



Monitoring Linux Systems

Linux Base Pack version 103

Table of Contents

Introduction	3
What is SNMP?	4
What is Net-SNMP?	4
Why Should I Use Net-SNMP?	4
Basic SNMP Terminology	5
What is SSH?	7
What Does the Linux Base Pack PowerPack Monitor?	8
Installing the Linux Base Pack PowerPack	8
Installing and Configuring Net-SNMP for Linux	10
Installing Net-SNMP on Linux Devices	11
Step 1: Verifying and Installing Net-SNMP with RPM Packages	12
Step 2: Stopping snmpd	12
Step 3: Creating the snmpd.conf file	13
Example snmpd.conf file for SNMPv2:	13
Adding Read/Write Access to the snmpd.conf File for SNMPv2	15
Example snmpd.conf file for SNMPv3:	15
Step 4: Starting snmpd and Testing connectivity to Net-SNMP	16
Testing the Example snmpd.conf file for SNMPv2	16
Testing the Example snmpd.conf file for SNMPv3	17
Creating SNMP Credentials for Linux	18
Creating SNMPv2 Credentials	19
Creating SNMPv3 Credentials	21
Configuring Syslog for Linux	24
What is Syslog?	24
Configuring Syslog for Linux	25
Monitoring Linux with SSH	27
Prerequisites for Monitoring Linux Devices with SSH	28
Configuring Linux Devices to Collect Data	28
Creating an SSH/Key Credential	31
Configuring the Linux Device Template	33
Discovering Linux Devices	34
Discovering More Devices per Discovery Session	36
Configuring Dynamic Applications for Monitoring	36
Linux: Hardware Configuration	36
Configuring Linux IC Dynamic Applications	37
Linux: IC Port Performance	37
Configuring Collection Frequency for Linux IC Dynamic Applications	37
Unhiding Linux File Systems	38
Configuring Linux File System Thresholds	39
Relationships Between Component Devices	40

Chapter

1

Introduction

Overview

This manual describes how to configure SNMP and Syslog for Linux systems and how to monitor Linux systems with SL1 using the Dynamic Applications in the *Linux Base Pack PowerPack*.

The following sections provide an overview of SNMP, Net-SNMP, Secure Shell (SSH), and the *Linux Base Pack PowerPack*:

<i>What is SNMP?</i>	4
<i>What is Net-SNMP?</i>	4
<i>Why Should I Use Net-SNMP?</i>	4
<i>Basic SNMP Terminology</i>	5
<i>What is SSH?</i>	7
<i>What Does the Linux Base Pack PowerPack Monitor?</i>	8
<i>Installing the Linux Base Pack PowerPack</i>	8

NOTE: ScienceLogic provides this documentation for the convenience of ScienceLogic customers. Some of the configuration information contained herein pertains to third-party vendor software that is subject to change without notice to ScienceLogic. ScienceLogic makes every attempt to maintain accurate technical information and cannot be held responsible for defects or changes in third-party vendor software. There is no written or implied guarantee that information contained herein will work for all third-party variants. See the End User License Agreement (EULA) for more information.

What is SNMP?

Simple Network Management Protocol (SNMP) is a set of standard protocols for managing diverse computer hardware and software within a TCP/IP network. SNMP is the most common protocol used by network monitoring and management applications to exchange information between devices. SL1 uses this protocol and other protocols to collect availability, performance, and configuration information.

SNMP uses a server-client structure.

- Clients are called **agents**. Devices and software that run SNMP are agents. For the purposes of this document, Net-SNMP is the agent.
- The server is called the **management system**. SL1 is the management system.

Typically, **agents**:

- Implement the SNMP protocol on the device.
- Store data points as defined by the Management Information Base (MIB) file.
- Can asynchronously signal an event to the manager.

Typically, a **management system**:

- Uses the SNMP Protocol.
- Queries agents.
- Receives responses (data points) from agents.
- Acknowledges asynchronous events from agents.

Most enterprise-level network hardware is configured for SNMP and can be SNMP-enabled. Many enterprise software applications are also SNMP-compliant. When SNMP is running on a device, it uses a standard format to collect and store data about the device and/or software. For example, SNMP might collect information on each network interface and the traffic on each interface. SL1 can then query the device to retrieve the stored data.

What is Net-SNMP?

Net-SNMP is a suite of applications used to implement SNMP. Net-SNMP is an agent. Standard Net-SNMP includes the **snmpd** daemon and a suite of client utilities. Net-SNMP can be run on any supported operating system, and SL1 will then be able to communicate with and collect data from the device.

Why Should I Use Net-SNMP?

- Net-SNMP is an open-source application. It is free to use and distribute.
- Because Net-SNMP is widely used, there are many user groups and support forums for the product.

NOTE: Although ScienceLogic does not directly support the Net-SNMP agent, this document will get you started on the installation and configuration tasks for Net-SNMP. For detailed documentation on Net-SNMP, see <http://www.net-snmp.org>.

- Net-SNMP includes source and pre-compiled objects for all major flavors of UNIX and Linux as well as a number of other operating systems.
- Net-SNMP is an **extensible** agent. Generally, SNMP agents can retrieve only data that has been defined in a MIB file. In most cases, a hardware or software manufacturer creates the MIB file and then ships the MIB file with the product. Net-SNMP allows users to add values to the MIB file and retrieve values from scripts, programs, and files.
- Net-SNMP is a natural fit with SL1's Dynamic Applications. Using Net-SNMP and dynamic applications, users can create reports, coupled graphs, and events based on the data points that are most useful to them.

Basic SNMP Terminology

This section defines some basic SNMP terminology. You should be familiar with the following terminology before installing and configuring Net-SNMP:

- **SNMP (Simple Network Management Protocol)**. A set of standard protocols for managing diverse computer hardware and software within a TCP/IP network. SNMP is the most common network protocol used by network monitoring and management applications to exchange management information between devices. SL1 uses this protocol and other protocols to collect availability, performance, and configuration information.

SNMP uses a server-client structure. Clients are called agents. Devices and software that run SNMP are agents. The server is called the management system. SL1 is the management system.

Most enterprise-level network hardware is configured for SNMP and can be SNMP-enabled. Many enterprise software applications are also SNMP-compliant. When SNMP is running on a device, it uses a standard format to collect and store data about the device and/or software. For example, SNMP might collect information on each network interface and the traffic on each interface. SL1 can then query the device to retrieve the stored data.

- **SNMP Tree**. SNMP uses a tree structure. The first few branches of the tree are organizational and do not apply to specific manufacturers and device. The starting point for all device or application info is:

1.3.6.1.4.1.vendor_number

For details on SNMP tree structure, see <http://www.iana.org/assignments/enterprise-numbers>.

For an overview of the entire SNMP tree, see <http://www3.rad.com/networks/applications/snmp/main.htm>

- **MIB (Management Information Base)**. A collection of objects that can be monitored by a network management system (in this case, SL1). The objects are organized hierarchically and stored in a MIB file. SNMP requires a standardized format for each MIB file. This standardized format allows SL1 to gather data on any device where SNMP is enabled. A MIB file is usually associated with a manufacturer and a device. Some companies use a single MIB that contains information on all their products; some manufacturers create a separate MIB for each product.
- **OID (Object ID)**. OIDs are the numeric IDs that are used in the SNMP tree. OIDs are used to define manufacturers, devices, and the characteristics of devices. OIDs are defined and organized in MIB files.
- In SL1, the **root OID** (sometimes called the vendor number) refers to the unique number assigned to each manufacturer. Each root OID is registered with IANA. For example, the root OID for American Power Conversion (APC) Corporation is 1.3.6.1.4.1.318. APC can then create and organize OIDs under this root OID. For example:
 - 1.3.6.1.4.1.318 is the root OID for American Power Conversion Corporation
 - 1.3.6.1.4.1.318.1 could mean "all products". APC could then define unique IDs under "all products".
 - 1.3.6.1.4.1.318.1.1 could mean "hardware"
 - 1.3.6.1.4.1.318.1.2 could mean "software"

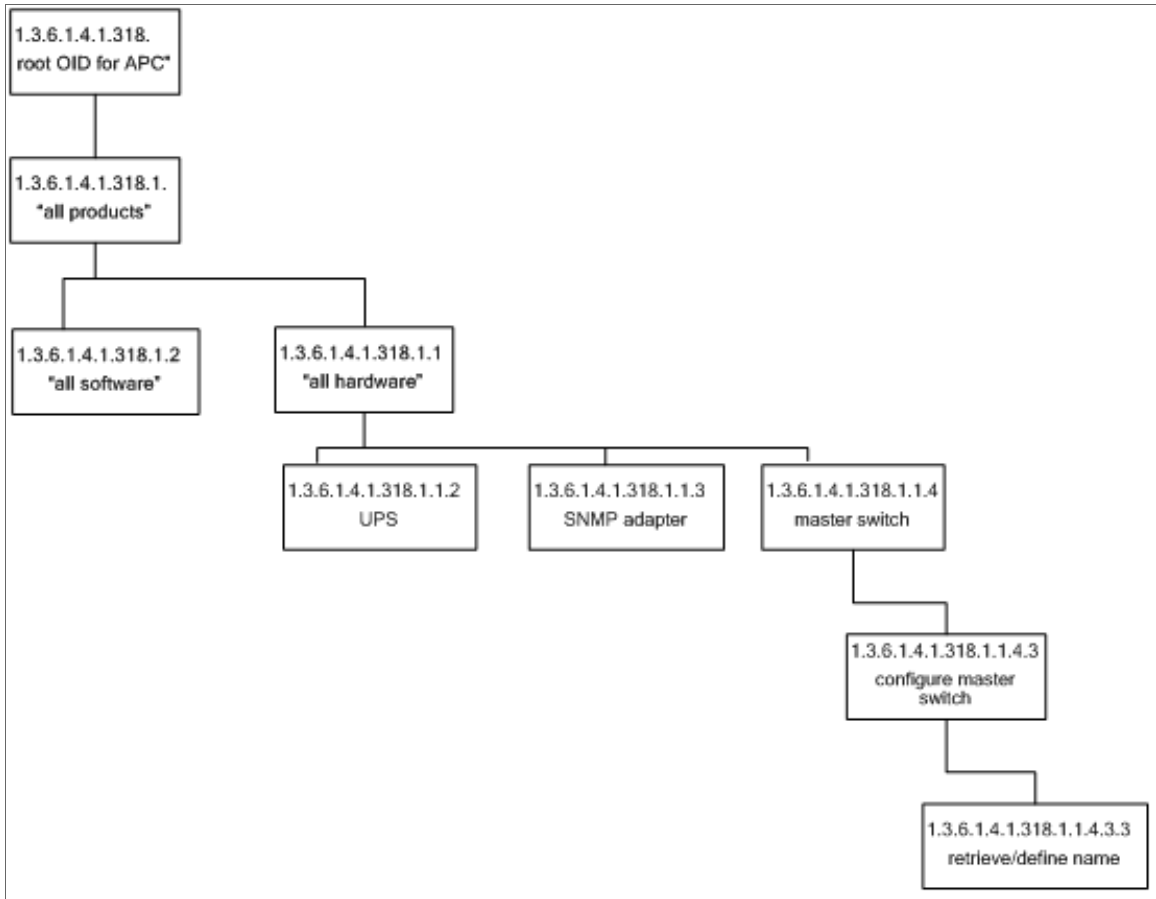
All the OIDs that occur under 1.3.6.1.4.1.318.1.1 would be mapped to types of hardware, for example:

