NetApp SMI-S Provider overview

NetApp SMI-S Provider

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NetApp SMI-S Provider overview

Overview

NetApp SMI-S Provider 5.2.5 enables you to manage and monitor storage systems and to manage LUNs and volumes of storage systems, CIMOM configuration settings, and CIM server users.

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

NetApp SMI-S Provider follows schemas standardized by two organizations:

- Distributed Management Task Force (DMTF)
- Storage Networking Industry Association (SNIA)

SMI-S Provider 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

- There is no upgrade path available for SMI-S Provider 5.2.5.
- You must deploy SMI-S Provider 5.2.5 as a new installation.

For Windows users:

- This release is not compatible with Windows Server 2012 or System Center Virtual Machine Manager (SCVMM) 2012.
- SMI-S Provider 5.2.5 supports Windows Server 2016, Windows Server 2019, SCVMM 2016 and SCVMM 2019.

Uses of NetApp SMI-S Provider

NetApp SMI-S Provider makes it easier for you to manage and monitor storage systems and to manage LUNs and volumes of storage systems.

You can use NetApp SMI-S Provider to manage storage controllers using System Center 2016 - Virtual Machine Manager or System Center 2016 - Virtual Machine Manager.

NetApp SMI-S Provider sizing and performance

Knowing the maximum number of systems managed by NetApp SMI-S Provider helps you understand its performance capabilities.

Sizing

NetApp SMI-S Provider can manage up to the following numbers of objects in clustered Data ONTAP:

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

If the FlexVol contains both qtrees and volumes, the qtrees appear as directories. You should be careful to not delete the qtrees accidentally when deleting volumes.

Performance notice

For configurations with 5,000 FlexVol volumes 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`

The Interoperability Matrix Tool (IMT) contains the latest information about sizing and performance.

NetApp SMI-S Provider components

NetApp SMI-S Provider consists of three components that enable you to manage and monitor storage systems: CIMOM, provider objects, and a repository.

- **CIMOM**

  This is the foundation for NetApp SMI-S Provider. 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.

- **Provider objects**

  When a host issues a command or query to SMI-S Provider, CIMOM loads a shared library object, invokes it to handle a request, and returns the resulting information to the host.

  Windows hosts use DLL objects.

- **Repository**

  CIMOM uses a flat-file database for its repository. It stores persistent data required at the CIM level.

NetApp SMI-S Provider protocols

NetApp SMI-S Provider uses CIM-XML encoding over HTTPS and Service Location Protocol (SLP).

- **CIM-XML encoding over HTTPS**

  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.

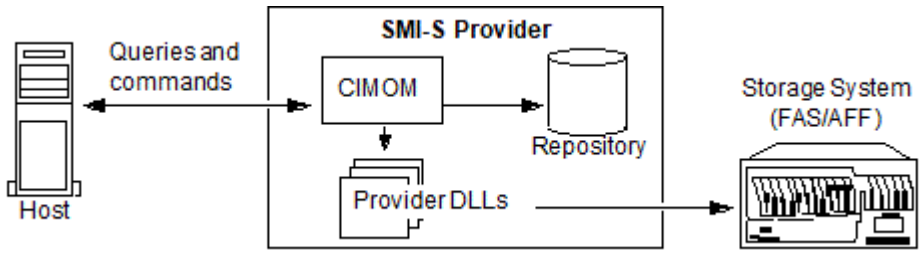
- **SLP**

  Discovery protocol that detects WBEM services within a LAN.

How NetApp SMI-S Provider 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 NetApp SMI-S Provider interacts with a WBEM management client when SMI-S Provider receives a query or command.



SMI-S profiles

SMI-S Provider uses profiles and subprofiles that comply with SMI-S v1.7. For information about SMI-S v1.7, see the SNIA: Technology Standards and Software page.

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