monitoring**.



2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Virtualization Discovery Task**.  
The Clustered Data ONTAP: Virtualization Discovery Task dialog box opens.
4. Select the storage targets that you want to run discovery on and click **Run**.

## What a resource pool is

A resource pool is a collection of management servers that you can use to distribute work in a clustered Data ONTAP environment. The management group contains all management servers in the management group, not only the members of the resource pool. System Center Operations Manager (SCOM) uses resource pools for load balancing and high availability among management servers.

When you install OnCommand Plug-in for Microsoft on a management server in the management group, the management server is automatically added to the OCPM resource pool. You can also choose other management servers in the group to add to the OCPM resource pool.

You can use the Management Server View monitor to determine the management servers that are part of the OCPM resource pool and have the plug-in installed on the server.

## Adding a management server to the resource pool

When you add a management server to the resource pool, OnCommand Plug-in for Microsoft is automatically installed on the new management server. You can add more management servers to the resource pool if the servers in the pool are overloaded.

### About this task

You should not use the **Resource Pools** task from the list of **Administration** tasks in the System Center Operations Manager (SCOM) console to add or remove management servers from the OCPM resource pool, because it might cause the OCPM resource pool to become out of sync.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. Select a management server that does not have the plug-in installed on it.
4. In the **Tasks** pane, click **Clustered Data ONTAP: Add Management Server to OCPM Resource Pool**.  
The Management Server Credentials dialog box opens.
5. Type the required information and click **Next**.  
The Status window opens.
6. Click **Close** after you verify the status of the management server.

### Related tasks

[Rescanning a management server in OnCommand Plug-in for Microsoft](#) on page 18

## Removing a management server from the resource pool

You can remove a management server from the resource pool if the servers are underutilized and OnCommand Plug-in for Microsoft is uninstalled from it.

### About this task

You should not use the **Resource Pools** task from the list of **Administration** tasks in the System Center Operations Manager (SCOM) console to add or remove management servers from the OCPM resource pool.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. Select a management server from those displayed.
4. In the **Tasks** pane, click **Clustered Data ONTAP: Remove Management Server from OCPM Resource Pool**.
5. Click **Remove** when prompted.

## Rescanning a management server in OnCommand Plug-in for Microsoft

It might be necessary to rescan a management server before you can add it to the OCPM resource pool. If you need to install System Center Operations Manager (SCOM) on additional management servers and add them to an existing management group, you must first rescan each server.

### About this task

A successful rescan of a management server enables OnCommand Plug-in for Microsoft to recognize the new server and to show updated information.

### Steps

1. Click **Monitoring**.
2. In the navigation pane, select **Clustered Data ONTAP > Management Servers**.
3. Select a management server that you want configured for the resource pool.
4. In the **Tasks** pane, click **Clustered Data ONTAP: Rescan Management Server**.

In the Management Servers view, the status of the management server changes from **Not Configured** to **Configured** when the rescan is complete.

### After you finish

After you rescan a management server, you can add it to the resource pool.

### Related tasks

[Adding a management server to the resource pool](#) on page 17

## List of OnCommand Plug-in for Microsoft monitors for clustered Data ONTAP environments

You can use the state and performance monitors for cluster environments to track and report alerts and events related to your clustered Data ONTAP infrastructure. The monitors advise you of events that you can view using the event log, so that you can determine a way to mitigate any problems.

A *state monitor* maps a storage object's status, state, or properties to a health state in SCOM. For a volume, a value of “online” would map to a healthy SCOM volume state monitor, a value of “restricted” would map to a warning, and a value of “offline” would map to a critical state.

A *performance monitor* maps a storage object's value to a health state in SCOM. For volume space utilization, the percentage value is added to the SCOM database and the volume space utilization monitor checks if the value in the database is greater than the acceptable thresholds. The thresholds are set to default values, but you can override them per storage object.

The following monitors are contained in the clustered Data ONTAP management pack:

- Clustered Data ONTAP: Aggregate Available Space (GB) Monitor
- Clustered Data ONTAP: Aggregate Space Utilization (%) Monitor
- Clustered Data ONTAP: Aggregate State Monitor
- Clustered Data ONTAP: Average Processor Utilization (%) Monitor
- Clustered Data ONTAP: Cluster Connection Monitor
- Clustered Data ONTAP: Cooling Element State Monitor
- Clustered Data ONTAP: Data Protection Lag Time Monitor
- Clustered Data ONTAP: Data Protection State Monitor
- Clustered Data ONTAP: Disk Data Read (Gbps) Monitor
- Clustered Data ONTAP: Disk State Monitor
- Clustered Data ONTAP: Disk Data Written (Gbps) Monitor
- Clustered Data ONTAP: Enclosure State Monitor
- Clustered Data ONTAP: FCP Read Operations/sec Monitor
- Clustered Data ONTAP: FCP Total Operations/sec Monitor
- Clustered Data ONTAP: FCP Write Operations/sec Monitor
- Clustered Data ONTAP: iSCSI Read Operations/sec Monitor
- Clustered Data ONTAP: iSCSI Write Operations/sec Monitor
- Clustered Data ONTAP: LIF Network Data Received (Gbps) Monitor
- Clustered Data ONTAP: LIF Network Data Sent (Gbps) Monitor
- Clustered Data ONTAP: LIF State Monitor
- Clustered Data ONTAP: LUN Latency Monitor
- Clustered Data ONTAP: LUN State Monitor
- Clustered Data ONTAP: Node Average Processor Utilization (%) Monitor
- Clustered Data ONTAP: Node CPU Resource Utilization (%) Monitor