- 1.3.6.1.4.1.318.1.1.2 could mean "UPS"
- 1.3.6.1.4.1.318.1.1.3 could mean "SNMP adapter"
- 1.3.6.1.4.1.318.1.1.4 could mean "master switch"

All the OIDs that occur under each type of hardware (UPS, SNMP adapter, master switch) would be mapped to specific parameters that can be monitored and controlled through SNMP commands. For example:

- 1.3.6.1.4.1.318.1.1.4.3 could mean "configuration settings for master switch"
- 1.3.6.1.4.1.318.1.1.4.3.3 could mean "retrieve or define name for master switch"

The section of the SNMP tree for our example would look like this:



What is SSH?

Secure Shell (SSH) is a network protocol that enables users to securely access a command-line shell on a remote computer or server over an unsecured network. SSH provides strong encryption and authentication capabilities, making it an ideal method for securely administering commands or transferring data between a client and server.

To make SSH even more secure, you can use SSH keys instead of a simple password to log in to a server. SSH keys consist of two long strings of characters, called a public/private key pair, that are much less susceptible than passwords are to brute force attacks. The public key is placed on the server you want to access, while the private key resides on the client. When you use SSH to log in to the server from the client, the key pair is used to authenticate the session.

In SL1, some Dynamic Applications of type "Snippet" use SSH to communicate with a remote device. To use these Dynamic Applications, you must define an SSH credential. This credential specifies the hostname or IP address of the system you want to monitor, the port number used to access that system, and the private key used for authentication.

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

What Does the Linux Base Pack PowerPack Monitor?

To monitor Linux systems with SSH using SL1, you must install the *Linux Base Pack PowerPack*. This PowerPack enables you to discover, model, and collect data about Linux systems.

The *Linux Base Pack PowerPack* includes:

- Dynamic Applications that discover and collect configuration and performance data for Linux systems
- Internal collection Dynamic Applications for Linux systems
- Event Policies and corresponding alerts that are triggered when Linux systems meet certain status criteria
- Device Classes for each type of Linux system monitored
- A Run Book Action and an Automation policy to assign the proper device classes to Linux systems

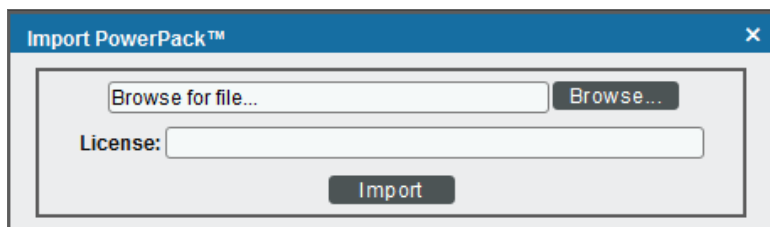
Installing the Linux Base Pack PowerPack

To monitor Linux systems with SSH, you must import and install the latest version of the *Linux Base Pack 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.)

To download and install a PowerPack:

1. Download the PowerPack from the [ScienceLogic Customer Portal](#).
2. Go to the **PowerPack Manager** page (System > Manage > PowerPacks).
3. In the **PowerPack Manager** page, click the **[Actions]** button, then select *Import PowerPack*.
4. The **Import PowerPack** dialog box appears:



5. Click the **[Browse]** button and navigate to the PowerPack file.
6. When the **PowerPack Installer** modal appears, click the **[Install]** button to install the PowerPack.

NOTE: If you exit the **PowerPack Installer** modal without installing the imported PowerPack, the imported PowerPack will not appear in the **PowerPack Manager** 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

Installing and Configuring Net-SNMP for Linux

Overview

The following sections describe how to install Net-SNMP on a Linux device and how to configure Net-SNMP:

<i>Installing Net-SNMP on Linux Devices</i>	11
<i>Step 1: Verifying and Installing Net-SNMP with RPM Packages</i>	12
<i>Step 2: Stopping snmpd</i>	12
<i>Step 3: Creating the snmpd.conf file</i>	13
<i>Example snmpd.conf file for SNMPv2:</i>	13
<i>Adding Read/Write Access to the snmpd.conf File for SNMPv2</i>	15
<i>Example snmpd.conf file for SNMPv3:</i>	15
<i>Step 4: Starting snmpd and Testing connectivity to Net-SNMP</i>	16
<i>Testing the Example snmpd.conf file for SNMPv2</i>	16
<i>Testing the Example snmpd.conf file for SNMPv3</i>	17
<i>Creating SNMP Credentials for Linux</i>	18
<i>Creating SNMPv2 Credentials</i>	19
<i>Creating SNMPv3 Credentials</i>	21

NOTE: For detailed descriptions of Net-SNMP for each supported operating system, see <http://www.net-snmp.org>.

Installing Net-SNMP on Linux Devices

For each Linux device that you want to monitor with Net-SNMP, you must install and configure Net-SNMP. ***If you want to monitor multiple devices with Net-SNMP, you must install Net-SNMP and create the `snmpd.conf` file on each device to be monitored.***

NOTE: Most Linux distributions will require the same installation and configuration as described in this chapter.

If Net-SNMP is correctly installed and configured on a Linux device, SL1 can automatically query the device and collect data. SL1 includes multiple default Dynamic Applications for the Net-SNMP agent. These Dynamic Applications allow SL1 to collect selected data-points from Net-SNMP devices. The data is then used to create reports and graphs, accessible via the graphical user-interface.

By querying Net-SNMP data-points, SL1 can collect and present at least the following about a device:

- System name, operating system, operating system version, and uptime
- File-system configuration and usage
- Memory size and usage
- CPU usage
- Installed software
- Running processes
- Network interface details, including name, speed, and MAC address
- Bandwidth usage

Installing and Configuring Net-SNMP on a Linux computer includes the following steps:

1. [Verifying and Installing Net-SNMP using free RPM Packages.](#)
2. [Stopping `snmpd`.](#)
3. [Creating the `snmpd.conf` file.](#) This file defines how the Net-SNMP agent will behave and includes information on the physical location and the contact information for the server, access control for the Net-SNMP agent, and trap destinations for the agent.
4. [Starting `snmpd` and testing connectivity to Net-SNMP.](#)

Step 1: Verifying and Installing Net-SNMP with RPM Packages

The operating system for SL1 ships with the following RPM packages for Net-SNMP:

- net-snmp-5.7.2-24.silo.el7.x86_64
- net-snmp-libs-5.7.2-24.silo.el7.x86_64
- net-snmp-utils--5.7.2-24.silo.el7.x86_64

To continue with the steps in this chapter, you must verify the presence of these RPMs on the server that SL1 will monitor. To do this:

1. Open a shell session
2. Enter one of the following at the prompt:

```
rpm -qa | grep net-snmp
```

or

```
yum list net-snmp
```

3. Ensure that the output of this command includes each RPM listed above.
4. If one or more of these packages are missing you can run the appropriate command from the following commands:

```
yum install net-snmp
yum install net-snmp-libs
yum install net-snmp-utils
```

5. After you have verified and installed all the packages, you can create the net-snmp configuration file and start the snmp service (agent).

Step 2: Stopping snmpd

The Linux RPM for net-snmp includes the snmpd (Net-SNMP agent) binary as follows:

- The snmpd binary is installed in the directory /usr/sbin/snmpd.
- The configuration file for the snmpd agent is installed in /etc/snmp/snmpd.conf

NOTE: You should configure the snmpd.conf file before you start the snmpd daemon.

You must check if the snmpd agent is running. If it is, you must stop the snmpd agent so you can create the configuration file.

To check the snmpd agent and stop it (if necessary):

1. Open a shell session.
2. To see if the snmpd agent is running, enter the following at the prompt:

```
/etc/init.d/snmpd status
```

3. If snmpd is running, you will see a message like "snmpd is running".
4. If the snmpd agent is running, enter the following command to stop the agent:

```
/etc/init.d/snmpd stop
```

Step 3: Creating the snmpd.conf file

The snmpd.conf. file defines how the Net-SNMP daemon will behave and includes information about the physical location and contact information for the server, access control for the Net-SNMP agent, and trap destinations for the Net-SNMP agent.

