



Monitoring SMI-S Storage Devices

SMI-S: Array PowerPack version 103

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Chapter

1

Introduction

Overview

This manual describes how to monitor SMI-S storage devices in SL1 using the *SMI-S: Array PowerPack*.

The following sections provide an overview of SMI-S and the *SMI-S: Array PowerPack*:

This chapter covers the following topics:

<i>What is SMI-S?</i>	3
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What is SMI-S?

Storage Management Initiative Specification, or SMI-S, is a standard that allows users to manage heterogeneous storage devices in a Storage Area Network (SAN).

An HTTP server, called a **provider**, sends and receives XML requests to the storage devices to manage those devices and retrieve information about those devices.

SL1 communicates with the provider to retrieve information about the SAN and its devices.

What Does the SMI-S: Array PowerPack Monitor?

To monitor storage arrays using SL1, you must install the *SMI-S: Array PowerPack*. This PowerPack enables you to discover, model, and collect data about storage arrays and their component devices.

The *SMI-S: Array PowerPack* includes:

- An example credential you can use to create Basic/Snippet credentials to connect to the SMI-S Provider.
- Dynamic Applications to discover and monitor the storage arrays
- Device Classes for each type of storage array component device monitored by SL1

NOTE: If you are monitoring EMC VNX storage arrays, then you should install and use the *EMC: VNX PowerPack*. For more information, see the *Monitoring Dell EMC VNX* manual.

If you are monitoring EMC VMAX storage arrays, then you should install and use the *EMC: VMAX PowerPack*. For more information, see the *Monitoring Dell EMC VMAX* manual.

If you are monitoring Hitachi Data Systems Virtual Storage Platform arrays, then you should install and use the *Hitachi Data Systems: VSP PowerPack*. For more information, see the *Monitoring Hitachi Data Systems* manual.

Installing the SMI-S: Array PowerPack

Before completing the steps in this manual, you must import and install the latest version of the *SMI-S: Array PowerPack*.

TIP: By default, installing a new version of a PowerPack overwrites all content from a previous version of that PowerPack that has already been installed on the target system. You can use the **Enable Selective PowerPack Field Protection** setting in the **Behavior Settings** page (System > Settings > Behavior) to prevent new PowerPacks from overwriting local changes for some commonly customized fields. (For more information, see the *System Administration* manual.)

IMPORTANT: The minimum required MySQL version is 5.6.0.

To download and install the PowerPack:

1. Search for and download the PowerPack from the **PowerPacks** page (Product Downloads > PowerPacks & SyncPacks) at the [ScienceLogic Support Site](#).
2. In SL1, go to the **PowerPacks** page (System > Manage > PowerPacks).
3. Click the **[Actions]** button and choose *Import PowerPack*. The **Import PowerPack** dialog box appears.
4. Click **[Browse]** and navigate to the PowerPack file from step 1.

5. Select the PowerPack file and click **[Import]**. The **PowerPack Installer** modal displays a list of the PowerPack contents.
6. Click **[Install]**. The PowerPack is added to the **PowerPacks** page.

NOTE: If you exit the **PowerPack Installer** modal without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPacks** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal. This page appears when you click the **[Actions]** menu and select *Install PowerPack*.

Chapter

2

Configuration and Discovery

Overview

The following sections describe how to configure SMI-S storage arrays for monitoring by SL1 using the SMI-S: Array PowerPack:

This chapter covers the following topics:

<i>Prerequisites for Monitoring SMI-S Providers</i>	6
<i>Creating a Credential to Monitor Storage Arrays</i>	7
<i>Discovering Storage Arrays</i>	8
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Prerequisites for Monitoring SMI-S Providers

To configure the SL1 system to monitor an SMI-S Provider using the SMI-S: Array PowerPack, you must have the following information about the SMI-S Provider that you want to monitor:

- IP address and port for the SMI-S Provider
- Username and password for a user with access to the SMI-S Provider

The SMI-S Provider will act as the root device during discovery by SL1.

Creating a Credential to Monitor Storage Arrays

To configure SL1 to monitor storage arrays, you must first create a Basic/Snippet credential. This credential allows the Dynamic Applications in the *SMI-S: Array PowerPack* to connect with an SMI-S Provider. An example Basic/Snippet credential that you can edit for your own use is included in the *SMI-S: Array PowerPack*.

