

Sun Network 10GbE Switch 72p

Software Configuration Guide



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Chapter 1

Introduction

Purpose and Scope

The Sun Ethernet Fabric Operating System (SEFOS) offers a rich set of system features, such as copying and writing facilities, and many other features. This document explains how to configure the system features in a Oracle Network 10GbE Switch 72p from Oracle running SEFOS. You should have a basic knowledge of the protocol as a prerequisite.

Related Documentation

Sun Network 10GbE Switch 72p Documentation

Category	URL or Title	Part Number	Available
Sun Network 10GbE Switch 72p documentation	(http://docs.sun.com/app/docs/prod/netwk.10GbE.72p#hic)		
	<i>Sun Network 10GbE Switch 72p Where to Find Documentation</i>	821-0408	Printed and online
	<i>Sun Network 10GbE Switch 72p User's Guide</i>	821-0492	Online
	<i>Sun Network 10GbE Switch 72p Safety and Compliance Guide</i>	821-1298	Online
	<i>Sun Network 10GbE Switch 72p Product Notes</i>	821-0493	Online

Category	URL or Title	Part Number	Available
	<i>Sun Network 10GbE Switch 72p Software Configuration Guide</i>	821-1584	Online
	<i>Sun Ethernet Fabric Operating System CLI Base Reference Manual</i>	821-0410	Online
	<i>Sun Ethernet Fabric Operating System CLI Enterprise Reference Manual</i>	821-0411	Online
	<i>Sun Ethernet Fabric Operating System RIP Administration Guide</i>	821-0658	Online
	<i>Sun Ethernet Fabric Operating System STP Administration Guide</i>	821-0660	Online
	<i>Sun Ethernet Fabric Operating System OSPF Administration Guide</i>	821-0662	Online
	<i>Sun Ethernet Fabric Operating System IGS Administration Guide</i>	821-0663	Online
	<i>Sun Ethernet Fabric Operating System VLAN Administration Guide</i>	821-0664	Online
	<i>Sun Ethernet Fabric Operating System Link Aggregation Administration Guide</i>	821-0665	Online
	<i>Sun Ethernet Fabric Operating System LLDP Administration Guide</i>	821-0752	Online
	<i>Sun Ethernet Fabric Operating System PNAC Administration Guide</i>	821-0754	Online
	<i>Sun Ethernet Fabric Operating System RADIUS Administration Guide</i>	821-0756	Online
	<i>Sun Ethernet Fabric Operating System DHCP Administration Guide</i>	821-0657	Online
ILOM 3.0 documentation	http://docs.sun.com/app/docs/prod/netwk.10GbE.72p#hic		
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide</i>	820-6410	Online
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide</i>	820-6411	Online
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide</i>	820-6412	Online

Category	URL or Title	Part Number	Available
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Management Protocols Reference Guide</i>	820-6413	Online
	<i>Oracle Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide</i>	820-5523	Online
	<i>Oracle Integrated Lights Out Manager (ILOM) Feature Updates and Release Notes</i>	820-7329	Online

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Acronyms

ACL	Access Control List
BOOTP	Bootstrap Protocol
CLI	Command Line Interface
DHCP	Dynamic Host Configuration Protocol
DSCP	Differentiated Services Code Point
HTTP	Hyper Text Transfer Protocol
ICMP	Internet Control Message Protocol
IP	Internet Protocol

MAC	Media Access Control
MTU	Maximum Transfer Unit
NVRAM	Non-Volatile Random Access Memory
PNAC	Port based Network Access Control
QoS	Quality-of-Service
RADIUS	Remote Authentication Dial-In User Service
RARP	Reverse Address Resolution Protocol
SEFOS	Sun Ethernet Fabric Operating System
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol

Document Conventions

Convention	Usage
Bold	CLI commands
<i>Italics</i>	Variables - user inputs for CLI commands
Regular	CLI command outputs
	Notes / Guidelines / Prerequisites
<i>Bold italics</i>	Output areas specific to the configuration

General Configurations

The following table provides the access and exit methods to various general configuration modes.

Command Mode	Access Method	Prompt	Exit method
User EXEC	This is the initial mode to start a session.	SEFOS>	The logout method is used.
Privileged EXEC	The User EXEC mode command enable is used to enter the Privileged EXEC mode.	SEFOS#	To return from the Privileged EXEC mode to User EXEC mode the disable command is used.

Command Mode	Access Method	Prompt	Exit method
Global Configuration	The Privileged EXEC mode command configure terminal is used to enter the Global Configuration mode	SEFOS(config)#	To exit to the Global Configuration mode the exit command is used and to exit to the Privileged EXEC mode the end command is used.
Interface Configuration	The Global Configuration mode command interface interface-type interface-id is used to enter the Interface Configuration mode.	SEFOS(config-if)#	To exit to the Global Configuration mode the exit command is used and to exit to the Privileged EXEC mode the end command is used.

Chapter

2

Connecting to SEFOS

In order to use the Sun Ethernet Fabric Operating System (SEFOS) software, you must first establish a serial connection to your system and then connect to SEFOS through ILOM. The instructions in this section assume that you are connecting to ILOM using a serial connection directly to the Sun Network 10GbE Switch 72p. Refer to the Sun Network 10GbE Switch 72p User's Guide for other ways to connect to SEFOS.

1. Connect a terminal or terminal emulator to the serial management port on the switch.

2. Press Enter on the terminal device.

This action establishes the connection between the terminal device and the switch ILOM. The switch ILOM login prompt appears:

```
SUNSPnnnnnnnnnn login:
```

3. Log in to ILOM.

The default user is `root` and the default password is `changeme`. Once you have successfully logged in, the switch ILOM displays the ILOM default command prompt

```
->
```

4. Access SEFOS:

```
-> cd /SYS/fs_cli/
```

The SEFOS# prompt appears. For example:

```
-> cd /SYS/fs_cli/
```

```
cd: Connecting to Fabric Switch CLI as user root
```

```
SEFOS#
```

You are now connected to SEFOS and you can begin to configure the SEFOS features.

5. When you are finished using SEFOS, type `exit` to return to the ILOM prompt:

```
SEFOS# exit
```

```
Connection closed by foreign host.
```

```
cd: The session with /SYS/fs_cli has ended.
```

->

6. When you are finished with ILOM, exit the ILOM:

→ **exit**

Configuring SEFOS System Features

- The following two figures depict topology for configuring some of the SEFOS switch features shown in this guide.
- For the purpose of showing the SEFOS switch features, the two Sun Network 10GbE Switch 72p switches used throughout this document will be identified as SEFOS-1 for the first switch and SEFOS-2 for the second switch.
- For the host servers that will be connected to the SEFOS switches, names such as Host 1, Host 2, Host A, Host A-2, Host B, and Host B-2 will be used.
- For port numbers, terms such as P1 denote port 1, and P17-20 denote ports 17 through 20.

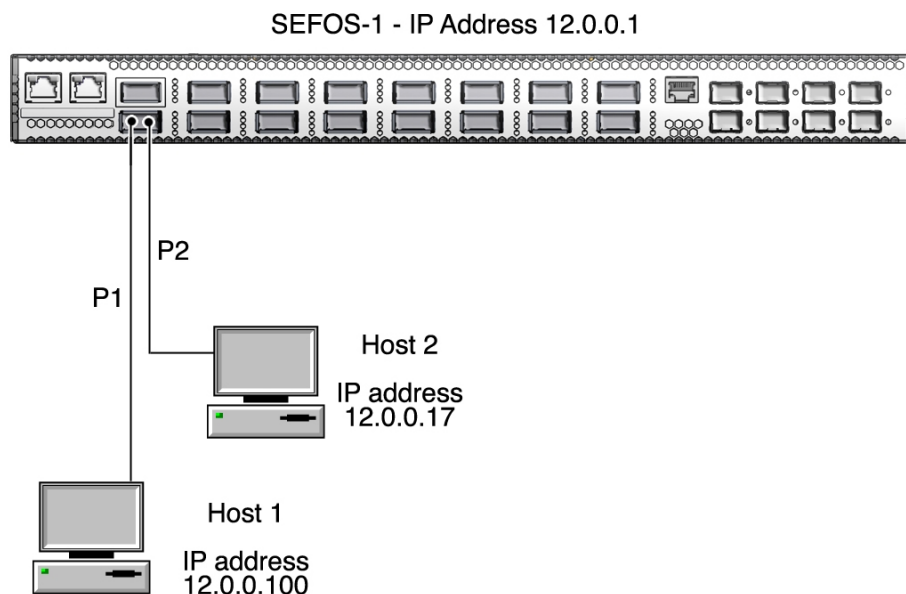


Figure 1. Configuration of Basic System Features

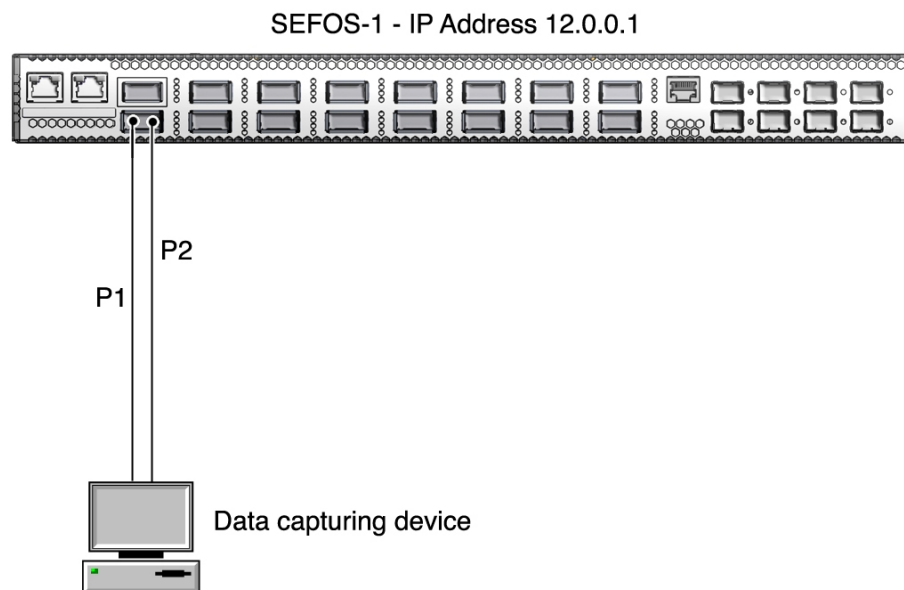


Figure 2. Configuration with Packet Capturing Device

Default Configurations

Feature	Default Setting
IP Address and Subnet Mask	10.0.0.1 and 255.0.0.0
IP Allocation Mode	Manual
Dynamic IP Allocation Protocol	DHCP
Base MAC Address	The switch's base MAC address is derived from the system's standard unique MAC address, shown on the yellow sticker. This MAC address should be sufficient for normal functionality of the switch, so you do not have to change it.
Login Authentication Mode	Local
Authorized Managers	All users are allowed to configure the switch
Restoration File Name	switch.conf
CLI Console	Enabled
HTTP Status	Disabled
Management VLAN	VLAN 1
MTU	9216
Trap Generation on an Interface	Enabled

Feature	Default Setting
Checksum on Tunnel Interface	Disabled
MTU Discovery on Tunnel Interface	Disabled
Debug logging	Logs in console

Clearing the Timeout for Line Connections

If you leave a session idle for too long, the session might get disconnected, bringing you back to the ILOM prompt. The following instructions will clear the timeout for line connections so that idle sessions will not get disconnected:

1. Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

2. Enter the following commands to clear the timeout for line connections:

```
SEFOS (config)# line vty
```

```
SEFOS (config)# exit
```

```
SEFOS (config)#
```

Configuring the Default IP Address

When you configure the default IP address, it will be written to the flash. This default IP address will be used as the IP address of the default interface when the switch is restarted.

1. Configure the default IP address.

- Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

-

- Configure the default IP address and subnet mask as 12.0.0.1 and 255.255.0.0, respectively:

```
SEFOS(config)# default ip address 12.0.0.1 subnet-mask 255.255.0.0
```

- Exit from the Global Configuration mode:

```
SEFOS(config)#end
```

2. View the default IP address and subnet mask:

```
SEFOS# show nvram
```

```

Default IP Address                : 12.0.0.1
Default Subnet Mask              : 255.255.0.0
Default IP Address Config Mode      : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address             : 00:14:4f:6c:69:ee
```

Default Interface Name	: Ex0/1
Default RM Interface Name	: NONE
Config Restore Option	: No Restore
Config Save Option	: No save
Auto Save	: Disable
Incremental Save	: Enable
Roll Back	: Enable
Config Save IP Address	: 0.0.0.0
Config Save Filename	: switch.conf
Config Restore Filename	: switch.conf
PIM Mode	: Sparse Mode
IGS Forwarding Mode	: MAC based
Cli Serial Console	: No
SNMP EngineID	: 80.00.08.1c.04.46.53
SNMP Engine Boots	: 1
Default VLAN Identifier	: 1
Stack PortCount	: 0
ColdStandby	: Disable
NPAPI Mode	: Synchronous
Dynamic Port Count	: 72

VLAN 1 (the default VLAN) will have this IP address and subnet mask after the switch is restarted (DHCP client is not supported).

