



Monitoring NetApp Appliances

NetApp Base Pack PowerPack version 109.1

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Chapter

1

Introduction to Monitoring NetApp ONTAP

Overview

This manual describes how to monitor NetApp ONTAP environments in Skylar One using the "NetApp Base Pack" PowerPack.

This chapter covers the following topics:

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What is NetApp ONTAP?

ONTAP is the operating system used in NetApp storage disk arrays. It operates in **C-Mode** for clustered environments. C-Mode enables users to bundle multiple, heterogeneous systems into a single cluster and migrate data across the entire cluster.

IMPORTANT: Earlier versions of the "NetApp Base Pack" PowerPack also supported **7-Mode**, for environments with only a single storage controller or two controllers clustered together for high availability. However, NetApp discontinued support for 7-Mode as of ONTAP version 8.3. That version and all subsequent ONTAP versions support C-Mode only. The 7-Mode Dynamic Applications were deprecated from the "NetApp Base Pack" PowerPack as of version 108 and are disabled by default.

What Does the NetApp Base Pack PowerPack Monitor?

The "NetApp Base Pack" PowerPack includes the following features:

- Dynamic Applications that discover, model, and collect data from NetApp storage devices
- Device classes for each of the NetApp component devices monitored
- Event policies and corresponding alerts that are triggered when NetApp component devices meet certain status criteria
- Sample credentials for discovering NetApp component devices
- A device dashboard that displays information about NetApp clusters

Installing the NetApp Base Pack PowerPack

Before completing the steps in this manual, you must import and install the latest version of the "NetApp Base Pack" PowerPack.

TIP: By default, installing a new version of a PowerPack overwrites all content in 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 the new version of the PowerPack from overwriting local changes for some commonly customized fields.

NOTE: For details on upgrading Skylar One, see the relevant [Skylar One Platform Release Notes](#).

To download and install the PowerPack:

1. Search for and download the PowerPack from the **PowerPacks** page at the [ScienceLogic Support Center](#) (Skylar One > PowerPacks, login required).
2. In Skylar One, go to the **PowerPacks** page (System > Manage > PowerPacks).
3. Click the actions icon 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 on the **PowerPacks** page. However, the imported PowerPack will appear in the **Imported PowerPacks** modal. This modal appears when you click the **[Actions]** menu and select *Install PowerPack*.

Chapter

2

Configuration and Discovery for NetApp Devices

Overview

This section describes how to configure and discover NetApp appliances for monitoring in Skylar One using the "NetApp Base Pack" PowerPack.

This chapter covers the following topics:

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Prerequisites for Monitoring NetApp

Before you discover your NetApp appliances in your Skylar One system, you must perform the following configuration tasks on each NetApp appliance you want to discover:

- Configure a user account on the NetApp device that Skylar One will use to connect to the NetApp API. The user account must be assigned a role that includes the following allowed capabilities:

- login-http-admin
- api-system-get-*
- api-aggr-list-info
- api-lun-list-info
- api-volume-list-info
- api-perf-object-get-instances
- api-storage-shelf-environment-list-info
- api-net-config-get-active
- api-vfiler-list-info
- api-disk-list-info
- api-snapshot-list-info

NOTE: For Clustered Data ONTAP 8.3 or later, see NetApp's documentation, available on the NetApp Support Portal (<http://mysupport.netapp.com>), for customizing the role of a user account.

If you are discovering a Clustered Data ONTAP system, the user account you use for the ScienceLogic credential should be given the built-in "readonly" role and access to the "ontapi" application. For example:

```
security login create [username] -application ontapi -role readonly -
vserver [clustername]
```

- Determine whether connections to the API on your NetApp device require SSL.
- If you are discovering a NetApp v8 system, you must enable the NetApp multistore license. To do this, execute the following command on your NetApp appliance:

```
options licensed_feature.multistore.enable on
```

Configuring NetApp Credentials

To use the Dynamic Applications in the "NetApp Base Pack" PowerPack, you must first define a NetApp credential in Skylar One. These credentials allow Skylar One to communicate with the NetApp appliances. The "NetApp Base Pack" PowerPack includes templates for the NetApp credentials.

