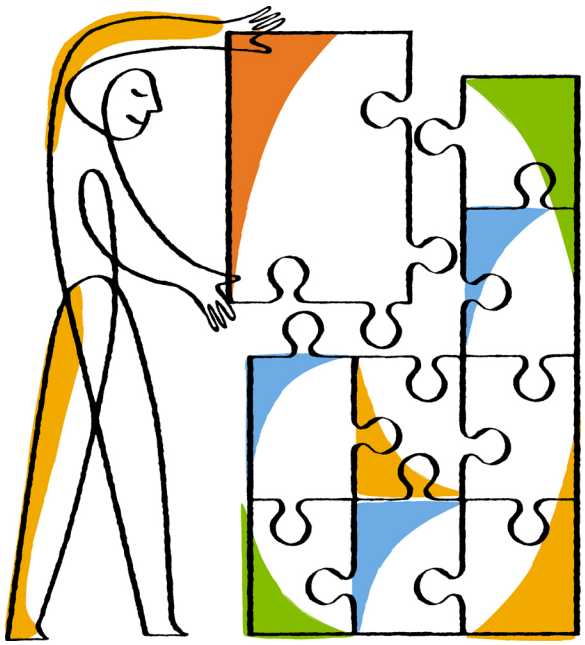
OnCommand® Plug-in 4.1 for Microsoft®

Installation and Setup Guide

For Data ONTAP® Operating in 7-Mode Environments



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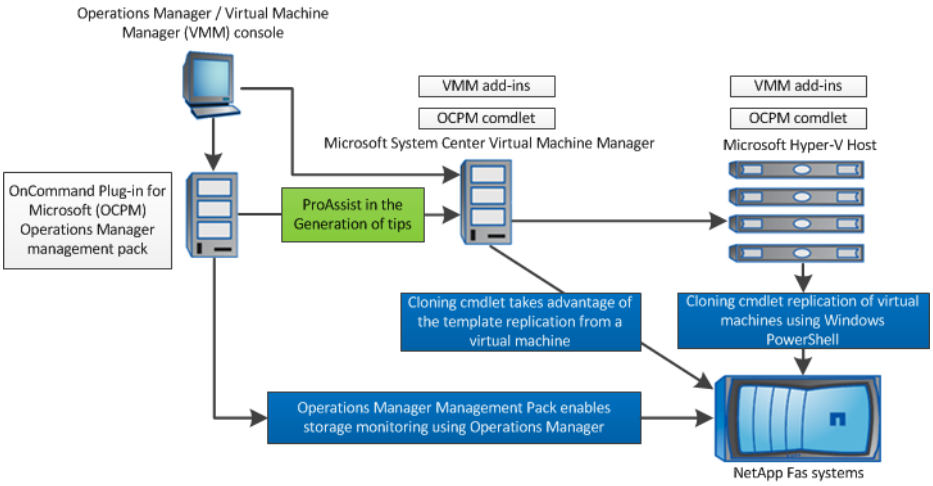
Product overview

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), System Center Virtual Machine Manager (SCVMM), and System Center Orchestrator (SCO).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 provision and clone storage using Windows PowerShell cmdlets, the VMM add-in, and Orchestrator integration packs (OIPs)
- Ability to build simple disaster recovery solutions
- Support for Data ONTAP operating in 7-Mode

- Support for discovery and monitoring of the following:
  - Data ONTAP controllers and vFiler units (MultiStore)
  - VMs and virtual hard disk files on LUNs in Data ONTAP
  - Physical objects such as nodes, aggregates, enclosures, disks, and ports
  - Logical objects such as volumes, qtrees, LUNs, and data protection relationships
  - CIFS shares
- 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)	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. SCOM includes the following components: **SCOM agent** 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. **SCOM console or server** User interface used to view managed objects and perform administrative tasks. The server refers to the computer where the SCOM console is installed. **SCOM console integration** A feature that enables you to perform tasks on a SCOM system remotely. **SCOM management packs** Options that enable agents to monitor a specific service or application. Management packs might also contain tasks, reports, views, diagnostics, and recovery tools. **System Center PRO Tips** Performance and resource optimization (PRO) tips. A System Center feature that provides dynamic management of the virtual infrastructure. Alerts from SCOM are tied to remediation in SCVMM. Management packs that enable PRO features are referred to as *NetApp Data ONTAP PRO management packs*.

Component	Description
System Center Orchestrator (SCO)	A member of the System Center family of products. A workflow management tool that enables you to create, deploy, and monitor storage resources in the data center. Orchestrator uses Orchestrator Integration Packs (OIPs) that help you create workflows to automate complex processes.
System Center Virtual Machine Manager (SCVMM)	A member of the System Center product family that enables the following: • Uunified 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 **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.

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
Data ONTAP	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. This pack is required for Data ONTAP.
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	This pack enables you to monitor and report on your Hyper-V virtualized environment for Data ONTAP. This pack is required to monitor your virtualized environment running on Data ONTAP.
Data ONTAP Virtualization Reports	This pack enables you to report on your Data ONTAP virtualized storage.

