IBM Storage Management Pack for Microsoft System Center Operations Manager (SCOM)
Version 2.5.0

User Guide

IBM
Note

Before using this document and the product it supports, read the information in “Notices” on page 59.

Edition notice

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About this guide

This guide describes how to install, configure, and use the IBM® Storage Management Pack for Microsoft System Center Operations Manager (SCOM).

Who should use this guide

This guide is intended for system administrators who use SCOM together with IBM storage systems.

Conventions used in this guide

These notices are used in this guide to highlight key information.

**Note:** These notices provide important tips, guidance, or advice.

**Important:** These notices provide information or advice that might help you avoid inconvenient or difficult situations.

**Attention:** These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

Related information and publications

You can find additional information and publications related to the IBM Storage Management Pack for Microsoft SCOM on the following information sources.

- IBM Storwize® V3500 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STLM6B)
- IBM Storwize V3700 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STLM5A)
- IBM Storwize V5000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STHGUG)
- IBM Storwize V7000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST3FR7)
- IBM Storwize V7000 Unified on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST5Q4U/landing/v7000_unified_welcome.htm)
- IBM SAN Volume Controller on IBM Knowledge Center (ibm.com/support/knowledgecenter/STPVUG)
- IBM DS8700 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STUVMB/com.ibm.storage.ssic.help.doc/f2c_ichomepage_ds8700.html)
- IBM DS8800 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STXN8P/com.ibm.storage.ssic.help.doc/f2c_ichomepage_ds8800.html)
- IBM DS8870 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST8NCA/product_welcome/ds8000_kcwelcome.html)
- IBM DS8880 on IBM Knowledge Center (ibm.com/support/knowledgecenter/ST5GLJ/product_welcome/ds8000_kcwelcome.html)

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- IBM Directory of Worldwide Contacts website (www.ibm.com/planetwide)

The IBM Publications Center is a worldwide central repository for IBM product publications and marketing material. The IBM Publications Center website (www.ibm.com/shop/publications/order/) offers customized search functions to help you find the publications that you need. Some publications are available for you to view or download at no charge. You can also order publications. The publications center displays prices in your local currency.

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Chapter 1. Introduction

The IBM Storage Management Pack for Microsoft SCOM is a set of software modules, called management packs, that help you access and monitor IBM storage systems from the host-based Microsoft SCOM interface.

You can install a specific management pack, add specific storage systems to the list of SCOM monitored IBM storage systems, or remove IBM storage systems from the SCOM monitoring list.

Bundled tools and management packs

The IBM Storage Management Pack for Microsoft SCOM includes the following components:

- IBM Storage SCOM-control utility (scomu.cmd), a stand-alone command-line interface (CLI) utility (command prompt utility) for configuration and diagnostics.
- IBM Storwize V3500 management pack
- IBM Storwize V3700 management pack
- IBM Storwize V5000 management pack
- IBM Storwize V7000 management pack
- IBM Storwize V7000 Unified management pack
- IBM System Storage® SAN Volume Controller management pack
- IBM System Storage DS8000® series management pack
- IBM XIV Storage System and IBM Spectrum Accelerate management pack
- IBM FlashSystem A9000 and IBM FlashSystem A9000R management pack

Monitoring modules

The IBM Storage Management Pack for Microsoft SCOM includes the following monitoring modules:

- Alerts – Lists all alert notifications.
- Events – Lists the captured events for every component of the monitored storage systems.
- Systems – Displays the health state of entire storage systems and their objects (overall view).
- Physical components – Displays the health state of any specific physical component.
- Logical components – Displays the health state of any defined logical component.
- Diagrams – Shows a visual representation of the hierarchy and relationship of selected components within a storage system, as well as more detailed information about it.

Concept diagram

The IBM Storage Management Pack comprises ten separate management packs, each matching one or more IBM storage systems.
Accordingly, you can import a management pack into Microsoft SCOM for each IBM storage system.

The following block diagram illustrates how all management packs are integrated in Microsoft SCOM and connect to the storage systems.

![Diagram of IBM Storage Management Packs](image)

**Figure 1. Individual management packs for IBM storage systems**

**Note:** There is one management pack for both FlashSystem A9000 and FlashSystem A9000R (the FlashSystem A9000R management pack), one for both XIV and Spectrum Accelerate (the XIV management pack), and one for DS8700, DS8800, DS8870, and DS8880 (the DS8000 management pack), as shown in the above diagram.

The IBM management packs use different client types and communication channels to connect to their backend storage systems:

- The management packs for XIV and Spectrum Accelerate and for FlashSystem A9000 and FlashSystem A9000R use their respective command-line clients and communicate with their storage systems over SSL.
- The SAN Volume Controller, Storwize V7000, Storwize V7000 Unified, Storwize V5000 Unified, Storwize V3700, and Storwize V3500 management packs use their respective command line clients and communicate with their storage systems over SSH.
- The DS8000 management pack uses a DS8000 client and communicates with the DS8000 storage system using the SMI-S standard Common Information Model (CIM) agent.

**Compatibility and requirements**

For complete and up-to-date information about compatibility and requirements of the IBM Storage Management Pack for Microsoft SCOM, refer to the latest release notes.
You can find the latest release notes in the IBM Storage Host Software Solutions Information Center (pic.dhe.ibm.com/infocenter/strhosts/ic/index.jsp) or on IBM Fix Central (www.ibm.com/support/fixcentral).

Before you proceed

Before you proceed to the installation and usage of the IBM Storage Management Pack, you need to obtain the required user privileges for accessing the specific IBM storage systems that you intend to monitor from Microsoft SCOM.

Use your IBM storage system management GUI (or contact your storage administrator) to define your user account on the storage system in the appropriate user permission group.

Unless specified otherwise in the release notes of the IBM Storage Management Pack for Microsoft SCOM, your storage system user account should be defined in:

- **Monitor** user group – applicable to SAN Volume Controller, Storwize V3500, Storwize V3700, Storwize V5000, Storwize V7000, Storwize V7000 Unified, and DS8000.

- **Read Only** category – applicable to XIV, Spectrum Accelerate, FlashSystem A9000, and FlashSystem A9000R.
Chapter 2. Installation

This chapter describes the installation of the IBM Storage Management Pack for Microsoft SCOM, and includes the following sections:

- “Downloading the IBM Storage Management Pack”
- “Installation package contents” on page 6
- “First-time installation vs. upgrade” on page 6
- “Running the installation wizard” on page 7
- “Installing the Microsoft Operations Manager SDK on an agent server” on page 11
- “Uninstalling the IBM Storage Management Pack” on page 12

Note:

- You can install the IBM Storage Management Pack on the Microsoft SCOM management server and on all site servers that run SCOM agents. This allows monitoring data to be collected by each SCOM agent service, which then sends the data to the SCOM management server.
- As a best practice, install IBM Storage Management Pack on SCOM agents. If you have many storage arrays to monitor, it is also recommended to distribute the monitoring over multiple SCOM agents, in order to balance the load across the agents.

Downloading the IBM Storage Management Pack

Download the IBM Storage Management Pack onto the host on which Microsoft SCOM is installed and used.

About this task

You can find the IBM Storage Management Pack for Microsoft SCOM installation package on the IBM Fix Central website (www.ibm.com/support/fixcentral).

Procedure

Two packages are available for download. Download the executable package that matches the Windows bit version that you are using on the host:

- IBM_Storage_MP_for_SCOM-windows-x86-2.5.0.exe – for 32-bit Windows Server versions
- IBM_Storage_MP_for_SCOM-windows-x64-2.5.0.exe – for 64-bit Windows Server versions
Installation package contents

Some components in the installation package are required and some are optional, as detailed in the following table.

