# Oracle® Switch ES1-24

Configuration Guide

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# Contents

# Using This Documention

This guide describes how to configure and manage the Oracle Switch ES1-24.

These instructions are for enterprise network and system administrators.

# Product Notes

For late-breaking information and known issues about this product, refer to the product notes at:

http://www.oracle.com/goto/ES1-24/docs

# Related Documentation

| Documentation | Links |
|---|---|
| All Oracle products | http://docs.oracle.com |
| Oracle Switch ES1-24 | http://www.oracle.com/goto/ES1-24/docs |
| Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0 | http://www.oracle.com/pls/topic/lookup?ctx=ilom30 |

For detailed information about the commands and options described in this document, refer to the *Sun Ethernet Fabric Operating System CLI Base Reference Manual* and the *Sun Ethernet Fabric Operating System CLI Enterprise Reference Manual*.

# CLI Command Modes

This table lists the configuration modes used in this document with their access and exit methods.

| Command Mode | Access Method | Prompt | Exit Method |
|---|---|---|---|
| User EXEC | Access SEFOS from Oracle ILOM with read-only rights (privilege level 1). | SEFOS> | Use the logout or exit command to return to the Oracle ILOM prompt. |
| Privileged EXEC | Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15). | SEFOS# | Use the logout or exit command to return to the Oracle ILOM prompt. |
| Global Configuration | From User EXEC mode, use the configure terminal command. | SEFOS(config)# | Use the end command to return to Privileged EXEC mode. |
| Interface Configuration | From Global Configuration mode, use the interface *interface-type interface-id* command. | SEFOS(config-if)# | Use the exit command to return to Global Configuration mode, or use the end command to return to Privileged EXEC mode. |

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# Administering the Switch

These tasks describe how to prepare the switch for management tasks.

| Description | Links |
| --- | --- |
| Connect to the SP and access the Oracle ILOM interface. | "Log In to the Oracle ILOM CLI" on page 1 |
| Create a SEFOS user. | "Create a SEFOS User" on page 2 |
| Change the privilege level of an existing SEFOS user. | "Change a SEFOS User Privilege Level" on page 4 |
| Configure network management from the web interface or through the NET MGT port. | "Configure Network Management From the Web Interface" on page 5 |
| | "Configure Network Management From the CLI" on page 6 |
| Log out of the Oracle ILOM CLI. | "Log Out of the Oracle ILOM CLI" on page 8 |
| Update the Oracle ILOM firmware. | "Update the Firmware" on page 9 |

**Related Information**

- "Administering SEFOS" on page 11
- "Configuring the Switching Feature" on page 41
- "Configuring the Routing Feature" on page 57

# ▼ Log In to the Oracle ILOM CLI

The instructions in this topic assume that you are connecting to Oracle ILOM using a serial connection directly to the switch. For SER MGT pinout, baud rate, and parity information, refer to *Switch Installation*, SER MGT port.

**1. Connect a terminal or terminal emulator to the SER MGT port on the switch.**

2. **Press Enter on the terminal device.**

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

```
SUNSPnnnnnnnnnnn login:
```

3. **Log in to the Oracle ILOM CLI.**

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

```
->
```

**Related Information**

# ▼ Create a SEFOS User

1. **Log in to the Oracle ILOM CLI.**

See .

2. **Create a user and set the user** `fs_privilege` **attribute upon creation.**

```
-> create /SP/users/username fs_privilege=level
```

where:

- *username* is the user name.

- *level* is the privilege level (`1` for read-only, `15` for full administrative).

For example:

```
-> create /SP/users/user15 fs_privilege=15
Creating user...
Enter new password: ********
Enter new password again: ********
Created /SP/users/user15
```

3. **View the user parameters.**

```
-> show /SP/users/user15

 /SP/users/user15
   Targets:
     ssh
   Properties:
     role = o
     password = *****
     fs_privilege = 15

   Commands:
     cd
     set
     show

->
```

4. **Repeat** Step 2 **and** Step 3 **for each SEFOS user.**

5. **After you configure all SEFOS users, configure SEFOS.**

See "Administering SEFOS" on page 11.

**Related Information**

- "Log In to the Oracle ILOM CLI" on page 1
- "Change a SEFOS User Privilege Level" on page 4
- "Configure Network Management From the Web Interface" on page 5
- "Configure Network Management From the CLI" on page 6
- "Log Out of the Oracle ILOM CLI" on page 8
- "Update the Firmware" on page 9

# ▼ Change a SEFOS User Privilege Level

**1. Log in to the Oracle ILOM CLI.**

See "Log In to the Oracle ILOM CLI" on page 1.

**2. Change into the directory for that user.**

```
-> cd /SP/users/user15
```

**3. Change a user privilege level for an existing user.**

Level 1 allows read-only, and level 15 allows full administrative privileges.

For example:

```
-> set fs_privilege=15
Set 'fs_privilege' to '15'
```

**4. Verify the user privileges.**

```
-> show

 /SP/users/user15
   Targets:
        ssh

   Properties:
        role = o
        password = *****
        fs_privilege = 15

    Commands:
        cd
        set
        show

->
```

**Related Information**

- "Log In to the Oracle ILOM CLI" on page 1
- "Create a SEFOS User" on page 2
- "Configure Network Management From the Web Interface" on page 5
- "Configure Network Management From the CLI" on page 6

- "Log Out of the Oracle ILOM CLI" on page 8
- "Update the Firmware" on page 9

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# ▼ Configure Network Management From the Web Interface

1. **In a web browser, type the IP address of the switch in the location bar.**

   The switch Oracle ILOM login screen appears. The default user name is `root`. The default password is `changeme`.

2. **Select Configuration from the first row of tabs.**

3. **Select Network from the second row of tabs.**

   The Network Settings page for the switch appears.

4. **Configure the network settings as desired.**

5. **Click Save.**

---

**Note –** When you click Save, connections to the web interface might be lost. You must reestablish connection to the web interface.

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**Related Information**
- "Log In to the Oracle ILOM CLI" on page 1
- "Create a SEFOS User" on page 2
- "Change a SEFOS User Privilege Level" on page 4
- "Configure Network Management From the CLI" on page 6
- "Log Out of the Oracle ILOM CLI" on page 8
- "Update the Firmware" on page 9

# ▼ Configure Network Management From the CLI

**Note –** This procedure is best performed from the SER MGT port. If performed from the NET MGT port, you might lose connection to the SP during the process.

1. **Log in to the Oracle ILOM CLI.**

   See "Log In to the Oracle ILOM CLI" on page 1.

2. **Change to the** `/SP/network` **directory.**

   ```
   -> cd SP/network
   ```

3. **(Optional) Set the state of network management.**

   ```
   -> set state = state
   ```

   where *state* is either `enabled` or `disabled`.

**Note –** If you set the `state` to `disabled`, connections to the NET MGT port are lost.

4. **(Optional) Set the IP discovery mode.**

   ```
   -> set pendingipdiscovery = mode
   ```

   where *mode* is either `dhcp` or `static`.

**Note –** By default, the switch uses DHCP as the IP discovery mode.

5. **If you set the IP discovery mode to** `dhcp`**, go to** Step 7.

6. **If you set the IP discovery mode to** `static`**, configure an externally accessible IP address on the switch.**

   a. **Set the pending service processor IP address.**

   ```
   -> set pendingipaddress=IP_address
   Set 'pendingipaddress' to 'IP_address'
   ```

**b. Set the pending gateway IP address.**

```
-> set pendingipgateway=IP_address
Set 'pendingipgateway' to 'IP_address'
```

   **c. Set the pending netmask.**

```
-> set pendingipnetmask=netmask
Set 'pendingipnetmask' to 'n.n.n.n'
```

7. **Verify the configuration information that you entered.**

   The show command displays information about the switch, including its IP address.

   For example:

```
-> show

 /SP/network
    Targets:

    Properties:
        type = Network Configuration
        commitpending = (Cannot show property)
        ipaddress = 10.7.59.97
        ipdiscovery = static
        ipgateway = 10.7.59.254
        ipnetmask = 255.255.255.0
        macaddress = 00:14:4f:6C:5D:E8
        pendingipaddress = 10.7.59.97
        pendingipdiscovery = static
        pendingipgateway = 10.7.59.254
        pendingipnetmask = 255.255.255.0
        state = enabled

    Commands:
        cd
        set
        show

->
```

8. **Commit the changes.**

```
-> set commitpending=true
Set 'commitpending' to 'true'
```

> **Note –** When you set `commitpending` to `true`, connections to the NET MGT port might be lost. You must reestablish connection to the NET MGT port.

**9. When you are done, exit the switch Oracle ILOM.**

See "Log Out of the Oracle ILOM CLI" on page 8.

**Related Information**

- "Log In to the Oracle ILOM CLI" on page 1
- "Create a SEFOS User" on page 2
- "Change a SEFOS User Privilege Level" on page 4
- "Configure Network Management From the Web Interface" on page 5
- "Log Out of the Oracle ILOM CLI" on page 8
- "Update the Firmware" on page 9

# ▼ Log Out of the Oracle ILOM CLI

● **When you are finished with Oracle ILOM, exit the Oracle ILOM CLI.**

```
-> exit
```

**Related Information**

- "Log In to the Oracle ILOM CLI" on page 1
- "Create a SEFOS User" on page 2
- "Change a SEFOS User Privilege Level" on page 4
- "Configure Network Management From the Web Interface" on page 5
- "Configure Network Management From the CLI" on page 6
- "Update the Firmware" on page 9

# ▼ Update the Firmware

1. **Go to this web site for Oracle ILOM updates:**

   https://support.oracle.com/

   This site contains updates for firmware and drivers, and also contains CD-ROM .iso images.