The "NetApp Base Pack" PowerPack includes the following example credentials:

- **NetApp w/SSL/TLS Option.** This SOAP/XML type credential allows you to retrieve data from a NetApp C-Mode device that uses Transport Layer Security (TLS).

IMPORTANT: ScienceLogic strongly recommends using the "NetApp w/SSL/TLS Option" credential for monitoring NetApp devices in most scenarios. You should use the following two credentials that do not utilize TLS only on some older ONTAP versions and restricted environments that require the legacy NaServer (SOAP/XML over HTTPS) path.

- **NetApp w/SSL Option.** This SOAP/XML type credential allows you to retrieve data from a NetApp C-Mode device that uses Secure Sockets Layer (SSL). In production, most NetApp C-Mode devices use SSL.
- **NetApp w/SSL Option Off.** This SOAP/XML type credential allows you to retrieve data from a NetApp C-Mode device that does not use SSL or TLS.

NOTE: The user account configured for the credential must be assigned a role that includes "login-http-admin" and "api-system-get-*" as allowed capabilities.

Creating a SOAP/XML Credential for C-Mode

To use the Dynamic Applications in the "NetApp Base Pack" PowerPack, you must create a SOAP/XML credential to allow Skylar One to communicate with the NetApp appliances.

To modify the example credentials for use with your NetApp C-Mode appliances:

1. Go to the **Credentials** page (Manage > Credentials).
2. On the **Credentials** page:
 - If you want Skylar One to use TLS when connecting to the NetApp device, locate the "NetApp w/ SSL/TLS Option" credential. Click its actions icon (⋮) and select *Duplicate*. A copy of the credential appears.

IMPORTANT: ScienceLogic strongly recommends using the "NetApp w/SSL/TLS Option" credential for monitoring NetApp devices in most scenarios. You should use the following two credentials that do not utilize TLS only on some older ONTAP versions and restricted environments that require the legacy NaServer (SOAP/XML over HTTPS) path.

- If you want Skylar One to use SSL when connecting to the NetApp device, locate the "NetApp w/SSL Option" credential. Click its actions icon (⋮) and select *Duplicate*. A copy of the credential appears.
- If you do not want Skylar One to use SSL or TLS when connecting to the NetApp device, locate the "NetApp w/SSL Option Off" credential. Click its actions icon (⋮) and select *Duplicate*. A copy of the credential appears.

- Click the actions icon (⋮) for the new, copied credential and then select *Edit*.

Edit Credential

Name *
NetApp w/SSL/TLS Option copy

All Organizations ☒ Select the organizations the credential belongs to * Timeout (ms)
3000

Content Encoding Method HTTP Version
text/xml GET http/1.1

URL *
https://%D

HTTP Auth User HTTP Auth Password
root *****

Proxy Hostname/IP Proxy Port
0

Proxy User Proxy Password

Embedded Password [%P]

Embed Value [%1] Embed Value [%2]
True TLSv1.0

Embed Value [%3] Embed Value [%4]

HTTP Headers Add Header
X-Sample-Header:Sample Value X

CURL Options Add CURL Option
SSLVERIFYPEER 1 X

Credential Tester

Select Credential Test

Select Collector
CUG | knt-dist-cu-78: 10.2.5.78

IP or Hostname to test * Test Credential

Close

- Enter values for 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 **Select the organization the credential belongs to** drop-down field to align the credential with those specific organizations. This field is required.
- Timeout.** Keep the default value.
- URL.** Use the provided value of "https://%D".
- HTTP Auth User.** Type the username that Skylar One will use to connect to the NetApp appliance.
- HTTP Auth Password.** Type the password for the username you entered in the **HTTP Auth User** field.
- Embed Value [%1].**
 - Type *True* if you want Skylar One to use SSL or TLS when connecting to the NetApp device.
 - Type *False* if you do not want Skylar One to use SSL or TLS when connecting to the NetApp device.

