

# **Sun Ethernet Fabric Operating System**

## **RIP Administration Guide**



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# Using This Documentation

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As part of Oracle's Sun Ethernet Fabric Operating System (SEFOS), RIP software is a portable implementation of the industry standard routing protocol. This document describes RIP topologies and how to configure RIP software.

- "Product Notes" on page 1
- "Related Documentation" on page 2
- "Acronyms and Abbreviations" on page 2
- "CLI Command Modes" on page 3
- "Feedback" on page 3
- "Support and Accessibility" on page 4

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## Product Notes

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

Sun Blade 6000 Ethernet Switched NEM 24p 10GbE:

<http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE>

Sun Network 10GbE Switch 72p:

<http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p>

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## Related Documentation

Documentation	Links
All Oracle products	<a href="http://oracle.com/documentation">http://oracle.com/documentation</a>
Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	<a href="http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE">http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE</a>
Sun Network 10GbE Switch 72p	<a href="http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p">http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p</a>
Sun Blade 6000 modular system	<a href="http://www.oracle.com/pls/topic/lookup?ctx=sb6000">http://www.oracle.com/pls/topic/lookup?ctx=sb6000</a>
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom30">http://www.oracle.com/pls/topic/lookup?ctx=ilom30</a>

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

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## Acronyms and Abbreviations

Acronym or Abbreviation	Explanation
CLI	Command-line interface
IETF	Internet Engineering Task Force
IGP	Internet Gateway Protocol
Oracle ILOM	Oracle Integrated Lights Out Management
LAN	Local area network
NEM	Network express module
RIP	Routing Information Protocol
SEFOS	Sun Ethernet Fabric Operating System



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# CLI Command Modes

The following 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 <code>logout</code> or <code>exit</code> 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 <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the <code>enable</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the <code>interface interface-type interface-id</code> command.	SEFOS(config-if)#	Use the <code>exit</code> command to return to Global Configuration mode, or use the <code>end</code> command to return to Privileged EXEC mode.

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## Feedback

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>

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# Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	<a href="http://support.oracle.com">http://support.oracle.com</a>
Learn about Oracle's commitment to accessibility	For hearing impaired:
	<a href="http://www.oracle.com/accessibility/support.html">http://www.oracle.com/accessibility/support.html</a>
	<a href="http://www.oracle.com/us/corporate/accessibility/index.html">http://www.oracle.com/us/corporate/accessibility/index.html</a>

# RIP Overview

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This section describes the RIP protocol and how to configure the example topology:

- [“Protocol Description” on page 5](#)
- [“Configuring the RIP Topology Example” on page 5](#)

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## Protocol Description

RIP is a widely-used protocol for managing router information within a self-contained network such as a corporate local area network or an interconnected group of such LANs. RIP is classified by the IETF as one of several IGPs.

RIP sends routing-update messages at regular intervals and when the network topology changes. When a router receives a routing update that includes changes to an entry, the router updates its routing table to reflect the new route. The metric value for the path is increased by 1, and the sender is indicated as the next hop. RIP routers maintain only the best route (the route with the lowest metric value) to a destination. After updating its routing table, the router immediately begins transmitting routing updates to inform other network routers of the change. These updates are sent independently of the regularly scheduled updates that RIP routers send. RIP uses a hop count as a way to determine network distance.

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## Configuring the RIP Topology Example

This section describes two RIP topology examples. These configurations are examples only. Variables such as interfaces, IP addresses, and other ID numbers might be different based on your site configuration. However, before you can configure the RIP software in your environment, you must perform the basic configuration steps that are described in these sections, as they apply to your environment.

- [“RIP Topology 1” on page 6](#)

- “RIP Topology 2” on page 6
- “Configure Switch 1” on page 6
- “Configure Switch 2” on page 7
- “Configure Switch 3” on page 8

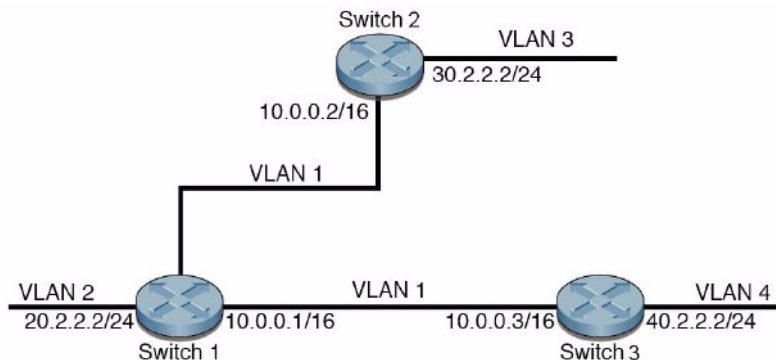
## RIP Topology 1

This illustration shows one RIP topology in which two switches are connected over a common interface and share VLAN 1. Switch 1 also has VLAN 2 and VLAN 5 configured, and switch 2 has VLAN 3 and VLAN 5 configured.



