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Chapter 3

Monitoring Linux with SSH

Overview

Use the following menu options to navigate the SL1 user interface:

- To view a pop-out list of menu options, click the menu icon (☰).
- To view a page containing all of the menu options, click the Advanced menu icon (⋯).

The following sections describe how to configure and discover Linux devices for monitoring by SL1 using SSH and the *Linux Base Pack* PowerPack:

This chapter covers the following topics:

Prerequisites for Monitoring Linux Devices with SSH

Before you can monitor Linux devices using the *Linux Base Pack* PowerPack, you must have the following information about the devices that have already been properly configured:

- IP addresses of the devices you want to monitor
- SSH private keys for the devices you want to monitor

To monitor devices with the *Linux Base Pack* PowerPack, you must do the following:

1. *Configure your Linux Devices*
2. *Create the Credentials*
3. *Configure the Template*
4. *Discover the Linux Devices*

NOTE: The *Linux Base Pack* PowerPack currently supports 425 devices per Data Collector.

Linux Distributions Supported by the Linux Base Pack PowerPack

Distribution	Supported Versions
Ubuntu	23 22 20
CentOS	8 7
Red Hat Linux Enterprise	9 8 7
Oracle Linux Server	9 8 7
Debian GNU Linux	12 11 10 9

Distribution	Supported Versions
Fedora Server	39 38 37 36 35
Amazon Linux	Amazon Linux 2 Amazon Linux
SUSE Linux Enterprise Server	15 12
Rocky Linux	9 8

Configuring Linux Devices

Before creating your credentials, you must add the following permission to the sudo config file (`/etc/sudoers`) so the "Linux: Hardware Configuration" Dynamic Application will run without asking for the sudo password:

```
<username> ALL=(ALL) NOPASSWD:/usr/sbin/dmidecode
```

If you cannot enable `DMIDECODE`, you must disable the "Linux: Hardware Configuration" Dynamic Application.

NOTE: If you see the "Sorry, you must have a tty to run sudo" error message in your device logs, or your "Linux: Hardware Configuration" Dynamic Application is not collecting data even when configured with the "sudo dmidecode", you will need to configure the Tty Requirement in `/etc/sudoers`, in order to collect hardware configuration information. To do so,add the following line to the sudo config file:

```
Defaults:<username> !requiretty
```

NOTE: To collect information about password expiration, run the following command on the terminal of your Linux device (does not need sudo): `chage -l $(whoami)`

If the `chage -l $(whoami)` command asks for a password, you will need to disable it by editing the `/etc/pam.d/chage` file with the following:

```
from: auth required pam_shells.so

to: auth sufficient pam_shells.so
```

NOTE: To avoid error messages, check that a home directory exists for the Linux user.

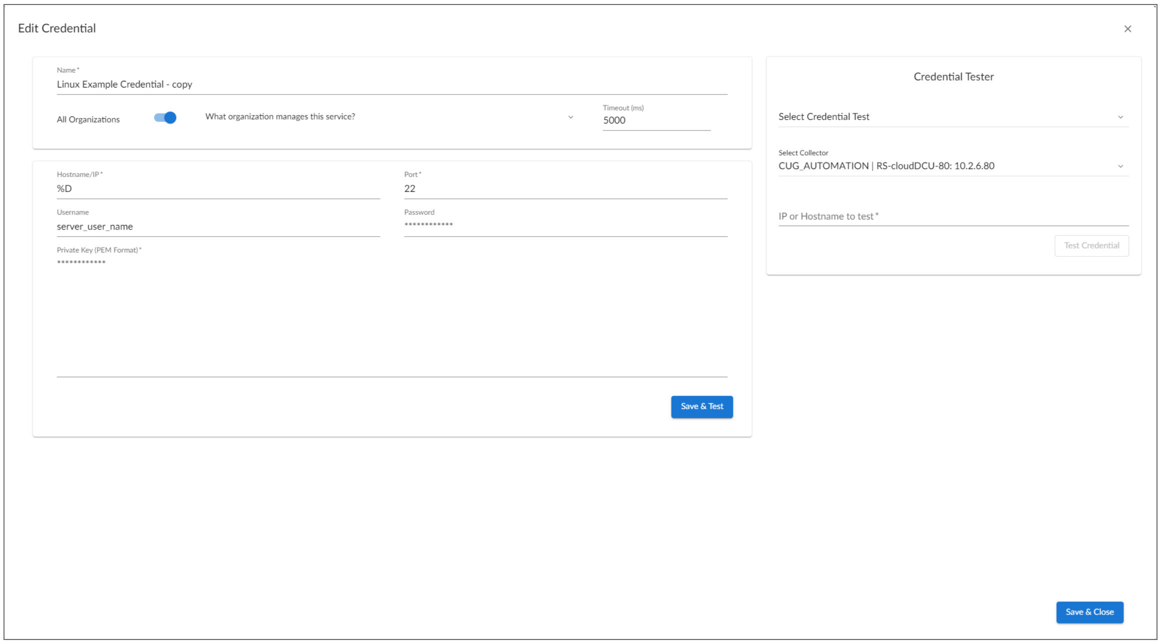
Creating an SSH/Key Credential

To configure SL1 to monitor Linux devices using SSH, you must first create an SSH/Key credential. This credential allows the Dynamic Applications in the *Linux Base Pack* PowerPack) to connect with a Linux device.

NOTE: If you are on an SL1 system prior to version 11.1.0, you will not be able to duplicate the sample credential. It is recommended that you create your new credentials using ***the SL1 classic user interface*** so you do not overwrite the sample credential.

To define an SSH/Key credential:

1. Go to the **Credentials** page (Manage > Credentials).
2. Locate the sample credential you want to use, then click its **[Actions]** icon (···) and select ***Duplicate***. A copy of the credential, called **Linux Example Credential- copy** appears.
3. Click the **[Actions]** icon (···) for the credential copy and select ***Edit***. The **Edit Credential** modal page appears.



Edit Credential

Name*: Linux Example Credential - copy

All Organizations | What organization manages this service?

Timeout (ms): 5000

Hostname/IP*: %D

Port*: 22

Username: server_user_name

Password: ************

Private Key (PEM Format)*: ************

4. Supply values in the following fields:

   - ***Name***. Type a new name for your Linux 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.
   - ***Timeout (ms)***. Keep the default value.
   - ***Hostname/IP***. Type the time, in milliseconds, after which SL1 will stop trying to communicate with the authenticating server.
   - ***Port***. Type the port number associated with the data you want to retrieve.

NOTE: The default TCP port for SSH servers is 22.

   - ***Username***. Type the username for an SSH or user account on the device to be monitored.
   - ***Password***. Type the password for an SSH user account on the device to be monitored.
   - ***Private Key (PEM Format)***. Type or paste the SSH private key that you want SL1 to use, in PEM format.

NOTE: For PEM Keys with a Passphrase, you can use the "Password" field to set the Passphrase.