- **Embed Value [%2].** If you want Skylar One to use TLS when connecting to the NetApp device, type one of the following, depending on the version of TLS you use: "TLSv1.0", "TLSv1.1", "TLSv1.2", or "TLSv1.3". Otherwise, keep this field blank.
- **CURL Options.** Set `SSLVERIFYPEER=1` to enable SSL verification. Otherwise, set it to `SSLVERIFYPEER=0`.

NOTE: If you are updating the PowerPack to version 108 or later, you must add the `SSLVERIFYPEER` option to your credential CURL options.

5. Click [**Save**].

NOTE: The user account configured for the credential must be assigned a role that includes "login-http-admin" and "api-system-get-*" as allowed capabilities.

Creating a Credential for C-Mode in the Skylar One Classic User Interface

To modify the example credentials for use with your NetApp C-Mode appliances:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. On the **Credential Management** page:
 - If you want Skylar One to use TLS when connecting to the NetApp device, click the wrench icon (🔧) for the **NetApp w/SSL/TLS Option** credential.

IMPORTANT: ScienceLogic strongly recommends using the "NetApp w/SSL/TLS Option" credential for monitoring NetApp devices in most scenarios. You should use the following two credentials that do not utilize TLS only on some older ONTAP versions and restricted environments that require the legacy NaServer (SOAP/XML over HTTPS) path.

- If you want Skylar One to use SSL when connecting to the NetApp device, click the wrench icon (🔧) for the **NetApp w/SSL Option** credential.
- If you do not want Skylar One to use SSL or TLS when connecting to the NetApp device, click the wrench icon (🔧) for the **NetApp w/SSL Option Off** credential.

The **Credential Editor** modal appears.

3. Supply values in the following fields:
 - **Profile Name.** Type a new name for the credential.
 - **URL.** Use the provided value of "https://%D".

- **HTTP Auth User.** Type the username that Skylar One will use to connect to the NetApp appliance.
- **HTTP Auth Password.** Type the password for the username you entered in the **HTTP Auth User** field.
- **Embed Value [%1].**
 - Type *True* if you want Skylar One to use SSL or TLS when connecting to the NetApp device.
 - Type *False* if you do not want Skylar One to use SSL or TLS when connecting to the NetApp device.
- **Embed Value [%2].** If you want Skylar One to use TLS when connecting to the NetApp device, type one of the following, depending on the version of TLS you use: "TLSv1.0", "TLSv1.1", "TLSv1.2", or "TLSv1.3". Otherwise, keep this field blank.
- **CURL Options.** Set `SSLVERIFYPEER=1` to enable SSL verification. Otherwise, set it to `SSLVERIFYPEER=0`.

NOTE: If you are updating the PowerPack to version 108 or later, you must add the `SSLVERIFYPEER` option to your credential CURL options.

NOTE: The user account configured for the credential must be assigned a role that includes "login-http-admin" and "api-system-get-*" as allowed capabilities.

4. Click the **[Save As]** button.

Configuring the NetApp Device Template

The "NetApp Base Pack" PowerPack includes the "NetApp: Base Pack Template C-Mode Example" device template, which you can use to save a device configuration and apply it when discovering a NetApp appliance.

To configure the NetApp device template:

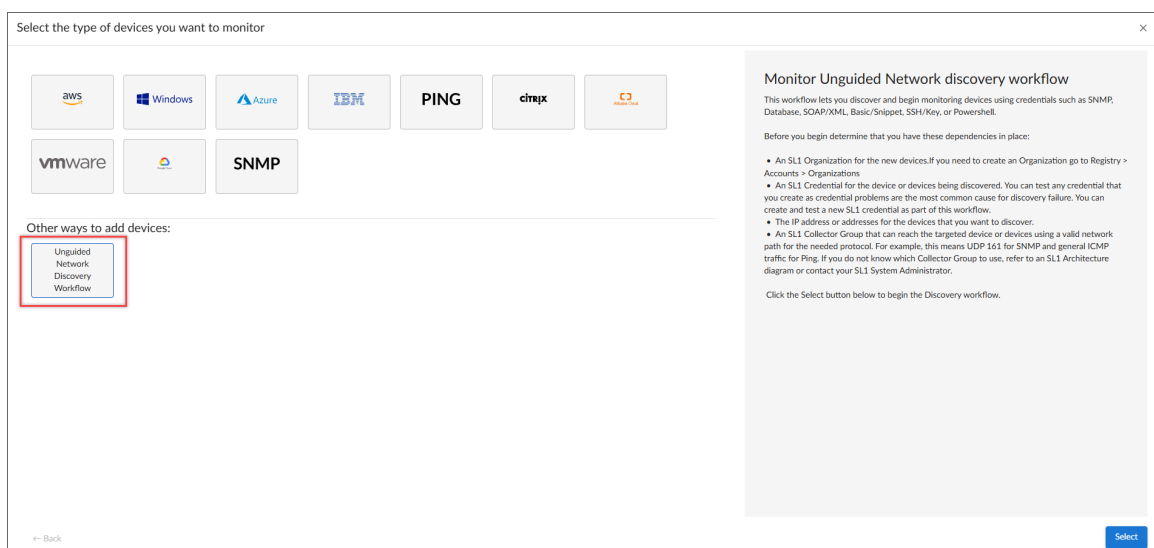
1. Go to the **Configuration Templates** page (Devices > Templates, or Registry > Devices > Templates in the classic user interface).
2. Locate the "NetApp: Base Pack Template C-Mode Example" device template and click its wrench icon (🔧). The **Device Template Editor** page appears.
3. Click the **[Dyn Apps]** tab. The **Editing Dynamic Application Subtemplates** page appears.
4. Click the "NetApp: Cluster Logical Interface Stats C-Mode" Dynamic Application listed in the **Subtemplate Selection** section on the left side of the page.
5. Click the **Credentials** field label to enable editing.
6. Select the NetApp credential you created in the [Configuring NetApp Credentials](#) section. Repeat this step to align all of your Dynamic Applications to the credentials you created.

7. Enter a new name for the template in the **Template Name** field.
8. Click **[Save As]**.

Discovering a NetApp Appliance

To create and run a discovery session that will discover a NetApp appliance:

1. Go to the **Devices** page (🖨️) or the **Discovery Session** page (Devices > Discovery Sessions) and click the **[Add Devices]** button. The **Select** page appears.
2. Click the **[Unguided Network Discovery Workflow]** 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:
 - **Discovery Session Name.** Type a unique name for this discovery session. This name is displayed in the list of discovery sessions on the **[Discovery Session]** 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 Session]** 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 SOAP/XML credential you created for NetApp appliances](#).
7. Click **[Next]**. The **Discovery Session** page of the **Add Devices** wizard appears.
8. Complete the following fields:

- **List of IP/Hostnames.** Type the IP address for the NetApp appliance.
 - **Which collector will monitor these devices?** Required. Select an existing collector to monitor the discovered devices.
 - **Run after save.** Select this option to run this discovery session as soon as you save the session.
 - **Advanced options.** Click the down arrow (▼) to complete the following fields:
 - **Discover Non-SNMP.** Enable this setting.
 - **Model Devices.** Enable this setting.
 - **Select Device Template.** If you configured a [NetApp device template](#), select it here. Otherwise, leave the default selection.
9. If you enabled the **Run after save** option, click the **[Save and Run]** button. 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.
 10. If you did not enable the **Run after save** option, click the **[Save and Close]** button. The **Discovery Session** page (Devices > Discovery Sessions) displays the new discovery session.