## RIP Topology 2

This illustration shows a second RIP topology in which all three switches are connected over a common interface in VLAN 1. Switch 1 also has VLAN 2 configured. Switch 3 has VLAN 3 configured, and switch 2 has VLAN 4 configured.



## ▼ Configure Switch 1

Use the following commands to configure VLAN 1 and VLAN 2 on switch 1 in the example topologies.

- **Configure switch 1.**

```
SEFOS# configure terminal
SEFOS(config)# set gvrp disable
SEFOS(config)# set gmrp disable
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 10.0.0.1 255.255.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ports extreme-ethernet 0/1 untagged
extreme-ethernet 0/1
SEFOS(config-vlan)# exit
SEFOS(config)# interface vlan 2
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 20.2.2.2 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 2
SEFOS(config-vlan)# ports extreme-ethernet 0/2 untagged
extreme-ethernet 0/2
SEFOS(config-vlan)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# switchport pvid 2

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

## ▼ **Configure Switch 2**

Use the following commands to configure VLAN 1 and VLAN 3 on switch 2 in the example topologies.

- **Configure switch 2.**

```
SEFOS# configure terminal
SEFOS(config)# set gvrp disable
SEFOS(config)# set gmrp disable
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 10.0.0.2 255.255.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 1
```

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1 untagged
extreme-ethernet 0/1
SEFOS(config-vlan)# exit
SEFOS(config)# interface vlan 3
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 30.2.2.2 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 3
SEFOS(config-vlan)# ports extreme-ethernet 0/3 untagged
extreme-ethernet 0/3
SEFOS(config-vlan)# exit
SEFOS(config)# interface extreme-ethernet 0/3
SEFOS(config-if)# switchport pvid 3

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

## ▼ Configure Switch 3

Use the following commands to configure VLAN 1 and VLAN 4 on switch 3 in the example topologies.

- Configure switch 3.

```
SEFOS# configure terminal
SEFOS(config)# set gvrp disable
SEFOS(config)# set gmrp disable
SEFOS(config)# interface vlan 1
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 10.0.0.3 255.255.0.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 1
SEFOS(config-vlan)# ports extreme-ethernet 0/1 untagged
extreme-ethernet 0/1
SEFOS(config-vlan)# exit
SEFOS(config)# interface vlan 4
SEFOS(config-if)# shutdown
SEFOS(config-if)# ip address 40.2.2.2 255.255.255.0
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# vlan 4
SEFOS(config-vlan)# ports extreme-ethernet 0/4 untagged
extreme-ethernet 0/4
SEFOS(config-vlan)# exit
```

```
SEFOS(config)# interface extreme-ethernet 0/4  
SEFOS(config-if)# switchport pvid 4  
  
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```





# General Configurations

---

This section contains procedures for configuring RIP in SEFOS. See [“Configuring the RIP Topology Example” on page 5](#) for descriptions of the topologies that are referenced in the procedures. Before you can configure RIP, you must configure the switches in your environment. To configure switch 1, see [“Configure Switch 1” on page 6](#). To configure switch 2, see [“Configure Switch 2” on page 7](#), and to configure switch 3, see [“Configure Switch 3” on page 8](#). RIP is disabled by default.

- [“Managing RIP” on page 11](#)
- [“Configuring RIP Security” on page 13](#)
- [“Configuring the RIP Packet Retransmission Interval and Retry Count” on page 14](#)
- [“Configuring RIP Neighbors” on page 17](#)
- [“Configuring the RIP Passive Interface” on page 18](#)
- [“Configuring the Output Delay” on page 20](#)
- [“Configuring Redistribution” on page 22](#)
- [“Configuring the Default Metric” on page 26](#)
- [“Managing the auto-summary Option” on page 29](#)
- [“Configuring Interface-Specific RIP Parameters” on page 32](#)
- [“Configuring the Debug Level for RIP” on page 45](#)

---

## Managing RIP

Before you can enable RIP, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Enable RIP” on page 12](#)
- [“Disable RIP” on page 12](#)
- [“Enabling RIP on an IP Network” on page 12](#)

## ▼ Enable RIP

1. On the switch, enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Enable RIP.

```
SEFOS(config)# router rip  
SEFOS(config-router)# exit
```

## ▼ Disable RIP

1. On the switch, enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Disable RIP.

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

## ▼ Enabling RIP on an IP Network

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. On switch 1, enable RIP for the VLAN 1 interface.

```
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

3. Review the RIP interface.