5. Click **[Save & Close]**.

NOTE: The Linux Base Pack PowerPack supports a range of modern public key cryptography for authentication. The full list of supported algorithms is as follows: ssh-ed25519, ecdsa-sha2-nistp256, ecdsa-sha2-nistp384, ecdsa-sha2-nistp521, rsa-sha2-512, rsa-sha2-256, ssh-rsa, ssh-dsa. Some of these types of keys do not work with the SL1 Credential Tester, but will function correctly with the PowerPack.

Creating an SSH/Key Credential in the Classic SL1 User Interface

To configure SL1 to monitor Linux devices using SSH, you must first create an SSH/Key credential. This credential allows the Dynamic Applications in the *Linux Base Pack* PowerPack to connect with a Linux device.

To create an SSH/Key credential:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the **Linux Example Credential** credential and click its wrench icon (🔧). The **Credential Editor** modal page appears:
3. Supply values in the following fields:

- ***Credential Name***. Type a new name for the credential.
- ***Hostname/IP***. Keep the default value. SL1 will replace the variable with the IP address of the device that is currently using the credential.
- ***Port***. Type the port number associated with the data you want to retrieve.

NOTE: The default TCP port for SSH servers is 22.

- ***Timeout (ms)***. Type the time, in milliseconds, after which SL1 will stop trying to communicate with the authenticating server.
- ***Username***. Type the username for an SSH or user account on the device to be monitored.
- ***Password***. Type the password for an SSH user account on the device to be monitored.
- ***Private Key (PEM Format)***. Type or paste the SSH private key that you want SL1 to use, in PEM format.

NOTE: In the classic user interface, the private key field will only accept RSA formatted / styled keys to be saved. If you wish to create SSH credentials with a key in the OpenSSH format you must do so in the default SL1 user interface.

NOTE: For PEM Keys with a Passphrase, you can use the "Password" field to set the Passphrase.

NOTE: **NOTE:** The Linux Base Pack PowerPack supports a range of modern public key cryptography for authentication. The full list of supported algorithms is as follows: ssh-ed25519, ecdsa-sha2-nistp256, ecdsa-sha2-nistp384, ecdsa-sha2-nistp521, rsa-sha2-512, rsa-sha2-256, ssh-rsa, ssh-dsa. Some of these types of keys do not work with the SL1 Credential Tester, but will function correctly with the PowerPack.

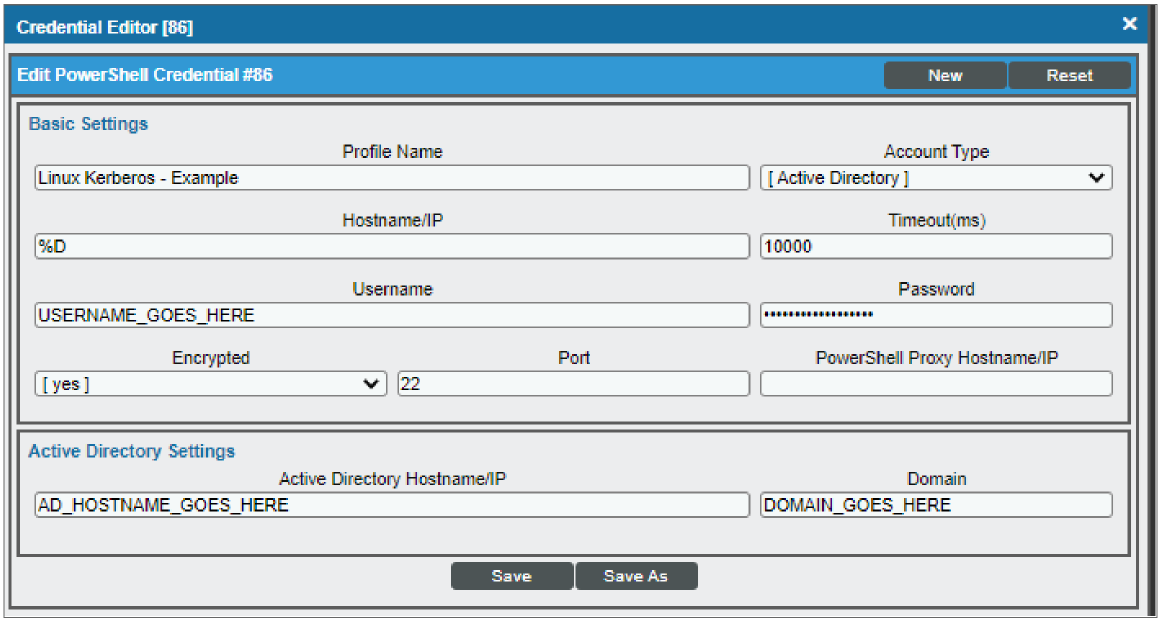
4. Click the **[Save As]** button, and then click **[OK]**.

Creating a PowerShell Credential in the Classic SL1 User Interface

To configure SL1 to monitor Linux devices using Windows Active Directory and GSSAPI, you must first create a PowerShell credential. This credential allows the Dynamic Applications in the *Linux Base Pack*PowerPack to connect with a Linux device using an Active Directory user.

To create a PowerShell credential:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Locate the "Linux Kerberos - Example" credential and click its wrench icon (🔧). The **Credential Editor** modal page appears:



Credential Editor [86]

Edit PowerShell Credential #86

Basic Settings

Profile Name: Linux Kerberos - Example	Account Type: [Active Directory]
Hostname/IP: %D	Timeout(ms): 10000
Username: USERNAME_GOES_HERE	Password: •••••••••••••••••••
Encrypted: [yes] Port: 22	PowerShell Proxy Hostname/IP:

Active Directory Settings

Active Directory Hostname/IP: AD_HOSTNAME_GOES_HERE	Domain: DOMAIN_GOES_HERE

3. Supply values in the following fields:
   - ***Credential Name***. Type a new name for the credential.
   - ***Hostname/IP***. Keep the default value. SL1 will replace the variable with the IP address of the device that is currently using the credential.
   - ***Port***. Type the port number associated with the data you want to retrieve; it will be used to authenticate by SSH using GSSAPI option. The default TCP port for SSH servers is 22.
   - ***Timeout (ms)***. Type the time, in milliseconds, after which SL1 will stop trying to communicate with the authenticating server.
   - ***Username***. Type the Active Directory username for an SSH on the device to be monitored.
   - ***Password***. Type the Active Directory password for an SSH on the device to be monitored.
   - ***Active Directory Hostname/IP***. Type the Active Directory hostname, IP, or fully qualified domain name (FQDN).
   - ***Domain***. Type the Domain of the network.
4. Click the **[Save As]** button, then click **[OK]**.