Configuring the IP Address for an Interface

This procedure describes how to configure the SEFOS switch IP address for a VLAN interface that will be used for sending and receiving the packets. In the following command examples, VLAN ID 1 is used.

1. Configure an IP address for a VLAN interface.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Enter the Interface Configuration mode:
SEFOS(config)# **interface vlan 1**
- Shut down the VLAN interface:
SEFOS(config-if)# **shutdown**

- Configure the IP address and subnet mask:
SEFOS(config-if)# **ip address** *12.0.0.1 255.0.0.0*
- Bring up the VLAN interface:
SEFOS(config-if)# **no shutdown**
- Exit from the Interface Configuration mode:
SEFOS(config)# **end**

You must shut down the interface before you can configure the IP address for that interface.

2. View the configured interface IP address:

```
SEFOS# show ip interface
```

```
vlan1 is up, line protocol is up
Internet Address is 12.0.0.1/8
Broadcast Address 12.255.255.255
```

Configuring the Restoration File Name

This procedure describes how to write the restoration file to the flash. This file will be used as the configuration restoration file.

1. Configure the restoration file name.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Configure the configuration restoration file name for the switch:
SEFOS(config)# **default restore-file myconfig.conf**
- Exit from the Global Configuration mode:
SEFOS(config)# **end**

2. View the default restoration file name:

```
SEFOS# show nvram
```

```
Default IP Address           : 12.0.0.1
Default Subnet Mask         : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
```

```

Switch Base MAC Address      : 00:14:4f:6c:69:ee
Default Interface Name       : Ex0/1
Default RM Interface Name    : NONE
Config Restore Option        : No restore
Config Save Option           : No save
Auto Save                    : Disable
Incremental Save             : Enable
Roll Back                    : Enable
Config Save IP Address       : 0.0.0.0
Config Save Filename         : switch.conf
Config Restore Filename    : myconfig.conf
PIM Mode                     : Sparse Mode
IGS Forwarding Mode          : MAC based
Cli Serial Console           : No
SNMP EngineID                : 80.00.08.1c.04.46.53
SNMP Engine Boots            : 1
Default VLAN Identifier      : 1
Stack PortCount              : 0
ColdStandby                  : Disable
NPAPI Mode                   : Synchronous
Dynamic Port Count           : 72

```

Saving the Current Configurations for Restoration

This procedure describes how to write the running configuration to a flash file, a startup configuration file or to a remote site.

1. Save the configuration that is currently running to a file:

```
SEFOS# write startup-config
```

2. View the current restoration settings:

```
SEFOS#show nvram
```

```

Default IP Address          : 12.0.0.1
Default Subnet Mask         : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address     : 00:14:4f:6c:69:ee
Default Interface Name      : Ex0/1

```



```

Default RM Interface Name      : NONE
Config Restore Option       : Restore
Config Save Option         : Startup save
Auto Save                      : Disable
Incremental Save               : Enable
Roll Back                      : Enable
Config Save IP Address         : 0.0.0.0
Config Save Filename           : switch.conf
Config Restore Filename        : myconfig.conf
PIM Mode                       : Sparse Mode
IGS Forwarding Mode            : MAC based
Cli Serial Console             : No
SNMP EngineID                  : 80.00.08.1c.04.46.53
SNMP Engine Boots              : 1
Default VLAN Identifier        : 1
Stack PortCount                : 0
ColdStandby                   : Disable
NPAPI Mode                     : Synchronous
Dynamic Port Count             : 72

```

3. View the restoration status:

```
SEFOS# show system information
```

```

Hardware Version               : 2.5.5_00166738
Firmware Version               : TOR-1.0.0.2
Switch Name                    : TOR 72P
System Contact                  : Sun Microsystems, Inc.
System Location                 : Sun Microsystems Inc.
Logging Option                  : Console Logging
Login Authentication Mode       : Local
Config Save Status              : Successful
Remote Save Status              : Not Initiated
Config Restore Status       : Not Initiated

```

4. Reboot the switch to verify that the current configurations were saved properly.

Refer to the documentation that came with your switch for those instructions. If you do not want to reboot the switch at this time, you do not have to complete the rest of the steps in this procedure.

5. View the restoration status after rebooting the switch:

The **Config Restore Status** will show Successful after the reboot.

SEFOS# **show system information**

```
Hardware Version           : 2.5.5_00166738
Firmware Version          : TOR-1.0.0.2
Switch Name               : TOR 72P
System Contact             : Sun Microsystems, Inc.
System Location           : Sun Microsystems, Inc.
Logging Option            : Console Logging
Login Authentication Mode  : Local
Config Save Status        : Not Initiated
Remote Save Status        : Not Initiated
Config Restore Status    : Successful
```

- The current configurations will be saved to a file that you specified when you ran the restore-file command in the previous section.
- The default name for the restoration file is switch.conf.
- The switch will start with the saved configuration when you reboot the switch.

Erasing a Saved Configuration File

This procedure describes how to clear the contents of the startup configuration or set the parameters in flash to their default values.

1. Erase the saved configuration file:

SEFOS# **erase startup-config**

2. View the erase status settings:

SEFOS# **show nvram**

```
Default IP Address        : 12.0.0.1
Default Subnet Mask       : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
```

```

Switch Base MAC Address      : 00:14:4f:6c:69:ee
Default Interface Name      : Ex0/1
Default RM Interface Name   : NONE
Config Restore Option      : No restore
Config Save Option       : No save
Auto Save                : Disable
Incremental Save            : Enable
Roll Back                   : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename     : switch.conf
Config Restore Filename  : switch.conf
PIM Mode                    : Sparse Mode
IGS Forwarding Mode         : MAC based
Cli Serial Console          : No
SNMP EngineID               : 80.00.08.1c.04.46.53
SNMP Engine Boots           : 1
Default VLAN Identifier     : 1
Stack PortCount             : 0
ColdStandby                 : Disable
NPAPI Mode                  : Synchronous
Dynamic Port Count          : 72

```

The switch will start with the default configurations when you reboot the switch.

Copying a Configuration File To A Remote Location

This procedure describes how to back up the initial configuration file to flash or to a remote location. Note that the remote location has to be on a host connected to one of the 72 ports on the switch.

In the following example, the default IP address of the switch SEFOS-1 is set to 12.0.0.1, and the IP address of Host 1 is set to 12.0.0.100. In addition, Port 1 on the switch SEFOS-1 is connected to Host 1. See Figure 1 for the topology for this procedure.

1. Ping Host 1 from switch SEFOS-1:

```
SEFOS# ping 12.0.0.100
```

```

Reply Received From :12.0.0.100, TimeTaken : 30 msec
Reply Received From :12.0.0.100, TimeTaken : 110 msec
Reply Received From :12.0.0.100, TimeTaken : 90 msec

```

```
--- 12.0.0.100 Ping Statistics ---  
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

2. Save the configuration that is currently running to a file:

```
SEFOS# write startup-config
```

3. Copy the configuration file to Host 1 (IP address 12.0.0.10), giving it the name `switch.conf` on the Host 1 side:

```
SEFOS# copy startup-config tftp://12.0.0.100/switch.conf
```

```
SEFOS#
```

Copying a Configuration From A Remote Location to Flash

This procedure describes how to copy the backup configuration file from a remote location to the location of the default configuration directory path (`/conf/sefos`) for restoration. Note that the remote location has to be on a host connected to one of the 72 ports on the switch.

- Copy the startup configuration file `switch.conf` stored in host Host 1 12.0.0.100 to the current directory path (`/conf/sefos`):

```
SEFOS# copy tftp://12.0.0.100/switch.conf startup-config
```

```
SEFOS#
```

This action will copy the file `switch.conf` from the host 12.0.0.100 to the default configuration directory (`/conf/sefos`) path location. This file will be used as the startup configuration file when you reboot the switch.

Copying System Logs To A Remote Location

This procedure describes how to write the system logs to a remote location. Note that the remote location has to be a host on one of the 72 ports on the switch.

In this sample procedure, you will first execute several commands to generate system logs, and you will also clear the system buffers so that the log file can be copied over to the remote site.

- **Upload the log file to the remote location 12.0.0.100:**

```
SEFOS# debug npapi transmission
```

```
SEFOS# show debug-logging
```

```
[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 119
```

```
[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 119
```

```
[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 119
```

```
[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 60
```

```

[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 60
[NP]:: TRACE [NP]: Packet Transmission on logicalPort 1 Pktsize 60
....
.....
SEFOS# configure terminal
SEFOS(config)# clear logs
SEFOS(config)# end
SEFOS#
SEFOS# copy logs tftp://12.0.0.100/logfile
% Log Upload Successful
SEFOS#
SEFOS# no debug npapi transmission
SEFOS#
SEFOS# show debugging

```

NOTE: Make sure to run the “no debug npapi transmission” command as shown above so that the debugging function is disabled.

Copying a File From One Remote Site or Flash to Another Remote Site or Flash

This procedure describes how to copy a file from one remote site or flash to another remote site or flash. Note that the remote location has to be on a host connected to one of the 72 ports on the switch.

The following procedure assumes that the file `script.txt` already exists on the remote site.

- **Copy the file `script.txt` from the remote location 12.0.0.100 to flash:**

```

SEFOS# copy tftp://12.0.0.100/script.txt flash:script.txt
Copied tftp://12.0.0.100/script.txt ==> flash:script.txt
SEFOS#

```

If the file does not exist on the remote site or if the file is not accessible for some reason, you should see the following error message.

```

SEFOS# copy tftp://12.0.0.100/vlan_script.txt flash:vlan_script.txt
% Unable to copy remote file to flash
SEFOS#

```

Enabling or Disabling Incremental Save Flag

Enabling the incremental save flag updates the in-memory database for every configuration at runtime.

Disabling the incremental save flag does not update the in-memory database for any configuration at runtime. However, you can save the memory database by running the `write startup-config` command. Refer to the section “Saving the Current Configurations for Restoration” for those instructions.

- **Enable the incremental save flag on the switch.**

- Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

- Disable the incremental save flag on the switch:

```
SEFOS(config)# incremental-save disable
```

- Enable the incremental save flag on the switch:

```
SEFOS(config)# incremental-save enable
```

- Exit from the Global Configuration mode:

```
SEFOS(config)# end
```

```
SEFOS# show nvram
```

```
Default IP Address           : 12.0.0.1
Default Subnet Mask          : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address      : 00:14:4f:6c:69:ee
Default Interface Name       : Ex0/1
Default RM Interface Name     : NONE
Config Restore Option        : Restore
Config Save Option           : Startup save
Auto Save                    : Disable
Incremental Save            : Enable
Roll Back                    : Enable
Config Save IP Address       : 0.0.0.0
Config Save Filename         : switch.conf
Config Restore Filename      : switch.conf
PIM Mode                     : Sparse Mode
IGS Forwarding Mode          : MAC based
Cli Serial Console           : No
SNMP EngineID                : 80.00.08.1c.04.46.53
SNMP Engine Boots            : 2
Default VLAN Identifier      : 1
Stack PortCount              : 0
```

ColdStandby	: Disable
NPAPI Mode	: Synchronous
Dynamic Port Count	: 72

SEFOS#

Enabling or Disabling the Auto Save Flag

This procedure describes how to enable or disable updates of the runtime configuration in the configuration file.

- **Enable or disable the auto save flag on the switch.**

- Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

- Enable the auto save flag on the switch:

```
SEFOS(config)# auto-save trigger enable
```

- Disable the auto save flag on the switch:

```
SEFOS(config)# auto-save trigger disable
```

- Exit from the Global Configuration mode:

```
SEFOS(config)# end
```

```
SEFOS# show nvram
```

Default IP Address	: 12.0.0.1
Default Subnet Mask	: 255.255.0.0
Default IP Address Config Mode	: Manual
Default IP Address Allocation Protocol	: DHCP
Switch Base MAC Address	: 00:14:4f:6c:69:ee
Default Interface Name	: Ex0/1
Default RM Interface Name	: NONE
Config Restore Option	: Restore
Config Save Option	: Startup save
Auto Save	: Enable
Incremental Save	: Enable
Roll Back	: Enable
Config Save IP Address	: 0.0.0.0
Config Save Filename	: switch.conf
Config Restore Filename	: switch.conf
PIM Mode	: Sparse Mode
IGS Forwarding Mode	: MAC based
Cli Serial Console	: No