```
SEFOS# show ip rip statistics
```

```
RIP Global Statistics:  
-----
```

Total number of route changes is 0					
Total number of queries responded is 0					
Total number of dropped packets is 0					
RIP Interface Statistics:					
-----					
Interface	Periodic	BadRoutes	Triggered	BadPackets	
Admin					
IP Address	Updates Sent	Received	Updates Sent	Received	
Status					
-----	-----	-----	-----	-----	
-----					
10.0.0.1	11	0	0	0	Enabled

4. Review the RIP route.

SEFOS# <b>show ip rip database</b>	
10.0.0.0/8[1]	summary route
10.0.0.0/16	directly connected, vlan1

# Configuring RIP Security

By default, RIP security is disabled. Before you can enable RIP security, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Enable RIP Security” on page 13](#)
- [“Disable RIP Security” on page 14](#)

## ▼ Enable RIP Security

1. Enter the configuration mode for the router.

SEFOS# <b>configure terminal</b>	
SEFOS(config)#	<b>router rip</b>

## 2. Enable RIP security in switch 1.

```
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# ip rip security minimum  
SEFOS(config-router)# exit
```

## ▼ Disable RIP Security

### 1. Enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip
```

### 2. Disable RIP security.

```
SEFOS(config-router)# no ip rip security  
SEFOS(config-router)# exit
```

---

# Configuring the RIP Packet Retransmission Interval and Retry Count

Before you can configure the retransmission level or retry count, you must configure your environment. The procedures in this section are based on “RIP Topology 1” on page 6. For instructions on how to configure switch 1, see “Configure Switch 1” on page 6. For instructions on how to configure switch 2, see “Configure Switch 2” on page 7.

- “Set the RIP Packet Retransmission Interval and Retry Count” on page 15
- “Reset the Retransmission Interval and Retry Count” on page 16

## ▼ Set the RIP Packet Retransmission Interval and Retry Count

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Set the retransmission interval (10 seconds in this example).

```
SEFOS(config-router)# ip rip retransmission interval 10
```

3. Set the retry count (20 in this example).

```
SEFOS(config-router)# ip rip retransmission retries 20
```

4. Review the configuration information.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Minimum  
  Redistributing : rip  
  Output Delay is disabled  
  Retransmission timeout interval is 10 seconds  
  Number of retransmission retries is 20  
  Default metric is 3  
  Auto-Summarisation of routes is enabled  
  Routing for Networks :  
    10.0.0.0  
  Routing Information Sources :  
  Interface Specific Address Summarization :  
  Trusted Neighbors :  
  Interface vlan1  
    Sending updates every 30 seconds  
    Invalid after 180 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon with poisoned reverse is enabled  
    Restricts default route installation  
    Restricts default route origination
```

## ▼ Reset the Retransmission Interval and Retry Count

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Reset the retransmission interval and retry count.

```
SEFOS(config-router)# no ip rip retransmission interval  
SEFOS(config-router)# no ip rip retransmission retries  
SEFOS(config-router)# end
```

3. Review the configuration information.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Maximum  
  Redistributing : rip  
  Output Delay is disabled  
  Retransmission timeout interval is 5 seconds  
  Number of retransmission retries is 36  
  Default metric is 3  
  Auto-Summarisation of routes is enabled  
  Routing for Networks :  
    10.0.0.0  
  Routing Information Sources :  
  Interface Specific Address Summarization :  
  Trusted Neighbors :  
  Interface vlan1  
    Sending updates every 30 seconds  
    Invalid after 180 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon with poisoned reverse is enabled  
    Restricts default route installation  
    Restricts default route origination
```

---

# Configuring RIP Neighbors

Before you can enable RIP neighbors, you must configure your environment. The procedures in this section are based on [“RIP Topology 2” on page 6](#). For instructions on how to configure switch 1, see page 8. For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#). For instructions on how to configure switch 3, see [“Configure Switch 3” on page 8](#).

- [“Add a RIP Neighbor” on page 17](#)
- [“Remove a RIP Neighbor” on page 17](#)

## ▼ Add a RIP Neighbor

In this example, switch 2 is added to switch 1.

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Add the switch 2 as a neighbor.

```
SEFOS(config-router)# neighbor 10.0.0.2  
SEFOS(config-router)# end
```

In switch 1, you should be able to view only the routes that are sent as RIP updates from the neighbor router (switch 2 at 10.0.0.2).

## ▼ Remove a RIP Neighbor

In this example, switch 2 is removed from switch 1.

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

## 2. Delete the configured RIP neighbor.

```
SEFOS(config-router)# no neighbor 10.0.0.2  
SEFOS(config-router)# end
```

In switch 1, you should be able to view the routes that are sent as RIP updates from both of the neighbor routers (switch 2 at 10.0.0.2 and switch 3 at 10.0.0.3).

---

# Configuring the RIP Passive Interface

Before you can configure the passive interface, you must configure your environment. The procedures in this section are based on “RIP Topology 1” on page 6. For instructions on how to configure switch 1, see “Configure Switch 1” on page 6. For instructions on how to configure switch 2, see “Configure Switch 2” on page 7.