2. **Download the latest firmware bundle.**

3. **Install the latest firmware and updates.**

   For details on how to update the switch firmware, refer to the product notes at http://www.oracle.com/goto/ES1-24/docs.

**Related Information**

- "Log In to the Oracle ILOM CLI" on page 1
- "Create a SEFOS User" on page 2
- "Change a SEFOS User Privilege Level" on page 4
- "Configure Network Management From the Web Interface" on page 5
- "Configure Network Management From the CLI" on page 6
- "Log Out of the Oracle ILOM CLI" on page 8

# Administering SEFOS

These topics describe how to use SEFOS for common management tasks.

- "SEFOS Setup Tasks" on page 11
- "Understanding SEFOS Basics" on page 12
- "Configuring the SEFOS Environment" on page 16
- "Managing Configuration Files" on page 34
- "Managing Log Files" on page 38

**Related Information**

- "Administering the Switch" on page 1
- "Configuring the Switching Feature" on page 41
- "Configuring the Routing Feature" on page 57

# SEFOS Setup Tasks

This table describes the tasks to prepare the SEFOS interface for subsequent management activities.

| No. | Description | Links |
|-----|-------------|-------|
| 1. | Familiarize yourself with basic SEFOS topologies and the default configuration. | "Understanding SEFOS Basics" on page 12 |
| 2. | Connect to SEFOS. | "Connect to SEFOS" on page 14 |
| 3. | (Optional) Configure the environment to give yourself more time for learning. | "Enable or Disable the Timeout for Line Connections" on page 16 |
| 4. | Configure the switch's default IP address. | "Configure the Default IP Address" on page 17 |
| 5. | Create the interfaces that you will be using. | "Configure the IP Address for an Interface" on page 18 |

| No. | Description | Links |
|-----|-------------|-------|
| 6. | Create a name for the file that will contain configuration information. | "Configure the Name of the Configuration File" on page 19 |
| 7. | Set the default VLAN ID. | "Configure the Default VLAN ID" on page 20 |
| 9. | Configure where to display the debug file. | "Configure Debug Logging" on page 22 |
| 10. | Configure ACL filters on interfaces. | "Configure ACL Filters" on page 23 |
| 11. | Classify packets to a service based on the ACL filters. | "Configure QoS" on page 26 |
| 12. | Monitor packets from port 1 on port 2. | "Configure Port Mirroring" on page 29 |
| 13. | Limit interface traffic. | "Configure Rate Limiting" on page 31 |
| 14. | (Optional) Set up how you want save configurations, as they change (incremental) or saving them periodically (auto-save). | "Configuring Save Parameters" on page 32 |
| 15. | Save configuration information to the backup file. | "Save the Configuration to a File" on page 34 |
| 16. | Save a copy of the config file to a remote location. | "Copy a Configuration File to a Remote Location" on page 36 |

**Related Information**

- "Understanding SEFOS Basics" on page 12
- "Configuring the SEFOS Environment" on page 16
- "Managing Configuration Files" on page 34
- "Managing Log Files" on page 38

# Understanding SEFOS Basics

These topics describe the features of SEFOS.

- "Basic SEFOS Topology" on page 13
- "Default Configurations" on page 13
- "Connect to SEFOS" on page 14
- "Disconnect From SEFOS" on page 15

**Related Information**

- "SEFOS Setup Tasks" on page 11

# Basic SEFOS Topology



SEFOS-1 - IP address 12.0.0.1

P2

P1

Host A

Host B

IP address
12.0.0.100
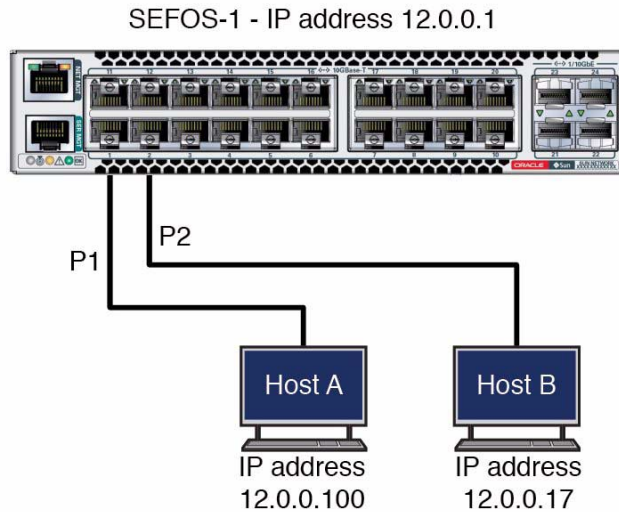
IP address
12.0.0.17

**Related Information**

# 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 | On label |

| Feature | Default Setting |
|---|---|
| Login authentication mode | Local |
| Authorized managers | All users are allowed to configure the switch |
| Configuration file name | `switch.conf` |
| CLI console | Enabled |
| HTTP status | Disabled |
| Management VLAN | `VLAN 1` |
| MTU | 9216 |
| Trap generation on an interface | Enabled |
| Checksum on tunnel interface | Disabled |
| MTU discovery on tunnel interface | Disabled |
| Debug logging | Logs in console |

### Related Information

- "Basic SEFOS Topology" on page 13
- "Connect to SEFOS" on page 14
- "Disconnect From SEFOS" on page 15

## ▼ Connect to SEFOS

To configure the SEFOS software, you must first establish a connection to your system and then connect to SEFOS through Oracle ILOM.

**1. Log in to the Oracle ILOM CLI.**

See "Log In to the Oracle ILOM CLI" on page 1.

**2. Connect to 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-1#
```

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

**Related Information**

# ▼ Disconnect From SEFOS

**1. When you are finished using SEFOS, return to the Oracle ILOM prompt.**

```
SEFOS-1# exit
Connection closed by foreign host.
cd: The session with /SYS/fs_cli has ended.

->
```

**2. When you are finished using Oracle ILOM, exit the interface.**

```
-> exit
```

**Related Information**

# Configuring the SEFOS Environment

Use these procedures to configure the SEFOS environment for the switch.

- "Enable or Disable the Timeout for Line Connections" on page 16
- "Configure the Default IP Address" on page 17
- "Configure the IP Address for an Interface" on page 18
- "Configure the Name of the Configuration File" on page 19
- "Configure the Default VLAN ID" on page 20
- "Enable or Disable Trap Generation on an Interface" on page 21
- "Configure Debug Logging" on page 22
- "Configure ACL Filters" on page 23
- "Configure QoS" on page 26
- "Configure Port Mirroring" on page 29
- "Configure Rate Limiting" on page 31
- "Configuring Save Parameters" on page 32

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Understanding SEFOS Basics" on page 12
- "Managing Configuration Files" on page 34
- "Managing Log Files" on page 38

## ▼ Enable or Disable the Timeout for Line Connections

If you leave a session idle for too long, the session might get disconnected and return you to the Oracle ILOM prompt. This procedure clears the timeout for line connections so that idle sessions are not disconnected.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Enter Global Configuration mode.**

   ```
   SEFOS-1# configure terminal
   ```

3. **Enable or disable the timeout for line connections.**

```
SEFOS-1(config)# line vty
SEFOS-1(config-line)# no exec-timeout
SEFOS-1(config-line)# exit
```

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Enable or Disable Trap Generation on an Interface" on page 21
- "Disconnect From SEFOS" on page 15

# ▼ Configure the Default IP Address

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

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Configure the default IP address.**

   a. **Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

   b. **Configure the default IP address and subnet mask as** 12.0.0.1 **and** 255.255.0.0, **respectively.**

```
SEFOS-1(config)# default ip address 12.0.0.1 subnet-mask
255.255.0.0
```

   c. **Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

3. **View the default IP address and subnet mask.**

```
SEFOS-1# show nvram

Default IP Address                          : 12.0.0.1
Default Subnet Mask                         : 255.255.0.0
...
```

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

**Related Information**

■ "SEFOS Setup Tasks" on page 11
■ "Configure the IP Address for an Interface" on page 18

# ▼ Configure the IP Address for an Interface

This task describes how to configure the IP address for sending and receiving the packets.

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**3. Enter Interface Configuration mode.**

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

**4. Shut down the VLAN interface.**

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

```
SEFOS-1(config-if)# shutdown
```

**5. Configure the IP address and subnet mask.**

```
SEFOS-1(config-if)# ip address 12.0.0.1 255.0.0.0
```

**6. Bring up the VLAN interface.**

```
SEFOS-1(config-if)# no shutdown
```

7. **Exit from Interface Configuration mode.**

```
SEFOS-1(config)# end
```

8. **View the configured interface IP address.**

```
SEFOS-1# show ip interface

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

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Configure the Default IP Address" on page 17

# ▼ Configure the Name of the Configuration File

This task describes how to write the configuration file to flash. This file is used as the restoration configuration file.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Configure the configuration file name.**

   a. **Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

   b. **Configure the restoration configuration file name for the switch.**

      For example:

```
SEFOS-1(config)# default restore-file myconfig.conf
```

   c. **Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

**3. View the default configuration file name.**

```
SEFOS-1# show nvram
...
Config Restore Filename                    : myconfig.conf
...
```

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Managing Configuration Files" on page 34

# ▼ Configure the Default VLAN ID

This task describes how to write the VLAN ID to the flash. This ID is used as the default VLAN ID when the switch is restarted. Do not change the default VLAN ID when some configurations are already saved.