```

SNMP EngineID                : 80.00.08.1c.04.46.53
SNMP Engine Boots             : 2
Default VLAN Identifier       : 1
Stack PortCount               : 0
ColdStandby                   : Disable
NPAPI Mode                    : Synchronous
Dynamic Port Count            : 72
SEFOS#

```

Configuring the Default VLAN Identifier

This procedure describes how to write the VLAN ID to the flash. This ID will be used as the default VLAN ID when the switch is restarted.

1. Configure the default VLAN identifier.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Configure the default VLAN ID as 10:
SEFOS(config)# **default vlan id 10**
- Exit from the Global Configuration mode:
SEFOS(config)# **end**

2. View the default VLAN ID:

```

SEFOS# show nvram
Default IP Address            : 12.0.0.1
Default Subnet Mask           : 255.255.0.0
Default IP Address Config Mode : Manual
Default IP Address Allocation Protocol : DHCP
Switch Base MAC Address       : 00:14:4f:6c:69:ee
Default Interface Name        : Ex0/1
Default RM Interface Name     : NONE
Config Restore Option         : Restore
Config Save Option            : Startup save
Auto Save                     : Enable
Incremental Save              : Enable
Roll Back                     : Enable
Config Save IP Address      : 0.0.0.0
Config Save Filename          : switch.conf
Config Restore Filename       : switch.conf
PIM Mode                      : Sparse Mode

```



```

IGS Forwarding Mode           : MAC based
Cli Serial Console            : No
SNMP EngineID                 : 80.00.08.1c.04.46.53
SNMP Engine Boots             : 2
Default VLAN Identifier      : 10
Stack PortCount               : 0
ColdStandby                   : Disable
NPAPI Mode                    : Synchronous
Dynamic Port Count             : 72

```

- You should not change the default VLAN ID when some configurations are already saved.
- After you have configured the default VLAN ID, you must restart the switch before saving any configuration.

Enabling or Disabling Trap Generation on an Interface

This procedure describes how to enable or disable trap generation either on the physical interface or on the port-channel interface.

1. Disable the SNMP trap on the interface extreme-ethernet 0/1.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Enter the Interface Configuration mode for extreme-ethernet 0/1:
SEFOS(config)# **interface extreme-ethernet 0/1**
- Disable the trap on the interface:
SEFOS(config-if)# **no snmp trap link-status**
- Exit from configuration mode:
SEFOS(config-if)# **end**

2. View the trap state for the interface extreme-ethernet 0/1:

```
SEFOS# show interface extreme-ethernet 0/1
```

```
Ex0/1 up, line protocol is up (connected)
```

```
Bridge Port Type: Customer Bridge Port
```

```
Hardware Address is 00:14:4f:6c:69:ee
```

```
MTU 9216 bytes, Full duplex, 10 Gbps, No-Negotiation
```

```
HOL Block Prevention enabled.
```

Input flow-control is on,output flow-control is on

Link Up/Down Trap is disabled

Reception Counters

Octets	: 225649
Unicast Packets	: 304
Discarded Packets	: 60
Error Packets	: 0
Unknown Protocol	: 0

Transmission Counters

Octets	: 955578
Unicast Packets	: 307
Discarded Packets	: 0
Error Packets	: 0

If the trap is enabled, then the switch sends trap messages to the SNMP Manager on specific events such as link up, link down, and so on.

Configuring Debug Logging

This procedure describes how to configure where the debug logs are to be displayed (on the console or to a file).

1. Modify the logging option of debug traces.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Log the debug traces to a file:
SEFOS(config)# **debug-logging file**
- Exit from the Global Configuration mode:
SEFOS(config)# **end**

2. View the logging option:

SEFOS# **show system information**

Hardware Version	: 2.5.5_00166738
Firmware Version	: TOR-1.0.0.2

```

Switch Name                : TOR 72P
System Contact              : Sun Microsystems, Inc.
System Location            : Sun Microsystems, Inc.
Logging Option            : File Logging
Login Authentication Mode   : Local
Config Save Status         : Successful
Remote Save Status         : Successful
Config Restore Status      : Successful

```

```
SEFOS#
```

3. View the debug traces logged in the file.

- Enable the debug trace for any of the modules, such as the PNAC module:

```
SEFOS# debug dot1x all
```

```
SEFOS# show debugging
```

```

DOT1x :
DOT1x init and shutdown debugging is on
DOT1x management debugging is on
DOT1x control path debugging is on
DOT1x packet dump debugging is on
DOT1x error debugging is on

```

```
SEFOS#
```

- View the debug logs in the file:

```
SEFOS# show debug-logging
```

```

PNAC:  SNMPPROP: Trace Option is set with value: 347
PNAC:  SNMPPROP: Trace Option is set with value: 347
PNAC:  Dumping received frame :
ff ff ff ff ff ff 00 14 4f 6c 7d e9 81 00 00 01
08 06 00 01 08 00 06 04 00 01 00 14 4f 6c 7d e9
0c 00 00 64 ff ff ff ff ff ff 0c 00 00 64 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

PNAC:  DBG:PAE: Incremented Statistics

```

```
SEFOS#
```

- Disable the PNAC module debug trace:

```
SEFOS# no debug dot1x all
```

Configuring ACL (Access Control Lists) Filters

ACL filters are used to filter packets at the hardware based on certain filtering criteria configured or programmed in the switch. The switch examines each packet to determine if it should be blocked or if it should be forwarded based on the configured access lists.

The following example shows how to block the IP traffic from a host with an IP address of 12.0.0.100. See Figure 1 for the topology for this procedure. Port 1 of the SEFOS-1 switch is connected to Host 1 and Port 2 of the SEFOS-1 switch is connected to Host 2. Run the following commands on the SEFOS-1 switch. The following procedure assumes that the IP address of Host 1 is set to 12.0.0.100 and the IP address of Host 2 is set to 12.0.0.17.

1. Configure the IP address of the switch to 12.0.0.1:

```
SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 12.0.0.1 255.0.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

2. Create an IP filter with ID 11:

```
SEFOS(config)# ip access-list extended 11
```

The filter type can be extended or standard. Standard filters are used to filter the traffic based on the source IP address and the destination IP address. Extended filters can also be used to specify the protocol ID, TCP/UDP port numbers, DSCP values, and flow label. In this example, the IP packets with 12.0.0.100 as the source address will be filtered.

3. Deny the IP traffic from host 12.0.0.100 to any network or host:

```
SEFOS(config-ext-nacl)# deny ip host 12.0.0.100 any
SEFOS(config-ext-nacl)# end
```

4. Ping from Host 1 to Host 2:

```
# ping 12.0.0.17
```

```
12.0.0.17 is alive
```

5. Apply the IP filter 11 to port1:

```
SEFOS# configure terminal
```

```
SEFOS(config)# interface extreme-ethernet 0/1
```

```
SEFOS(config-if)# ip access-group 11 in
```

```
SEFOS(config-if)# exit
```

```
SEFOS(config)# vlan 1
```

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1 extreme-ethernet 0/2 untagged extreme-ethernet 0/1  
extreme-ethernet 0/2
```

NOTE: You may see the following message if port 1 and 2 are already in vlan 1. If you see this message, you can ignore it:

```
% Member Ports cannot be added/deleted on Default VLAN
```

```
SEFOS(config-vlan)# end
```

6. View the configuration details:

```
SEFOS# show access-lists
```

```
IP ACCESS LISTS
```

```
-----
```

```
Extended IP Access List 11
```

```
-----
```

Filter Priority	: 1
Filter Protocol Type	: ANY
IP address Type	: IPV4
Source IP address	: 12.0.0.100
Source IP address mask	: 255.255.255.255
Source IP Prefix Length	: 32
Destination IP address	: 0.0.0.0
Destination IP address mask	: 0.0.0.0
Destination IP Prefix Length	: 0
Flow Identifier	: 0
In Port List	: Ex0/1
Out Port List	: NIL
Filter TOS	: NIL
Filter DSCP	: NIL
Filter Action	: Deny

Status : **Active**

7. Send the forwarding traffic from Host 1 to Host 2 in the same fashion as the ping from Host 1 to Host 2 earlier in these procedures.

Notice that packets sent from Host 1 will not be forwarded to Port 2 because the filter action is set to “deny”. The ping to 12.0.0.17 from Host 1 will fail with no answer from 12.0.0.17.

8. Remove the IP filter from port 1:

```
SEFOS# configure terminal
```

```
SEFOS(config)# interface extreme-ethernet 0/1
```

```
SEFOS(config-if)# no ip access-group 11 in
```

```
SEFOS(config-if)# end
```

```
SEFOS# show access-lists
```

```
IP ACCESS LISTS
```

```
-----
```

```
Extended IP Access List 11
```

```
-----
```

Filter Priority	: 1
Filter Protocol Type	: ANY
IP address Type	: IPV4
Source IP address	: 12.0.0.1
Source IP address mask	: 255.255.255.255
Source IP Prefix Length	: 32
Destination IP address	: 0.0.0.0
Destination IP address mask	: 0.0.0.0
Destination IP Prefix Length	: 0
Flow Identifier	: 0
In Port List	: NIL
Out Port List	: NIL
Filter TOS	: NIL
Filter DSCP	: NIL
Filter Action	: Deny

Status : **InActive**

9. Send the forwarding traffic from Host 1 to Host 2 in the same fashion as the ping from Host 1 to Host 2 earlier in these procedures.

The ping will get answer from Host 2. Packets sent from Host 1 will be forwarded to Port 2. The following two consecutive ping commands show that the “deny” filter action set in the ACL list was applied to one port and was removed from another port.

```
# ping 12.0.0.17
no answer from 12.0.0.17
# ping 12.0.0.17
12.0.0.17 is alive
```

Configuring Quality of Services (QoS)

Packets received at the switch can be classified to a particular class of service based on the filters configured. Certain policies can be applied to them before forwarding the packet. The following example illustrates the classification of the TCP packets received in the switch and changing the DSCP value in the IP header of the TCP packets to 46.

See Figure 1 for the topology for this procedure. Connect port 1 to Host 1 and port 2 to Host 2. Host 2 should have a command to dump traffic over a network interface such as tcpdump or snoop. If not, port 1 and port 2 can be connected to a data capturing device as shown in Figure 2.

1. Enable Port 1 and Port 2:

```
SEFOS# configure terminal
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ports extreme-ethernet 0/1 extreme-ethernet 0/2 untagged extreme-ethernet 0/1
extreme-ethernet 0/2
```

NOTE: You may see the following message if both interfaces are already in vlan 1.

```
% Member Ports cannot be added/deleted on Default VLAN
SEFOS(config-vlan)# end
```

2. Enable QoS:

```
SEFOS# configure terminal
SEFOS(config)# qos enable
SEFOS(config)# end
```

3. Create an access control list filter for TCP packets:

```
SEFOS# configure terminal
SEFOS(config)# ip access-list extended 11
SEFOS(config-ext-nacl)# permit tcp any any
SEFOS(config-ext-nacl)# exit
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# ip access-group 11 in
SEFOS(config-if)# end
```

4. Specify the class mapping for the incoming packet and policy mapping for the classified packet.

- Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

- Create a class map and enter into the Class Map Configuration mode:

```
SEFOS(config)# class-map 10
```

- Configure the match criteria for the class map with the criteria specified by the access list 11 (already configured earlier as all tcp packets):

```
SEFOS(config-cls-map)# match access-group ip-access-list 11
```

```
SEFOS(config-cls-map)# set class 100
```

- Exit from the Class Map Configuration mode:

```
SEFOS(config-cls-map)# exit
```

- Create a policy map to apply on the packet before forwarding it:

```
SEFOS(config)# policy-map 10
```

- Create a policy map for class 100 packets and set the DSCP value in the IP header for the outgoing packets matched by this class as 46:

```
SEFOS(config-ply-map)# set policy class 100 default-priority-type ipdscp 46
```

```
SEFOS(config-ply-map)# end
```

NOTE: 46 (0x2e) is a decimal number. If an 8-bit TOS value is shown, it will be shown as 0xb8 because 0x2e needs to be shifted left 2 bits to get the 6 bits of the DSCP value.

5. View the configuration details:

```
SEFOS# show access-lists
```

```
IP ACCESS LISTS
```

```
-----
```

```
Extended IP Access List 11
```

```
-----
```



```

Filter Priority                : 1
Filter Protocol Type        : TCP
IP address Type            : IPv4
Source IP address             : 0.0.0.0
Source IP address mask        : 0.0.0.0
Source IP Prefix Length       : 0
Destination IP address        : 0.0.0.0
Destination IP address mask    : 0.0.0.0
Destination IP Prefix Length   : 0
Flow Identifier               : 0
In Port List                : Ex0/1
Out Port List                 : NIL
Filter TOS                    : NIL
Filter DSCP                   : NIL
Filter Source Ports From      : 1
Filter Source Ports Till      : 65535
Filter Destination Ports From : 1
Filter Destination Ports Till : 65535
Filter Action                : Permit
Status                      : Active

```

MAC ACCESS LISTS

No MAC Access Lists have been configured

SEFOS# show class-map 10

QoS Class Map Entries

```

ClassMapId                   : 10
L2FilterId                   : None
L3FilterId                  : 11
PriorityMapId                : None
CLASS                       : 100
PolicyMapId                 : 10
PreColor                     : None
Status                       : Active

```

SEFOS# show policy-map 10

QoS Policy Map Entries

```
-----
PolicyMapId   : 10
IfIndex      : 0
Class        : 100
DefaultPHB   : IP DSCP 46
MeterId        : 0
ConNClass      : 0
ExcNClass      : 0
VioNClass      : 0
ConfAct        : None.
ExcAct         : None.
VioAct         : None.
```

6. Verify the functionality of the policy configuration by sending 100 TCP packets:

- From Host 1 to Host 2, send TCP packets to Host 2 and use the host-supported packet dumping command to verify the DSCP value.