CAUTION: In most cases, your computer(s) will already have an existing /etc/snmp/snmpd.conf file that includes the default settings. Because we want to create a new, clean snmpd.conf file, you must replace the existing file. You must move, not copy, the file, to ensure that you are creating a new file and not simply append new settings to the default settings in the snmpd.conf file. After stopping the snmpd agent, you must move the existing config file.

To move the existing configuration file, open a shell session and enter the following at the command line:

```
mv /etc/snmp/snmpd.conf /etc/snmp/snmpd.conf.orig
```

To create the/etc/snmp/snmpd.conf file:

- You can replace your snmpd.conf file with one of the examples in the following sections. There is an example configuration file for Net-SNMP for SNMPv2 and another for SNMPv3 on Linux.
- The example configuration files contain the basic settings that SL1 will need to communicate successfully with the Net-SNMP agent on the Linux server.
- For basic compatibility, you should edit your file to include only the entries from the selected example.

NOTE: Net-SNMP is highly customizable, and SL1 can fully take advantage of these customizations. If you are interested in extending your Net-SNMP agent, please contact ScienceLogic Professional Services.

Example snmpd.conf file for SNMPv2:

The following is a working example of a snmpd.conf file for SNMPv2. You should edit your snmpd.conf file to include only the entries from this example file.

NOTE: This snmpd.conf file does *not* include encrypting SNMP access to the Linux client.

The file should be located in /etc/snmp/snmpd.conf:

```
# snmpd.conf
#
# - created by the snmpconf configuration program
#
#####
# SECTION: System Information Setup
#
# This section defines some of the information reported in
# the "system" mib group in the mibII tree.
# syslocation: The [typically physical] location of the system.
# Note that setting this value here means that when trying to
# perform an snmp SET operation to the sysLocation.0 variable will make
# the agent return the "notWritable" error code. IE, including
# this token in the snmpd.conf file will disable write access to
# the variable.
# arguments: location_string
syslocation "Reston, Virginia"
# syscontact: The contact information for the administrator
# Note that setting this value here means that when trying to
# perform an snmp SET operation to the sysContact.0 variable will make
# the agent return the "notWritable" error code. IE, including
# this token in the snmpd.conf file will disable write access to
# the variable.
# arguments: contact_string
syscontact "ScienceLogic Support 1-703-354-1010"
#####
# SECTION: Access Control Setup
#
# This section defines who is allowed to talk to your running
# snmp agent
# rocommunity: a SNMPv1/SNMPv2c read-only access community name
# arguments: community [default|hostname|network/bits] [oid]
rocommunity public
# rwcommunity: a SNMPv1/SNMPv2c read-write access community name
# arguments: community [default|hostname|network/bits] [oid]
# rwcommunity private
#####
# SECTION: Trap Destinations
#
# Here we define who the agent will send traps to.
# trap2sink: A SNMPv2c trap receiver
# arguments: host [community] [portnum]
#
trap2sink 192.168.10.71 public
# End of File
```

NOTE: The example snmpd.conf file for SNMPv2 uses the default community string ("public") and ScienceLogic-specific examples of Contact and Location information and Trap Destinations. You will need to change these settings to match your local environment.

Adding Read/Write Access to the snmpd.conf File for SNMPv2

The example snmpd.conf file provides only Read Only access to your Linux system from SL1 (using the default "SNMP public" credential that is included in SL1). If you require SL1 to have Read/Write access to your Linux system, you will need to perform the following steps.

1. In the snmpd.conf file, uncomment the line for rwcommunity. To do this:

Change this line:

```
# rwcommunity private
```

To:

```
rwcommunity private
```

2. Save your changes and exit the file.

Example snmpd.conf file for SNMPv3:

The following is a working example of a snmpd.conf file for SNMPv3. For operation with SL1, you should edit your snmpd.conf file to include only entries from this example file.

This example snmpd.conf file includes read and write community strings and encrypts all Net-SNMP access to your Linux system from SL1.

The file should reside in /etc/snmp/snmpd.conf:

```
# snmpd.conf
#
# - created by the snmpconf configuration program
#####
# SECTION: System Information Setup
#
# This section defines some of the information reported in
# the "system" mib group in the mibII tree.
# syslocation: The [typically physical] location of the system.
# Note that setting this value here means that when trying to
# perform an snmp SET operation to the sysLocation.0 variable will make
# the agent return the "notWritable" error code. IE, including
# this token in the snmpd.conf file will disable write access to
# the variable.
# arguments: location_string
syslocation "Reston, Virginia"
# syscontact: The contact information for the administrator
# Note that setting this value here means that when trying to
# perform an snmp SET operation to the sysContact.0 variable will make
```

```

# the agent return the "notWritable" error code. IE, including
# this token in the snmpd.conf file will disable write access to
# the variable.
# arguments: contact_string
syscontact "ScienceLogic Support: 1-703-354-1010"
#####
# SECTION: Access Control Setup
#
# This section defines who is allowed to talk to your running
# snmp agent.
# rwuser: a SNMPv3 read-write user
# arguments: user [noauth|auth|priv] [restriction_oid]
rouser linuser priv
createUser linuser SHA linuserpass DES linprivpass
rwuser linadmin priv
createUser linadmin SHA linauthpass DES linprivpass
#####
# SECTION: Trap Destinations
#
# Here we define who the agent will send traps to.
# trap2sink: A SNMPv2c trap receiver
# arguments: host [community] [portnum]
#
trap2sink 192.168.10.71 public
# End of File

```

NOTE: The example snmpd.conf file for SNMPv3 uses ScienceLogic-specific examples of Contact and Location information and Trap Destinations. You will need to change these settings to match your local environment. In SL1, you must create a Read-Only credential for SNMPv3 and a Read/Write credential for SNMPv3 that match the credentials specified in the snmpd.conf file.

Step 4: Starting snmpd and Testing connectivity to Net-SNMP

These sections describe how to start the snmpd agent and how to test connectivity to Net-SNMP.

- If you use SNMPv2 and used the example snmpd.conf file for SNMPv2, follow the steps in the section on SNMPv2.
- If you use SNMPv3 and used the example snmpd.conf file for SNMPv3, follow the steps in the section on SNMPv3.

Testing the Example snmpd.conf file for SNMPv2

Now that you have created the new snmpd.conf file for SNMPv2 on your Linux system, you can start the snmpd service (agent) and test that the new file is working. To do this:

1. You must first restart the snmpd agent. To do this, open a shell session and enter the following at the command prompt:

```
/etc/init.d/snmpd start
```


2. The snmpd agent should now start running.
3. To test the snmpd agent and the new configuration file, enter the following at the command prompt:

```
snmpwalk -v 2c -c public localhost system
```

4. You should see output similar to:

```
SNMPv2-MIB::sysDescr.0 = STRING: Linux ps-centos-lnx 2.6.18-92.el5 #1 SMP Tue Jun 10
18:49:47 EDT 2008 i686
SNMPv2-MIB::sysObjectID.0 = OID: NET-SNMP-MIB::netSnmpAgentOIDs.10
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (437) 0:00:04.37
SNMPv2-MIB::sysContact.0 = STRING: "ScienceLogic Support 1-703-354-1010"
SNMPv2-MIB::sysName.0 = STRING: ps.centos-lnx
SNMPv2-MIB::sysLocation.0 = STRING: "Reston, Virginia"
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORID.1 = OID: SNMPv2-MIB::snmpMIB
SNMPv2-MIB::sysORID.2 = OID: TCP-MIB::tcpMIB
SNMPv2-MIB::sysORID.3 = OID: IP-MIB::ip
SNMPv2-MIB::sysORID.4 = OID: UDP-MIB::udpMIB
SNMPv2-MIB::sysORID.5 = OID: SNMP-VIEW-BASED-ACM-MIB::vacmBasicGroup
SNMPv2-MIB::sysORID.6 = OID: SNMP-FRAMEWORK-MIB::snmpFrameworkMIBCompliance
SNMPv2-MIB::sysORID.7 = OID: SNMP-MPD-MIB::snmpMPDCompliance
SNMPv2-MIB::sysORID.8 = OID: SNMP-USER-BASED-SM-MIB::usmMIBCompliance
SNMPv2-MIB::sysORDescr.1 = STRING: The MIB module for SNMPv2 entities
SNMPv2-MIB::sysORDescr.2 = STRING: The MIB module for managing TCP implementations
SNMPv2-MIB::sysORDescr.3 = STRING: The MIB module for managing IP and ICMP
implementations
SNMPv2-MIB::sysORDescr.4 = STRING: The MIB module for managing UDP implementations
SNMPv2-MIB::sysORDescr.5 = STRING: View-based Access Control Model for SNMP.
SNMPv2-MIB::sysORDescr.6 = STRING: The SNMP Management Architecture MIB.
SNMPv2-MIB::sysORDescr.7 = STRING: The MIB for Message Processing and Dispatching.
SNMPv2-MIB::sysORDescr.8 = STRING: The management information definitions for the
SNMP User-based Security Model.
SNMPv2-MIB::sysORUpTime.1 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.2 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.3 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.4 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.5 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.6 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.7 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.8 = Timeticks: (0) 0:00:00.00
```

Testing the Example snmpd.conf file for SNMPv3

Now that you have created the new snmpd.conf file for SNMPv3 on your Linux system, you can start the snmpd service (agent) and test that the new file is working. To do this:

1. You must first restart the snmpd agent. To do this, open a shell session and enter the following at the command prompt:

```
/etc/init.d/snmpd start
```

2. The snmpd agent should now start running.
3. To test the snmpd agent and the new configuration file, enter the following at the command prompt. We are using the credentials from the example snmpd.conf file for SNMPv3 (*linuser*, *linuserpass*, and *linprivpass*); if you used different credentials, please substitute them in the command:

```
snmpwalk -v 3 -u linuser -l authPriv -a SHA -A linuserpass -x DES -X linprivpass localhost system
```