Table 1. Installation package contents

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Required or optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCOM-control utility <em>(scomu.cmd)</em></td>
<td>A stand-alone command-line interface (CLI) tool for configuration and diagnostics.</td>
<td>Required</td>
</tr>
<tr>
<td>Upgrade utility <em>(upgrade_config.cmd)</em></td>
<td>A CLI utility for upgrading from version 1.1.1 or earlier.</td>
<td>Optional</td>
</tr>
<tr>
<td>DS8000 management pack</td>
<td>A module for monitoring DS8000 systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>SAN Volume Controller management pack</td>
<td>A module for monitoring SAN Volume Controller systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>Storwize V3500 management pack</td>
<td>A module for monitoring Storwize V3500 systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>Storwize V3700 management pack</td>
<td>A module for monitoring Storwize V3700 systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>Storwize V5000 management pack</td>
<td>A module for monitoring Storwize V5000 systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>Storwize V7000 management pack</td>
<td>A module for monitoring Storwize V7000 systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>Storwize V7000 Unified management pack</td>
<td>A module for monitoring Storwize V7000 Unified systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>XIV management pack</td>
<td>A module for monitoring XIV and IBM Spectrum Accelerate systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
<tr>
<td>FlashSystem A9000R management pack</td>
<td>A module for monitoring FlashSystem A9000 and FlashSystem A9000R systems through Microsoft SCOM.</td>
<td>Optional</td>
</tr>
</tbody>
</table>

Note: The management packs are not automatically imported to Microsoft SCOM. You must manually import each pack that you want to use.

First-time installation vs. upgrade

If a previous version of the IBM Storage Management Pack is already installed, you can upgrade it.
When you run the installation (see “Running the installation wizard”) on a host with an existing installation of the IBM Storage Management Pack, the upgrade wizard is automatically invoked and it guides you through the upgrade process.

Important:
- After the upgrade, you need to delete and then re-import the management packs. For more information, see “Removing a specific management pack” on page 12 and “Importing management packs to Microsoft SCOM” on page 32.
- No IBM Storage events and alerts are kept in the database after the upgrade.

If you are upgrading to version 2.5.0 by installing it over version 1.1.1, run the upgrade_config.cmd CLI utility after version 2.5.0 is installed, in order to restore the earlier configurations.

For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>upgrade_config.cmd
Upgrade complete.
```

### Running the installation wizard

To install the IBM Storage Management Pack, run the installation wizard as described in the following procedure.

**Before you begin**

**Attention:** Before installing, updating, or uninstalling the IBM Storage Management Pack, close the configuration shell (scomu.cmd) and all other running applications that may be using the IBM Storage Solutions External Runtime Components (such as the IBM XIV Host Attachment Kit). This is to avoid errors or disruptive restart of the host server.

### About this task

You can install the IBM Storage Management Pack on the Microsoft SCOM management server and on all site servers that run SCOM agents. This allows monitoring data to be collected by each SCOM agent service, which then sends the data to the SCOM management server.

### Procedure

1. Run the executable file that you have downloaded (see “Downloading the IBM Storage Management Pack” on page 5). The welcome panel of the installation wizard is displayed.
2. Click Next. The License Agreement panel is displayed.
3. Read and accept the terms of the license agreement, and then click Next.
   The Setup Type panel is displayed.
4. Select the setup type:
   - **Complete** – Select this option to install all management packs (see “Installation package contents” on page 6).
   - **Custom** – Select this option to install only the management packs that you specify.

5. Click Next. If you previously selected Custom, the Select Features panel is displayed, and you can select the specific management packs that you want to install.
6. Click **Next**. The Ready to Install the Program panel is displayed.

**Figure 4. Custom setup**

**Figure 5. Ready to install the program**
7. Click Install. The installation process begins, and files are copied to the following directory: %ProgramFiles%\IBM\Storage\Host\IBMStorageSCOM

8. After the installation process is complete, click Finish.

---

**Installing the Microsoft Operations Manager SDK on an agent server**

The Microsoft Operations Manager Software Development Kit (SDK) is required for any IBM Storage Management Pack that runs on a SCOM agent server. The SDK is not installed by default on the SCOM agent server, and you need to install it manually.

**Before you begin**

The Microsoft Operations Manager SDK component must be installed on the SCOM agent server only after the IBM Storage Management Pack is installed.

For the latest up-to-date information about this SDK, refer to the [MSDN web page for System Center 2012 – Operations Manager SDK](msdn.microsoft.com/en-us/library/hh329086.aspx).

**Note:** The term agent server refers to any host computer on which a SCOM agent runs in the background, as opposed to the server upon which the actual SCOM platform is installed (referred to as management server).

---

**Procedure**

There are two methods of installing the Microsoft Operations Manager SDK on the SCOM agent:

- Install the SDK on the agent server. The SDK is installed in one of the following directories, depending on the Microsoft SCOM version that you are using:
  - C:\Program Files\System Center 2012\Operations Manager\Console\SDK Binaries

- Copy the SDK from the management server to the agent server in the following manner:
  1. On the management server, find the 'SDK Binaries' folder located in one of the following directories, depending on the Microsoft SCOM version that you are using:
     - C:\Program Files\System Center 2012\Operations Manager\Server
     - C:\Program Files\Microsoft System Center 2012 R2\Operations Manager\Server
  2. Copy the SDK Binaries folder to one of the following directories on the agent server:
     - Default directory for Microsoft SCOM 2012 R2:
       C:\Program Files\Microsoft Monitoring Agent\Agent
     - Default directory for Microsoft SCOM 2012:
       C:\Program Files\System Center Operations Manager\Agent
     - Any local directory that you have defined in a configuration file named SDKdir.cfg. The file must be placed in:
       C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\config

   The **SDKdir.cfg** configuration file should contain only one text line specifying the directory path.
Uninstalling the IBM Storage Management Pack

When any specific management pack is no longer needed, you can remove it individually from the Microsoft SCOM or, if needed, you can uninstall all management packs together.

Procedure

Accordingly, the following subsections describe:

- “Removing a specific management pack”
- “Uninstalling all management packs” on page 13

Removing a specific management pack

This section describes how to remove a specific management pack.

Procedure

1. On the Administration panel, click Management Packs.
2. On the Management Packs list, select the management pack that you want to remove.
3. Right-click the management pack, and select Delete from the pop-up menu. Alternatively, press Delete or Del on the keyboard when the row of the management pack is selected.

Important: If the management pack you deleted is the last remaining pack in the Operations Manager, you must delete the IBM Storage common management pack as well.

Figure 6. Deleting a management pack
Uninstalling all management packs

This section describes how to completely uninstall all IBM management packs.

Procedure

1. Select and delete each management pack as explained in “Removing a specific management pack” on page 12.

2. Go to Control Panel > Add/Remove Programs, and uninstall IBM Storage Management Pack for Microsoft SCOM.
Chapter 3. Configuration

After the IBM Storage Management Pack for Microsoft SCOM has been successfully installed, you can configure it.

Configuring the IBM Storage Management Pack involves different tasks, as described in the following sections:

- “Using the command-line utility”
- “Adding IBM storage systems” on page 21
- “Displaying the monitored storage systems” on page 29
- “Modifying storage system connection parameters” on page 30
- “Removing a storage system from the monitoring list” on page 31
- “Changing event severity levels” on page 31
- “Importing management packs to Microsoft SCOM” on page 32
- “Setting the storage system discovery and event collection intervals” on page 36

Using the command-line utility

The IBM Storage Management Pack includes a standalone command-line interface (CLI) utility, `scomu.cmd`, which you can use from a desktop shortcut or from the Run command box on the Windows Start menu.

Using a set of CLI commands, you can configure the IBM storage systems that are monitored by Microsoft SCOM, as explained in the following subsections.

**Note:** `scomu.cmd` can also be used to diagnose issues and collect logs for troubleshooting. For more information, see Chapter 5, “Diagnostics and troubleshooting,” on page 53.

To display the full list of commands and options available for the CLI utility, enter `scomu.cmd --help` in the command prompt window.
Usage: Usage:
scomu.cmd --add [--no-test | --timeout TIMEOUT] [device options]
scomu.cmd --modify [--no-test | --timeout TIMEOUT] [device options]
scomu.cmd --del [device options]
scomu.cmd --list [-t DEVICE_TYPE] [--format FORMAT]
scomu.cmd --test [--timeout TIMEOUT] [device options]
scomu.cmd --setseverity -t DEVICE_TYPE --event_id [EVENT ID] --severity [SEVERITY]
scomu.cmd --restoreseverity -t DEVICE_TYPE --event_id [EVENT ID]
scomu.cmd --listseverity
scomu.cmd --loglevel
scomu.cmd --diag [-no-test]
scomu.cmd --precheck
scomu.cmd --migrate
scomu.cmd --sc-get
scomu.cmd --sc-set [--servername SERVERNAME | --domain DOMAIN | --username USERNAME | --password PASSWORD]
scomu.cmd --sc-del
scomu.cmd --sc-check
scomu.cmd --help

Options:
Main operation mode:
--add Add a connection
--modify Modify a connection
--del Delete a connection
--list List all connections
--test Test whether a connection can be established
--loglevel View the log level, or set log level to ['NOTSET', 'TRACE', 'DEBUG', 'INFO', 'WARNING', 'ERROR', 'CRITICAL']
--diag Collect diagnostic data
--precheck Pre-check the environment
--setseverity Set event severity
--restoreseverity Restore event severity
--listseverity List event severity mappings
--sc-get Get configurations for System Center
--sc-set Set configurations for System Center
--sc-del Delete configurations for System Center
--sc-check Check configurations for System Center
--migrate Migrate configurations and synchronize them with System Center

Operation modifiers:
-F FILE, --file=FILE Obtain configuration from a file or read the environment IBM_SCOM_HOME (used only by the service team)
--debug Display debug information (used by service team)
--no-test Skip the connection test
--timeout=TIMEOUT The device connection timeout duration in seconds, which can be any value between 1s and 3600s. Default value: 60s
--format=FORMAT The output format: html (default) or csv
Device options:  
-t DEVICE_TYPE, --dev_type=DEVICE_TYPE  
Set the device type to ['ds8k', 'storwize.v3700',  
'flex', 'storwize', 'svc', 'storwize.v7000u',  
'storwize.v7000', 'storwize.v3500', 'xiv',  
'storwize.v5000', 'a9000r']. 'ds8k' for IBM System Storage  
DS8000,'storwize.v3700' for IBM Storwize V3700,'flex'  
for IBM Flex System V7000,'storwize' for IBM  
Storwize,'svc' for IBM System Storage SAN Volume  
Controller,'storwize.v7000u' for IBM Storwize V7000  
Unified,'storwize.v7000' for IBM Storwize  
V7000,'storwize.v3500' for IBM Storwize V3500,'xiv'  
for IBM XIV Storage System or Spectrum Accelerate,  
'storwize.v5000' for IBM Storwize V5000, 'a9000r'  
for FlashSystem A9000 or FlashSystem A9000R  

--subtype=DEV_TYPE_SUB  
Sub-type of IBM Storwize: v3500, v3700, v5000, v7000u  

--ip=IP, --host=IP IP address or hostname  
-U USERNAME, --username=USERNAME  
username  
-P PASSWORD, --password=PASSWORD  
-p PASSPHRASE, --passphrase=PASSPHRASE  

--url=URL URL, for example <http | https>://<hostname or IP>:<port>  
--namespace=NAMESPACE  
namespace  

--authmode=AUTHMODE  
Set authentication mode to AUTHMODE. "publickey" for a  
certificate file, "password" for password (can be used  
for SAN Volume Controller or Storwize V7000 of  
microcode version 6.3 or later.)  

--certpath=CERTPATH certificate file path  
--event_id=EVENT_ID  

event ID  
--severity=SEVERITY  
Set event severity to SEVERITY  

Device options for IBM System Storage DS8000:  
-t ds8k --url URL [--username USERNAME] [--password PASSWORD]  
[--namespace NAMESPACE]  

Device options for IBM System Storage SAN Volume Controller:  
-t svc --ip IP [--authmode AUTHMODE] [--username USERNAME]  
[--password] PASSWORD [--certpath CERTPATH] [--passphrase] PASSPHRASE  

Device options for IBM Storwize System family:  
-t storwize --subtype DEV_TYPE_SUB --ip IP [--authmode AUTHMODE]  
[--username USERNAME] [--password] PASSWORD [--certpath CERTPATH]  
[--passphrase] PASSPHRASE  

Device options for IBM Flex System V7000:  
-t flex --ip IP [--authmode AUTHMODE] [--username USERNAME]  
[--password] PASSWORD [--certpath CERTPATH] [--passphrase] PASSPHRASE  

Device options for IBM XIV Storage System:  
-t xiv --ip IP [--username USERNAME] [--password PASSWORD]  

Device options to set System Center configurations:  
--sc-set [--servername SERVERNAME | --domain DOMAIN | --username  
USERNAME | --password PASSWORD]  

--servername=SERVERNAME  
The server name of System Center Operations Manager  
Management Server  
--domain=DOMAIN  
The Windows domain name
Configuring the SCOM management server

Before adding or modifying an IBM storage system, configure the SCOM management server as described in the following sections.

- “Checking the existing management server configuration”
- “Setting the management server domain and credentials” on page 19
- “Synchronizing storage configuration with the management server” on page 20
- “Deleting the management server information” on page 20

Note: The IBM Storage Management Pack only works if the SCOM Root Management Server (RMS) and SCOM agents are deployed in the same domain.

Checking the existing management server configuration

This section describes how to check the credential configuration of the management server before adding or modifying specific IBM storage systems to the Microsoft SCOM monitoring list.

About this task

You can use the `SCOMU.cmd` utility and the `--sc-check` command to check the credential configuration of the management server.

Procedure

To check the connection with the management server, enter `scomu.cmd --sc-check`. 
**Example**