Before you begin monitoring with this type of credential, it's necessary to configure the following:

- Active Directory Server with the Linux Machines included.
- DNS Server with the Linux Machines included.
- GSSAPI option enabled in the `/etc/ssh/sshd_config` file of the target Linux machine.

```
GSSAPIAuthentication yes
```

```
GSSAPICleanupCredentials yes # optional
```

NOTE: If the option `use_fully_qualified_names` is enabled in the target Linux machine, you need to type the username in the credential including the domain, for example: user@DOMAIN.COM

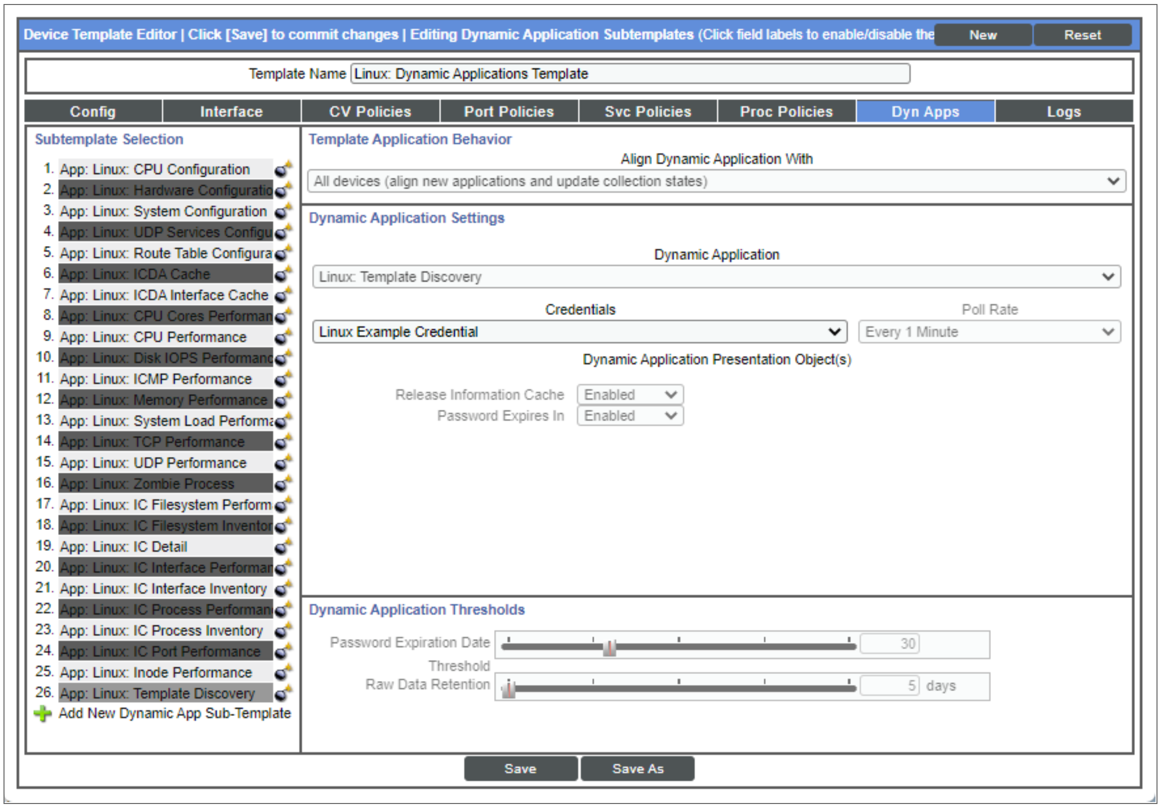
Configuring the Linux Device Template

A ***device template*** allows you to save a device configuration and apply it to multiple devices. You must use the ***Linux: Dynamic Applications Template*** device template in the discovery session to align all of the PowerPack's Dynamic Applications.

NOTE: When using the device template, ensure that only Linux devices will be discovered. Any device found during discovery will cause SL1 to apply the template to the device, resulting in Linux Dynamic Applications aligning to non-Linux devices.

To configure the Linux device template:

1. Go to the **Configuration Templates** page (Devices > Templates or Registry > Devices > Templates in the SL1 classic user interface).
2. Locate the "Linux: Dynamic Applications Template" 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.


Device Template Editor | Click [Save] to commit changes | Editing Dynamic Application Subtemplates (Click field labels to enable/disable the
New
Reset
Config
Interface
CV Policies
Port Policies
Svc Policies
Proc Policies
Dyn Apps
Logs
Save
Save As

Template Name: Linux: Dynamic Applications Template

Subtemplate Selection

1. App: Linux: CPU Configuration
2. App: Linux: Hardware Configuratio
3. App: Linux: System Configuration
4. App: Linux: UDP Services Configu
5. App: Linux: Route Table Configura
6. App: Linux: ICDA Cache
7. App: Linux: ICDA Interface Cache
8. App: Linux: CPU Cores Performan
9. App: Linux: CPU Performance
10. App: Linux: Disk IOPS Performanc
11. App: Linux: ICMP Performance
12. App: Linux: Memory Performance
13. App: Linux: System Load Performa
14. App: Linux: TCP Performance
15. App: Linux: UDP Performance
16. App: Linux: Zombie Process
17. App: Linux: IC Filesystem Perform
18. App: Linux: IC Filesystem Inventor
19. App: Linux: IC Detail
20. App: Linux: IC Interface Performar
21. App: Linux: IC Interface Inventory
22. App: Linux: IC Process Performan
23. App: Linux: IC Process Inventory
24. App: Linux: IC Port Performance
25. App: Linux: Inode Performance
26. App: Linux: Template Discovery

Add New Dynamic App Sub-Template

Template Application Behavior

Align Dynamic Application With: All devices (align new applications and update collection states)

Dynamic Application Settings

Dynamic Application: Linux: Template Discovery

Credentials: Linux Example Credential

Poll Rate: Every 1 Minute

Dynamic Application Presentation Object(s)