4. You should see output similar to:

```
SNMPv2-MIB::sysDescr.0 = STRING: Linux ps-centos-lnx 2.6.18-92.el5 #1 SMP Tue Jun 10
18:49:47 EDT 2008 i686
SNMPv2-MIB::sysObjectID.0 = OID: NET-SNMP-MIB::netSnmAgentOIDs.10
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (327207) 0:54:32.07
SNMPv2-MIB::sysContact.0 = STRING: "ScienceLogic Support 1-703-354-1010"
SNMPv2-MIB::sysName.0 = STRING: ps-centos-lnx
SNMPv2-MIB::sysLocation.0 = STRING: "Reston, Virginia"
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORID.1 = OID: SNMPv2-MIB::snmpMIB
SNMPv2-MIB::sysORID.2 = OID: TCP-MIB::tcpMIB
SNMPv2-MIB::sysORID.3 = OID: IP-MIB::ip
SNMPv2-MIB::sysORID.4 = OID: UDP-MIB::udpMIB
SNMPv2-MIB::sysORID.5 = OID: SNMP-VIEW-BASED-ACM-MIB::vacmBasicGroup
SNMPv2-MIB::sysORID.6 = OID: SNMP-FRAMEWORK-MIB::snmpFrameworkMIBCompliance
SNMPv2-MIB::sysORID.7 = OID: SNMP-MPD-MIB::snmpMPDCompliance
SNMPv2-MIB::sysORID.8 = OID: SNMP-USER-BASED-SM-MIB::usmMIBCompliance
SNMPv2-MIB::sysORDescr.1 = STRING: The MIB module for SNMPv2 entities
SNMPv2-MIB::sysORDescr.2 = STRING: The MIB module for managing TCP implementations
SNMPv2-MIB::sysORDescr.3 = STRING: The MIB module for managing IP and ICMP
implementations
SNMPv2-MIB::sysORDescr.4 = STRING: The MIB module for managing UDP implementations
SNMPv2-MIB::sysORDescr.5 = STRING: View-based Access Control Model for SNMP.
SNMPv2-MIB::sysORDescr.6 = STRING: The SNMP Management Architecture MIB.
SNMPv2-MIB::sysORDescr.7 = STRING: The MIB for Message Processing and Dispatching.
SNMPv2-MIB::sysORDescr.8 = STRING: The management information definitions for the
SNMP User-based Security Model.
SNMPv2-MIB::sysORUpTime.1 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.2 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.3 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.4 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.5 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.6 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.7 = Timeticks: (0) 0:00:00.00
SNMPv2-MIB::sysORUpTime.8 = Timeticks: (0) 0:00:00.00
```

Creating SNMP Credentials for Linux

The following sections describe how to create SNMP credentials in SL1 to monitor Linux devices.

- If you use SNMPv2 and used the example snmpd.conf file for SNMPv2, follow the steps in the section on SNMPv2.
- If you use SNMPv3 and used the example snmpd.conf file for SNMPv3, follow the steps in the section on SNMPv3.

Creating SNMPv2 Credentials

SNMP Credentials (called "community strings" in earlier versions of SNMP) allow SL1 to access SNMP data on a managed device. SL1 uses SNMP credentials to perform discovery, run auto-discovery, and gather information from SNMP Dynamic Applications.

To create an SNMPv2 credential:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. In the **Credential Management** page, click the **[Actions]** menu. Select **Create SNMP Credential**.

The screenshot shows the 'Credential Management | Credentials Found [62]' page. It features a table with columns for Profile Name, Organization, RO Use, RW Use, RA Use, Type, Credential User, Host, Port, Timeout (ms), ID, and Last. A dropdown menu is open over the table, listing various credential types such as 'Create SNMP Credential', 'Create Database Credential', 'Create SOAP/XML Host Credential', 'Create LDAP/AD Credential', 'Create Basic Snippet Credential', 'Create SSH/Key Credential', and 'Create PowerShell Credential'. The table lists 31 credentials, including 'Amazon Web Services Credential', 'Azure Credential - SOAP/XML', 'Cisco SNMPv2 - Example', and 'EM7 DB - DB Info'.

Profile Name	Organization	RO Use	RW Use	RA Use	Type	Credential User	Host	Port	Timeout (ms)	ID	Last
1. Amazon Web Services Credential	System	--	--	--	SOAP/XML Host	AWS Account Access	example.com	80	2000	1	2015-05-14
2. Azure Credential - SOAP/XML	[all orgs]	--	--	--	SOAP/XML Host	+AD_USER+	login.windows.net	443	60000	60	2015-05-14
3. Azure Credential - SSH/Key	[all orgs]	--	--	--	SSH/Key	<SUBSCRIPTION_ID_H %D	--	22	180000	59	2015-05-14
4. Cisco SNMPv2 - Example	[all orgs]	--	--	--	SNMP	--	--	161	1500	3	2015-05-14
5. Cisco SNMPv3 - Example	[all orgs]	--	--	--	SNMP	[USER_GOES_HERE]	--	161	1500	2	2015-05-14
6. Cisco ACI	[all orgs]	--	--	126	Basic/Snippet	admin	173.36.219.46	443	0	62	2015-05-14 15:05:24
7. Cisco ACI Credential	[all orgs]	--	--	--	Basic/Snippet	admin	198.18.133.200	443	0	61	2015-05-14 14:32:20
8. Cloudkick - Example	[all orgs]	--	--	--	Basic/Snippet	[SECURITY KEY GOES	127.0.0.1	443	5000	9	2015-05-14 11:25:31
9. CUCM PerfmonService 8.0 Example	[all orgs]	--	--	--	SOAP/XML Host	--	%D	8443	2000	4	2015-05-14 11:25:12
10. EM7 Central Database	[all orgs]	--	--	--	Database	root	localhost	7706	0	51	2015-05-14 11:28:41
11. EM7 Collector Database	[all orgs]	--	--	--	Database	root	%D	7707	0	14	2015-05-14 11:25:43
12. EM7 DB	[all orgs]	--	--	--	Database	root	%D	7706	0	35	2015-05-14 11:28:32
13. EM7 DB - DB Info	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	38	2015-05-14 11:28:32
14. EM7 DB - My conf	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	37	2015-05-14 11:28:32
15. EM7 DB - Ssl conf	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	36	2015-05-14 11:28:32
16. EM7 Default V2	[all orgs]	--	--	--	SNMP	--	--	161	1500	10	2015-05-14 11:25:42
17. EM7 Default V3	[all orgs]	--	--	--	SNMP	em7defauth3	--	161	500	11	2015-05-14 11:25:42
18. EMC - Example	[all orgs]	--	--	--	Basic/Snippet	root	%D	443	10000	15	2015-05-14 11:25:47
19. GGGrid - Example	[all orgs]	--	--	--	Basic/Snippet	[SECURITY KEY GOES	127.0.0.1	443	5000	16	2015-05-14 11:25:51
20. IPSLA Example	[all orgs]	--	--	--	SNMP	--	--	161	1500	5	2015-05-14 11:25:14
21. LifeSize - Endpoint SNMP	[all orgs]	--	--	--	SNMP	control	--	161	3000	18	2015-05-14 11:25:58
22. LifeSize - Endpoint SSH/CLI	[all orgs]	--	--	--	Basic/Snippet	auto	%D	22	3	17	2015-05-14 11:25:58
23. Local API	[all orgs]	--	--	--	Basic/Snippet	em7admin	10.0.0.180	80	5000	22	2015-05-14 11:28:11
24. NetApp 7-mode	[all orgs]	--	--	--	Basic/Snippet	root	%D	443	3000	24	2015-05-14 11:28:20
25. NetApp w/SSL Option	[all orgs]	--	--	--	SOAP/XML Host	root	%D	443	3000	26	2015-05-14 11:28:20
26. NetApp w/SSL Option Off	[all orgs]	--	--	--	SOAP/XML Host	root	%D	443	10000	25	2015-05-14 11:28:20
27. Nexus netconf	[all orgs]	--	--	--	Basic/Snippet	--	%D	22	10000	6	2015-05-14 11:25:16
28. Nexus snmp	[all orgs]	--	--	--	SNMP	--	--	161	10000	7	2015-05-14 11:25:16
29. Polycom - Advanced	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	28	2015-05-14 11:28:24
30. Polycom - CDR	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	31	2015-05-14 11:28:24
31. Polycom - Interface	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	29	2015-05-14 11:28:24

3. The **Credential Editor** modal page appears. In this page, you can define the new SNMP credential. To define the new credential, supply values in the following fields:

The screenshot shows a modal window titled "Credential Editor" with a close button (X) in the top right corner. The main title bar reads "Create New SNMP Credential" and includes a "Reset" button. The form is organized into three sections:

- Basic Settings:** Contains a "Profile Name" text input field, an "SNMP Version" dropdown menu (set to "[SNMP V2]"), a "Port" text input field (set to "161"), a "Timeout(ms)" text input field (set to "1500"), and a "Retries" text input field (set to "1").
- SNMP V1/V2 Settings:** Contains two text input fields: "SNMP Community (Read-Only)" and "SNMP Community (Read/Write)".
- SNMP V3 Settings:** Contains a "Security Name" text input field, a "Security Passphrase" text input field, an "Authentication Protocol" dropdown menu (set to "[MD5]"), a "Security Level" dropdown menu (set to "[Authentication Only]"), an "SNMP v3 Engine ID" text input field, a "Context Name" text input field, a "Privacy Protocol" dropdown menu (set to "[DES]"), and a "Privacy Protocol Pass Phrase" text input field.

A "Save" button is located at the bottom center of the form.