System Center Orchestrator Integration Packs

System Center Orchestrator (SCO) uses Orchestrator Integration Packs (OIPs) that help you create workflows to automate complex processes. OnCommand Plug-in for Microsoft includes several integration packs.

OnCommand Plug-in for Microsoft includes the following System Center Orchestrator integration packs:

Orchestrator Integration Packs (OIPs)	Description
Cloning and Provisioning Integration Pack	Enables you to create workflows to provision storage, clone virtual machines, and manage storage system credentials. Template cloning supports LUN-to-LUN cloning only in 7-Mode environments.
Disaster Recovery Integration Pack	Enables you to create disaster recovery workflows that replicate data across two sites in both failover and failback scenarios for Hyper-V disaster recovery.
Data ONTAP Toolkit Integration Pack	Enables you to invoke commands from Orchestrator. Use for commonly used data storage operations. You can also use the activities individually as an alternative to using the command-line interface and PowerShell scripting workflows.

OIPs do not support clustered Data ONTAP environments.

System Center Virtual Machine Manager add-in

The System Center Virtual Machine Manager (SCVMM) add-in enables you to manage some controller activities from a GUI that you can open from the SCVMM toolbar.

OnCommand Plug-in for Microsoft includes the following SCVMM add-in features:

- Ability to clone a VM
- Ability to clone a VM from a template
- Ability to manage controllers
- Ability to manage OnCommand Plug-in for Microsoft hosts

OnCommand Plug-in for Microsoft cmdlets

OnCommand Plug-in for Microsoft includes cmdlets that enable you to perform cloning and disaster recovery 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 and Provisioning cmdlets

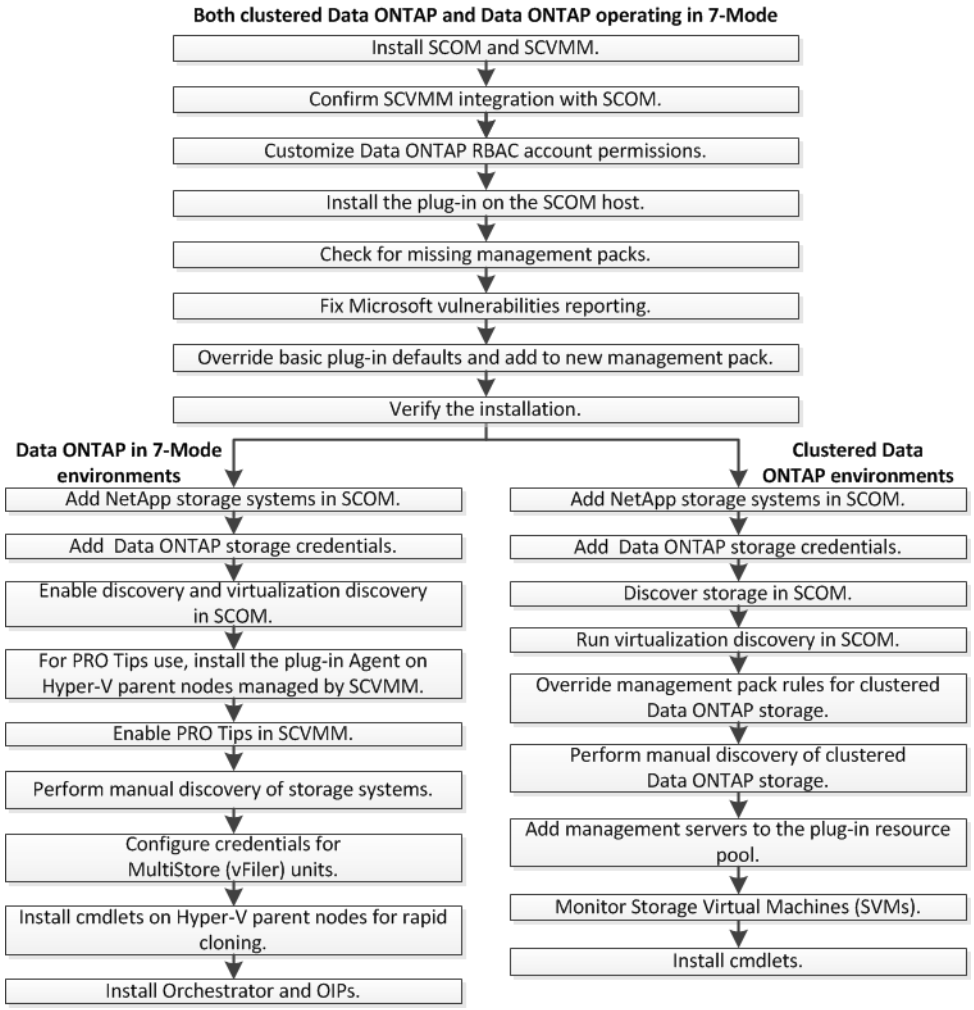
Enable you to clone storage, provision storage, and manage storage system credentials.

