Content

Chapter 1 Mirror Configuration

1.1 Introduction to Mirror

Mirror functions include port mirror function, CPU mirror function, flow mirror function.

Port mirror refers to the duplication of data frames sent/received on a port to another port. The duplicated port is referred to as mirror source port and the duplicating port is referred to as mirror destination port. A protocol analyzer (such as Sniffer) or a RMON monitor will be connected at mirror destination port to monitor and manage the network, and diagnose the problems in the network.

CPU mirror function means that the switch exactly copies the data frames received or sent by the CPU to a port.

Flow mirror function means that the switch exactly copies the data frames received by the specified rule of a port to another port. The flow mirror will take effect only the specified rule is permit.

Switch supports one mirror destination port only. There is no limitation on mirror source ports, one port or several ports is allowed. When there are more than one source ports, they can be in the same VLAN or in different VLAN. The source port and destination port can be in different VLAN.

1.2 Mirror Configuration Task List

1. Specify mirror destination port
2. Specify mirror source port (CPU)
3. Specify flow mirror source

1. Specify mirror destination port

Command	Explanation
Global mode	
monitor session <*session*> destination interface <*interface-number*> **no monitor session <*session*> destination interface**	Specifies mirror destination port; the no command deletes mirror destination source port.

<interface-number>	

2. Specify mirror source port（CPU）

Command	Explanation
Global mode	
monitor session <*session*> source {interface <*interface-list*> | cpu} {rx| tx| both} **no monitor session <*session*> source {interface <*interface-list*> | cpu}**	Specifies mirror source port; the no command deletes mirror source port.

3. Specify flow mirror source

Command	Explanation
Global mode	
monitor session <*session*> source {interface <*interface-list*>} access-group <*num*> {rx|tx|both} **no monitor session <*session*> source {interface <*interface-list*>} access-group <*num*>**	Specifies flow mirror source port and apply rule; the no command deletes flow mirror source port.

1.3 Mirror Examples

1. Example:

The requirement of the configurations is shown as below: to monitor at interface 1 the data frames sent out by interface 9 and received from interface 7, sent and received by CPU, and the data frames received by interface 15 and matched by rule 120(The source IP address is 1.2.3.4 and the destination IP address is 5.6.7.8).

Configuration guidelines:

1. Configure interface 1 to be a mirror destination interface.
2. Configure the interface 7 ingress and interface 9 egress to be mirrored source.
3. Configure the CPU as one of the source.
4. Configure access list 120.
5. Configure access 120 to binding interface 15 ingress.

Configuration procedure is as follows:

Switch(config)#monitor session 1 destination interface ethernet 1/1
Switch(config)#monitor session 1 source interface ethernet 1/7 rx
Switch(config)#monitor session 1 source interface ethernet 1/9 tx
Switch(config)#monitor session 1 source cpu
Switch(config)#access-list 120 permit tcp 1.2.3.4 0.0.0.255 5.6.7.8 0.0.0.255
Switch(config)#monitor session 1 source interface ethernet 1/15 access-list 120 rx

1.4 Device Mirror Troubleshooting

If problems occur on configuring port mirroring, please check the following first for causes:

- ☞ Whether the mirror destination port is a member of a TRUNK group or not, if yes, modify the TRUNK group.
- ☞ If the throughput of mirror destination port is smaller than the total throughput of mirror source port(s), the destination port will not be able to duplicate all source port traffic; please decrease the number of source ports, duplicate traffic for one direction only or choose a port with greater throughput as the destination port. Mirror destination port can not be pulled into Isolate vlan, or will affect mirror between VLAN.

Chapter 2 sFlow Configuration

2.1 Introduction to sFlow

The sFlow (RFC 3176) is a protocol based on standard network export and used on monitoring the network traffic information developed by the InMon Company. The monitored switch or router sends date to the client analyzer through its main operations such as sampling and statistic, then the analyzer will analyze according to the user requirements so to monitor the network.

A sFlow monitor system includes: sFlow proxy, central data collector and sFlow analyzer. The sFlow proxy collects data from the switch using sampling technology. The sFlow collector is for formatting the sample data statistic which is to be forwarded to the sFlow analyzer which will analyze the sample data and perform corresponding measure according to the result. Our switch here acts as the proxy and central data collector in the sFlow system.

We have achieved data sampling and statistic targeting physical port.

Our data sample includes the IPv4 and IPv6 packets. Extensions of other types are not supported so far. As for non IPv4 and IPv6 packet, the unify HEADER mode will be adopted following the requirements in RFC3176, copying the head information of the packet based on analyzing the type of its protocol.