- **Profile Name.** Name of the credential. Can be any combination of alphanumeric characters. This field is required.
- **SNMP Version.** SNMP version. Select *SNMP V2*. This field is required.
- **Port.** The port SL1 will use to communicate with the external device or application. The default value is *161*. This field is required.
- **Timeout (ms).** Time, in milliseconds, after which SL1 will stop trying to communicate with the SNMP device. The default value is *1500*. This field is required.
- **Retries.** Number of times SL1 will try to authenticate and communicate with the external device. The default value is *1*. This field is required.

SNMP V1/V2 Settings

These fields appear if you selected SNMP V1 or SNMP V2 in the **SNMP Version** field. Otherwise, these fields are grayed out.

- **SNMP Community (Read Only)**. The SNMP community string (password) required for read-only access of SNMP data on the remote device or application. For read-only SNMP V2 credentials, this field is required and you should leave the **SNMP Community (Read/Write)** field blank. Enter the same value as you entered for **rocommunity** in the snmpd.conf file.
- **SNMP Community (Read/Write)**. The SNMP community string (password) required for read and write access of SNMP data on the remote device or application. For read/write SNMP V2 credentials, this field is required and you should leave the **SNMP Community (Read Only)** field blank. Enter the same value as you entered for **rwcommunity** in the snmpd.conf file.

4. Click the **[Save]** button to save the new SNMP credential.

NOTE: When you define an SNMP Credential, the credential will automatically be aligned with the organization(s) you are a member of.

Creating SNMPv3 Credentials

The example snmpd.conf file for SNMPv3 provides both Read Only and Read/Write access to your Linux system from SL1. You must therefore define two new SNMPv3 credentials (one for read-only access and one for read/write access) in SL1, so SL1 can successfully communicate with your Linux system. To do this:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. In the **Credential Management** page, click the **[Actions]** menu. Select **Create SNMP Credential**.

Credential Management Credentials Found [62]													Actions	Reset	Guide
Profile Name	Organization	RO Use	RW Use	DA Use	Type	Credential User	Host	Port	Timeout (ms)	ID	Last				
1. Amazon Web Services Credential	System	--	--	--	SOAP/XML Host	[AWS Account Access] example.com		80	2000	1	2015-05-16				
2. Azure Credential - SOAP/XML	[all orgs]	--	--	--	SOAP/XML Host	<<AD_USER>	login.windows.net	443	60000	60	2015-05-14				
3. Azure Credential - SSH/Key	[all orgs]	--	--	--	SSH/Key	<<SUBSCRIPTION_ID_H	%D	22	180000	59	2015-05-14				
4. Cisco SNMPv2 - Example	[all orgs]	--	--	--	SNMP	--	--	161	1500	3	2015-05-14				
5. Cisco SNMPv3 - Example	[all orgs]	--	--	--	SNMP	[USER_GOES_HERE]	--	161	1500	2	2015-05-14				
6. Cisco - ACI	[all orgs]	--	--	126	Basic/Snippet	admin	173.36.219.46	443	0	62	2015-05-14 11:05:24	em7admin			
7. Cisco - ACI Credential	[all orgs]	--	--	--	Basic/Snippet	admin	168.16.133.200	443	0	61	2015-05-14 14:32:20	em7admin			
8. Cloudtek - Example	[all orgs]	--	--	--	Basic/Snippet	SECURITY KEY GOES	127.0.0.1	443	5000	9	2015-05-14 11:25:31	em7admin			
9. CUCM PerformanceService 8.0 Example	[all orgs]	--	--	--	SOAP/XML Host	--	--	8443	2000	4	2015-05-14 11:28:12	em7admin			
10. EM7 Central Database	[all orgs]	--	--	--	Database	root	localhost	7706	0	51	2015-05-14 11:28:41	em7admin			
11. EM7 Collector Database	[all orgs]	--	--	--	Database	root	%D	7707	0	14	2015-05-14 11:25:43	em7admin			
12. EM7 DB	[all orgs]	--	--	--	Database	root	%D	7706	0	35	2015-05-14 11:28:32	em7admin			
13. EM7 DB - DB Info	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	38	2015-05-14 11:28:32	em7admin			
14. EM7 DB - My.cnf	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	37	2015-05-14 11:28:32	em7admin			
15. EM7 DB - Ssl.conf	[all orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	36	2015-05-14 11:28:32	em7admin			
16. EM7 Default V2	[all orgs]	--	--	--	SNMP	--	--	161	1500	10	2015-05-14 11:25:42	em7admin			
17. EM7 Default V3	[all orgs]	--	--	--	SNMP	em7defaultv3	--	161	500	11	2015-05-14 11:25:42	em7admin			
18. EMC - Example	[all orgs]	--	--	--	Basic/Snippet	root	%D	443	10000	15	2015-05-14 11:25:47	em7admin			
19. GDSGrid - Example	[all orgs]	--	--	--	Basic/Snippet	SECURITY KEY GOES	127.0.0.1	443	5000	16	2015-05-14 11:25:51	em7admin			
20. IPCLA Example	[all orgs]	--	--	--	SNMP	--	--	161	1500	5	2015-05-14 11:25:14	em7admin			
21. LifeSize - Endpoint SNMP	[all orgs]	--	--	--	SNMP	control	--	161	3000	18	2015-05-14 11:25:58	em7admin			
22. LifeSize - Endpoint SSH/CLI	[all orgs]	--	--	--	Basic/Snippet	auto	%D	22	3	17	2015-05-14 11:25:58	em7admin			
23. Local API	[all orgs]	--	--	--	Basic/Snippet	em7admin	10.0.0.190	80	5000	22	2015-05-14 11:28:11	em7admin			
24. NetApp 7-mode	[all orgs]	--	--	--	Basic/Snippet	root	%D	443	3000	24	2015-05-14 11:28:20	em7admin			
25. NetApp w/SSL Option	[all orgs]	--	--	--	SOAP/XML Host	root	%D	443	3000	26	2015-05-14 11:28:20	em7admin			
26. NetApp w/SSL Option Off	[all orgs]	--	--	--	SOAP/XML Host	root	%D	443	10000	25	2015-05-14 11:28:20	em7admin			
27. Nexus netconf	[all orgs]	--	--	--	Basic/Snippet	--	%D	22	10000	6	2015-05-14 11:25:16	em7admin			
28. Nexus snmp	[all orgs]	--	--	--	SNMP	--	--	161	10000	7	2015-05-14 11:25:16	em7admin			
29. Polycom - Advanced	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	28	2015-05-14 11:28:24	em7admin			
30. Polycom - CDR	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	31	2015-05-14 11:28:24	em7admin			
31. Polycom - Interface	[all orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	29	2015-05-14 11:28:24	em7admin			

- The **Credential Editor** modal page appears. In this page, you can define the new SNMP credential. To define the new read-only credential, supply values in the following fields:

- **Profile Name.** Name of the read-only credential. Can be any combination of alphanumeric characters. This field is required.
- **SNMP Version.** SNMP version. Select *SNMP V3*. This field is required.
- **Port.** The port SL1 will use to communicate with the external device or application. The default value is *161*. This field is required.
- **Timeout (ms).** Time, in milliseconds, after which SL1 will stop trying to communicate with the SNMP device. The default value is *1500*. This field is required.
- **Retries.** Number of times SL1 will try to authenticate and communicate with the external device. The default value is *1*. This field is required.

SNMP V3 Settings

These fields appear if you selected *SNMP V3* in the **SNMP Version** field. Otherwise, these fields are grayed out.

- **Security Name.** Name used for read-only SNMP authentication. This field is required. Enter the same value as you entered for *rouser* in the `snmpd.conf` file.
- **Security Passphrase.** Password used to authenticate the credential. This value must contain at least 8 characters. This value is required if you want to use a **Security Level** that includes authentication. Enter the same value as you entered in the `createuser` line in the `snmpd.conf` file.

- **Authentication Protocol.** Select an authentication algorithm for the credential. Choices are MD5 or SHA. This field is required. Select *SHA*.

NOTE: If your SL1 system is FIPS-compliant, MD5 authentication for SNMP will fail. FIPS-compliant SL1 systems require SHA authentication for SNMP.

- **Security Level.** Specifies the combination of security features for the credentials. This field is required. Choices are:
 - *No Authentication / No Encryption.*
 - *Authentication Only.* This is the default value.
 - *Authentication and Encryption.* This is the option specified in the example `snmpd.conf` file.
- **SNMPv3 Engine ID.** The unique engine ID for the SNMP agent you want to communicate with. (SNMPv3 authentication and encryption keys are generated based on the associated passwords and the engine ID.) This field is optional.
- **Context Name.** A context is a mechanism within SNMPv3 (and AgentX) that allows you to use parallel versions of the same MIB objects. For example, one version of a MIB might be associated with SNMP Version 2 and another version of the same MIB might be associated with SNMP Version 3. For SNMP Version 3, specify the context name in this field. This field is optional.
- **Privacy Protocol.** The privacy service encryption and decryption algorithm. Choices are *DES* or *AES*. The default value is *DES*. This field is required. The example `snmpd.conf` file specifies *DES*.
- **Privacy Protocol Passphrase.** Privacy password for the credential. This field is optional.

4. Click the **[Save]** button to save the new read-only SNMPv3 credential.
5. Repeat steps 1-4 to also create the new read/write SNMPv3 credential, updating the field values as needed.

NOTE: When you define an SNMP Credential, the credential will automatically be aligned with the organization(s) you are a member of.

Configuring Syslog for Linux

Overview

The following sections describe how to configure syslog for Linux:

<i>What is Syslog?</i>	24
<i>Configuring Syslog for Linux</i>	25

What is Syslog?