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Configure the default VLAN identifier.**

**a. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**b. Configure the default VLAN ID as 10.**

```
SEFOS-1(config)# default vlan id 10
```

**c. Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

**3. View the default VLAN ID.**

```
SEFOS-1# show nvram
...
Config Save IP Address                     : 0.0.0.0
...
Default VLAN Identifier                    : 10
...
```

**Note –** After you have configured the default VLAN ID, you must restart the switch before saving any configuration.

### Related Information

# ▼ Enable or Disable Trap Generation on an Interface

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

**Note –** Refer to the *Oracle ILOM 3.0 Daily Management – CLI Procedures Guide* for information to configure the SNMP manager for trap generation.

**1. Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

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

   **a. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

   **b. Enter Interface Configuration mode for** extreme-ethernet 0/1**.**

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

   **c. Type one of the following commands.**

```
SEFOS-1(config-if)# snmp trap link-status
```

```
SEFOS-1(config-if)# no snmp trap link-status
```

**d. Exit Interface Configuration mode.**

```
SEFOS-1(config-if)# end
```

**3. View the trap state for the interface** extreme-ethernet 0/1.

```
SEFOS-1# show interface extreme-ethernet 0/1
...
Link Up/Down Trap is enabled
...
```

or,

```
SEFOS-1# show interface extreme-ethernet 0/1
...
Link Up/Down Trap is disabled
...
```

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

### Related Information

- "SEFOS Setup Tasks" on page 11

# ▼ Configure Debug Logging

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

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Modify the logging option of debug traces.**

**a. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**b. Log the debug traces to a file.**

```
SEFOS-1(config)# debug-logging file
```

    **c. Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

**3. Verify the logging option.**

```
SEFOS-1# show system information
...
Logging Option                       : File Logging
...
```

### Related Information

- "SEFOS Setup Tasks" on page 11
- "View Debug Logs" on page 40
- "Copy a System Log to a Remote Location" on page 39

# ▼ Configure ACL Filters

The example in this procedure shows how to block the IP traffic from a host with an IP address of 12.0.0.100. See "Basic SEFOS Topology" on page 13 for the topology for this task.

The filter type can be extended or standard. Standard filters filter the traffic based on the source IP address and the destination IP address. Extended filters can also 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 are filtered.

ACL filters 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. Type the following commands on the SEFOS-1 switch.

**1. Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

**2. Configure the IP address of the switch to** 12.0.0.1**.**

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

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

3. **Create an IP filter with ID** 11.

```
SEFOS-1(config)# ip access-list extended 11
```

4. **Deny the IP traffic from host** 12.0.0.100 **to any network or host.**

```
SEFOS-1(config-ext-nacl)# deny ip host 12.0.0.100 any
SEFOS-1(config-ext-nacl)# end
```

5. **Ping from host A to host B.**

```
# ping 12.0.0.17
12.0.0.17 is alive
```

6. **Apply the IP filter** 11 **to port** 1.

```
SEFOS-1(config)# interface extreme-ethernet 0/1
SEFOS-1(config-if)# ip access-group 11 in
SEFOS-1(config-if)# exit
SEFOS-1(config)# vlan 1
SEFOS-1(config-vlan)# ports extreme-ethernet 0/1 extreme-ethernet
0/2 untagged extreme-ethernet 0/1 extreme-ethernet 0/2
```

---

**Note –** You might see the following message if ports 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-1(config-vlan)# end
```

7. **View the configuration details.**

```
SEFOS-1# show access-lists
...
IP address Type                        : IPV4
...
In Port List                           : Ex0/1
```

```
...
Filter Action                      : Deny
Status                             : Active
```

8. **Send the forwarding traffic from host A to host B in the same fashion as the ping from host A to host B in** Step 5.

Packets sent from host A are not forwarded to port 2 because the filter action is set to deny. The ping to 12.0.0.17 from host A fails with no answer from 12.0.0.17.

9. **Remove the IP filter from port** 1.

```
SEFOS-1# configure terminal
SEFOS-1(config)# interface extreme-ethernet 0/1
SEFOS-1(config-if)# no ip access-group 11 in
SEFOS-1(config-if)# end
SEFOS-1# show access-lists
...
Status                             : InActive
```

10. **Send the forwarding traffic from host A to host B in the same fashion as the ping from host A to host B in** Step 5.

The ping is answered from host B. Packets sent from host A are 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
```

### Related Information

- "SEFOS Setup Tasks" on page 11
- "Configure QoS" on page 26
- "Configure Port Mirroring" on page 29
- "Configure Rate Limiting" on page 31

# ▼ Configure 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 before forwarding the packets. The following task 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 "Basic SEFOS Topology" on page 13 for the topology of this task. Connect port 1 to host A and port 2 to host B. Host B 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 "Basic SEFOS Topology" on page 13.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Enable port** 1 **and port** 2.

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

   You might see the following message if both interfaces are already in VLAN 1.

```
% Member Ports cannot be added/deleted on Default VLAN
SEFOS-1(config-vlan)# end
```

3. **Enable QoS.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# qos enable
SEFOS-1(config)# end
```

4. **Create an access control list filter for TCP packets.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# ip access-list extended 11
SEFOS-1(config-ext-nacl)# permit tcp any any
```

```
SEFOS-1(config-ext-nacl)# exit
SEFOS-1(config)# interface extreme-ethernet 0/1
SEFOS-1(config-if)# ip access-group 11 in
SEFOS-1(config-if)# end
```

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

   a. Enter Global Configuration mode.

```
SEFOS-1# configure terminal
```

   b. Create a class map and enter Class Map Configuration mode.

```
SEFOS-1(config)# class-map 10
```

   c. Configure the match criteria for the class map with the criteria specified by
      the access list 11 (configured in Step 4 as all TCP packets).

```
SEFOS-1(config-cls-map)# match access-group ip-access-list 11
SEFOS-1(config-cls-map)# set class 100
```

   d. Exit Class Map Configuration mode.

```
SEFOS-1(config-cls-map)# exit
```

   e. Create a policy map to apply to the packet before forwarding it.

```
SEFOS-1(config)# policy-map 10
```

   f. 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-1(config-ply-map)# set policy class 100
default-priority-type ipdscp 46
SEFOS-1(config-ply-map)# exit
```

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

6. **View the configuration details.**

```
SEFOS-1# show access-lists
...
Filter Protocol Type              : TCP
IP address Type                   : IPV4
...
In Port List                      : Ex0/1
...

Filter Action                     : Permit
Status                            : Active...
L3FilterId                  : 11
PriorityMapId               : None
CLASS                       : 100
PolicyMapId                 : 10
...
SEFOS-1# show policy-map 10
QoS Policy Map Entries
----------------------
PolicyMapId  : 10IfIndex      : 0
Class        : 100
DefaultPHB   : IP DSCP 46
...
```

7. **Verify the functionality of the policy configuration by generating 100 TCP packets.**

   From host A to host B, send TCP packets to host B and use the host-supported packet dumping command to verify the DSCP value.

```
# tcpdump -xx -n -i eth3 ip
...
16:34:27.979962 IP 12.0.0.100.905 > 12.0.0.17.shell:
...
16:34:27.980163 IP 12.0.0.17.shell > 12.0.0.100.905:
0x0000:  0014 4f6c 7de9 001b 2147 d479 0800 4500
0x0000:  001b 2147 d479 0014 4f6c 7de9 0800 45b8
...
```

   These packets are received at Port 2 and have a DSCP value 46. In this example, the dump command shows a DSCP value of 0xb8.

## Related Information

-

# ▼ Configure Port Mirroring

Port mirroring monitors 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 "Basic SEFOS Topology" on page 13 for the topology for this task. Type the following commands on the SEFOS-1 switch.

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Configure the IP address of the switch as** 12.0.0.1**.**

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

**3. View the ping between the host and the switch.**

```
SEFOS-1# ping 12.0.0.100

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

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

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

**4. Type the following commands on the** SEFOS-1 **switch to enable mirroring for incoming packets at port** 1 **to port** 2**.**

**a. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

b. Configure the destination interface for mirroring as port 2.

```
SEFOS-1(config)# monitor session destination interface
extreme-ethernet 0/2
```

c. Configure the source interface for mirroring as port 1 and apply mirroring for incoming packets.

```
SEFOS-1(config)# monitor session source interface extreme-ethernet
0/1 rx
```

d. Exit Global Configuration mode.

```
SEFOS-1(config-if)# end
```

e. View the configuration details.

```
SEFOS-1# show port-monitoring

Port Monitoring  is enabled
Monitor Port : Ex0/2

Port          Ingress-Monitoring     Egress-Monitoring
----          ------------------     -----------------
Ex0/1         Enabled                Disabled
...
```

5. Ping 12.0.0.100 and verify that the ICMP reply was received at port 2.

```
SEFOS-1# ping 12.0.0.100
```

6. Verify that the ping reply from host A to the SEFOS-1 switch is captured at host B or using the packet-capturing device, such as IXIA or SmartBits.

```
# tcpdump -xx -n -i eth3 icmp
...
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
...
0x0010:  003c 68e6 4000 ff01 fa75 0c00 0064 0c00
```

```
17:09:58.617899 IP 12.0.0.100 > 12.0.0.1: ICMP echo reply, id 0, seq 2, length 40
...
0x0030:  a5a5 a5a5 a5a5 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
...
```

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Configure ACL Filters" on page 23
- "Configure QoS" on page 26
- "Configure Rate Limiting" on page 31

# ▼ Configure 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, the packet gets dropped. The following example illustrates the configuration for limiting a multicast traffic at port 1 to a rate of 50 packets per second.