Disaster Recovery cmdlets

Enable you to replicate data across two sites to provide a disaster recovery solution.

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 meets System Center Orchestrator (SCO) requirements.
4. Verify that your system supports storage system requirements (Data ONTAP, FlexClone).
5. Check Data ONTAP compatibility with OnCommand Plug-in for Microsoft features.
6. Verify that your system meets connection and port requirements.
7. Verify that your system meets SNMP requirements.
8. Verify that your system meets discovery agent requirements.
9. 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
System Center Orchestrator integration pack requirements on page 14
Storage system requirements on page 12
Data ONTAP compatibility with OnCommand Plug-in for Microsoft features on page 13
Connection and port requirements on page 14
SNMP support on page 14
Discovery agent requirements on page 15
Upgrade notes on page 15

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

Software	Version	Needed for
Microsoft System Center Virtual Machine Manager (SCVMM)	2012 (SP1 and R2)	Required only for cloning cmdlets
Microsoft System Center Orchestrator (SCO)	2012 SP1	Required only for Orchestrator integration packs
Microsoft Windows PowerShell	3.0	All features
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.PRO.Library
- Microsoft.SystemCenter.VirtualMachineManager PRO V2 library
- 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	For Data ONTAP operating in 7-Mode environments, Data ONTAP 8.1 and later in the 8.1 release family or 8.2 and later in the 8.2 release family 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
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

Feature	Functions in 7-Mode environments	Required in 7-Mode environments	Functions in cluster environments	Required in cluster environments
OnCommand Plug-in VIM web service	Yes	Yes	Yes	No
SCVMM add-in	Yes	No	No	No
SCVMM PRO Tips	Yes	No	No	No

System Center Orchestrator integration pack requirements

To enable cloning, provisioning, and disaster recovery using System Center Orchestrator (SCO), integration packs must meet minimum requirements.

Consider the following requirements:

- To use the runbook server, you must install Orchestrator and deploy the integration packs. Runbook servers communicate directly with the Orchestrator database.
- You must install OnCommand Plug-in Virtual Infrastructure Management (VIM) web services on the host running Windows Server 2008 R2 SP1 or later.
- You must install Microsoft .NET Framework 4 or later on a server where the Orchestrator user interface, Runbook Designer, is installed.

Related information

Microsoft Technet: Orchestrator Architecture

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 SNMP protocol to discover Data ONTAP controllers operating in 7-Mode.
- 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 16
Connecting the plug-in to Data ONTAP operating in a 7-Mode 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 17
   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 and to facilitate performance and resource optimization (PRO) Tips functionality.
2. Customizing role-based access control permissions for Data ONTAP operating in 7-Mode environments on page 18

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, the System Center Orchestrator (SCO) integration pack, the System Center Virtual Machine Manager (SCVMM) add-ins, 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 23
   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 26
   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 and to facilitate performance and resource optimization (PRO) Tips functionality.

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 role-based access control permissions for Data ONTAP operating in 7-Mode environments

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 Data ONTAP CLI commands needed to create a user named “ocpmuser” and assigned the role.

Steps

1. Create a role and assign these permissions:

   ```
   useradmin role add <role_name> -a <permission_name>
   ```

Example

```
useradmin role add ocpm_7mode_role -a
api-aggr-list-info, api-aggr-options-list-info...login-http-admin
```

2. Create a group named “ocpmgroup”:

   useradmin group add <*group_name*> -r <*role_name*>

   Example

```
useradmin group add ocpmgroup -r ocpm_7mode_role
```

3. Create a user named “ocpmuser” in the “ocpmgroup” group:

   useradmin user add <*user_name*> -g <*group_name*>

   Example

```
useradmin user add ocpmuser -g ocpmgroup
```

Examples

Sample command to assign permissions.

```
useradmin role add ocpm_7mode_role -a
api-aggr-list-info, api-aggr-options-list-info...login-http-admin
useradmin group add ocpmgroup -r ocpm_7mode_role
useradmin user add ocpmuser -g ocpmgroup
```

Sample command to modify a custom role.

```
useradmin role modify scom-user-roles -a
login-http-admin,api-system-get-version,
api-system-get-info,api-system-get-vendor-info,
api-cf-status,api-system-get-ontapi-version,
api-vfiler-list-info,api-ems-autosupport-log,
api-aggr-list-info,api-volume-list-info,api-lun-list-info,
api-disk-list-info,api-storage-shelf-list-info,
api-license-list-info,api-lun-map-list-info,api-volume-autosize-get,
api-aggr-options-list-info,api-qtree-list,
api-storage-shelf-environment-list-info,api-lun-get-space-reservation-info,
api-volume-options-list-info,api-perf-object-get-instances,
api-snmp-get,api-snapmirror-get-status, api-quota-report-iter-start,
api-quota-report-iter-next
```