- Clustered Data ONTAP: Node Disk Data Read (Gbps) Monitor
- Clustered Data ONTAP: Node Disk Data Written (Gbps) Monitor
- Clustered Data ONTAP: Node Global Status Monitor
- Clustered Data ONTAP: Node HA State monitor
- Clustered Data ONTAP: Node HTTP Operations/sec Monitor
- Clustered Data ONTAP: Node Latency (ms) Monitor
- Clustered Data ONTAP: Node NFS Operations/sec Monitor
- Clustered Data ONTAP: Node State Monitor
- Clustered Data ONTAP: Port State Monitor
- Clustered Data ONTAP: Power Supply State Monitor
- Clustered Data ONTAP: Qtree Quota Monitor
- Clustered Data ONTAP: SMB Operations/sec Monitor
- Clustered Data ONTAP: SMB State Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Connection Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) FCP Service Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) HTTP Operations Per Second Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) iSCSI Service Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Network Data Received (Gbps) Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Network Data Sent (Gbps) Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) NFS Operations Per Second Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) SMB Service Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) State Monitor
- Clustered Data ONTAP: Storage Virtual Machine (SVM) Total Operations Per Second Monitor
- Clustered Data ONTAP: Volume Available Space (GB) Monitor
- Clustered Data ONTAP: Volume Latency Monitor
- Clustered Data ONTAP: Volume Quota Monitor
- Clustered Data ONTAP: Volume SnapMirror Monitor
- Clustered Data ONTAP: Volume Space Utilization (%) Monitor
- Clustered Data ONTAP: Volume State Monitor
- Clustered Data ONTAP: Volume Used Inodes (%) Monitor

### OnCommand Plug-in for Microsoft monitor default threshold values for clustered Data ONTAP environments

You can use the state and performance monitors for cluster environments to track and report alerts and events related to your clustered Data ONTAP infrastructure. The monitors advise you of events that you can view using the event log. Then you can determine a way to mitigate any problems.

The default threshold values within the OnCommand Plug-in for Microsoft Clustered Data ONTAP Management Pack, double threshold monitors, are as follows:

Monitor name	Monitor rule	Default threshold value (lower threshold-upper threshold)
Aggregate Available Space (MB) Monitor	Aggregate Performance Data Collection Rule	50GB-100GB
Aggregate Space Utilization (%) Monitor	Aggregate Performance Data Collection Rule	85%-90%
Volume Available Space (MB) Monitor	Volume Performance Data Collection Rule	10GB-50GB
Volume Space Utilization (%) Monitor	Volume Performance Data Collection Rule	85%-90%
Data Protection Lag Time Monitor	Data Protection Lag Time Performance Data Collection Rule	720mins-1440mins

The default threshold values within the OnCommand Plug-in for Microsoft Clustered Data ONTAP Management Pack, consecutive samples monitors, are as follows:

Monitor name	Monitor rule	Default threshold value
Storage Virtual Machine (SVM) Network Data Sent (Gbps) Monitor	Storage Virtual Machine (SVM) Performance Statistics Collection Rule	5 Gbps
Storage Virtual Machine (SVM) Network Data Received (Gbps) Monitor	Storage Virtual Machine (SVM) Performance Statistics Collection Rule	5 Gbps
Node Latency Monitor	Node Performance Statistics Collection Rule	50 ms
Volume Latency Monitor	Volume Performance Data Collection Rule	50 ms
LUN Latency Monitor	LUN Performance Collection Rule	50 ms
SMB Operations/sec Monitor	SMB Performance Statistics Collection Rule	1000 Ops/sec
Average Processor Utilization (%) Monitor	Node Performance Statistics Collection Rule	90%
CPU Resource Utilization (%) Monitor	Node Performance Statistics Collection Rule	90%
Disk Data Read (Gbps) Monitor	Node Performance Statistics Collection Rule	1 (Gbps)