- “Enable the RIP Passive Interface” on page 18
- “Disable the RIP Passive Interface” on page 19

## ▼ Enable the RIP Passive Interface

### 1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

### 2. Enable the passive interface for VLAN 1.

```
SEFOS(config-router)# passive-interface vlan 1  
SEFOS(config-router)# exit
```



### 3. Review the passive interface configuration information.

```
SEFOS# show ip rip statistics

RIP Global Statistics:
-----
Total number of route changes is 0
Total number of queries responded is 0
Total number of dropped packets is 0

RIP Interface Statistics:
-----
Interface      Periodic      BadRoutes      Triggered      BadPackets
Admin
IP Address     Updates Sent  Received       Updates Sent    Received
Status

-----
-----
10.0.0.1        0             0              0              0              Passive
```

No routing updates are sent over the passive interface (VLAN 1).

## ▼ Disable the RIP Passive Interface

### 1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
```

### 2. Disable the passive interface status for VLAN 1.

```
SEFOS(config-router)# no passive-interface vlan 1
SEFOS(config-router)# exit
```

### 3. Review the RIP interface for the periodic updates sent over the interface.

```
SEFOS# show ip rip statistics

RIP Global Statistics:
-----
Total number of route changes is 0
Total number of queries responded is 0
```

Total number of dropped packets is 0				
RIP Interface Statistics:				
-----				
Interface	Periodic	BadRoutes	Triggered	BadPackets
Admin				
IP Address	Updates Sent	Received	Updates Sent	Received
Status				
-----	-----	-----	-----	-----
-----				
10.0.0.1	1	0	0	0
				Enabled

## Configuring the Output Delay

Before you can configure the output delay, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Enable the Output Delay” on page 20](#)
- [“Disable the Output Delay” on page 21](#)

### ▼ Enable the Output Delay

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
```

2. Enable the output delay feature.

```
SEFOS(config-router)# output-delay
SEFOS(config-router)# end
```

3. Review the enabled output delay.

```
SEFOS# show ip protocols

Routing Protocol is rip
```

```

Vrf default
  RIP2 security level is Maximum
  Redistributing : rip
  Output Delay is enabled
  Retransmission timeout interval is 5 seconds
  Number of retransmission retries is 36
  Default metric is 3
  Auto-Summarisation of routes is enabled
  Routing for Networks :
    10.0.0.0
  Routing Information Sources :
  Interface Specific Address Summarization :
  Trusted Neighbors :
  Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination

```

## ▼ Disable the Output Delay

1. On switch 1, enter the configuration mode for the router.

```

SEFOS# configure terminal
SEFOS(config)# router rip

```

2. Disable the output delay.

```

SEFOS(config-router)# no output-delay
SEFOS(config-router)# end

```

3. Review the output delay.

```

SEFOS# show ip protocols

Routing Protocol is rip

Vrf default
  RIP2 security level is Maximum
  Redistributing : rip

```

```
Output Delay is disabled
Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 3
Auto-Summarisation of routes is enabled
Routing for Networks :
    10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
Trusted Neighbors :
Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination
```

---

## Configuring Redistribution

Before you can configure redistribution, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Enable Redistribution” on page 22](#)
- [“Test Redistribution” on page 23](#)
- [“Disable Redistribution” on page 25](#)

### ▼ Enable Redistribution

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
```

## 2. Enable redistribution.

```
SEFOS(config-router)# redistribute static
SEFOS(config-router)# end
```

## ▼ Test Redistribution

### 1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
```

### 2. Enable redistribution.

```
SEFOS(config-router)# redistribute static
SEFOS(config-router)# exit
```

### 3. Add static routes.

```
SEFOS(config)# ip route 50.0.0.0 255.0.0.0 vlan 2
SEFOS(config)# ip route 60.0.0.0 255.0.0.0 vlan 2
SEFOS(config)# ip route 70.0.0.0 255.0.0.0 vlan 2
SEFOS(config)# ip route 80.0.0.0 255.0.0.0 vlan 2
SEFOS(config)# end
```

### 4. On switch 2, test the redistribution.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.2
SEFOS(config-router)# end
```

### 5. Review the redistribution of static routes on switch 1.

```
SEFOS# show ip protocols

Routing Protocol is rip

Vrf default
  RIP2 security level is Maximum
  Redistributing : rip, static
  Output Delay is disabled
```

```

Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 3
Auto-Summarisation of routes is enabled
Routing for Networks :
    10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
Trusted Neighbors :
Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination

```

**6. On switch 2, review the RIP route entries for the static routes that were added in switch 1.**

In switch 1, static routes with the metric of 3 are redistributed into the RIP domain. The following output shows the redistributed static routes with the metric of 4.