The latest sFlow protocol presented by InMon Company is the version 5. Since it is the version 4 which is realized in the RFC3176, version conflict might exist in some case such as the structure and the packet format. This is because the version 5 has not become the official protocol, so, in order to be compatible with current applications, we will continue to follow the RFC3176.

2.2 sFlow Configuration Task List

1. Configure sFlow Collector address

Command	Explanation
Global mode and Port Mode	
sflow destination <*collector-address*> [<*collector-port*>] **no sflow destination**	Configure the IP address and port number of the host in which the sFlow analysis software is installed. As for the ports, if IP address is configured on the port, the port configuration will be applied, or else will be

	applied the global configuration. The "**no sflow destination**" command restores to the default port value and deletes the IP address.

2. Configure the sFlow proxy address

Command	Explanation
Global Mode	
sflow agent-address *<collector-address>* **no sflow agent-address**	Configure the source IP address applied by the sFlow proxy; the "no" form of the command deletes this address.

3. Configure the sFlow proxy priority

Command	Explanation
Global Mode	
sflow priority *<priority-vlaue>* **no sflow priority**	Configure the priority when sFlow receives packet from the hardware; the "**no sflow priority**" command restores to the default

4. Configure the packet head length copied by sFlow

Command	Explanation
Port Mode	
sflow header-len *<length-vlaue>* **no sflow header-len**	Configure the length of the packet data head copied in the sFlow data sampling; the "no" form of this command restores to the default value.

5. Configure the max data head length of the sFlow packet

Command	Explanation
Port Mode	
sflow data-len *<length-vlaue>* **no sflow data-len**	Configure the max length of the data packet in sFlow; the "no" form of this command restores to the default.

6. Configure the sampling rate value

Command	Explanation
Port Mode	
sflow rate {input *<input-rate>* | output *<output-rate* >} **no sflow rate [input | output]**	Configure the sampling rate when sFlow performing hardware sampling. The "no" command deletes the rate value.

7. Configure the sFlow statistic sampling interval

Command	Explanation
Port Mode	

sflow counter-interval <*interval-vlaue*> **no sflow counter-interval**	Configure the max interval when sFlow performing statistic sampling. The “no” form of this command deletes

8. Configure the analyzer used by sFlow

Command	Explanation
Global Mode	
sflow analyzer sflowtrend **no sflow analyzer sflowtrend**	Configure the analyzer used by sFlow, the no command deletes the analyzer.

2.3 sFlow Examples

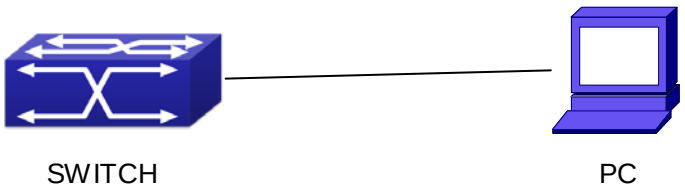

Fig 2-1 sFlow configuration topology

As shown in the figure, sFlow sampling is enabled on the port 1/1 and 1/2 of the switch. Assume the sFlow analysis software is installed on the PC with the address of 192.168.1.200. The address of the layer 3 interface on the SwitchA connected with PC is 192.168.1.100. A loopback interface with the address of 10.1.144.2 is configured on the SwitchA. sFlow configuration is as follows:

Configuration procedure is as follows:

Switch#config
Switch (config)#sflow ageng-address 10.1.144.2
Switch (config)#sflow destination 192.168.1.200
Switch (config)#sflow priority 1
Switch (config)# interface ethernet1/1
Switch (Config-If-Ethernet1/1)#sflow rate input 10000
Switch (Config-If-Ethernet1/1)#sflow rate output 10000
Switch (Config-If-Ethernet1/1)#sflow counter-interval 20
Switch (Config-If-Ethernet1/1)#exit
Switch (config)# interface ethernet1/2
Switch (Config-If-Ethernet1/2)#sflow rate input 20000
Switch (Config-If-Ethernet1/2)#sflow rate output 20000
Switch (Config-If-Ethernet1/2)#sflow counter-interval 40

2.4 sFlow Troubleshooting

In configuring and using sFlow, the sFlow server may fail to run properly due to physical connection failure, wrong configuration, etc. The user should ensure the following:

- ☞ Ensure the physical connection is correct
- ☞ Guarantee the address of the sFlow analyzer configured under global or port mode is accessible.
- ☞ If traffic sampling is required, the sampling rate of the interface must be configured
- ☞ If statistic sampling is required, the statistic sampling interval of the interface must be configured

If the examination remains unsolved, please contact with the technical service center of our company.