Syslog is a protocol and utility for capturing and logging system information. This system information can be stored locally, remotely, or both. syslog allows a server to forward log messages over the network to SL1. SL1 then uses these messages to monitor the health of the server and trigger events (if necessary).

Because the syslog utility is mature and widely-used, there is an array of commercial and open source implementations. This chapter provides only a basic outline of how to configure syslog to send messages to SL1.

Entries in a syslog can include the following severity descriptions:

Severity	Description
0 Emergency:	System is unusable. A "panic" condition. Notify all technical staff. Affects multiple servers, applications, systems, or sites. For example, an outage caused by an earthquake.
1 Alert	Failure in primary system. Immediate action is required. Notify appropriate staff. Example would be "loss of backup ISP connection".

Severity	Description
2 Critical	Failure in primary system. Immediate action is required before problem escalates to "alert". For example, "loss of primary ISP connection".
3 Error	Non-urgent failure. Action is required but not urgent. These messages should be relayed to appropriate support staff for resolution.
4 Warning	Indication that an error is about to occur. Action is required but not immediately. For example, "file system is 85% full".
5 Notice	Normal but significant condition. No immediate action required. Events that are unusual but are not considered error conditions. Should be examined to spot potential problems.
6 Informational	Normal operational messages. No action required. These may be harvested for reporting, measuring through-put, etc.
7 Debug	Information that is useful to developers for debugging the application; not useful during operations.

Configuring Syslog for Linux

To configure your Linux server to send syslogs to SL1, you must edit the file `/etc/syslog.conf`.

1. Before editing the `/etc/syslog.conf` file, ensure that syslog is enabled. To do this, open a shell session, log in as root, and enter the following at the command prompt:

```
service syslog status
```

2. Backup the existing `/etc/syslog.conf` file. To do this, open a shell session, log in as root, and enter the following at the command prompt:

```
cp /etc/syslog.conf /etc/syslog.orig
```

3. Use your favorite editor to edit the `/etc/syslog.conf` file and add the following line:
 - If you are using an All-In-One Appliance, use the IP address of the All-In-One Appliance.
 - If you are using a Distributed System and the Collector Group that will monitor your device includes a Message Collector, use the IP address of the Message Collector.
 - If you are using a Distributed System and the Collector Group that will monitor your device includes a single Data Collector that performs the message collection function, use the IP address of the Data Collector.

```
*.err;local0.debug;daemon.notice;mail.crit @<IP_OF_SCIENCELOGIC_APPLIANCE>
```

NOTE: syslog includes many facilities. The facilities referenced above are merely a starting point as suggested by ScienceLogic.

4. After you edit the syslog.conf file, you must **restart the syslog service**. To do this, open a shell session and enter the following at the command prompt:

```
service syslog restart
```

5. To test sending syslog messages to SL1, open a shell session and enter the following at the command prompt:

```
logger -p local0.debug "Test Debug Message to SL1"
```

6. To see if the message was sent to SL1, check:

- on the Linux device, the file /var/log/messages
- in SL1, the device logs of the corresponding Linux device.

NOTE: By default, SL1 includes multiple event policies based on syslog messages. ScienceLogic recommends that you review these policies to ensure that they suit your business needs. To view these policies, go to Registry > Events > Event Manager. Use the sort and filter tools to view all policies of type "syslog." From the same page, you can edit these event policies or create your own event policies based on syslog messages. For more information on event policies, see the manual on **Events**.

Chapter

4

Monitoring Linux with SSH

Overview

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

<i>Prerequisites for Monitoring Linux Devices with SSH</i>	28
<i>Configuring Linux Devices to Collect Data</i>	28
<i>Creating an SSH/Key Credential</i>	31
<i>Configuring the Linux Device Template</i>	33
<i>Discovering Linux Devices</i>	34
<i>Discovering More Devices per Discovery Session</i>	36
<i>Configuring Dynamic Applications for Monitoring</i>	36
<i>Linux: Hardware Configuration</i>	36
<i>Configuring Linux IC Dynamic Applications</i>	37
<i>Linux: IC Port Performance</i>	37
<i>Configuring Collection Frequency for Linux IC Dynamic Applications</i>	37
<i>Unhiding Linux File Systems</i>	38
<i>Configuring Linux File System Thresholds</i>	39
<i>Relationships Between Component Devices</i>	40

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

Additionally, if you want to collect interface information about your Linux devices, you must install *ifconfig* on those devices.

Configuring Linux Devices to Collect Data

The following tables list the Collection Objects included in those Dynamic Applications and the Linux commands used by each of those objects. You can use these commands to grant or restrict access to certain data types on the user account you will use to monitor your Linux devices.

The following table is a list of configuration and performance Dynamic Applications in the PowerPack:

Dynamic Application	Collection Object	Linux Command
Linux: Configuration Discovery		Determines if a device is a Linux system before discovery in SL1. If the device is not a Linux system, it will not be discovered.
Linux: CPU Configuration	All	<code>cat /proc/cpuinfo/lscpu</code>
Linux: CPU Cores Performance	All	<code>cat /proc/stat</code>
Linux: CPU Performance	All	<code>cat /proc/stat</code>
Linux: Disk IOPs Performance	All	<code>cat /proc/diskstats</code>
Linux: File System Performance	All	<code>df -kPT</code>
Linux: Hardware Configuration	All	<code>sudo dmidecode -qt 1,2,3</code>
Linux: ICMP Performance	All	<code>cat /proc/net/snmp</code>
Linux: Interface Performance	All	<code>/sbin/ifconfig</code>
Linux: Memory Performance	All	<code>cat /proc/meminfo</code>
Linux: Network Configuration	All	<code>/sbin/ifconfig</code>
Linux: Route Table Configuration	All	<code>netstat -rn</code>
Linux: System Configuration	Kernel Version	<code>cat /proc/sys/kernel/osrelease</code>
	Distribution	<code>cat /etc/os-release</code>


Dynamic Application	Collection Object	Linux Command
	Genus	
	Host Name	cat /proc/sys/kernel/hostname
	Distribution Release	cat /etc/os-release grep PRETTY_NAME
	AppDynamics Host Name IP Address	hostname=\$(cat /proc/sys/kernel/hostname) && echo \$hostname "<silos:ip>
	AppDynamics Namespace	echo "appdynamics/ns"
	Architecture Type	uname -a
	Compiler	cat /proc/version
	Domain Name	cat /proc/sys/kernel/domainname
	Dynatrace Hostname	cat /proc/sys/kernel/hostname
	Dynatrace Namespace	echo "dynatrace/physical/ns"
	New Relic Hostname	cat /proc/sys/kernel/hostname
	New Relic Namespace	echo "newrelic/server/ns"
	Release Date	cat /proc/sys/kernel/version
	SMP Support	cat /proc/sys/kernel/version
	Time Zone	date
	Total Physical Memory (MBytes)	cat /proc/meminfo
	Total Swap Memory (MBytes)	cat /proc/meminfo
Linux: System Load Performance	All	cat /proc/loadavg
Linux: TCP Performance	All	cat /proc/net/snmp
	TCP Ports Listening Cache	netstat -ltn
Linux: TCP Services Configuration	All	netstat -ltn grep tcp

Dynamic Application	Collection Object	Linux Command
Linux: UDP Performance	All	cat /proc/net/snmp
Linux: UDP Services Configuration	All	netstat -lun grep udp
Linux: Zombie Process	All	ps aux grep Z

The following table is a list of internal collection inventory and performance Dynamic Applications in the PowerPack:

Dynamic Application	Collection Object	Linux Command
Linux: IC Availability	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Detail	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Filesystem Inventory	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Filesystem Performance	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Interface Inventory	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Interface Performance	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Port Performance	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Process Inventory	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.
Linux: IC Process Performance	All	Internal Collection that consumes data stored by the "Linux: ICDA Cache" Dynamic Application.

Dynamic Application	Collection Object	Linux Command
Linux: ICDA Cache	Filesystem	<code>df -kPT</code>
	Hardware Config Product Name	<code>cat /sys/devices/virtual/dmi/id/product_name</code>
	Interface	<code>/sbin/ifconfig</code>
	Latency	<code>ping -c1 -W 1 <silosip></code>
	Process	<code>ps aux</code>
	Processes CPU Usage	<code>cat /proc/stat</code>
	Processes Memory Usage	<code>free -b</code>
	Software Distribution Release	<code>grep "PRETTY_NAME" /etc/os-release</code>
	Uptime	<code>cat /proc/uptime</code>

NOTE: Linux Base Pack v103 uses a number of standard Linux commands to collect information about a particular device. Most of these commands do not require any specific or elevated permissions to be executed. The PowerPack includes one single command (`dmidecode`) in the "Linux: Hardware Configuration" Dynamic Application which requires root permissions to execute. ScienceLogic recommends configuring a password-less sudo for the user for `dmidecode` as the PowerPack does not support sudo with a password prompt. If the user is not configured correctly the "Linux: Hardware Configuration" Dynamic Application will fail with the following error: `sudo: no tty present and no askpass program specified` You can validate if your configuration is correct by clicking the lightning bolt icon () on the Dynamic Application for the device in question.

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.

To create an SSH/Key credential:

1. Go to the **Credential Management** page (System > Manage > Credentials).
2. Click the **[Actions]** menu, and then select **Create SSH/Key Credential**. The **Create New SSH/Key Credential** modal page appears.

