

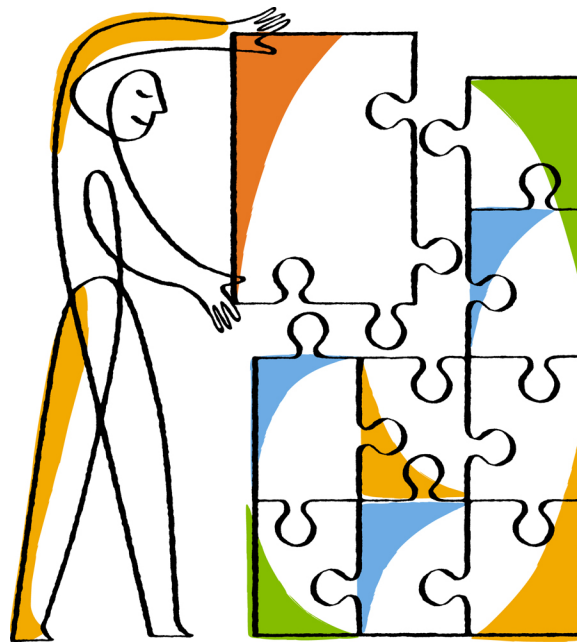


NetApp®

OnCommand® Plug-in 4.1 for Microsoft®

Installation and Setup Guide

For Clustered Data ONTAP®



NetApp, Inc.
495 East Java Drive
Sunnyvale, CA 94089
U.S.

Telephone: +1 (408) 822-6000
Fax: +1 (408) 822-4501
Support telephone: +1 (888) 463-8277
Web: www.netapp.com
Feedback: doccomments@netapp.com

Part number: 215-09981_A0
April 2015

Contents

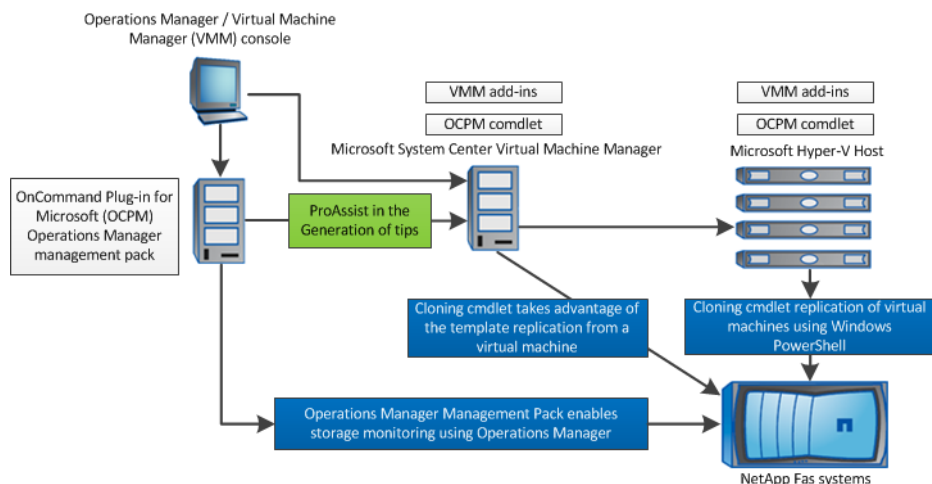
Product overview	5
OnCommand Plug-in for Microsoft features	5
OnCommand Plug-in for Microsoft components	6
System Center Operations Manager (SCOM) management packs	7
OnCommand Plug-in for Microsoft cmdlets	8
Deployment workflow	9
Preparing for deployment	10
Microsoft software requirements	10
System Center Operations Manager library requirements	11
System Center Operations Manager reporting requirements	12
Storage system requirements	12
Data ONTAP compatibility with OnCommand Plug-in for Microsoft features	12
Connection and port requirements	13
SNMP support	14
Discovery agent requirements	14
Upgrade notes	14
Installing OnCommand Plug-in for Microsoft	15
Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments	15
Confirming Virtual Machine Manager integration with Operations Manager	16
Customizing clustered Data ONTAP role-based access control permissions	17
Installing OnCommand Plug-in for Microsoft using the installation wizard	21
Checking for missing management packs	22
Installing missing management packs	22
Fixing Microsoft vulnerabilities reporting	23
Overriding plug-in defaults and saving to a new management pack	24
Verifying a successful installation	25
Connecting to your clustered Data ONTAP environment	26
Adding clustered Data ONTAP storage systems and credentials	27
Adding clustered Data ONTAP domain account credentials for a Run As action account	28
Discovering storage in SCOM	29
Discovering virtualized storage in SCOM	30
Initiating storage discovery in SCOM	30
Overriding clustered Data ONTAP management pack rules	31
Overriding available space monitors	32
Discovering clustered Data ONTAP storage systems manually	33
Adding a management server to a plug-in resource pool	34

Monitoring Storage Virtual Machines (SVMs)	34
Installing cmdlets	35
Uninstalling the plug-in and SCOM management packs	35
Installing OnCommand Plug-in for Microsoft using silent mode	37
Silent install and uninstall process parameters and variables	37
Selecting features for custom installation	38
Plug-in features used with the AddLocal parameter in silent installation cmdlets ...	39
Uninstalling the plug-in using silent mode	40
Upgrading OnCommand Plug-in for Microsoft	41
Where to go next	42
Copyright information	43
Trademark information	44
How to send comments about documentation and receive update	
notifications	45
Index	46

Product overview

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

The following diagram provides a high level overview of OnCommand Plug-in for Microsoft:



The following provides additional information related to the diagram:

- System Center Virtual Machine Manager (SCVMM) discovers VMs supported in Data ONTAP operating in both cluster and 7-Mode environments. Data ONTAP operating in 7-Mode supports VMs on LUNs, while clustered Data ONTAP supports VMs on LUNs and SMB shares.
- System Center Operations Manager (SCOM) displays and monitors VMs in the virtualization views.
- The System Center Virtual Machine Manager (SCVMM) add-in applies to Data ONTAP operating in 7-Mode only, while the OnCommand Plug-in for Microsoft add-ins apply to both 7-Mode and cluster environments.

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
- Ability to clone storage using Windows PowerShell cmdlets
- 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>SCOM agent</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>SCOM console or server</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>SCOM console integration</p> <p>A feature that enables you to perform tasks on a SCOM system remotely.</p> <p>SCOM management packs</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>

Component	Description
System Center Virtual Machine Manager (SCVMM)	<p>A member of the System Center product family that enables the following:</p> <ul style="list-style-type: none"> • Unified management of physical and virtual machines • The use of PRO Tips features that provide dynamic management of the virtual infrastructure • The consolidation of underutilized physical servers • Rapid provisioning of new VMs by leveraging Microsoft Windows Server technology <p>Note: SCVMM is supported on both clustered Data ONTAP and Data ONTAP operating in 7-Mode; however, the SCVMM add-in is supported only in 7-Mode environments.</p>

System Center Operations Manager (SCOM) management packs

You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage. While some SCOM management packs are required in SCOM prior to installation, these management packs are imported as part of the OnCommand Plug-in for Microsoft installation.

You can use the following SCOM management packs with OnCommand Plug-in for Microsoft:

SCOM management pack	Description
Clustered Data ONTAP	This pack enables you to monitor your clustered Data ONTAP storage.
Clustered Data ONTAP MetroCluster	This pack enables you to monitor your clustered Data ONTAP MetroCluster storage components.
Clustered Data ONTAP MetroCluster Reports	This pack enables you to report on your clustered Data ONTAP MetroCluster storage.
Clustered Data ONTAP Reports	This pack enables you to report on your clustered Data ONTAP storage.
Data ONTAP	<p>This pack enables you to use your existing storage management tools to monitor and generate reports through one application for all storage systems that are running Data ONTAP.</p> <p>This pack is required for Data ONTAP.</p>
Data ONTAP PRO	This pack enables the use of PRO Tips features that provide dynamic management of the virtual infrastructure. The PRO Tips features require System Center Virtual Machine Manager (SCVMM).
Data ONTAP Reports	This pack enables you to report on Data ONTAP storage.
Data ONTAP Virtualization	<p>This pack enables you to monitor and report on your Hyper-V virtualized environment for Data ONTAP.</p> <p>This pack is required to monitor your virtualized environment running on Data ONTAP.</p>

SCOM management pack	Description
Data ONTAP Virtualization Reports	This pack enables you to report on your Data ONTAP virtualized storage.

OnCommand Plug-in for Microsoft cmdlets

OnCommand Plug-in for Microsoft includes cmdlets that enable you to perform cloning tasks.

Cmdlets are separate from management packs and are not dependent upon them to function correctly.

OnCommand Plug-in for Microsoft includes the following cmdlets:

Cloning cmdlets

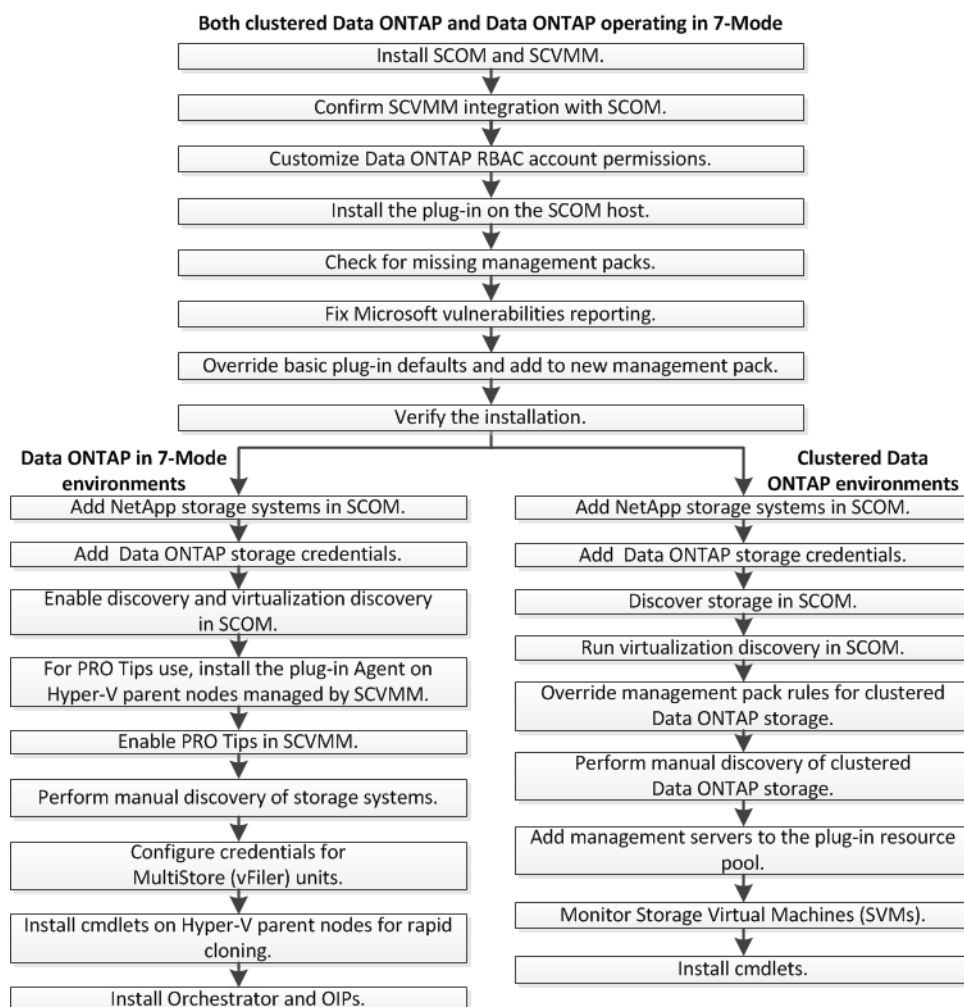
Enable you to clone storage and manage storage system credentials.

For clustered Data ONTAP only, provisioning is not supported, and only template cloning is supported (SMB to SMB and LUN to LUN) on clustered Data ONTAP 8.3 or later.

SMB-to-LUN or LUN-to-SMB cloning is not supported for clustered environments.

Deployment workflow

Before you can use OnCommand Plug-in for Microsoft, you must check prerequisites, install Microsoft System Center Operations Manager (SCOM), install System Center Virtual Machine Manager (SCVMM), initiate discovery, and perform other tasks. You might also want to install System Center Orchestrator (SCO).



Preparing for deployment

Before deploying OnCommand Plug-in for Microsoft, ensure that your system meets software, storage system, licensing and other requirements.

Steps

1. Verify that your system meets Microsoft software requirements.
2. Verify that your system meets System Center Operations Manager (SCOM) library and reporting requirements.
3. Verify that your system supports storage system requirements (Data ONTAP, FlexClone).
4. Check Data ONTAP compatibility with OnCommand Plug-in for Microsoft features.
5. Verify that your system meets connection and port requirements.
6. Verify that your system meets discovery agent requirements.
7. Check the upgrade paths to ensure that you can upgrade.

Related references

[Microsoft software requirements](#) on page 10

[System Center Operations Manager library requirements](#) on page 11

[System Center Operations Manager reporting requirements](#) on page 12

[Storage system requirements](#) on page 12

[Data ONTAP compatibility with OnCommand Plug-in for Microsoft features](#) on page 12

[Connection and port requirements](#) on page 13

[Discovery agent requirements](#) on page 14

[Upgrade notes](#) on page 14

Microsoft software requirements

Microsoft software must meet minimum requirements before you can install OnCommand Plug-in for Microsoft and use its features.

OnCommand Plug-in for Microsoft requires the following versions of software:

Software	Version	Needed for
Microsoft .NET Framework	3.5 and 4.0	All features
Microsoft SQL Server	2008 R2 SP1 and later	All features
Microsoft System Center Operations Manager (SCOM)	2012 (SP1 and R2)	SCOM management packs
Microsoft System Center Virtual Machine Manager (SCVMM)	2012 (SP1 and R2)	Required only for cloning cmdlets and clustered Data ONTAP virtualization discovery
Microsoft Windows PowerShell	3.0	All features

Software	Version	Needed for
Microsoft Windows Server	2008 R2 SP1, 2012, or 2012 R2	All features

For more information about requirements to install these products, see the Microsoft TechNet web site.

For details about the Microsoft operation system version, see the Interoperability Matrix.

Related information

[Microsoft Technet: System Center](#)

[NetApp Interoperability](#)

System Center Operations Manager library requirements

Specific System Center Operations Manager (SCOM) management pack libraries are required for OnCommand Discovery Agent and reporting functionality. They must be included in SCOM before you install OnCommand Plug-in for Microsoft.

Required for OnCommand Discovery Agent

- Microsoft.SystemCenter.InstanceGroup.Library
- Microsoft.SystemCenter.Library
- Microsoft.SystemCenter.NetworkDevice.Library
- Microsoft.SystemCenter.VirtualMachineManager 2012 discovery
- Microsoft.SystemCenter.VirtualMachineManager.Library
- Microsoft.Windows.Library
- System.Health.Library
- System.Library
- System.Performance.Library
- SystemSnmp.Library

Additional libraries required for reporting

- Microsoft.SystemCenter.DataWarehouse.Report.Library
- Microsoft.SystemCenter.DataWarehouse.ServiceLevel.Report.Library
- Microsoft ODR Report Library

Imported management packs after installation

After you install OnCommand Plug-in for Microsoft, additional management packs are imported into SCOM. See information about OnCommand Plug-in for Microsoft management packs.

Related references

[System Center Operations Manager \(SCOM\) management packs](#) on page 7

System Center Operations Manager reporting requirements

You need specific System Center Operations Manager (SCOM) libraries to use OnCommand Plug-in for Microsoft reporting functionality.

SQL Server configuration required for reporting

You must configure SCOM for reporting so that the reporting management pack appears with the other management packs. To do this, you must correctly configure the SQL Server reporting services. For details, refer to the Microsoft TechNet website.

Libraries required for reporting

- Microsoft.SystemCenter.DataWarehouse.Report.Library
- Microsoft ODR Report Library
- Microsoft.SystemCenter.DataWarehouse.ServiceLevel.Report.Library

Storage system requirements

The storage system must meet minimum requirements before you can install OnCommand Plug-in for Microsoft.

Requirement	Description
Data ONTAP	Clustered Data ONTAP 8.2 or 8.3 is required.
FlexClone	A FlexClone license is required.

For the latest details about the storage system requirements, see the Interoperability Matrix.

Related information

[NetApp Interoperability](#)

Data ONTAP compatibility with OnCommand Plug-in for Microsoft features

Some OnCommand Plug-in for Microsoft features are supported in both clustered Data ONTAP and Data ONTAP operating in 7-Mode, while other features are supported only in one or the other.

Feature	Functions in 7-Mode environments	Required in 7-Mode environments	Functions in cluster environments	Required in cluster environments
SCOM: clustered Data ONTAP	No	No	Yes	Yes
SCOM: clustered Data ONTAP MetroCluster	No	No	Yes	Yes
SCOM: clustered Data ONTAP reports	No	No	Yes	Yes

Feature	Functions in 7-Mode environments	Required in 7-Mode environments	Functions in cluster environments	Required in cluster environments
SCOM: console integration	Yes	Yes*	Yes	Yes
SCOM: Data ONTAP Hyper-V Storage monitoring and management	Yes	Yes	Yes	No
SCOM: Data ONTAP storage monitoring	Yes	Yes	Yes	No
Cmdlets: Cloning and provisioning	Yes	Yes	Yes*	No
Cmdlets: Debug-OCHost	Yes	Yes	Yes	Yes
Cmdlets: Disaster recovery	Yes	No	No	No
Cmdlets: Storage system credential cmdlets	Yes	No	Yes	No
MetroCluster reports	No	No	Yes	Yes
OIP: Cloning and Provisioning Integration Pack	Yes	No	No	No
OIP: Data ONTAP Toolkit Integration Pack	Yes	No	No	No
OIP: Disaster Recovery Integration Pack	Yes	No	No	No
OnCommand Discovery Agent	Yes	Yes for FCP	Yes	Yes for FCP
OnCommand Plug-in for Microsoft database	Yes	No	Yes	No
OnCommand Plug-in VIM web service	Yes	Yes	Yes	No
SCVMM add-in	Yes	No	No	No
SCVMM PRO Tips	Yes	No	No	No

Connection and port requirements

Connections and ports must meet minimum requirements before you can install OnCommand Plug-in for Microsoft.

Consider the following requirements:

- The required port uses the HTTP or HTTPS protocol.
- Firewalls, proxies, or other network devices should not interfere with connections.

SNMP support

OnCommand Plug-in for Microsoft is compatible with SNMP for discovering controllers and generating alerts. Data ONTAP operating in 7-Mode environments impacts SNMP version support.

You should not set up SNMP v3 in SCOM 2012 R2.

Based on your Data ONTAP version, OnCommand Plug-in for Microsoft uses the following SNMP versions:

Data ONTAP version	SNMP support
Data ONTAP earlier than 7.3	SNMP v1
Data ONTAP 7.3 and later	SNMP v1, v2C, and v3

Discovery agent requirements

To begin monitoring, systems must be discovered. Comprehensive monitoring requires that you install an agent on the discovered system. Discovery agents must meet minimum requirements.

Discovery agents require the following:

- Hyper-V server role enabled
- Windows Server 2012, 2012 R2, 2008 R2 SP1

Upgrade notes

Upgrade notes describe important changes between the most recent release of OnCommand Plug-in for Microsoft and this one, including any deprecated features. You should review this information carefully before upgrading. Also, you should check the Interoperability Matrix for the most up-to-date information about supported configurations.

Supported upgrade path

You can upgrade to OnCommand Plug-in for Microsoft 4.1 from version 3.2.1 or 4.0.1.

Upgrade issues

Consider the following issues before you upgrade:

- If you upgrade from a version earlier than OnCommand Plug-in for Microsoft 4.0, you cannot complete the upgrade remotely.
- OnCommand Plug-in for Microsoft 4.1 System Center Operations Manager (SCOM) Management Packs can be upgraded and are also backward compatible with OnCommand Plug-in for Microsoft 4.0.1 Management Packs.

Related information

[NetApp Interoperability](#)

Installing OnCommand Plug-in for Microsoft

You install OnCommand Plug-in for Microsoft on the Microsoft System Center Operations Manager (SCOM) host. You can choose to install the plug-in interactively with the user interface wizard or silently with commands.