```
# tcpdump -xx -n -i eth3 ip
```

```
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
```

```
listening on eth3, link-type EN10MB (Ethernet), capture size 96 bytes
```

```
16:34:27.979962 IP 12.0.0.100.905 > 12.0.0.17.shell: S 772222554:772222554(0)
win 49640 <mss 1460,nop,nop,sackOK>
```

```
0x0000: 001b 2147 d479 0014 4f6c 7de9 0800 45b8
0x0010: 0034 baac 4000 4006 66eb 0c00 0064 0c00
0x0020: 0011 0389 0202 2e07 2e5a 0000 0000 8002
0x0030: c1e8 32cf 0000 0204 05b4 0103 0300 0101
0x0040: 0402
```

```
16:34:27.980163 IP 12.0.0.17.shell > 12.0.0.100.905: S 848773685:848773685(0)
ack 772222555 win 5840 <mss 1460,nop,nop,sackOK,nop,wscale 7>
```

```
0x0000: 0014 4f6c 7de9 001b 2147 d479 0800 4500
0x0010: 0034 0000 4000 4006 2250 0c00 0011 0c00
0x0020: 0064 0202 0389 3297 4235 2e07 2e5b 8012
0x0030: 16d0 6903 0000 0204 05b4 0101 0402 0103
0x0040: 0307
```

```
16:34:27.980296 IP 12.0.0.100.905 > 12.0.0.17.shell: . ack 1 win 49640
```

```
0x0000: 001b 2147 d479 0014 4f6c 7de9 0800 45b8
0x0010: 0028 baad 4000 4006 66f6 0c00 0064 0c00
0x0020: 0011 0389 0202 2e07 2e5b 3297 4236 5010
0x0030: c1e8 febc 0000 0000 0000 0000
```

You will notice that these packets are received at Port 2 and have a DSCP value 46 (in the above dump, it shows a DSCP value of 0xb8).

Configuring Port Mirroring

Port mirroring is used to monitor the packets of a particular port on another port. The following example shows how to mirror all incoming packets on Port 1 to Port 2.

See Figure 1 for the topology for this procedure. Port 1 of the SEFOS-1 switch is connected to Host 1 and Port 2 is connected to Host 2, or a packet-capturing device is used to verify that packet is mirrored at Port 2. Run the following commands on the SEFOS-1 switch. The following procedure assumes that the IP address of Host 1 is set to 12.0.0.100 and the IP address of Host 2 is set to 12.0.0.17.

1. Configure the IP address of the SEFOS-1 switch as 12.0.0.1:

```
SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 12.0.0.1 255.0.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

2. View the ping between the host and the switch:

```
SEFOS# ping 12.0.0.100

Reply Received From :12.0.0.100, TimeTaken : 60 msec
Reply Received From :12.0.0.100, TimeTaken : 100 msec
Reply Received From :12.0.0.100, TimeTaken : 90 msec

--- 12.0.0.100 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss

SEFOS# ping 12.0.0.17

Reply Received From :12.0.0.17, TimeTaken : 120 msec
Reply Received From :12.0.0.17, TimeTaken : 100 msec
Reply Received From :12.0.0.17, TimeTaken : 90 msec

--- 12.0.0.17 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

SEFOS#

The ping reply from Host 1 to the SEFOS-1 switch is not captured at Port 2, which is connected to the packet-capturing device prior to the port-mirroring configuration.

3. Run the following commands on the SEFOS-1 switch to enable mirroring for incoming packets at Port 1 to Port 2.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Configure the destination interface for mirroring as Port 2:
SEFOS(config)# **monitor session destination interface extreme-ethernet 0/2**
- Configure the source interface for mirroring as Port 1 and apply mirroring for incoming packets:
SEFOS(config)# **monitor session source interface extreme-ethernet 0/1 rx**
- Exit from the Global Configuration mode:
SEFOS(config-if)# **end**
- View the configuration details:
SEFOS# **show port-monitoring**

Port Monitoring is enabled

Monitor Port : Ex0/2

Port	Ingress-Monitoring	Egress-Monitoring
----	-----	-----
Ex0/1	Enabled	Disabled
Ex0/2	Disabled	Disabled
Ex0/3	Disabled	Disabled
Ex0/4	Disabled	Disabled
Ex0/5	Disabled	Disabled
Ex0/6	Disabled	Disabled
Ex0/7	Disabled	Disabled
Ex0/8	Disabled	Disabled
.....		

4. Ping 12.0.0.100 and verify that the ICMP reply was received at Port 2:

SEFOS# **ping 12.0.0.100**

Reply Received From :12.0.0.100, TimeTaken : 60 msecs
Reply Received From :12.0.0.100, TimeTaken : 90 msecs
Reply Received From :12.0.0.100, TimeTaken : 100 msecs

```

--- 12.0.0.100 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss

```

5. Verify that the ping reply from Host 1 to the SEFOS-1 switch is captured at Host 2 or using the packet-capturing device, such as IXIA or SmartBits.

The following is an example taken from Host 2 running the `tcpdump` command when the ping 12.0.0.100 command is run from the SEFOS-1 switch:

```

# tcpdump -xx -n -i eth3 icmp
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth3, link-type EN10MB (Ethernet), capture size 96 bytes
17:09:58.595583 IP 12.0.0.100 > 12.0.0.1: ICMP echo reply, id 0, seq 1, length
40
    0x0000:  0014 4f6c 69ee 0014 4f6c 7de9 0800 4500
    0x0010:  003c 68e6 4000 ff01 fa75 0c00 0064 0c00
    0x0020:  0001 0000 a5a4 0000 0001 a5a5 a5a5 a5a5
    0x0030:  a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5
    0x0040:  a5a5 a5a5 a5a5 a5a5 a5a5
17:09:58.617899 IP 12.0.0.100 > 12.0.0.1: ICMP echo reply, id 0, seq 2, length
40
    0x0000:  0014 4f6c 69ee 0014 4f6c 7de9 0800 4500
    0x0010:  003c 68e7 4000 ff01 fa74 0c00 0064 0c00
    0x0020:  0001 0000 a5a3 0000 0002 a5a5 a5a5 a5a5
    0x0030:  a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5
    0x0040:  a5a5 a5a5 a5a5 a5a5 a5a5
17:09:58.698280 IP 12.0.0.100 > 12.0.0.1: ICMP echo reply, id 0, seq 3, length
40
    0x0000:  0014 4f6c 69ee 0014 4f6c 7de9 0800 4500
    0x0010:  003c 68e8 4000 ff01 fa73 0c00 0064 0c00
    0x0020:  0001 0000 a5a2 0000 0003 a5a5 a5a5 a5a5
    0x0030:  a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5 a5a5
    0x0040:  a5a5 a5a5 a5a5 a5a5 a5a5

```

Configuring Rate Limiting

SEFOS can be configured to limit the rate of traffic received on a particular interface. If the traffic is above the configured threshold level, then the packet will get dropped. The following example illustrates the configuration for limiting a multicast traffic at Port 1 to a rate of 50 packets per second.

See Figure 2 for the topology used in this procedure. Port 1 and Port 2 are connected to SmartBits/IXIA to monitor the rate of packet forwarding. Configure the rate limiting for multicast packets on Port 1 as 50 packets per second and then generate a multicast traffic from IXIA at the rate of 1 Mbps. Packets received at Port 2 must be at the rate of 50 packets per second.

1. Run the following commands in the switch to enable Port 1 and Port 2:

```
SEFOS# configure terminal
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

2. Set the rate limit to 50 packets per second.

- Enter the Global Configuration mode:
SEFOS# **configure terminal**
- Enter the Interface Configuration mode:
SEFOS(config)# **interface extreme-ethernet 0/1**
- Set the rate limit to 50 packets per second:
SEFOS(config-if)# **storm-control multicast level 50**
- Exit from Global Configuration mode:
SEFOS(config-if)# **end**

3. View the configuration details:

```
SEFOS# show interface extreme-ethernet 0/1 storm-control
```

```
Ex0/1
DLF Storm Control           : Disabled
Broadcast Storm Control     : Disabled
Multicast Storm Control     : Enabled
Multicast Storm Control Limit : 50
```

4. View the functionality by sending multicast packets from IXIA at the rate of 1 Mbps to Port 1.

You will notice that the packets received at the second port of IXIA are at the rate of 50 packets per second only.

Chapter

3

Sample Configurations

This chapter provides sample configurations for showing some of the switching and routing features available in the Sun Network 10GbE Switch 72p running the Sun Ethernet Fabric Operating System (SEFOS).

Topology – Switching Feature

The following figure shows a sample topology for illustrating the switching features. Host servers shown in this figure can be blade servers or rack-mount servers as long as ports from those servers can be connected to the SEFOS switch SEFOS-1 shown in this topology.

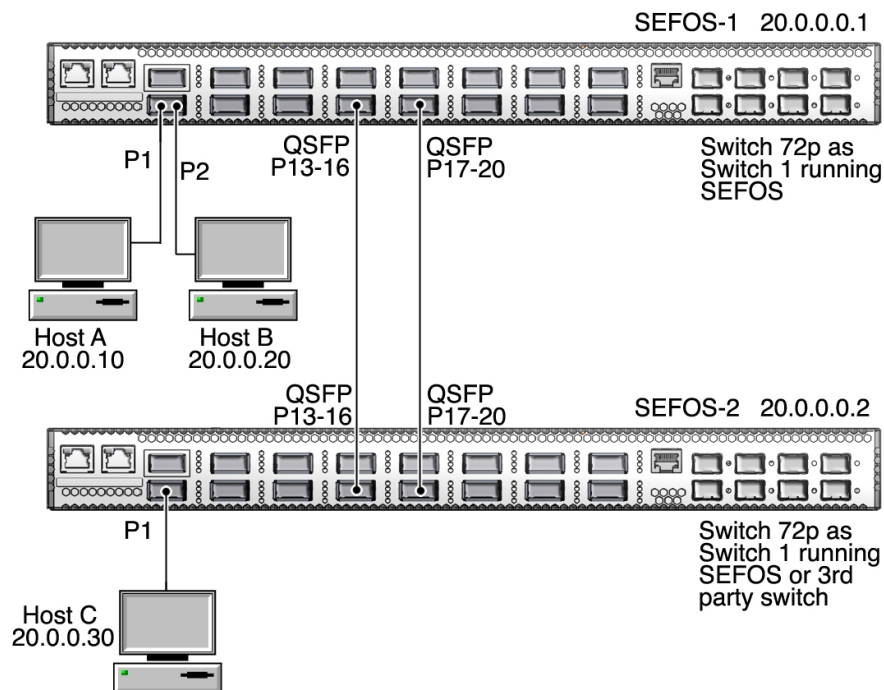


Figure 3. Sample Topology For the Switching Feature

Getting Started

1. Verify that you have made the following connections between the switches and hosts, as shown in Figure 3:

SEFOS-1 switch:

- Port1 - Connected to Host server A (server A: IP address 20.0.0.10)
- Port 2 - Connected to Host server B (server B: IP address 20.0.0.20)
- Ports 17 – 20 - Connected to ports 17 – 20 on the SEFOS-2 switch

SEFOS-2 switch:

- Port 1 - Connected to Host server C (server C: IP address 20.0.0.30)

2. Connect to SEFOS.

If you are not already connected to SEFOS, see the instructions in Chapter 1, then return here. You should see the SEFOS prompt when you are connected to SEFOS:

```
SEFOS#
```

3. View the status of the switch interfaces.

NOTE: In the following example, the status for ports 1 and 2 should be shown as `connected`. If the status for those ports are not shown as `connected`, use the `no shutdown` command to bring them up.

```
SEFOS# show interface status
```

Port	Status	Duplex	Speed	Negotiation
----	-----	-----	-----	-----
Ex0/1	connected	Full	10 Gbps	No-Negotiation
Ex0/2	connected	Full	10 Gbps	No-Negotiation
Ex0/3	not connected	Full	10 Gbps	No-Negotiation
Ex0/4	not connected	Full	10 Gbps	No-Negotiation
Ex0/5	not connected	Full	10 Gbps	No-Negotiation
Ex0/6	not connected	Full	10 Gbps	No-Negotiation
Ex0/7	not connected	Full	10 Gbps	No-Negotiation
Ex0/8	not connected	Full	10 Gbps	No-Negotiation
....				

```
SEFOS# show interface description
```

Interface	Status	Protocol
-----	-----	-----
Ex0/1	up	up
Ex0/2	up	up

Ex0/3	down	down
Ex0/4	down	down
Ex0/5	down	down
Ex0/6	down	down
Ex0/7	down	down
Ex0/8	down	down
...		
Ex0/71	down	down
Ex0/72	down	down
vlan1	up	up

4. View the default IP address:

```
SEFOS# show ip interface
```

```
vlan1 is up, line protocol is up
Internet Address is 10.0.0.1/8
Broadcast Address 10.255.255.255
```

When the system is booted up, it will come up with a default IP address of 10.0.0.1 for the default VLAN 1.