Monitor name	Monitor rule	Default threshold value
Disk Data Written (Gbps) Monitor	Node Performance Statistics Collection Rule	1 (Gbps)
HTTP Operations/sec Monitor	Node Performance Statistics Collection Rule	1000 Operations/sec
NFS Operations/sec Monitor	Node Performance Statistics Collection Rule	1000 Operations/sec
iSCSI Read Operations/sec Monitor	Storage Virtual Machine (SVM) iSCSI Performance Statistics Collection Rule	1000 Operations/sec
iSCSI Write Operations/sec Monitor	Storage Virtual Machine (SVM) iSCSI Performance Statistics Collection Rule	1000 Operations/sec
FCP Read Operations/sec Monitor	Storage Virtual Machine (SVM) FCP Performance Statistics Collection Rule	1000 Operations/sec
FCP Write Operations/sec Monitor	Storage Virtual Machine (SVM) FCP Performance Statistics Collection Rule	1000 Operations/sec
LIF Network Data Sent (KB/sec) Monitor	LIF Performance Statistics Collection Rule	5 (Gbps)
LIF Network Data Received (Gbps) Monitor	LIF Performance Data Collection Rule	5 (Gbps)
SMB Latency (microseconds)	SMB Performance Statistics Collection Rule	50 ms

## Monitoring MetroCluster configurations by using the MetroCluster Data ONTAP management pack

The Clustered Data ONTAP management pack contains the management pack for MetroCluster configurations and provides the monitoring support for MetroCluster configurations in OnCommand Plug-in for Microsoft, which enables you to check for any connectivity issues in your MetroCluster configuration. Discovering a connectivity issue early enables you to manage your MetroCluster configurations effectively.

### Discovering clusters in a MetroCluster configuration

OnCommand Plug-in for Microsoft does not include a separate function to discover MetroCluster configurations. You must discover clusters in a MetroCluster configuration using the clustered Data ONTAP discovery task if you want to monitor the clusters using the plug-in.

#### Steps

1. To use the MetroCluster Data ONTAP management pack, you must provide the user credentials for a cluster when you add a storage system.  
See [Adding a clustered Data ONTAP storage system](#) on page 10 for information on adding a cluster in a MetroCluster configuration.
2. Clusters in a MetroCluster configuration are removed at the same time when one of the selected clusters is removed.  
See [Removing a clustered Data ONTAP storage system](#) on page 11 for information on removing a cluster in a MetroCluster configuration.
3. To enable MetroCluster monitoring, you must discover the clusters in a MetroCluster configuration.

See *Running discovery on clustered Data ONTAP* on page 16 for information on discovering a cluster in a MetroCluster configuration.

### List of monitors for MetroCluster configurations in a clustered Data ONTAP environment

You can use the monitors for MetroCluster configurations in a clustered Data ONTAP environment to track and report alerts and events related to your MetroCluster configuration. The monitors advise you of events that you can view using the event log, so that you can determine a way to mitigate any problems.

The following monitors are contained in the MetroCluster Data ONTAP management pack:

- Clustered Data ONTAP MetroCluster: Aggregate Redundancy Monitor
- Clustered Data ONTAP MetroCluster: Aggregate Replication Monitor
- Clustered Data ONTAP MetroCluster: Back Hoe Detection Monitor
- Clustered Data ONTAP MetroCluster: Health Monitor
- Clustered Data ONTAP MetroCluster: Intercluster Connection Status Monitor
- Clustered Data ONTAP: MetroCluster: Node Interconnect Adapter Status Monitor
- Clustered Data ONTAP: MetroCluster: Node Interconnect Mirror Status Monitor
- Clustered Data ONTAP MetroCluster: Node Interconnect Redundancy Monitor
- Clustered Data ONTAP MetroCluster: Node Object Limit Monitor
- Clustered Data ONTAP MetroCluster: Node Root Volume Configuration Monitor
- Clustered Data ONTAP MetroCluster: Node State Monitor
- Clustered Data ONTAP MetroCluster: Storage Bridge Status Monitor
- Clustered Data ONTAP MetroCluster: Storage FCP Adapter Status Monitor
- Clustered Data ONTAP MetroCluster: Storage Virtual Machine DR Replication Monitor
- Clustered Data ONTAP MetroCluster: SwitchBack Effect Monitor
- Clustered Data ONTAP MetroCluster: SwitchOver Detection Monitor
- Clustered Data ONTAP MetroCluster: Version Monitor

### What the MetroCluster Topology Diagram view is

The MetroCluster Topology Diagram view enables you to see a pictorial representation of all of the clusters in a MetroCluster configuration in a clustered Data ONTAP environment currently being monitored by the plug-in, so that you can more easily isolate problems to a specific storage object.

You can expand this view to display storage hierarchy, so that you can isolate problems to the exact component on which they occur. When you select a cluster in a MetroCluster configuration, you can view information about it in the Detail View window.

### Information displayed in views for MetroCluster configurations in a clustered Data ONTAP environment

You can use different views in OnCommand Plug-in for Microsoft to monitor your MetroCluster configuration in a clustered Data ONTAP environment, enabling you to quickly discover connectivity issues. You can use the tasks listed in the Actions pane to perform specific tasks related to managing your MetroCluster configuration.

Clustered Data ONTAP MetroCluster views display the following information:

**Aggregates**

Displays information about the aggregate in a MetroCluster configuration, including the total size of the aggregate and the amount of used space as a percentage of the total space available.

**Cluster**

Displays information about the cluster in a MetroCluster configuration, including the status of the cluster and remote cluster operations.