Before you begin

Microsoft System Center Operations Manager (SCOM) and System Center Virtual Machine Manager (SCVMM) must already be installed.

About this task

Installation tasks are divided into these phases:

- Starting the OnCommand Plug-in for Microsoft installation, which includes tasks common to both clustered Data ONTAP and Data ONTAP operating in 7-Mode environments
- Connecting to the Data ONTAP environment, which includes tasks for only one of the two environments

Consider the following deployment issues:

- If the host is a SCOM management server, you can install the SCOM management packs on the host.
- You can install the SCOM user interface on a different machine from the host.

Related tasks

[Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments](#) on page 15

[Connecting to your clustered Data ONTAP environment](#) on page 26

Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments

For both clustered Data ONTAP and Data ONTAP operating in 7-Mode, you begin the installation of OnCommand Plug-in for Microsoft on the Microsoft System Center Operations Manager (SCOM) server.

Before you begin

Microsoft System Center Operations Manager (SCOM) and System Center Virtual Machine Manager (SCVMM) must already be installed.

Steps

1. [Confirming Virtual Machine Manager integration with Operations Manager](#) on page 16
To use virtual machine alerts and features, you must ensure that System Center Operations Manager (SCOM) and System Center Virtual Machine Manager (SCVMM) are integrated. Additionally, you must add Hyper-V hosts to both SCOM and SCVMM servers to enable the discovery of virtual machines from within SCOM.
2. [Customizing clustered Data ONTAP role-based access control permissions](#) on page 17

Configuring role-based access control (RBAC) involves creating users, creating roles, and assigning privileges to those roles. Then, you create permissions to dictate which role is used by which users or groups when they access an OnCommand Plug-in for Microsoft object.

3. [Installing OnCommand Plug-in for Microsoft using the installation wizard](#) on page 21
You can use the installation wizard to install System Center Operations Manager (SCOM), the management packs, and the web server. You install the OnCommand Plug-in for Microsoft on a SCOM server.
4. [Checking for missing management packs](#) on page 22
You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage. You can check for management packs that were not installed but required subsequently after the installation package was created and then install them.
5. [Installing missing management packs](#) on page 22
You might need to install missing management packs that are required for OnCommand Plug-in for Microsoft. You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage.
6. [Fixing Microsoft vulnerabilities reporting](#) on page 23
After you install OnCommand Plug-in for Microsoft on a Windows Server 2012 machine, some Microsoft vulnerabilities can appear. You should identify whether these vulnerabilities appear and, if so, resolve them.
7. [Overriding plug-in defaults and saving to a new management pack](#) on page 24
You can change the default settings of rules, such as the discovery rule that starts the discovery process, that were established during OnCommand Plug-in for Microsoft installation. Changes to the rules, called *overrides*, should be saved in a new management pack. You can override any rules to enable or disable them, alter the frequency, or change the start time for a rule.
8. [Verifying a successful installation](#) on page 25
After you install OnCommand Plug-in for Microsoft, you might want to ensure that OnCommand Plug-in for Microsoft components appear in the System Center Operations Manager (SCOM).

Confirming Virtual Machine Manager integration with Operations Manager

To use virtual machine alerts and features, you must ensure that System Center Operations Manager (SCOM) and System Center Virtual Machine Manager (SCVMM) are integrated. Additionally, you must add Hyper-V hosts to both SCOM and SCVMM servers to enable the discovery of virtual machines from within SCOM.

Before you begin

- Microsoft SCOM and SCVMM must already be installed.
- After SCVMM is installed, the SCOM console must then be installed on the SCVMM server.

About this task

Refer to the Microsoft System Center Technet documentation to facilitate installation and configuration.

Steps

1. To configure SCVMM with SCOM, complete the following:
 - a. Open the SCVMM console.
 - b. From the SCVMM navigation tree, select **Settings > System Center Settings**.

- c. Right-click **Operations Manager Server**, type in the SCOM management server name, and select **Enable the connection to Operations Manager** to establish the connection to the SCVMM server.
 - d. If an error appears about the Virtual Machine Manager PRO library, unselect **Enable Performance and Resource Optimization (PRO)** the first time you access this page, exit this page, access the page again, and reselect the option.
2. To confirm that Hyper-V nodes are added to SCVMM, complete the following:
- a. From the SCVMM console, click the **VMs and Services** tab.
 - b. Expand **All Hosts** and confirm that Hyper-V hosts are listed.
 - c. Click **Add Hyper-V Hosts and Clusters** and provide Hyper-V host and credential information.
- You can provide the credentials or choose a run-as account. When you add Hyper-V hosts or clusters, you cannot use the same account with which SCVMM is installed. In this case, you can create a new user with the same permissions and then set up a run-as account for that user.
3. To ensure that Hyper-V VMs are visible in SCOM, complete the following:
- a. From the SCOM console, select **Monitoring > Microsoft System Center Virtual Machine Manager Views** tab.
 - b. Select **Diagram View** and ensure that Hyper-V VMs are visible.

Related information

[Microsoft Technet: System Requirements for System Center 2012 - Operations Manager](#)

Customizing clustered Data ONTAP role-based access control permissions

Configuring role-based access control (RBAC) involves creating users, creating roles, and assigning privileges to those roles. Then, you create permissions to dictate which role is used by which users or groups when they access an OnCommand Plug-in for Microsoft object.

Before you begin

You must have already identified which Data ONTAP permissions are required. For details, see information about Data ONTAP permissions required for OnCommand Plug-in for Microsoft.

About this task

You can use the administrator or root login to perform all storage discovery and monitoring; however, it is a good practice to use role-based access control 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 needed to create a user named "OCPM" and assigned a role.

In clustered Data ONTAP, the permissions are not based on ZAPIs, but are based on command or directory permissions.

Steps

1. To create a user who has permissions on the clustered Data ONTAP controller required by the plug-in, run these commands and append the permission:


```
security login role create -role <OCPM> -access readonly -cmddirname
<permission>
```

Example

```

security login role create -role OCPM -access readonly -cmddirname
"cluster identity show"
security login role create -role OCPM -access readonly -cmddirname "cluster show"
security login role create -role OCPM -access readonly -cmddirname "cluster peer show"
security login role create -role OCPM -access readonly -cmddirname "lun show"
security login role create -role OCPM -access readonly -cmddirname
"network interface show"
security login role create -role OCPM -access readonly -cmddirname "network port show"
security login role create -role OCPM -access readonly -cmddirname "snapmirror show"
security login role create -role OCPM -access readonly -cmddirname
"snapmirror policy show"
security login role create -role OCPM -access readonly -cmddirname "statistics show"
security login role create -role OCPM -access readonly -cmddirname "storage aggregate
show"
security login role create -role OCPM -access readonly -cmddirname "storage disk show"
security login role create -role OCPM -access readonly -cmddirname
"storage failover show"
security login role create -role OCPM -access readonly -cmddirname "system node show"
security login role create -role OCPM -access readonly -cmddirname "version"
security login role create -role OCPM -access readonly -cmddirname
"volume efficiency show"
security login role create -role OCPM -access readonly -cmddirname "volume qtree show"
security login role create -role OCPM -access readonly -cmddirname "volume quota report"
security login role create -role OCPM -access readonly -cmddirname "volume show"
security login role create -role OCPM -access readonly -cmddirname
"vservers cifs share access-control show"
security login role create -role OCPM -access readonly -cmddirname
"vservers cifs share show"
security login role create -role OCPM -access readonly -cmddirname "vservers cifs show"
security login role create -role OCPM -access readonly -cmddirname "vservers fcp show"
security login role create -role OCPM -access readonly -cmddirname "vservers iscsi show"
security login role create -role OCPM -access readonly -cmddirname "vservers peer show"
security login role create -role OCPM -access readonly -cmddirname "vservers show"

```

2. Create a user named “OCPM” with the role of “OCPM_role” and with these settings and enable the plug-in to connect to the controller:

```

security login create -username <user_name> -role <role> -application
http -authmethod password

```

```

security login create -username <user_name> -role <role> -application
ontapi -authmethod password

```

-authmethod includes both a variable named *password* and it also accepts the string “password”.

Example

```

security login create -username OCPM -role OCPM_role
-application http -authmethod password
security login create -username OCPM -role OCPM_role
-application ontapi -authmethod password

```

3. If you want to monitor NetApp MetroCluster software, set permissions:

```

security login role create -role OCPM -access readonly -cmddirname
"metrocluster check aggregate show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check config-replication show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check config-replication show-aggregate-eligibility"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check lif repair-placement"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check lif show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check node show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check run"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster check show"

```

```

security login role create -role OCPM -access readonly -cmddirname
"metrocluster configure"
security login role create -role OCPM -access readonly -cmddirname "metrocluster heal"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster interconnect adapter show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster interconnect mirror multipath show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster interconnect mirror show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster node show"
security login role create -role OCPM -access readonly -cmddirname "metrocluster show"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster switchback"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster switchover"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster vserver resync"
security login role create -role OCPM -access readonly -cmddirname
"metrocluster vserver show"

```

Related references

[Clustered Data ONTAP storage permissions for basic monitoring](#) on page 19

Clustered Data ONTAP storage permissions for basic monitoring

Specific Data ONTAP permissions are required for basic monitoring using OnCommand Plug-in for Microsoft.

The following permissions are required for basic monitoring only for clustered Data ONTAP. The list does not include permissions for active management or cmdlets.

- 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-qtree-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 named “ocpm” with role of “ocpm_role” must have permissions set for the following parameters:

- -application http
- -application ontapi

Installing OnCommand Plug-in for Microsoft using the installation wizard

You can use the installation wizard to install System Center Operations Manager (SCOM), the management packs, and the web server. You install the OnCommand Plug-in for Microsoft on a SCOM server.

About this task

All components are selected by default; however, you can select specific components. The installer performs the following tasks:

- If the supported version of SCOM is not detected on the system, unselects the SCOM management packs feature from the installation features
- Checks for any missing management pack requirements and provides a list
- Imports those management packs that have met all the requirements into SCOM

During installation, the OnCommand Plug-in for Microsoft management packs for clustered Data ONTAP are automatically imported while the OnCommand Plug-in for Microsoft resource pool is initialized and management servers are discovered. You must not manually unimport and then reimport the management packs, because then the OnCommand Plug-in for Microsoft resource pool is not initialized correctly. If you do unimport the management packs, you must reinstall the plug-in.