Release Information Cache: Enabled

Password Expires In: Enabled

Dynamic Application Thresholds

Password Expiration Date Threshold: 30

Raw Data Retention: 5 days

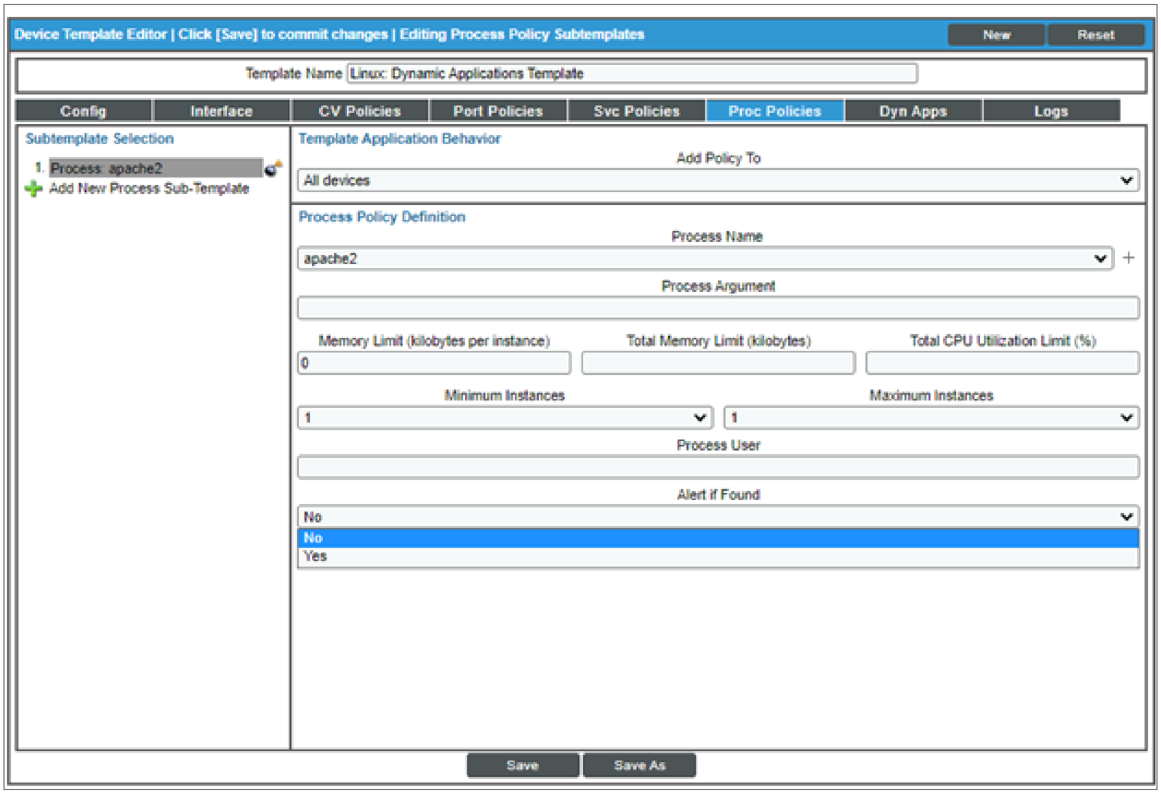
4. Click the "Linux: Template Discovery" Dynamic Application listed in the **Subtemplate Selection** section on the left side of the page and then click the ***Credentials*** field label to enable editing.

5. Select the Linux credential you created in the ***Credentials*** field. Repeat this step for all Dynamic Applications. All Dynamic Applications should be aligned to the credentials you created.

6. Enter a new name for the template in the ***Template Name*** field.

7. Click **[Save As]**.

8. Optionally, you can use the template to pre-configure Process policies and TCP/IP Port policies. To do this while configuring the template, click the **[Port Policies]** or the **[Proc Policies]** tabs and fill out the relevant fields for your policy. For more information on creating port monitoring policies and process monitoring policies with the device template, see the *Creating a Device Template* section of the ***Device Groups and Device Templates*** manual.


Device Template Editor | Click [Save] to commit changes | Editing Process Policy Subtemplates
New
Reset
Config
Interface
CV Policies
Port Policies
Svc Policies
Proc Policies
Dyn Apps
Logs
Add New Process Sub-Template
Save
Save As

Template Name: Linux: Dynamic Applications Template

Subtemplate Selection

1. Process: apache2

Template Application Behavior

Add Policy To: All devices

Process Policy Definition

Process Name: apache2

Process Argument:

Memory Limit (kilobytes per instance): 0

Total Memory Limit (kilobytes):

Total CPU Utilization Limit (%):

Minimum Instances: 1

Maximum Instances: 1

Process User:

Alert if Found: No

No
Yes

NOTE: You must rename the sample templates and click **[Save As]** to save it. If you do not rename the device template, then your device template will be overwritten the next time you upgrade the *Linux Base Pack*PowerPack.

Configuring the Linux: IC Port Performance Dynamic Application

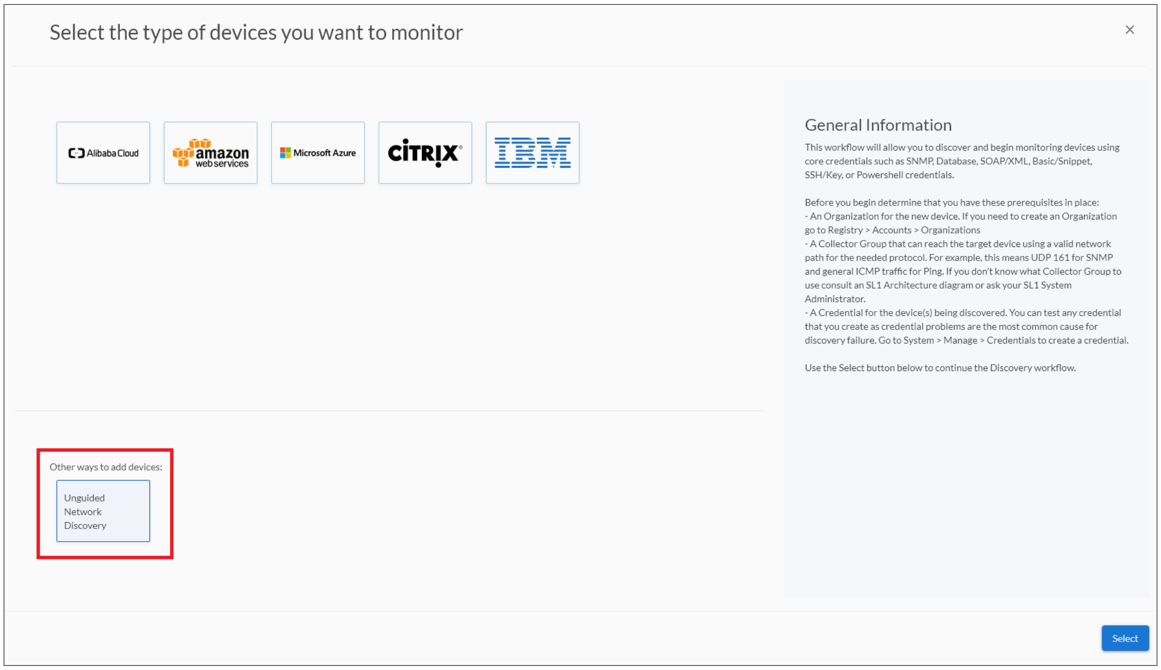
To use the "Linux: IC Port Performance" Dynamic Application, you will need to create a TCP/IP Port monitoring policy after running the discovery session. To create the TCP/IP Policy:

1. After running your discovery session, go to the **TCP/IP Port Monitoring** page (Registry > Monitors > TCP-IP Ports).
2. Click the **[Create]** button to open the **Create New TCP/IP Port Policy** page.
3. In the **Create New TCP/IP Port Policy** page, fill out the following fields:
    - ***Select IP Device***. Select the Linux device with the ports you want to monitor.
    - ***Port/Service***. Select the port you want to monitor from the dropdown menu.
    - Click the **[Save]** button.
4. You will see the ports monitored in the **[Performance]** tab of the **Device Summary** page.

