Configure SNMP Notification Recipients on a Switch through the CLI

Objective

Simple Network Management Protocol (SNMP) is a network management protocol for IP networks which helps to record, store, and share information about the devices in the network. It is an application-layer protocol composed of an SNMP Manager, an SNMP Agent, and a Management Information Base (MIB) .

- SNMP Manager The SNMP Manager is actually an administrative computer that may be part of a Network Management System (NMS). It runs the SNMP monitoring applications, and receives the notifications sent by the Agent software. The SNMP manager uses the most processing and memory required for network management.
- SNMP Agent SNMP Agent devices may be a switch, a router, or another computer among many others. This is where the MIB resides. SNMP Agent devices translate information into a format that can be interpreted by the SNMP manager. The notifications are to the SNMP manager, and are called Trap notifications or Inform requests. Trap notifications are sent by the SNMP agent device when a specific parameter is reached by the device. Trap messages can be improper user authentication, CPU usage, link status, and other significant events. This helps the administrator address network issues. Traps are merely notifications, and not acknowledged by the notification server. Inform request is acknowledged by the notification server. Inform is only available on SNMPv2c and v3.
- MIB An MIB is a virtual information storage area for network management information. It is composed of a collection of managed objects.

SNMP has three significant versions.

- SNMPv1 This is the initial version of SNMP.
- SNMPv2c This version uses a community-based form of security, just like SNMPv1, replacing the Party-based Administrative and Security Framework of SNMPv2.
- SNMPv3 This is an interoperable standards-based protocol defined in RFC2273, 2274, and 2275. It provides secure access to devices by authenticating and encrypting packets over the network. Due to the security vulnerabilities of other versions of SNMP, it is recommended to use SNMPv3.

This document aims to show you how to configure the host with IP address 192.168.100.139 as the SNMP notification recipient of SNMPv2c traps using the Command Line Interface (CLI) of a switch.

This article assumes that you have already installed and configured the SNMP manager. It also assumes that you have already added the switch to the SNMP manager for monitoring.

Applicable Devices

- Sx250 Series
- Sx300 Series
- Sx350 Series

- SG350X Series
- Sx500 Series
- Sx550X Series

Software Version

- 1.4.7.05 Sx300, Sx500
- 2.2.8.04 Sx250, Sx350, SG350X, Sx550X

Configure SNMP Community String on a Switch

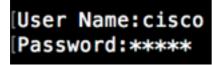
SNMP community strings act as embedded passwords authenticating access to MIB objects. It is only defined in SNMPv1 and SNMPv2 since SNMPv3 works with users instead of communities. The users belong to groups that have access rights assigned to them. Use the community string as a password or group name when adding the switch to the SNMP Manager. A community string has to be configured when setting up SNMP so that the SNMP host and the SNMP manager would be able to connect.

A community string can have one of these properties:

- Read-only (RO) This option allows read access to authorized management devices to all objects in the MIB, but does not allow write access.
- Read-write (RW) This option allows read and write access to authorized management devices to all objects in the MIB, however, it does not allow access to the community strings.

To configure an SNMP community string, follow these steps:

Step 1. Log in to the switch.



Step 2. Switch to global configuration mode.

SG500#configure terminal

Step 3. In global configuration mode, configure the community string by entering the following command.

SG500(config)#snmp-server community [word][view ro|rw][access-list number]

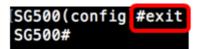
- word This will act like a password and permit access to the SNMP protocol.
- view (Optional) Specify the view record accessible to the community.
- ro|rw (Optional) Specify either read-only (ro) if you want authorized management stations to retrieve MIB objects. Specify read-write (rw) if you want authorized management stations to retrieve and modify MIB objects. The default value is ready-only access to all objects.

• access-list-number — (Optional) Enter a standard IP access list number from 1 to 99 and 1300 to 1999.

Note: In this example, SNMPCommunity will act as the password. This will be used when adding the switch to the SNMP Manager.

```
[SG500(config #snmp-server community SNMPCommunity view ro SG500(config)#_
```

Step 4. Switch to the Privileged EXEC mode by entering **exit** command.