**Interconnect Adapter**

Displays information about the cluster interconnect adapter, which enables the cluster nodes to communicate with each other and to move data within the cluster. You can monitor the status of the link and verify whether both nodes are running.

**Interconnects**

Displays information about the interconnect between the node controllers. You can monitor this connection and troubleshoot if an interconnect is down, is not present, or has experienced a partial failure.

**MetroCluster**

Displays information about the MetroCluster configuration such as the state of the configuration and the display name of each cluster in the configuration.

**Nodes**

Displays information about the nodes in a MetroCluster configuration, including the name of the DR partner cluster and HA partner nodes in an HA pair.

**Storage Bridge**

Displays information about the storage bridge in a MetroCluster configuration, such as whether the bridge is being monitored, so that you can detect, diagnose, and quickly resolve any issues.

**Storage Virtual Machines (SVMs)**

Displays information about SVMs in a MetroCluster configuration such as the root volume, type, and the allowed protocols on the SVM.

**Modifying or overriding clustered Data ONTAP monitor thresholds**

You can view and then either modify or override the threshold values of the clustered Data ONTAP monitors to trigger alerts based on specified threshold values.

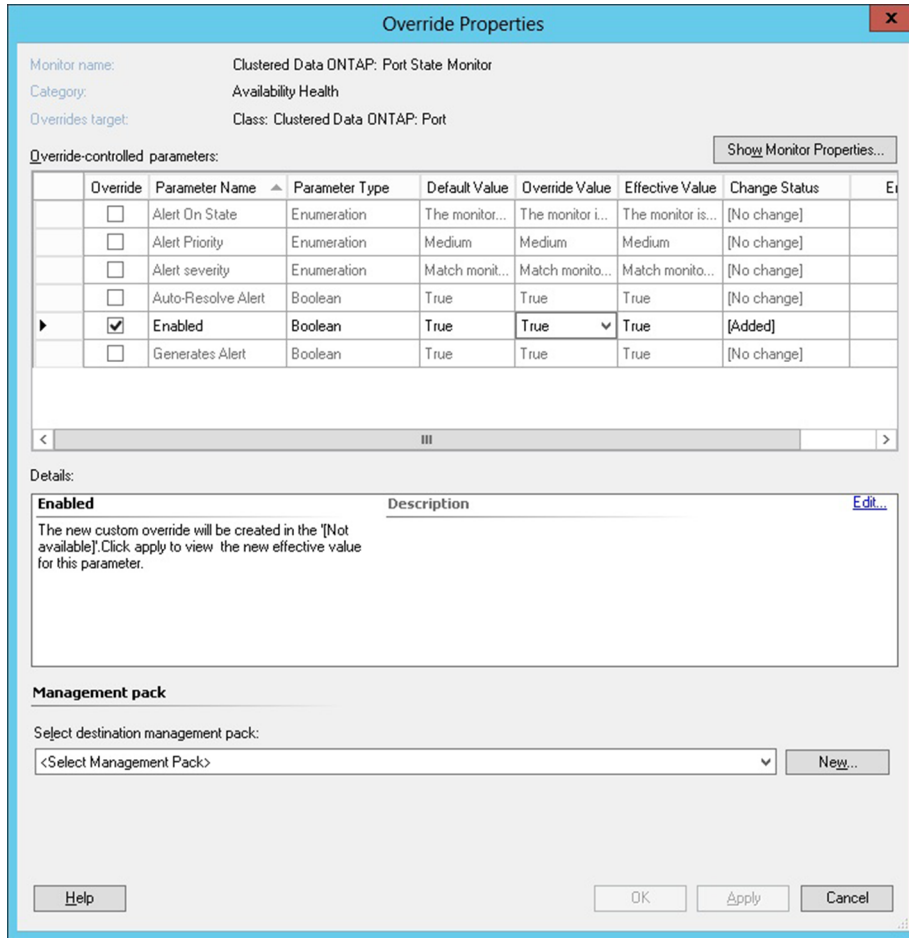
**Steps**

1. Click **Authoring**.
2. In the navigation pane, click **Monitors**.
3. In the search field, type **Clustered Data ONTAP** and click **Find Now**.
4. Select the monitor that you want to view and monitor or override.
5. Right-click the selected monitor and click **Overrides > Override the Monitor > For all objects of class: Clustered Data ONTAP: Object name**.

You can set the overrides for all objects or specific objects, or to the entire group.

6. In the **Override Properties** dialog box, select the **Override** check box and an override value from the **Override Value** list.





7. Save the changes to the management pack.

You can create a new management pack for your overrides or one management pack for all of your overrides. However, you should not save changes to the default management pack.

**Related tasks**

*[Overriding clustered Data ONTAP management pack rules](#)* on page 12

**Related information**

*[Microsoft TechNet](#)*

**Information displayed in views for clustered Data ONTAP environments**

You can use different views in OnCommand Plug-in for Microsoft to monitor the state of your clustered Data ONTAP storage objects and to identify usage patterns. You can use the tasks listed in the Actions pane to perform specific tasks related to managing your clustered Data ONTAP storage.