5. Enter the Global Configuration mode:

```
SEFOS# configure terminal
```

```
SEFOS(config)#
```

6. Change the default IP address of VLAN 1:

```
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 20.0.0.1 255.0.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

7. View the default IP address of VLAN 1:

```
SEFOS# show ip interface
```

```
vlan1 is up, line protocol is up
Internet Address is 20.0.0.1/8
Broadcast Address 20.255.255.255
SEFOS#
```

8. Ping Host A (20.0.0.10) from the SEFOS-1 switch.

The ping should be successful.

SEFOS# **ping 20.0.0.10**

Reply Received From :20.0.0.10, TimeTaken : 40 msec
Reply Received From :20.0.0.10, TimeTaken : 120 msec
Reply Received From :20.0.0.10, TimeTaken : 100 msec

--- 20.0.0.10 Ping Statistics ---

3 Packets Transmitted, 3 Packets Received, 0% Packets Loss

SEFOS#

9. Check the MAC address entry:

SEFOS# **show mac-address-table**

Vlan	Mac Address	Type	Ports
----	-----	----	-----
1	00:14:4f:6c:7d:e9	Learnt	Ex0/1

Total Mac Addresses displayed: 1

The MAC address shown should correspond to the MAC address of Host A.

10. Repeat Step 6 on the SEFOS-2 switch to change the default IP address of VLAN 1 IP to 20.0.0.2.

11. Configure the topology.

To configure the topology, all of the interfaces should be up. If they are not up, use the `no shutdown` command to bring up the ports.

SEFOS# **configure terminal**

SEFOS(config)# **interface extreme-ethernet 0/2**

SEFOS(config-if)# **no shutdown**

SEFOS(config)# **interface range ex 0/17-20**

SEFOS(config-if-range)# **no shutdown**

SEFOS(config-if)# **end**

In the SEFOS-1 switch, make the interface extreme-ethernet 0/1, 0/2, 0/17, 0/18, 0/19, and 0/20 up as shown above. In the SEFOS-2 switch, make the interface extreme-ethernet 0/1, 0/2, 0/17, 0/18, 0/19 and 0/20 up as shown above.

Following are the expected results from the configurations made to the Sun Ethernet Fabric Operating System on the Sun Network 10GbE Switch 72p targets SEFOS-1 and SEFOS-2.

Pings from Host A or Host B to the SEFOS-1 switch should be successful.

- From Host A:

ping 20.0.0.1

20.0.0.1 is alive

- From Host B:

ping 20.0.0.1

```
PING 20.0.0.1 (20.0.0.1) 56(84) bytes of data.  
64 bytes from 20.0.0.1: icmp_seq=1 ttl=64 time=27.6 ms  
64 bytes from 20.0.0.1: icmp_seq=2 ttl=64 time=73.0 ms  
64 bytes from 20.0.0.1: icmp_seq=3 ttl=64 time=37.7 m
```

- From the SEFOS-1 switch, pings to Host A and Host B should be successful as well:

SEFOS# ping 20.0.0.10

```
Reply Received From :20.0.0.10, TimeTaken : 20 msec  
Reply Received From :20.0.0.10, TimeTaken : 100 msec  
Reply Received From :20.0.0.10, TimeTaken : 110 msec  
  
--- 20.0.0.10 Ping Statistics ---  
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

SEFOS# ping 20.0.0.20

```
Reply Received From :20.0.0.20, TimeTaken : 90 msec  
Reply Received From :20.0.0.20, TimeTaken : 100 msec  
Reply Received From :20.0.0.20, TimeTaken : 100 msec  
  
--- 20.0.0.20 Ping Statistics ---  
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss  
SEFOS#
```

- A ping from Host C should be successful to the SEFOS-2 switch (20.0.0.2):

SEFOS# ping 20.0.0.30

```
Reply Received From :20.0.0.30, TimeTaken : 40 msec  
Reply Received From :20.0.0.30, TimeTaken : 100 msec  
Reply Received From :20.0.0.30, TimeTaken : 110 msec  
  
--- 20.0.0.30 Ping Statistics ---  
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss  
SEFOS#
```

12. Use a packet-capture device or dumping utility to capture packets on Host A, Host B and Host C for the port connected to the switch.

- All of these hosts should receive STP, GMRP, GVRP packets continuously if these protocols were not disabled using SEFOS commands.

- By default, all the ports on a target will be members of default VLAN 1.

Configuring VLAN Forwarding

This procedure describes how to configure and test VLAN forwarding feature of SEFOS running on a Sun Network 10GbE Switch 72p target. This procedure tests whether the incoming packets are properly switched on the member ports of the VLAN.

See Figure 3 for the topology for this procedure.

1. Change the member ports on the SEFOS-1 switch:

```
SEFOS# configure terminal
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ports extreme-ethernet 0/1-2,0/17-20 untagged extreme-ethernet 0/1-2,0/17-20
```

NOTE: You may get the following message if these ports are already in vlan 1:

```
% Member Ports cannot be added/deleted on Default VLAN
SEFOS(config-vlan)# exit
SEFOS(config)# interface range extreme-ethernet 0/1-2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

2. Verify the VLAN membership:

```
SEFOS# show vlan
Vlan database
-----
Vlan ID          : 1
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6, Ex0/7,
Ex0/8, ...
Untagged Ports   : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6, Ex0/7,
Ex0/8, ...
Forbidden Ports  : None
Name             :
Status           : Permanent
```

3. Ping from Host A to Host B:

```
# ping -s 20.0.0.20
PING 20.0.0.20: 56 data bytes
64 bytes from 20.0.0.20: icmp_seq=0. time=0.422 ms
64 bytes from 20.0.0.20: icmp_seq=1. time=0.306 ms
64 bytes from 20.0.0.20: icmp_seq=2. time=0.286 ms
```

```
64 bytes from 20.0.0.20: icmp_seq=3. time=0.336 ms
```

```
.....
```

4. Ping from Host B to Host A:

```
# ping 20.0.0.10
```

```
PING 20.0.0.10 (20.0.0.10) 56(84) bytes of data.
```

```
64 bytes from 20.0.0.10: icmp_seq=1 ttl=255 time=0.403 ms
```

```
64 bytes from 20.0.0.10: icmp_seq=2 ttl=255 time=0.316 ms
```

```
64 bytes from 20.0.0.10: icmp_seq=3 ttl=255 time=0.209 ms
```

```
64 bytes from 20.0.0.10: icmp_seq=4 ttl=255 time=0.317 ms
```

```
64 bytes from 20.0.0.10: icmp_seq=5 ttl=255 time=0.250 ms
```

```
...
```

5. Change the member ports of VLAN 1 on the SEFOS-2 switch:

```
SEFOS# configure terminal
```

```
SEFOS(config)# vlan 1
```

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-2,0/17-20 untagged extreme-ethernet 0/1-2,0/17-20
```

NOTE: If the ports are already in vlan 1, you may see the following message:

```
% Member Ports cannot be added/deleted on Default VLAN
```

```
SEFOS(config-vlan)# exit
```

```
SEFOS(config)# interface range ex 0/17-20
```

```
SEFOS(config-if-range)# no shutdown
```

```
SEFOS(config-if-range)# end
```

```
SEFOS#
```

6. Enable port 1, which is connected to Host C.

Use the following VLAN CLI command to put a port in VLAN 1.

```
SEFOS# config terminal
```

```
SEFOS(config)# interface extreme-ethernet 0/1
```

```
SEFOS(config-if)# switchport access vlan 1
```

```
SEFOS(config-if)# no shutdown
```

```
SEFOS(config-if)# end
```

```
SEFOS# show vlan
```

```
Vlan database
```

```
-----
```

```
Vlan ID          : 1
```

```
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
```

```

      . . . . .
Untagged Ports      :  Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
      . . . . .
Forbidden Ports     :  None
Name                :
Status              :  Permanent

```

7. Ping from Host A to Host B, or Host C.

The ping should be successful.

ping -s 20.0.0.20

```

PING 20.0.0.20: 56 data bytes
64 bytes from 20.0.0.20: icmp_seq=0. time=0.554 ms
64 bytes from 20.0.0.20: icmp_seq=1. time=0.240 ms
64 bytes from 20.0.0.20: icmp_seq=2. time=0.342 ms
^C
----20.0.0.20 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.240/0.379/0.554/0.160

```

ping -s 20.0.0.30

```

PING 20.0.0.30: 56 data bytes
64 bytes from 20.0.0.30: icmp_seq=0. time=0.798 ms
64 bytes from 20.0.0.30: icmp_seq=1. time=0.503 ms
64 bytes from 20.0.0.30: icmp_seq=2. time=0.584 ms
^C
----20.0.0.30 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.503/0.628/0.798/0.152
#

```

Multiple Instance Spanning Tree Protocol (MSTP)

This procedure shows the traffic flow in the Rapid Spanning Tree protocol configuration on SEFOS running on the Sun Network 10GbE Switch 72p targets. This procedure verifies whether a loop is present in the topology, if it is detected and if the traffic is blocked for the alternate port.

See Figure 3 for the topology for this procedure.

1. **Configure VLAN forwarding in SEFOS-1 and SEFOS-2 using the instructions in the section “Configuring VLAN Forwarding”.**
2. **Run the following command on SEFOS-1 to verify the port status in MSTP mode:**

SEFOS# show spanning-tree

```
Root Id          Priority    32768
                  Address     00:14:4f:6c:69:ee
                  Cost         0
                  Port         0 [0]
                  This bridge is the root
                  Max age 20 Sec, forward delay 15 Sec
```

MST00

Spanning tree Protocol has been enabled

MST00 is executing the mstp compatible Multiple Spanning Tree Protocol

```
Bridge Id        Priority    32768
                  Address     00:14:4f:6c:69:ee
                  Max age is 20 sec, forward delay is 15 sec
                  Dynamic Path Cost is Disabled
```

Name	Role	State	Cost	Prio	Type
----	----	-----	----	----	-----
Ex0/1	Designated	Forwarding	2000	128	P2P
Ex0/2	Designated	Forwarding	2000	128	P2P
Ex0/13	Designated	Forwarding	2000	128	P2P
Ex0/14	Designated	Forwarding	2000	128	P2P
Ex0/15	Designated	Forwarding	2000	128	P2P
Ex0/16	Designated	Forwarding	2000	128	P2P
Ex0/17	Designated	Forwarding	2000	128	P2P
Ex0/18	Designated	Forwarding	2000	128	P2P
Ex0/19	Designated	Forwarding	2000	128	P2P
Ex0/20	Designated	Forwarding	2000	128	P2P

3. Run the following command on SEFOS 2 to verify the port status in MSTP mode:

SEFOS# show spanning-tree

```
Root Id          Priority    32768
                  Address     00:14:4f:6c:69:ee
                  Cost         2000
                  Port         13 [Ex0/13]
                  Max age 20 Sec, forward delay 15 Sec
```

MST00

Spanning tree Protocol has been enabled

MST00 is executing the mstp compatible Multiple Spanning Tree Protocol

Bridge Id Priority 32768
 Address 00:14:4f:6c:6e:0e
 Max age is 20 sec, forward delay is 15 sec
 Dynamic Path Cost is Disabled

Name	Role	State	Cost	Prio	Type
----	----	-----	----	-----	-----
Ex0/1	Designated	Forwarding	2000	128	P2P
Ex0/2	Designated	Forwarding	2000	128	P2P
Ex0/13	Root	Forwarding	2000	128	P2P
Ex0/14	Alternate	Discarding	2000	128	P2P
Ex0/15	Alternate	Discarding	2000	128	P2P
Ex0/16	Alternate	Discarding	2000	128	P2P
Ex0/17	Alternate	Discarding	2000	128	P2P
Ex0/18	Alternate	Discarding	2000	128	P2P
Ex0/19	Alternate	Discarding	2000	128	P2P
Ex0/20	Alternate	Discarding	2000	128	P2P

4. Ping from Host A to Host C:

```
# ping -s 20.0.0.30
PING 20.0.0.30: 56 data bytes
64 bytes from 20.0.0.30: icmp_seq=0. time=0.512 ms
64 bytes from 20.0.0.30: icmp_seq=1. time=0.591 ms
64 bytes from 20.0.0.30: icmp_seq=2. time=0.462 ms
```

Traffic is forwarded through the extreme-ethernet 0/17 port on SEFOF-1 to SEFOS-2 port 17.