Step 5. Verify the configuration by running the command:

SG500#show snmp

```
SG500#show snmp
SNMP is enabled.
SNMP traps Source IPv4 interface:
SNMP informs Source IPv4 interface:
SNMP traps Source IPv6 interface:
SNMP informs Source IPv6 interface:
                      Community-Access
  Community-String
                                          View name
                                                        IP address
                                                                        Mask
   SNMPCommunity
                         read only
                                           Default
                                                       192.168.100.
                                                       139
      private
                                           Default
                                                           All
                         read write
                         read only
                                                           All
       public
                                           Default
 Community-String Group name
                                  IP address
                                                       Mask
                                                                  Version Type
Traps are enabled.
Authentication-failure trap is enabled.
Version 1,2 notifications
Target Address
                  Type
                           Community
                                       Version
                                                 Udp
                                                       Filter
                                                                То
                                                                      Retries
                                                 Port
                                                       name
                                                                Sec
192.168.100.119
                  Trap
                          SNMPCommuni
                                          2
                                                  162
                                                                 0
                                                                         0
                          ty
Version 3 notifications
                                                     Filter
 Target Address
                                      Security Udp
                                                              То
                                                                    Retries
                 Type
                           Username
                                      Level
                                               Port
                                                              Sec
                                                     name
System Contact:
System Location:
SG500#
SG500#
```

Step 6. (Optional) Save the settings in the configuration file.

SG500#copy running-config startup-config

```
SG500 #copy running-config startup-config Overwill [N] ?Y

13-Jul-2017 19:36:07 %COPY-I-FILECPY: Files Copy - source URL running-config destination URL flash://startup-config

13-Jul-2017 19:36:14 %COPY-N-TRAP: The copy operation was completed successfully Copy succeeded SG500#
```

Step 7. Press Y to proceed.

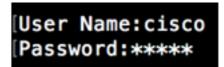
```
SG500#copy running-config startup-config
Overwrite file [startup-config]... (Y/N)[N] ?Y
13-Jul-2017 19:36:07 %COPY-I-FILECPL.................................. source URL running-config destination
URL flash://startup-config
13-Jul-2017 19:36:14 %COPY-N-TRAP: The copy operation was completed successfully
Copy succeeded
SG500#
```

Configure SNMP Notification Recipients on a Switch through the CLI

SNMP allows the switch to send notifications to SNMP managers when events occur. SNMP notifications can be traps or inform requests. A Trap is an SNMP message meant to notify the SNMP manager about the event that occurred. Traps are unreliable because the receiver does not send an acknowledgment when a Trap is received. An SNMP Inform operates on the same principle as a Trap. The main difference between a Trap and an Inform is that the remote application acknowledges the receipt of the Inform. Also, a Trap is discarded as soon as it is sent, while an Inform request is held in memory until a request is received, else it times out. SNMP Inform is not supported by SNMPv1.

This section, although optional, will guide you in setting up SNMP Notification Recipients through the CLI of the Switch.

Step 1. Log in to the switch.



Step 2. Switch to the global configuration mode.

SG500#configure terminal

Step 3. On global configuration mode, specify the notification recipient by running the following command:

SG500(config)#snmp-server host [IPaddress] traps [version] SNMP Community

SG500(config)#snmp-server host 192.168.100.139 traps version 2 SNMPCommunity SG500(config)#

- snmp-server This command allows the device to be managed by SNMP
- host This command lets you specify the IP address of the recipient of the notification.

Note: In this example, the IP address is 192.168.100.139.

- notification type This is the type of notification that the network manager would receive.
- Note: In this example, the notification is set to traps instead of informs.
- version This would use the specified SNMP version of the notifications.

Note: In this example, version 2 is used.

• SNMP Community — This is the name of the SNMP community.

Note: In this example, SNMPCommunity is entered.

Step 4. Switch to the Privileged EXEC mode by entering the exit command.

SG500(config)#exit

SG500(config)#exit SG500#_

Step 5. (Optional) Save the settings in the configuration file.

SG500#copy running-config startup config

Step 6. Press Y to confirm the action.

[SG500#copy running-config startup-config
Overwrite file [startup-config].... (Y/N)[N] ?

You should now have added an SNMP notification recipient.