Sample Windows PowerShell command using the Data ONTAP PowerShell toolkit. This example adds a new role with the capabilities.

```
New-NaRole –Role scom-user-roles –Capabilities
login-http-admin,api-system-get-version,api-system-get-info,
api-system-get-vendor-info,api-cf-status,api-system-get-ontapi-version,
api-vfiler-list-info,api-ems-autosupport-log,api-aggr-list-info,
api-volume-list-info,api-lun-list-info,api-disk-list-info,
api-storage-shelf-list-info,api-license-list-info,api-lun-map-list-info,
api-volume-autosize-get,api-aggr-options-list-info,api-qtree-list,
api-storage-shelf-environment-list-info,
api-lun-get-space-reservation-info,api-volume-options-list-info,
api-perf-object-get-instances,api-snmp-get,api-snapmirror-get-status,
api-quota-report-iter-start, api-quota-report-iter-next
```

Data ONTAP permissions for basic monitoring in 7-Mode environments

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

The following permissions are required for basic monitoring only. The list does not include permissions for active management, cmdlets, or System Center Virtual Machine Manager (SCVMM) functionality.

- api-aggr-list-info
- api-aggr-options-list-info
- api-cf-status
- api-cifs-status
- api-disk-list-info
- api-disk-san-own-list-info
- api-ems-autosupport-log
- api-IscsiPortalListInfo
- api-IscsiServiceStatus
- api-license-list-info
- api-lun-get-attribute
- api-lun-get-serial-number
- api-lun-get-space-reservation-info
- api-lun-initiator-list-mapinfo
- api-lun-list-info
- api-lun-map-list-info
- api-nfs-status
- api-perf-object-get-instances
- api-qtree-list
- api-quota-report-iter-end
- api-quota-report-iter-next
- api-quota-report-iter-start
- api-snapmirror-get-status
- api-snapshot-list-info
- api-snapshot-reserve-list-info
- api-snmp-get
- api-storage-shelf-environment-list-info
- api-storage-shelf-list-info
- api-system-get-info

- api-system-get-ontapi-version
- api-system-get-vendor-info
- api-system-get-version
- api-Vfiler-Get-Allowed-Protocols
- api-Vfiler-Get-Status
- api-vfiler-list-info
- api-volume-autosize-get
- api-Volume-CloneSplit-Estimate
- api-Volume-GetRoot-Name
- api-volume-list-info
- api-volume-options-list-info
- login-http-admin

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, the System Center Orchestrator (SCO) integration pack, the System Center Virtual Machine Manager (SCVMM) add-ins, 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
- If the supported version of SCVMM is not detected on the system, unselects the SCVMM console add-ins 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 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 was not imported due to missing dependencies (for example, SCVMM is not connected to SCOM), 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 23

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.
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**.

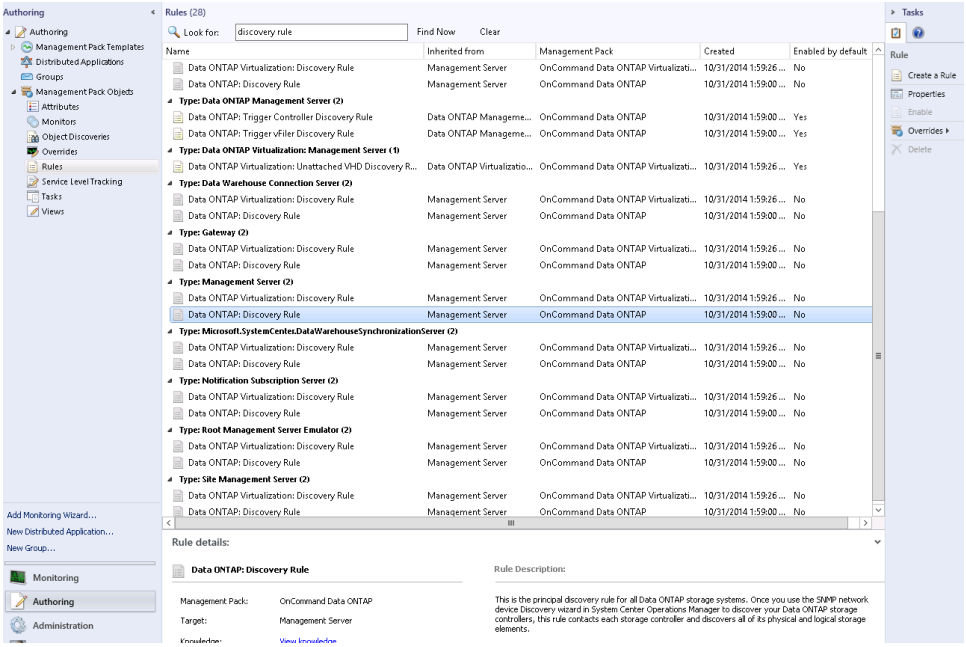
   You can create one management pack for all of your overrides or group your overrides and create management packs for each group. However, you should not save changes to the default management pack.