Profile Name	Organization	BD Use	R/W Use	DA Use	Type	Credential User	Host	Port	Timeout (ms)	ID	Last
1. Amazon Web Services Credential	System	--	--	--	SOAP/XML Host	[AWS Account Access]	example.com	80	2000	1	2015-05-14
2. Azure Credential - SOAP/XML	[All Orgs]	--	--	--	SOAP/XML Host	<AD_USERS>	login.windows.net	443	60000	60	2015-05-14
3. Azure Credential - SSHKey	[All Orgs]	--	--	--	SSHKey	<SUBSCRIPTION_ID_H	%D	22	180000	59	2015-05-14
4. Cisco SNMPv2 - Example	[All Orgs]	--	--	--	SNMP	USER_GOES_HERE	--	161	1500	3	2015-05-14
5. Cisco SNMPv3 - Example	[All Orgs]	--	--	--	SNMP	USER_GOES_HERE	--	161	1500	2	2015-05-14
6. Cisco ACL	[All Orgs]	--	--	--	I2E Basic Snippet	admin	173.38.210.46	443	0	62	2015-05-14 15:05:24
7. Cisco ACL Credential	[All Orgs]	--	--	--	Basic Snippet	admin	198.18.133.200	443	0	61	2015-05-14 14:32:20
8. Cloudkick - Example	[All Orgs]	--	--	--	Basic Snippet	[SECURITY KEY GOES	127.0.0.1	443	5000	9	2015-05-14 11:25:31
9. CUCM PerfmonService 8.0 Example	[All Orgs]	--	--	--	SOAP/XML Host	--	%D	8443	2000	4	2015-05-14 11:25:12
10. EMT Center Database	[All Orgs]	--	--	--	Database	root	localhost	7706	0	51	2015-05-14 11:25:41
11. EMT Collector Database	[All Orgs]	--	--	--	Database	root	%D	7707	0	14	2015-05-14 11:25:43
12. EMT DB	[All Orgs]	--	--	--	Database	root	%D	7706	0	35	2015-05-14 11:26:32
13. EMT DB - DB Info	[All Orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	38	2015-05-14 11:26:32
14. EMT DB - My conf	[All Orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	37	2015-05-14 11:26:32
15. EMT DB - Sdk conf	[All Orgs]	--	--	--	SOAP/XML Host	root	%D	80	3000	36	2015-05-14 11:26:32
16. EMT Default V2	[All Orgs]	--	--	--	SNMP	--	--	161	1500	10	2015-05-14 11:25:42
17. EMT Default V3	[All Orgs]	--	--	--	SNMP	em7default3	%D	161	950	11	2015-05-14 11:25:42
18. EMC - Example	[All Orgs]	--	--	--	Basic Snippet	root	%D	443	10000	15	2015-05-14 11:25:47
19. GIGGL - Example	[All Orgs]	--	--	--	Basic Snippet	[SECURITY KEY GOES	127.0.0.1	443	5000	16	2015-05-14 11:25:51
20. IPSLA Example	[All Orgs]	--	--	--	SNMP	--	--	161	1500	5	2015-05-14 11:25:14
21. LifeSize Endpoint SNMP	[All Orgs]	--	--	--	SNMP	control	%D	161	3000	18	2015-05-14 11:25:58
22. LifeSize Endpoint SSHCLI	[All Orgs]	--	--	--	Basic Snippet	auto	%D	22	3	17	2015-05-14 11:25:58
23. Local API	[All Orgs]	--	--	--	Basic Snippet	em7admin	10.0.0.180	80	8000	22	2015-05-14 11:26:11
24. NetApp 7-mode	[All Orgs]	--	--	--	Basic Snippet	root	%D	443	3000	24	2015-05-14 11:26:20
25. NetApp w/SSL Option	[All Orgs]	--	--	--	SOAP/XML Host	root	%D	443	3000	26	2015-05-14 11:26:20
26. NetApp w/SSL Option Off	[All Orgs]	--	--	--	SOAP/XML Host	root	%D	443	10000	25	2015-05-14 11:26:20
27. Nexus netconf	[All Orgs]	--	--	--	Basic Snippet	--	%D	22	10000	6	2015-05-14 11:25:16
28. Nexus snmp	[All Orgs]	--	--	--	SNMP	--	--	161	10000	7	2015-05-14 11:25:16
29. Polycom - Advanced	[All Orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	28	2015-05-14 11:26:24
30. Polycom - CDR	[All Orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	31	2015-05-14 11:26:24
31. Polycom-Interface	[All Orgs]	--	--	--	SOAP/XML Host	admin	%D	80	20000	29	2015-05-14 11:26:24

3. On the **Create New SSH/Key Credential** modal page, supply values in the following fields:

- **Credential Name.** Type a name for the credential.
- **Hostname/IP.** Type the hostname or IP address of the Linux device you want to monitor.
 - You can include the variable **%D** in this field. SL1 will replace the variable with the IP address of the device that is currently using the credential.
 - You can include the variable **%N** in this field. SL1 will replace the variable with hostname of the device that is currently using the credential. If SL1 cannot determine the hostname, SL1 will replace the variable with the primary management IP address for the device.

- **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: To monitor Amazon Web Services Linux instances, the private key must include the lines "BEGIN RSA PRIVATE KEY" and "END RSA PRIVATE KEY", as well as all preceding and following dashes on those lines.


4. Click **[Save]**.

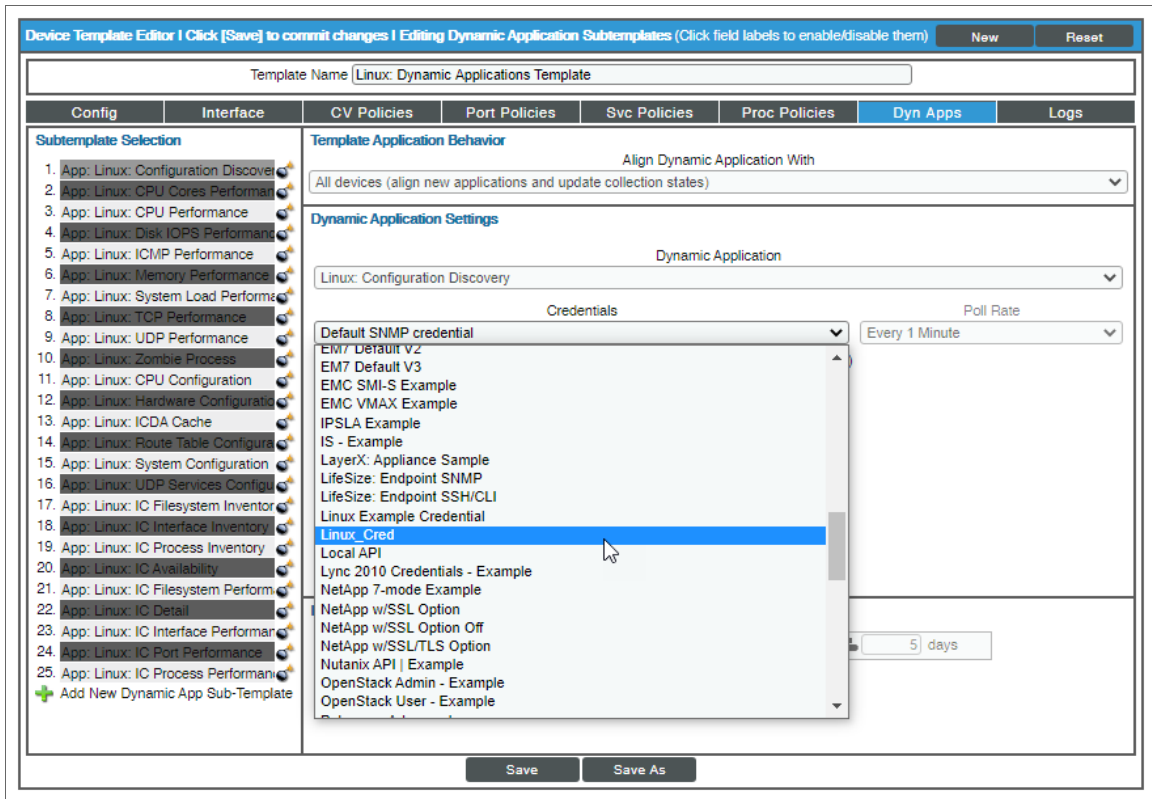
Configuring the Linux Device Template

A **device template** allows you to save a device configuration and apply it to multiple devices. You can use a template in the discovery session to align all of the PowerPack's Dynamic Applications. There are two device templates in the *Linux Base Pack*PowerPack:

- **Linux: Dynamic Applications Template.** This template includes the Dynamic Applications that are automatically aligned with the "Linux Classification and Automation" run book action.
- **Linux: Note Used Dynamic Applications Template.** This template includes the Dynamic Applications that are **not** automatically aligned.

To configure the Linux device template:

1. Go to the Configuration Templates page (Registry > Devices > Templates).
2. Locate the Linux device template you want to configure 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 first 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. Select the Linux credential you created in the **Credentials** field.
5. Repeat step 4 until the you have selected the correct Linux credential in the **Credentials** field for all of the Dynamic Applications listed in the **Subtemplate Selection** section.
6. Click **[Save As]**.

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 PackPowerPack*.

Discovering Linux Devices

To discover Linux devices using a discovery session, perform the following steps:



1. Go to the **Discovery Control Panel** page (System > Manage > Discovery).
2. In the **Discovery Control Panel**, click the **[Create]** button.