Discovering Linux Devices

To discover Linux devices, 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:



Select the type of devices you want to monitor

General Information

This workflow will allow you to discover and begin monitoring devices using core credentials such as SNMP, Database, SOAP/XML, Basic/Snippet, SSH/Key, or Powershell credentials.

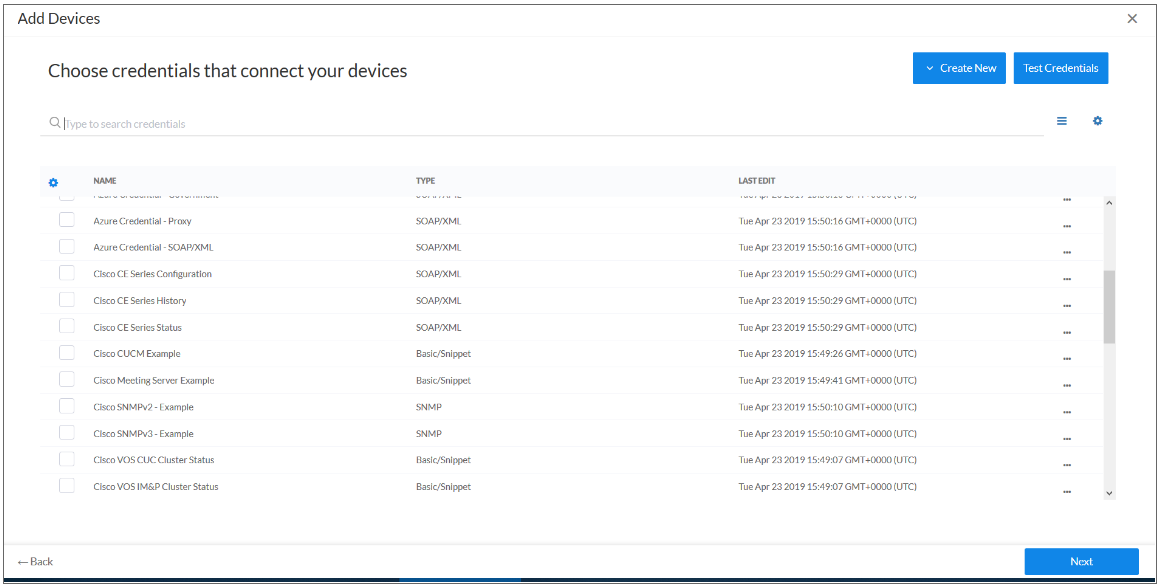
Before you begin determine that you have these prerequisites in place:
- An Organization for the new device. If you need to create an Organization go to Registry > Accounts > Organizations
- A Collector Group that can reach the target device using a valid network path for the needed protocol. For example, this means UDP 161 for SNMP and general ICMP traffic for Ping. If you don't know what Collector Group to use consult an SL1 Architecture diagram or ask your SL1 System Administrator.
- A Credential for the device(s) being discovered. You can test any credential that you create as credential problems are the most common cause for discovery failure. Go to System > Manage > Credentials to create a credential.

Use the Select button below to continue the Discovery workflow.

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:



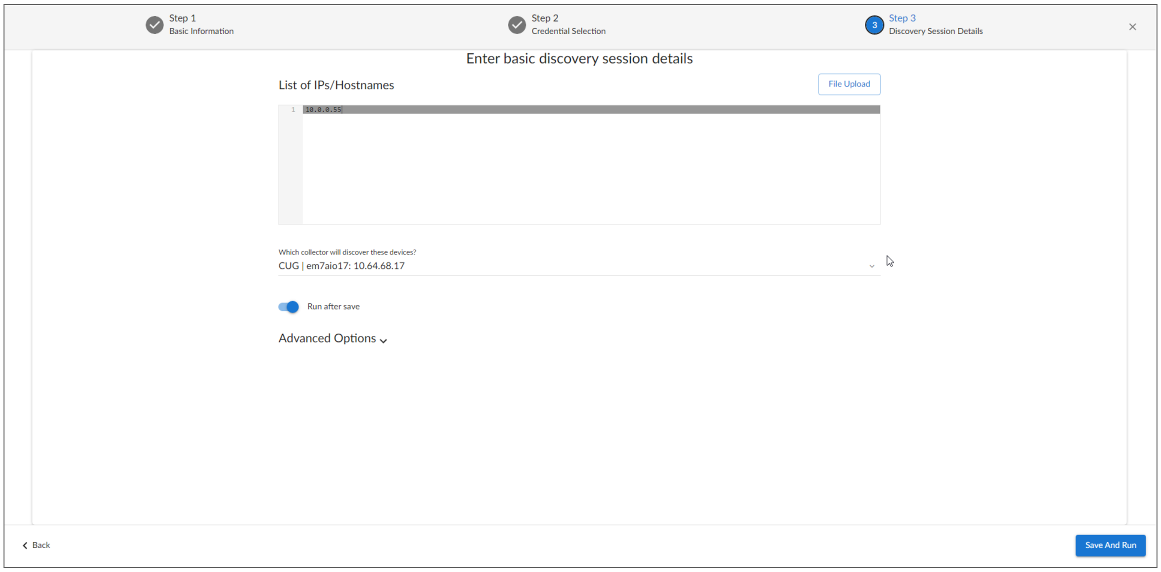
Add Devices

Choose credentials that connect your devices

	NAME	TYPE	LAST EDIT
□	Azure Credential - Proxy	SOAP/XML	Tue Apr 23 2019 15:50:16 GMT+0000 (UTC)
□	Azure Credential - SOAP/XML	SOAP/XML	Tue Apr 23 2019 15:50:16 GMT+0000 (UTC)
□	Cisco CE Series Configuration	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)
□	Cisco CE Series History	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)
□	Cisco CE Series Status	SOAP/XML	Tue Apr 23 2019 15:50:29 GMT+0000 (UTC)
□	Cisco CUCM Example	Basic/Snippet	Tue Apr 23 2019 15:49:26 GMT+0000 (UTC)
□	Cisco Meeting Server Example	Basic/Snippet	Tue Apr 23 2019 15:49:41 GMT+0000 (UTC)
□	Cisco SNMPv2 - Example	SNMP	Tue Apr 23 2019 15:50:10 GMT+0000 (UTC)
□	Cisco SNMPv3 - Example	SNMP	Tue Apr 23 2019 15:50:10 GMT+0000 (UTC)
□	Cisco VOS CUC Cluster Status	Basic/Snippet	Tue Apr 23 2019 15:49:07 GMT+0000 (UTC)
□	Cisco VOS IM&P Cluster Status	Basic/Snippet	Tue Apr 23 2019 15:49:07 GMT+0000 (UTC)

6. On the **Credentials** page, locate and select the *SSH/Key credential* you created for the Linux devices.

7. Click **[Next]**. The **Discovery Session Details** page of the **Add Devices** wizard appears:



Enter basic discovery session details

List of IPs/Hostnames

```
10.0.0.55
```

Which collector will discover these devices?
CUG | em7aio17: 10.64.68.17

● Run after save

8. Complete the following fields:

- ***List of IPs/Hostnames***. Type the IP addresses for the Linux devices you want to monitor.
- ***Which collector will monitor 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 save the session.