2. From the SCOM console, click the **Authoring** workspace option.

3. Select **Management Pack Objects** > **Rules**.

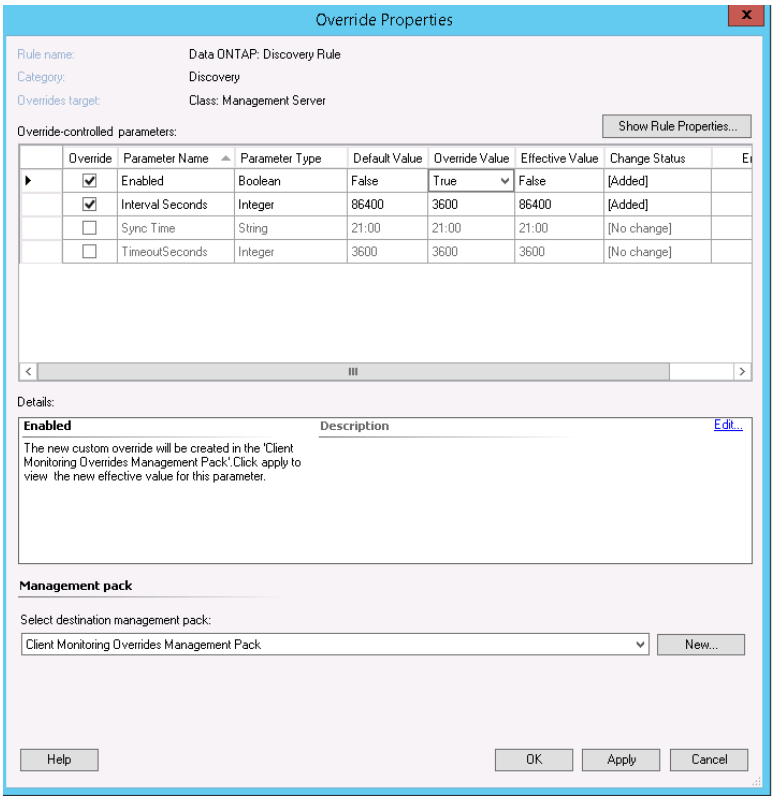
4. In the Look for box, enter **`discovery rule`** and click **Find Now**.

5. Under Management Server, select **Data ONTAP: Discovery Rule**.



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.



8. Select the new management pack to which you want to save these overrides.

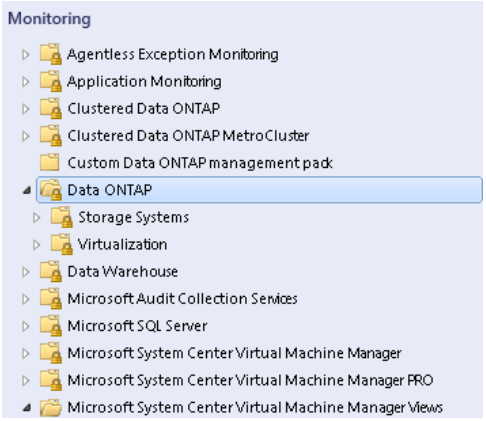
9. Click **OK**.

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 "Data ONTAP" appears for OnCommand Plug-in for Microsoft installations for Data ONTAP operating in 7-Mode environments.



Connecting the plug-in to Data ONTAP operating in a 7-Mode environment

Completing the OnCommand Plug-in for Microsoft installation in Data ONTAP operating in 7-Mode environments involves adding storage systems, enabling discovery, adding Data ONTAP credentials, and enabling PRO Tips.

Before you begin

You must have already finished all the beginning installation tasks common to both clustered Data ONTAP and Data ONTAP operating in 7-Mode environments.

Steps

1. Adding NetApp storage systems to SCOM on page 27
   You should add NetApp storage systems in System Center Operations Manager (SCOM) so that you can monitor, manage, and report on those systems.
2. Adding NetApp storage credentials in SCOM in 7-Mode environments on page 28
   To monitor NetApp storage systems in OnCommand Plug-in for Microsoft, you must add credentials for them. You can do this using the SCOM console.
3. Enabling discovery in SCOM on page 29
   Enabling discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.
4. Enabling virtualization discovery in SCOM on page 29

Enabling virtualization discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.