See "Basic SEFOS Topology" on page 13 for the topology for this task. Port 1 and port 2 are connected to IXIA/Smartbits 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. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Type the following commands in the switch to enable port 1 and port 2.**

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

3. **Set the rate limit to 50 packets per second.**

   a. **Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**b. Enter Interface Configuration mode.**

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

**c. Set the rate limit to 50 packets per second.**

```
SEFOS-1(config-if)# storm-control multicast level 50
```

**d. Exit Global Configuration mode.**

```
SEFOS-1(config-if)# end
```

**4. View the configuration details.**

```
SEFOS-1# show interface extreme-ethernet 0/1 storm-control
...
Multicast Storm Control    : 50
```

**5. View the functionality by generating a multicast packet from IXIA at the rate of 1 Mbps to port 1.**

The packets received at the second port of IXIA are at the rate of 50 packets per second only.

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Configure ACL Filters" on page 23
- "Configure QoS" on page 26
- "Configure Port Mirroring" on page 29

# Configuring Save Parameters

These topics describe how to enable and disable save flags.

- "Enable or Disable the Incremental Save Flag" on page 33
- "Enable or Disable the Auto Save Flag" on page 33

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Managing Configuration Files" on page 34

## ▼ Enable or Disable the Incremental Save Flag

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

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**3. Enable or disable the incremental save flag on the switch.**

```
SEFOS-1(config)# incremental-save state
```

where *state* is enable or disable.

**4. Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

**Related Information**

■ "Enable or Disable the Auto Save Flag" on page 33

## ▼ Enable or Disable the Auto Save Flag

This task describes how to enable updates of the runtime configuration in the configuration file.

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Enter Global Configuration mode.**

```
SEFOS-1# configure terminal
```

**3. Enable the auto save flag on the switch.**

```
SEFOS-1(config)# auto-save trigger state
```

where *state* is enable or disable.

4. **Exit Global Configuration mode.**

```
SEFOS-1(config)# end
```

**Related Information**

■ "Enable or Disable the Incremental Save Flag" on page 33

# Managing Configuration Files

These topics describe how to manage configuration files.

■ "Save the Configuration to a File" on page 34
■ "Erase a Configuration File" on page 35
■ "Copy a Configuration File to a Remote Location" on page 36
■ "Copy a Configuration File From a Remote Location to Flash" on page 37
■ "Copy a Configuration File From One Remote Location or Flash to Another Remote Location or Flash" on page 38

**Related Information**

■ "SEFOS Setup Tasks" on page 11
■ "Understanding SEFOS Basics" on page 12
■ "Configuring the SEFOS Environment" on page 16
■ "Managing Log Files" on page 38

# ▼ Save the Configuration to a File

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

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

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

```
SEFOS-1# write startup-config
```

3. **View the current restoration settings.**

```
SEFOS-1# show nvram
...
Config Restore Option                 : Restore
Config Save Option                    : Startup save
...
```

4. **View the restoration status.**

```
SEFOS-1# show system information
...
Config Restore Status          : Not Initiated
```

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

   If you do not want to reboot the switch at this time, you do not have to complete the last step in this task.

6. **View the restoration status after rebooting the switch.**

   The Config Restore Status shows Successful after the reboot.

```
SEFOS-1# show  system information
...
Config Restore Status          : Successful
```

### Related Information

# ▼ Erase a Configuration File

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

1. **Connect to SEFOS.**

2. **Erase the saved configuration file.**

```
SEFOS-1# erase startup-config
```

3. **View the erase status settings.**

```
SEFOS-1# show nvram
...
Config Restore Option                       : No restore
Config Save Option                          : No save
Auto Save                                   : Disable
...
Config Save Filename                        : switch.conf
Config Restore Filename                     : switch.conf
...
```

The switch starts with the default configurations when you reboot the switch.

### Related Information

- "Configure the Name of the Configuration File" on page 19
- "Configuring Save Parameters" on page 32
- "Save the Configuration to a File" on page 34
- "Copy a Configuration File to a Remote Location" on page 36
- "Copy a Configuration File From a Remote Location to Flash" on page 37
- "Copy a Configuration File From One Remote Location or Flash to Another Remote Location or Flash" on page 38

# ▼ Copy a Configuration File to a Remote Location

This task describes how to save the initial configuration file to flash or to a remote location.

See "Basic SEFOS Topology" on page 13 for the topology for this task.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Ping host A from switch** `SEFOS-1`.

```
SEFOS-1# ping 12.0.0.100
```

**3. Save the configuration that is currently running to a file.**

```
SEFOS-1# write startup-config
```

**4. Copy the configuration file to host A, giving it the name** switch.conf_*date*.

```
SEFOS-1# copy startup-config tftp://12.0.0.100/switch.conf_date
SEFOS-1#
```

**Related Information**

- "Copy a Configuration File From a Remote Location to Flash" on page 37
- "Copy a Configuration File From One Remote Location or Flash to Another Remote Location or Flash" on page 38

# ▼ Copy a Configuration File From a Remote Location to Flash

This task 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. The remote location must be on a host connected to one of the 24 ports on the switch.

**1. Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

**2. Copy the startup configuration file** switch.conf **stored in the host** 12.0.0.100 **to the current path (**/conf/sefos**).**

```
SEFOS-1# copy tftp://12.0.0.100/switch.conf startup-config
SEFOS-1#
```

**Related Information**

- "Copy a Configuration File to a Remote Location" on page 36
- "Copy a Configuration File From One Remote Location or Flash to Another Remote Location or Flash" on page 38

## ▼ Copy a Configuration File From One Remote Location or Flash to Another Remote Location or Flash

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

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

```
SEFOS-1# copy tftp://12.0.0.100/script.txt  flash:script.txt
Copied tftp://12.0.0.100/script.txt ==> flash:script.txt
SEFOS-1#
```

**Related Information**

- "Copy a Configuration File to a Remote Location" on page 36
- "Copy a Configuration File From a Remote Location to Flash" on page 37

# Managing Log Files

These topics describe how to manage log files.

- "View a System Log" on page 38
- "Copy a System Log to a Remote Location" on page 39
- "View Debug Logs" on page 40

**Related Information**

- "SEFOS Setup Tasks" on page 11
- "Understanding SEFOS Basics" on page 12
- "Configuring the SEFOS Environment" on page 16
- "Managing Configuration Files" on page 34

## ▼ View a System Log

System logs are generated automatically.

- **Type.**

```
SEFOS-1# show /SP/logs/event/list
...
```

**Related Information**

- "Copy a System Log to a Remote Location" on page 39
- "View Debug Logs" on page 40

# ▼ Copy a System Log to a Remote Location

This task describes how to write the system logs to a remote location. The remote location must be a host on one of the 24 ports on the switch.

In this task, you first execute several commands to customize system logs. You also clear the system buffers so that the log file can be copied over to the remote site.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Save the log file to the remote location** `12.0.0.100`.

```
SEFOS# debug npapi transmission
SEFOS# show debug-logging
...
SEFOS# configure terminal
SEFOS(config)# clear logs
SEFOS(config)# end
SEFOS#
SEFOS-1# copy logs tftp://12.0.0.100/logfile
% Log Upload Successful
SEFOS#
SEFOS# no debug npapi transmission
SEFOS#
SEFOS# show debugging
```

**Note –** Ensure that you type the `no debug npapi transmission` command as shown so that the debugging function is disabled.

**Related Information**

- "View a System Log" on page 38
- "View Debug Logs" on page 40

# ▼ View Debug Logs

**1. Connect to SEFOS.**

See "Connect to SEFOS" on page 14.

