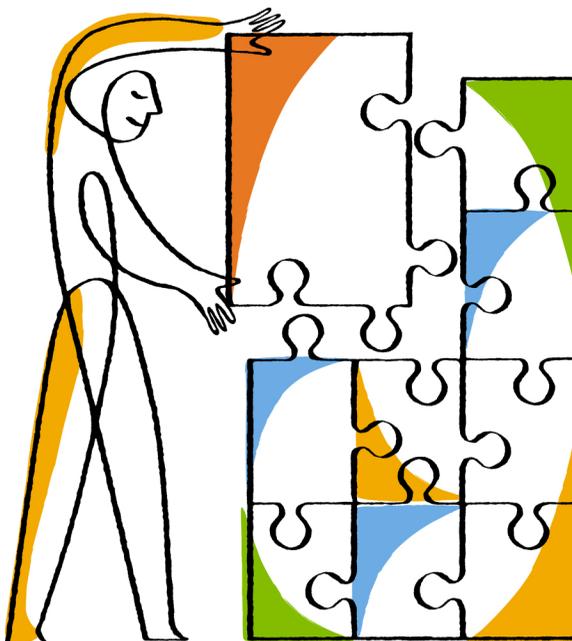




## Data ONTAP<sup>®</sup> SMI-S Agent 5.1

### Installation and Configuration Guide



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## Data ONTAP SMI-S Agent overview

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Data ONTAP SMI-S Agent enables you to manage and monitor storage systems and to manage LUNs and volumes of storage systems, CIMOM configuration settings, and CIM server users.

Data ONTAP SMI-S Agent is a command-based interface that detects and manages platforms that run Data ONTAP. SMI-S Agent uses Web-Based Enterprise Management (WBEM) protocols, which enable you to manage, monitor, and report on storage elements.

Data ONTAP SMI-S Agent follows schemas standardized by two organizations:

- Distributed Management Task Force (DMTF)  
For more information, see <http://www.dmtf.org/home>.
- Storage Networking Industry Association (SNIA)  
For more information, see <http://www.snia.org/home>.

Data ONTAP SMI-S Agent replaces the use of multiple managed-object models, protocols, and transports with a single object-oriented model for all components in a storage network.

## New in this release

Data ONTAP SMI-S Agent 5.1 introduces new features and enhancements, such as support for System Center 2012 R2 - Virtual Machine Manager.

SMI-S Agent 5.1 includes the following new features and enhancements:

- Support for Data ONTAP 8.2.1
- Support for Windows Server 2012 R2
- Support for System Center 2012 R2 Virtual Machine Manager (SCVMM)
- Support for Copy Offload (ODX) provisioning from SCVMM 2012 R2
- Support for Synthetic Fibre Channel Adapters
- Support for IPv6

SMI-S Agent 5.1 contains the following changed feature:

- For `smis addsecure` and `smis add`, it is recommended that you no longer include the `storage_sys_pwd` parameter in the command line for security reasons. The parameter is only offered for backward compatibility and automation.

## Uses of Data ONTAP SMI-S Agent

Data ONTAP SMI-S Agent makes it easier to manage and monitor storage systems and to manage LUNs and volumes of storage systems.

You can use Data ONTAP SMI-S Agent to perform the following tasks:

- Manage storage controllers using System Center 2012 - Virtual Machine Manager or System Center 2012 R2 - Virtual Machine Manager
- Monitor storage controllers using ServiceNow
- Monitor storage controllers using TPC (Tivoli Storage Productivity Center)
- Manage and monitor using additional SMI-S based products

## Data ONTAP SMI-S Agent sizing and performance

The maximum number of systems managed by Data ONTAP SMI-S Agent helps you understand its performance capabilities.

### Data ONTAP operating in 7-Mode

Data ONTAP SMI-S Agent 5.1 can manage up to the following numbers of objects:

- 30 storage systems (without indications)
- 10 storage systems (with indications)
- 1,500 LUNs (per FlexVol or traditional volume)

### Clustered Data ONTAP

Data ONTAP SMI-S Agent 5.1 can manage up to the following numbers of objects:

- 100 Storage Virtual Machines (without indications)
- 10 Storage Virtual Machines (with indications)
- 1,500 LUNs (per FlexVol)
- 200 CIFS file shares (per FlexVol)

### Performance notice

For configurations with 5,000 FlexVols or 300,000 Snapshot copies, you might experience performance issues with the following cimcli commands:

- `cimcli ei ONTAP_Snapshot -n root/ontap`
- `cimcli ei ONTAP_SnapshotBasedOnFlexVol -n root/ontap`
- `cimcli ei ONTAP_StorageVolumeStats -n root/ontap`

For the latest information on sizing and performance, check the Interoperability Matrix Tool (IMT).

### Related information

[\*Interoperability Matrix Tool \(IMT\)\*](#)

## Data ONTAP SMI-S Agent components

Data ONTAP SMI-S Agent consists of three components that allow you to manage and monitor storage systems

<b>CIMOM</b>	This is the foundation for Data ONTAP SMI-S Agent. CIMOM collects, validates, and authenticates each application request and then responds to the application. It becomes a conduit for each request by invoking the appropriate provider to handle each request.
<b>Provider objects</b>	When a host issues a command or query to SMI-S Agent, CIMOM loads a shared library object, invokes it to handle a request, and returns the resulting information to the host.  <b>Note:</b> Windows hosts use DLL objects. Linux hosts use SO objects.
<b>Repository</b>	CIMOM uses a flat-file database for its repository. It stores persistent data required at the CIM level.

## Data ONTAP SMI-S Agent protocols

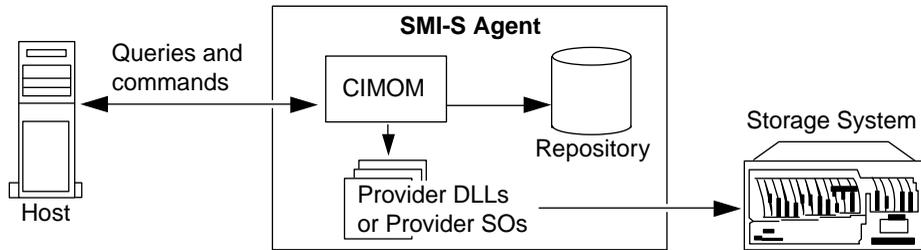
Data ONTAP SMI-S Agent uses CIM-XML encoding over HTTPS and Service Location Protocol (SLP).

<b>CIM-XML encoding over HTTPS</b>	Protocol that exchanges information between a Web-Based Enterprise Management (WBEM)-enabled management client and the CIMOM server. CIM-XML encoding over HTTPS uses the CIM protocol as the payload and HTTPS as the transport. HTTP is also supported.
<b>SLP</b>	Discovery protocol that detects WBEM services within a LAN.

## How Data ONTAP SMI-S Agent interacts with a host

When a client application on a host discovers the CIMOM server by using SLP (CIM-XML encoding over HTTP), the client then queries the CIMOM for shared objects (objects modeled in the CIM language). The CIMOM loads shared objects and queries the storage system by using device-specific APIs for the requested information.

The following illustration shows how Data ONTAP SMI-S Agent interacts with a WBEM management client when Data ONTAP SMI-S Agent receives a query or command.



## SMI-S profiles

SMI-S Agent uses profiles and subprofiles that comply with SMI-S v1.6 via CTP 1.6.

For information about SMI-S v1.6, see [http://www.snia.org/tech\\_activities/standards/curr\\_standards/smi/](http://www.snia.org/tech_activities/standards/curr_standards/smi/).

# Installing and uninstalling Data ONTAP SMI-S Agent

---

You can download and install Data ONTAP SMI-S Agent. If necessary, you can also uninstall the software.

## Supported operating system versions

Before installing SMI-S Agent, you must verify that the Windows and Linux hosts are running supported operating systems (includes Windows and Linux VMs).

Operating system	Supported versions
Linux	<ul style="list-style-type: none"> <li>• SUSE Linux Enterprise Server, version 10 (32-bit)</li> <li>• SUSE Linux Enterprise Server, version 11 with SP1 (64-bit)               <ul style="list-style-type: none"> <li>• Install 32-bit libraries: gcc, libc, and libz</li> </ul> </li> <li>• Red Hat Enterprise Linux 5 Advanced Platform for x86 (32-bit and 64-bit)</li> <li>• Red Hat Enterprise Linux 6 (32-bit and 64-bit)               <ul style="list-style-type: none"> <li>• For 64-bit, install 32-bit libraries: gcc, libc, and libz</li> </ul> </li> </ul>
Windows	<ul style="list-style-type: none"> <li>• Microsoft Windows Server 2008 R2 (64-bit)</li> <li>• Microsoft Windows Server 2012</li> <li>• Microsoft Windows Server 2012 R2</li> </ul>

To run SMI-S Agent, the agent host machine must meet certain specifications:

- The agent host machine cannot be used to host a Hyper-V node.
- System Center Virtual Machine Manager (SCVMM) must not be running on the agent host machine.
- The agent host machine must not run other programs that are memory-intensive.
- The agent host machine must not run SMI-S providers from any other vendor.

## Hardware requirements

You must verify that Windows and Linux hosts meet minimum hardware requirements before installing Data ONTAP SMI-S Agent.

Hardware	Requirements
Memory	<p>You must always meet the minimum memory requirements for the host operating system.</p> <ul style="list-style-type: none"> <li>• 4 GB RAM (minimum)</li> <li>• 8 GB RAM (recommended)</li> </ul>
Disk space	<ul style="list-style-type: none"> <li>• 4 GB (recommended)</li> </ul> <p><b>Note:</b> Enabling logging and tracing requires additional disk space of up to 1 GB, depending on the log and trace file rotation settings.</p>
CPU	<ul style="list-style-type: none"> <li>• Dual-core 2.0 GHz (minimum)</li> <li>• Quad-core 2.0 GHz (recommended)</li> </ul>

## Client software requirements

Before you install Data ONTAP SMI-S Agent, you must first install required software.

Operating system	Required client software
Linux	<ul style="list-style-type: none"> <li>• Install the <code>uncompress</code> utility in the <code>/usr/bin</code> directory.</li> </ul>
Windows	<p>Microsoft Visual C++ 2010 runtime libraries are automatically installed during the Data ONTAP SMI-S Agent installation. To avoid potential issues related to runtime libraries, install the following software package:</p> <ul style="list-style-type: none"> <li>• Microsoft Visual C++ 2010 Redistributable Package (x86), available at <a href="http://www.microsoft.com">http://www.microsoft.com</a>.</li> </ul>

## Supported platforms

SMI-S Agent supports platforms running Data ONTAP 7.3.5+, 8.0.x, and 8.1.x (operating in 7-Mode only), and Data ONTAP 8.2 and 8.2.1.

For SMI-S Agent to create clones of storage volumes (LUNs), you must have installed a FlexClone license on the storage system.

SMI-S Agent supports the following platforms:

- FAS series systems
- V-Series storage systems

## Downloading the Data ONTAP SMI-S Agent software package

Before installing Data ONTAP SMI-S Agent, you must download the software package from the NetApp Support Site [support.netapp.com](http://support.netapp.com).

### Before you begin

Before downloading the software, you must have a NetApp Support Site account. You can create a NetApp Support Site account at [support.netapp.com](http://support.netapp.com).

### Steps

1. Log in to the NetApp Support Site site at [support.netapp.com](http://support.netapp.com).
2. Go to the Download Software page.
3. Locate Data ONTAP SMI-S Agent and select the operating system on which you want to install Data ONTAP SMI-S Agent.
4. Click **Go!**.
5. Follow the instructions on the Data ONTAP SMI-S Agent page to download the software.

## Installing SMI-S Agent on a Windows host

You can install the SMI-S Agent software so that you can manage storage systems that run Data ONTAP. If you are installing on a Windows 2008 R2 or Windows 2012 platform, the SMI-S Agent

software is by default installed in the `system_drive:\Program Files (x86)\ontap\smis` directory.