5. Installing the plug-in Agent on Hyper-V parent nodes on page 30
   To monitor virtualization in Hyper-V environments, you must install the OnCommand Plug-in for Microsoft Agent on all Hyper-V parent nodes that are managed by System Center Virtual Machine Manager (SCVMM). This also enables you to use PRO Tips to dynamically manage the virtual infrastructure.
6. Enabling PRO Tips in SCVMM on page 30
   To monitor storage performance and obtain storage performance tips, you must enable PRO Tips in System Center Virtual Machine Manager (SCVMM).
7. Discovering storage systems manually on page 31
   To use SCOM to monitor storage systems with Data ONTAP operating in 7-Mode environments, you must run the discovery process. Discovery is required for the plug-in to recognize your controllers.
8. Running PRO discovery (7-Mode environments) on page 31
   You can run Data ONTAP PRO discovery to discover Hyper-V hosts with PRO integration in System Center Virtual Machine Manager (SCVMM). PRO discovery enables PRO tips to be triggered on your Hyper-V hosts.
9. Running virtualization discovery in 7-Mode environments on page 32
   You can run Data ONTAP virtualization discovery to discover storage on all Hyper-V hosts in System Center Virtual Machine Manager (SCVMM).
10. Configuring credentials for MultiStore units on page 32
    To use SCOM to monitor MultiStore units (formerly *vFiler units*) with Data ONTAP operating in 7-Mode environments, you should configure the storage controller credentials. Use of MultiStore units enables a controller to be partitioned into a set of relatively independent “virtual” controllers.
11. Installing cmdlets on Hyper-V parent nodes for rapid cloning on page 33
    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.
12. Installing System Center Orchestrator components on page 33
    You can install System Center Orchestrator (SCO) and its Orchestrator Integration Packs (OIPs) on both the management server and all action servers. To be able to manage physical and virtual machines and use PRO Tips features that provide dynamic management of the virtual infrastructure, you must install Orchestrator.

Related tasks

Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments on page 16

Adding NetApp storage systems to SCOM

You should add NetApp storage systems in System Center Operations Manager (SCOM) so that you can monitor, manage, and report on those systems.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. From the **Monitoring** tab, select **Storage Systems > Data ONTAP > Management Server**.
3. From the Health Service Tasks list, select **Data ONTAP: Add Controller**:

4. Select the management server and click **Run**.

Adding NetApp storage credentials in SCOM in 7-Mode environments

To monitor NetApp storage systems in OnCommand Plug-in for Microsoft, you must add credentials for them. You can do this using the SCOM console.

Before you begin

Role-based access control (RBAC) account permissions must have already been set. See information about RBAC permissions.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. From the Monitoring navigation tree, select **Data ONTAP > Storage Systems > Management Server**.
3. From the list of Health Service tasks, select **Data ONTAP: Manage Controller Credentials**.
4. Select a storage system for which you want to add the user credentials.
5. To add the user credentials for the selected storage system, type the user name or password for the system and click **Apply**.
6. If you cannot connect to the controller (entered in the Manage Storage System option or in the Manage Controller Credentials option), configure the Run-As action account:
   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 plug-in Run-As action account to a user with privileges that enables it to run.
7. Log in to the SCOM server with the default action account.
8. Restart the SCOM service.
9. Run a manual discovery in SCOM.

   For details, see the instructions for performing a manual discovery of storage running on Data ONTAP operating in 7-Mode environments.

Related tasks

Discovering storage systems manually on page 31

To use SCOM to monitor storage systems with Data ONTAP operating in 7-Mode environments, you must run the discovery process. Discovery is required for the plug-in to recognize your controllers.

Related references

Data ONTAP permissions for basic monitoring in 7-Mode environments on page 20

Enabling discovery in SCOM

Enabling discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.

About this task

When you save changes to a new management pack, you can save all overrides to one management pack or group overrides into several management packs, aligned by function or by their expected duration.

Steps

1. From the SCOM console, click the **Authoring** workspace option.
2. Select **Rules**.
3. In the Look for box, enter

   `management server`
   and click **Find Now**.
4. Under **Management Server** (*not* Data ONTAP Management Server), locate **Data ONTAP: Discovery Rule**.
5. If you installed PRO Tips, enable them.
6. Right-click the rule and select **Overrides > Override the Rule > For All Objects of Class: Management Server**.
7. Select the **Override** box next to Interval Seconds and enter

   `3600`
   in the Override Value box.
8. Save all overrides to a new management pack.
9. Click **Apply**.

Enabling virtualization discovery in SCOM

Enabling virtualization discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.

Steps

1. From the SCOM console, click the **Authoring** workspace option.
2. Select **Rules**.
3. In the Look for box, enter

   `management server`
   and click **Find Now**.

4. Under **Management Server** (*not* Data ONTAP Management Server), locate **Data ONTAP: Virtualization Discovery Rule**.
5. Right-click the rule and select **Overrides** > **Override the Rule** > **For All Objects of Class: Management Server**.
6. Select the **Override** box next to Interval Seconds and enter

   `3600`

   in the Override Value box.
7. Save all overrides to a new management pack.
8. Click **Apply**.

Installing the plug-in Agent on Hyper-V parent nodes

To monitor virtualization in Hyper-V environments, you must install the OnCommand Plug-in for Microsoft Agent on all Hyper-V parent nodes that are managed by System Center Virtual Machine Manager (SCVMM). This also enables you to use PRO Tips to dynamically manage the virtual infrastructure.

Before you begin

You must be using Data ONTAP operating in 7-Mode environments.

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.
4. In the **Feature Selection** page of the wizard, select **OnCommand Discovery Agent** and continue with the installation.

Related information

NetApp Support

Enabling PRO Tips in SCVMM

To monitor storage performance and obtain storage performance tips, you must enable PRO Tips in System Center Virtual Machine Manager (SCVMM).