**2. Enable the debug trace for any of the modules, such as the PNAC module.**

```
SEFOS-1# debug dot1x all
SEFOS-1# show debugging

DOT1x :

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

**3. View the debug logs in the file.**

```
SEFOS-1# show debug-logging
...
```

**4. Disable the PNAC module debug trace.**

```
SEFOS-1# no debug dot1x all
```

**Related Information**

- "View a System Log" on page 38
- "Copy a System Log to a Remote Location" on page 39

# Configuring the Switching Feature

These topics describe how to configure the layer 2 switching feature using SEFOS. Review and perform these topics in order.

**Related Information**

# Switching Feature Topology

**Note –** All ports in this topology are in VLAN 101.
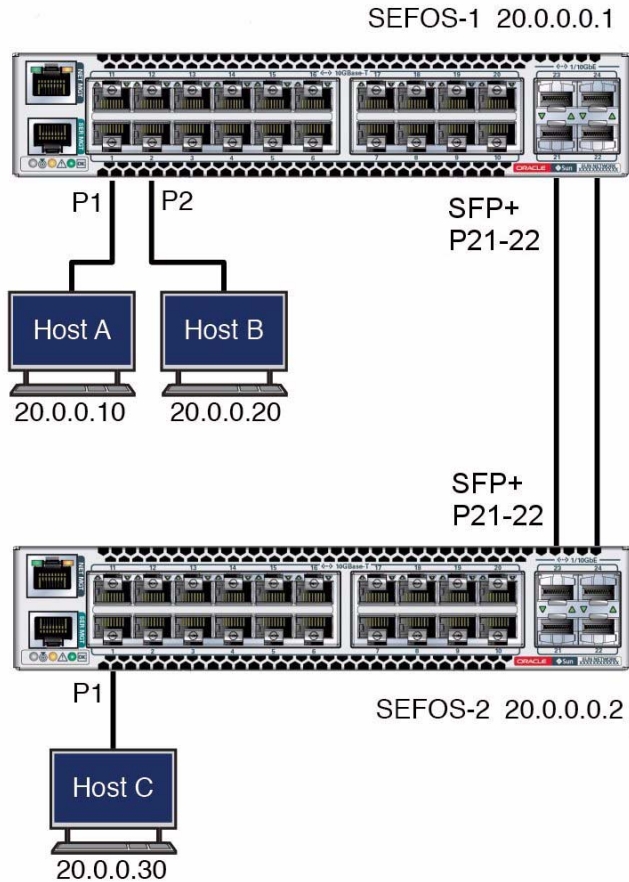
SEFOS-1 20.0.0.0.1

P1  P2

SFP+
P21-22

Host A    Host B

20.0.0.10  20.0.0.20

SFP+
P21-22

SEFOS-2 20.0.0.0.2

P1

Host C

20.0.0.30

**Related Information**

- "Configure Initial Settings" on page 43
- "Configure VLAN Forwarding" on page 46
- "Configure RSTP" on page 48
- "Configure LA" on page 51
- "Save a Configuration" on page 54

# ▼ Configure Initial Settings

1. **Verify the connections between the switches and hosts.**

   See "Switching Feature Topology" on page 41.

   a. **For the** `SEFOS-1` **switch, verify:**
      - **Port 1** – Connected to host server A (IP address `20.0.0.10`)
      - **Port 2** – Connected to host server B (IP address `20.0.0.20`)
      - **Ports 21-22** – Connected to ports 21-22 on the `SEFOS-2` switch

   b. **For the** `SEFOS-2` **switch, verify that port 1 is connected to host server C (IP address** `20.0.0.30`**).**

2. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

3. **Create a VLAN and add the host ports as member ports of the VLAN.**

   ```
   SEFOS-1# configure terminal
   SEFOS-1(config)# vlan 101
   SEFOS-1(config-vlan)# ports extreme-ethernet 0/1-2 untagged
   extreme-ethernet 0/1-2
   SEFOS-1(config-vlan)# vlan active
   SEFOS-1(config-vlan)# exit
   ```

4. **Bring up the interfaces on which the hosts are connected.**

   ```
   SEFOS-1# configure terminal
   SEFOS-1(config)# interface range extreme-ethernet 0/1-2
   SEFOS-1(config-if-range)# switchport pvid 101
   SEFOS-1(config-if-range)# no shutdown
   SEFOS-1(config-if-range)# exit
   ```

5. **Configure the IP address on** `VLAN 101` **and bring up the interface.**

   ```
   SEFOS-1# configure terminal
   SEFOS-1(config-int)# interface vlan 101
   SEFOS-1(config-int)# ip address 20.0.0.1 255.0.0.0
   SEFOS-1(config-int)# no shutdown
   SEFOS-1(config-int)# exit
   ```

6. **Verify that the** `VLAN 101` **interface is up.**

```
SEFOS-1# show ip interface
vlan1 is down, line protocol is down
Internet Address is 10.0.0.1/8
Broadcast Address 10.255.255.255

vlan101 is up, line protocol is up
Internet Address is 20.0.0.1/8
Broadcast Address 10.255.255.255
```

7. **Check the status of the interfaces.**

```
SEFOS-1# show interface status
Port Status Duplex Speed Negotiation
---- ------ ------ ----- -----------
Ex0/1 connected Full 10 Gbps Auto-Negotiation
Ex0/2 connected Full 10 Gbps Auto-Negotiation
...
Ex0/4 not connected Full 10 Gbps Auto-Negotiation
SEFOS-1# show interface description
Interface Status Protocol
--------- ------ --------
Ex0/1     up     up
Ex0/2     up     up
Ex0/3     down   down
Ex0/4     down   down
...
vlan101 up up
```

8. **Ping host A (**`20.0.0.10`**) from the** `SEFOS-1` **switch.**

   The ping should be successful.

9. **Check the MAC address entry.**

```
SEFOS-1# show mac-address-table

Vlan     Mac Address          Type     Ports
----     -----------          ----     -----
101      00:14:4f:6c:7d:e9    Learnt   Ex0/1

Total Mac Addresses displayed: 1
```

---

**Note –** The MAC address displayed must correspond to the MAC address of host A.

---

10. **Repeat** **through** **on the** `SEFOS-2` **switch to bring up the required ports and configure the IP address of** `VLAN 101` **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-1# configure terminal
SEFOS-1(config)# interface range ex 0/21-22
SEFOS-1(config-if-range)# switchport pvid 101
SEFOS-1(config-if-range)# no shutdown
SEFOS-1(config-if-range)# end
```

    In both switches, ensure that the following interfaces are up: `0/1`, `0/2`, `0/21`, `0/22`.

    **Related Information**

    - "Switching Feature Topology" on page 41
    - "Verify the Configuration" on page 45
    - "Configure VLAN Forwarding" on page 46
    - "Configure RSTP" on page 48
    - "Configure LA" on page 51
    - "Save a Configuration" on page 54

# ▼ Verify the Configuration

1. **From host A, ping the** `SEFOS-1` **switch.**

```
# ping 20.0.0.1
20.0.0.1 is alive
```

2. **From host B, ping the** `SEFOS-1` **switch.**

```
# ping 20.0.0.1
```

3. **From the** `SEFOS-1` **switch, ping host A.**

```
SEFOS-1# ping 20.0.0.10
```

4. **From the** SEFOS-1 **switch, ping host B.**

```
SEFOS-1# ping 20.0.0.20
```

5. **From host C, ping the** SEFOS-2 **switch (**20.0.0.2**).**

```
SEFOS-1# ping 20.0.0.30
```

6. **For the port connected to the switch, use a packet-capture device or dumping utility to capture packets on host A, B, and C.**

   All three hosts should receive STP, GMRP, and GVRP packets continuously, unless these protocols were disabled with SEFOS commands. By default, all the ports on a target are members of default VLAN 1.

### Related Information
- "Configure Initial Settings" on page 43
- "Verify VLAN Membership" on page 47

## ▼ Configure VLAN Forwarding

This task describes how to configure and test the VLAN forwarding feature of SEFOS running on a switch target. This task tests whether the incoming packets are properly switched on the member ports of the VLAN.

See "Switching Feature Topology" on page 41 for the topology of this task.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Change the member ports on the** SEFOS-1 **switch.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# vlan 101
SEFOS-1(config-vlan)# ports extreme-ethernet 0/1-2,0/21-22
untagged extreme-ethernet 0/1-2,0/21-22
SEFOS-1(config-vlan)# vlan active
SEFOS-1(config-vlan)# exit
```

### Related Information
- "Configure the Default VLAN ID" on page 20

# ▼ Verify VLAN Membership

This task tests whether the incoming packets are properly switched on the member ports of the VLAN.

1. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

2. **Display the current VLAN interface.**

```
SEFOS-1# show vlan
Vlan database
-------------
Vlan ID          : 101
Member Ports : Ex0/1,Ex0/2,Ex/021,Ex0/22
Untagged Ports : Ex0/1,Ex0/2,Ex/021,Ex0/22
Forbidden Ports : None
Reflective-Relay : Disabled
Name :
Status : Other
```

3. **Ping from host A to host B.**

```
# ping -s 20.0.0.20
```

4. **Ping from host B to host A.**

```
# ping 20.0.0.10
```

5. **Change the member ports of** VLAN 101 **on** SEFOS-2 **switch.**

```
SEFOS-2# configure terminal
SEFOS-2(config)# vlan 101
SEFOS-1(config-vlan)# ports extreme-ethernet 0/1,0/21-22 untagged
extreme-ethernet 0/1,0/21-22
```

6. **Enable port 1, which is connected to host C.**

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

7. **Display the VLAN interface.**

```
SEFOS-2# show vlan
Vlan database
-------------
Vlan ID            : 101
Member Ports       : Ex0/1,Ex/021, Ex0/22
Untagged Ports     : Ex0/1,Ex/021, Ex0/22
Forbidden Ports    : None
Reflective-Relay   : Disabled
Name               :
Status             : Other
```

8. **Ping from host A to host B, or to host C.**

   The ping should be successful.