In the **Advanced options** section, click the down arrow icon (⌄) to complete the following fields:

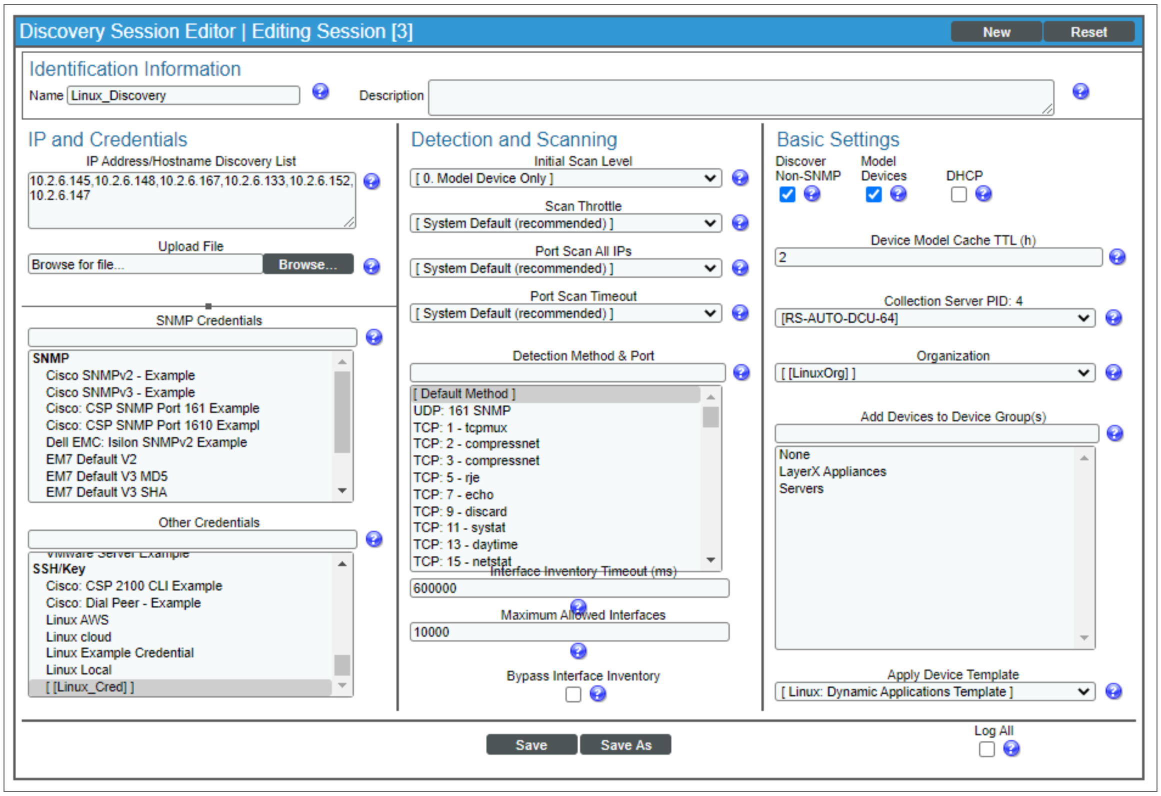
- ○ ***Discover Non-SNMP***. Enable this setting.
- ○ ***Model Devices***. Enable this setting.
- ○ ***Select Device Template***. Select *the device template that you configured*.

9. Click **[Save and Run]** if you enabled the Run after save setting, or **[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 Linux Devices in the SL1 Classic User Interface

To discover Linux devices using a discovery session, 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:



Identification Information
Name: Linux_Discovery
Description:

IP and Credentials
IP Address/Hostname Discovery List: 10.2.6.145,10.2.6.148,10.2.6.167,10.2.6.133,10.2.6.152,10.2.6.147
Upload File: Browse for file... Browse...
SNMP Credentials: SNMP; Cisco SNMPv2 - Example; Cisco SNMPv3 - Example; Cisco: CSP SNMP Port 161 Example; Cisco: CSP SNMP Port 1610 Exampl; Dell EMC: Isilon SNMPv2 Example; EM7 Default V2; EM7 Default V3 MD5; EM7 Default V3 SHA
Other Credentials: VMware Server Example; SSH/Key; Cisco: CSP 2100 CLI Example; Cisco: Dial Peer - Example; Linux AWS; Linux cloud; Linux Example Credential; Linux Local; [[Linux_Cred]]

Detection and Scanning
Initial Scan Level: [0. Model Device Only]
Scan Throttle: [System Default (recommended)]
Port Scan All IPs: [System Default (recommended)]
Port Scan Timeout: [System Default (recommended)]
Detection Method & Port: [Default Method]; UDP: 161 SNMP; TCP: 1 - tcpmux; TCP: 2 - compressnet; TCP: 3 - compressnet; TCP: 5 - rje; TCP: 7 - echo; TCP: 9 - discard; TCP: 11 - systat; TCP: 13 - daytime; TCP: 15 - netstat
Interface Inventory Timeout (ms): 600000
Maximum Allowed Interfaces: 10000
Bypass Interface Inventory: □

Basic Settings
Discover Non-SNMP: ☑
Model Devices: ☑
DHCP: □
Device Model Cache TTL (h): 2
Collection Server PID: 4: [RS-AUTO-DCU-64]
Organization: [[LinuxOrg]]
Add Devices to Device Group(s): None; LayerX Appliances; Servers
Apply Device Template: [Linux: Dynamic Applications Template]

Log All: □

- ***IP Address Discovery List***. Type the IP addresses for the Linux devices you want to monitor, separated by a comma.

- ***Other Credentials***. Select the SSH/Key credential you created for the Linux devices.
- ***Initial Scan Level***. Select *0. Model Device Only*.
- ***Discover Non-SNMP***. Select this checkbox.
- ***Model Devices***. Select this checkbox.
- ***Apply Device Template***. Select *the device template that you configured*.

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 Linux devices are discovered, click their device icons ( ) to view the **Device Properties** pages for the Linux devices.

NOTE: The "Linux: IC Interface Inventory" Dynamic Application runs during nightly discovery. If you want to force discovery of interfaces at a time outside of nightly discovery, run the following command on the collector:

```
sudo -u s-em7-core /opt/em7/bin/python /opt/em7/backend/discover_
update.py
```

Configuring Dynamic Applications for Monitoring

Configuring Collection Frequency for Linux IC Dynamic Applications

The Linux IC Dynamic Applications use results from a different command from the rest of the Dynamic Applications in the PowerPack. The results of the command create a list of Filesystems mounted on the target Linux machine that is updated every two hours.

To change the collection frequency of the "Linux: IC Filesystem Inventory" Dynamic Application:

1. Go to the **Process Manager** page (System > Settings > Admin Processes or System > Settings > Processes in the SL1 classic user interface).
2. Search for the "Data Collection: Host Filesystem Inventory" process and click its wrench icon ( ).
3. In the **Process Editor** window, use the ***Frequency*** dropdown field to select a new frequency.
4. Click the **[Save]** button.