Steps

1. From the NetApp Support Site at mysupport.netapp.com, download the OnCommand Plug-in for Microsoft executable file to a directory on your hard drive.
2. Double-click the installer icon, and click **Run** to start the installation wizard.
3. Follow the instructions in the installation wizard to install the software.
4. In the **Feature Selection** page of the wizard, select the program features that you want to install.
5. Optional: To perform these options, complete the following steps:
 - To view an explanation of the icons and their meanings, click **Help**.
 - To change the location where the files are installed, click **Change** and type in the new path.
 - To view the disk space usage, click **Disk Space**.
6. After you have selected the features that you want to install, click **Next**.
7. In the **Web Service Credentials** dialog box, type your web service credentials and click **Next**.
8. In the **Configure OCPM Database** dialog box, type the required information.

You must type the instance in the Database server field in the following format:

`<server_name>\<instance>`

If you do not include the instance, the default instance is used.

9. In the **Ready to Install** dialog box, click **Install**.

If the installer finds that required software is missing, a dialog box displays, in which you can view the requirements and from which you can install the missing software.

After all files are installed on a storage system running clustered Data ONTAP, a dialog box shows the remote systems on which you can install the plug-in.

If you install SCOM on a storage system running clustered Data ONTAP and import the management pack on one of three remote management servers, the SCOM console is visible on all three systems. However, you cannot access any of the functionality in the SCOM console because the plug-in is not installed on the other two systems.

10. Click **Finish.**

When the installation of the plug-in is complete, the installer checks for remote SCOM management servers that were in the same management group to install the plug-in.

11. You can select all SCOM management servers for a remote installation.

12. If a management pack (for example, Clustered Data ONTAP Virtualization Management Pack) was not imported due to missing dependencies, repeat Step 2 and select **Repair or **Modify**. This imports the missing management pack.**

Checking for missing management packs

You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage. You can check for management packs that were not installed but required subsequently after the installation package was created and then install them.

Steps

1. Check the Microsoft management pack catalog for missing management packs at both the System Center Central web site and the Microsoft TechNet site (<http://www.systemcentercentral.com/pack-catalog-categories/mp-catalog-pack-catalog/> and <http://social.technet.microsoft.com/wiki/contents/articles/16174.microsoft-management-packs.aspx>).
2. If you identify packs that are missing, refer to the instructions on how to download and install any missing management packs required for OnCommand Plug-in for Microsoft.

Related tasks

[Installing missing management packs](#) on page 22

You might need to install missing management packs that are required for OnCommand Plug-in for Microsoft. You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage.

Related information

[Microsoft Technet: Microsoft Management Packs](#)

Installing missing management packs

You might need to install missing management packs that are required for OnCommand Plug-in for Microsoft. You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage.

Before you begin

You should have already identified management packs that were not installed but required.

Steps

1. From the SCOM console, click the **Administration** workspace option.
2. From the navigation tree, right-click **Management Packs**.
3. From the **Tasks** pane, click **Import Management Packs**.

4. In the **Import Management Packs** dialog box, click **Add** and select **Add from disk**.
5. Navigate to where you saved the download: for example, C:\Program Files (x86)\System Center Management Packs\Microsoft SQL Server System Center Operations Manager MP.
6. Select one or more .mp files and click **Open**.
7. Click **Install**.

Related tasks

[Checking for missing management packs](#) on page 22

You use the System Center Operations Manager (SCOM) management packs to configure, monitor, and maintain your storage. You can check for management packs that were not installed but required subsequently after the installation package was created and then install them.

Fixing Microsoft vulnerabilities reporting

After you install OnCommand Plug-in for Microsoft on a Windows Server 2012 machine, some Microsoft vulnerabilities can appear. You should identify whether these vulnerabilities appear and, if so, resolve them.

Before you begin

A vulnerability scanner should already have been downloaded and installed.

About this task

Different vulnerabilities might require different resolutions.

Note: To review monthly bulletins, you might want to subscribe to the Microsoft Technical Security Notifications at <https://technet.microsoft.com/en-us/security/dd252948.aspx?f=255&MSPPError=-2147217396>.

Steps

1. Open and run the vulnerability scanner.
The tool provides a list of vulnerabilities.
2. Resolve the following potential and more common of the possible vulnerabilities:

Vulnerability	How to resolve
MSRDP Uses Non-Network-Level Authentication Sessions to Log on to Servers	Change remote settings to allow a connection running remote desktop with network-level authentication (NLA).
SMB Certificate Is Not Trusted	Turn on or off SMB signing and trusting. Implementing SMB signing increases both client-side and server-side load for SMB operations and could decrease throughput. See the support article on disabling SMB signing.
KB2862973 Not Installed: This May Cause a Vulnerability	Install Microsoft KB Windows8-RT-KB2862973-x64.

Vulnerability	How to resolve
SSL Sessions Are Not Signed	Fix SSL signing issues. See the support articles on discussions.tenable.com.
Servers Store User Logon Details in Local Registry	Change the registry key on all servers by setting HKLM\Software\Microsoft\WindowsNT\CurrentVersion\Winlogon\CachedLogonsCount to 0.

Overriding plug-in defaults and saving to a new management pack

You can change the default settings of rules, such as the discovery rule that starts the discovery process, that were established during OnCommand Plug-in for Microsoft installation. Changes to the rules, called *overrides*, should be saved in a new management pack. You can override any rules to enable or disable them, alter the frequency, or change the start time for a rule.

Steps

1. Create a custom management pack to store your overrides by completing the following steps:
 - a. From the SCOM console, click the **Administration** workspace option.
 - b. In the **Administration** tree, select **Management Packs**.
 - c. From the **Actions** pane, click **Create Management Pack**.

You can create one management pack for all of your overrides or group your overrides and create management packs for each group. However, you should not save changes to the default management pack.

2. From the SCOM console, click the **Authoring** workspace option.
3. Select **Management Pack Objects > Rules**.
4. In the Look for box, enter **discovery rule** and click **Find Now**.
5. Under Management Server, select **Data ONTAP: Discovery Rule**.

The screenshot displays the SCOM Authoring console. On the left, the 'Authoring' tree shows 'Management Pack Objects' > 'Rules' selected. The main pane, titled 'Rules (28)', contains a search bar with 'discovery rule' and a 'Find Now' button. Below the search bar is a table of rules. The 'Data ONTAP: Discovery Rule' is highlighted. The right pane shows the 'Rule details' for this rule, including the management pack 'OnCommand Data ONTAP' and the target 'Management Server'. The rule description states: 'This is the principal discovery rule for all Data ONTAP storage systems. Once you use the SNMP network device Discovery wizard in System Center Operations Manager to discover your Data ONTAP storage controllers, this rule contacts each storage controller and discovers all of its physical and logical storage elements.'

Name	Inherited from	Management Pack	Created	Enabled by default
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Data ONTAP Management Server (2)				
Data ONTAP: Trigger Controller Discovery Rule	Data ONTAP Manage...	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	Yes
Data ONTAP: Trigger Vfiler Discovery Rule	Data ONTAP Manage...	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	Yes
Type: Data ONTAP Virtualization: Management Server (1)				
Data ONTAP Virtualization: Unattached VHD Discovery R...	Data ONTAP Virtualizati...	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	Yes
Type: Data Warehouse Connection Server (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Gateway (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Management Server (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Microsoft System Center Data Warehouse Synchronization Server (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Notification Subscription Server (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Root Management Server Emulator (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No
Type: Site Management Server (2)				
Data ONTAP Virtualization: Discovery Rule	Management Server	OnCommand Data ONTAP Virtualizati...	10/31/2014 1:59:26 ...	No
Data ONTAP: Discovery Rule	Management Server	OnCommand Data ONTAP	10/31/2014 1:59:00 ...	No

Rule details:

Data ONTAP: Discovery Rule

Management Pack: OnCommand Data ONTAP

Target: Management Server

Rule Description: This is the principal discovery rule for all Data ONTAP storage systems. Once you use the SNMP network device Discovery wizard in System Center Operations Manager to discover your Data ONTAP storage controllers, this rule contacts each storage controller and discovers all of its physical and logical storage elements.

6. Right-click the rule that you want to change and select **Overrides > Override the Rule > For all objects of class: Management Server**.
7. In the **Override Properties** dialog box, select the **Override** box adjacent to Interval Seconds and modify the Interval Seconds override value to 3600.

Override Properties

Rule name: Data ONTAP: Discovery Rule
 Category: Discovery
 Overrides target: Class: Management Server

Show Rule Properties...

Override-controlled parameters:

	Override	Parameter Name	Parameter Type	Default Value	Override Value	Effective Value	Change Status	
	<input checked="" type="checkbox"/>	Enabled	Boolean	False	True	False	[Added]	
	<input checked="" type="checkbox"/>	Interval Seconds	Integer	86400	3600	86400	[Added]	
	<input type="checkbox"/>	Sync Time	String	21:00	21:00	21:00	[No change]	
	<input type="checkbox"/>	TimeoutSeconds	Integer	3600	3600	3600	[No change]	

Details:

Enabled Description [Edit...](#)

The new custom override will be created in the 'Client Monitoring Overrides Management Pack'. Click apply to view the new effective value for this parameter.

Management pack

Select destination management pack:

Client Monitoring Overrides Management Pack [New...](#)

Help OK Apply Cancel

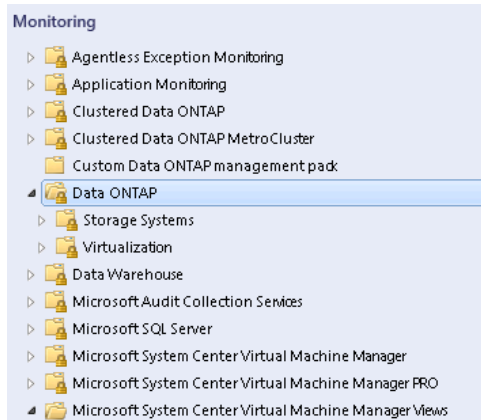
8. Select the new management pack to which you want to save these overrides.
9. Click **OK**.