```

SEFOS# show ip rip database

10.0.0.0/8 [1] auto-summary
10.0.0.0/16 [1] directly connected, vlan1
50.0.0.0/8 [4] auto-summary
50.0.0.0/8 [4] via 10.0.0.1, vlan1
60.0.0.0/8 [4] auto-summary
60.0.0.0/8 [4] via 10.0.0.1, vlan1
70.0.0.0/8 [4] auto-summary
70.0.0.0/8 [4] via 10.0.0.1, vlan1
80.0.0.0/8 [4] auto-summary
80.0.0.0/8 [4] via 10.0.0.1, vlan1

```

**7. Review the IP routing table on switch 2.**

```

SEFOS# show ip route

C 10.0.0.0/16 is directly connected, vlan1
C 30.2.2.0/24 is directly connected, vlan3
R 50.0.0.0/8 [4] via 10.0.0.1

```

```
R 60.0.0.0/8 [4] via 10.0.0.1
R 70.0.0.0/8 [4] via 10.0.0.1
R 80.0.0.0/8 [4] via 10.0.0.1
```

## ▼ Disable Redistribution

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
```

2. Disable the output delay.

```
SEFOS(config-router)# no redistribute static
SEFOS(config-router)# end
```

3. On switch 2, review the RIP route entries for the static routes that were added in switch 1.

The routes were made unreachable with a metric as infinity (16). The static routes are redistributed into the RIP domain.

```
SEFOS# show ip rip database

10.0.0.0/8 [1] auto-summary
10.0.0.0/16 [1] directly connected, vlan1
50.0.0.0/8 [16] via 10.0.0.1, vlan1
60.0.0.0/8 [16] via 10.0.0.1, vlan1
70.0.0.0/8 [16] via 10.0.0.1, vlan1
80.0.0.0/8 [16] via 10.0.0.1, vlan1
```

4. On switch 2, review the RIP route entries for the redistributed static routes that were deleted from the IP routing table.

```
SEFOS# show ip route

C 10.0.0.0/16 is directly connected, vlan1
C 30.2.2.0/24 is directly connected, vlan3
```

---

# Configuring the Default Metric

Before you can configure the default metric, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Set the Default Metric” on page 26](#)
- [“Test the Default Metric” on page 26](#)
- [“Reset the Default Metric” on page 29](#)

## ▼ Set the Default Metric

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Set the default metric value (10 in this example).

```
SEFOS(config-router)# default-metric 10  
SEFOS(config-router)# redistribute static  
SEFOS(config-router)# end
```

## ▼ Test the Default Metric

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Set the default metric value (10 in this example).

```
SEFOS(config-router)# default-metric 10
```



### 3. Configure the redistribution of static routes into the RIP domain.

```
SEFOS(config-router)# redistribute static  
SEFOS(config-router)# exit
```

### 4. Add static routes.

```
SEFOS(config)# ip route 50.0.0.0 255.0.0.0 vlan 2  
SEFOS(config)# ip route 60.0.0.0 255.0.0.0 vlan 2  
SEFOS(config)# ip route 70.0.0.0 255.0.0.0 vlan 2  
SEFOS(config)# ip route 80.0.0.0 255.0.0.0 vlan 2  
SEFOS(config)# end
```

### 5. On switch 2, test the default metric.

```
SEFOS# show ip rip database  
  
10.0.0.0/8 [1] auto-summary  
10.0.0.0/16 [1] directly connected, vlan1  
50.0.0.0/8 [11] auto-summary  
50.0.0.0/8 [11] via 10.0.0.1, vlan1  
60.0.0.0/8 [11] auto-summary  
60.0.0.0/8 [11] via 10.0.0.1, vlan1  
70.0.0.0/8 [11] auto-summary  
70.0.0.0/8 [11] via 10.0.0.1, vlan1  
80.0.0.0/8 [11] auto-summary  
80.0.0.0/8 [11] via 10.0.0.1, vlan1
```

Review the IP routing table.

```
SEFOS# show ip route  
C 10.0.0.0/16 is directly connected, vlan1  
C 30.2.2.0/24 is directly connected, vlan3  
R 50.0.0.0/8 [11] via 10.0.0.1  
R 60.0.0.0/8 [11] via 10.0.0.1  
R 70.0.0.0/8 [11] via 10.0.0.1  
R 80.0.0.0/8 [11] via 10.0.0.1
```

### 6. On switch 1, review the metric for the redistributed RIP route entries.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default
```

```

RIP2 security level is Maximum
Redistributing : rip, static
Output Delay is disabled
Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 10
Auto-Summarisation of routes is enabled
Routing for Networks :
    10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
Trusted Neighbors :
Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination

```

**7. On switch 1, review the RIP configuration information.**

```

SEFOS# show ip rip database

10.0.0.0/8 [1] auto-summary
10.0.0.0/16 [1] directly connected, vlan1
50.0.0.0/8 [10] auto-summary
50.0.0.0/8 [10] redistributed via 0.0.0.0
60.0.0.0/8 [10] auto-summary
60.0.0.0/8 [10] redistributed via 0.0.0.0
70.0.0.0/8 [10] auto-summary
70.0.0.0/8 [10] redistributed via 0.0.0.0
80.0.0.0/8 [10] auto-summary
80.0.0.0/8 [10] redistributed via 0.0.0.0

```

**8. On switch 1, disable redistribution.**

```

SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# no redistribute static
SEFOS(config-router)# end

```

## ▼ Reset the Default Metric

1. Reset the default metric for the redistributed routes.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# no default-metric
```