**Note:** Events are displayed only in the Windows event log, and performance information might not display because some objects do not have any.

All the views for clustered Data ONTAP physical storage objects such as aggregates, controllers, disks, ports, and nodes do not contain any data if you add only Storage Virtual Machines (SVMs) in OnCommand Plug-in for Microsoft.

Clustered Data ONTAP views display the following information:

**Aggregates**

Displays information about your clustered Data ONTAP aggregate, including the total size of the aggregate and the amount of used space as a percentage of the total space available.

**Clusters**

Displays information about the storage systems running clustered Data ONTAP, including the state of the system and the display name of the system.

**Dashboard**

Displays information about the overall state and health of your clustered Data ONTAP storage resources, including the number and state of all clusters, nodes, and virtual machines. This view displays how efficiently the storage is currently being used by all clusters that are monitored by the plug-in.

**Disks**

Displays information about different attributes of a disk in cluster environments. You can monitor the disk's health and diagnose any issues by viewing the disk type, state, and rotational speed of the disk.

**LIFs**

Displays information about different attributes of a logical interface in cluster environments such as the interface name, IP address, current node, current port, and whether or not logical interfaces are currently located on their home node and port.

**LUNs**

Displays information about different attributes of a LUN in cluster environments such as the LUN path, multiprotocol type, volume, and total size of the LUN.

**Management Servers**

Displays information about different attributes of a management server in cluster environments, such as the state of the server and whether the server is contained in a resource pool.

**Nodes**

Displays information about node attributes such as the size of the nodes and the name of the systems running clustered Data ONTAP.

**Ports**

Displays information about port attributes such as the state of the port and the node name.

**Qtrees**

Displays information about different attributes of a qtree in cluster environments such as the volume containing the qtree, the security style of the qtree, and the status of the qtree.

**Storage Virtual Machine (SVM) Dashboard**

Displays information about SVMs with the highest amount of used space as a percentage of the total space available and the recent trends in space utilization for the monitored Storage Virtual Machines (SVMs).

**Storage Virtual Machines (SVMs)**

Displays information about SVMs storage system attributes such as the root volume, state, and the allowed protocols on the SVM.

**Volumes**

Displays information about different attributes of a volume in cluster environments such as the name of the volume, the total size of the volume, and the amount of used space as a percentage of the total space available.

**Data Protection Policies**

Displays information about all data protection policies for the virtual machines that monitored by the plug-in such as the name of the data protection policy and the total number of data protection rules.

**Data Protection Status**

Displays information about the status of all SnapMirror relationships that are monitored by the plug-in such as the source and destination location of the SnapMirror pair and the state of the pair.

**Peering Cluster**

Displays information about the cluster peer relationship and the availability of the cluster peer connection for the cluster peers that are monitored by the plug-in.

**Peering Storage Storage Virtual Machines (SVMs)**

Displays information about the cluster peer relationships for all SVMs that are monitored by the plug-in.

**SMB Permissions**

Displays information about SMB permissions such as the SMB share name, permissions, and the user or group authorized to access the data.

**SMB Server**

Displays information about the SMB server such as the name of the server, authentication style, and the domain name and workgroup.

**SMB Shares**

Displays information about SMB shares such as the volume name, share name, path, and properties.

**Hyper-V Hosts**

Displays information about all Hyper-V hosts and the number of virtual machines being hosted by each.

**Hyper-V Virtual Hard Disks on LUNs**

Displays information about the location of all Hyper-V virtual hard disks on a LUN.

**Hyper-V Virtual Hard Disks on SMB shares**

Displays information about SMB statistics.

**Hyper-V VMs**

Displays information about different attributes of a monitored Hyper-V virtual machine such as the fully qualified domain name (FQDN) of the virtual machine and the fully qualified domain name (FQDN) of the Hyper-V host that is hosting the virtual machines.

**What performance counters do**

You can use the performance counters in OnCommand Plug-in for Microsoft to monitor the state of your storage controllers. After these counters collect information, the information is displayed in a performance graph in the System Center Operations Manager (SCOM) Console.

The plug-in monitors CPU and space utilization, as well as I/O operations, throughput, latency, and protocols, so that you can monitor and identify performance trends over time.

If you save a performance graph as an image in the SCOM Console, a performance counter such as `Operations/sec` displayed in the graph's title does not appear in the saved image. Each axis of the saved graph does not display a counter, which only appears in the title of the graph.

## What the Cluster Topology Diagram view is

The Cluster Topology Diagram view enables you to see a pictorial representation of all of the clusters currently being monitored by the plug-in, so that you can more easily isolate problems to a specific storage object.

You can expand this view to display storage hierarchy, so that you can isolate problems to the exact component on which they occur. When you select a cluster, you can view information about it in the Detail View window.

## What the Storage Virtual Machine (SVM) Topology Diagram view is

The Storage Virtual Machine (SVM) Topology Diagram view enables you to see a pictorial representation of all of the SVMs currently being monitored by the plug-in, so that you can more easily isolate problems to a specific storage object.