### Before you begin

You must already have the following credentials and software:

- Login credentials for the Windows Administrator account
- SMI-S Agent software package

### About this task

As a result of the installation process, the CIMOM service (named “Data ONTAP SMI-S Agent” in Service Control Manager) and SLP daemon (named “Service Location Protocol” in Service Control Manager) run as automatic services that are automatically started after a host reboot.

Upgrading to the latest version of SMI-S Agent is not supported. You must uninstall the previous version and install the new version.

### Steps

1. Uninstall the installed version of SMI-S Agent.
2. If you are upgrading from SMI-S Agent 4.1 to SMI-S Agent 5.1, delete the `smis` folder located at `installation_directory\ontap\smis`.
3. Log in to the Windows system with an Administrator account.
4. Navigate to the directory that contains the SMI-S Agent software package, and double-click the package name.
5. Complete the steps in the setup wizard.

### Result

SMI-S Agent is started automatically toward the end of the installation process.

### After you finish

If you are upgrading from SMI-S Agent 4.1 to SMI-S Agent 5.1, after upgrading, filer credentials are cleared, and you must re-add the storage systems to the CIMOM repository.

## Installing SMI-S Agent on a Linux host

You can install the SMI-S Agent software so that you can manage platforms that run Data ONTAP. By default, the SMI-S Agent software is installed in the `/usr/ontap/smis` directory.

### Before you begin

You must already have the following credentials and software:

- Login credentials for the root account
- SMI-S Agent software package

### Steps

1. Log in as root.
2. Navigate to the directory that contains the SMI-S Agent software package by entering the following command:  

```
cd directory_name
```
3. Do one of the following:
  - To extract the tar file into a temporary directory and delete all temporary files, including the install script, enter the following command:  

```
tar xvf smisagent-5.1.tar
```
  - To extract the tar file into a temporary directory without deleting the temporary files, enter the following command:  

```
tar xvf smisagent-5.1.tar -k
```
4. To install the software package, enter one of the following commands:
  - To install the software package and automatically delete all temporary files, including `install_smisproxy`:  

```
./install_smisproxy
```
  - To install the software package without deleting the temporary files:  

```
./install_smisproxy -k
```
  - To reinstall the software package and overwrite the previously installed version of the SMI-S Agent:  

```
./install_smisproxy -f
```
  - To reinstall the software package and keep the SLP configuration files:  

```
./install_smisproxy -f -s
```

## Uninstalling SMI-S Agent from a Windows host

You must uninstall the existing version of SMI-S Agent to upgrade to the latest version.

### Steps

1. Uninstall SMI-S Agent from a Windows host by using the Windows Add/Remove Programs utility.
2. If you are upgrading from SMI-S Agent 4.1 to SMI-S Agent 5.1, delete the `smis` folder located at `installation_directory\ontap\smis`.

## Uninstalling SMI-S Agent from a Linux host

Uninstalling SMI-S Agent from Linux requires you to use the CLI.

### Before you begin

The `compress` or `gzip` program must be installed for you to use the following `uninstall_smisproxy` script options:

- `-i` (interactive mode)
- `-s path` (silent mode with the option to save agent log files)

### Steps

1. Log in as root.
2. Enter the following command:

```
installation_directory/ontap/smis/pegasus/bin/uninstall_smisproxy
```

# Preconfiguration task overview

---

Before using SMI-S Agent, verify that the CIM server is started, add at least one storage system to the CIMOM repository, and verify that the storage system is working correctly. Optionally, you can also enable authentication for SMI-S Agent and generate a self-signed certificate for the CIMOM.

Perform the following tasks before using SMI-S Agent:

1. Access SMI-S Agent.
2. Verify that the CIM server is started.
3. Add a storage system to the CIMOM repository.
4. Verify that the storage system is working correctly.
5. (Optional) Enable authentication for SMI-S Agent.
6. (Optional) Generate a self-signed certificate for the CIMOM.

## Related tasks

[Accessing SMI-S Agent](#) on page 17

[Verifying the CIM server status](#) on page 18

[Adding storage systems to the CIMOM repository](#) on page 18

[Verifying that the storage system is working correctly](#) on page 20

[Enabling authentication for SMI-S Agent](#) on page 20

[Generating a self-signed certificate for the CIM server \(Linux\)](#) on page 21

[Generating a self-signed certificate for the CIM server \(Windows\)](#) on page 22

## Accessing SMI-S Agent

For Linux platforms, you access SMI-S Agent from the shell. For Windows platforms, you can open a command prompt to access SMI-S Agent, or you can access SMI-S Agent from the Start menu.

### Before you begin

You must have login credentials as root (Linux) or Administrator (Windows). If you have User Account Control (UAC) enabled on Windows, make sure you have Administrator credentials.

### Steps

1. Log in as root (Linux) or Administrator (Windows).
2. Do one of the following:

Platform	Description
<b>Linux</b>	From a command prompt with elevated administrative privileges, navigate to <code>installation_directory/ontap/smis/pegasus/bin</code> .
<b>Windows</b>	From a command prompt with elevated administrative privileges, navigate to <code>installation_directory\ontap\smis\pegasus\bin</code> or, from the Start > Programs menu, right-click Data ONTAP SMI-S Agent and select Run as Administrator.

## Verifying the CIM server status

After installing SMI-S Agent, you must verify that the CIM server automatically started.

### Before you begin

You must already have login credentials as root (Linux) or Administrator (Windows).

### Steps

1. Log in as root or Administrator.
2. Enter the following at the command prompt:

```
smis cimserver status
```

If the CIM server has been started, you see the following message:

```
Data ONTAP SMI-S Agent is running.
```

## Adding storage systems to the CIMOM repository

Before you configure SMI-S Agent, you must add at least one storage system to the CIMOM repository.

### Step

1. Enter one of the following at the command prompt:

To add a storage system with an...	Enter this command...
HTTP connection between the agent and the storage system	<b>smis add storage_sys storage_sys_user</b>
HTTPS connection between the agent and the storage system	<b>smis addsecure storage_sys storage_sys_user</b>

The command waits for up to 15 minutes for the agent to update the cache and respond.

For clustered Data ONTAP, the IP address specified must be for a Storage Virtual Machine (SVM), not a cluster, and the credentials must be for a vsadmin user. SMI-S Agent does not support cluster IP addresses or node management IP addresses, nor does it support not admin or node SVMs (only cluster SVMs).

### Examples: Adding a storage system

To add a storage system with an IP address of 10.32.1.4 over HTTP, enter the following command:

```
smis add 10.32.1.4 vsadmin
```

To add a storage system with an IP address of 10.32.1.4 over HTTPS, enter the following command:

```
smis addsecure 10.32.1.4 vsadmin
```

**Note:** Operating systems using languages other than U.S. English cannot use the add or addsecure commands.

To add a storage system with an IP address of 10.32.1.4 over HTTP on a non-English-language system, enter the following command:

```
cimcli -n root/ontap ci ontap_filerdata hostname="10.32.1.4"
username="root" password="PasSw0Rd" port=80 comMechanism="HTTP" --
timeout 180
```

To add a storage system with an IP address of 10.32.1.4 over HTTPS on a system using languages other than U.S. English, enter the following command:

```
cimcli -n root/ontap ci ontap_filerdata hostname="10.32.1.4"
username="root" password="PasSw0Rd" port=443 comMechanism="HTTPS" --
timeout 180
```

**Note:** Only for 7-Mode Data ONTAP, replace *vsadmin* with *root*.

### After you finish

When operating in clustered Data ONTAP environments (requires 8.2 or 8.2.1), make sure that you have correctly followed the guidelines for setting up your Storage Virtual Machines (SVMs) in the *Clustered Data ONTAP System Administration Guide for Vserver Administrators*. SMI-S Agent only supports cluster SVMs, not admin or node SVMs.

### Related tasks

[Deleting storage systems from the CIMOM repository](#) on page 28

[Listing storage systems in the CIMOM repository](#) on page 28

**Related references**

[Issue entering passwords containing special characters](#) on page 85

## Verifying that the storage system is working correctly

After adding a storage system to the CIMOM repository, you can verify whether the storage system is working correctly by using `smis` commands such as `smis list`, `smis disks`, `smis luns`, `smis pools`, and `smis volumes`.

**Steps**

1. Enter the following command:

```
smis luns
```

2. Verify the command output:

<b>For this command...</b>	<b>Verify that...</b>
<code>smis list</code>	The number of items matches the number of storage systems being managed.
<code>smis disks</code>	The number of disks matches the total number of disks on all storage systems.
<code>smis luns</code>	The number of LUNs matches the total number of LUNs on all storage systems.
<code>smis pools</code>	The number of <code>ONTAP_ConcretePools</code> matches the total number of aggregates on all storage systems.
<code>smis volumes</code>	The number of volumes matches the total number of volumes on all storage systems.

## Enabling authentication for SMI-S Agent

By default, authentication is enabled for SMI-S Agent. If authentication causes errors on your system, you can optionally disable it.

**Before you begin**

You must have login credentials as root (Linux) or Administrator (Windows). Any client, including System Center Virtual Machine Manager (SCVMM), must connect to the agent using `cimuser` and `cimpassword`.

**Steps**

1. Log in as root (Linux) or Administrator (Windows).
2. Navigate to the `bin` directory in the directory in which SMI-S Agent was installed.
3. At a command prompt, verify that SMI-S Agent is running by entering the following command:

```
smis cimserver status
```

4. Enable authentication by entering the following command:

```
cimconfig -p -s enableAuthentication=true
```

CIMOM does not use Windows authentication.

5. Restart SMI-S Agent with the following commands:

```
smis cimserver stop
```

```
smis cimserver start
```

On Windows systems, the following commands also work:

```
net stop cimserver
```

```
net start cimserver
```

6. Add a CIM server user by entering the following command:

```
cimuser -a -u Administrator -w password
```

### After you finish

You might encounter the error Registration of storage provider *smis\_agent\_machine* for user *name* failed from *SCVMM\_\_(machine)* with error code *HostAgentAccessDenied*. Specify valid provider, port and user credentials for storage discovery. ID: 26263. If this occurs, the local administrator (on the SMI-S Agent machine) or the domain administrator must be added to the CIM server database using the *cimuser* command: ***cimuser -a -u Administrator -w password***. That administrative user must then be used when adding the SMI-S Agent to SCVMM. If the domain controller takes too long to authenticate the domain administrator, the local administrator (on the SMI-S Agent machine) must be used. If the error persists, you can disable authentication.

## Generating a self-signed certificate for the CIM server (Linux)

By default, SSL authentication is enabled for the CIM server. During SMI-S Agent installation, a self-signed certificate for the CIM server is installed in the *installation\_directory/ontap/smis/pegasus* directory. You can generate your own self-signed certificate and use it rather than the default certificate.

### About this task

For this certificate, Common Name does not have to match the connecting server name exactly, because that requirement might preclude using a common certificate on multiple machines and lead to difficulty diagnosing connection issues.

The administrator must be an existing local or domain user on the machine.

**Steps**

1. Navigate to the pegasus bin directory at `installation_directory/ontap/smis/pegasus/bin`.
2. At a command prompt, navigate to the OpenSSL bin directory.
3. Generate a private key by entering the following command:  
`openssl genrsa -out cimom.key 2048`
4. Generate a certificate request by entering the following command:  
`openssl req -new -key cimom.key -out cimom.csr`
5. Enter your information for the certificate request when prompted.
6. Generate the self-signed certificate by using the following command:  
`openssl x509 -in cimom.csr -out cimom.cert -req -signkey cimom.key -days 1095`  
  
You can provide a different number of days for which the certificate is valid.
7. Copy the `cimom.key` and `cimom.cert` files to the `installation_directory/ontap/smis/pegasus` directory.