Discovering a NetApp Appliance in the Skylar One Classic User Interface

To create and run a discovery session that will discover a NetApp appliance, perform the following steps:

1. Go to the **Discovery Control Panel** page (System > Manage > Classic Discovery or System > Manage > Discovery in the classic user interface).
2. Click the **[Create]** button to create a new discovery session. The **Discovery Session Editor** window appears:
3. Enter values in the following fields:
 - **IP Address/Hostname Discovery List.** Enter the IP address for the NetApp appliance.
 - **Other Credentials.** Select [the SOAP/XML credential you created for NetApp appliances](#).
 - **Discover Non-SNMP.** Select this checkbox.
 - **Model Devices.** Select this checkbox.
 - **Apply Device Template.** If you configured a [NetApp device template](#), select it here. Otherwise, leave the default selection.
4. Optionally, you can enter values in the other fields on this page or you can accept their default values instead. For more information about the other fields on this page, see the **Discovery & Credentials** manual.
5. Click the **[Save]** button 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.

8. When the NetApp appliance is discovered, click its device icon () to view the **Device Properties** page for the NetApp appliance.

Verifying Discovery and Dynamic Applications

To verify that Skylar One has automatically aligned the correct Dynamic Applications during discovery:

1. From the **Device Properties** page for the NetApp appliance, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
2. The following Dynamic Applications should be displayed in the list of Dynamic Applications aligned to the NetApp C-Mode appliance:
 - NetApp: Cache C-Mode
 - NetApp: Cache C-Mode Volume Snapshot
 - NetApp: Cache vServer Node C-Mode
 - NetApp: Cluster Configuration C-Mode
 - NetApp: Cluster Logical Interface Config C-Mode
 - NetApp: Cluster Logical Interface Stats C-Mode
 - NetApp: Cluster Performance C-Mode
 - NetApp: Disk Count C-Mode
 - NetApp: Hardware Count C-Mode
 - NetApp: System C-Mode
 - NetApp: Topology Cache C-Mode
 - NetApp: Volume LUN Config Cache C-Mode
 - NetApp: vServer Data Discovery C-Mode
 - NetApp: vServer Node Discovery C-Mode
3. If one or more of these Dynamic Applications are not automatically aligned with each NetApp device, follow the instructions in the section on [Manually Aligning the Dynamic Applications](#) or discover using the device template.

Manually Aligning the Dynamic Applications

If the Dynamic Applications have not been automatically aligned, you can align them manually:

1. From the **Device Properties** page for the NetApp appliance, click the **[Collections]** tab. The **Dynamic Application Collections** page appears.
2. Click the **[Action]** button and then select *Add Dynamic Application*. The **Dynamic Application Alignment** page appears.
3. In the **Dynamic Applications** field, select the Dynamic Application you want to align.
4. In the **Credentials** field, select the credential [you created for this NetApp appliance](#).
5. Click **[Save]**.

6. Repeat steps 2-5 for the remaining Dynamic Applications to align with the C-Mode NetApp appliance.
7. After aligning the Dynamic Applications, click the **[Reset]** button and then click the plus icon (+) for the Dynamic Application. If collection for the Dynamic Application was successful, the graph icons () for the Dynamic Application are enabled.
8. Click a graph icon () to view the collected data. The **Configuration Report** page will display the number of components of each type and the total number of components managed by the NetApp appliance.

Viewing NetApp Component Devices

In addition to the **Device Manager** page (Devices > Classic Devices, or Registry > Devices > Device Manager in the classic user interface), you can view NetApp component devices in the following places in the user interface:

- The **Device Components** page (Devices > Device Components) displays a list of all root devices and component devices discovered by Skylar One 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 a NetApp cluster, find the NetApp cluster and click its plus icon (+).
- On the **Component Map** page (Classic Maps > Device Maps > Components), you can view devices by root node and view the relationships between root nodes, parent components, and child components in a map. This lets you visualize and manage root nodes and their components. Skylar One 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 a NetApp cluster, go to the **Component Map** page and select the map from the list in the left navigation bar. For more information, see the **Views** manual.

Relationships with Other Types of Component Devices

Skylar One can automatically build relationships between NetApp component devices and other associated devices. If you discover a vCenter device using the Dynamic Applications in the "VMware: vSphere Base Pack" PowerPack, Skylar One will automatically create relationships between NetApp LUNs and VMware Datastores, where appropriate.

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

International: +1-703-354-1010