You can expand this view to display storage hierarchy, so that you can isolate problems to the exact component on which they occur. When you select an SVM, you can view information about it in the Detail View window.

## What an alert is

OnCommand Plug-in for Microsoft includes numerous rules that monitor the health of various discovered clustered Data ONTAP storage objects. If the conditions of a rule are broken, OnCommand Plug-in for Microsoft generates an alert and sends it to System Center Operations Manager (SCOM).

You can view active alerts from any of the following SCOM interface locations:

### Active Alerts view

You can view all alerts in the Active Alerts view. You can view information about an individual alert in the Alert Details view, and you can view the cause of the problem in Health Explorer in SCOM.

### Cluster Alerts view

You can view alerts specific to clustered Data ONTAP storage in the Cluster Alerts view of the Dashboard.

### Storage Virtual Machine (SVM) Dashboard

You can view alerts specific to SVMs in the New Storage Virtual Machine Alerts view of the Storage Virtual Machine Dashboard.

For information about formatting the email notification for an alert, refer to the Microsoft TechNet web site.

### Related information

*[Microsoft TechNet](#)*

## Types of clustered Data ONTAP reports available through the plug-in

Using OnCommand Plug-in for Microsoft, you can view reports about different aspects of your clustered Data ONTAP storage over a specific period of time. These reports can help you to make decisions about the health of your storage system.

### Clustered Data ONTAP reports

The default reporting time period is from the first day of the month to the current day. You can view the following reports from the Reporting pane:

#### Clustered Data ONTAP Aggregate Committed Space (%) report

Displays up to 50 aggregates with the highest (default) or lowest committed space (%) on all monitored aggregates over a specific period of time. The default time period is from the first day of the month to the current day, and the default number of aggregates is five.

#### Clustered Data ONTAP Storage Virtual Machine (SVM) Average Latency (ms) report

Displays up to 50 SVMs with the highest (default) or lowest average latency (ms) on all monitored SVMs over a specific period of time. The default time period is from the first day of the month to the current day, and the default number of SVMs is five.

#### Clustered Data ONTAP Storage Virtual Machine (SVM) Deduplication and Compression (%) report

Displays up to 50 SVMs with the highest (default) or lowest storage efficiency (%) on all monitored SVMs over a specific period of time. The default time period is from the first day of the month to the current day, and the default number of SVMs is five.

#### Clustered Data ONTAP Volume Overwrite Reserve Used Rate (KB/day) report

Displays up to 50 volumes with the highest or lowest overwrite reserve used space (KB/day) on all monitored volumes over a specified period of time. The report defaults to the highest overwrite reserve used space (KB/day). The default time period is from the first day of the month to the current day, and the default number of volumes is five.

#### Clustered Data ONTAP Volume Used Space (%) report

Displays up to 50 volumes with the highest (default) or lowest used space (%) on all monitored volumes over a specific period of time. The default time period is from the first day of the month to the current day, and the default number of volumes is five.

#### Clustered Data ONTAP MetroCluster report

You must select the MetroCluster Data ONTAP management pack during installation to view the following report:

#### Clustered Data ONTAP MetroCluster Most Common Alerts report

Displays up to 50 of the most common alerts on all monitored storage controllers over a specific period of time. The default number of alerts shown is five.

## **SCOM Console and storage controller usage tips**

The usage tips are intended to assist you with challenging issues related to your use of the plug-in, the System Center Operations Manager Console, and your storage controller.

### **Tips for solving SCOM Console issues**

If you experience an issue with OnCommand Plug-in for Microsoft and the Microsoft System Center Operations Manager (SCOM) Console, consulting some documented tips can help you to find the source of the problem and quickly solve it.

#### **Console tasks fail consistently**

The Data ONTAP Storage Systems pane does not appear in the SCOM Monitoring window.

You must ensure that you imported all the Data ONTAP management packs.

#### **Changes that are made to storage configuration are not reflected in the SCOM Console**

Run the Discovery rule again or wait for it to run automatically. By default, this rule runs once in a 24-hour period.

#### **SNMP traps are not appearing in the SCOM Console**

Enable the non-emergency trap monitors globally or per storage controller. By default, they are disabled.

#### **Alerts do not reappear after an issue reoccurs**

Open Microsoft Health Explorer and select **Reset Health**. As a Microsoft System Center Operations Manager best practice, do not dismiss an alert without resetting its underlying monitor.

#### **Network devices are not discovered when discovery timeout is increased**

Ensure that you have met the following requirements:

- Used the correct SNMP version
- Used the default timeout value of two minutes or a value less than five minutes
- Run the System Center Operations Manager Discovery wizard

If you have met these requirements and your storage system still has not discovered the network devices, contact Microsoft for further assistance.

#### **Related information**

*[Microsoft TechNet](#)*

## Troubleshooting

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You should be familiar with certain OnCommand Plug-in for Microsoft issues and their causes so that you can solve problems with consoles, storage controllers, and performance and resource optimization.