To create a Basic/Snippet credential to access an SMI-S Provider:

1. Go to the **Credentials** page (Manage > Credentials).
2. Locate the example **SNIA SMI-S Example** credential, click its **[Actions]** icon (☰) and select **Duplicate**. A copy of the credential, called **SNIA SMI-S Example copy** appears.
3. Click the **[Actions]** icon (☰) for the **SNIA SMI-S Example copy** credential and select **Edit**. The **Edit Credential** page appears:
4. Enter values in the following fields:
 - **Name**. Type a new name for the credential.
 - **All Organizations**. Toggle on (blue) to align the credential to all organizations, or toggle off (gray) and then select one or more specific organizations from the **What organization manages this service?** drop-down field to align the credential with those specific organizations.
 - **Hostname/IP**. Enter "%D".
 - **Port**. Enter "5989" for an HTTPS connection.
 - **Username**. Enter the username for a user with access to the SMI-S Provider.
 - **Password**. Enter the password for the SMI-S Provider account username.
5. Click **[Save & Close]**.

Creating a Credential to Monitor Storage Arrays in the SL1 Classic User Interface

To configure SL1 to monitor storage arrays, you must first create a Basic/Snippet credential. This credential allows the Dynamic Applications in the *SMI-S: Array PowerPack* to connect with an SMI-S Provider. An example Basic/Snippet credential that you can edit for your own use is included in the *SMI-S: Array PowerPack*.

To create a Basic/Snippet credential to access an SMI-S Provider:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the **SNIA SMI-S Example** credential and then click its wrench icon (🔧). The **Edit Basic/Snippet Credential** modal page appears.
3. Enter values in the following fields:
 - **Credential Name**. Enter a new name for the credential.
 - **Hostname/IP**. Enter "%D".
 - **Port**. Enter "5989" for an HTTPS connection.

- **Username.** Enter the username for a user with access to the SMI-S Provider.
 - **Password.** Enter the password for the SMI-S Provider account username.
4. Click the **[Save As]** button.
 5. When the confirmation message appears, click **[OK]**.

Discovering Storage Arrays


To model and monitor your storage system, you must first run a discovery session to discover the SMI-S Provider that SL1 will use as the root device for monitoring the storage system.

The discovery session will discover the SMI-S Provider as a pingable device using [the Basic/Snippet credential that you created](#). You must then manually align the "SMI-S: Array Discovery", "SMI-S: Statistics Cache", and "SMI-S Components Config" Dynamic Applications to the SMI-S Provider pingable device. When you do so, SL1 will discover, model, and monitor the remaining component devices in your storage system.

To discover the storage system that you want to monitor, perform the following steps:

1. On the **Devices** page () or the **Discovery Sessions** page (Devices > Discovery Sessions), click the **[Add Devices]** button. The **Select** page appears:

2. Click the **[Unguided Network Discovery]** button. Additional information about the requirements for discovery appears in the **General Information** pane to the right.
3. Click **[Select]**. The **Add Devices** page appears:
4. Complete the following fields:
 - **Name**. Type a unique name for this discovery session. This name is displayed in the list of discovery sessions on the **[Discovery Sessions]** tab.
 - **Description**. Optional. Type a short description of the discovery session. You can use the text in this description to search for the discovery session on the **[Discovery Sessions]** tab.
 - **Select the organization to add discovered devices to**. Select the name of the organization to which you want to add the discovered devices.
5. Click **[Next]**. The **Credentials** page of the **Add Devices** wizard appears:
6. On the **Credentials** page, locate and select the *Basic/Snippet credential* you created.
7. Click **[Next]**. The **Discovery Session Details** page of the **Add Devices** wizard appears:
8. Complete the following fields:
 - **List of IPs/Hostnames**. Enter the IP address for the SMI-S Provider.
 - **Which collector will discover these devices?**. Select an existing collector to monitor the discovered devices. Required.
 - **Run after save**. Select this option to run this discovery session as soon as you click **[Save and Close]**.