**Result**

The certificate date range starts at the current date and runs for the number of days specified.

## Generating a self-signed certificate for the CIM server (Windows)

By default, SSL authentication is enabled for the CIM server. During SMI-S Agent installation, a self-signed certificate for the CIM server is installed in the `installation_directory\ontap\smis\pegasus` directory. You can generate your own self-signed certificate and use it rather than the default certificate.

**Steps**

1. Navigate to the pegasus bin directory at `installation_directory\ontap\smis\pegasus\bin`.
2. Generate a private key by entering the following command:  
`openssl genrsa -out cimom.key 2048`
3. Generate a certificate request by entering the following command:  
`openssl req -new -key cimom.key -out cimom.csr`
4. Enter your information for the certificate request when prompted.

5. Generate the self-signed certificate by using the following command:

```
openssl x509 -in cimom.csr -out cimom.cert -req -signkey cimom.key -days 1095
```

You can provide a different number of days for which the certificate is valid.

6. Copy the `cimom.key` and `cimom.cert` files to the `installation_directory\ontap\smis\pegasus` directory.

## Managing the CIM server

---

You can use SMI-S Agent to start, stop, and restart the CIM server and to review its status.

### Stopping and starting the CIM server

You can use SMI-S Agent to stop and start the CIM server.

#### Before you begin

You must already have login credentials as root (Linux) or Administrator (Windows).

#### Steps

1. Log in to the host system as root or Administrator.
2. Enter the following commands: `smis cimserver stop` and `smis cimserver start`.

After entering the `smis cimserver start` command, a status message appears every three minutes. If an attempt to reach the CIM server fails, five more attempts are made to contact the server.

#### Related tasks

[Restarting the CIM server](#) on page 24

[Reviewing the CIM server status](#) on page 25

### Restarting the CIM server

You can use SMI-S Agent to restart the CIM server. After entering the `cimconfig` command or creating an environment variable for an SMI-S Agent configuration value, you must restart the CIM server (using the `smis cimserver restart` command).

#### Before you begin

Make sure that you have login credentials as root (Linux) or Administrator (Windows).

#### Steps

1. Log in as root or Administrator.
2. Enter the following at the command prompt:

```
smis cimserver restart
```

**Related tasks**

[Stopping and starting the CIM server](#) on page 24

[Reviewing the CIM server status](#) on page 25

## Reviewing the CIM server status

You can use SMI-S Agent to review whether the CIM server is running.

**Before you begin**

Make sure that you have login credentials as root (Linux) or Administrator (Windows).

**Steps**

1. Log in as root or Administrator.
2. Enter the following at the command prompt:

```
smis cimserver status
```

**Related tasks**

[Stopping and starting the CIM server](#) on page 24

[Restarting the CIM server](#) on page 24

## Managing storage systems

You can use SMI-S Agent commands to add, delete, and list storage systems in the CIMOM repository. You can also list NFS and CIFS exports and exported LUNs for storage systems. Performing these tasks from the SMI-S Agent CLI enables you to quickly manage and verify whether storage systems are running properly.

### Adding storage systems to the CIMOM repository

Before you configure SMI-S Agent, you must add at least one storage system to the CIMOM repository.

#### Step

1. Enter one of the following at the command prompt:

To add a storage system with an...	Enter this command...
HTTP connection between the agent and the storage system	<code>smis add storage_sys storage_sys_user</code>
HTTPS connection between the agent and the storage system	<code>smis addsecure storage_sys storage_sys_user</code>

The command waits for up to 15 minutes for the agent to update the cache and respond.

For clustered Data ONTAP, the IP address specified must be for a Storage Virtual Machine (SVM), not a cluster, and the credentials must be for a vsadmin user. SMI-S Agent does not support cluster IP addresses or node management IP addresses, nor does it support not admin or node SVMs (only cluster SVMs).

#### Examples: Adding a storage system

To add a storage system with an IP address of 10.32.1.4 over HTTP, enter the following command:

```
smis add 10.32.1.4 vsadmin
```

To add a storage system with an IP address of 10.32.1.4 over HTTPS, enter the following command:

```
smis addsecure 10.32.1.4 vsadmin
```

**Note:** Operating systems using languages other than U.S. English cannot use the add or addsecure commands.

To add a storage system with an IP address of 10.32.1.4 over HTTP on a non-English-language system, enter the following command:

```
cimcli -n root/ontap ci ontap_filerdata hostname="10.32.1.4"
username="root" password="PasSw0Rd" port=80 comMechanism="HTTP" --
timeout 180
```

To add a storage system with an IP address of 10.32.1.4 over HTTPS on a system using languages other than U.S. English, enter the following command:

```
cimcli -n root/ontap ci ontap_filerdata hostname="10.32.1.4"
username="root" password="PasSw0Rd" port=443 comMechanism="HTTPS" --
timeout 180
```

**Note:** Only for 7-Mode Data ONTAP, replace *vsadmin* with *root*.

### After you finish

When operating in clustered Data ONTAP environments (requires 8.2 or 8.2.1), make sure that you have correctly followed the guidelines for setting up your Storage Virtual Machines (SVMs) in the *Clustered Data ONTAP System Administration Guide for Vserver Administrators*. SMI-S Agent only supports cluster SVMs, not admin or node SVMs.

### Related tasks

[Deleting storage systems from the CIMOM repository](#) on page 28

[Listing storage systems in the CIMOM repository](#) on page 28

### Related references

[Issue entering passwords containing special characters](#) on page 85

## Listing NFS and CIFS exports for storage systems

You can get a list of NFS and CIFS exports for storage systems.

### Step

1. Enter the following at the command prompt:

```
smis exports
```

## Listing storage systems in the CIMOM repository

You can verify the storage systems in the CIMOM repository before adding or deleting storage systems.

### Step

1. Enter the following at the command prompt:

```
smis list
```

### Example: Listing storage systems in the CIMOM repository

To list storage systems, enter the following command:

```
smis list
```

### Related tasks

[Adding storage systems to the CIMOM repository](#) on page 18

[Deleting storage systems from the CIMOM repository](#) on page 28

## Listing exported LUNs for storage systems

You can list exported LUNs for storage systems.

### Step

1. Enter the following at the command prompt:

```
smis luns
```

## Deleting storage systems from the CIMOM repository

If you no longer need to manage a storage system, you can delete it from the CIMOM repository. Because SMI-S Agent gathers information from all storage systems in the CIMOM repository, you should delete an unused storage system from the repository to maintain optimal performance.

### Step

1. Enter the following at the command prompt:

```
smis delete storage_sys
```

**Example: Deleting a storage system**

To delete a storage system with an IP address of 10.32.1.4, enter the following command:

```
smis delete 10.32.1.4
```

**Related tasks**

*[Adding storage systems to the CIMOM repository](#)* on page 18

*[Listing storage systems in the CIMOM repository](#)* on page 28

## Managing CIM server users

---

You can use SMI-S Agent to add and remove CIM users that are authorized to use the CIM server. You can also list all current CIM users and modify their passwords.

### Adding CIM server users

You can use SMI-S Agent to authorize CIM users to use the CIM server.

#### Before you begin

You must already have login credentials as root (Linux) or Administrator (Windows).

#### Steps

1. Log in as root or Administrator.
2. For Windows, create a local user account, and add the user to the Administrators group.  
For more information, see your system documentation.
3. Enter the following at the command prompt:  

```
cimuser -a -u user_name
```
4. When prompted, enter and reenter the password.

#### Example: Adding a CIM server user

To add a CIM server user named *chris*, enter the following command:

```
cimuser -a -u chris
```

#### Related tasks

[Removing CIM server users](#) on page 32

[Listing CIM server users](#) on page 31

[Managing CIM server user passwords](#) on page 31

## Listing CIM server users

If you want to check the current CIM users that are authorized to use the CIM server, you can use the `cimuser -l` command.

### Before you begin

You must already have login credentials as root (Linux) or Administrator (Windows).

### Steps

1. Log in as root or Administrator.
2. Enter the following at the command prompt:

```
cimuser -l
```

### Related tasks

[Adding CIM server users](#) on page 30

[Removing CIM server users](#) on page 32

[Managing CIM server user passwords](#) on page 31

## Managing CIM server user passwords

After adding CIM users, you can modify their passwords if you need to reset the passwords.

### Before you begin

You must already have login credentials as root (Linux) or Administrator (Windows).

### Steps

1. Log in as root or Administrator.
2. Enter the following at the command prompt:  

```
cimuser -m -u user_name
```
3. When prompted, enter and reenter the old password.
4. When prompted, enter and reenter the new password.

#### **Example: Modifying a CIM server user's password**

To change the password for the CIM server user named `chris`, enter the following command:

```
cimuser -m -u chris
```

### Related references

[Issue entering passwords containing special characters](#) on page 85

## Removing CIM server users

You can use SMI-S Agent to remove CIM server users so that they are not authorized to use the CIM server.

### Before you begin

You must have login credentials as root (Linux) or Administrator (Windows).

### Steps

1. Log in as root or Administrator.
2. Enter the following at the command prompt:

```
cimuser -r -u user_name
```

#### **Example: Removing a CIM server user**

To remove the CIM server user named chris, enter **cimuser -r -u chris**.

### Related tasks

[Adding CIM server users](#) on page 30

[Listing CIM server users](#) on page 31

[Managing CIM server user passwords](#) on page 31

# Managing CIMOM configuration settings

---

You can use SMI-S Agent to manage the CIMOM configuration, such as enabling or disabling HTTP and HTTPS connections and changing HTTP and HTTPS port numbers.

## Enabling HTTP connections

By default, HTTP connections are enabled. Enabling HTTP connections allows clients to connect to the CIM server without using SSL encryption. Unencrypted traffic is allowed. If your environment requires encrypted traffic to and from the CIM server, disable HTTP connections and verify that HTTPS connections for the CIM server are enabled.

### Steps

1. Access SMI-S Agent.
2. Enter the following command:  

```
cimconfig -s enableHttpConnection=true -p
```
3. Restart the CIM server by entering the following command:  

```
smis cimserver restart
```

### Related tasks

- [Disabling HTTP connections](#) on page 33
- [Enabling HTTPS connections](#) on page 34
- [Disabling HTTPS connections](#) on page 34

## Disabling HTTP connections

By default, HTTP connections are enabled, which allows clients to connect to the CIM server without using SSL encryption. Unencrypted traffic will be allowed. If your environment requires encrypted traffic to and from the CIM server, disable HTTP connections and verify that HTTPS connections for the CIM server are enabled.

### Steps

1. Access SMI-S Agent.
2. Enter the following command:  

```
cimconfig -s enableHttpConnection=false -p
```
3. Restart the CIM server by entering the following command:

```
smis cimserver restart
```

### Related tasks

[Enabling HTTP connections](#) on page 33

[Enabling HTTPS connections](#) on page 34

[Disabling HTTPS connections](#) on page 34

## Enabling HTTPS connections

By default, HTTPS connections are enabled, which allows clients to connect to the CIM server using SSL encryption. If you previously disabled HTTPS connections and want to allow SSL-encrypted traffic, you can enable HTTPS connections again.

### Steps

1. Access SMI-S Agent.
2. Enter the following command:

```
cimconfig -s enableHttpsConnection=true -p
```

3. Restart the CIM server by entering the following command:

```
smis cimserver restart
```

### Related tasks

[Disabling HTTPS connections](#) on page 34

[Enabling HTTP connections](#) on page 33

[Disabling HTTP connections](#) on page 33

## Disabling HTTPS connections

By default, HTTPS connections are enabled, which allows clients to connect to the CIM server using SSL encryption. You can disable HTTPS connections so that unencrypted traffic is allowed. You should consider your environment's security needs before disabling HTTPS connections.