5. Shut down the extreme-ethernet 0/17 port from SEFOS-2 and verify the port status:

```
SEFOS# configure terminal
SEFOS(config)# interface extreme-ethernet 0/17
SEFOS(config-if)# shutdown
SEFOS(config-if)# exit
SEFOS(config)# exit
SEFOS# show spanning-tree

Root Id            Priority   32768
                     Address   00:14:4f:6c:69:ee
```



```

Cost          2000
Port          13 [Ex0/13]
Max age 20 Sec, forward delay 15 Sec

```

MST00

Spanning tree Protocol has been enabled

MST00 is executing the mstp compatible Multiple Spanning Tree Protocol

```

Bridge Id      Priority 32768
Address 00:14:4f:6c:6e:0e
Max age is 20 sec, forward delay is 15 sec
Dynamic Path Cost is Disabled

```

Name	Role	State	Cost	Prio	Type
----	----	-----	----	----	-----
Ex0/1	Designated	Forwarding	2000	128	P2P
Ex0/2	Designated	Forwarding	2000	128	P2P
Ex0/13	Root	Forwarding	2000	128	P2P
Ex0/14	Alternate	Discarding	2000	128	P2P
Ex0/15	Alternate	Discarding	2000	128	P2P
Ex0/16	Alternate	Discarding	2000	128	P2P
Ex0/18	Alternate	Discarding	2000	128	P2P
Ex0/19	Alternate	Discarding	2000	128	P2P
Ex0/20	Alternate	Discarding	2000	128	P2P

6. Ping from Host A to Host C:

```
# ping -s 20.0.0.30
```

```
PING 20.0.0.30: 56 data bytes
```

```
64 bytes from 20.0.0.30: icmp_seq=0. time=0.864 ms
```

```
64 bytes from 20.0.0.30: icmp_seq=1. time=0.478 ms
```

```
....
```

Traffic should be forwarded through the extreme-ethernet 0/18 port on SEFOS-1. If the Multiple Instance Spanning Tree protocol is working as expected, there will be a change in the port state. This procedure shows that if the root port in the MSTP mode goes down for any reason, an alternate port in the MSTP will forward the traffic.

Configuring Link Aggregation

This procedure describes how to configure and test the Link Aggregation feature of SEFOS running on a Sun Network 10GbE Switch 72p switch.

See Figure 3 for the topology used in this procedure.

1. Create a port-channel group 100 on SEFOS-1 and link the ports in the group:

```
SEFOS# configure terminal
SEFOS(config)# set port-channel enable
SEFOS(config)# interface port-channel 100
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface range extreme-ethernet 0/17-20
SEFOS(config-if-range)# no shutdown
SEFOS(config-if-range)# channel-group 100 mode active
SEFOS(config-if-range)# exit
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ports extreme-ethernet 0/1-2 port-channel 100 untagged extreme-ethernet 0/1-2
port-channel 100
```

NOTE: You may see the following message if the ports are already in VLAN 1:

```
% Member Ports cannot be added/deleted on Default VLAN
SEFOS(config-vlan)# end
```

2. Repeat the previous step on SEFOS-2.

3. Verify the VLAN membership:

```
SEFOS# show vlan

Vlan database
-----
Vlan ID          : 1
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  ....
                  Ex0/71, Ex0/72, po100
Untagged Ports   : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  ...
                  ..
                  Ex0/71, Ex0/72, po100
Forbidden Ports  : None
Name             :
Status           : Permanent
```

4. Verify the STP port status on SEFOS-1:

SEFOS# show spanning-tree

```
Root Id          Priority    32768
                  Address     00:14:4f:6c:69:ee
                  Cost         0
                  Port         0 [0]
                  This bridge is the root
                  Max age 20 Sec, forward delay 15 Sec
```

MST00

Spanning tree Protocol has been enabled

MST00 is executing the mstp compatible Multiple Spanning Tree Protocol

```
Bridge Id        Priority    32768
                  Address     00:14:4f:6c:69:ee
                  Max age is 20 sec, forward delay is 15 sec
                  Dynamic Path Cost is Disabled
```

Name	Role	State	Cost	Prio	Type
----	----	-----	----	----	-----
Ex0/1	Designated	Forwarding	2000	128	P2P
Ex0/2	Designated	Forwarding	2000	128	P2P
po100	Designated	Forwarding	1900	128	P2P

5. Ping continuously from Host A to Host C.

There should not be any data loss during traffic forwarding.

6. Verify the port channel summary:

SEFOS# show etherchannel summary

```
Port-channel Module Admin Status is enabled
Port-channel Module Oper Status is enabled
Port-channel System Identifier is 00:14:4f:6c:69:ee
```

Flags:

```
D - down          P - in port-channel
I - stand-alone   H - Hot-standby (LACP only)
```

Number of channel-groups in use: 1

```
Number of aggregators: 1
```

Group	Port-channel	Protocol	Ports
100	Po100 (P)	LACP	Ex0/17 (P) , Ex0/18 (P) , Ex0/19 (P) , Ex0/20 (P)

7. Shut down the port extreme-ethernet 0/17 and verify the port channel summary:

```
SEFOS# configure terminal
```

```
SEFOS(config)# interface extreme-ethernet 0/17
```

```
SEFOS(config-if)# shutdown
```

```
SEFOS(config-if)# end
```

```
SEFOS# show etherchannel summary
```

```
Port-channel Module Admin Status is enabled
```

```
Port-channel Module Oper Status is enabled
```

```
Port-channel System Identifier is 00:14:4f:6c:69:ee
```

```
Flags:
```

```
D - down          P - in port-channel
```

```
I - stand-alone  H - Hot-standby (LACP only)
```

```
Number of channel-groups in use: 1
```

```
Number of aggregators: 1
```

Group	Port-channel	Protocol	Ports
100	Po100 (P)	LACP	Ex0/17 (D) , Ex0/18 (P) , Ex0/19 (P) , Ex0/20 (P) Port 17 shows it is in down state.

If traffic flows continuously through the port channel group, then Link Aggregation was configured properly.

Saving Configurations

This procedure describes how to save configurations even after restarting the switch.

The following examples will restart the SEFOS-1 and SEFOS-2 switches. If you are not ready to restart the switches, skip over the steps in this procedure that calls for you to exit and reset the ILOM.

See Figure 3 for the topology used in this procedure.

1. Save the configurations for SEFOS-1 and SEFOS-2:

```
SEFOS# write startup-config
```

This may take a few seconds. You will see the message **[OK]** when the configurations have been successfully saved.

2. Exit the SEFOS session:

```
SEFOS# exit
Connection closed by foreign host.
cd: The session with /SYS/fs_cli has ended.
```

3. At the ILOM prompt, change directories to the /SP directory:

```
-> cd /SP
```

4. Reset the service processor:

```
-> reset
Are you sure you want to reset /SP (y/n)? y
Performing reset on /SP
....
....
```

5. Log in when the system comes back online.

The default password is changeme.

```
[root]# ssh my-tor -l root
root@my-tor's password:
```

```
Sun(TM) Integrated Lights Out Manager (Fabric Component Edition)
```

```
Version 3.0.5.1
```

```
Copyright 2009 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
```

```
Warning: password is set to factory default.
```

6. Connect to the Sun Ethernet Fabric Operating System again:

```
-> cd /SYS/fs_cli
cd: Connecting to Fabric Switch CLI
```

7. Verify the port channel summary:

```
SEFOS# show etherchannel summary
```

```
Port-channel Module Admin Status is enabled
Port-channel Module Oper Status is enabled
Port-channel System Identifier is 00:14:4f:6c:69:ee
```

Flags:

D - down P - in port-channel

I - stand-alone H - Hot-standby (LACP only)

Number of channel-groups in use: 1

Number of aggregators: 1

Group	Port-channel	Protocol	Ports
100	Po100 (P)	LACP	Ex0/17 (D) , Ex0/18 (P) , Ex0/19 (P) , Ex0/20 (P)

Note that port 17 is down because it was shut down before saving the configuration.

Once SEFOS-1 and SEFOS-2 are both restarted, the Sun Ethernet Fabric Operating System will come up with all the previous configurations.

Topology – Routing Feature

The following figure shows a sample topology for the routing feature.

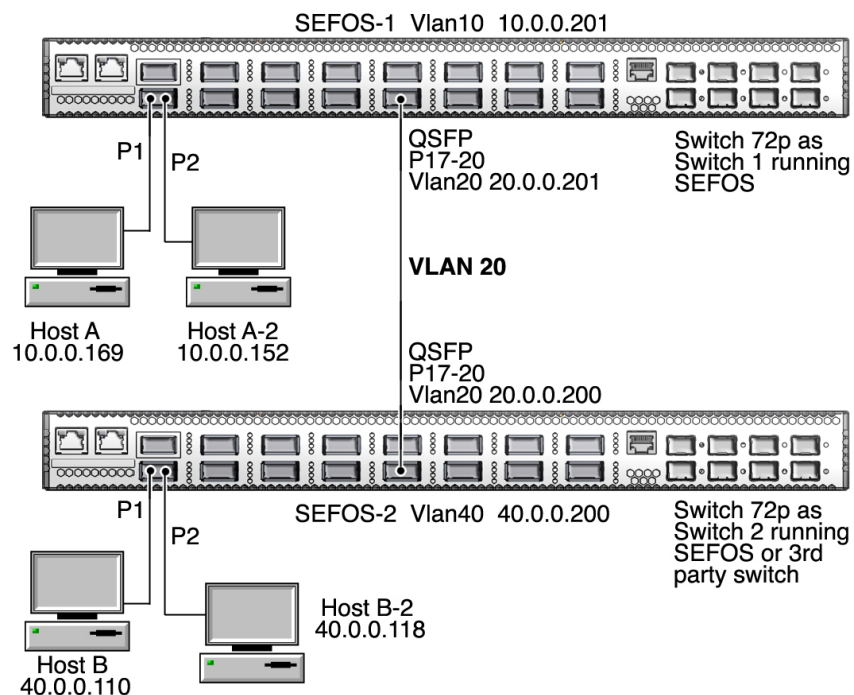


Figure 4. Sample Topology For the Routing Feature

Configuring Static Unicast Route Entries

This procedure describes how to configure the static route entries in SEFOS running on Sun Network 10GbE 72p switches. This procedure will verify that the traffic between hosts, which are on two different networks, is reachable by configuring the required static route in SEFOS.

See Figure 4 for the topology used in this procedure.