### Troubleshooting OnCommand Plug-in for Microsoft installation and setup

If you encounter unexpected behavior during the installation or when configuring OnCommand Plug-in for Microsoft, you can use specific troubleshooting procedures to identify and resolve the cause of such issues.

#### Remote installation silently fails if the remote system is missing software

##### Issue

When you run the installer remotely, the plug-in will not report if software is missing; the remote installation will appear to succeed. You must check the Windows Event log on the remote system to find the error.

If the Windows Event log shows a fatal error and the log files do not provide enough information, run the installer in GUI mode directly on the remote system.

##### Cause

This issue occurs if the plug-in detects that there is software missing. Instead of reporting the missing software, the installer silently fails. You must check the log on your remote system to discover the failure.

##### Corrective action

If you run the installer on the remote system and observe a silent failure:

1. Check your system's Windows Event log for details.
2. If the logs do not provide enough information, run the installer using the GUI directly on the remote system.  
Using the GUI remote installer might allow you to see the error occurring.
3. Install the missing software.
4. Run the remote installer again.

#### Uninitialized LUNs cannot be connected to the host

##### Issue

Attempts to connect LUNs to the host fail.

##### Cause

This issue occurs when you attempt to use the `Connect-OCStorage` cmdlet or the **Connect Storage to Host** activity to connect to the host uninitialized LUNs that were created using System Manager or the storage system console.

##### Corrective action

You must first map the LUN to the host and then use Windows Disk Management to initialize and format the disk before attempting to connect the LUN to the host.

## Connect to controller failed: storage system credentials cannot be found

### Description

This message occurs when the DNS contains multiple IP addresses for a host name and the host name does not always resolve to the same IP address.

### Corrective action

You should add credentials for all IP addresses that a host name uses:

- If you add the storage system credentials with the IP address, the plug-in uses the IP address and DNS lookup for the fully qualified domain name (FQDN).
- If you add the storage system credentials with the host name, the plug-in looks up the IP addresses that are associated with the host and adds one of those IP addresses.
- If you perform a get or remove operation with one or more IP addresses, only those IP entries associated with the host name or names is displayed or removed from the OCPM database.
- If you have multiple IP addresses per host name and encounter this error, add the storage system credentials for all IP addresses that the host name can resolve, to ensure that any cmdlet and activity operations that are given host names succeed.

## You need to format the disk in drive *x:* \ before you can use it

### Description

When you attempt to create a LUN on a machine that is running Windows 2008 R2 SP1, the New-OCStorage cmdlet succeeds but OnCommand Plug-in for Microsoft returns the following error message:

```
You need to format the disk in drive X: before you can use it.
```

### Corrective action

Format the newly created disk using Microsoft Disk Management. Right-click the name of the primary partition and select **Format**.

## Troubleshooting using SCOM

You can use the System Center Operations Manager (SCOM) troubleshooting information to research, view, determine the cause of, and resolve or work around error messages and other issues.

## %OCSCOMPAT%/executable.exe not found

### Message

```
%OCSCOMPAT%/executable.exe not found
```

### Cause

This message occurs when System Center Operations Manager (SCOM) has not recognized the environment variable and the path to the executable file is missing.

### Corrective action

Log off and then log on to the system and reopen SCOM.



## Errors occur in Eventvwr after discovery is run for a large cluster of Storage Virtual Machines (SVMs)

### Issue

When you add and run discovery for a large cluster of SVMs, the PowerShell scripts for monitoring are dropped and fail to execute, causing errors to occur in Eventvwr.

### Cause

This issue occurs when the script limits are exceeded by adding a large cluster of SVMs, which increases the number of monitoring rules that must run simultaneously.

### Corrective action

1. Back up the current Windows registry settings.
2. Open the Windows registry editor by typing `regedit` at the Windows run prompt.
3. Navigate to the following registry key: [HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Microsoft Operations Manager\3.0\Modules\Global\PowerShell].
4. Set the DWORD value for multinode storage management servers to `ScriptLimit=100` and `QueueMinutes=60`.
5. Set the DWORD value for a single node storage management server to `ScriptLimit=150` and `QueueMinutes=60`.
6. Exit the registry editor and restart the Windows host.

## Health status does not change when an existing SnapMirror pair of controllers is added in SCOM

### Issue

When an existing SnapMirror pair of controllers is added, the pair's health status, as reported by SCOM, does not change from `Not Monitored` to `Healthy` even though the SnapMirror pair is healthy instead of being not monitored.

### Cause

This issue occurs when there is a problem with the cache file.

### Corrective action

1. Click **Monitoring**.
2. In the navigation pane, select **Data ONTAP > Storage Systems > Management Server**.
3. In the **Tasks** pane, click **Flush Health Service State and Cache**.  
The health status of the controllers changes to `Healthy`.

## SCOM interface appears distorted when scrolling horizontally across the screen

### Issue

When you select an item in the navigation pane for a storage object running clustered Data ONTAP, the System Center Operations Manager (SCOM) interface sometimes appears distorted when scrolling horizontally across the screen.