Verifying a successful installation

After you install OnCommand Plug-in for Microsoft, you might want to ensure that OnCommand Plug-in for Microsoft components appear in the System Center Operations Manager (SCOM).

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. From the Monitoring navigation tree, ensure that one or more of the following appear:
 - Clustered Data ONTAP, for OnCommand Plug-in for Microsoft installations for clustered Data ONTAP environments
 - Clustered Data ONTAP MetroCluster, for OnCommand Plug-in for Microsoft installations for clustered Data ONTAP environments



Connecting to your clustered Data ONTAP environment

Connecting to your clustered Data ONTAP environment for the OnCommand Plug-in for Microsoft involves adding clustered storage systems, enabling discovery, overriding rules, adding Data ONTAP credentials, and adding management servers to the resource pool.

Before you begin

You must have already finished all the beginning installation tasks.

Steps

1. [Adding clustered Data ONTAP storage systems and credentials](#) on page 27
You can add a clustered Data ONTAP storage system so that you can monitor clustered storage in System Center Operations Manager (SCOM). When you add the storage system, you can also enter the corresponding credentials.
2. [Adding clustered Data ONTAP domain account credentials for a Run As action account](#) on page 28
To monitor NetApp storage systems in OnCommand Plug-in for Microsoft, you must add Windows domain account credentials under which discoveries and monitoring workflows run. If you cannot connect to the controller entered into using the Manage Storage System option (for clustered Data ONTAP), you might need to configure the Run As action account. You might also need to do this if you the workflows are not operating successfully in SCOM.
3. [Discovering storage in SCOM](#) on page 29
To monitor storage, you must first run the discovery process in System Center Operations Manager (SCOM).
4. [Discovering virtualized storage in SCOM](#) on page 30
To monitor virtualized storage, you must first run the virtualization discovery process in System Center Operations Manager (SCOM).
5. [Initiating storage discovery in SCOM](#) on page 30
To monitor storage, you must first initiate the discovery process in System Center Operations Manager (SCOM).
6. [Overriding clustered Data ONTAP management pack rules](#) on page 31
You can change the default settings of rules, such as the discovery rule that starts the discovery process, that were established during installation. In addition to overriding basic management pack defaults completed earlier in the installation process, you must override clustered Data ONTAP management pack defaults. You can save changes to the rules, called *overrides*, in a new management pack.

7. [Overriding available space monitors](#) on page 32
You should change the default settings of rules, established during OnCommand Plug-in for Microsoft installation, that monitor the available space for aggregates and volumes. These changes affect the threshold for triggering available space alerts. You should save these changes to the rules, called *overrides*, in a new management pack.
8. [Discovering clustered Data ONTAP storage systems manually](#) on page 33
To use SCOM to monitor clustered Data ONTAP storage systems, you must run the discovery process, which retrieves storage system information.
9. [Adding a management server to a plug-in resource pool](#) on page 34
You can add System Center Operations Manager (SCOM) management servers to the resource pool in the clustered Data ONTAP management pack by using the System Center Operations Manager (SCOM) console. You might want to do this to monitor load balancing among the servers in the resource pool.
10. [Monitoring Storage Virtual Machines \(SVMs\)](#) on page 34
You can monitor Storage Virtual Machines (SVMs) in the clustered Data ONTAP management pack by using the System Center Operations Manager (SCOM) console. An SVM is a logical storage unit, formerly referred to as a *Vserver*.
11. [Installing cmdlets](#) on page 35
If you did not install PowerShell cmdlets as part of the OnCommand Plug-in for Microsoft installation, you can install them later. You might want to use cmdlets to enter credentials for the controllers, create LUNs, and create VMs.

Related tasks

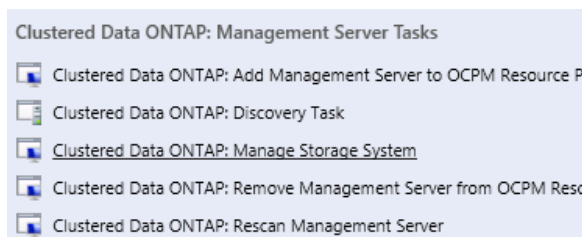
[Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments](#) on page 15

Adding clustered Data ONTAP storage systems and credentials

You can add a clustered Data ONTAP storage system so that you can monitor clustered storage in System Center Operations Manager (SCOM). When you add the storage system, you can also enter the corresponding credentials.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. In the navigation tree, click **Clustered Data ONTAP > Management Servers**
3. In the Tasks pane, click **Clustered Data ONTAP: Manage Storage System**.



Note: If an error message appears about not being able to find a file, you might need close SCOM, exit the VM, and reopen it.

4. In the **Manage Storage Systems** dialog box, click **Add**.
5. Type the name or IP address of the clustered storage system or storage virtual machine (SVM).

6. Type the user credentials associated with the storage system.
7. Click **Add**.

Adding clustered Data ONTAP domain account credentials for a Run As action account

To monitor NetApp storage systems in OnCommand Plug-in for Microsoft, you must add Windows domain account credentials under which discoveries and monitoring workflows run. If you cannot connect to the controller entered into using the Manage Storage System option (for clustered Data ONTAP), you might need to configure the Run As action account. You might also need to do this if you the workflows are not operating successfully in SCOM.

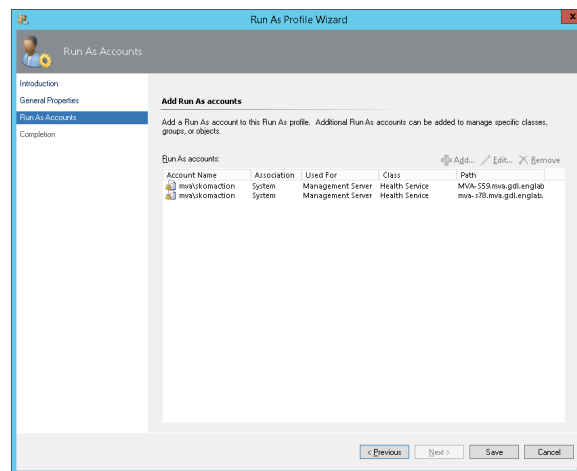
About this task

The OnCommand Plug-in for Microsoft discovery and monitoring scripts are called using Windows PowerShell and run under the context of an action account in SCOM. This account should have a Windows profile created to run the PowerShell script. If this account is not used to log in to the SCOM server before running the OnCommand Plug-in for Microsoft SCOM management pack, the discovery and monitoring tasks fail to run the PowerShell script.

You should add the Run As account as an administrator on the local machine for all of the servers.

Steps

1. Add the OnCommand Plug-in for Microsoft Run As action account as an administrator on the local host.
 - a. From the SCOM console on the local host, select **Administration > Run As Configuration > Profiles > Default Action Account > Verify Properties > Run As Accounts**.



- b. Click **Add** and add the Run As action account information.
2. If you cannot connect to the controller (entered in the Manage Storage System option for clustered Data ONTAP), configure the Run As action account by doing the following:
 - a. From the SCOM console on the local host, select **Administration > Run As Configuration > Accounts > Action Account**.
 - b. Add the OnCommand Plug-in for Microsoft Run As action account as an administrator.
 - c. Change the credentials of the SCOM default action account to a user with privileges that enables it to run.

3. Right-click the OnCommand Plug-in for Microsoft account, select **Properties**, click the **Credentials** tab, and enter the credentials.
4. Log in to the SCOM server with the default action account.
5. Restart the SCOM service.
6. Run a manual discovery in SCOM.

Discovering storage in SCOM

To monitor storage, you must first run the discovery process in System Center Operations Manager (SCOM).

About this task

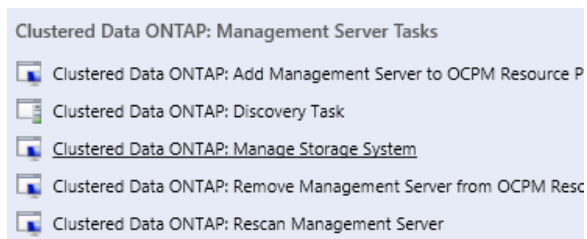
The clustered Data ONTAP SCOM management pack includes clustered Data ONTAP storage discovery and clustered Data ONTAP virtualization discovery. These are enabled by default.

For the clustered Data ONTAP SCOM management pack, the discovery rules are targeted at a resource pool.

The OnCommand Plug-in for Microsoft discovery and monitoring scripts are called using Windows PowerShell and run under the context of an action account in SCOM. This account should have a Windows profile created to run the PowerShell script. If this account is not used to log in to the SCOM server before running the OnCommand Plug-in for Microsoft SCOM management pack, the discovery and monitoring tasks fail to run the PowerShell script.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. In the navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Discovery Task**.



4. In the **Discovery Task** dialog box, select the storage targets on which you want to run discovery and click **Run**.
5. To verify which discovery rules are enabled, open a cmdlet window:

Debug-OCHost - CheckSettings

```
PS C:\Debug-OCHost -CheckSettings
SCOM Clustered Data ONTAP storage discovery           : Enabled
SCOM Clustered Data ONTAP virtualization discovery   : Enabled
SCOM 7-Mode Data ONTAP storage discovery             : Disabled
SCOM 7-Mode Data ONTAP virtualization discovery     : Disabled
OCPM VIM service status                             : Running
OCPM VIM service port number                         : 808
OCPM VMI provider status                             : OK
Remote Registry status                              : Not Configured
Remote powershell status                            : Enabled
```

Firewall settings	: Configured
Multipath I/O	: Disabled
Data ONTAP DSM	: Not Configured
Microsoft DSM	: Not Configured
OCPM SQL server instance	: SCOM2012R2
OCPM SQL server port	: 1433

Discovering virtualized storage in SCOM

To monitor virtualized storage, you must first run the virtualization discovery process in System Center Operations Manager (SCOM).

About this task

The clustered Data ONTAP SCOM management pack includes clustered Data ONTAP storage discovery and clustered Data ONTAP virtualization discovery. These are enabled by default.

For the clustered Data ONTAP SCOM management pack, the discovery rules are targeted at a resource pool.