```
C:\Program Files\IBM\Storage\Host\IBMScom\bin>scomu.cmd --sc-check
There is no System Center configuration.

C:\Program Files\IBM\Storage\Host\IBMScom\bin>scomu.cmd --sc-check
Checking the connection to the management server...
The connection to the management server is OK.
```

**What to do next**

If the management server configuration is missing or incorrect, use `--sc-set` to configure or modify the management server info. See the detailed explanation in "Setting the management server domain and credentials."

**Setting the management server domain and credentials**

The management server domain and credential information should be configured before adding or modifying specific IBM storage systems in the Microsoft SCOM monitoring list.

**Procedure**

You can use the `SCOMU.cmd` utility and the `--sc-set` command to configure the management server information.

1. To configure the management server information on the agent, type the following details in a single command line:
   - Server name (`--servername`) of the management server.
   - Domain (`--domain`) of the management server.
   - User name (`--username`) and password (`--password`).

   **Important:**
   - If the management server user account and software development kit (SDK) user account are different, use the username and password of the SDK user account.
   - The domain of the management server must be the same domain of the SCOM agent nodes.

2. To configure the management server information on the server, type the following details in a single command line:
   - Server name (`--servername`) of the management server.

   **Example**

   The following is an example of configuring the management server information on the agent:

   ```
   C:\Program Files\IBM\Storage\Host\IBMScom\bin>scomu.cmd --sc-set
   --servername scom1234.domain.com --domain scom.domain.com
   --username administrator --password pass
   ```

   The following is an example of configuring the management server information on the server:

   ```
   C:\Program Files\IBM\Storage\Host\IBMScom\bin>scomu.cmd --sc-set
   --servername localhost
   ```
What to do next

If you want to delete the management server information, use the `--sc-del` command.

C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>scomu.cmd --sc-del
Checking the connection to the management server...
The connection to the management server is OK
The connection to the management server is deleted

If you want to get the management server information, use `--sc-get` command.

C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>scomu.cmd --sc-get
Management Server: scom1234
Windows domain: scom.domain.com
Username: administrator
Password: ********

Synchronizing storage configuration with the management server

The IBM storage configuration must be synchronized with the management server manually if a storage configuration has remained after upgrading from version 1.3.0 or earlier to the latest version.

About this task

The IBM storage configuration should also be synchronized with the management server manually after the management pack is deleted and re-imported.

Procedure

To synchronize the IBM storage configuration with the management server, enter `scomu.cmd --migrate`.

Example

C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin scomu.cmd --migrate

Deleting the management server information

When required, you can delete the management server information.

About this task

You can use the `SCOMU.cmd` utility and the `--sc-del` command to delete the management server information.

Example

C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>scomu.cmd --sc-del
Checking the connection to the management server...
The connection to the management server is OK
The connection to the management server is deleted.
Adding IBM storage systems

You can use the `SCOMU.cmd` utility and the `--add` command to add specific IBM storage systems to the Microsoft SCOM monitoring list.

Management packs must be imported into the Microsoft SCOM environment before adding IBM storage systems. If the management pack is not yet imported, import it as specified in “Importing management packs to Microsoft SCOM” on page 32.

Notes:

- After importing a management pack, check the connection with the SCOM server using `scomu.cmd --sc-check`. If the connection is not OK, you should correct it before adding IBM storage systems.
- When adding a storage system to the monitoring list, the connection to the storage system is tested before it is added. You can skip the testing by specifying `--no-test` when adding the storage system.

Adding a DS8000 system

This section describes how to add a DS8000 system to the list of SCOM-monitored IBM storage systems.

About this task

The DS8000 management pack connects to the DS8000 storage system through a DS CIM agent. The DS CIM agent runs embedded on the DS8000 system or in proxy mode, depending on the microcode version (for more information, refer to the release notes).

Procedure

To add a DS8000 system to the monitoring list, type the following details in a single command line:

- Type of system to be added (`-t`) – Use "ds8k" to specify DS8000 as the system type.
- URL (`--url`) – Web address of the DS CIM agent.
- Namespace (`--namespace`) – CIM namespace of the DS CIM agent (for example: root/ibm).
- Login user name (`--username`) and password (`--password`) – For a proxy DS CIM agent, use the CIM agent user account. For an embedded DS CIM agent, use the DS8000 user account.

Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>
scomu.cmd --add -t ds8k --url https://host1.domain1.com:6989
--namespace root/ibm --username usrl --password pwd1
Connecting to the device ... 
1 IBM DS8000 is found.
device ID: xx, code level: x.x.x.x, CIM server version: x.x.x.x

The connection is OK.
Trying to add the connection.
New connection is added.
```
Adding a SAN Volume Controller system