### Steps

1. Access SMI-S Agent.
2. Enter the following command:

```
cimconfig -s enableHttpsConnection=false -p
```

3. Restart the CIM server by entering the following command:

```
smis cimserver restart
```

**Related tasks**

[Enabling HTTPS connections](#) on page 34

[Enabling HTTP connections](#) on page 33

[Disabling HTTP connections](#) on page 33

## Changing the HTTP port number

By default, the HTTP port number is 5988. You can change the HTTP port number.

**Steps**

1. Access SMI-S Agent.
2. Enter the following command:  

```
cimconfig -s httpPort=new_port_number -p
```
3. Restart the CIM server by entering the following command:  

```
smis cimserver restart
```

**Example: Changing the HTTP port number**

To change the HTTPS port number to 5555, enter the following command:

```
cimconfig -s httpPort=5555 -p  
smis cimserver restart
```

**Related tasks**

[Changing the HTTPS port number](#) on page 35

## Changing the HTTPS port number

By default, the HTTPS port number is 5989. You can change the HTTPS port number.

**Steps**

1. Access SMI-S Agent.
2. Enter the following command:  

```
cimconfig -s httpsPort=new_port_number -p
```
3. Restart the CIM server by entering the following command:  

```
smis cimserver restart
```

**Example: Changing the HTTPS port number**

To change the HTTPS port number to 5556, enter the following commands:

```
cimconfig -s httpsPort=5556 -p  
smis cimserver restart
```

**Related tasks**

*[Changing the HTTP port number](#)* on page 35

# Managing logging and tracing

---

You can configure how SMI-S Agent manages log and trace files, such as specifying the levels of messages to be logged and the directory to which logs are saved, and specifying the components to be traced, the target to which trace messages are written, the level of tracing, and the trace file location.

## Configuring log settings

You can change the location of and the level of system messages that are written to the CIM server log. For example, you can choose to have logs stored in a directory that you specify and have only fatal system messages written to the CIM server log.

## Changing the system message log directory

By default, the system message logs are located in the `logs` directory in the directory in which SMI-S Agent is installed. If you prefer to have logs saved to a directory that you specify, you can use the `cimconfig` command.

### Steps

1. Access SMI-S Agent.
2. Enter the following command:

```
cimconfig -s logdir=new_log_directory -p
```

If the `new_log_directory` contains space, you must enclose it in quotation marks: "`new log directory`".

3. Restart the CIM server:

```
smis cimserver restart
```

### Example: Changing the system message log directory

To change the directory in which logs are stored to `serverlogs`, enter the following commands:

```
cimconfig -s logdir=serverlogs -p
```

```
smis cimserver restart
```

### Related tasks

[Changing the system message logging level](#) on page 38

**Related references**

[Logging levels](#) on page 38

**Changing the system message logging level**

By default, all system messages are logged. Using the `cimconfig` command, you can change the logging level so that fewer messages are logged. For example, you can specify that only severe and fatal system messages are logged.

**Steps**

1. Access SMI-S Agent.
2. Enter the following command:

```
cimconfig -s logLevel=new_log_level -p
```

3. Restart the CIM server:

```
smis cimserver restart
```

**Example: Changing the system message logging level**

To change the logging level to INFORMATION, enter the following commands:

```
cimconfig -s logLevel=INFORMATION -p
```

```
smis cimserver restart
```

**Related tasks**

[Changing the system message log directory](#) on page 37

**Related references**

[Logging levels](#) on page 38

**Logging levels**

You can specify the types of messages that are logged (for example, you want only fatal system messages to be logged).

You can configure the logging level to one of the following:

<b>TRACE</b>	Saves trace messages in the <code>cimserver_standard</code> log.
<b>INFORMATION</b>	Logs all (informational, warning, severe, and fatal) system messages.
<b>WARNING</b>	Logs warning, severe, and fatal system messages.
<b>SEVERE</b>	Logs severe and fatal system messages

**FATAL** Logs only fatal system messages.

### Related tasks

[Changing the system message log directory](#) on page 37

[Changing the system message logging level](#) on page 38

## Managing tracing

You can configure how SMI-S Agent manages trace files, such as specifying the components to be traced, the target to which trace messages are written, the level of tracing, and the trace file location.

### Specifying trace settings

Having tracing enabled is important for gathering information for troubleshooting. However, having tracing enabled can impact performance, so carefully consider what must be traced and how long you need tracing enabled.

#### Steps

1. Access SMI-S Agent.
2. To specify the components to be traced, enter the following command:  

```
cimconfig -s traceComponents=components -p
```
3. To specify the trace facility, enter the following command:  

```
cimconfig -s traceFacility=facility -p
```
4. To specify the location of the trace file, enter the following command:  

```
cimconfig -s traceFilePath=path_name -p
```
5. To specify the trace level, enter the following command:  

```
cimconfig -s traceLevel=level -p
```
6. To restart the CIM server, enter the following command:  

```
smis cimserver restart
```

#### Related tasks

[Specifying trace file size](#) on page 41

[Specifying the number of trace files saved](#) on page 41

#### Related references

[Trace setting values](#) on page 40

## Trace setting values

You can specify the components to trace, the trace target, and the level of tracing. Optionally, you can change the name and location of the trace file if you do not want to use the default trace file name and location.

You can configure the following trace settings:

**traceComponents** Specifies the components to be traced. By default, all components are traced.

**traceFacility** Specifies the target to which trace messages are written:

- File  
This is the default value, which specifies that trace messages are written to the file specified by the `traceFilePath` configuration option.
- Log  
Specifies that trace messages are written to the `cimserver_standard` log file.

**traceFilePath** Specifies the location of the trace file. By default, the trace file is named `cimserver.trc` and is located in the `traces` directory.

**traceLevel** Specifies the level of tracing. By default, tracing is disabled.

Trace level	Trace messages written
0	Tracing is disabled.
1	Severe and log messages.
2	Basic flow trace messages (low data detail)
3	Inter-function logic flow (medium data detail)
4	High data detail
5	High data detail + Method enter and exit

### Related tasks

[Specifying trace settings](#) on page 39

[Specifying trace file size](#) on page 41

[Specifying the number of trace files saved](#) on page 41

## Specifying trace file size

If tracing is enabled, the maximum trace file size is 100 MB by default. You can increase or decrease the maximum trace file size by setting the environment variable `PEGASUS_TRACE_FILE_SIZE`. The value of the trace file size can be 10 MB through 2 GB.

### Steps

1. Do one of the following:

If you are using...	Then do this...
<b>Linux</b>	Set the <code>PEGASUS_TRACE_FILE_SIZE</code> environment variable to the new trace file size in bytes.
<b>Windows</b>	Create a system or user environment variable named <code>PEGASUS_TRACE_FILE_SIZE</code> with the new trace file size in bytes. (For information about creating environment variables, see your Windows documentation.)

2. Restart the CIM server by using the `smis cimserver restart` command.

#### Example: Specifying the trace file size (Linux)

To specify the trace file size on Linux, enter the following commands:

```
export PEGASUS_TRACE_FILE_SIZE=20971520
smis cimserver restart
```

### Related tasks

[Specifying trace settings](#) on page 39

[Specifying the number of trace files saved](#) on page 41

### Related references

[Trace setting values](#) on page 40

## Specifying the number of trace files saved

If tracing is enabled, seven trace files are saved by default. If you need more trace files saved, you can increase the maximum number of trace files saved by setting the environment variable `PEGASUS_TRACE_FILE_NUM`. If you increase the maximum number of trace files saved, you must ensure that the system has enough space on its hard drive to accommodate the trace files.

### About this task

If tracing is enabled, tracing information is written to the `cimserver.trc` file. The trace files are rotated. When the `cimserver.trc` file reaches the maximum trace file size, its contents are moved to

the `cimserver.trc.n` file. By default, *n* is a value from zero through five. If you need more trace files saved, you increase the value of *n*.

### Steps

1. Do one of the following:

---

**If you are using... Then do this...**

---

<b>Linux</b>	Set the <code>PEGASUS_TRACE_FILE_NUM</code> environment variable to the new number of trace files saved.
--------------	--

---

<b>Windows</b>	Create a system or user environment variable named <code>PEGASUS_TRACE_FILE_NUM</code> with the new number of trace files saved. (For information about creating environment variables, see your Windows documentation.)
----------------	--

---

2. Restart the CIM server by using the `smis cimserver restart` command.

#### Example: Specifying the number of trace files saved (Linux)

To specify the number of trace files saved, enter the following commands:

```
export PEGASUS_TRACE_FILE_NUM=10
smis cimserver restart
```

### Related tasks

[Specifying trace settings](#) on page 39

[Specifying trace file size](#) on page 41

### Related references

[Trace setting values](#) on page 40

## Enabling or disabling audit logging for SMI-S commands

All incoming SMI-S commands are recorded in audit log files. You can enable or disable the logging of these incoming commands by setting a dynamic configuration property.

### About this task

Audit log data can provide a record of access, activity, and configuration change for a CIM server. The contents of the audit file include what command was issued, by whom the command was issued, and what time the command was issued. The audit log enables auditors to track activities of WBEM client operations and provider usages.

The dynamic configuration property `enableAuditLog` enables or disables audit logging at run time. By default, `enableAuditLog` is set to `true`.

The common practice is to leave audit logging enabled.

### Step

1. To enable or disable audit logging of SMI-S commands at runtime, reset the dynamic configuration property as follows:
  - To enable SMI-S audit logging, enter `cimconfig -s enableAuditLog=true`.
  - To disable SMI-S audit logging, enter `cimconfig -s enableAuditLog=false`.

### Result

The audit log file, `cimserver_auditlog`, is stored in the `/usr/ontap/smis/pegasus/logs` directory in Linux and the `C:\Program Files (x86)\ontap\smis\pegasus\logs` directory in Windows.

The maximum size of the audit log file is 10 MB. After reaching the maximum limit, the file is renamed `cimserver_auditlog.0`, and a new `cimserver_auditlog` file is created to collect the newer audit logging information.

SMI-S Agent maintains the six most recent audit log files: `cimserver_auditlog.0` through `cimserver_auditlog.5`.

## Managing SMI-S Agent advanced settings

---

You can manage advanced settings for SMI-S Agent, such as specifying the SMI-S cache refresh interval, ONTAPI timeout, and maximum number of threads per message service queue.

### Specifying the SMI-S Agent cache refresh interval

By default, SMI-S Agent gets information from storage systems every 5 minutes (300 seconds). You can set the cache refresh interval to a value from 300 through 86400 seconds (24 hours).

#### Steps

1. Do one of the following:

If you are using...	Then do this...
<b>Linux</b>	Set the <code>CACHE_REFRESH_SEC</code> environment variable to the new refresh interval value (in seconds).
<b>Windows</b>	Create a system or user environment variable named <code>CACHE_REFRESH_SEC</code> with the new refresh interval value (in seconds). (For information about creating environment variables, see your Windows documentation.)

2. Restart the CIM server by using the `smis cimserver restart` command.

### Specifying the concrete job lifetime value

Some storage system operations, such as aggregate creation and cloning or splitting a LUN, are asynchronous. SMI-S Agent tracks the progress of these operations by creating "concrete jobs". By default, SMI-S Agent keeps concrete job information for 60 minutes (3600 seconds) after the completion of the job. You can set the concrete job lifetime to a value from 3600 through 86400 seconds (24 hours).

#### Step

1. Do one of the following:

If you are using...	Then do this...
<b>Linux</b>	Set the <code>JOB_LIFETIME_SEC</code> environment variable to the new lifetime value (in seconds).

---

**If you are using... Then do this...**


---

<b>Windows</b>	Create a system or user environment variable named <code>JOB_LIFETIME_SEC</code> with the new lifetime value (in seconds). (For information about creating environment variables, see your Windows documentation.)
----------------	--

---

## Specifying the ONTAPI timeout value

SMI-S Agent makes ONTAP API (ONTAPI) calls to storage systems. By default, the ONTAPI timeout is 60 seconds. You can increase or decrease the timeout value.