```
# ping -s 20.0.0.20
# ping -s 20.0.0.30
```

**Related Information**

- "Configure the Default VLAN ID" on page 20
- "Configure VLAN Forwarding" on page 46
- "Verify the Configuration" on page 45

# ▼ Configure RSTP

This task shows the traffic flow in the RSTP configuration on SEFOS running on the switch targets. This task verifies whether a loop is present in the topology, if it is detected, and if the traffic is blocked for the alternate port.

See "Switching Feature Topology" on page 41 for the topology of this task.

1. **Configure the initial settings.**

   See "Configure Initial Settings" on page 43.

2. **Configure VLAN forwarding in** `SEFOS-1` **and** `SEFOS-2`**.**

   See "Configure VLAN Forwarding" on page 46.

3. **On** `SEFOS-1`**, verify the port status in RSTP mode.**

```
SEFOS-1# show spanning-tree
Root Id          Priority   32768
                 Address    00:14:4f:6c:63:0f
                 Cost       0
                 Port       0 [0]
                 Max Age 20 Sec, Forward Delay 15 Sec

Spanning tree Protocol Enabled.
Bridge is executing the rstp compatible Rapid Spanning Tree Protocol
Bridge Id        Priority 32768
                   Address    00:14:4f:6c:63:0f
                   Cost       0
                   Port       0 [0]
                   Max Age 20 Sec, Forward Delay 15 Sec

Spanning tree Protocol Enabled.

Bridge is executing the rstp compatible Rapid Spanning Tree Protocol
Bridge Id          Priority 32768
                   Address 00:14:4f:6c:63:0f
                   Hello Time 2 sec, Max Age 20 sec, Forward Delay 15 sec
                   Dynamic Path Cost is Disabled
                   Dynamic Path Cost Lag-Speed Change is Disabled
Name             Role         State        Cost      Prio    Type
----             ----         -----        ----      ----    ----
Ex0/1            Designated   Forwarding   2000      128     P2P
Ex0/2            Designated   Forwarding   2000      128     P2P
Ex0/21           Designated   Forwarding   2000      128     P2P
Ex0/22           Designated   Forwarding   2000      128     P2P
...
```

4. **On** `SEFOS-2`**, verify the port status in RSTP mode.**

```
SEFOS-2# show spanning-tree
Root Id          Priority   32768
                 Address    00:14:4f:6c:63:0f
                 Cost       4000
                 Port       Ex0/1
                 Max Age 20 Sec, Forward Delay 15 Sec
```

```
Spanning tree Protocol Enabled.

Bridge is executing the rstp compatible Rapid Spanning Tree Protocol
Bridge Id       Priority 32768
                Address 00:14:4f:6c:6e:0e
                Hello Time 2 sec, Max Age 20 sec, Forward Delay 15 sec
                Dynamic Path Cost is Disabled
                Dynamic Path Cost Lag-Speed Change is Disabled
Name             Role          State        Cost     Prio   Type
----             ----          -----        ----     ----   ------
Ex0/1            Designated  Forwarding    2000      128  P2P
Ex0/21           root          Forwarding    2000      128  P2P
Ex0/22           Alternate    Discarding   2000      128 P2P
...
```

5. **Ping from host A to host C.**

```
# ping -s 20.0.0.30
```

   Traffic is forwarded through the extreme-ethernet 0/21 port on SEFOS-1 to
   SEFOS-2 port 21.

6. **Shut down the** extreme-ethernet 0/21 **port from** SEFOS-2 **and verify the
   port status.**

```
SEFOS-2# configure terminal
SEFOS-2(config)# int ext 0/21
SEFOS-2(config)# shut
SEFOS-2(config)# exit
SEFOS-2# show spanning-tree
Root Id          Priority   32768
                 Address    00:14:4f:6c:69:0f
                 Cost       4000
                 Port       Ex0/1
                 Max Age 20 Sec, Forward Delay 15 Sec

Spanning tree Protocol Enabled.

Bridge is executing the rstp compatible Rapid Spanning Tree Protocol
Bridge Id        Priority 32768
                 Address 00:14:4f:6c:6e:0e
                 Hello Time 2 sec, Max Age 20 sec, Forward Delay 15 sec
                 Dynamic Path Cost is Disabled
                 Dynamic Path Cost Lag-Speed Change is Disabled
Name             Role          State        Cost     Prio   Type
----             ----          -----        ----     ----   ------
```

```
Ex0/1           Designated   Forwarding   2000   128   P2P
Ex0/21          Disabled     Forwarding   2000   128   P2P
Ex0/22          root         Forwarding   2000   128   P2P
...
```

**7. Ping from host A to host C.**

```
# ping 20.0.0.30
```

Traffic should be forwarded through the extreme-ethernet 0/18 port on
SEFOS-1. If RSTP is working, there will be a change in the port state.

### Related Information

# ▼ Configure LA

This task describes how to configure and test the LA feature of SEFOS running on a
switch target.

See "Switching Feature Topology" on page 41 for the topology of this task.

**1. Configure the initial settings.**

See "Configure Initial Settings" on page 43.

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

```
SEFOS-1# configure terminal
SEFOS-1(config)# set port-channel enable
SEFOS-1(config)# interface port-channel 100
SEFOS-1(config-if)# no shutdown
SEFOS-1(config-if)# exit
SEFOS-1(config)# interface range extreme-ethernet 0/21-22
SEFOS-1(config-if)# no shutdown
SEFOS-1(config-if)# channel-group 100 mode active
SEFOS-1(config-if)# exit
```

```
SEFOS-1(config)# vlan 101
SEFOS-1(config-vlan)# ports extreme-ethernet 0/1-2 port-channel
100 untagged extreme-ethernet 0/1-2 port-channel 100
```

3. **Repeat** Step 2 **on** SEFOS-2.

4. **Verify the VLAN membership.**

```
SEFOS-1# show vlan
Vlan database
-------------
Vlan ID : 101
Member Ports : Ex0/1,Ex0/2,po100
Untagged Ports : Ex0/1,Ex0/2,po100
Forbidden Ports : None
Reflective-Relay : Disabled
Name :
Status : Other
```

5. **Verify the STP port status on** SEFOS-1.

```
SEFOS-1# show spanning-tree
Root Id          Priority   32768
                 Address    00:14:4f:6c:69:ee
                 Cost       0
                 Port       0 [0]
                 Max age 20 Sec, forward delay 15 Sec
                 Hello Time 2 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
                 Hello Time is 2 sec
                 Dynamic Path Cost is Disabled
                 Dynamic Path Cost Lag-Speed Change 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    2000       128   P2P
...
```

6. **Ping continuously from host A to host C.**

   There should not be any data loss during traffic forwarding.

7. **Verify the port channel summary.**

```
SEFOS-1# 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)
AD - Admin Down     AU - Admin Up
OD - Operative Down OU - Operative Up

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

Group  Port-channel        Protocol   Ports
------------------------------------------------------------------------
100    Po100(P)[AU,OD]      LACP       Ex0/21(P),Ex0/22(P)
...
```

8. **Shut down the port** `extreme-ethernet 0/21` **and verify the port channel summary.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# int ext 0/21
SEFOS-1(config-if)# shut
SEFOS-1(config-if)# end
SEFOS-1# 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)
AD - Admin Down      AU - Admin Up
OD - Operative Down  OU - Operative Up

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

Group   Port-channel          Protocol    Ports
------------------------------------------------------------------
100     Po100(P)[AU,OD]       LACP        Ex0/21(D),Ex0/22(P)
...
```

LA was configured properly if traffic flows through the port channel group.

**Related Information**

- "Configure Initial Settings" on page 43
- "Configure VLAN Forwarding" on page 46
- "Configure RSTP" on page 48
- "Save a Configuration" on page 54

# ▼ Save a Configuration

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

See "Switching Feature Topology" on page 41 for the topology of this task.

1. **Configure initial settings.**

   See "Configure Initial Settings" on page 43.

2. **Save the configurations for** SEFOS-1.

   ```
   SEFOS-1# write startup-config
   ```

   This process might take a few seconds. You see the message [OK] when the configurations have been successfully saved.

3. **Exit the SEFOS session.**

   ```
   SEFOS-1# exit
   Connection closed by foreign host.
   cd: The session with /TOR/fs_cli has ended.
   ```

4. **At the Oracle ILOM prompt, change directories to the /SP directory.**

   ```
   -> cd /SP
   ```

5. **Reset the service processor.**

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

6. **Log in to the Oracle ILOM CLI.**

   See "Log In to the Oracle ILOM CLI" on page 1.

7. **Connect to SEFOS.**

   See "Connect to SEFOS" on page 14.

8. **Verify the port channel summary.**

   ```
   SEFOS-1# 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)
   AD - Admin Down     AU - Admin Up
   ```

```
OD - Operative Down  OU - Operative Up

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

Group  Port-channel        Protocol  Ports
----------------------------------------------------------------
100    Po100(P)[AU,OD]     LACP      Ex0/21(D),Ex0/22(P)
...
```

**9. Repeat** Step 2 **through** Step 8 **for SEFOS-2.**

Once SEFOS-1 and SEFOS-2 are both restarted, SEFOS comes up with all the previous configurations.