This section describes how to add a SAN Volume Controller system to the list of SCOM-monitored IBM storage systems.

Procedure

After the --add command, specify the following parameters (CLI arguments followed by values):

- IP address (--ip) or host name (--host) of the SAN Volume Controller system.
- Type of system to be added (-t) – Use "svc" to specify SAN Volume Controller as the system type.
- Authentication mode (--authmode) – You can specify the public key mode (publickey), or, if you are using microcode version 6.3 or later – you can specify the password mode (password).
  - If the public key authentication mode is used, enter the authentication user name (--username) and then the folder location and name of the private SSH key (--certpath). If the SSH requires a passphrase (--passphrase), enter it as well.

For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t svc --ip 192.100.200.150 --authmode publickey --username john1 --certpath c:\svc.cert --passphrase xxxx
Connecting to the device ...
1 IBM SAN Volume Controller is found.
cluster ID: xx, code level: x.x.x.x, location: local

The connection is OK.
Trying to add the connection.
New connection is added.
```

- If the password authentication mode is used (applicable only to microcode version 6.3 or later), enter the authentication user name (--username) and then the authentication password (--password).

For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t svc --ip 192.100.200.150 --authmode password --username john1 --password xxxxxxxxxxx
Connecting to the device ...
1 IBM SAN Volume Controller is found.
cluster ID: xx, code level: x.x.x.x, location: local

The connection is OK.
Trying to add the connection.
New connection is added.
```
Important:

- If you are using a SAN Volume Controller system with microcode version 6.1, only “admin” is accepted as the user name. Using “admin” does not necessarily mean that you have administrator credentials, but rather a user name spelled as “admin”. It also does not mean that the matching user name defined on the storage system is also “admin”. The pairing between the SCOM Management Pack user and the storage system user account is performed only by the SSH key pairing (any valid SSH key grants access).
- The private SSH key (in all cases in which it is used) must be in the OpenSSH format. If your key is not in the OpenSSH format, you can use a certified OpenSSH conversion utility. For more information, see the OpenSSH website (www.openssh.org).

Adding a Storwize V3500 system

This section describes how to add a Storwize V3500 system to the list of SCOM-monitored IBM storage systems.

Procedure

After the --add command, specify the following parameters (CLI arguments followed by values):

- IP address (--ip) or host name (--host) of the Storwize V3500 system.
- Type of system to be added (-t) – Use "storwize" to specify Storwize V3500 as the system type.
- Authentication mode (--authmode) – You can specify the public key mode (publickey), or the password mode (password).
  - If the public key authentication mode is used, enter the authentication user name (--username) and then the folder location and name of the private SSH key (--certpath). If the SSH requires a passphrase (--passphrase), enter it as well.
    
  For example:

  ```
  C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.100.200.150 --authmode publickey --username john1 --certpath c:\storwize.cert --passphrase xxxxx
  Connecting to the device ...
  1 IBM Storwize V3500 is found.
  cluster ID: xx, code level: x.x.x.x, location: local
  The connection is OK.
  Trying to add the connection.
  New connection is added.
  ```

  - If the password authentication mode is used, enter the authentication user name (--username) and then the authentication password (--password).
    
    For example:
Adding a Storwize V3700 system

This section describes how to add a Storwize V3700 system to the list of SCOM-monitored IBM storage systems.

Procedure

After the `--add` command, specify the following parameters (CLI arguments followed by values):

- IP address (`--ip`) or host name (`--host`) of the Storwize V3700 system.
- Type of system to be added (`-t`) – Use "storwize" to specify Storwize V3700 as the system type.
- Authentication mode (`--authmode`) – You can specify the public key mode (`publickey`), or the password mode (`password`).
  - If the public key authentication mode is used, enter the authentication user name (`--username`) and then the folder location and name of the private SSH key (`--certpath`). If the SSH requires a passphrase (`--passphrase`), enter it as well.
    
      For example:

      ```
      C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.100.200.150 --authmode publickey --username john1 --certpath c:\storwize.cert --passphrase xxxxx
    
    Connecting to the device ...
    1 IBM Storwize V3700 is found.
    cluster ID: xx, code level: x.x.x.x, location: local
    The connection is OK.
    Trying to add the connection.
    New connection is added.
      ```

    - If the password authentication mode is used, enter the authentication user name (`--username`) and then the authentication password (`--password`).
      
      For example:

      ```
      C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.100.200.150 --authmode password --username john1 --password xxxxxxxxxxx
    
    Connecting to the device ...
    1 IBM Storwize V3500 is found.
    cluster ID: xx, code level: x.x.x.x, location: local
    The connection is OK.
    Trying to add the connection.
    New connection is added.
      ```

  - Important: The private SSH key (in all cases in which it is used) must be in the OpenSSH format. If your key is not in the OpenSSH format, you can use a certified OpenSSH conversion utility. For more information, see the [OpenSSH website](www.openssh.org).
Adding a Storwize V5000 system

This section describes how to add a Storwize V5000 system to the list of SCOM-monitored IBM storage systems.

Procedure

After the --add command, specify the following parameters (CLI arguments followed by values):

- IP address (--ip) or host name (--host) of the Storwize V5000 system.
- Type of system to be added (-t) – Use "storwize" to specify Storwize V5000 as the system type.
- Authentication mode (--authmode) – You can specify the public key mode (publickey), or the password mode (password).
  - If the public key authentication mode is used, enter the authentication user name (--username) and then the folder location and name of the private SSH key (--certpath). If the SSH requires a passphrase (--passphrase), enter it as well.
    For example:
    ```
    C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.100.200.110
    --authmode publickey --username john1 --certpath c:\storwize.cert --passphrase xxxxx
    Connecting to the device ... 
    1 IBM Storwize V5000 is found. 
    cluster ID: xx, code level: x.x.x.x, location: local
    The connection is OK. 
    Trying to add the connection. 
    New connection is added.
    ```
  - If the password authentication mode is used, enter the authentication user name (--username) and then the authentication password (--password).
    For example:
Adding a Storwize V7000 system

This section describes how to add a Storwize V7000 system to the list of SCOM-monitored IBM storage systems.

Procedure

After the `--add` command, specify the following parameters (CLI arguments followed by values):

- IP address (`--ip`) or host name (`--host`) of the Storwize V7000 system.
- Type of system to be added (`-t`) – Use "storwize" to specify Storwize V7000 as the system type.
- Authentication mode (`--authmode`) – You can specify the public key mode (publickey), or, if you are using microcode version 6.3 or later – you can specify the password mode (password).
  - If the public key authentication mode is used, enter the authentication user name (`--username`) and then the folder location and name of the private SSH key (`--certpath`). If the SSH requires a passphrase (`--passphrase`), enter it as well.