### Step

1. Do one of the following:

---

**If you are using... Then do this...**


---

<b>Linux</b>	Set the <code>ONTAPI_TIMEOUT_SEC</code> environment variable to the new timeout value (in seconds).
<b>Windows</b>	Create a system or user environment variable named <code>ONTAPI_TIMEOUT_SEC</code> with the new timeout value (in seconds). (For information about creating environment variables, see your Windows documentation.)

---

### Related references

*Filer return: No ontap element in response* on page 87

## Specifying the maximum number of threads per message service queue

By default, SMI-S Agent allows 80 threads per message service queue. You can specify the maximum thread value as 1 through 5000. Increasing the maximum number of threads can impact the SMI-S Agent machine's performance, so carefully consider whether you need to increase this value.

### About this task

If your trace file shows many lines of `insufficient resources` output, try increasing the number of threads in increments of 500.

If you set the maximum number of threads to less than 20, using the command `cimcli -n root/ontap niall` causes the agent to become unresponsive and to return the message `Insufficient threadpool` in the trace file. If this occurs, increase the number of threads in increments of 500 and restart the agent.

**Steps**

1. Do one of the following:

If you are using...	Then do this...
<b>Linux</b>	Set the <code>PEGASUS_MAX_THREADS_PER_SVC_QUEUE</code> environment variable to the new maximum thread value.
<b>Windows</b>	Create a system or user environment variable named <code>PEGASUS_MAX_THREADS_PER_SVC_QUEUE</code> with the new maximum thread value. (For information about creating environment variables, see your Windows documentation.)

2. Restart the CIM server by using the `smis cimserver restart` command.

## Disabling indications in SMI-S Agent

When `PEGASUS_DISABLE_INDICATIONS` is set to `true`, then Alert, FileSystem Quota, and Lifecycle indications are disabled on SMI-S Agent. Indications support is only available for Windows.

**Steps**

1. Set the `PEGASUS_DISABLE_INDICATIONS` environment variable to `true`.
2. Restart SMI-S Agent.

`ONTAP_AlertIndication`, `ONTAP_FSQuotaIndication`, and Lifecycle indications are disabled on SMI-S Agent.

# Managing SLP

---

The SLP service broadcasts WBEM services. When the SLP service is enabled, client applications can discover the CIMOM server. You can also specify SLP configuration settings using the `slp.conf` file.

If the SLP service is not already enabled, you can start the SLP service by using the `smis slpd start` command. To stop the SLP service, use the `smis slpd stop` command.

## Specifying SLP configuration options

You can edit the `slp.conf` configuration file to manage the service location protocol daemon (SLPD) service.

### Editing the `slp.conf` file

The `slp.conf` configuration file provides additional options that enable you to manage a service location protocol daemon (SLPD) server.

#### Location

- Linux—`installation_directory/ontap/smis/pegasus/cfg`
- Windows—`installation_directory\ontap\smis\pegasus\cfg`

#### Privilege level

A user with a valid user name and password

#### Description

The `slp.conf` configuration file enables you to change the number of interfaces a host listens to for SLP requests and the number of IP addresses a host uses for multicasting.

Use a text editor to open the `slp.conf`.

#### Parameters

##### `interfaces`

Specifies the maximum number of IP addresses a host can listen to for SLP requests.

##### `multicast`

Specifies the maximum number of IP addresses a host might use for multicasting. Use this parameter when configuring interfaces for SLP multicast traffic on multihomed systems.

**BroadcastOnly**

Forces the use of the broadcast option, instead of using the multicast option, when sending messages over SLP.

**securityEnabled**

Enables security for received URLs and attribute lists.

**Example**

The following is an abbreviated example of the `slp.conf` configuration file:

```
bin::> vi slp.conf
#####
# OpenSLP configuration file
# Format and contents conform to specification in IETF RFC 2614 so
# the comments use the language of the RFC. In OpenSLP, SLPD
# operates as an SA and a DA. The SLP UA functionality is
# encapsulated by SLPLIB.
#####
#-----
# Static Scope and DA Configuration
#-----
# This option is a comma delimited list of strings indicating the
# only scopes a UA or SA is allowed when making requests or
# registering or the scopes a DA must support. (default value is
# "DEFAULT");net.slp.useScopes = myScope1, myScope2, myScope3

# Allows administrator to force UA and SA agents to use specific
# DAs. If this setting is not used dynamic DA discovery will be used
# to determine which DAs to use. (Default is to use dynamic DA
# discovery)
```

# CIMOM commands

---

You can use the `cimconfig` command to configure CIMOM settings, such as enabling and disabling HTTP and HTTPS and changing the HTTP and HTTPS port numbers.

## cimconfig command options

You can use the `cimconfig` command to manage CIMOM configuration settings. After entering the `cimconfig` command or creating an environment variable for an SMI-S Agent configuration value, you must stop and then restart the CIM server (using the `smis cimserver stop` and `smis cimserver start` commands).

### Syntax

```
cimconfig options
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

### Options

**-c**

Specifies that the configuration setting applies to the current CIMOM configuration.

**-d**

Specifies that the configuration setting applies to the default CIMOM configuration.

**-g**

Gets the value of a specified configuration property.

**-h, --help**

Displays help for the `cimconfig` command.

**-l**

Lists all CIMOM configuration properties.

**-p**

Specifies that the configuration setting is applied when the CIM server is next started.

**-s**

Sets the specified configuration property value.

**-u**

Resets the configuration property to its default value.

**--version**

Displays the version of the CIM server.

### **Example**

The following example changes the maximum log file size to 15000 KB:

```
bin::>cimconfig -s maxLogFileSizeKBytes=15000
Current value for the property maxLogFileSizeKBytes is set to
"15000" in CIMServer.
bin::>smis cimserver restart
```

# CIM user commands

---

You can use the `cimuser` command to add, delete, and list CIM server users, as well as manage their passwords.

## cimuser command options

You can use the `cimuser` options to add, remove, modify, and list CIM server users.

### Syntax

```
cimuser options
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

### Options

**-a**

Adds a CIM user.

**-h, --help**

Displays help for the `cimuser` command.

**-l**

Lists CIM users.

**-m**

Modifies a CIM user's password. The password can be between 4 through 32 characters long.

**-n**

Creates a new password for the specified user. The password can be between 4 through 32 characters long.

**-r**

Removes a specified CIM user.

**-u**

Specifies a CIM user name.

**--version**

Displays the version of the CIM server.

**-w**

Specifies the password for the specified user.

### **Example**

The following example creates a CIM user named sydney with a password of password1:

```
bin::>cimuser -a -u sydney -w password1
User added successfully.
```

## SMI-S Agent commands

---

You can use the `smis` command to manage storage systems and to display information about the CIM object manager.

Help is available for the `smis` command with the `-help` option.

**`smis -help`**

Displays a command summary.

**`smis -help examples`**

Displays usage examples.

**`smis -help subcommand`**

Displays help for the specified subcommand.

The default timeout value for the `smis` tool is 180 seconds.

### smis add

The `smis add` command adds a storage system with an HTTP connection to your configuration to enable you to manage and monitor the device. Unless it is necessary, you should use `smis addsecure` instead of `smis add`.

#### Syntax

```
smis add storage_sys storage_sys_user [-t {http | https}]
```

#### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

#### Privilege level

Root or sudo (Linux) or Administrator (Windows)

#### Parameters

***storage\_sys***

Name or IP address of the storage system that you are adding

If you are specifying the IP address, you can use IPv4 or IPv6. Both compressed and full IPv6 addresses are supported, for example

1001:0002:0000:0000:0000:0000:0003:0004 or 1001:2::3:4.

***storage\_sys\_user***

User name of the administrator who manages the storage system that you are adding

***storage\_sys\_pwd***

Optional: password of the administrator who manages the storage system that you are adding

As a best practice, do not use this parameter for security reasons. This parameter is provided only for automation and backward compatibility.

**`[-t {http | https}]`**

Protocol to be used: HTTPS (default) or HTTP

### Storage system-agent and agent-client protocol

The `smis add` and `smis addsecure` commands determine the protocol used between the storage system and the agent. The `[-t {http | https}]` parameter determines the protocol used between the agent and the client.

The `smis addsecure` command and the `[-t {https}]` parameter connects using SSL encryption, and unencrypted traffic is not allowed. The `smis add` command and the `[-t {http}]` parameter connects without using SSL encryption, and unencrypted traffic is allowed.

You should consider your environment's security needs before disabling SSL-encrypted connections.

#### Example

The following is an example of the `smis add` command using IPv4:

```
bin::>smis add 10.32.1.4 user2
```

If no error message appears, the storage system was successfully added.

#### Example

The following are examples of the `smis add` command using IPv6:

```
bin::>smis add 1001:0002:0000:0000:0000:0000:0003:0004 user2
```

```
bin::>smis add 1001:2::3:4 user2
```

If no error message appears, the storage system was successfully added.

### Related references

[Issue entering passwords containing special characters](#) on page 85

## smis addsecure

The `smis addsecure` command adds a storage system with an HTTPS connection to your configuration to enable you to manage and monitor the device. Unless is it necessary, you should use `smis addsecure` instead of `smis add`.

### Syntax

```
smis addsecure storage_sys storage_sys_user [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

### Parameters

#### *storage\_sys*

Name or IP address of the storage system that you are adding

If you are specifying the IP address, you can use IPv4 or IPv6. Both compressed and full IPv6 addressees are supported, for example

`1001:0002:0000:0000:0000:0000:0003:0004` or `1001:2::3:4`.

#### *storage\_sys\_user*

User name of the administrator who manages the storage system that you are adding

#### *storage\_sys\_pwd*

Optional: password of the administrator who manages the storage system that you are adding

As a best practice, do not use this parameter for security reasons. This parameter is provided only for automation and backward compatibility.

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

### Storage system-agent and agent-client protocol

The `smis add` and `smis addsecure` commands determine the protocol used between the storage system and the agent. The `[-t {http | https}]` parameter determines the protocol used between the agent and the client.

The `smis addsecure` command and the `[-t {https}]` parameter connects using SSL encryption, and unencrypted traffic is not allowed. The `smis add` command and the `[-t {http}]` parameter connects without using SSL encryption, and unencrypted traffic is allowed.

You should consider your environment's security needs before disabling SSL-encrypted connections.

#### Example

The following is an example of the `smis addsecure` command using IPv4:

```
bin::>smis addsecure 10.32.1.4 user2 password2
```

If no error message appears, the storage system was successfully added.

#### Example

The following are examples of the `smis addsecure` command using IPv6:

```
bin::>smis addsecure 1001:0002:0000:0000:0000:0000:0003:0004 user2
password2
```

```
bin::>smis addsecure 1001:2::3:4 user2 password2
```

If no error message appears, the storage system was successfully added.

### Related references

[Issue entering passwords containing special characters](#) on page 85

## smis cimom

The `smis cimom` command describes the CIM object manager.

### Syntax

```
smis cimom [-t {http | https}]
```

### Location

- Linux: *installation\_directory/ontap/smis/pegasus/bin*
- Windows: *installation\_directory\ontap\smis\pegasus\bin*

### Privilege level

A user with a valid user name and password

### Parameters

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

### Example

The following is an example of the `smis cimom` command and its output:

```
bin::>smis cimom
PG_ObjectManager.CreationClassName="PG_ObjectManager",
Name="PG:1297121114307-10-229-89-243",
SystemCreationClassName="PG_ComputerSystem",SystemName="10.1.2.3"
```

## smis cimserver

The `smis cimserver` command starts, stops, restarts, or gets status of the CIM server.

### Syntax

```
smis {start | stop | restart | status}
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

Root or sudo (Linux) or Administrator (Windows)

**Parameters****start**

Start the CIM server.

**stop**

Stop the CIM server.

**restart**

Restart the CIM server.

**status**

Get the status of the CIM server.