**Related Information**

- "Managing Configuration Files" on page 34
- "Configure Initial Settings" on page 43
- "Configure VLAN Forwarding" on page 46
- "Configure RSTP" on page 48
- "Configure LA" on page 51

# Configuring the Routing Feature

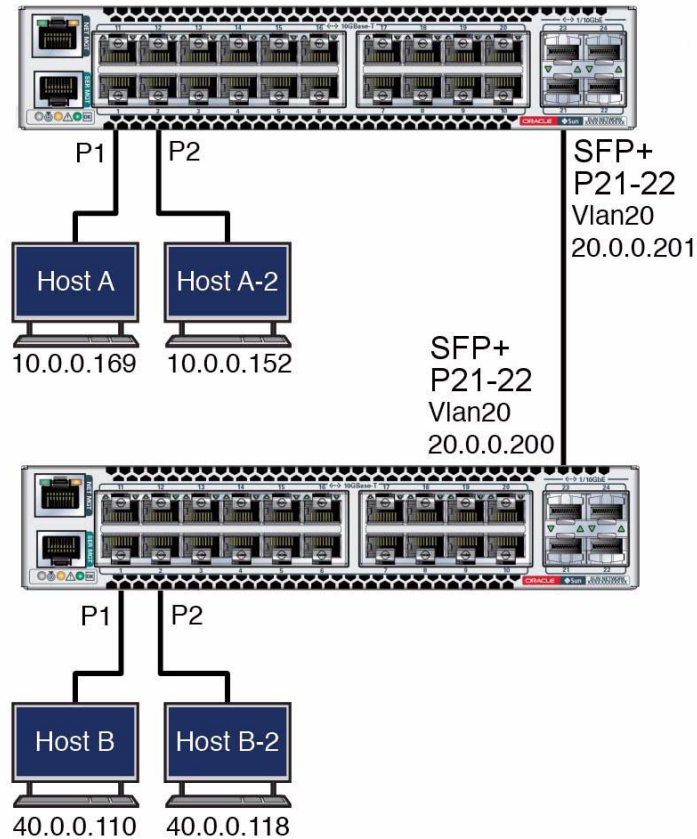These topics describe how to configure the routing feature with SEFOS and blade servers.

**Related Information**

# Routing Feature Topology



| Switch or Host Name | VLAN ID | IP Address |
|---|---|---|
| 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 | 10.0.0.152 |
| SEFOS-2 | VLAN 20 | 20.0.0.200 |
| | VLAN 40 | 40.0.0.200 |

| Switch or Host Name | VLAN ID | IP Address |
|---|---|---|
| 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` |

### Related Information

- "Configuring Static Routing" on page 59
- "Configuring Dynamic Routing" on page 65
- "Disabling Routing" on page 70

# Configuring Static Routing

These tasks describe how to configure static routing.

- "Configure Static Unicast Route Entries" on page 59
- "Add Static Routes" on page 64

### Related Information

- "Routing Feature Topology" on page 58
- "Configuring Dynamic Routing" on page 65
- "Disabling Routing" on page 70

## ▼ Configure Static Unicast Route Entries

This task configures the static route entries in SEFOS and verifies that traffic is reachable across networks.

**Note –** Before performing this task, erase any previous configurations on the switches.

See "Routing Feature Topology" on page 58 for the topology of this task.

**1. Configure the initial settings.**

See "Configure Initial Settings" on page 43.

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

```
SEFOS-1# configure terminal
SEFOS-1(config)# set gvrp disable
SEFOS-1(config)# set gmrp disable
SEFOS-1(config)# end
SEFOS-1# 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
```

The set gvrp disable and set gmrp disable commands disable these protocols. The show vlan device info command shows the VLAN configuration information.

**3. Configure SEFOS-1.**

See "Routing Feature Topology" on page 58.

**a. Remove the IP address of VLAN 1.**

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

The default IP address of VLAN 1 is 10.0.0.1, and the IP address of VLAN 10 is 10.0.0.201. So you must remove the IP address of VLAN 1 before you can add the IP address for VLAN 10.

**b. Ping host A from** SEFOS-1.

```
SEFOS-1# ping 10.0.0.169
```

**c. Ping host A-2 from** SEFOS-1.

```
SEFOS-1# ping 10.0.0.152
```

**d. 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.**

   See "Routing Feature Topology" on page 58.

```
SEFOS-2# configure terminal
SEFOS-2(config)# interface vlan 1
SEFOS-2(config-if)# no ip address
SEFOS-2(config-if)# exit
SEFOS-2(config)# vlan 40
SEFOS-2(config-vlan)# exit
SEFOS-2(config)# interface range extreme-ethernet 0/1-2
SEFOS-2(config-if-range)# shutdown
SEFOS-2(config-if-range)# switchport access vlan 40
SEFOS-2(config-if-range)# no shutdown
SEFOS-2(config-if-range)# exit
SEFOS-2(config)# interface vlan 40
SEFOS-2(config-if)# shutdown
SEFOS-2(config-if)# ip address 40.0.0.200 255.255.255.0
SEFOS-2(config-if)# no shutdown
SEFOS-2(config-if)# end
SEFOS-2#
```

5. **Ping host B and host B-2 from** SEFOS-2.

```
SEFOS-2# ping 40.0.0.110
SEFOS-2# ping 40.0.0.118
```

6. **Create** VLAN 20 **between the two switches.**

   Use ports 21 to 22 on both switches.

a. **Create** VLAN 20 **on** SEFOS-1, **ports** 21 **to** 22.

```
SEFOS-1# configure terminal
SEFOS-1(config)# interface range extreme-ethernet 0/21-22
SEFOS-1(config-if-range)# switchport access vlan 20
SEFOS-1(config-if-range)# no shutdown
SEFOS-1(config-if-range)# exit
SEFOS-1(config)# interface vlan 20
SEFOS-1(config-if)# shutdown
SEFOS-1(config-if)# ip address 20.0.0.201 255.255.255.0
SEFOS-1(config-if)# no shutdown
SEFOS-1(config-if)# end
SEFOS-1#
```

b. **Create** VLAN 20 **on** SEFOS-2, **ports** 21 **to** 22.

```
SEFOS-2# configure terminal
SEFOS-2(config)# interface range extreme-ethernet 0/21-22
SEFOS-2(config-if-range)# switchport access vlan 20
SEFOS-2(config-if-range)# no shutdown
SEFOS-2(config-if-range)# exit
SEFOS-2(config)# interface vlan 20
SEFOS-2(config-if)# shutdown
SEFOS-2(config-if)# ip address 20.0.0.200 255.255.255.0
SEFOS-2(config-if)# no shutdown
SEFOS-2(config-if)# end
SEFOS-2# ping 20.0.0.201
```

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

7. **Save the configuration.**

a. **On on** SEFOS-1, **type.**

```
SEFOS-1# write startup-config
Building configuration _
[OK]
```

b. **On** SEFOS-2, **type.**

```
SEFOS-2# write startup-config
Building configuration _
[OK]
```

Switches start with the saved configuration on reboot.

8. **Verify that the existing routes are available in** `SEFOS-1`.

   a. **On** `SEFOS-1`**, type.**

   ```
   SEFOS-1# 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-1#
   ```

   b. **On** `SEFOS-2`**, type.**

   ```
   SEFOS-2# 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-2#
   ```

   If there is no known route from `SEFOS-1` to host B, the ping from host A to host B fails.

9. **Configure the static route in the** `SEFOS-1`**, type.**

   ```
   SEFOS-1# configure terminal
   SEFOS-1(config)# ip route 40.0.0.0 255.255.255.0 20.0.0.200
   SEFOS-1(config)# end
   ```

10. **Configure the static route in** `SEFOS-2`**.**

   ```
   SEFOS-2# configure terminal
   SEFOS-2(config)# ip route 10.0.0.0 255.255.255.0 20.0.0.201
   SEFOS-2(config)# end
   ```

11. **Verify that the routes are known to** `SEFOS-1` **and** `SEFOS-2`**.**

   a. **On** `SEFOS-1`**, type.**

   ```
   SEFOS-1# 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
   ```

**b. On** `SEFOS-2`**, type.**

```
SEFOS-2# 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
```

**Related Information**

- "Add Static Routes" on page 64
- "Configure RIP Dynamic Routing" on page 66
- "Configure OSPF Dynamic Routing" on page 68
- "Remove Static Routes" on page 70

# ▼ Add Static Routes

Depending on how each server configures routes, you might need to add static routes with commands provided by the servers.

1. **On host A, add static routes to reach** `VLAN 40` **and** `VLAN 20` **configured on** `SEFOS-2`**.**

```
# 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
```

2. **On host B, add static routes to reach** `VLAN 10` **and** `VLAN 20` **configured on** `SEFOS-1`**.**

```
# 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
```

3. **Connect to SEFOS on** `SEFOS-1`**.**

   See "Connect to SEFOS" on page 14.

4. **Ping the** `SEFOS-2` `VLAN 40` **IP address from** `SEFOS-1`**.**

```
SEFOS-1# ping 40.0.0.200
```

5. **Ping host B** `VLAN 40` **IP address from** `SEFOS-1`**.**

```
SEFOS-1# ping 40.0.0.110
```

6. **Ping host B from host A.**

```
# ping -s 40.0.0.110
```

7. **Connect to SEFOS on** `SEFOS-2`.

   See "Connect to SEFOS" on page 14.