For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.100.200.110 --authmode publickey --username john1 --certpath c:\storwize.cert --passphrase xxxxxx
Connecting to the device ...
1 IBM Storwize V5000 is found.
cluster ID: xx, code level: x.x.x.x, location: local
The connection is OK.
Trying to add the connection.
New connection is added.
```

- If the password authentication mode is used (applicable only to microcode version 6.3 or later), enter the authentication user name (`--username`) and then the authentication password (`--password`).

For example:
Adding a Storwize V7000 Unified system

This section describes how to add a Storwize V7000 Unified system to the list of SCOM-monitored IBM storage systems.

Procedure

After the --add command, specify the following parameters (CLI arguments followed by values):

- IP address (--ip) or host name (--host) of the Storwize V7000 Unified system.
- Type of system to be added (-t) – Use "storwize" to specify Storwize V7000 Unified as the system type.
- Authentication mode (--authmode) – You can specify the public key mode (publickey), or the password mode (password).
  - If the public key authentication mode is used, enter the authentication user name (--username) and then the folder location and name of the private SSH key (--certpath). If the SSH requires a passphrase (--passphrase), enter it as well.
  - If the password authentication mode is used, enter the authentication user name (--username) and then the authentication password (--password).

Important:

- If you are using a Storwize V7000 system with microcode version 6.1, only "admin" is accepted as the user name. Using "admin" does not necessarily mean that you have administrator credentials, but rather a user name spelled as "admin". It also does not mean that the matching user name defined on the storage system is also "admin". The pairing between the SCOM Management Pack user and the storage system user account is performed only by the SSH key pairing (any valid SSH key grants access).
- The private SSH key (in all cases in which it is used) must be in the OpenSSH format. If your key is not in the OpenSSH format, you can use a certified OpenSSH conversion utility. For more information, see the [OpenSSH website](https://www.openssh.org).
For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t storwize --ip 192.110.20.10 --authmode password --username john1 --password xxxxxxxxx
Connecting to the device ...
1 IBM Storwize V7000 Unified is found.
cluster ID: xxxxxxx, name: ifs
The connection is OK.
Trying to add the connection.
New connection is added.
```

**Important:** The private SSH key (in all cases in which it is used) must be in the OpenSSH format. If your key is not in the OpenSSH format, you can use a certified OpenSSH conversion utility. For more information, see the [OpenSSH website](www.openssh.org).

---

### Adding an XIV or Spectrum Accelerate system

This section describes how to add an XIV or Spectrum Accelerate system to the list of SCOM-monitored IBM storage systems.

#### About this task

SCOM version 2.5.0 includes XIV multi-tenancy support, which applies to XIV and Spectrum Accelerate microcode version 11.5 or later. To use multi-tenancy support, a non-domain user must have global visibility and then can have access only when the access policy is set to “Open.”

**Note:** SCOM only accepts non-domain LDAP users.

#### Procedure

To add an XIV or Spectrum Accelerate system to the monitoring list, use `-t xiv` to specify XIV as the system type, and then specify the IP address (`--ip`) or host name (`--host`) of the XIV or Spectrum Accelerate system, followed by the `--username` and `--password` login details.

#### Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t xiv --ip 192.0.2.10 --username usr4 --password pwd4
Connecting to the device ...
1 IBM XIV Storage System is found.
device ID: xx, code level: x.x.x.x
The connection is OK.
Trying to add the connection.
New connection is added.
```

### Adding a FlashSystem A9000 or FlashSystem A9000R system

This section describes how to add a FlashSystem A9000 or FlashSystem A9000R system to the list of SCOM-monitored IBM storage systems.
About this task

SCOM version 2.5.0 includes XIV multi-tenancy support, which applies to FlashSystem A9000 and A9000R microcode version 12.0.1 or later. To use multi-tenancy support, a non-domain user must have global visibility and then can have access only when the access policy is set to “Open.”

Note: SCOM only accepts non-domain LDAP users.

Procedure

To add a FlashSystem A9000 or FlashSystem A9000R system to the monitoring list, use `-t a9000r` to specify A9000 or A9000R as the system type. Then specify the IP address (`--ip`) or host name (`--host`) of the A9000 or A9000R system, followed by the `--username` and `--password` login details.

Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --add -t a9000r --ip 192.0.2.10 --username usr4 --password pwd4
Connecting to the device ...  
1 IBM FlashSystem A9000R Storage System is found.
device ID: xx, code level: x.x.x.x

The connection is OK.
Trying to add the connection.
New connection is added.
```

Displaying the monitored storage systems

This section describes how to display the list of SCOM-monitored storage systems.

Procedure

To view the list of monitored storage systems, enter `scomu.cmd --list`. The default output format is HTML, and the list is displayed in the default web browser.

Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --list
4 connections are found.
```
IBM Storage Management Pack for Microsoft System Center Operations Manager

IBM DS8000 Storage System

<table>
<thead>
<tr>
<th>DEV_TYPE</th>
<th>URL</th>
<th>USERNAME</th>
<th>PASSWORD</th>
<th>NAMESPACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ds8k</td>
<td><a href="https://host1.domain1.com:6989">https://host1.domain1.com:6989</a></td>
<td>usr1</td>
<td>*</td>
<td>root/ibm</td>
</tr>
</tbody>
</table>

IBM Storwize V7000 Storage System

<table>
<thead>
<tr>
<th>DEV_TYPE</th>
<th>IP</th>
<th>AUTHMODE</th>
<th>USERNAME</th>
<th>CERTPATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>storwize</td>
<td>192.0.2.10</td>
<td>publickey</td>
<td>usr2</td>
<td>c:\storwize.cert</td>
</tr>
</tbody>
</table>

IBM SAN Volume Controller Storage System

<table>
<thead>
<tr>
<th>DEV_TYPE</th>
<th>IP</th>
<th>AUTHMODE</th>
<th>USERNAME</th>
<th>CERTPATH</th>
</tr>
</thead>
<tbody>
<tr>
<td>svc</td>
<td>192.0.2.20</td>
<td>publickey</td>
<td>usr3</td>
<td>c:\svc.cert</td>
</tr>
</tbody>
</table>

IBM XIV Storage System

<table>
<thead>
<tr>
<th>DEV_TYPE</th>
<th>IP</th>
<th>USERNAME</th>
<th>PASSWORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>xiv</td>
<td>192.0.2.10</td>
<td>usr4</td>
<td>*</td>
</tr>
</tbody>
</table>

What to do next

To display the list in comma-separated values (CSV) format, add `--format csv` to the command. For example:

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin> scomu.cmd --list --format csv
4 connections are found.
DEV_TYPE,URL,USERNAME,PASSWORD,NAMESPACE
ds8k,https://192.0.2.40:6989,usr1,*,root/ibm
DEV_TYPE,IP,AUTHMODE,USERNAME,CERTPATH
storwize,192.0.2.10,publickey,usr2,c:\storwize.cert
DEV_TYPE,IP,AUTHMODE,USERNAME,CERTPATH
svc,192.0.2.30,publickey,usr3,c:\svc.cert
DEV_TYPE,IP,USERNAME,PASSWORD
xiv,192.0.2.10,usr4,*
```

Modifying storage system connection parameters

This section describes modifying storage system connection parameters.
Procedure

To modify the connection parameters for a specific monitored storage system, enter --modify followed by the system to be modified, the new parameter names and values.

Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>
scomu.cmd --modify -t xiv --ip 192.0.2.10 --username usrS
Connecting to the device ...
1 IBM XIV Storage System is found.
device ID: xx, code level: x.x.x.x

The connection is OK.
Trying to modify the connection.
The connection is modified.
```

Removing a storage system from the monitoring list

This section describes how to remove a storage system from the list of SCOM-monitored IBM storage systems.

Procedure

To remove the storage system from the monitored list, enter --del and then the IP address or host name of the storage system.

Example

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>
scomu.cmd --del -t xiv --ip 192.0.2.40
1 connection is deleted.
```

Changing event severity levels

You can use the scomu.cmd CLI utility to change the severity level of logged events.