**Example**

The following command starts the CIM server:

```
bin::>smis cimserver start
Data ONTAP SMI-S Agent started.
```

The following command stops the CIM server:

```
bin::>smis cimserver stop
Data ONTAP SMI-S Agent stopped.
```

**smis class**

The `smis class` command lists information about a specified class or all classes.

**Syntax**

```
smis class name_space {niall | {ei | ni | gi | gc} class_name}} [-t
{http | https}]
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

A user with a valid user name and password

**Parameters*****name\_space***

Name space supported by the CIMOM

**niall**

Enumerate all instance names

**ei**

Enumerate instances for a class

**ni**

Enumerate instance names for a class

**gi**

Get instances for a class

**gc**

Get class for a class name

***class\_name***

Name of the class for which you want information

**[-t {http | https}]**

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following is an example of the `smis class` command and its abbreviated output:

```
bin::>smis class root/ontap gi CIM_StorageVolume
1:
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID="P3LfgJ
dC-mN5",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
2:
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID="P3LfgJ
cmzpHt",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
3:
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID="P3LfgJ
c30t26",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
4:
```

```

ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID="P3LfgJ
cSgbiT",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
5:
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID="P3LfgJ
cSgrA9",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"

```

## smis config show

The `smis config show` command lists the current CIM server configuration information.

### Syntax

```
smis config show
```

### Location

- Linux: `installation_directory/ontap/smis/pegasus/bin`
- Windows: `installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

### Example

The following example shows `smis config show` output:

```

[root@smis-rhel5x64-07 ~]# smis config show
slp:
Current value: true

tracelevel:
Current value: 4

traceComponents:
Current value: XmlIO,Thread, IndicationGeneration, DiscardedData,
CMPIProvider, LogMessages, ProviderManager, SSL, Authentication,
Authorization

traceFilePath:
Current value: traces/cimserver.trc

enableAuditLog:
Current value: true

logLevel:
Current value: WARNING

```

```

sslKeyFilePath:
Current value: cimom.key

sslCertificateFilePath:
Current value: cimom.cert

passwordFilePath:
Current value: cimserver.passwd

enableHttpConnection:
Current value: true

enableHttpsConnection:
Current value: true

httpPort:
Current value: 5988

httpsPort:
Current value: 5989

enableAuthentication:
Current value: true

```

## smis crp

The `smis crp` command describes CIM registered profiles supported by SMI-S Agent, including Data ONTAP profiles.

### Syntax

```
smis crp [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

```
[-t {http | https}]
```

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following is an example of the `smis crp` command and its output:

```
C:\Program Files (x86)\Ontap\smis\pegasus\bin>smis crp

PG_RegisteredProfile.InstanceID="SNIA:Profile Registration:1.4.0"
PG_RegisteredProfile.InstanceID="SNIA:SMI-S:1.4.0"
PG_RegisteredProfile.InstanceID="SNIA:SMI-S:1.5.0"
PG_RegisteredProfile.InstanceID="SNIA:SMI-S:1.6.0"
PG_RegisteredProfile.InstanceID="SNIA:Server:1.4.0"
PG_RegisteredProfile.InstanceID="SNIA:Server:1.5.0"
PG_RegisteredProfile.InstanceID="SNIA:Server:1.6.0"
PG_RegisteredProfile.InstanceID="DMTF:Profile Registration:1.4.0"
PG_RegisteredProfile.InstanceID="DMTF:Indications:1.4.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.4.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.5.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.6.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.4.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.5.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.6.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Object Manager Adapter:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:iSCSI Target Ports:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:iSCSI Target Ports:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Software:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Multiple Computer System:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Access Points:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Target Port:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Masking and Mapping:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Masking and Mapping:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Server Performance:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Server Performance:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Physical Package:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Physical Package:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Health:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FileSystem:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Storage:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export Manipulation:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File System Manipulation:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Filesystem Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Server Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FileSystem Quotas:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Job Control:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Job Control:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Location:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:NAS Network Port:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Replication Services:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Replication Services:1.6.0"
```

```

ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Capacity Utilization:1.4.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:SCNAS:1.6.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:SCNAS:1.5.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:SCNAS:1.4.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Array:1.6.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Array:1.5.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Array:1.4.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:NAS Head:1.6.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:NAS Head:1.5.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:NAS Head:1.4.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Storage Virtualizer:1.6.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Storage Virtualizer:1.5.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Storage Virtualizer:1.4.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Thin Provisioning:1.6.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Thin Provisioning:1.5.0"
ONTAP_RegisteredProfile.InstanceID="ONTAP:Thin Provisioning:1.4.0"

```

## smis crsp

The `smis crsp` command describes CIM registered subprofiles supported by Data ONTAP SMI-S Agent, including Data ONTAP subprofiles.

### Syntax

```
smis crsp [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

```
[-t {http | https}]
```

Protocol to be used: HTTPS (default) or HTTP

### Example

The following is an example of the `smis crsp` command and its abbreviated output:

```

C:\Program Files (x86)\Ontap\smis\pegasus\bin>smis crsp

PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.4.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.5.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Indication:1.6.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.4.0"

```

```

PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.5.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Software:1.6.0"
PG_RegisteredSubProfile.InstanceID="SNIA:Object Manager Adapter:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:iSCSI Target Ports:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:iSCSI Target Ports:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Software:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Disk Drive Lite:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Multiple Computer System:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Access Points:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Target Port:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FC Initiator Ports:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Masking and Mapping:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Masking and Mapping:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Extent Composition:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Server Performance:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Server Performance:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Physical Package:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Physical Package:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Block Services:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Health:1.2.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FileSystem:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Storage:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export Manipulation:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Export Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File System Manipulation:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Filesystem Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:File Server Manipulation:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:FileSystem Quotas:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Job Control:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Job Control:1.3.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Location:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:NAS Network Port:1.4.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Replication Services:1.5.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Replication Services:1.6.0"
ONTAP_RegisteredSubProfile.InstanceID="ONTAP:Capacity Utilization:1.4.0"

```

## smis delete

The `smis delete` command deletes a storage system.

### Syntax

```
smis delete storage_sys [-t {http | https}]
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

A user with a valid user name and password

**Note:** To add a storage system with the `smis add` command, you should log in as a system administrator.

**Parameters**

*storage\_sys*

Name or the IP address of the storage system that you are adding

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following is an example of the `smis delete` command:

```
bin::>smis delete mgt-1
```

If no error message appears, the storage system was successfully deleted.

**smis disks**

The `smis disks` command displays disk information for storage systems.

**Syntax**

```
smis disks [-t {http | https}]
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

A user with a valid user name and password

**Parameters**

[-t {http | https}]

Protocol to be used: HTTPS (default) or HTTP

**Example**The following is an example of the `smis disks` command and its abbreviated output:

```
bin::>smis disks
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.3",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.5",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.7",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.6",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.1",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
ONTAP_DiskExtent.CreationClassName="ONTAP_DiskExtent",DeviceID="0c.
00.8",SystemCreationClassName="ONTAP_StorageSystem",SystemName="ONTAP:
0135027815"
```

**smis exports**

The `smis exports` command displays Network Attached Storage (NAS) exports for storage systems.

**Syntax**

```
smis exports [-t {http | https}]
```

**Location**

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

**Privilege level**

A user with a valid user name and password

**Parameters**

[-t {http | https}]

Protocol to be used: HTTPS (default) or HTTP

### Example

The following example displays abbreviated output from the `smis exports` command:

```
[root@smis-rhel5x64-07 ~]# smis exports
ONTAP_LogicalFile.CreationClassName="ONTAP_LogicalFile",CSCreationClassName=
"ONTAP_StorageSystem",CSName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412",FSCreationClassName="ONTAP_LocalFS",FSName="/vol/NAS_vol/
TestCFS0528",Name="/vol/NAS_vol/TestCFS0528"
ONTAP_Qtree.CreationClassName="ONTAP_Qtree",CSCreationClassName="ONTAP_Stora
geSystem",CSName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412",FSCreationClassName="ONTAP_LocalFS",FSName="nilesh_vserve
r_rootvol",Id="nilesh_vserver_rootvol:0",Name=""
ONTAP_Qtree.CreationClassName="ONTAP_Qtree",CSCreationClassName="ONTAP_Stora
geSystem",CSName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412",FSCreationClassName="ONTAP_LocalFS",FSName="NAS_vol",Id="
NAS_vol:0",Name=""
ONTAP_Qtree.CreationClassName="ONTAP_Qtree",CSCreationClassName="ONTAP_Stora
geSystem",CSName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412",FSCreationClassName="ONTAP_LocalFS",FSName="NAS_vol",Id="
NAS_vol:1",Name=""
```

## smis initiators

The `smis initiators` command displays Fibre Channel and iSCSI port information for storage systems.

### Syntax

```
smis initiators [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

```
[-t {http | https}]
```

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following example displays abbreviated output from the `smis initiators` command:

```
bin::>smis initiators
ONTAP_StorageHardwareID.InstanceID="ONTAP:0084259609:iqn.
1991-05.com.microsoft:s
f-tpc1"
ONTAP_StorageHardwareID.InstanceID="ONTAP:0084259609:21:00:00:e0:8b:
86:f2:89"
ONTAP_StorageHardwareID.InstanceID="ONTAP:0084259609:iqn.
1991-05.com.microsoft:went2k3x32-01"
```

## smis licensed

The `smis licensed` command lists the licensed features for storage systems.

**Syntax**

```
smis licensed [-t {http | https}]
```

**Location**

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

**Privilege level**

A user with a valid user name and password

**Parameters**

```
[-t {http | https}]
```

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following is an example of the `smis licensed` command and its abbreviated output:

```
bin::>smis licensed
ONTAP_SoftwareIdentity.InstanceID="ONTAP:0084259609:cifs"
ONTAP_SoftwareIdentity.InstanceID="ONTAP:0084259609:cluster"
ONTAP_SoftwareIdentity.InstanceID="ONTAP:0084259609:fc"
ONTAP_SoftwareIdentity.InstanceID="ONTAP:0084259609:iscsi"
ONTAP_SoftwareIdentity.InstanceID="ONTAP:0084259609:nfs"
```

## smis list

The `smis list` command displays storage systems that are added.

### Syntax

```
smis list [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

```
[-t {http | https}]
```

Protocol to be used: HTTPS (default) or HTTP

### Example

The following is an example of the `smis list` command and its output:

```
bin::>smis list
ONTAP_FilerData.hostName="10.16.180.122",port=80
bin::>
```

## smis luns

The `smis luns` command displays LUN information for storage systems.

### Syntax

```
smis luns [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

**Privilege level**

A user with a valid user name and password

**Parameters**

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following example displays abbreviated output from the `smis luns` command:

```
[root@smis-rhel5x64-07 ~]# smis luns
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID
="ef805c0d-5269-47c6-ba0f-
d9cdbf5e2515",SystemCreationClassName="ONTAP_StorageSystem",SystemNa
me="ONTAP:68f6b3c0-923a-11e2-a856-123478563412"
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID
="f81cb3bf-2f16-467c-8e30-88bae415ab05",SystemCreationClassName="ONT
AP_StorageSystem",SystemName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412"
ONTAP_StorageVolume.CreationClassName="ONTAP_StorageVolume",DeviceID
="684f5fb9-0fdd-4b97-8678-188774bdcdd0",SystemCreationClassName="ONT
AP_StorageSystem",SystemName="ONTAP:68f6b3c0-923a-11e2-
a856-123478563412"
```

**smis namespaces**

The `smis namespaces` command lists the registered namespaces for the CIMOM.

**Syntax**

```
smis namespaces [-t {http | https}]
```

**Location**

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

**Privilege level**

A user with a valid user name and password

**Parameters**

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

### Example

The following is an example of the `smis namespaces` command and its abbreviated output:

```
bin::>smis namespaces
interop
root/ontap
```

## smis pools

The `smis pools` command lists the storage pools for storage systems.