Before you begin

OCPM Agent must be installed on all Hyper-V parent nodes that are managed by SCVMM.

Steps

1. From the SCVMM console, select **Settings** > **Operations Manager Server**.
2. Right-click **Operations Manager Server**.
3. In the **Details** pane of the **Operations Manager Server** dialog box, select **Enable Performance and Resource Optimization**.
4. Click **OK**.

Discovering storage systems manually

To use SCOM to monitor storage systems with Data ONTAP operating in 7-Mode environments, you must run the discovery process. Discovery is required for the plug-in to recognize your controllers.

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 Data ONTAP operating in 7-Mode environments, the discovery is disabled by default.

About this task

The discovery and monitoring scripts used by the plug-in are called using Windows PowerShell and are run under the context of an action account in SCOM. This account should have a Windows profile created to run the PowerShell script. If you do not use this account 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 Data ONTAP folder, select **Storage Systems** > **Management Server**.
3. From the list of tasks, click **Data ONTAP: Run Discovery Task**.
4. Select the storage targets on which you want to run discovery and click **Run**.

Related tasks

Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments on page 16

Enabling discovery in SCOM on page 29

Enabling discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.

Running PRO discovery (7-Mode environments)

You can run Data ONTAP PRO discovery to discover Hyper-V hosts with PRO integration in System Center Virtual Machine Manager (SCVMM). PRO discovery enables PRO tips to be triggered on your Hyper-V hosts.

Before you begin

The OnCommand management pack must be installed and you must have typed valid credentials for the newly added storage systems.

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

Steps

1. Click the **Monitoring** workspace option.
2. In the navigation pane, select **Data ONTAP** > **Storage Systems** > **Management Server**.
3. In the **Tasks** pane, click **Data ONTAP: Run PRO Discovery Task**.

   The Data ONTAP: Run PRO Discovery Task dialog box opens.

4. Select the storage targets that you want to run discovery on and click **Run**.

Running virtualization discovery in 7-Mode environments

You can run Data ONTAP virtualization discovery to discover storage on all Hyper-V hosts in System Center Virtual Machine Manager (SCVMM).

Before you begin

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

You must have the OnCommand Discovery Agent installed on a Hyper-V host if the Hyper-V host has Fibre Channel-mapped LUNs.

About this task

The Data ONTAP Virtualization: Discovery Rule targets the management server and has a default interval of four hours and a default timeout of one hour. It automatically discovers storage on Hyper-V hosts, Hyper-V LUNs, Hyper-V virtual machines, and Hyper-V virtual hard disks.

Steps

1. Click the **Monitoring** workspace option.
2. In the navigation pane, select **Data ONTAP > Storage Systems > Management Server**.
3. In the **Tasks** pane, click **Data ONTAP: Run Virtualization Discovery Task**.

   The Data ONTAP: Run Virtualization Discovery Task dialog box opens.
4. Select the storage targets that you want to run discovery on and click **Run**.

Configuring credentials for MultiStore units

To use SCOM to monitor MultiStore units (formerly *vFiler units*) with Data ONTAP operating in 7-Mode environments, you should configure the storage controller credentials. Use of MultiStore units enables a controller to be partitioned into a set of relatively independent “virtual” controllers.

Before you begin

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

You should have added storage controllers, enabled discovery, and run discovery. For Data ONTAP operating in 7-Mode, the discovery is disabled by default.

About this task

You monitor MultiStore units as individual objects, including their storage, health, and utilization. The Data ONTAP discovery process also discovers MultiStore units along with the associated volume, qtree, and LUN path. Because a MultiStore unit's volume, qtree, and LUN path are also the physical appliance's path, these are mapped to the corresponding aggregates.

To connect to a MultiStore unit, you must use HTTP. However, HTTPS is the default protocol used to connect to the storage controller and you must have socket security layer (SSL) enabled on the controller. If SSL is not enabled, HTTP is used to connect to the storage.

Steps

1. From the SCOM console, click the **Monitoring** workspace option.
2. In the Data ONTAP folder, select **Storage Systems > Management Server**.

3. In the list of tasks, click **Data ONTAP: Manage Controller Credentials**.
4. In the **Credentials Manager** view, view the list of MultiStore (or vFiler) units and set their credentials.

Related tasks

Starting the plug-in installation for clustered Data ONTAP and 7-Mode environments on page 16

Enabling discovery in SCOM on page 29

Enabling discovery requires that you override a discovery rule for the management server and save the changes to a new management pack. To monitor storage, you must first enable discovery.

Installing cmdlets on Hyper-V parent nodes for rapid cloning

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.

About this task

When you install OnCommand Plug-in for Microsoft, the following options are installed by default. However, if you did not install them, you can install them later.

- Provisioning and cloning cmdlets
- Disaster recovery cmdlets

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.
4. In the **Feature Selection** page of the wizard, select **Provisioning and Cloning Cmdlets** and **Disaster Recovery Cmdlets** and continue with the installation.