About this task

Depending on your environment and preferences, you can change the default severity level of logged events. This allows you to set automated alerts for events that their default severity does not match your particular environment and preference. You can lower the severity level of events about which you do not want to be alerted, or raise the severity level of events about which you do want to be alerted.

Note:

- This feature is supported only with Storwize V7000, Storwize V7000 Unified, Storwize V5000, Storwize V3700, Storwize V3500, and SAN Volume Controller.
- The default alert severity level is Warning.

Use the --setseverity command to change event severity levels, as described in the following procedure.
Procedure

After the --setseverity command, specify the following parameters (CLI arguments followed by values):

- Type of system for which the severity change should be made – Use -t followed by "flex", "storwize", or "svc".
- ID of the event for which you want to change the severity level – Use --event_id followed by the ID number of the event.
- The severity level that you want to set for the event – Use --severity followed by the name of the severity level that you want to set.

*Note:* Different severity level types are available depending on the IBM storage system that you are using. For more information, see Chapter 4, “Monitoring,” on page 39.

Example

```bash
scomu.cmd --setseverity -t svc --event_id 980001 --severity information
```

What to do next

- To display a list of all the customized severity levels, use the --listseverity command as follows:

  ```bash
  scomu.cmd --listseverity
  ```

- If you want to restore the severity level of a certain event to its default severity, use the --restoreseverity command as shown in this example:

  ```bash
  scomu.cmd --restoreseverity -t svc --event_id 980001
  ```

Importing management packs to Microsoft SCOM

If any specific management pack (for a storage system type) is not already imported, you can import it to the Microsoft SCOM environment by performing the following procedure.

Before you begin

*Important:* Any management pack that was previously imported with version 1.3.0 or earlier must be deleted before importing management packs with newer versions of the IBM Storage Management Pack for Microsoft SCOM. For more information, see "Removing a specific management pack” on page 12.

Procedure

To import an IBM management pack in Microsoft SCOM 2012 or 2012 R2:

1. On the Administration panel, right-click Management Packs, and select Import Management Packs.
   
   The Import Management Pack dialog box is displayed.
2. Click Add, and then click Add from disk.
The Online Catalog Connection confirmation is displayed.

3. Click No to locate the management pack locally. The Select Management Packs to Import dialog box is displayed.

4. Access the \%ProgramFiles\%IBM\Storage\Host\IBMStorageSCOM\mps directory and select the following files:
   - IBM.Storage.Common.mp
• The file of the management pack that you want to add (for example, select IBM.Storage.DS8K.mp for adding the DS8000 management pack). You can select more than one management pack by pressing the CTRL key when selecting.

**Important:** You must select the IBM.Storage.Common.mp file together with the first management pack that you add. After this initial addition, you do not need to select IBM.Storage.Common.mp file again.

5. When the files are selected, click **Open**. The Import Management Packs dialog box lists the management packs to be added.
6. Click **Install** to start the import. When the management packs are successfully imported, click **Close**.

### Setting the storage system discovery and event collection intervals

Before or at any time after you start using the IBM Storage Management Pack, you can set the time intervals that define the rate by which Microsoft SCOM discovers new storage systems and collects information about new events.

#### Setting the storage system discovery intervals

This section describes how to set the storage system discovery intervals.

**Procedure**

The default interval for the discovery of DS8000 storage systems is 20 minutes. The default interval for the discovery of all other IBM storage systems is 10 minutes. To change the IBM storage system discovery interval in Microsoft SCOM 2012:

1. Click the Microsoft SCOM **Authoring** pane.
2. Select Rules, and then select IncrementalDiscoveryRule for the relevant management pack.

3. In the Actions pane (located on the right), select Overrides > Override the Rule > For all objects of class. The Override Properties dialog box is displayed.

4. Select Override for Interval Seconds, and then enter a new numerical Override Value. The numerical value that you enter defines the number of seconds for the interval.

5. Click Apply. The new discovery interval is set.

---

**Figure 13. Interval setting for storage system discovery**

### Setting the event collection intervals

This section describes how to set the storage system event collection intervals.

**About this task**

If you need SCOM to collect storage system events at a higher or a lower frequency, you can change the event collection time interval as explained in the following procedure.

**Note:** Storage system event collection is not supported by DS8000 storage systems.

**Procedure**

The default interval for event collection of any IBM storage system (except DS8000) is set to 10 minutes. Perform the following procedure to change the collection interval.

1. Click the Microsoft SCOM Authoring pane.
2. Select Rules, and then select Event Rule for the relevant management pack.
3. In the Actions pane (located on the right), select **Overrides > Override the Rule > For all objects of class: System**. The Override Properties dialog box appears.

4. Select **Override for Interval Seconds**, and then enter a new numerical value **Override Value**. The numerical value that you enter defines the number of seconds for the interval.

5. Click **Apply**. The new event collection interval is set.

---

**Figure 14. Interval setting for event collection**
Chapter 4. Monitoring

After installing the IBM Storage Management Pack, configuring the management server, and adding IBM Storage Systems, you can use the Monitoring tab of the Microsoft SCOM console to monitor the storage systems.

Note: The examples in this chapter are from Microsoft SCOM 2012 R2.

To start the monitoring, click the Monitoring tab on the left pane of the Operations Manager console, and then expand the IBM System Storage folder, located on the Monitoring tree.

Depending on the installed management packs, the subfolders under IBM System Storage display the information about the different IBM storage systems that are monitored via Microsoft SCOM.
Under each management pack subfolder (of a storage system type), the following options are available:

- Monitoring alerts
- Monitoring events
- Monitoring systems
- Monitoring physical and logical components
- Viewing diagrams

**Monitoring alerts**

This section describes how to monitor alerts for IBM storage systems.

**About this task**

You can monitor two types of alerts:

- **Health monitoring alerts** – Alerts about the health state of the monitored storage components. Health monitoring alerts are applicable to all the supported
IBM storage systems. For example, an alert is created when the health state of a certain component changes from **Healthy** to **Critical**.

- **Event log alerts** – Alerts about system events that are defined as error or warning events. Event log alerts are **not applicable to DS8000 systems**, but are applicable to all the other supported IBM storage systems and are monitored as follows:
  - For Storwize V7000, V7000 Unified, V5000, V3700, V3500, and SAN Volume Controller systems, **Error** events are displayed in SCOM as **Warning** alerts.

**Note:**
- To increase or decrease alerting regarding certain events of Storwize V7000, V7000 Unified, V5000, V3700, V3500, and SAN Volume Controller systems, change the severity level of any event as explained in **Changing event severity levels** on page 31.
- For more information about SAN Volume Controller error events, refer to the **IBM System Storage SAN Volume Controller Troubleshooting Guide** available on the [IBM SAN Volume Controller Information Center](pic.dhe.ibm.com/infocenter/svc/ic/index.jsp). In the guide, refer to the section: ‘Error event IDs and error codes’.

  - For XIV, Spectrum Accelerate, FlashSystem A9000, and FlashSystem A9000R systems, **Major** and **Critical** events are displayed in SCOM as **Critical** alerts, while **Minor** and **Warning** events are displayed in SCOM as **Warning** alerts.

**Note:** The alert severity level of XIV, Spectrum Accelerate, FlashSystem A9000, and FlashSystem A9000R system events cannot be modified.

**Procedure**

To view more details regarding a specific alert, select its row. A detailed description of the alert is displayed in the Alert Details pane (below the alerts list).
Monitoring events

This section describes how to monitor events for IBM storage systems.

About this task

Events are displayed differently in the management packs:

- For Storwize V7000, V7000 Unified, V5000, V3700, V3500, and SAN Volume Controller systems, **Information** and **Configuration** events are displayed.

**Note:** To learn about SAN Volume Controller Information or Configuration events, refer to the *IBM System Storage SAN Volume Controller Troubleshooting Guide* available on the [IBM SAN Volume Controller Information Center](pic.dhe.ibm.com/infocenter/svc/ic/index.jsp). In the guide, refer to the sections: ‘Informational events’ and ‘Configuration event IDs’.
For XIV, Spectrum Accelerate, FlashSystem A9000, and FlashSystem A9000R systems, all event levels are displayed: Information, Error, and Warning.