 In the **Advanced options** section, click the down arrow icon () to complete the following fields:
 - **Discover Non-SNMP**. Toggle on (blue).
 - **Model Devices**. Toggle on (blue).
9. Click **[Save and Close]** to save the discovery session. The **Discovery Sessions** page (Devices > Discovery Sessions) displays the new discovery session.
10. If you selected the **Run after save** option on this page, the discovery session runs, and the **Discovery Logs** page displays any relevant log messages. If the discovery session locates and adds any devices, the **Discovery Logs** page includes a link to the **Device Investigator** page for the discovered device.

Discovering Storage Arrays in the SL1 Classic User Interface

To model and monitor your storage system, you must first run a discovery session to discover the SMI-S Provider that SL1 will use as the root device for monitoring the storage system.

The discovery session will discover the SMI-S Provider as a pingable device using *the Basic/Snippet credential that you created*. You must then manually align the "SMI-S: Array Discovery" Dynamic Application to the SMI-S Provider pingable device. When you do so, SL1 will discover, model, and monitor the remaining component devices in your storage system.

To discover the storage system that you want to monitor, perform the following steps:

1. Go to the **Discovery Control Panel** page (System > Manage > Classic Discovery).
2. In the **Discovery Control Panel**, click the **[Create]** button.
3. The **Discovery Session Editor** page appears. On this page, define values in the following fields:
 - **IP Address Discovery List**. Enter the IP address for the SMI-S Provider.
 - **Other Credentials**. Select the Basic/Snippet credential you created for the SMI-S Provider.
 - **Discover Non-SNMP**. Select this checkbox.
 - **Model Devices**. Select this checkbox.
4. Optionally, you can enter values in the other fields on this page. For more information about the other fields on this page, see the **Discovery & Credentials** manual.
5. Click the **[Save]** button to save the discovery session and then close the **Discovery Session Editor** window.
6. The discovery session you created appears at the top of the **Discovery Control Panel** page. Click its lightning-bolt icon () to run the discovery session.
7. The **Discovery Session** window appears. When the SMI-S Provider is discovered, click its device icon () to view the **Device Properties** page for the SMI-S Provider.
8. From the **Device Properties** page for the SMI-S Provider, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
9. Click the **[Actions]** button and then select *Add Dynamic Application* from the menu. The **Dynamic Application Alignment** page appears.
10. In the **Dynamic Applications** field, select *SMI-S: Array Discovery*, *SMI-S: Components Config*, and *SMI-S: Statistics Cache*.
11. In the **Credentials** field, select the Basic/Snippet credential you configured for the SMI-S Provider.
12. Click the **[Save]** button.
13. The "SMI-S: Array Discovery" Dynamic Application appears on the **Dynamic Application Collections** page and begins auto-aligning the other Dynamic Applications in the *SMI-S: Array PowerPack* to the SMI-S Provider and discovering the other component devices in the storage system.

NOTE: It might take several minutes after manually aligning the discovery Dynamic Application for SL1 to discover and model the remaining component devices in the storage system.

Troubleshooting


If you have installed a simulator or an EMC: VNX device on the same server as the SMI-S: Array, SL1 aligns the EMC: VNX and discovers its component devices at the same time as the SMI-S: Array component devices. However, some of the EMC: VNX component devices move to the SMI-S: Array component devices, which causes the topology to change. You can avoid this disruption in one of two ways:

- Before running the discovery session for an SMI-S: Array device, remove the EMC: VNX PowerPack, since it is included in SL1 up to version 11.3.0.
- If you have already run discovery and do not want to remove the EMC: VNX PowerPack, you can delete the discovered component devices and disable the collection of the EMC: VNX applications on the root device.

To delete the discovered component devices:

1. Navigate to the **Device Components** page (Devices > Device Components).
2. Locate the EMC: VNX component devices and select the check box next to each you want to delete.
3. Select *DELETE Selected Devices* from the **Select Action** drop-down menu.
4. Select the **[Go]** button. SL1 will apply the selected option to the selected devices.

