

sFlow on ProCurve 2800

Overview

This document <dated Oct 4th, 2007> defines standardized network switch

Flow monitoring technologies, including CISCO's NetFlow and InMon Technology's sFlow, provide traffic monitoring of host-to-host conversations, host-to-network conversations, application identification, and bandwidth monitoring. sFlow is a sampling technology, and so you must a sampling rate for each interface on a switch, when configuring sFlow.

Precautions

On the switches we tested, sFlow configuration on HP ProCurve 2800 series switches, is not saved as part of the 'write memory' command, nor is it backed up along with a backup to FLASH: or TFTP:. If an HP ProCurve 2800 switch is rebooted, or power is lost, all sFlow configuration is lost, and must be manually reset, as described in the following procedures.

Procedures

HP ProCurve 2800 & 5300 Series switches

1. Login to switch console
 - a. Either connect console cable to computer serial port, or via telnet
 - b. If password has already been set, you will need to provide current *user-level 1* password
 - c. Type **enable** to enter privileged EXEC mode
 - d. If password has already been set, you will need to provide current *privileged-level 2* password
 - e. When in *privileged EXEC mode*, prompt will change to a "#", and be displayed as **switch #**
2. Check the switch software revisions.
 - a. 2800 Series: Software Revision **I.08.105** and Firmware (ROM) version **I.08.07** are required
 - i. 5300 Series: Software Revision **E.10.37** or higher
 - b. To check current revisions, perform either of the following:
 - i. Enter Switch Management menu
 1. Type **menu** and hit Enter
 2. Select Option 1. **Status and Counters**
 3. Select Option 1. **General System Info**
 - ii. At command-line, type **show system-information**
 - c. To upgrade current revisions:
 - i. *Switch will need to be rebooted after each software update. Any connected users will experience loss of connectivity for up to 5 minutes.*
 - ii. Download upgrade files **I_08_07.swi** (firmware update) and **I_08_105.swi** (software revision) from HP, save to a TFTP server.
 - iii. If firmware revision is less than **I.08.07**, the firmware must be upgraded before the switch *IOS* (or Software Revision) can be upgraded. To upgrade the firmware, you apply the I_08_07.swi software revision file, which will set firmware AND software revision to I.08.07, after which you then apply I_08_105, which upgrades software revision, but leaves firmware at I.08.07.
 - iv. On Data Collector PC (or TFTP Server): Run the TFTP-Server (*Start...All Programs...Solarwinds Free Tools...TFTP Server, for example*). Be sure the .swi update files in the the TFTP-Root directory.
 - v. On switch console: Open **Switch Management menu**, if not already. (At command-line, type **menu**)
 - vi. Select Option 7. **Download OS**
 - vii. Select method = **TFTP** (press the space-bar to toggle options and Tab to navigate fields)
 - viii. Enter the IP Address of the TFTP Server
 - ix. Enter Remote Filename of software package (.SWI) to download and install
 1. To update firmware, enter **I_08_07.swi** (this may 'down-rev' the Software Revision, but is required to update the firmware)
 2. After download, install begins automatically. Reboot the switch when prompted.
 - x. Following successful Firmware update, if needed, repeat steps above to update Software Revision. (As of Jan 2007, **I.08.105** is latest Software Revision).

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3. View MIB Objects

- a. *At the time this document was created, sFlow configuration can only be viewed or changed at switch command-line. This information cannot be found in the Switch Management Menu.*
- b. At switch command-line (exit menu if needed), type **walkmib 1.3.6.1.4.1.14706**
- c. This will display current settings for **sFlow** (the sFlow MIB Object name is "sFlow" and its OID, or Object-ID string, is 1.3.6.1.4.1.14706)
- d. The following **MIB objects** will be displayed, along with their current values:

sFlowVersion.0 = 1.3;HP;I.08.105

sFlowAgentAddressType.0 = 1

sFlowAgentAddress.0 = 0a 02 01 a5

sFlowRcvrOwner.1 =

sFlowRcvrTimeout.1 = 0

sFlowRcvrMaximumDatagramSize.1 = 1400

sFlowRcvrAddressType.1 = 1

sFlowRcvrAddress.1 = 00 00 00 00

sFlowRcvrPort.1 = 6343

sFlowRcvrDatagramVersion.1 = 5

- e. Items listed in **bold** above, need to be changed to send sFlow datagrams to a collector, such as Scrutinizer.