For the DS8000 systems, events are not displayed.

Note: By default, the list of events is refreshed every 10 minutes. You can change the default interval as explained in “Setting the event collection intervals” on page 37.

Procedure

To view more details regarding a specific event, select its row. A detailed description of the event is displayed in the Event Details pane (below the events list).

To view the raw data of the selected event, click View Event Data. The XML code is displayed in your system's default browser or XML viewer, as shown in Figure 17.

Figure 17. Event Monitoring
the following figure.

![Monitoring systems](image)

**Monitoring systems**

This section describes how to monitor IBM storage systems.

**About this task**

The Systems monitoring module provides a global health view of the monitored IBM storage systems and their associated components and objects (disks, volume group, volume mapping, and so on) in one general list.

**Procedure**

- To view more detailed information about a specific system component or object, click on its row. The details are displayed in the Detailed View pane located below the systems list.

**Notes:**

- By default, the systems monitoring list is refreshed every 10 minutes (20 minutes for DS8000). You can change this interval as described in "Setting the storage system discovery intervals" on page 36.
- SAN Volume Controller is monitored by clusters and not by systems. Therefore, its equivalent monitoring tree level displays 'Clusters' instead of 'Systems'.
Alternatively, you can click on a specific component cell on a specific column to see its associated components and details in the Detailed View pane.

**Note:** Only the object availability is monitored. The object status can be **Healthy**, **Warning**, or **Critical**.
Monitoring physical and logical components

This section describes monitoring physical and logical components.

About this task

Each management pack folder includes two sub-folders that you can use to monitor two major types of components:

- Physical components – Hardware components that a storage system comprises.
- Logical components – User-defined storage entities that can be modified during operation and added or removed per specific use as necessary.

The following table summarizes the logical and physical components that are monitored for each IBM storage system.

Figure 20. System monitoring per object status
<table>
<thead>
<tr>
<th>Storage system and management pack</th>
<th>Logical components</th>
<th>Physical components</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS8000</td>
<td>• Array</td>
<td>• Disk</td>
</tr>
<tr>
<td></td>
<td>• Array site</td>
<td>• FC port</td>
</tr>
<tr>
<td></td>
<td>• Extent pool</td>
<td>• Host port</td>
</tr>
<tr>
<td></td>
<td>• IBM FlashCopy®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Host volume mapping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rank</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Standard volume</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Space-efficient (SE) volume</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Virtual pool</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Volume group</td>
<td></td>
</tr>
<tr>
<td>SAN Volume Controller</td>
<td>• FlashCopy consistency group</td>
<td>• FCoE port</td>
</tr>
<tr>
<td></td>
<td>• FlashCopy mapping</td>
<td>• Fibre Channel port</td>
</tr>
<tr>
<td></td>
<td>• Host mapping</td>
<td>• Host</td>
</tr>
<tr>
<td></td>
<td>• Remote Copy consistency group</td>
<td>• iSCSI port</td>
</tr>
<tr>
<td></td>
<td>• Remote Copy relationship</td>
<td>• MDisk</td>
</tr>
<tr>
<td></td>
<td>• Storage pool</td>
<td>• Node</td>
</tr>
<tr>
<td></td>
<td>• Volume</td>
<td></td>
</tr>
<tr>
<td>Storwize V3500</td>
<td>• FlashCopy consistency group</td>
<td>• Array</td>
</tr>
<tr>
<td></td>
<td>• FlashCopy mapping</td>
<td>• Drive</td>
</tr>
<tr>
<td></td>
<td>• Host mapping</td>
<td>• Enclosure</td>
</tr>
<tr>
<td></td>
<td>• Remote Copy consistency group</td>
<td>• FCoE port</td>
</tr>
<tr>
<td></td>
<td>• Remote Copy relationship</td>
<td>• Fibre Channel port</td>
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<td></td>
<td>• Storage pool</td>
<td>• Host</td>
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<td></td>
<td>• Volume</td>
<td>• iSCSI port</td>
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<td>• MDisk</td>
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<tr>
<td></td>
<td></td>
<td>• Node</td>
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<tr>
<td>Storwize V3700</td>
<td>• FlashCopy consistency group</td>
<td>• Array</td>
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<tr>
<td></td>
<td>• FlashCopy mapping</td>
<td>• Drive</td>
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<td></td>
<td>• Host mapping</td>
<td>• Enclosure</td>
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<td></td>
<td>• Remote Copy consistency group</td>
<td>• FCoE port</td>
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<td>• Remote Copy relationship</td>
<td>• Fibre Channel port</td>
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<td>• Storage pool</td>
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<td>• Volume</td>
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<td>• MDisk</td>
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<td></td>
<td></td>
<td>• Node</td>
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</tbody>
</table>
Table 2. Monitored physical and logical components per storage system (continued)

<table>
<thead>
<tr>
<th>Storage system and management pack</th>
<th>Logical components</th>
<th>Physical components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storwize V5000</td>
<td>• FlashCopy consistency group</td>
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<td>• FlashCopy mapping</td>
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<td>• Storage pool</td>
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<td></td>
<td>• Volume</td>
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<td>• Drive</td>
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<td>• iSCSI port</td>
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<td>• MDisk</td>
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<td>• Node</td>
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<tr>
<td>Storwize V7000</td>
<td>• FlashCopy consistency group</td>
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<td>• FlashCopy mapping</td>
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<td>• Node</td>
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<tr>
<td>Storwize V7000 Unified</td>
<td>• FlashCopy consistency group</td>
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<td>• FlashCopy mapping</td>
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<td>IBM XIV Storage System</td>
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<td>• Mirror</td>
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<td>• Pool</td>
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<td></td>
<td>• Volume</td>
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<tr>
<td></td>
<td>• Cluster</td>
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<td></td>
<td>• Disk</td>
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<td></td>
<td>• FC Port</td>
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<td></td>
<td>• Host</td>
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<td></td>
<td>• IP interface</td>
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<td></td>
<td>• iSCSI port</td>
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<td></td>
<td>• Module</td>
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<tr>
<td>IBM Spectrum Accelerate</td>
<td>• Mapping</td>
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<td>• Pool</td>
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<td>• Volume</td>
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<td>• Cluster</td>
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<td>• Disk</td>
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<td></td>
<td>• Host</td>
<td></td>
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<tr>
<td></td>
<td>• IP interface</td>
<td></td>
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<tr>
<td></td>
<td>• iSCSI port</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Module</td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Monitored physical and logical components per storage system (continued)

<table>
<thead>
<tr>
<th>Storage system and management pack</th>
<th>Logical components</th>
<th>Physical components</th>
</tr>
</thead>
</table>
| FlashSystem A9000 and FlashSystem A9000R | • Mapping  
• Mirror  
• Pool  
• Volume | • Cluster  
• FC Port  
• Host  
• IP interface  
• iSCSI port  
• Module |

Procedure

To view the monitoring details of a specific physical or logical component, click its item on the monitoring tree. The details are displayed in the Detailed View pane.

Figure 21. Volume details
Viewing diagrams

In addition to monitoring the IBM storage systems through a table and an information pane (as described in the previous sections), you can view any information object in a diagram.

The diagram shows a graphic representation of the selected object, as well as its relationship with other objects. This viewing option helps you obtain a clear picture of the object condition and its influence on other objects in real time.

To display a diagram for a selected object on the table, right-click the object, and then select Open > Diagram View from the pop-up menu.
The displayed diagram shows the object icon, current status and relationships. You can click any icon in the diagram to display more information in the **Detailed View** pane.
**Figure 24. Diagram View**
Chapter 5. Diagnostics and troubleshooting

This chapter describes diagnostic and troubleshooting information.

You can use the scomu.cmd utility to perform different diagnostic tasks, as described in the following sections:

- "Testing the connection to the SCOM management server"
- "Testing the connectivity to storage systems"
- "Setting the logging level"
- "Collecting diagnostic information" on page 54
- "Checking the running environment" on page 54

For troubleshooting info, refer to "Troubleshooting" on page 54.

Testing the connection to the SCOM management server

You can check whether the Microsoft SCOM agent can successfully connect to the SCOM management server using the scomu.cmd --sc-check command.