2. Enable static route redistribution.

```
SEFOS(config-router)# redistribute static  
SEFOS(config-router)# end
```

3. On switch 1, review the metric for redistributed RIP route entries.

```
SEFOS# show ip rip database  
  
10.0.0.0/8 [1] auto-summary  
10.0.0.0/16 [1] directly connected, vlan1  
50.0.0.0/8 [3] auto-summary  
50.0.0.0/8 [3] redistributed via 0.0.0.0  
60.0.0.0/8 [3] auto-summary  
60.0.0.0/8 [3] redistributed via 0.0.0.0  
70.0.0.0/8 [3] auto-summary  
70.0.0.0/8 [3] redistributed via 0.0.0.0  
80.0.0.0/8 [3] auto-summary  
80.0.0.0/8 [3] redistributed via 0.0.0.0
```

---

## Managing the auto-summary Option

By default, the `auto-summary` option is enabled. Before you can manage the `auto-summary` option, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Disable the auto-summary Option” on page 30](#)
- [“Enable the auto-summary Option” on page 31](#)

## ▼ Disable the auto-summary Option

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1
```

2. Disable the auto-summary option for RIP routes.

```
SEFOS(config-router)# auto-summary disable
```

3. Review the disabled option.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Maximum  
  Redistributing : rip  
  Output Delay is disabled  
  Retransmission timeout interval is 5 seconds  
  Number of retransmission retries is 36  
  Default metric is 3  
  Auto-Summarisation of routes is disabled  
  Routing for Networks :  
    10.0.0.0  
  Routing Information Sources :  
  Interface Specific Address Summarization :  
  Trusted Neighbors :  
  Interface vlan1  
    Sending updates every 30 seconds  
    Invalid after 180 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon with poisoned reverse is enabled  
  Restricts default route installation  
    Restricts default route origination
```

## ▼ Enable the auto-summary Option

### 1. Enable the auto-summary option in switch 1.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# auto-summary enable  
SEFOS(config-router)# end
```

### 2. Review the configuration information to ensure that the option is enabled.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
RIP2 security level is Maximum  
Redistributing : rip  
Output Delay is disabled  
Retransmission timeout interval is 5 seconds  
Number of retransmission retries is 36  
Default metric is 3  
Auto-Summarisation of routes is enabled  
Routing for Networks :  
    10.0.0.0  
Routing Information Sources :  
Interface Specific Address Summarization :  
Trusted Neighbors :  
Interface vlan1  
    Sending updates every 30 seconds  
    Invalid after 180 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon with poisoned reverse is enabled  
    Restricts default route installation  
    Restricts default route origination
```

---

# Configuring Interface-Specific RIP Parameters

You must use the interface mode to configure the parameters. However, before you can configure RIP parameters, you must configure your environment. The procedures in this section are based on [“RIP Topology 1” on page 6](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Configuring Interface-Specific Authentication” on page 32](#)
- [“Configuring the RIP Default Route Propagation” on page 35](#)
- [“Configuring the Version for Receiving RIP Advertisement” on page 39](#)
- [“Configuring the Summary Address” on page 40](#)
- [“Configure Basic Timers” on page 42](#)
- [“Configuring the split-horizon Option” on page 43](#)

## Configuring Interface-Specific Authentication

This section contains procedures that explain how to configure interface-specific authentication and the command to disable interface-specific authentication.

- [“Enable Interface-Specific Authentication” on page 32](#)
- [“Enable Authentication on Both Switches” on page 33](#)
- [“Disable Interface-Specific Authentication” on page 34](#)

### ▼ Enable Interface-Specific Authentication

1. Enter the configuration mode for the interface.

```
SEFOS# configure terminal  
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# exit
```

2. Enter the configuration mode for the router.

```
SEFOS# configure terminal
```

```
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

3. On switch 1, enable interface-specific authentication on the specific interface.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip authentication mode md5 key-chain 12345
```

## ▼ Enable Authentication on Both Switches

This task tests the authentication.

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# config terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# redistribute all  
SEFOS(config-router)# exit
```

2. Enable md5 authentication.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip authentication mode md5 key-chain 12345  
SEFOS(config-if)# end
```

3. On switch 2, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.2  
SEFOS(config-router)# exit
```

4. Enable md5 authentication.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip authentication mode md5 key-chain 12345  
SEFOS(config-if)# end
```

## 5. Review the authentication type in switch 1.

```
SEFOS# show ip protocols

Routing Protocol is rip

Vrf default
  RIP2 security level is Maximum
  Redistributing : rip
  Output Delay is disabled
  Retransmission timeout interval is 5 seconds
  Number of retransmission retries is 36
  Default metric is 3
  Auto-Summarisation of routes is enabled
  Routing for Networks :
    10.0.0.0
  Routing Information Sources :
  Interface Specific Address Summarization :
  Trusted Neighbors :
  Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is md5
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination
```

On switch 2, ensure that all of the RIP packets have authentication information.