Steps

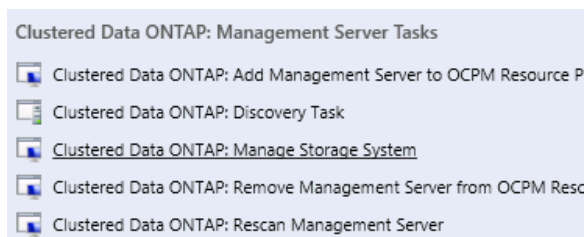
1. From the SCOM console, click the **Monitoring** workspace option.
2. From the navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, click **Clustered Data ONTAP: Virtualization Discovery Task**.
4. In the **Virtualization Discovery Task** dialog box, select the storage targets on which you want to run discovery and click **Run**.

Initiating storage discovery in SCOM

To monitor storage, you must first initiate the discovery process in System Center Operations Manager (SCOM).

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. In the navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. In the **Tasks** pane, do one of the following:



- Click **Clustered Data ONTAP: Manage Storage System** and from the Manage Storage System dialog box, click **Discover**.
If you click **Discover**, discovery is initiated on all clustered Data ONTAP controllers listed, not just the one selected. The job does not appear in the Task Status window.
- Click **Clustered Data ONTAP: Discovery Task** and from the Run Task dialog box, click the target and click **Run**.

If you click **Run**, the job appears in the Task Status window and you can verify completion from there.

Overriding clustered Data ONTAP management pack rules

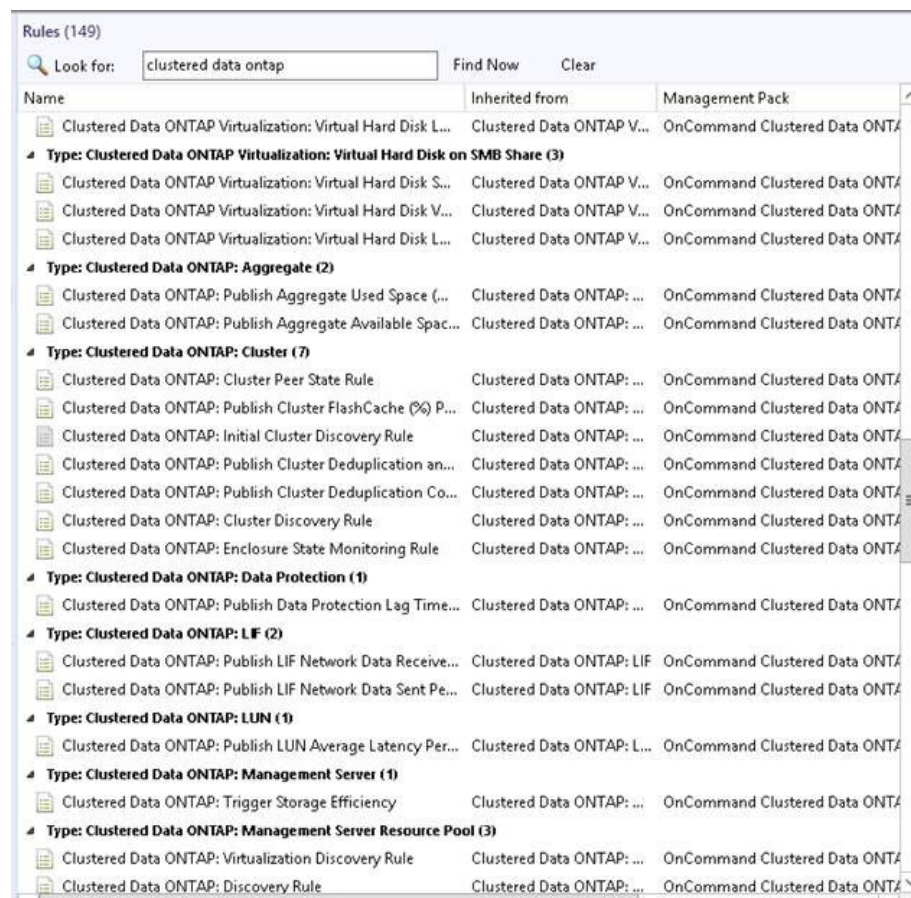
You can change the default settings of rules, such as the discovery rule that starts the discovery process, that were established during installation. In addition to overriding basic management pack defaults completed earlier in the installation process, you must override clustered Data ONTAP management pack defaults. You can save changes to the rules, called *overrides*, in a new management pack.

Steps

1. Create a custom management pack to store your overrides:
 - a. From the SCOM console, click the **Administration** workspace option.
 - b. In the **Administration** tree, select **Management Packs**.
 - c. From the **Actions** pane, click **Create Management Pack**.

You can create one management pack for all of your overrides or group your overrides and create management packs for each group. However, you should not save changes to the default management pack.

2. From the SCOM console, click the **Authoring** tab.
3. In the navigation tree, click **Management Pack Object > Rules**.
4. In the Look for field, enter **clustered data ontap** and click **Find Now**.



5. Right-click the rule.
6. Select **Overrides** for all objects, specific objects, or the entire group.
7. 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 of the rule.
8. Select the custom management pack you created where you want to save overrides.
9. Click **OK**.

Overriding available space monitors

You should change the default settings of rules, established during OnCommand Plug-in for Microsoft installation, that monitor the available space for aggregates and volumes. These changes affect the threshold for triggering available space alerts. You should save these changes to the rules, called *overrides*, in a new management pack.

About this task

Consider the following situations:

- When a system's root aggregates equal or exceed 95% utilization, the default available space monitor triggers alerts on FlexPod and other configurations.
To avoid these alerts, you should either disable the monitor or use a higher threshold value in the aggregate space utilization monitor. For example, you might want to override the thresholds of aggregate space utilization monitors for these aggregates to a lower threshold parameter of 96 and an upper threshold parameter of 98.
- Because the size of small aggregates or volumes might be below the threshold, you should look for alerts for the available space monitor for both volumes and aggregates.
To avoid the alert, you should lower the threshold.
- For some root Flex volumes that are 1 GB, you might want to disable the available space monitor and rely on the space utilization monitor instead.
Alternatively, you might want to override and lower the thresholds on the available space monitor for these volumes to 0.2 and 0.1 GB.

You can disable these monitors for all objects in a class for some objects. For example, you could turn off alerts for the Storage Virtual Machine (SVM, formerly known as Vserver) root volumes, but not all objects in the clustered Data ONTAP class, which enables you to still monitor the important data volumes.

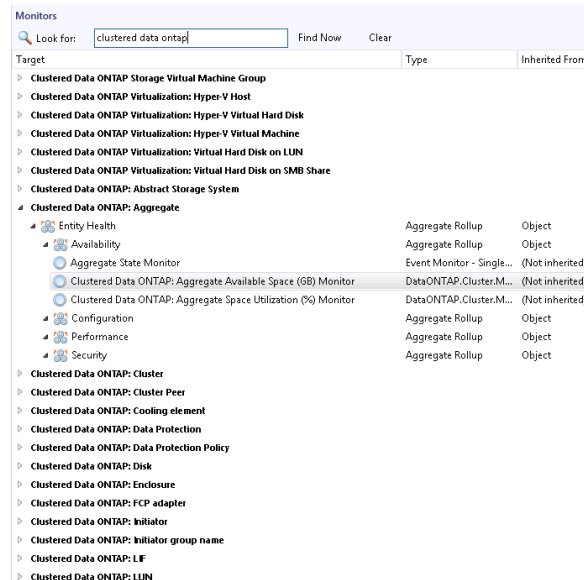
Steps

1. Create a custom management pack to store your overrides:
 - a. From the SCOM console, click the **Administration** workspace option.
 - b. In the **Administration** tree, select **Management Packs**.
 - c. From the **Actions** pane, click **Create Management Pack**.

You can create one management pack for all of your overrides or group your overrides and create management packs for each group. However, you should not save changes to the default management pack.

2. From the SCOM console, click the **Authoring** workspace.
3. In the navigation tree, click **Management Pack Object > Monitors**.

4. Override the Clustered Data ONTAP Aggregate Space Utilization monitor:
 - a. In the main **Monitors** pane, select **Clustered Data ONTAP: Aggregate > Entity Health > Availability > Clustered Data ONTAP: Aggregate Space Utilization (%) Monitor**.



- b. Right-click the monitor name and select **Overrides > Override the Monitor > For all objects of class: Clustered Data ONTAP: Aggregate**.

Note: You could select a specific aggregate to override instead by selecting **For a specific object of class: Clustered Data** and choosing the specific aggregate.
 - c. Change the Lower or Upper Threshold Override Value parameter, as needed.
5. Override the Clustered Data ONTAP Volume Available Space monitor:
 - a. In the main **Monitors** pane, select **Clustered Data ONTAP: Volume > Entity Health > Availability > Clustered Data ONTAP: Volume Available Space (GB) Monitor**.
 - b. Right-click the monitor name and select **Overrides > Override the Monitor > For all objects of class: Clustered Data ONTAP: Volume**.
 - c. Change the Lower or Upper Threshold Override Value parameter, as needed.
6. Select the custom management pack you created where you want to save overrides.

Discovering clustered Data ONTAP storage systems manually

To use SCOM to monitor clustered Data ONTAP storage systems, you must run the discovery process, which retrieves storage system information.

Before you begin

OnCommand Plug-in for Microsoft and its required management packs must already be installed.

The discovery process must have been enabled. For clustered Data ONTAP, the discovery is enabled by default, unlike Data ONTAP operating in 7-Mode environments.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.

2. In the navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. From the **Tasks** pane, click **Clustered Data ONTAP: Manage Storage System** to initiate the manual discovery process.
4. From the **Manage Storage Systems** view, click **Add**.
5. From the **Add Storage System** view, enter storage system information and click **Add**.

Adding a management server to a plug-in resource pool

You can add System Center Operations Manager (SCOM) management servers to the resource pool in the clustered Data ONTAP management pack by using the System Center Operations Manager (SCOM) console. You might want to do this to monitor load balancing among the servers in the resource pool.

About this task

The clustered Data ONTAP management pack and SCOM enable you to monitor resource pools. A resource pool is a collection of management servers that balance work load among the servers in the pool and take over from a failed server in the pool. Resource pools enable monitoring continuity, if one of the management servers becomes unavailable.