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin\scomu.cmd --sc-check
Checking the connection to the management server...
The connection to the management server is OK.
```

Testing the connectivity to storage systems

When required, you can check whether the Microsoft SCOM server can successfully connect to the storage system using the scomu.cmd --test command.

If the network is slow, you can set the timeout value for the connection, using the scomu.cmd --timeout command. The default timeout is 60 seconds.

```
C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\bin>
scomu.cmd --test -t ds8k --url https://host1.domain1.com:6989 --namespace root/ibm --username usr1 --password pwd1 --timeout=300
Connecting to the device...
1 IBM DS8800 Storage System is found.
device ID: xx, code level: x.x.x.x, CIM server version: x.x.x.x
The connection is OK.
```

Setting the logging level

You can set the logging level for each management pack, so that the logging is performed only for events with severity level equivalent or lower than the severity level that you set.

The IBM Storage management packs logs activity in the following directory:
%ProgramFiles%\IBM\Storage\Host\IBMStorageSCOM\log

The possible logging levels are: Critical, Error, Warning, Info, Debug, or Trace.
Collecting diagnostic information

Use the `scomu.cmd --diag` command to collect diagnostic information and include the generated tar file when reporting the issue.

The tar file is located in the following directory: `%ProgramFiles%\IBM\Storage\Host\IBMStorageSCOM`

Checking the running environment

Use the `scomu.cmd --precheck` command to check whether the running environment of the management packs is correctly set, and whether the installed libraries are corrupted.

Troubleshooting

The following table lists some typical problems that you might encounter, along with the possible solution for each problem.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the installation, the following error message may appear: The installation package is not supported by the processor type.</td>
<td>Check which bit version of the operating system you are using, and run the matching installation package.</td>
</tr>
<tr>
<td>This problem might occur when you are installing a 32-bit package on a 64-bit operating system, or vice versa.</td>
<td></td>
</tr>
</tbody>
</table>

Note:

- For additional up-to-date troubleshooting information, refer to the Known Issues section in the latest release notes.
- Check the SCOM event log to obtain any relevant information that might help in troubleshooting. Check for event ID 700 to trace any fatal error.
Table 3. Typical problems and possible solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No storage system is listed under Systems or Clusters.</td>
<td>Use the <code>scomu.cmd --list</code> command to check the list of monitored storage systems. Use the <code>scomu.cmd --test</code> command to check the connection to each storage system.</td>
</tr>
<tr>
<td>The connection to DS8000 storage systems fails.</td>
<td>Make sure that the web address of the DS CIM agent is correct. The protocol is usually HTTPS and not HTTP.</td>
</tr>
<tr>
<td></td>
<td>By default, the embedded DS CIM agent communicates through port 6989, and the proxy agent communicates through port 5989.</td>
</tr>
<tr>
<td>Event information is not synchronized with System information.</td>
<td>This occurs due to a default data refresh interval in <strong>Events</strong> is 10 minutes (DS8000 is 20 minutes), and in <strong>Systems</strong> it is 30 minutes.</td>
</tr>
<tr>
<td></td>
<td>Accordingly, wait until the next refresh interval for the synchronization to occur.</td>
</tr>
<tr>
<td></td>
<td>In addition, if numerous events are generated within a short time, only the last 300 events are reported (fewer events are reported for SAN Volume Controller with microcode 5.1.0 or later).</td>
</tr>
<tr>
<td></td>
<td>This is an intended restriction that is imposed due to performance considerations.</td>
</tr>
<tr>
<td>IBM management packs still appear in Microsoft SCOM after uninstallation.</td>
<td>IBM management pack entries may remain in Microsoft SCOM after uninstallation. This occurs when installed management packs are not manually deleted from SCOM prior to uninstalling the IBM Storage Management pack via the Windows Control Panel.</td>
</tr>
<tr>
<td></td>
<td>Accordingly, you must manually remove the IBM management packs from the Administration pane of Microsoft SCOM (before or after you use the Windows Control Panel to uninstall the IBM Storage Management Pack).</td>
</tr>
<tr>
<td></td>
<td>For more information, refer to the Microsoft SCOM documentation.</td>
</tr>
<tr>
<td>Delay in storage systems display.</td>
<td>After you import a management pack to Microsoft SCOM, it might take several minutes before the relevant storage systems are displayed, and it might take several minutes more before all health state icons are correctly presented.</td>
</tr>
<tr>
<td></td>
<td>You can encounter this delay depending on the following circumstances:</td>
</tr>
<tr>
<td></td>
<td>• Network traffic</td>
</tr>
<tr>
<td></td>
<td>• The number of monitored storage systems</td>
</tr>
<tr>
<td></td>
<td>• The performance of the Microsoft SCOM database.</td>
</tr>
<tr>
<td>Reset to default has no effect on the order of columns.</td>
<td>Under Alerts or Systems, columns cannot be restored to their default order after it is manually changed, and the <strong>Reset to Default</strong> option in Personalize View has no effect on the order of columns.</td>
</tr>
<tr>
<td></td>
<td>Due to this limitation of Microsoft SCOM, you need to re-order the columns manually.</td>
</tr>
<tr>
<td>Problem</td>
<td>Possible solution</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Status icon of newly discovered systems displays a wrong status.</td>
<td>Immediately after the storage systems are discovered, the status icon (Healthy, Warning or Critical) does not indicate the actual state of the system. This may occur due to data refresh timing in Microsoft SCOM. Press F5 to manually refresh the displayed status information.</td>
</tr>
<tr>
<td>Modified sticky views are kept after re-importing management packs.</td>
<td>Microsoft SCOM allows you to use modifiable sticky views that are kept across sessions even after removing the IBM management packs from the Administration pane and re-importing them. To resolve this, use the Reset to Default option in Personalize View.</td>
</tr>
<tr>
<td>Management packs cannot be removed due to a dependency.</td>
<td>This message, which is normal in Microsoft SCOM, appears whenever one or more manual overrides were defined for the rules or monitors in the IBM management pack. Such overrides are saved in either the default management pack, or in the IBM management pack. To resolve this, save the overrides in a custom management pack, and then delete the existing overrides or import new ones if necessary.</td>
</tr>
<tr>
<td>When the IBM Storage Management Pack is installed on a SCOM agent and the connected storage system has a large amount of volumes (about 300 volumes per storage system), the discovery data package may exceed the SCOM size limit (4MB). In such a case, a relevant alert message (event ID: 2015) is added to the SCOM event log.</td>
<td>Consider installing the IBM System Storage Management Pack on the SCOM management server.</td>
</tr>
<tr>
<td>While adding IBM storage, the following error message may appear:</td>
<td>Delete the management pack and re-import the management pack in the Operation Manager control panel, and then wait for the Monitor Computer to be discovered. Alternatively, shorten the Monitor Computer discovery time. Click the Microsoft SCOM Authoring pane, select ObjectDiscoveries for the relevant storage system type, then in the Actions pane, select Overrides &gt; Override the Rule &gt; For all objects of class: Window Computer.</td>
</tr>
<tr>
<td>The following error massage may appear when configuring IBM storage after upgrade from version 1.1.0 to a newer version:</td>
<td>Run upgrade_config.cmd from IBM standalone command-line interface (CLI) utility, as explained in &quot;First-time installation vs. upgrade&quot; on page 6.</td>
</tr>
</tbody>
</table>

Table 3. Typical problems and possible solutions (continued)
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<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following error may appear in C:\Program Files\IBM\Storage\Host\IBMStorageSCOM\log\scsdk.log:</td>
<td>The <strong>OpsMgr</strong> configuration service failed to send the dirty state notifications to the dirty OpsMgr Health Services. This may occur because the root <strong>OpsMgr</strong> health service is not running. Restart the healthy service on the SCOM management server.</td>
</tr>
</tbody>
</table>

Traceback (most recent call last):
File "scsdk", line 39, in _call_
File "scsdk", line 158, in do_discovery
Exception: The Configuration "9.115.246.54" of the MonitorComputer "scom-167.scom145.cn.ibm.com" does not exist. Fail to save its discovery data.
2013-05-30 09:33:39,830 INFO 724# SDK CLI end |
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