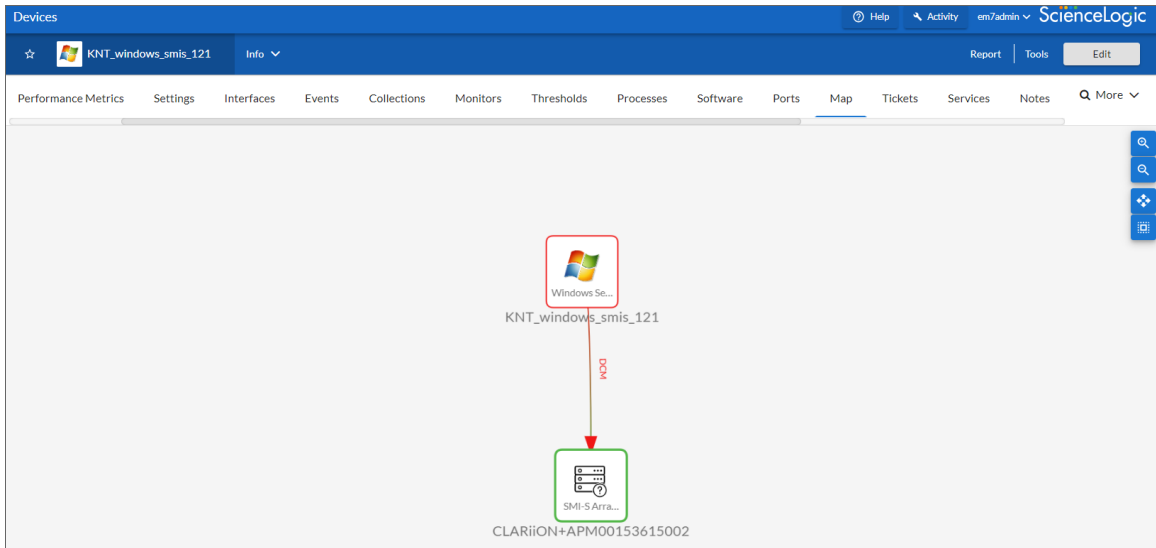
To disable the collection of EMC: VNX applications on the root device:

1. Navigate to the **Device Components** page (Devices > Device Components).
2. Locate the root device and select the Device Properties icon (.
3. Click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
4. Select the checkbox next to the following Dynamic Applications:
 - EMC: VNX Array Discovery
 - EMC: VNX Components Configuration
 - EMC: VNX LUN Cache
5. Select *Disable All Collection Objects* from the **Select Action** drop-down menu.
6. Select the **[Go]** button. SL1 will apply the selected option to the root device.

Viewing Storage Devices

In addition to the **Devices** page, you can view the SMI-S Array and all of its component devices in the following places in the user interface:

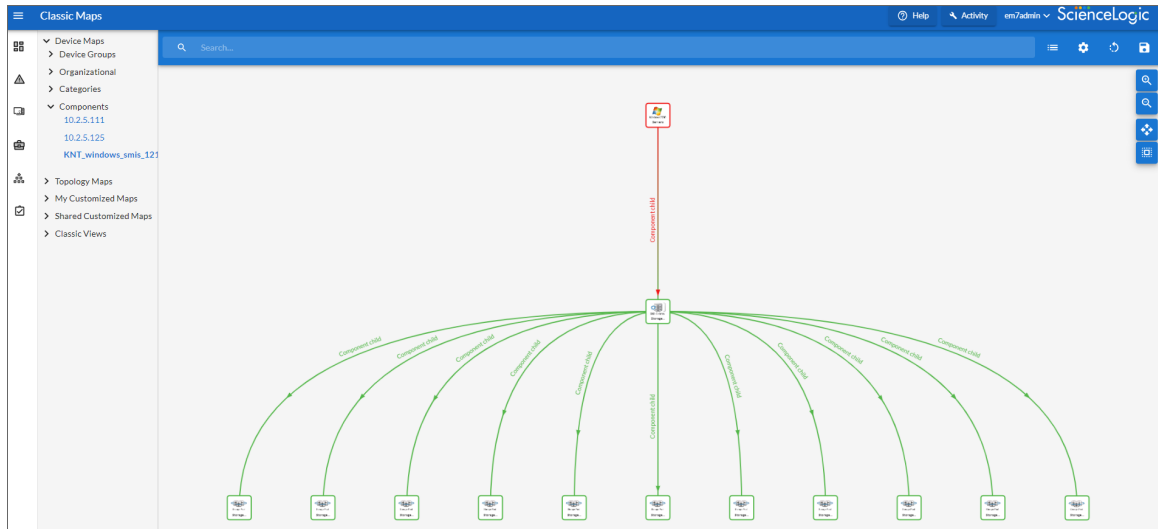
- The **Device Investigator** Map page (click **Map** in the **Device Investigator** page) displays a map of a particular device and all of the devices with which it has parent-child relationships. Double-clicking any of the listed devices reloads the page to make the selected device the primary device.