All SCOM servers in a resource pool point to the same SCOM database.

For example, if four nodes exist in the resource pool, you would run the discovery tasks from the node on which the plug-in is installed. You would run all other tasks, such as alerting and monitoring, from the other nodes in the resource pool.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. From the Monitoring navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. Select the management server.
4. From the list of **Clustered Data ONTAP: Management Server Tasks**, click **Clustered Data ONTAP: Add Management Server to OCPM Resource Pool**.

Monitoring Storage Virtual Machines (SVMs)

You can monitor Storage Virtual Machines (SVMs) in the clustered Data ONTAP management pack by using the System Center Operations Manager (SCOM) console. An SVM is a logical storage unit, formerly referred to as a *Vserver*.

About this task

Clusters are administered by whole cluster rather than on a per-node basis and data is served from one or more SVMs. Each SVM is configured to own storage in the form of volumes provisioned from a physical aggregate and logical interfaces (LIFs).

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. From the Monitoring navigation tree, click **Clustered Data ONTAP > Management Servers**.
3. Select the management server.
4. From the list of tasks, click **Clustered Data ONTAP: Discovery Task** to initiate the manual discovery process.

5. Click **Close** to close the discovery task.
6. From the list of tasks, click **Clustered Data ONTAP: Manage Storage System**.
7. From the **Manage Storage Systems** view, note the total number of Storage Virtual Machines (SVMs) and the list of names.

Installing cmdlets

If you did not install PowerShell cmdlets as part of the OnCommand Plug-in for Microsoft installation, you can install them later. You might want to use cmdlets to enter credentials for the controllers, create LUNs, and create VMs.

Steps

1. Locate the OnCommand Plug-in for Microsoft executable file that you downloaded from the NetApp Support Site at mysupport.netapp.com.
2. Double-click the installer icon, and click **Run** to start the installation wizard.
3. Follow the instructions in the installation wizard to install the software.

Related information

[NetApp Support](http://mysupport.netapp.com)

Uninstalling the plug-in and SCOM management packs

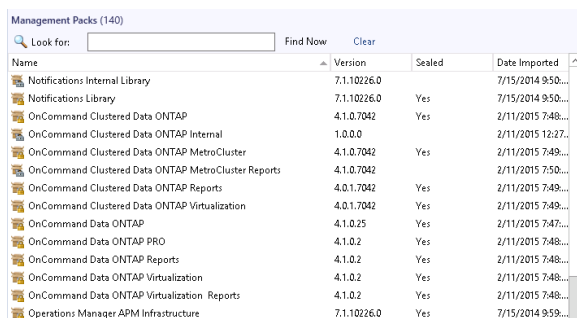
Custom configurations that were performed during the setup of OnCommand Plug-in for Microsoft can cause the uninstall process to react in different ways. You must understand how to completely uninstall OnCommand Plug-in for Microsoft and return the SCOM environment to its original state.

Before you begin

To eliminate any loss of settings, you should have removed the override settings for Data ONTAP stored in the default management pack prior to uninstalling OnCommand Plug-in for Microsoft. When you try to delete the OnCommand Plug-in for Microsoft management packs, SCOM might prompt you to remove the Microsoft default management pack dependency. This message occurs if you save any override management pack values to the default management pack, which is not recommended. You will lose all override settings stored in the default management pack.

Steps

1. From the SCOM console, click the **Administration** workspace option.
2. From the Administration navigation tree, click **Management Packs**.



The screenshot shows the 'Management Packs (140)' window in the SCOM console. It includes a search bar at the top with 'Look for:' and buttons for 'Find Now' and 'Clear'. Below is a table listing various management packs with columns for Name, Version, Sealed, and Date Imported.

Name	Version	Sealed	Date Imported
Notifications Internal Library	7.1.10226.0		7/15/2014 9:50...
Notifications Library	7.1.10226.0	Yes	7/15/2014 9:50...
OnCommand Clustered Data ONTAP	4.1.0.7042	Yes	2/11/2015 7:48...
OnCommand Clustered Data ONTAP Internal	1.0.0.0		2/11/2015 12:27...
OnCommand Clustered Data ONTAP MetroCluster	4.1.0.7042	Yes	2/11/2015 7:49...
OnCommand Clustered Data ONTAP MetroCluster Reports	4.1.0.7042		2/11/2015 7:50...
OnCommand Clustered Data ONTAP Reports	4.0.1.7042	Yes	2/11/2015 7:49...
OnCommand Clustered Data ONTAP Virtualization	4.0.1.7042	Yes	2/11/2015 7:49...
OnCommand Data ONTAP	4.1.0.25	Yes	2/11/2015 7:47...
OnCommand Data ONTAP PRO	4.1.0.2	Yes	2/11/2015 7:48...
OnCommand Data ONTAP Reports	4.1.0.2	Yes	2/11/2015 7:48...
OnCommand Data ONTAP Virtualization	4.1.0.2	Yes	2/11/2015 7:48...
OnCommand Data ONTAP Virtualization Reports	4.1.0.2	Yes	2/11/2015 7:48...
Operations Manager APM Infrastructure	7.1.10226.0	Yes	7/15/2014 9:59...

3. Select a management pack.
4. From the list of actions, click **Delete**.
5. From the Windows Control Panel, uninstall the OnCommand Plug-in for Microsoft application.
6. Reboot your system.

Installing OnCommand Plug-in for Microsoft using silent mode

You can install OnCommand Plug-in for Microsoft using silent mode instead of following the pages of the installation wizard. When you use silent mode, you can use a command line that lets you automatically install all of the software features at once.

Before you begin

You must have completed all tasks needed to prepare for deployment.

About this task

During silent installation, no interface, progress bars, or error messages display. If errors occur, messages are written to a log file that is located in the Temp folder, or you can provide a custom log file path in the silent install command line. A new log file is written whenever there is any software that you need to install before you can install the plug-in.

Steps

1. From [NetApp Support](#), download the OnCommand Plug-in for Microsoft executable file to a directory on your hard drive.
2. From the command line, switch to the directory to which you saved the executable file.
3. From the directory in which the downloaded product executable file resides, run the executable:

```
OnCommand-PlugIn-Microsoft_4.1_x64_NetApp.exe /s /v"/qn
SILENT_MODE=1 /L*v <log_file_name> ADDLOCAL=<ALL|Feature Names>
SVCUSERNAME=<domain_user> SRV_PASSWORD=<passwd>
SRV_CONFIRMUSERPASSWORD=<passwd> REMOTE_ALL=1 DBCONNECTIONSTRING=
\"Server=<server_name>; Integrated security=SSPI; database=master;\""
```

The installation begins and runs in the background.

After you finish

Complete tasks required to connect to your Data ONTAP environment.

Related tasks

[Preparing for deployment](#) on page 10

Silent install and uninstall process parameters and variables

When you want to run an install or uninstall process in the background, or *silently*, you construct a command to do so using a particular set of parameters and variables.

The plug-in passes the parameters to setup.exe in the following order:

```
OnCommand-PlugIn-Microsoft_4.1_x64_NetApp.exe /s /v"/qn SILENT_MODE=1 /L*v
<log_file_name> ADDLOCAL=<ALL|Feature Names> SVCUSERNAME=<domain_user>
SRV_PASSWORD=<passwd> SRV_CONFIRMUSERPASSWORD=<passwd> REMOTE_ALL=1
DBCONNECTIONSTRING=\"Server=<server_name>; Integrated security=SSPI;
database=master;\""
```

The following list includes those parameters and variables that you can use with the silent installation command:

/s

Specifies silent mode

/v

Passes the parameters to the installer

Note: Do not leave a space between the “v” and the quotation mark.

/q

Specifies silent installation, with which you can use the following options:

b

Creates a basic user interface

f

Displays a full user interface

n

Does not create a user interface

r

Displays a reduced user interface

/w (Optional)

Waits until the installation is complete before exiting

If you are using the `/w` parameter in a batch file, you should precede the entire `setup.exe` command line with **start /WAIT:**

```
start /WAIT OnCommand-PlugIn-Microsoft_4.1_x64_NetApp.exe /w ...
```

ADDLOCAL=

In a custom installation, indicates the features that you want to install

If there is no `AddLocal` parameter in the command, all features are installed by default.

REMOTE_ALL=

In a custom installation, pushes the installer to other remote SCOM servers

If there is no `Remote` parameter in the command, the installer is not pushed to remote SCOM servers by default.

Selecting features for custom installation

If you do not want to use the default OnCommand Plug-in for Microsoft installation that includes all plug-in features, you must select the names of the features that you want to install and use the `AddLocal` parameter to construct a command that silently runs a custom installation.

If you install a parent feature, such as Management Packs, then all of its child features are also installed. If you install a child feature, such as Hyper-V Storage Monitoring and Management, its parent feature, Management Packs, is also installed, along with any required sibling features, such as Storage Monitoring.

The following example illustrates a custom installation:

```
OnCommand-PlugIn-Microsoft_4.1_x64_NetApp.exe /s /v"/qn
SILENT_MODE=1 /L*v <log_file_name> ADDLOCAL=<ALL|Feature Names>
SVCUSERNAME=<domain_user> SRV_PASSWORD=<passwd>
```

```
SRV_CONFIRMUSERPASSWORD=<passwd> REMOTE_ALL=1 DBCONNECTIONSTRING=
\"Server=<server_name>; Integrated security=SSPI; database=master;\""
```

Plug-in features used with the AddLocal parameter in silent installation cmdlets

There are specific feature names that you must use with the AddLocal parameter to install the various plug-in components.