To change the collection frequency of the "Linux: IC Filesystem Performance" Dynamic Application:

1. Go to the **Process Manager** page (System > Settings > Admin Processes or System > Settings > Processes in the SL1 classic user interface).
2. Search for the "Data Collection: Filesystem statistics" process and click its wrench icon ( ).

3. In the **Process Editor** window, use the ***Frequency*** dropdown field to select a new frequency.
4. Click the **[Save]** button.

To change the collection frequency of the "Linux: IC Detail" Dynamic Application:

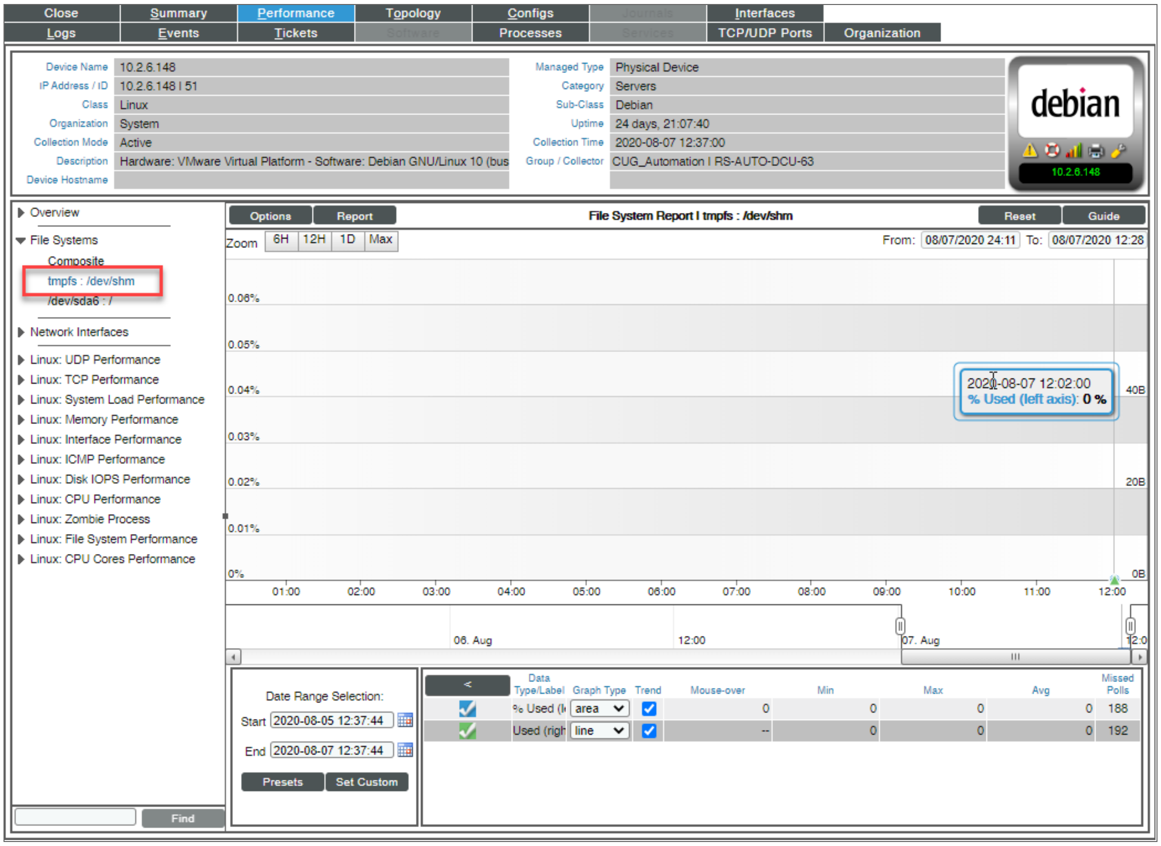
1. Go to the **Process Manager** page (System > Settings > Admin Processes or System > Settings > Processes in the SL1 classic user interface).
2. Search for the "Data Collection: SNMP Detail" process and click its wrench icon (🔧).
3. In the **Process Editor** window, use the ***Frequency*** dropdown field to select a new frequency.
4. Click the **[Save]** button.

Unhiding Linux File Systems

In the**Device Hardware** page (Registry > Devices > Hardware), you can see view the size of the file system, the mount point with the name of the mounted file system, the format of the file system, and whether or not the file system is hidden.

To unhide the file system:

1. Go to the**Device Hardware** page (Devices > Hardware or Registry > Devices > Hardware in the SL1 classic user interface).
2. Find the file system you want to hide and select its checkbox.
3. In the ***Select Actions*** menu, select *UNHIDE File systems*.
4. Click the **[Go]** button to apply your changes.
5. Click the graph icon (📊) next to the file system to open the **Device Summary** page.
6. Click the **[Performance]** tab.
7. You will see the unhidden file system listed in the left pane.



Device Name: 10.2.6.148
IP Address / ID: 10.2.6.148 | 51
Class: Linux
Organization: System
Collection Mode: Active
Description: Hardware: VMware Virtual Platform - Software: Debian GNU/Linux 10 (bus
Device Hostname:

Managed Type: Physical Device
Category: Servers
Sub-Class: Debian
Uptime: 24 days, 21:07:40
Collection Time: 2020-08-07 12:37:00
Group / Collector: CUG_Automation | RS-AUTO-DCU-63