## ▼ Disable Interface-Specific Authentication

### 1. Enter the configuration mode for the interface.

```
SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# exit
```

### 2. Enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
SEFOS(config-router)# end
```



### 3. Disable the authentication.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# no ip rip authentication
```

## Configuring the RIP Default Route Propagation

This section contains four procedures that explain how to configure and test the default route propagation.

- [“Set the Default Route Propagation” on page 35](#)
- [“Install the Default Route” on page 36](#)
- [“Test the Default Route Origination and Installation” on page 36](#)
- [“Disable the Default Route” on page 38](#)

### ▼ Set the Default Route Propagation

#### 1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal  
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# exit
```

#### 2. Enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

#### 3. Set the default route.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip default route originate 10
```

## ▼ Install the Default Route

1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal  
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# exit
```

2. Enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

3. Install the default route.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip default route install
```

## ▼ Test the Default Route Origination and Installation

1. On switch 1, configure the interface.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit  
SEFOS(config)# interface vlan 1
```

2. Install the default route.

```
SEFOS(config-if)# ip rip default route install  
SEFOS(config-if)# end
```

3. On switch 2, configure the interface.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.2  
SEFOS(config-router)# exit  
SEFOS(config)# interface vlan 1
```

#### 4. Enable default route origination.

```
SEFOS(config-if)# ip rip default route originate 11  
SEFOS(config-if)# end
```

#### 5. On switch 2, review the RIP response packet sent through the interface in switch 2.

The RIP response packets should have a default route.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Maximum  
  Redistributing : rip  
  Output Delay is disabled  
  Retransmission timeout interval is 5 seconds  
  Number of retransmission retries is 36  
  Default metric is 3  
  Auto-Summarisation of routes is enabled  
  Routing for Networks :  
    10.0.0.0  
  Routing Information Sources :  
  Interface Specific Address Summarization :  
  Trusted Neighbors :  
  Interface vlan1  
    Sending updates every 30 seconds  
    Invalid after 180 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon with poisoned reverse is enabled  
    Restricts default route installation  
    Originate default route
```

#### 6. On switch 1, review the default route with the next hop as 10.0.0.2 (the IP address for switch 2) and a metric of 12 (11+1).

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Maximum  
  Redistributing : rip
```

```

Output Delay is disabled
Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 3
Auto-Summarisation of routes is enabled
Routing for Networks :
    10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
Trusted Neighbors :
Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1 2
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Installs default route received
    Originate default route

```

## 7. Review the RIP database.

```

SEFOS# show ip rip database

0.0.0.0/0 [12]          via 10.0.0.2, vlan1
10.0.0.0/8 [1]         auto-summary
10.0.0.0/16 [1]        directly connected, vlan1

```

## 8. Review the IP route.

```

SEFOS# show ip route

R 0.0.0.0/0 [12] via 10.0.0.2
C 10.0.0.0/16 is directly connected, vlan1
C 20.0.0.0/24 is directly connected, vlan2

```

# ▼ Disable the Default Route

## 1. Enter the configuration mode for the interface.

```

SEFOS# configure terminal
SEFOS(config)# interface vlan 1

```

## 2. Disable the default route.

```
SEFOS(config-if)# no ip rip default route originate
```

# Configuring the Version for Receiving RIP Advertisement

This section contains two procedures that explain how to configure the version for receiving RIP advertisements.

- [“Set the Version” on page 39](#)
- [“Reset the Version” on page 40](#)

## ▼ Set the Version

### 1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# exit
```

### 2. Enter the configuration mode for the router.

```
SEFOS# configure terminal
SEFOS(config)# router rip
SEFOS(config-router)# network 10.0.0.1
SEFOS(config-router)# exit
```

### 3. Set the version for the VLAN interface (1 in this example).

```
SEFOS(config)# interface vlan 1
SEFOS(config-if)# ip rip receive version 1
```

### 4. Review the IP protocol output to ensure that switch 1 receives only RIP version 1 packets over the interface.

```
SEFOS# show ip protocols

Routing Protocol is rip

Vrf default
```

```

RIP2 security level is Maximum
Redistributing : rip
Output Delay is disabled
Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 3
Auto-Summarisation of routes is enabled
Routing for Networks :
    10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
Trusted Neighbors :
Interface vlan1
    Sending updates every 30 seconds
    Invalid after 180 seconds
    Flushed after 120 seconds
    Send version is 1 2, receive version is 1
    Authentication type is none
    Split Horizon with poisoned reverse is enabled
    Restricts default route installation
    Restricts default route origination

```

## ▼ Reset the Version

1. Enter the configuration mode for the interface.

```

SEFOS# configure terminal
SEFOS(config)# interface vlan 1

```

2. Reset the version.