The AddLocal parameter values can be used in the ADDLOCAL=<ALL | Feature Names> section of the following example:

```
OnCommand-PlugIn-Microsoft_4.1_x64_NetApp.exe
/s /v"/qn SILENT_MODE=1
/L*v <log_file_name> ADDLOCAL=<ALL | Feature Names>
SVCUSERNAME=<domain_user>
SRV_PASSWORD=<passwd> SRV_CONFIRMUSERPASSWORD=<passwd> REMOTE_ALL=1
DBCONNECTIONSTRING=\"Server=<server_name>;
Integrated security=SSPI; database=master;\""
```

The following are the feature names for the AddLocal parameter:

Management pack	Feature	Subfeature	ADDLOCAL=<Feature Names> options
System Center Operations Manager (SCOM) Management Packs			ManagementPacks
	Storage Monitoring		StorageMonitoring
		Reports	Reporting
	Hyper-V Storage Monitoring and Management		HVStorageMonitoring
		Reports	HVStorageReporting
	Clustered Data ONTAP Management Pack		ClusteredDataONTAP ManagementPack
		Reports	ClusterReporting
		Clustered Data ONTAP Virtualization Management Pack	ClusteredDataONTAP Virtualization
		MetroCluster Data ONTAP Management Pack	MetroCluster

Management pack	Feature	Subfeature	ADDLOCAL=<Feature Names> options
		MetroCluster Clustered Reports	MetroCluster Reporting
	SCOM console		SCOMConsole
Cmdlets			Cmdlets
	Cloning Cannot be installed individually		CmdletsCP
	Disaster Recovery Cannot be installed individually		CmdletsDR
Documentation			Doc
OnCommand Discovery Agent			OCAgent

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.

Upgrading OnCommand Plug-in for Microsoft

If you have OnCommand Plug-in 3.2.1 for Microsoft or later installed, you can upgrade to plug-in version 4.1. If you want to use the plug-in to monitor storage systems running clustered Data ONTAP, you must also install additional management packs that are not imported during the upgrade, and run the installer a second time.

Steps

1. From the NetApp Support Site at mysupport.netapp.com, download the OnCommand Plug-in for Microsoft executable file to a directory on your hard drive.
2. Double-click the installer icon and then click **Run** to start the installation wizard.
3. Follow the instructions in the installation wizard to install the software.
4. In the **Ready to Install** dialog box, click **Install** to begin the installation or click **Back** if you want to make any changes to the settings.
5. Click **Finish** to complete the upgrade, which does not include the clustered Data ONTAP management packs.
6. If you are installing the MetroCluster Data ONTAP management pack or the Clustered Data ONTAP Virtualization management pack, which are a part of the Clustered Data ONTAP management pack, repeat Step 2.

After you start the installation wizard, you are prompted to modify, repair, or remove the program.

7. Select **Modify**.
8. Expand **SCOM Management packs > Clustered Data ONTAP management packs**.
9. Select the management packs you want to install.
You must select a specific management pack, such as the MetroCluster Data ONTAP management pack or the Clustered Data ONTAP Virtualization management pack.
10. Click **Next**.
11. Click **Finish** to complete the upgrade, including installing the management packs.

Where to go next

After you have installed and configured OnCommand Plug-in for Microsoft, you can discover storage systems and monitor storage systems. You can also explore other features, such as PowerShell cmdlets, in other information resources.

You can find more information about these features, as well as release-specific information for OnCommand Plug-in for Microsoft, in the following documentation, available on the NetApp Support Site at mysupport.netapp.com:

- *OnCommand Plug-in for Microsoft PowerShell Cmdlet and Orchestrator Activity Reference Guide*
Describes the Orchestrator activities and properties and provides syntax and examples of the PowerShell cmdlets and parameters that are used by OnCommand Plug-in for Microsoft for provisioning, cloning, and disaster recovery.
- *OnCommand Plug-in for Microsoft Release Notes*
Describes new features, important cautions, known problems, and limitations of the product.

Related information

[*OnCommand Plug-in 4.1 for Microsoft Windows PowerShell Cmdlet and Orchestrator Activity Reference Guide*](#)

[*OnCommand Plug-in 4.1 for Microsoft Release Notes*](#)

Copyright information

Copyright © 1994–2015 NetApp, Inc. All rights reserved. Printed in the U.S.

No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark information

NetApp, the NetApp logo, Go Further, Faster, AltaVault, ASUP, AutoSupport, Campaign Express, Cloud ONTAP, Clustered Data ONTAP, Customer Fitness, Data ONTAP, DataMotion, Fitness, Flash Accel, Flash Cache, Flash Pool, FlashRay, FlexArray, FlexCache, FlexClone, FlexPod, FlexScale, FlexShare, FlexVol, FPolicy, GetSuccessful, LockVault, Manage ONTAP, Mars, MetroCluster, MultiStore, NetApp Insight, OnCommand, ONTAP, ONTAPI, RAID DP, RAID-TEC, SANtricity, SecureShare, Simplicity, Simulate ONTAP, Snap Creator, SnapCenter, SnapCopy, SnapDrive, SnapIntegrator, SnapLock, SnapManager, SnapMirror, SnapMover, SnapProtect, SnapRestore, Snapshot, SnapValidator, SnapVault, StorageGRID, Tech OnTap, Unbound Cloud, and WAFL and other names are trademarks or registered trademarks of NetApp, Inc., in the United States, and/or other countries. All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such. A current list of NetApp trademarks is available on the web at <http://www.netapp.com/us/legal/netapptmlist.aspx>.

How to send comments about documentation and receive update notifications

You can help us to improve the quality of our documentation by sending us your feedback. You can receive automatic notification when production-level (GA/FCS) documentation is initially released or important changes are made to existing production-level documents.

If you have suggestions for improving this document, send us your comments by email to doccomments@netapp.com. To help us direct your comments to the correct division, include in the subject line the product name, version, and operating system.

If you want to be notified automatically when production-level documentation is released or important changes are made to existing production-level documents, follow Twitter account @NetAppDoc.

You can also contact us in the following ways:

- NetApp, Inc., 495 East Java Drive, Sunnyvale, CA 94089 U.S.
- Telephone: +1 (408) 822-6000
- Fax: +1 (408) 822-4501
- Support telephone: +1 (888) 463-8277

Index

A

AddLocal parameter
using in silent installation cmdlets [39](#)

B

background installation
advantages [37](#)
parameters and variables [37](#)
steps [37](#)
background uninstallation
using silent mode [40](#)

C

clustered Data ONTAP
adding storage systems [27](#)
upgrading the management packs [41](#)
cmdlets
AddLocal parameter in silent installations [39](#)
installing [35](#)
purpose and types of [8](#)
comments
how to send feedback about documentation [45](#)
connections
minimum requirements [13](#)
credentials
adding in SCOM [28](#)

D

Data ONTAP
feature compatibility by mode [12](#)
upgrading the management packs [41](#)
deployment
preparing for [10](#)
discovery
OnCommand Discovery Agent [11](#)
performing manual for clustered Data ONTAP [33](#)
storage [29](#)
virtualized storage [30](#)
documentation
additional resources [42](#)
how to receive automatic notification of changes to [45](#)
how to send feedback about [45](#)

F

feedback
how to send comments about documentation [45](#)

I

information
how to send feedback about improving
documentation [45](#)

installation

adding clustered storage systems [27](#)
deployment workflow diagram [9](#)
instructions [21](#)
overriding clustered Data ONTAP available space
monitors [32](#)
overview [15](#)
overview for clustered Data ONTAP [26](#)
PowerShell cmdlets [35](#)
prerequisites [10–14](#)
saving overrides [24](#)
saving overrides to clustered Data ONTAP
management pack [31](#)
silent [37](#)
silent install parameters and variables [37](#)
silent mode, AddLocal parameter [39](#)
silent mode, feature choices [38](#)
SNMP support [14](#)
verifying success of [25](#)

M

management packs
checking for missing [22](#)
installing [22](#)
installing for cluster environment [41](#)
Microsoft vulnerabilities
resolving exposed [23](#)

O

OnCommand Discovery Agent
required management pack libraries for [11](#)
OnCommand Plug-in for Microsoft
features [5](#)
product overview [5](#)
upgrading the software [41](#)
overrides
clustered Data ONTAP available space monitors [32](#)
saving [24](#)
saving in clustered Data ONTAP management pack
[31](#)

P

permissions
customizing [17](#)
required for monitoring, list of [19](#)
plug-in rule settings, default
overriding [24](#)
ports
minimum requirements [13](#)
PowerShell cmdlets
installing [35](#)
prerequisites
discovery agent [14](#)
for deployment [10](#)
for Discovery Agent [11](#)

- for reporting [11, 12](#)
- ports [13](#)
- software [10](#)
- storage system [12](#)

R

- reporting
 - required management pack libraries for [11](#)
- requirements
 - connections and ports [13](#)
 - deployment [10](#)
- resource pools
 - adding management server [34](#)
- role-based access control
 - adding credentials in SCOM [28](#)
 - customizing [17](#)
 - list of permissions [19](#)
- rules, plug-in default settings
 - overriding [24](#)

S

- SCOM
 - discovering storage [29, 30](#)
 - discovering virtualized storage [30](#)
 - uninstalling OnCommand Plug-in for Microsoft [35](#)
- silent installation
 - advantages [37](#)
 - feature names used with the AddLocal parameter [39](#)
 - parameters and variables [37](#)
 - steps [37](#)
- silent mode
 - feature selection [38](#)
 - parameters and variables [37](#)
 - uninstallation [40](#)
 - uninstalling the plug-in [40](#)
- SNMP support
 - based on Data ONTAP version [14](#)
- storage systems
 - adding clustered [27](#)
 - discovering virtualized [30](#)
 - performing manual discovery for clustered Data ONTAP [33](#)

- running discovery [29, 30](#)
- Storage Virtual Machines
 - monitoring in SCOM [34](#)
- suggestions
 - how to send feedback about documentation [45](#)
- SVM
 - See* Storage Virtual Machines
- System Center Operations Manager
 - checking for missing management packs [22](#)
 - installing management packs [22](#)
 - integrating with Virtual Machine Manager [16](#)
 - management packs [7](#)
 - product overview [6](#)
 - uninstalling OnCommand Plug-in for Microsoft [35](#)
 - verifying installed components [25](#)
- System Center Virtual Machine Manager (SCVMM)
 - integrating with Operations Manager [16](#)

T

- twitter
 - how to receive automatic notification of documentation changes [45](#)

U

- uninstallation
 - plug-in [35](#)
 - silent install parameters and variables [37](#)
 - using silent mode [40](#)
- upgrade
 - silent [37](#)
 - supported path [14](#)

V

- verification
 - of successful installation of plug-in components [25](#)
- virtualized storage
 - running discovery [30](#)
- Vservers
 - See* Storage Virtual Machines
- vulnerabilities
 - identifying and resolving [23](#)