- The **Device Components** page (Devices > Device Components) displays a list of all root devices and component devices discovered by SL1. The **Device Components** page displays all root devices and component devices in an indented view, so you can easily view the hierarchy and relationships between child devices, parent devices, and root devices. To view the component devices associated with an SMI-S: Array, find the device and click its plus icon (+).

Device Name	IP Address	Device Category	Device Class / Sub-class	DID	Organization	Current State	Collection Group	Collection State
10.2.5.111	10.2.5.111	Servers	Linux Generic	12	TestOrg_Oracle_Database	Healthy	CUG_Automation	Active
10.2.5.125	10.2.5.125	Servers	Microsoft Windows	13	TestOrg_Oracle_Database	Healthy	CUG_Automation	Active
KNT_windows_smis_121	10.2.5.121	Servers	Microsoft Windows Server 2008 R2	964	TestOrg_SMI-S_testing_if_this_is_working_with	Critical	CUG_Automation	Active
CLARiON+APM00153615002	--	Array	SMI-S SMI-S Array Storage System	965	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Concrete storage pool 0001 for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	972	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Concrete storage pool 0002 for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	970	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Local mirror storage pool SP_A for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	967	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Local mirror storage pool SP_B for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	968	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Prtd Pool 0	--	Pool	SMI-S SMI-S Storage Pool	976	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Remote mirror storage pool SP_A for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	973	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Remote mirror storage pool SP_B for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	974	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Snap storage pool GLOBAL for APM00153615002 storage	--	Pool	SMI-S SMI-S Storage Pool	971	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Spare devices storage pool AVAILABLE_FOR_FAILOVER	--	Pool	SMI-S SMI-S Storage Pool	966	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Spare devices storage pool FAILED_NOT_REPLACED	--	Pool	SMI-S SMI-S Storage Pool	975	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active
Spare devices storage pool FAILED_REPLACED_BY_SR	--	Pool	SMI-S SMI-S Storage Pool	969	TestOrg_SMI-S_testing_if_this_is_working_with	Healthy	CUG_Automation	Active


- The **Component Map** page (Classic Maps > Device Maps > Components) allows you to view devices by root node and view the relationships between root nodes, parent components, and child components in a map. This makes it easy to visualize and manage root nodes and their components. SL1 automatically updates the **Component Map** as new component devices are discovered. The platform also updates each map with the latest status and event information. To view the map for an SMI-S: Array, go to the **Component Map** page and select the map from the list in the left NavBar. To learn more about the **Component Map** page, see the **Maps** manual.



Viewing Storage Devices in the SL1 Classic User Interface

When SL1 discovers your storage system, SL1 will create component devices that represent each component in your storage system.

In addition to the **Device Manager** page, you can view the storage system and all associated component devices in the following places in the user interface:

- The **Device View** modal page (click the bar-graph icon  for a device, then click the **Topology** tab) displays a map of the selected device and all of the devices with which it has parent-child relationships. Double-clicking any of the devices listed reloads the page, with the selected device as the primary device.
- The **Device Components** page (Registry > Devices > Device Components) displays a list of all root devices and component devices discovered by SL1 in an indented view, so you can easily view the hierarchy and relationships between child devices, parent devices, and root devices. To view the component devices associated with your storage system, find the root device and click its plus icon (+).
- The **Component Map** page (Classic Maps > Device Maps > Components) allows you to view devices by root node and view the relationships between root nodes, parent components, and child components in a map. This makes it easy to visualize and manage root nodes and their components. SL1 automatically updates the **Component Map** as new component devices are discovered. The platform also updates each map with the latest status and event information. To view the map for your storage system, go to the **Component Map** page and select the map from the list in the left NavBar. To learn more about the **Component Map** page, see the **Views** manual.

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ScienceLogic

800-SCI-LOGIC (1-800-724-5644)

International: +1-703-354-1010