File System Report | tmpfs : /dev/shm

From: 08/07/2020 24:11 To: 08/07/2020 12:28

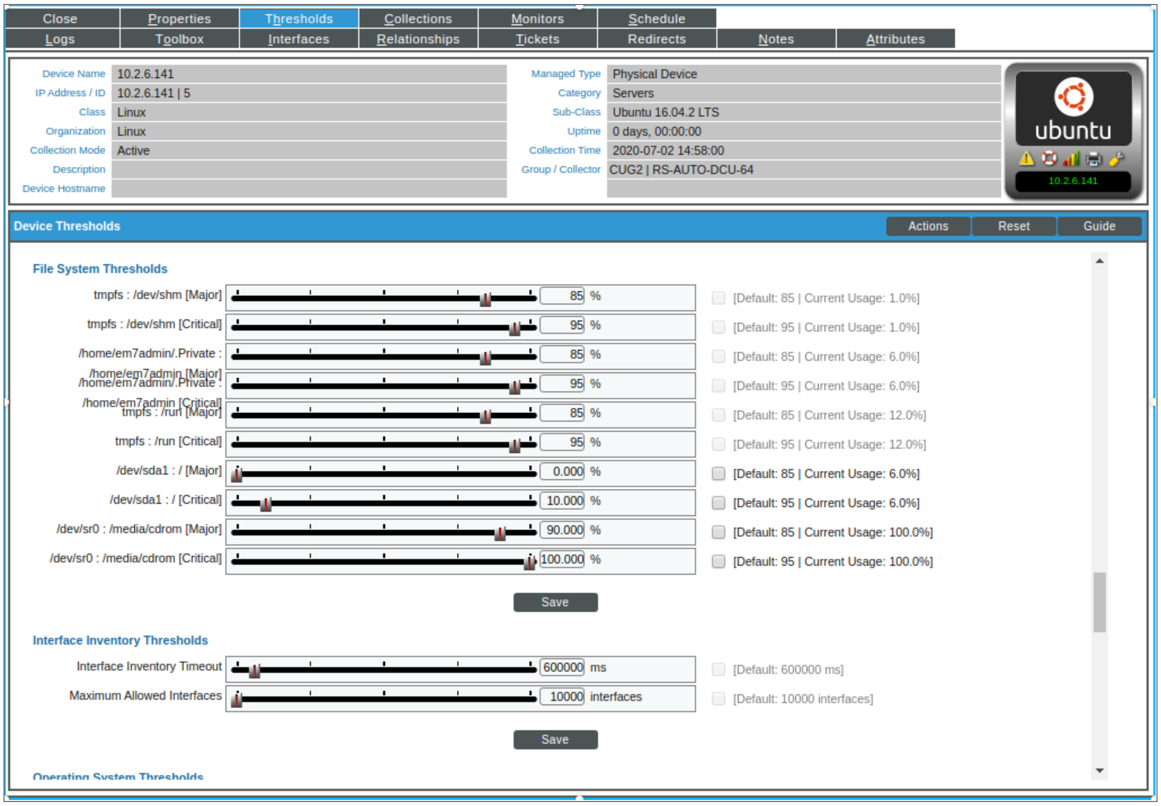
Date Range Selection:
Start 2020-08-05 12:37:44
End 2020-08-07 12:37:44

	Data Type/Label	Graph Type	Trend	Mouse-over	Min	Max	Avg	Missed Polls
☑	% Used (l	area	☑	0	0	0	0	188
☑	Used (righ	line	☑	--	0	0	0	192

Configuring Linux File System Thresholds

To change the file system threshold:

1. Go to the **Device Hardware** page (Devices > Hardware or Registry > Devices > Hardware in the SL1 classic user interface).
2. Find the file system you want to hide and select its checkbox.
3. In the ***Select Actions*** menu, select *UNHIDE File systems*.
4. Click the **[Go]** button to apply your changes.
5. Click the wrench icon (🔧) next to the file system to open the **Device Properties** page.
6. Click the **[Thresholds]** tab.
7. In the **Device Thresholds** page, scroll down to the **File System Thresholds** section.
8. Find the threshold you want to edit and drag the sliders to adjust the threshold(s).
9. Click **[Save]** to save the threshold(s).



Device Name: 10.2.6.141
IP Address / ID: 10.2.6.141 | 5
Class: Linux
Organization: Linux
Collection Mode: Active
Description:
Device Hostname:
Managed Type: Physical Device
Category: Servers
Sub-Class: Ubuntu 16.04.2 LTS
Uptime: 0 days, 00:00:00
Collection Time: 2020-07-02 14:58:00
Group / Collector: CUG2 | RS-AUTO-DCU-64

File System Thresholds

tmpfs : /dev/shm [Major] 85 % [Default: 85 | Current Usage: 1.0%]
tmpfs : /dev/shm [Critical] 95 % [Default: 95 | Current Usage: 1.0%]
/home/em7admin/.Private : /home/em7admin [Major] 85 % [Default: 85 | Current Usage: 6.0%]
/home/em7admin/.Private : /home/em7admin [Critical] 95 % [Default: 95 | Current Usage: 6.0%]
tmpfs : /run [Major] 85 % [Default: 85 | Current Usage: 12.0%]
tmpfs : /run [Critical] 95 % [Default: 95 | Current Usage: 12.0%]
/dev/sda1 : / [Major] 0.000 % [Default: 85 | Current Usage: 6.0%]
/dev/sda1 : / [Critical] 10.000 % [Default: 95 | Current Usage: 6.0%]
/dev/sr0 : /media/cdrom [Major] 90.000 % [Default: 85 | Current Usage: 100.0%]
/dev/sr0 : /media/cdrom [Critical] 100.000 % [Default: 95 | Current Usage: 100.0%]

Interface Inventory Thresholds

Interface Inventory Timeout 600000 ms [Default: 600000 ms]
Maximum Allowed Interfaces 10000 interfaces [Default: 10000 interfaces]

Operating System Thresholds

Aligning the Linux: SSH Cache Worker Dynamic Application

After updating to Linux Base Pack PowerPack version 111, you must align the "Linux: SSH Cache Worker" Dynamic Application to continue monitoring. This Dynamic Application acts as a cache producer for all the Dynamic Applications.

Devices discovered through a discovery session with the "Linux: Configuration Discovery" Dynamic Application aligned will automatically align with the "Linux: SSH Cache Worker" Dynamic Application in the next poll. However, if the Dynamic Applications were aligned using a template, you will need to set up the "Linux: SSH Cache Worker" Dynamic Application manually.

To align the "Linux: SSH Cache Worker" Dynamic Application using a template:

1. Create a new template adding the "Linux: SSH Cache Worker" Dynamic Application and credential.

- Go to the **Device Template** (Registry>Devices>Template) and click **[Create]**. The Device Template Editor modal opens.
- Enter a template name in the **Template Name** field.
- On the **[Dyn Apps]** tab click ***Add New Dynamic App Sub-Template*** in the left **Subtemplate** menu.
- In the ***Dynamic Application*** drop-down field, select "*Linux: SSH Cache Worker*".
- In the ***Credentials*** drop-down field, select *ssh-cred*.
- Click **[Save]**.

2. Apply the template to align the "Linux: SSH Cache Worker" Dynamic Application to multiple devices.

- Go to the **Device Manager** (Registry>Device Manager) and select the checkbox of the devices you want to align.
- In the **Select Action** menu at the bottom of the page, select *MODIFY by Template*. Next, click **[Go]**. The **Bulk Device Configuration** modal appears.

3. In the ***Template*** field, select the template you created in the previous steps and then click **[Apply]**.
4. Click **[Confirm]** to align the "Linux: SSH Cache Worker" Dynamic Application to your selected devices.

Relationships Between Component Devices

The Dynamic Applications in the *Linux Base Pack* PowerPack can automatically build relationships between Linux servers and other associated devices:

- If you discover AppDynamics applications using the Dynamic Applications in the *Cisco: AppDynamics* PowerPack, SL1 will automatically create relationships between Linux Servers and AppDynamics Nodes.
- If you discover Dynatrace environments using the Dynamic Applications in the *Dynatrace* PowerPack, SL1 will automatically create relationships between Linux Servers and Dynatrace Hosts.
- If you discover New Relic devices using the Dynamic Applications in the *New Relic* PowerPack, SL1 will automatically create relationships between Linux Servers and New Relic Servers.

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