Related information

NetApp Support

Installing System Center Orchestrator components

You can install System Center Orchestrator (SCO) and its Orchestrator Integration Packs (OIPs) on both the management server and all action servers. To be able to manage physical and virtual machines and use PRO Tips features that provide dynamic management of the virtual infrastructure, you must install Orchestrator.

Before you begin

IP connectivity must exist on the designated port between the action servers and the Hyper-V servers you are attempting to manage.

Using the OnCommand Plug-in for Microsoft installer, you should install the OnCommand Plug-in for Microsoft VIM Web service on each Hyper-V server that you plan to manage. This enables the runbooks to work consistently. OIPs attempt to contact the Hyper-V server designated in the runbook through web services.

About this task

You can use Orchestrator only on systems with Data ONTAP operating in 7-Mode environments; you cannot use it in clustered Data ONTAP environments.

OnCommand Plug-in for Microsoft stores all credential-related information in its central database, so you need to enter credentials only once.

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.
4. In the **Feature Selection** page of the wizard, select **OnCommand Plug-in VIM Web Services** and continue with the installation.
5. From the Orchestrator Deployment Manager tool, locate the Orchestrator OIPs.

   By default, these are located in `C:\\Program Files\NetApp\OnCommand\MS_Plugin`:

   #### Example

   ```
   C:\Program Files\NetApp\OnCommand\MS_Plugin>dir *.oip
   Directory of C:\Program Files\NetApp\OnCommand\MS_Plugin

   02/12/2015  07:57 AM 3,178,498
   Integration_Pack_for_NetApp_OC_CloningAndProvisioning.oip
   02/12/2015  07:56 AM 6,054,624
   Integration_Pack_for_NetApp_OC_DataONTAP.oip
   02/12/2015  07:56 AM 3,179,721
   Integration_Pack_for_NetApp_OC_DisasterRecovery.oip
   ```

6. Deploy the OIPs to the action server.

   For details, see the *OnCommand Plug-in for Microsoft Windows PowerShell Cmdlet and Orchestrator Activity Reference Guide*.

Related information

NetApp Support

Uninstalling the plug-in and SCOM management packs

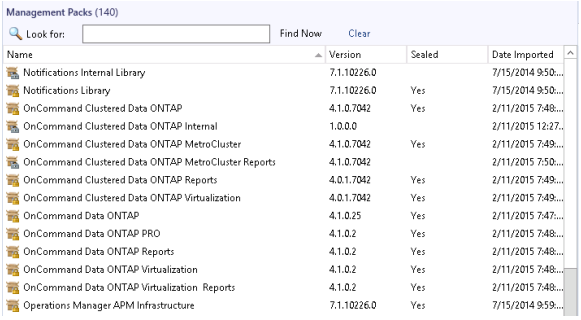
Custom configurations that were performed during the setup of OnCommand Plug-in for Microsoft can cause the uninstall process to react in different ways. You must understand how to completely uninstall OnCommand Plug-in for Microsoft and return the SCOM environment to its original state.

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**.



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.

Uninstalling Data ONTAP management packs using a cmdlet

You can remove management packs for Data ONTAP operating in 7-Mode environments from SCOM by using a cmdlet.

About this task

Select the management packs carefully.

Caution: If you accidentally delete the clustered Data ONTAP management packs instead of the 7-Mode packs, the OnCommand Plug-in for Microsoft resource pool is not initialized correctly. During installation, the OnCommand Plug-in for Microsoft management packs are automatically imported while the resource pool is initialized and the management servers are discovered. Because the resource pool is not initialized correctly, you should not manually delete and then reimport the management packs.

Steps

1. Open a cmdlet window and list Data ONTAP management packs:

   ```
   Get-SCOMManagementPack | where{ $_.name -like "DataONTAP*" }
   ```

2. Remove the management packs:

   ```
   Remove-SCOMManagementPack
   ```

Example: Removing management packs for Data ONTAP operating in 7-Mode

```
Import-Module OperationsManager
Get-SCOMManagementPack | where{ $_.name -like "DataONTAP*" }|
Remove-SCOMManagementPack
```

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`
	SCOM console		`SCOMConsole`
Cmdlets			`Cmdlets`
	Cloning and Provisioning Cannot be installed individually		`CmdletsCP`
	Disaster Recovery Cannot be installed individually		`CmdletsDR`
Orchestrator Integration Pack			`Opalis`

Management pack	Feature	Subfeature	`ADDLOCAL=<Feature Names>` options
	Cloning and Provisioning Integration Pack		`OpalisCP`
	Disaster Recovery Integration Pack		`OpalisDR`
	Data ONTAP Toolkit Integration Pack		`OpalisDataOntap`
	OnCommand Plug-in VIM Web Service		`OCWebServices`
Documentation			`Doc`
OnCommand Discovery Agent			`OCAgent`
SCVMM console Add-Ins			`VMMAddins`

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.

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.

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

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