Following are the VLAN IDs and IP addresses used in this procedure:

- SEFOS-1 switch and the hosts connected to SEFOS-1:
 - SEFOS-1: VLAN 10 – 10.0.0.201
 VLAN 20 – 20.0.0.201
 - Host A: Connected to SEFOS-1, port 1
 VLAN 10 – 10.0.0.169
 - Host A-2: Connected to SEFOS-1, port 2
 VLAN 10 – 20.0.0.152
- SEFOS-2 switch and the hosts connected to SEFOS-2:
 - SEFOS-2: VLAN 20 – 20.0.0.200
 VLAN 40 – 40.0.0.200
 - Host B Connected to SEFOS-2, port 1
 VLAN 40 – 40.0.0.110
 - Host B-2 Connected to SEFOS-2, port 2
 VLAN 40 – 40.0.0.118

1. Follow the instructions in the “Getting Started” section, if you have not already done so.

2. If GVRP and GMRP are enabled, disable them so that the VLAN creation will not be propagated.

The command “show vlan device info” shows the VLAN configuration information and the commands “set gvrp disable” and “set gmrp disable” are used to disable them. Follow these procedures to disable GVRP and GMRP, if necessary:

```
SEFOS# configure terminal
SEFOS(config)# set gvrp disable
SEFOS(config)# set gmrp disable
SEFOS(config)# end
SEFOS# show vlan device info
```

```
Vlan device configurations
-----
Vlan Status                : Enabled
Vlan Oper status           : Enabled
Gvrp status               : Disabled
```

```

Gmrp status : Disabled
Gvrp Oper status : Disabled
Gmrp Oper status : Disabled
Mac-Vlan Status : Disabled
Subnet-Vlan Status : Disabled
Protocol-Vlan Status : Enabled
Bridge Mode : Customer Bridge
Base-Bridge Mode : Vlan Aware Bridge
Traffic Classes : Enabled
Vlan Operational Learning Mode : IVL
Version number : 1
Max Vlan id : 4094
Max supported vlans : 4094
Unicast mac learning limit : 16334
SEFOS#

```

3. Configure SEFOS-1 based on the topology shown in Figure 4.

- Remove the IP address of VLAN 1.

In this routing example, because the default IP address of VLAN 1 is set to 10.0.0.1 and the IP address of VLAN 10 is set to 10.0.0.201, you must remove the IP address of VLAN 1 before you can add the IP address for VLAN 10.

```

SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# no ip address
SEFOS(config-if)# exit
SEFOS(config)# vlan 10
SEFOS(config-vlan)# exit
SEFOS(config)# interface range extreme-ethernet 0/1-2
SEFOS(config-if-range)# switchport access vlan 10
SEFOS(config-if-range)# no shutdown
SEFOS(config-if-range)# exit
SEFOS(config)# interface vlan 10
SEFOS(config-if)# shut
SEFOS(config-if)# ip address 10.0.0.201 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end

```

- Ping Host A from SEFOS-1:

```

SEFOS# ping 10.0.0.169

```



```
Reply Received From :10.0.0.169, TimeTaken : 30 msec
Reply Received From :10.0.0.169, TimeTaken : 100 msec
Reply Received From :10.0.0.169, TimeTaken : 110 msec
```

```
--- 10.0.0.169 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

- Ping Host A-2 from SEFOS-1:

```
SEFOS# ping 10.0.0.152
```

```
Reply Received From :10.0.0.152, TimeTaken : 70 msec
Reply Received From :10.0.0.152, TimeTaken : 100 msec
Reply Received From :10.0.0.152, TimeTaken : 110 msec
```

```
--- 10.0.0.152 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

- Ping SEFOS-1 and Host A-2 from Host A:

```
# ping 10.0.201
```

```
10.0.201 is alive
```

```
# ping 10.0.0.152
```

```
10.0.0.152 is alive
```

```
#
```

4. Configure the SEFOS-2 switch based on the topology shown in Figure 4:

```
SEFOS# configure terminal
```

```
SEFOS(config)# interface vlan 1
```

```
SEFOS(config-if)# no ip address
```

```
SEFOS(config-if)# exit
```

```
SEFOS(config)# vlan 40
```

```
SEFOS(config-vlan)# exit
```

```
SEFOS(config)# interface range extreme-ethernet 0/1-2
```

```
SEFOS(config-if-range)# shutdown
```

```
SEFOS(config-if-range)# switchport access vlan 40
```

```
SEFOS(config-if-range)# no shutdown
```

```
SEFOS(config-if-range)# exit
```

```
SEFOS(config)# interface vlan 40
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 40.0.0.200 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
SEFOS#
```

- Ping Host B and Host B-2 from SEFOS-2:

```
SEFOS# ping 40.0.0.110
Reply Received From :40.0.0.110, TimeTaken : 50 msec
Reply Received From :40.0.0.110, TimeTaken : 90 msec
Reply Received From :40.0.0.110, TimeTaken : 100 msec

--- 40.0.0.110 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss

SEFOS# ping 40.0.0.118
Reply Received From :40.0.0.118, TimeTaken : 100 msec
Reply Received From :40.0.0.118, TimeTaken : 90 msec
Reply Received From :40.0.0.118, TimeTaken : 110 msec

--- 40.0.0.118 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
SEFOS#
```

5. Create VLAN 20 between the two switches.

In this example, you will use QSFP ports 17-20 on both the SEFOS-1 and SEFOS-2 switches.

- Verify that ports 17-20 or any other ports are not part of any link aggregation groups:

```
SEFOS# show etherchannel summary

Port-channel Module Admin Status is enabled
Port-channel Module Oper Status is enabled
Port-channel System Identifier is 00:14:4f:6c:6e:0e

Flags:
D - down          P - in port-channel
I - stand-alone   H - Hot-standby (LACP only)
```

```
Number of channel-groups in use: 1
Number of aggregators: 1
```

Group	Port-channel	Protocol	Ports

100	Po100 (P)	LACP	Ex0/17 (D) , Ex0/18 (P) , Ex0/19 (P) , Ex0/20 (P)

This shows that the QSFP ports 17-20 are part of a link aggregation group. To remove the QSFP ports 17-20 from the link aggregation group:

```
SEFOS# configure terminal
SEFOS# interface range extreme-ethernet 0/17-20
SEFOS(config-if-range)# no channel-group
SEFOS(config-if-range)# end
SEFOS# show etherchannel summary
```

```
Port-channel Module Admin Status is enabled
Port-channel Module Oper Status is enabled
Port-channel System Identifier is 00:14:4f:6c:6e:0e
```

```
Flags:
D - down          P - in port-channel
I - stand-alone   H - Hot-standby (LACP only)
```

```
Number of channel-groups in use: 1
Number of aggregators: 1
```

Group	Port-channel	Protocol	Ports

100	Po100 (D)	LACP	

```
SEFOS#
```

- Create VLAN 20 on the SEFOS-1 switch, ports 17 – 20:

```
SEFOS# configure terminal
SEFOS(config)# interface range extreme-ethernet 0/17-20
SEFOS(config-if-range)# switchport access vlan 20
SEFOS(config-if-range)# no shutdown
SEFOS(config-if-range)# exit
SEFOS(config)# interface vlan 20
```

```
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 20.0.0.201 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
SEFOS#
```

- Create VLAN 20 on the SEFOS-2 switch, ports 17-20:

```
SEFOS# configure terminal
SEFOS(config)# interface range extreme-ethernet 0/17-20
SEFOS(config-if-range)# switchport access vlan 20
SEFOS(config-if-range)# no shutdown
SEFOS(config-if-range)# exit
SEFOS(config)# interface vlan 20
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 20.0.0.200 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
SEFOS# ping 20.0.0.201
```

```
Reply Received From :20.0.0.201, TimeTaken : 110 msecs
Reply Received From :20.0.0.201, TimeTaken : 90 msecs
Reply Received From :20.0.0.201, TimeTaken : 100 msecs
```

```
--- 20.0.0.201 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
SEFOS#
```

You can now use this configuration as a starting point for different router configurations.

6. Save the configuration information so that the switches will start with the saved configuration on reboot.

- Run the following command on the SEFOS-1 switch:

```
SEFOS# write startup-config
Building configuration ...
[OK]
```

- Run the following command on the SEFOS-2 switch:

```
SEFOS# write startup-config
Building configuration ...
```

[OK]

7. Verify that the existing routes are available in Switch 1.

- Run the following command on the SEFOS-1 switch:

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 10.0.0.0/24 is directly connected, vlan10
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
SEFOS#
```

- Run the following command on the SEFOS-2 switch:

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
C 40.0.0.0/24 is directly connected, vlan40
```

```
SEFOS#
```

If there is no known route from SEFOS-1 to Host B, the ping from Host A to Host B will fail.

8. Configure the static route in the SEFOS-1 switch:

```
SEFOS# configure terminal
```

```
SEFOS(config)# ip route 40.0.0.0 255.255.255.0 20.0.0.200
```

```
SEFOS(config)# end
```

9. Configure the static route in the SEFOS-2 switch:

```
SEFOS# configure terminal
```

```
SEFOS(config)# ip route 10.0.0.0 255.255.255.0 20.0.0.201
```

```
SEFOS(config)# end
```

10. Verify that the routes are known to SEFOS-1 and SEFOS-2.

- Run the following command on the SEFOS-1 switch:

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 10.0.0.0/24 is directly connected, vlan10
C 20.0.0.0/24 is directly connected, vlan20
S 40.0.0.0/24 [-1] via 20.0.0.200
```

- Run the following command on the SEFOS-2 switch:

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
S 10.0.0.0/24 [-1] via 20.0.0.201
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
C 40.0.0.0/24 is directly connected, vlan40
```

Depending on how each server configures its routes, you may need to add static routes using the route adding commands provided by the servers. Following are example commands use to add static routes to the host servers:

- To add static routes to Host A so that Host A can reach VLAN 40 and VLAN 20 configured on the SEFOS-2 switch:

```
# route add 40.0.0.0 -netmask 255.255.255.0 10.0.0.201
```

```
# route add 20.0.0.0 -netmask 255.255.255.0 10.0.0.201
```

- To add static routes to Host B so that Host B can reach VLAN 10 and VLAN 20 configured on the SEFOS-1 switch:

```
# route add -net 10.0.0.0 netmask 255.255.255.0 gw 40.0.0.200
```

```
# route add -net 20.0.0.0 netmask 255.255.255.0 gw 40.0.0.200
```

- Ping the SEFOS-2 switch's VLAN 40 IP address from the SEFOS-1 switch:

```
SEFOS# ping 40.0.0.200
```

```
Reply Received From :40.0.0.200, TimeTaken : 90 msec
```

```
Reply Received From :40.0.0.200, TimeTaken : 110 msec
```

```
Reply Received From :40.0.0.200, TimeTaken : 90 msec
```

```
--- 40.0.0.200 Ping Statistics ---
```

```
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
```

```
SEFOS#
```

- Ping the Host B's VLAN 40 IP address from the SEFOS-1 switch:

```
SEFOS# ping 40.0.0.110
```

```
Reply Received From :40.0.0.110, TimeTaken : 60 msec
```

```
Reply Received From :40.0.0.110, TimeTaken : 100 msec
```

```
Reply Received From :40.0.0.110, TimeTaken : 110 msec
```

```
--- 40.0.0.110 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
SEFOS#
```

- Ping Host B from Host A:

```
# ping -s 40.0.0.110
PING 40.0.0.110: 56 data bytes
64 bytes from 40.0.0.110: icmp_seq=0. time=0.544 ms
64 bytes from 40.0.0.110: icmp_seq=1. time=0.286 ms
64 bytes from 40.0.0.110: icmp_seq=2. time=0.561 ms
64 bytes from 40.0.0.110: icmp_seq=3. time=0.343 ms
```

- Ping the SEFOS-1 switch's VLAN 10 IP address from the SEFO-2 switch:

```
SEFOS# ping 10.0.0.201
Reply Received From :10.0.0.201, TimeTaken : 160 msecs
Reply Received From :10.0.0.201, TimeTaken : 90 msecs
Reply Received From :10.0.0.201, TimeTaken : 100 msecs
```

```
--- 10.0.0.201 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
SEFOS#
```

- Ping the Host A's IP address from the SEFOS-2 switch:

```
SEFOS# ping 10.0.0.169
Reply Received From :10.0.0.169, TimeTaken : 50 msecs
Reply Received From :10.0.0.169, TimeTaken : 100 msecs
Reply Received From :10.0.0.169, TimeTaken : 110 msecs

--- 10.0.0.169 Ping Statistics ---
3 Packets Transmitted, 3 Packets Received, 0% Packets Loss
SEFOS#
```

- Ping Host A from Host B:

```
# ping 10.0.0.169
PING 10.0.0.169 (10.0.0.169) 56(84) bytes of data.
64 bytes from 10.0.0.169: icmp_seq=1 ttl=253 time=0.462 ms
64 bytes from 10.0.0.169: icmp_seq=2 ttl=253 time=0.523 ms
64 bytes from 10.0.0.169: icmp_seq=3 ttl=253 time=0.445 ms
```

```
64 bytes from 10.0.0.169: icmp_seq=4 ttl=253 time=0.370 ms
...
```

To reach Host A from Host B, packets should be routed between VLAN 40 and VLAN 20, and between VLAN 20 and VLAN 10. You can now test the basic routing functionality of SEFOS now that the static routes have been configured.