4. Set MIB values

- a. *sFlow configuration can only be viewed or changed at switch command-line. This information cannot be found in the Switch Management Menu.*
- b. Set the IP Address of the collector (this is the destination where sFlow sampling packets will be sent to):
 - i. The IP Address must be provided as a *hexadecimal* value (without the leading **0x** convention)
 - ii. For example, hex equivalent for the dotted-decimal address: **10.2.1.101**, is **0a020165**
 - iii. To set the IP Address of the collector to be 10.2.1.101, enter the following command:

1. **setmib sFlowRcvrAddress.1 -o OA020165**

*The -o is a TYPE-STR identifier that specifies an **octal** value. This may seem unusual, given that the address must be specified in hex, but the command must be entered this way in CAPS nonetheless.*

- iv. If successfully entered, you should see:

```
sw-itspare-hp2824# setmib sFlowRcvrAddress.1 -o OA020165
sFlowRcvrAddress.1 = 0a 02 01 65
```

- v. To verify that the value was actually set, use the walkmib command:

1. **Do not specify the Instance, which is the ".1" portion of MIB name **sFlowRcvrAddress.1***
2. **walkmib sFlowRcvrAddress**
3. This command return will return current values for **all** instances of **sFlowRcvrAddress**

```
sw-itspare-hp2824# walkmib sFlowRcvrAddress
sFlowRcvrAddress.1 = 0a 02 01 65
```

- c. Set the sFlow port:

- i. Default port for sFlow is **6343**. Default port for NetFlow is **2055**. The Scrutinizer product is configured to only listen for flow packets on both ports. If you want to change it from the default:
- ii. **setmib sFlowRcvrPort.1 -i 2055**

*The -i is a TYPE-STR identifier that specifies an **integer** value*

```
sw-itspare-hp2824# setmib sFlowRcvrPort.1 -i 2055
sFlowRcvrPort.1 = 2055
```

- d. Set Owner and Timeout

- i. Both values must be set on the same command-line

Scrutinizer NetFlow & sFlow Analyzer www.plixer.com

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ii. This will 'enable' the sflow functionality on the switch

iii. **setmib sFlowRcvrOwner.1 -D scrut sFlowRcvrTimeout.1 -i 100000000**

The **-D** is a TYPE-STR identifier that specifies a **Display String** value. This value can be any string (scrut is an arbitrary value, referring to "Scrutinizer", meaning that the sFlow data collection has been configured to go to the 'Scrutinizer' product). This MIB Object **must** be set, before other interface-specific MIB Objects, can be set.

The **-i** is a TYPE-STR identifier that specifies an **Integer** value. The **100,000,000** value for Timeout, is an arbitrary value that defines the starting point for a countdown (in milliseconds). When the countdown (in milliseconds) has completed, the switch will stop sampling for sFlow. **A batch file can be created and schedule to reset the OID every ~24 hours.**

100,000,000 milliseconds is roughly equivalent to 28 hours.

```
sw-itspare-hp2824# setmib sFlowRcvrOwner.1 -D scrut sFlowRcvrTimeout.1 -i 100000000
sFlowRcvrOwner.1 = scrut
sFlowRcvrTimeout.1 = 100,000,000
```

e. The (4) 'Global' MIBs required for sFlow are now configured.

f. Each interface port on the switch, must now have associated sFlow parameters configured. The commands can either be typed individually for each interface, or added to a batch to run the same command sequentially against each port.

g. In order to set interface parameters via a batch, the batch file will need to call a 3rd party MIB Browser utility, such as the open source Net-SNMP, since you cannot run a batch on the switch itself, to call the native HP IOS setMIB command.

h. Download and install Net-SNMP (current release is 5.4)

i. <http://net-snmp.sourceforge.net/download.html>

i. Create a batch containing the Net-SNMP syntax to set sFlow parameters.

j. A Sample batch for interface configuration on a 24-port switch is shown below. The batch should be run from the C:\usr\bin directory, which is default install location for Net-SNMP. This will prevent any path issues to the 'snmpset' command.

i. The following OID specifies the 'sampling rate' (1 out of every 50 packets will be collected).

ii. The more frequent the sampling rate, the larger both traffic volume and database growth will be.

```
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.1.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.2.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.3.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.4.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.5.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.6.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.7.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.8.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.9.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.10.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.11.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.12.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.13.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.14.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.15.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.16.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.17.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.18.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.19.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.20.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.21.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.22.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.23.1 i: 50
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.4.11.1.3.6.1.2.1.2.2.1.1.24.1 i: 50
```

k. The following OID specifies a '1', or 'enable', flow monitoring on the interface port(s)

```
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.1.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.2.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.3.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.4.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.5.1 i: 1
```

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```
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.6.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.7.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.8.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.9.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.10.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.11.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.12.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.13.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.14.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.15.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.16.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.17.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.18.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.19.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.20.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.21.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.22.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.23.1 i: 1
snmpset -v1 -c Public 10.2.1.167 1.3.6.1.4.1.14706.1.1.5.1.3.11.1.3.6.1.2.1.2.2.1.1.24.1 i: 1
```

5. If all parameters are successfully applied, after the Scrutinizer service is restarted, it should automatically detect flows being received on port 2055, and automatically add the switch to the device list. **The above will only enable the packet sampling. Counter sampling must also be enabled which is not covered in this document:**

Search this page:

<http://www.oidview.com/mibs/14706/SFLOW-MIB.html>

For sflowCpInterval & sflowCpReceiver it will give you the OIDs to set.