### Syntax

```
smis pools [-t {http | https}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

### Example

The following is an example of the `smis pools` command and its abbreviated output:

```
bin::>smis pools
ONTAP_ConcretePool.InstanceID="ONTAP:
0084259609:d46de7f0-3925-11df-8516-00a09805
58ea"
ONTAP_ConcretePool.InstanceID="ONTAP:
0084259609:51927ab0-28b5-11df-92b2-00a09805
58ea"
ONTAP_DiskPrimordialPool.InstanceID="ONTAP:0084259609:Spare"
ONTAP_DiskPrimordialPool.InstanceID="ONTAP:0084259609:Other"
ONTAP_DiskPrimordialPool.InstanceID="ONTAP:0084259609:Present"
```

## smis slpd

The `smis slpd` command starts or stops the SLP daemon.

### Syntax

```
smis slpd {start | stop}]
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

**Note:** To add a storage system with the `smis add` command, you should log in as a system administrator.

### Example

The following example starts the SLP daemon:

```
bin::>smis slpd start
SLPD started.
```

The following example stops the SLP daemon:

```
bin::>smis slpd stop
SLPD (15564) was successfully stopped.
```

## smis version

The `smis version` command displays the version of SMI-S Agent.

### Syntax

```
smis version [-t {http | https}]
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

A user with a valid user name and password

**Parameters**

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following example displays output from the `smis version` command:

```
bin::>smis version
ONTAP_SMIAgentSoftware.InstanceID="ONTAP5.0"
```

## smis volumes

The `smis volumes` command lists the traditional and flexible volumes for storage systems. `smis volumes` only functions in Data ONTAP operating in 7-mode.

**Syntax**

```
smis volumes [-t {http | https}]
```

**Location**

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

**Privilege level**

A user with a valid user name and password

**Parameters**

`[-t {http | https}]`

Protocol to be used: HTTPS (default) or HTTP

**Example**

The following is an example of the `smis volumes` command and its abbreviated output:

```
bin: :>/smis volumes
ONTAP_LogicalDisk.CreationClassName="ONTAP_LogicalDisk",DeviceID="d46de7f0-3
925-
11df-8516-00a0980558ea",SystemCreationClassName="ONTAP_StorageSystem",System
Name
="ONTAP:0084259609"
ONTAP_LogicalDisk.CreationClassName="ONTAP_LogicalDisk",DeviceID="397cd140-3
a45-
11df-8516-00a0980558ea",SystemCreationClassName="ONTAP_StorageSystem",System
Name
="ONTAP:0084259609"
ONTAP_LogicalDisk.CreationClassName="ONTAP_LogicalDisk",DeviceID="69c472c0-4
b27-
11df-8517-00a0980558ea",SystemCreationClassName="ONTAP_StorageSystem",System
Name
="ONTAP:0084259609"
ONTAP_LogicalDisk.CreationClassName="ONTAP_LogicalDisk",DeviceID="6c7ea0b0-3
927-
11df-8516-00a0980558ea",SystemCreationClassName="ONTAP_StorageSystem",System
Name
="ONTAP:0084259609"
```

# SLP commands

---

You can use the `slptool` command to display information about WBEM services.

## slptool command options

You can use these options with the `slptool` command.

### Syntax

```
slptool [options] subcommand
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

Root or sudo (Linux) or Administrator (Windows)

### Options

- i**  
Specifies one or more interfaces.
- l**  
Specifies a language tag.
- s**  
Specifies a list of scopes (separated by commas).
- u**  
Specifies one interface.
- v**  
Displays the version of `slptool` and OpenSLP.

## slptool findattr

The `slptool findattr` command finds WBEM attributes that run on a network.

### Syntax

```
slptool findattr service
```

### Location

- Linux—`installation_directory/ontap/smis/pegasus/bin`
- Windows—`installation_directory\ontap\smis\pegasus\bin`

### Privilege level

A user with a valid user name and password

### Parameters

*service*

Specifies the service type.

### Example

The following example displays abbreviated output from the `slptool findattr` command:

```
[root@smis-rhel5x64-07 ~]# slptool findattr service:wbem
(template-url-syntax=http://10.229.90.227:5988),(service-id=PG:
10-229-90-227),(service-hi-name=Pegasus),(service-hi-
description=Pegasus CIM Server Version 2.12.0),(template-type=wbem),
(template-version=1.0),(template-description=This template
describes the attributes used for advertising Pegasus CIM Servers.),
(InteropSchemaNamespace=interop),(FunctionalProfilesSupported=Basic
Read,Basic Write,Schema Manipulation,Instance
Manipulation,Association Traversal,Qualifier
Declaration,Indications),(MultipleOperationsSupported=TRUE),
(AuthenticationMechanismsSupported=Basic),
(AuthenticationMechanismDescriptions=Basic),
(CommunicationMechanism=CIM-XML),(ProtocolVersion=1.0),
(Namespace=root/PG_Internal,interop,root/ontap,root),
(RegisteredProfilesSupported=SNIA:Server,SNIA:Array,SNIA:NAS
Head,SNIA:Software,SNIA:Profile
Registration,SNIA:SCNAS,SNIA:Storage Virtualizer,SNIA:Indication)
```

## slptool findsrvs

The `slptool findsrvs` command finds WBEM services that run on a network.

### Syntax

```
slptool findsrvs service
```

### Location

- Linux—*installation\_directory*/ontap/smis/pegasus/bin
- Windows—*installation\_directory*\ontap\smis\pegasus\bin

### Privilege level

A user with a valid user name and password

### Parameters

*service*

Specifies the service type.

### Example

The following is an example of the `slptool findsrvs` command and its output:

```
bin::>slptool findsrvs service:wbem
service:wbem:http://10.60.167.143:5988,65535
service:wbem:http://10.60.167.246:5988,65535
service:wbem:https://10.60.167.143:5989,65535
service:wbem:https://10.60.167.246:5989,65535
service:wbem:http://10.60.167.151:5988,65535
service:wbem:http://10.60.167.250:5988,65535
service:wbem:https://10.60.167.151:5989,65535
service:wbem:https://10.60.167.250:5989,65535
service:wbem:http://10.60.167.141:5988,65535
service:wbem:https://10.60.167.141:5989,65535
service:wbem:http://10.60.167.147:5988,65535
service:wbem:https://10.60.167.147:5989,65535
service:wbem:http://10.60.167.139:5988,65535
service:wbem:http://[fe80::7804:75ad:ab59:28c]:5988,65535
service:wbem:http://[fe80::3cb1:12da:f5c3:5874]:5988,65535
service:wbem:http://[2001::4137:9e76:3cb1:12da:f5c3:5874]:5988,65535
service:wbem:https://10.60.167.139:5989,65535
service:wbem:https://[fe80::7804:75ad:ab59:28c]:5989,65535
service:wbem:https://[fe80::3cb1:12da:f5c3:5874]:5989,65535
```

```
service:wbem:https://[2001::4137:9e76:3cb1:12da:f5c3:5874]:  
5989,65535
```

# Using System Center 2012 - Virtual Machine Manager

---

You can use System Center 2012 - Virtual Machine Manager (SCVMM) or System Center 2012 R2-Virtual Machine Manager to manage SMI-S Agent functions, including establishing an iSCSI session and allocating storage to host pools. SMI-S Agent cannot run on the same machine as SCVMM.

For information on the following tasks and more, please see the *Data ONTAP SMI-S Agent 5.1 Best Practices Guide*:

- Lifecycle indications tracked in SCVMM 2012
- Discovering SMI-S Agent in SCVMM 2012
- Allocating storage to host pools using SCVMM 2012
- Establishing an iSCSI session using SCVMM 2012
- Modify the size of a share using SCVMM 2012

## Related information

*Technical Documentation Download for System Center 2012 – Virtual Machine Manager:* <http://www.microsoft.com/en-us/download/details.aspx?id=6346>

*Configuring an SMI-S Provider for iSCSI Target Server:* <http://technet.microsoft.com/en-us/library/jj860422.aspx>

## Troubleshooting SMI-S Agent

---

If you encounter a problem with SMI-S Agent, use error messages to help with troubleshooting.

### Manually enabling ALUA

For 7-Mode only: because Data ONTAP SMI-S Agent 5.1 and later does not automatically enable the ALUA property on the FC and iSCSI igroups it creates, if you are using Data ONTAP MPIO DSM 3.4 or later for Windows MPIO, you must manually enable ALUA on those igroups.

The ALUA property does not need to be manually enabled for Data ONTAP MPIO DSM 3.4 or Microsoft DSM.

Data ONTAP MPIO DSM 3.4 does not support clustered Data ONTAP 8.2.x LUNs. Use Data ONTAP MPIO DSM 3.5 for clustered LUNs.

ALUA is automatically enabled for clustered Data ONTAP.

### Cloning technology used in SMI-S Agent

SMI-S Agent creates LUN clones using FlexClone technology.

SMI-S Agent creates LUN clones on that storage system using only FlexClone technology. If you do not have a FlexClone license, SMI-S Agent does not generate clones using LUN clone technology, and it generates the following error message:

```
FlexClone license is not enabled on the storage system.
```

If you have LUN clones that were created using LUN clone technology, and the Data ONTAP version is then upgraded to 7.3.1 or later, you cannot use SMI-S Agent to split those clones. They must be managed by the storage system administrator.

### Confirming visibility of important objects

After adding a managed storage system, you should confirm that you can see all the important logical and physical objects in SMI-S Agent.

You can use the `smis` command to see the objects that are in the SMI-S Agent CIMOM repository. For example, use `smis list` to display added storage systems, and use `smis luns` to display LUN information.

## Requirement for using fileshares on Windows

When using fileshares (CIFS shares) on Windows, the volume on which the fileshare is created must be an NTFS-only volume.

If you want to create a fileshare and use it on Windows, the volume where the fileshare is created must be an NTFS-only volume. This is to avoid problems with the credentials that access the fileshare.

From System Center 2012 Virtual Machine Manager (SCVMM), you can create virtual machines (VMs) only on fileshares that were created on NTFS-only volumes. Mixed and UNIX-style volumes are not supported.

### Creating a volume to be used for CIFS shares and SCVMM

When creating a volume to be used for CIFS shares and System Center Virtual Machine Manager (SCVMM), the volume has to be of NTFS type. To create the volume with NTFS, enter the following:

```
vol create -vserver <vserver_name> -volume <volume_name> -aggregate
<aggr_name> -size<volume_size> -security-style ntfs
```

## Possible errors while loading shared libraries

**Message** The server displays the following message on Linux systems:

```
Error while loading shared libraries: libssl.so.1.0.0: cannot
open shared object file: No such file or directory.
```

```
smis cimserver status shows cimserver running properly, but all other /usr/
ontap/smis/pegasus/bin/cim commands show various failure messages.
```

For example, you might receive the message `Cimserver not running when executing cimserver`, or you might receive the message `/usr/ontap/smis/pegasus/bin/cimcli: symbol lookup error: /usr/ontap/smis/pegasus/bin/cimcli: undefined symbol: _ZN7Pegasus16StringConversion21decimalStringToUint64EPKcRy` when executing `cimcli`.

These examples are not all-inclusive, and the error messages received might vary, even for the same executable.

**Description** This message (and similar messages) occurs when the `LD_LIBRARY_PATH` environment variable is not set to the installation directory.

**Corrective action** Enter one of the following commands to set the LD\_LIBRARY\_PATH environment variable to the installation directory:

```
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/ontap/smis/
pegasus/lib
```

```
setenv LD_LIBRARY_PATH $LD_LIBRARY_PATH:/usr/ontap/smis/
pegasus/lib
```

## Nondefault firewalls must have ports manually added as exceptions

<b>Issue</b>	If you are using a firewall other than the default Windows firewall, you might experience the following issues: <ul style="list-style-type: none"> <li>• SMI-S Agent unable to communicate with removed SMI-S client</li> <li>• SMI-S client unable to receive indications from SMI-S Agent</li> </ul>
<b>Cause</b>	This issue occurs when you use a firewall other than the default Windows firewall without first manually adding the necessary ports as exceptions.
<b>Corrective action</b>	Add ports 427, 5988, and 5989 as exceptions to your firewall.