- The **Discovery Session Editor** page appears. On this page, define values in the following fields:

The screenshot shows the 'Discovery Session Editor' window for 'Editing Session [1]'. It is divided into three main sections:

- Identification Information:** Includes fields for 'Name' (set to 'Linux_Discovery') and 'Description'.
- IP and Credentials:**
 - IP Address/Hostname Discovery List:** A text area containing IP addresses: '10.2.6.145,10.2.6.148,10.2.6.137,10.2.6.133,10.2.6.152,10.2.6.147'.
 - SNMP Credentials:** A list of credentials including 'Cisco SNMPv2 - Example', 'Cisco SNMPv3 - Example', 'Cisco: CSP SNMP Port 161 Example', 'Cisco: CSP SNMP Port 1610 Examp', 'Dell EMC: Isilon SNMPv2 Example', 'EM7 Default V2', 'EM7 Default V3', and 'IPSLA Example'.
 - Other Credentials:** A list including 'UCS - Example', 'UCS Standalone - Example', 'VMAX and PowerMax Example', 'VMware Server Example', 'SSHKey', 'Cisco: CSP 2100 CLI Example', 'Cisco: Dial Peer - Example', 'Linux Example Credential', and '[Linux_Cred]'.
- Detection and Scanning:**
 - Initial Scan Level:** '[System Default (recommended)]'
 - Scan Throttle:** '[System Default (recommended)]'
 - Port Scan All IPs:** '[System Default (recommended)]'
 - Port Scan Timeout:** '[System Default (recommended)]'
 - Detection Method & Port:** A list of methods including '[Default Method]', 'UDP: 161 SNMP', 'TCP: 1 - topmux', 'TCP: 2 - compressnet', 'TCP: 3 - compressnet', 'TCP: 5 - rje', 'TCP: 7 - echo', 'TCP: 9 - discard', 'TCP: 11 - systat', 'TCP: 13 - daytime', and 'TCP: 15 - netstat'.
 - Interface Inventory Timeout (ms):** '600000'
 - Maximum Allowed Interfaces:** '10000'
 - Bypass Interface Inventory:** An unchecked checkbox.
- Basic Settings:**
 - Discover Non-SNMP:** Checked checkbox.
 - Model Devices:** Checked checkbox.
 - DHCP:** Unchecked checkbox.
 - Device Model Cache TTL (h):** '2'
 - Collection Server PID:** '4'
 - Collection Server:** '[RS-AUTO-DCU-64]'
 - Organization:** '[LinuxOrg]'
 - Add Devices to Device Group(s):** A list including 'None', 'LayerX Appliances', and 'Servers'.
 - Apply Device Template:** 'Linux: Dynamic Applications Template'

At the bottom, there are 'Save' and 'Save As' buttons, and a 'Log All' checkbox which is checked.

- **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 credentials you created for the Linux devices.
 - **Discover Non-SNMP.** Select this checkbox.
 - **Model Devices.** Select this checkbox.
 - **Apply Device Template.** Select the device template that you configured.
- 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.
 - Click the **[Save]** button to save the discovery session and then close the **Discovery Session Editor** window.
 - 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.
 - 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`


Discovering More Devices per Discovery Session

The "Discovery: Detail" process in SL1 has the value of the **Async Throttle** field set to 5 as default, which allows SL1 to discover up to six devices.

However, you can discover up to 100 devices by adjusting this setting for collector units with the following characteristics:

- 4 CPU
- RAM 24GB
- Hard Drive 150GB

To change this setting:

1. Go to the **Process Manager** page (System > Settings > Processes).
2. Find the "Discovery: Detail" process and click its wrench icon ()
3. In the **Process Editor** window, select 10 from the **Async Throttle** dropdown field.
4. Click the **[Save]** button.

NOTE: This process consumes a lot of CPU and network resources. If CPU usage gets close to 75%, a crash may occur. If this occurs, reset the **Async Throttle** field to 5 and reduce the number of new devices to discover.

Configuring Dynamic Applications for Monitoring

Linux: Hardware Configuration

Some Dynamic Applications require added permissions to the Linux user to collect data.

For the "Linux: Hardware Configuration" Dynamic Application, the following permission needs to be added to the sudo config file (/etc/sudoers) so that it will run without asking for the sudo password:

```
username ALL=(ALL) NOPASSWD: ALL
```

Configuring Linux IC Dynamic Applications

Linux: IC Port Performance


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.


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 > Processes).
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 > Processes).
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 > Processes).
2. Search for the "Data Collection: SNMP Detail" process and click its wrench icon ()

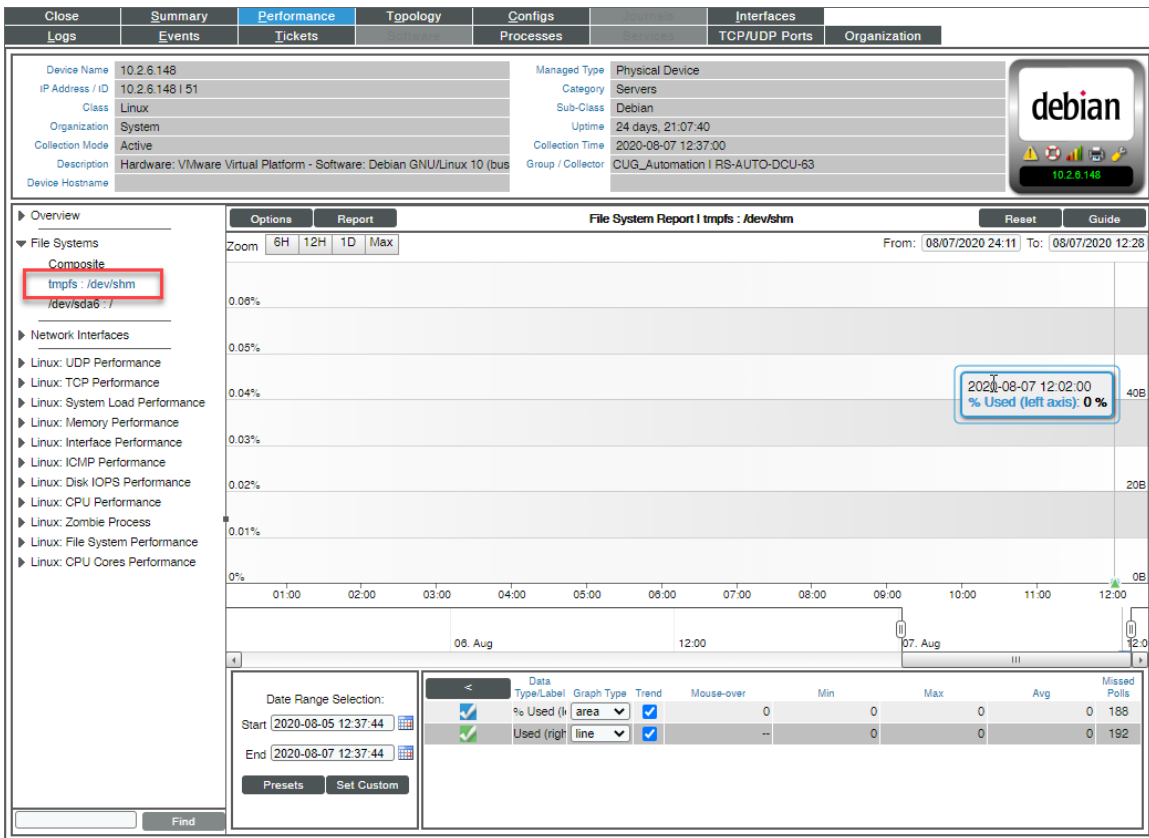
3. In the **Process Editor** window, use the **Frequency** dropdown field to select a new frequency.
4. Click the **[Save]** button.

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 (Registry > Devices > Hardware).
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.



Configuring Linux File System Thresholds

To change the file system threshold:

1. Go to the **Device Hardware** page (Registry > Devices > Hardware).
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).

The screenshot displays the Nagios XI interface for configuring device thresholds. The top navigation bar includes tabs for Close, Properties, Thresholds (selected), Collections, Monitors, Schedule, Logs, Toolbox, Interfaces, Relationships, Tickets, Redirects, Notes, and Attributes. The main content area is divided into two sections: Device Properties and Device Thresholds.

Device Properties:

- 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

Device Thresholds:

File System Thresholds:

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

Interface Inventory Thresholds:

Threshold	Value	Default
Interface Inventory Timeout	600000 ms	600000 ms
Maximum Allowed Interfaces	10000 interfaces	10000 interfaces

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.

© 2003 - 2020, ScienceLogic, Inc.

All rights reserved.

LIMITATION OF LIABILITY AND GENERAL DISCLAIMER

ALL INFORMATION AVAILABLE IN THIS GUIDE IS PROVIDED "AS IS," WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED. SCIENCELOGIC™ AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT.

Although ScienceLogic™ has attempted to provide accurate information on this Site, information on this Site may contain inadvertent technical inaccuracies or typographical errors, and ScienceLogic™ assumes no responsibility for the accuracy of the information. Information may be changed or updated without notice. ScienceLogic™ may also make improvements and / or changes in the products or services described in this Site at any time without notice.

Copyrights and Trademarks

ScienceLogic, the ScienceLogic logo, and EM7 are trademarks of ScienceLogic, Inc. in the United States, other countries, or both.

Below is a list of trademarks and service marks that should be credited to ScienceLogic, Inc. The ® and ™ symbols reflect the trademark registration status in the U.S. Patent and Trademark Office and may not be appropriate for materials to be distributed outside the United States.

- ScienceLogic™
- EM7™ and em7™
- Simplify IT™
- Dynamic Application™
- Relational Infrastructure Management™

The absence of a product or service name, slogan or logo from this list does not constitute a waiver of ScienceLogic's trademark or other intellectual property rights concerning that name, slogan, or logo.

Please note that laws concerning use of trademarks or product names vary by country. Always consult a local attorney for additional guidance.

Other

If any provision of this agreement shall be unlawful, void, or for any reason unenforceable, then that provision shall be deemed severable from this agreement and shall not affect the validity and enforceability of any remaining provisions. This is the entire agreement between the parties relating to the matters contained herein.

In the U.S. and other jurisdictions, trademark owners have a duty to police the use of their marks. Therefore, if you become aware of any improper use of ScienceLogic Trademarks, including infringement or counterfeiting by third parties, report them to Science Logic's legal department immediately. Report as much detail as possible about the misuse, including the name of the party, contact information, and copies or photographs of the potential misuse to: legal@sciencelogic.com



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

International: +1-703-354-1010