**Cause**

This issue occurs when the SCOM user interface is not rendered correctly.

**Corrective action**

Click anywhere in the SCOM user interface to resolve this issue.

**The root\MSCluster namespace is marked with the RequiresEncryption flag**

**Message**

The root\MSCluster namespace is marked with the RequiresEncryption flag. Access to this namespace might be denied if the script or application does not have the appropriate authentication level. Change the authentication level to Pkt\_Privacy and run the script or application again.

**Description**

This event log message occurs because the plug-in and the application are using different security levels. The plug-in uses packet-level security.

**Corrective action**

If the plug-in receives this warning, the application temporarily modifies the security to match. No corrective action is needed.

**OnCommand Virtual Infrastructure Management Service (VIM\_Service) on the local computer started and then stopped**

**Message**

The Virtual Infrastructure Management Service on Local Computer started and then stopped. Some services stop automatically if they are not in use by other services or programs.

**Description**

This message occurs when you use Ctrl + Break to end a PowerShell session while a cmdlet is still running.

In this case, OnCommand Virtual Infrastructure Management Service (VIM\_Service) might not start. If, before you ended the session, the cmdlet had sent any requests to Microsoft Virtual Disk Service (VDS), that service might be left in a state that would prevent restarting.

**Corrective action**

Restart the VDS service, and then restart VIM\_Service.

**Data ONTAP virtualization objects are not discovered**

**Issue**

Data ONTAP virtualization objects (Hyper-V Host, LUN, Virtual Machine, or VHD) are not discovered.

**Cause**

This issue occurs for a variety of reasons. You should perform all of the corrective actions to determine the cause and resolve the issue.

**Corrective action**

Ensure that the following conditions exist:

- Data ONTAP management packs have been imported.

- If your Hyper-V host does not meet the requirements for agentless monitoring, you have installed the OnCommand Discovery Agent on these hosts.
- Your virtual machine VHD files reside on NetApp LUNs.
- Your virtual machines are on and appear in Microsoft System Center Virtual Machine Manager.

## Errors 22406 and 3002 from SCOM event log

### Issue

Microsoft System Center Operations Manager (SCOM) event log reports two errors:

- Event ID 22406 from Health Service Modules
- Event ID 3002 from Health Service Script

```
Log Name:      Operations Manager
Source:       Health Service Modules
Date:        9/10/2014 3:47:40 AM
Event ID:    22406
Task Category: None
Level:      Error
Keywords:   Classic
User:      N/A
Computer:   lab.example.com
Description: The PowerShell script failed with below exception
```

```
Log Name:      Operations Manager
Source:       Health Service Script
Date:        9/10/2014 3:47:40 AM
Event ID:    3002
Task Category: None
Level:      Error
Keywords:   Classic
User:      N/A
Computer:   lab.example.com
Description: Monitoring.ps1 : Monitoring failed
```

### Cause

These errors occur in two scenarios:

- A node is down in the cluster
- MetroCluster is in switchover mode

### Corrective action

None; this is an expected behavior.

## Performance and resource optimization issues

If you experience an issue with OnCommand Plug-in for Microsoft performance and resource optimization (PRO) Tips, you can use troubleshooting tips to help find the source of the problem and resolve it. If your PRO Tips implementation fails, ensure that you have the necessary credentials.

## Uninstalling OnCommand Plug-in for Microsoft

---

You can uninstall OnCommand Plug-in for Microsoft from the server using the uninstall wizard, or you can perform a silent uninstall process. You can uninstall and reinstall if necessary to troubleshoot any issues with the software. The uninstall process uninstalls only the plug-in; it does not uninstall the management packs.

### Uninstalling the plug-in by using the wizard

You can use the wizard to uninstall OnCommand Plug-in for Microsoft when you no longer need the plug-in or when you upgrade to a later version.

#### Steps

1. Open the Windows **Control Panel** on the appropriate management server.
2. From the **Control Panel**, double-click **Programs and Features**.
3. Select **OnCommand Plug-in for Microsoft**.
4. Click **Uninstall**.

### Uninstalling the plug-in using silent mode

You can uninstall the OnCommand Plug-in for Microsoft software silently, without a wizard, when you no longer need the plug-in or when you upgrade to a later version.

#### About this task

During the silent uninstall process, no interface, progress bars, or error messages are displayed.

#### Step

1. From a command-line prompt, run the following command:

```
msiexec.exe /x{3FEDDDE8-6819-4D79-8444-1AB602C51F0B} /L*v  
C:your_log_file.log /q  
msiexec.exe /x{3FEDDDE8-6819-4D79-8444-1AB602C51F0B}
```

The uninstall process begins and runs in the background.

Any errors that occur during the uninstall process are saved to the log file that was included in the command input. If a log file is not specified in the command, then the log file is saved to the Temp folder after the procedure finishes.

#### After you finish

You can view the log file to ensure that the uninstallation is successful.

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