Follow these instructions to remove the static routes on SEFOS-1 and SEFOS-2:

1. Remove the static route on SEFOS-1:

```
SEFOS# configure terminal
SEFOS(config)# no ip route 40.0.0.0 255.0.0.0 20.0.0.200
SEFOS(config)# end
```

2. Remove the static route on SEFOS-2:

```
SEFOS# configure terminal
SEFOS(config)# no ip route 10.0.0.0 255.0.0.0 20.0.0.201
SEFOS(config)# end
```

Configuring Dynamic Routing – RIP

This procedure describes how to configure dynamic routing using the redistribution feature of RIP protocol in SEFOS. This procedure verifies that accessibility between the two hosts are established after learning the inbetween routes dynamically through RIP protocol.

Enable and configure RIP on the SEFOS-1 and SEFOS-2 switches.

1. Verify that SEFOS-1 and SEFOS2 still have the configuration information that you saved in the section “Configuring Static Unicast Route Entries”.

The basic VLAN configuration for dynamic routing is similar to the basic VLAN configuration for static routing. If the configuration information was not saved on SEFOS-1 and SEFOS-2, follow the procedures in Steps 1 – 5 in “Configuring Static Unicast Route Entries then return here.

2. Enter the following command to verify that the static routes were removed from SEFOS-1:

```
SEFOS# show ip route
```

Codes: C - connected, S - static, R - rip, B - bgp, O - ospf

```
C 10.0.0.0/24 is directly connected, vlan10
C 20.0.0.0/24 is directly connected, vlan20
```

The show ip route command should show only two directly-connected routes.

3. Enable RIP protocol on SEFOS-1:

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# neighbor 20.0.0.200
SEFOS(config-router)# network 20.0.0.201
SEFOS(config-router)# network 10.0.0.201
SEFOS(config-router)# redistribute all
SEFOS(config-router)# end
```

4. Enter the following command to verify that the static routes were removed from SEFOS-2:

```
SEFOS# show ip route
```

Codes: C - connected, S - static, R - rip, B - bgp, O - ospf

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
C 40.0.0.0/24 is directly connected, vlan40
```

The show ip route command should show only two directly-connected routes.

5. Enable RIP protocol on SEFOS-2 using the following commands.

If SEFOS-2 is a third-party switch, verify that RIP protocol is enabled on SEFOS-2 and that related configurations are applied accordingly. In the following example, both switches are from the same Sun Network 10GbE Switch 72p family.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# neighbor 20.0.0.201
SEFOS(config-router)# network 20.0.0.200
SEFOS(config-router)# network 40.0.0.200
SEFOS(config-router)# redistribute all
SEFOS(config-router)# end
```

6. Check the routing database on SEFOS-1:

```
SEFOS# show ip route
```

Codes: C - connected, S - static, **R - rip**, B - bgp, O - ospf

```
C 10.0.0.0/24 is directly connected, vlan10
```

```
C 20.0.0.0/24 is directly connected, vlan20
R 40.0.0.0/8 [2] via 20.0.0.200
```

SEFOS# show ip rip database

```
Vrf default
10.0.0.0/8 [1] auto-summary
10.0.0.0/24 [1] directly connected, vlan10
20.0.0.0/8 [1] auto-summary
20.0.0.0/24 [1] directly connected, vlan20
40.0.0.0/8 [3] auto-summary
40.0.0.0/24 [3] redistributed via 0.0.0.0
```

7. Check the routing database on SEFOS-2:

SEFOS# show ip route

Codes: C - connected, S - static, **R - rip**, B - bgp, O - ospf

```
R 10.0.0.0/8 [2] via 20.0.0.201
C 20.0.0.0/24 is directly connected, vlan20
C 40.0.0.0/24 is directly connected, vlan40
```

SEFOS# show ip rip database

```
Vrf default
10.0.0.0/8 [2] auto-summary
10.0.0.0/8 [2] via 20.0.0.201, vlan20
10.0.0.0/24 [3] redistributed via 0.0.0.0
20.0.0.0/8 [1] auto-summary
20.0.0.0/24 [1] directly connected, vlan20
40.0.0.0/8 [1] auto-summary
40.0.0.0/24 [1] directly connected, vlan40
```

8. Ping the VLAN interface on VLAN 10 on SEFOS-1 from Host B:

ping 10.0.0.201

```
PING 10.0.0.201 (10.0.0.201) 56(84) bytes of data.
64 bytes from 10.0.0.201: icmp_seq=1 ttl=63 time=1.64 ms
....
```

9. Ping Host A from Host B:

```
# ping 10.0.0.169
```

```
PING 10.0.0.169 (10.0.0.169) 56(84) bytes of data.
```

```
64 bytes from 10.0.0.169: icmp_seq=1 ttl=253 time=0.428 ms
```

```
64 bytes from 10.0.0.169: icmp_seq=2 ttl=253 time=0.465 ms
```

```
64 bytes from 10.0.0.169: icmp_seq=3 ttl=253 time=0.387 ms
```

```
64 bytes from 10.0.0.169: icmp_seq=4 ttl=253 time=0.316 ms
```

```
--- 10.0.0.169 ping statistics ---
```

```
4 packets transmitted, 4 received, 0% packet loss, time 3000ms
```

```
rtt min/avg/max/mdev = 0.316/0.399/0.465/0.055 ms
```

You can now test the basic routing functionality of SEFOS now that SEFOS is able to dynamically learn the routing entries using the redistribution feature of RIP.

Follow these instructions to disable RIP on SEFOS-1 and SEFOS-2:

1. Disable RIP on SEFOS-1:

```
SEFOS# configure terminal
```

```
SEFOS(config)# no router rip
```

```
SEFOS(config)# end
```

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 10.0.0.0/24 is directly connected, vlan10
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
SEFOS#
```

2. Disable RIP on SEFOS-2:

```
SEFOS# configure terminal
```

```
SEFOS(config)# no router rip
```

```
SEFOS(config)# end
```

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 20.0.0.0/24 is directly connected, vlan20
C 40.0.0.0/24 is directly connected, vlan40
```

```
SEFOS#
```

Configuring Dynamic Routing – OSPF

This procedure describes how to configure dynamic routing using the redistribution feature of the OSPF protocol in SEFOS. This procedure verifies that the reachability between two hosts is established after learning the inbetween routes dynamically through the OSPF protocol.

1. Verify that SEFOS-1 and SEFOS2 still have the configuration information that you saved in the section “Configuring Static Unicast Route Entries”.

The basic VLAN configuration for dynamic routing is similar to the basic VLAN configuration for static routing. If the configuration information was not saved on SEFOS-1 and SEFOS-2, follow the procedures in Steps 1 – 5 in “Configuring Static Unicast Route Entries then return here.

2. Enable the OSPF protocol on SEFOS-1:

```
SEFOS# configure terminal
SEFOS(config)# router ospf
SEFOS(config-router)# asBR router
SEFOS(config-router)# network 20.0.0.201 area 0.0.0.0
SEFOS(config-router)# router-id 20.0.0.201
SEFOS(config-router)# network 10.0.0.201 area 0.0.0.0
SEFOS(config-router)# router-id 10.0.0.201
SEFOS(config-router)# redistribute all
SEFOS(config-router)# end
```

3. Enable the OSPF protocol on SEFOS-2 using the following commands.

If SEFOS-2 is a third-party switch, verify that the OSPF protocol is enabled on SEFOS-2 and that related configurations are applied accordingly.

```
SEFOS# configure terminal
SEFOS(config)# router ospf
SEFOS(config-router)# asBR router
SEFOS(config-router)# network 20.0.0.200 area 0.0.0.0
SEFOS(config-router)# router-id 20.0.0.200
SEFOS(config-router)# network 40.0.0.200 area 0.0.0.0
```

```
SEFOS(config-router)# router-id 40.0.0.200
SEFOS(config-router)# redistribute all
SEFOS(config-router)# end
```

4. Check the neighbor router status of SEFOS-1:

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 10.0.0.0/24 is directly connected, vlan10
C 20.0.0.0/24 is directly connected, vlan20
O 40.0.0.0/24 [2] via 20.0.0.200
```

```
SEFOS# show ip ospf neighbor
```

```
Vrf default
Neighbor-ID Pri State DeadTime Address Interface
-----
40.0.0.200 1 FULL/BACKUP 32 20.0.0.200 vlan20
```

5. Verify the neighbor router status of SEFOS-2 using the following commands.

If target 2 is a third-party switch, use the appropriate command to verify the neighbor switch state.

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
O 10.0.0.0/24 [2] via 20.0.0.201
C 20.0.0.0/24 is directly connected, vlan20
C 40.0.0.0/24 is directly connected, vlan40
```

```
SEFOS# show ip ospf neighbor
```

```
Vrf default
Neighbor-ID Pri State DeadTime Address Interface
-----
10.0.0.201 1 FULL/DR 36 20.0.0.201 vlan20
```

6. Verify the connectivity between Host A and Host B.

The connectivity between Host A and Host B can be verified using ping.

- Ping from Host A to Host B:

```
# ping -s 40.0.0.110
```

```
PING 40.0.0.110: 56 data bytes
64 bytes from 40.0.0.110: icmp_seq=0. time=0.567 ms
64 bytes from 40.0.0.110: icmp_seq=1. time=0.392 ms
64 bytes from 40.0.0.110: icmp_seq=2. time=0.406 ms
64 bytes from 40.0.0.110: icmp_seq=3. time=0.552 ms
^C
----40.0.0.110 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.392/0.479/0.567/0.093
```

- Ping from Host B to ost AH:

```
# ping 10.0.0.169
```

```
PING 10.0.0.169 (10.0.0.169) 56(84) bytes of data.
64 bytes from 10.0.0.169: icmp_seq=1 ttl=253 time=0.551 ms
64 bytes from 10.0.0.169: icmp_seq=2 ttl=253 time=0.394 ms
64 bytes from 10.0.0.169: icmp_seq=3 ttl=253 time=0.534 ms
64 bytes from 10.0.0.169: icmp_seq=4 ttl=253 time=0.457 ms

--- 10.0.0.169 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 0.394/0.484/0.551/0.062 ms
```

- Disable OSPF on SEFOS-1:

```
SEFOS# configure terminal
```

```
SEFOS(config)# no router ospf
```

```
SEFOS(config)# end
```

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 10.0.0.0/24 is directly connected, vlan10
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
SEFOS#
```

- Disable OSPF on SEFOS-2. If SEFOS-2 is a 3rd party switch, use the 3rd party's switch commands to disable OSPF.

```
SEFOS# configure terminal
```

```
SEFOS(config)# no router ospf
```

```
SEFOS(config)# end
```

```
SEFOS# show ip route
```

```
Codes: C - connected, S - static, R - rip, B - bgp, O - ospf
```

```
C 20.0.0.0/24 is directly connected, vlan20
```

```
C 40.0.0.0/24 is directly connected, vlan40
```

Port Groupings on the Sun Network 10GbE Switch 72p

The Sun Network 10GbE Switch 72p from Oracle is a 72-port switch. These 72 ports can be divided into six groups with each group consisting of twelve ports (three physical QSFP ports), with twelve or fewer host servers connected to these twelve ports. To reduce the switching latency, you can use the following port group mapping table as a reference when connecting host servers to this 72p switch:

- Group 1: ports - 1, 2, 3, 4, 33, 34, 35, 36, 37, 38, 39, 40
- Group 2: ports - 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52
- Group 3: ports - 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64
- Group 4: ports - 29, 30, 32, 32, 65, 66, 67, 68, 69, 70, 71, 72
- Group 5: ports - 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28
- Group 6: ports - 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16

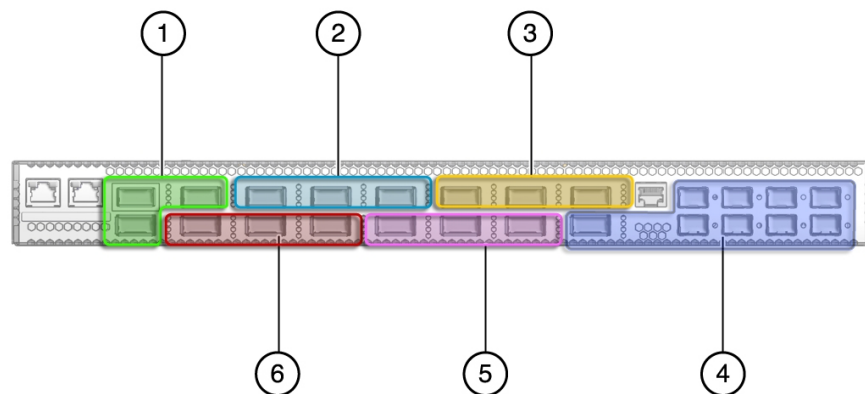


Figure 5. Port Groupings on the Sun Network 10GbE 72p Switch