8. **Ping** `SEFOS-1 VLAN 10` **IP address from** `SEFOS-2`.

```
SEFOS-2# ping 10.0.0.201
```

9. **Ping the host A IP address from** `SEFOS-2`.

```
SEFOS-2# ping 10.0.0.169
```

10. **Ping host A from host B.**

```
# ping 10.0.0.169
```

To reach host A from host B, packets must be routed between VLAN 40–VLAN 20 and VLAN 20–VLAN 10. With static routes configured, you can now test the routing functions with SEFOS.

**Related Information**

- "Configure Static Unicast Route Entries" on page 59
- "Configure RIP Dynamic Routing" on page 66
- "Configure OSPF Dynamic Routing" on page 68
- "Remove Static Routes" on page 70

# Configuring Dynamic Routing

These tasks describe how to configure dynamic routing.

- "Configure RIP Dynamic Routing" on page 66
- "Configure OSPF Dynamic Routing" on page 68

**Related Information**

- "Routing Feature Topology" on page 58

# ▼ Configure RIP Dynamic Routing

This task configures dynamic routing with the redistribution feature of RIP in SEFOS. This task also verifies the accessibility of the two hosts by learning the routes dynamically through RIP.

See "Routing Feature Topology" on page 58 for the topology of this task.

1. **Verify that** SEFOS-1 **and** SEFOS-2 **still have the configuration information that you saved.**

   See "Configure Static Unicast Route Entries" on page 59.

   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 Step 1 through Step 6 in "Configure Static Unicast Route Entries" on page 59, then return here.

2. **Enable the RIP protocol on** SEFOS-1.

```
SEFOS-1# configure terminal
SEFOS-1(config)# router rip
SEFOS-1(config-router)# neighbor 20.0.0.200
SEFOS-1(config-router)# network 20.0.0.201
SEFOS-1(config-router)# network 10.0.0.201
SEFOS-1(config-router)# redistribute all
SEFOS-1(config-router)# end
```

3. **Enable the RIP protocol on** SEFOS-2.

```
SEFOS-2# configure terminal
SEFOS-2(config)# router rip
SEFOS-2(config-router)# neighbor 20.0.0.201
SEFOS-2(config-router)# network 20.0.0.200
SEFOS-2(config-router)# network 40.0.0.200
SEFOS-2(config-router)# redistribute all
SEFOS-2(config-router)# end
```

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

4. **Check the routing database on** SEFOS-1**.**

```
SEFOS-1# 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 [2] auto-summary
40.0.0.0/8 [2] via 20.0.0.200, vlan20
```

5. **Check the routing database on** SEFOS-2**.**

```
SEFOS-2# 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
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
```

6. **Ping the VLAN interface on** VLAN 10 **on** SEFOS-1 **from blade server B.**

```
# ping 10.0.0.201
```

7. **Ping blade server A from blade server B.**

```
# ping 10.0.0.169
```

8. **Ping blade server B from blade server A.**

```
# ping 40.0.0.110
```

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

### Related Information

- "Configure Static Unicast Route Entries" on page 59
- "Add Static Routes" on page 64
- "Configure OSPF Dynamic Routing" on page 68
- "Disable RIP Dynamic Routing" on page 71

# ▼ Configure OSPF Dynamic Routing

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

See "Routing Feature Topology" on page 58 for the topology of this task.

1. **Verify that** SEFOS-1 **and** SEFOS-2 **still have the configuration information that you saved.**

   See "Configure Static Unicast Route Entries" on page 59.

   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 Step 1 through Step 6 in "Configure Static Unicast Route Entries" on page 59.

   If SEFOS-1 or SEFOS-2 is a third-party switch, configure the basic VLAN and the dynamic routing as recommended by the switch's manufacturer.

2. **Enable OSPF on** SEFOS-1**.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# router ospf
SEFOS-1(config-router)# asBR router
SEFOS-1(config-router)# router-id 10.0.0.201
SEFOS-1(config-router)# network 20.0.0.201 area 0.0.0.0
SEFOS-1(config-router)# network 10.0.0.201 area 0.0.0.0
SEFOS-1(config-router)# redistribute all
SEFOS-1(config-router)# end
```

3. **Enable OSPF on** SEFOS-2**.**

```
SEFOS-2# configure terminal
SEFOS-2(config)# router ospf
SEFOS-2(config-router)# asBR router
SEFOS-2(config-router)# router-id 40.0.0.200
SEFOS-2(config-router)# network 20.0.0.200 area 0.0.0.0
SEFOS-2(config-router)# network 40.0.0.200 area 0.0.0.0
SEFOS-2(config-router)# redistribute all
SEFOS-2(config-router)# end
```

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.

4. **Check the neighbor router status of** `SEFOS-1`.

```
SEFOS-1# show ip ospf neighbor

Vrf default

Neighbor-IDPriStateDeadTimeAddress    Interface
------------------------------------------
40.0.0.2001FULL/DR  3920.0.0.200 vlan20
SEFOS-1# 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
```

5. **Verify the neighbor router status of** `SEFOS-2`.

```
SEFOS-2# show ip ospf neighbor

Vrf default
Neighbor-ID Pri State DeadTime Address Interface
----------- --- ----- -------- ------- ---------
SEFOS-2# show ip route
10.0.0.201 1 FULL/BACKUP 32 20.0.0.201 vlan20
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
```

If `SEFOS-2` is a third-party switch, use the appropriate command to verify the neighbor router status.

6. **Verify connectivity between** `SEFOS-1` **and** `SEFOS-2` **with the** `ping` **command.**

### Related Information

-
-
-
-

# Disabling Routing

These tasks describe how to disable static and dynamic routing features.

- "Remove Static Routes" on page 70
- "Disable RIP Dynamic Routing" on page 71
- "Disable OSPF Dynamic Routing" on page 71

**Related Information**

- "Routing Feature Topology" on page 58
- "Configuring Static Routing" on page 59
- "Configuring Dynamic Routing" on page 65

## ▼ Remove Static Routes

1. **Connect to SEFOS on** SEFOS-1.

   See "Connect to SEFOS" on page 14.

2. **Remove the static route on** SEFOS-1.

   ```
   SEFOS-1# configure terminal
   SEFOS-1(config)# no ip route 40.0.0.0 255.0.0.0 20.0.0.200
   SEFOS-1(config)# end
   ```

3. **Connect to SEFOS on** SEFOS-2.

   See "Connect to SEFOS" on page 14.

4. **Remove the static route on** SEFOS-2.

   ```
   SEFOS-2# configure terminal
   SEFOS-2(config)# no ip route 10.0.0.0 255.0.0.0 20.0.0.201
   SEFOS-2(config)# end
   ```

**Related Information**

- "Disable RIP Dynamic Routing" on page 71
- "Disable OSPF Dynamic Routing" on page 71
- "Configure Static Unicast Route Entries" on page 59
- "Add Static Routes" on page 64

# ▼ Disable RIP Dynamic Routing

**1. Connect to SEFOS on** `SEFOS-1`**.**

See "Connect to SEFOS" on page 14.

**2. Disable RIP on** `SEFOS-1`**.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# no router rip
SEFOS-1(config)# end
```

**3. Disable RIP on** `SEFOS-2`**.**

If `SEFOS-2` is a third-party switch, follow the instructions that came with the switch to disable RIP. Otherwise, follow Step 1 to disable RIP on `SEFOS-2`.

**Related Information**

- "Remove Static Routes" on page 70
- "Disable OSPF Dynamic Routing" on page 71
- "Configure RIP Dynamic Routing" on page 66

# ▼ Disable OSPF Dynamic Routing

**1. Connect to SEFOS on** `SEFOS-1`**.**

See "Connect to SEFOS" on page 14.

**2. Disable OSPF on** `SEFOS-1`**.**

```
SEFOS-1# configure terminal
SEFOS-1(config)# no router ospf
SEFOS-1(config)# end
```

**3. Disable OSPF on** `SEFOS-2`**.**

If `SEFOS-2` is a third-party switch, follow the instructions that came with the switch to disable OSPF. Otherwise, follow Step 1 to disable OSPF on `SEFOS-2`.

**Related Information**

- "Remove Static Routes" on page 70
- "Disable RIP Dynamic Routing" on page 71
- "Configure OSPF Dynamic Routing" on page 68

# Glossary

## 10

**10GbE**    10 Gigabit Ethernet.

## A

**ACL**    Access control list.

## G

**GMRP**    GARP Multicast Registration Protocol.

**GVRP**    GARP VLAN Registration Protocol.

## L

**LA**    Link aggregation.

# O

**Oracle ILOM**  Oracle Integrated Lights Out Manager. ILOM provides advanced server processor hardware and software to manage and monitor servers.

**OSPF**  Open Shortest Path First protocol.

# R

**RIP**  Routing Information Protocol.

**RSTP**  Rapid Spanning tree protocol.

# S

**SEFOS**  Sun Ethernet Fabric Operating System. A full-featured fabric and switch management software package for configuring and monitoring the switches network infrastructure.

**SEL**  System event log. The switch includes a number of replaceable component sensors that generate entries in the SEL when the sensor crosses a threshold. Many of these readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the switch.

**SFP+**  Small form-factor, pluggable. A transceiver module specification for several physical layer technologies. In this document, SFP+ refers to Gigabit Ethernet, or 10GE, modules.

**SR**  Short range. A short range SFP+ optical transceiver module.

**STP**  Spanning-Tree Protocol.

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