## Access is denied error

<b>Message</b>	When you try to access SMI-S Agent from the Start menu on Windows platforms, you receive the following message:  Access is denied.
<b>Description</b>	This message occurs in two situations: <ul style="list-style-type: none"> <li>• If you are not logged in as Administrator when accessing SMI-S Agent from the Start menu shortcut</li> <li>• If the SMI-S Agent directory is not pointing to <code>program files (x86)/ontap/smis/pegasus/bin</code></li> </ul>
<b>Corrective action</b>	To resolve this issue, complete the action that corresponds to the situation: <ul style="list-style-type: none"> <li>• Log in with Administrator-level privileges and reopen SMI-S Agent from the Start menu, or right-click and select <b>Run as administrator</b>.</li> <li>• Log in with Administrator-level privileges and manually change the directory to <code>program files x86/ontap/smis/pegasus/bin</code>.</li> </ul>

## Cannot add a storage system using a nondefault HTTP or HTTPS port

<b>Issue</b>	You cannot add a storage system running HTTP or HTTPS on a nondefault port.
<b>Cause</b>	By default, SMI-S Agent uses port 80 for communicating with storage systems over HTTP, and port 443 for communicating over HTTPS.
<b>Corrective action</b>	Use the following command to add a storage system that uses a port other than 80 for HTTP traffic or port 443 for HTTPS traffic:

```
cimcli ci -n root/ontap ONTAP_FilerData
hostName=storage_sys_ip_address port=non_default_port
userName=storage_sys_user password=storage_sys_pwd
comMechanism=HTTP -u agent_user -p agent_pwd -l localhost:5989
-s
```

-u, -p, -l, and -s are optional parameters.

Example:

```
cimcli ci -n root/ontap ONTAP_FilerData hostName=10.60.167.12
port=8000 userName=root password=netapp! comMechanism=HTTP -u
root -p netapp! -l localhost:5989 -s --timeout 180
```

## Cannot connect to localhost:5988

<b>Message</b>	Cannot connect to localhost:5988. Connection failed. Trying to connect to localhost:5988
<b>Description</b>	This message occurs if HTTPS connections are disabled or the HTTPS port is not set to 5988, or if the agent has stopped working and remains in a hanging state.
<b>Corrective action</b>	Verify that the values of enableHttpConnection and httpsPort are correct:

```
cimconfig -g enableHttpConnection
```

```
cimconfig -g enableHttpsConnection
```

```
cimconfig -g httpPort
```

```
cimconfig -g httpsPort
```

If enableHttpConnection or enableHttpsConnection is not set to **true**, enter the following commands:

```
cimconfig -s enableHttpConnection -p
```

```
smis cimserver restart
```

If `httpPort` is not set to 5988, enter the following commands:

```
cimconfig -s httpPort=5988 -p
```

```
smis cimserver restart
```

If the agent has stopped working and remains in a hanging state, open Task Manager and end the process, and then restart the agent.

## Cannot connect to localhost:5989

**Message**            `Cannot connect to localhost:5989. Connection failed. Trying to connect to localhost:5989`

**Description**        This message occurs if HTTPS connections are disabled or the HTTPS port is not set to 5989, or if the agent has stopped working and remains in a hanging state.

**Corrective action**    Verify that the values of `enableHttpsConnection` and `httpsPort` are correct:

```
cimconfig -g enableHttpsConnection
```

```
cimconfig -g httpsPort
```

If `enableHttpsConnection` is not set to “true”, enter the following commands:

```
cimconfig -s enableHttpsConnection -p
```

```
smis cimserver restart
```

If `httpsPort` is not set to 5989, enter the following commands:

```
cimconfig -s httpsPort=5989 -p
```

```
smis cimserver restart
```

If the agent has stopped working and remains in a hanging state, open Task Manager and end the process, and then restart the agent.

## Connection refused error

**Message**            `Connection refused`

**Cause**              The CIM server has not been started.

**Corrective action**    Navigate to the `bin` directory in the directory in which you installed SMI-S Agent, and enter the following command to verify that the CIM server is started:

```
smis cimserver status
```

If the CIM server is not running, enter the following command:

```
smis cimserver start
```

## Issue entering passwords containing special characters

**Issue** In English-language operating systems, using a password that contains special characters with the `smis` command does not work in a Windows environment. This issue has not been tested with international (non-English) operating systems.

**Cause** In Windows, the following characters, plus any spaces, are considered special characters and cause password input to fail if the password is not enclosed in quotation marks:

```
, & ' < > ; | = ^ "
```

**Corrective action** If a password contains spaces or special characters, enclose it in double quotes (" ") when you use it in the `smis` command. Note that the quote character ("") is a special character and should never be used in your password.

Example:

```
smis add 1.2.3.4 root "pass word"
```

Example:

```
smis add 1.2.3.4 root "pass&word"
```

### Related tasks

[Adding storage systems to the CIMOM repository](#) on page 18

[Managing CIM server user passwords](#) on page 31

### Related references

[smis add](#) on page 53

[smis addsecure](#) on page 55

## Guidelines for handling SMI-S Agent crashes in Linux

**Issue** If SMI-S Agent crashes, there is information you can gather to help find the cause. When SMI-S Agent crashes, it generates a core file in the `/usr/ontap/smis/pegasus/bin` directory.

**Cause** The cause of your crash can be found using one of the logs below.

- Corrective action** Restart the agent and send the following information to technical support for further analysis:
- Core file from the `/usr/ontap/smis/pegasus/bin` directory or the `/root` directory
  - Log files from the `/usr/ontap/smis/pegasus/logs` directory
  - Trace files from the `/usr/ontap/smis/pegasus/traces` directory
  - The files `version.txt` and `cimserver_current.conf` from the `/usr/ontap/smis/pegasus` directory

## Guidelines for handling SMI-S Agent crashes in Windows

**Issue** If SMI-S Agent crashes, it generates a dump file in the `installation_directory\ontap\smis\pegasus\logs` directory.

Messages similar to the following also appear in the trace file:

```
23-May-2013 20:46:36.874 INFO cimserver: createMiniDump: SMI-S Agent has crashed, attempting to generate a dump file
```

```
23-May-2013 20:46:37.14 INFO cimserver: createMiniDump: Process dumped to C:\Program Files (x86)\ontap\smis\pegasus\logs\SMI-S Agent-8be55da-2011_05_23-20_46_36.dmp
```

When running Windows Server 2012, the agent might not generate a dump file. If the agent does not generate a dump file, it can be found under the Windows Error Reporting tool.

**Cause** The cause of your crash can be found using one of the logs below.

- Corrective action** Restart the agent and send the following information to technical support for further analysis:
- Dump file from the `installation_directory\ontap\smis\pegasus\logs` directory
  - Log files from the `installation_directory\ontap\smis\pegasus\logs` directory
  - Trace files from the `installation_directory\ontap\smis\pegasus\traces` directory
  - The files `version.txt` and `cimserver_current.conf` from the `installation_directory\ontap\smis\pegasus` directory

## Multiprocess mode disabled in Linux

**Description** SMI-S Agent does not currently support multiprocess mode in Linux.

## Filer return: No ontap element in response

**Message** Filer return: No ontap element in response.

**Description** Your system returns this error if your ONTAPI API times out. The default ONTAPI API timeout is 60 seconds, which might be too short in some scenarios.

**Corrective action** Change the ONTAPI API timeout to a value greater than 60 seconds by setting the environment variable `ONTAPI_TIMEOUT_SEC`, and then restart SMI-S Agent.

### Related tasks

*[Specifying the ONTAPI timeout value](#)* on page 45

## No response from the server

**Issue** The server does not respond when queried.

**Cause** This issue occurs when there is no storage system added to the CIMOM repository.

**Corrective action** Enter the following command to verify that a storage system is added:

```
smis list
```

If there is no storage system listed, add a storage system by entering the following command:

```
smis add storage_sys storage_sys_user storage_sys_pwd
```

## Runtime library issues

**Issue** You encounter runtime library issues.

**Corrective action** Install the Microsoft Visual C++ 2010 Redistributable Package (x86) from [www.microsoft.com](http://www.microsoft.com).

## Clone/Snapshot operations are not allowed

<b>Message</b>	Clone/Snapshot operations are not allowed while LUN clone split operations are going on in the volume. Please wait for some time and try again.
<b>Description</b>	This error occurs if you attempt to execute Snapshot operations during a LUN clone split. You cannot perform Snapshot operations in a volume where a LUN is being split, if that LUN clone split is running in the background.
<b>Corrective action</b>	Try your Snapshot operations after the LUN is split.

## SMI-S Agent takes a long time to start

**Description** On both Windows and Linux systems, with storage systems that are already under management, when you start SMI-S Agent using the `smis cimserver` command, the command does not return until the agent's local cache is populated. It waits a maximum of 15 minutes while the cache is populated, and you cannot use SMI-S Agent until it returns.

Using the `smis cimserver` command is the recommended method of starting SMI-S Agent.

## Total managed space for a storage pool (volume) discrepancy

<b>Issue</b>	If you are using another storage management tool, such as FilerView, you might notice a different size reported for the total managed space for a storage pool (volume) than the size returned by SMI-S Agent.
<b>Cause</b>	This discrepancy occurs because the size returned by SMI-S Agent includes the WAFL and Snapshot reserve, while FilerView and other tools show only the usable space, excluding WAFL and Snapshot reserve.
<b>Corrective action</b>	This is an expected behavior; no corrective action.

## ProviderLoadFailure

Your agent might return the error `ProviderLoadFailure` due to missing library files on RHEL6x64.

### Message

```
[root@smis-rhelx64-03 ~]# /usr/ontap/smis/pegasus/bin/smis list
cimcli CIMException: Cmd= ni Object= ONTAP_FilerData Code= 1
CIM_ERR_FAILED: ProviderLoadFailure:
(/usr/ontap/smis/pegasus/lib/
libONTAP_FilerData.so:ONTAP_FilerData):Cannot load library, error:
libz.so.1: cannot open shared object file: No such file or directory
```

### Description

This error occurs because of missing library files on RHEL6x64.

### Corrective action

1. Try setting the `LD_LIBRARY_PATH` using:

```
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/ontap/smis/pegasus/lib
```

2. Enter the following commands:

```
ldd /usr/ontap/smis/pegasus/bin/cimserver
```

```
ldd /usr/ontap/smis/pegasus/bin/cimcli
```

```
ldd /usr/ontap/smis/pegasus/lib/libONTAP_FilerData.so
```

3. Check the logs for any binaries that are not found on the `ldd` command.
4. If they are not found, look online and download correct binaries.

## Warning 26130

Warning 26130 occurs during storage capacity allocation through zoning.

### Message

```
Warning (26130) Storage pool has been allocated to host group where none of
hosts in host group has access to storage array.
```

### Description

This error occurs when you allocate storage capacity and grant an array access to hosts that are in a host group. With this warning, it is impossible to put virtual machines on the storage systems.

### Corrective action

1. On each host machine, add the IP address of each storage system to the iSCSI Initiator application.
2. If required, on each storage system, for each host machine, create one unique igroup linked with the proper iSCSI node name from the corresponding host machine.
3. For each host machine connected to Data ONTAP, open the MPIO application and add the following device hardware ID:
  - For clustered Data ONTAP, enter **NETAPP LUN C-Mode**.
  - For Data ONTAP operating in 7-Mode, enter **NETAPP LUN**.
4. Reboot the host machines.
5. Remove the provider.
6. Try setting the storage pool again.

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