```

SEFOS(config-if)# no ip rip send version
SEFOS(config-if)# no ip rip receive version

```

## Configuring the Summary Address

This section includes procedures for configuring the summary address.

- [“Set the Summary Address” on page 41](#)
- [“Test the Summary Address Configuration” on page 41](#)

## ▼ Set the Summary Address

1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal  
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# exit
```

2. Disable the auto-summary option for the interface in VLAN 1.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# auto-summary disable  
SEFOS(config-router)# exit
```

3. Set the version of the RIP packets to be sent over the VLAN 1 interface.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip summary-address 40.0.0.0 255.0.0.0  
SEFOS(config-if)# end
```

## ▼ Test the Summary Address Configuration

1. On switch 1, configure the summary-address option.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# redistribute all
```

2. Disable the auto-summary option.

```
SEFOS(config-router)# auto-summary disable  
SEFOS(config-router)# exit
```

3. Configure the static routes.

```
SEFOS(config-router)# ip route 40.1.0.0 255.255.0.0 vlan 2  
SEFOS(config-router)# ip route 40.2.0.0 255.255.0.0 vlan 2  
SEFOS(config-router)# ip route 40.3.0.0 255.255.0.0 vlan 2  
SEFOS(config-router)# ip route 40.4.0.0 255.255.0.0 vlan 2
```

4. Configure the summary address for the `VLAN 1` interface (`20.0.0.0/8`).

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# ip rip summary-address 40.0.0.0 255.0.0.0  
SEFOS(config-if)# end
```

5. On switch 2, configure the interface for `VLAN 1`.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.2  
SEFOS(config-router)# end
```

## ▼ Configure Basic Timers

1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal  
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# exit
```

2. Enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

3. Set the timers.

```
SEFOS(config)# interface vlan 1  
SEFOS(config-if)# timers basic 60 120 120  
SEFOS(config-if)# end
```

4. Review the RIP update packets that are sent after 60 seconds and the configured timer values.

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
RIP2 security level is Maximum
```



```
Redistributing : rip, bgp, connected, ospf, static
Output Delay is disabled
Retransmission timeout interval is 5 seconds
Number of retransmission retries is 36
Default metric is 3
Auto-Summarisation of routes is disabled
Routing for Networks :
  10.0.0.0
Routing Information Sources :
Interface Specific Address Summarization :
  40.0.0.0/8    for vlan1
Trusted Neighbors :
Interface vlan1
  Sending updates every 60 seconds
  Invalid after 120 seconds
  Flushed after 120 seconds
  Send version is 1 2, receive version is 1 2
  Authentication type is none
  Split Horizon with poisoned reverse is enabled
  Installs default route received
  Restricts default route origination
```

## Configuring the split-horizon Option

By default, the split-horizon option with poison reverse is enabled on all RIP interfaces.

- [“Configure the split-horizon Option” on page 43](#)
- [“Enable the split-horizon Option With Poison Reverse” on page 45](#)
- [“Disable the split-horizon Option” on page 45](#)

### ▼ Configure the split-horizon Option

1. On switch 1, enter the configuration mode for the interface.

```
SEFOS# configure terminal
SEFOS(config)# interface vlan 1
SEFOS(config-if)# exit
```

2. Enter the configuration mode for the router.

```
SEFOS# configure terminal
```

```
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# exit
```

**3. Enter the configuration mode for VLAN 1.**

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

**4. Enable the split-horizon option.**

```
SEFOS(config-if)# ip split-horizon
```

**5. Review the configuration information.**

```
SEFOS# show ip protocols  
  
Routing Protocol is rip  
  
Vrf default  
  RIP2 security level is Maximum  
  Redistributing : rip, bgp, connected, ospf, static  
  Output Delay is disabled  
  Retransmission timeout interval is 5 seconds  
  Number of retransmission retries is 36  
  Default metric is 3  
  Auto-Summarisation of routes is disabled  
  Routing for Networks :  
    10.0.0.0  
  Routing Information Sources :  
  Interface Specific Address Summarization :  
    40.0.0.0/8    for vlan1  
  Trusted Neighbors :  
  Interface vlan1  
    Sending updates every 60 seconds  
    Invalid after 120 seconds  
    Flushed after 120 seconds  
    Send version is 1 2, receive version is 1 2  
    Authentication type is none  
    Split Horizon is enabled  
    Installs default route received  
    Restricts default route origination
```

## ▼ Enable the split-horizon Option With Poison Reverse

1. Enter the configuration mode for the interface.

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

2. Enable the split-horizon option with poison reverse.

```
SEFOS(config-if)# ip split-horizon poison  
SEFOS(config-if)# end
```

## ▼ Disable the split-horizon Option

1. Enter the configuration mode for the interface.

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

2. Disable the split-horizon option.

```
SEFOS(config-if)# no ip split-horizon  
SEFOS(config-if)# end
```

---

# Configuring the Debug Level for RIP

For a description of the topology that is referenced in the procedures, see [“RIP Topology 1” on page 6](#). Before you can configure the debug level, you must configure switch 1 and switch 2. For instructions on how to configure switch 1, see [“Configure Switch 1” on page 6](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 7](#).

- [“Enable Debug” on page 46](#)
- [“Disable Debug” on page 46](#)

## ▼ Enable Debug

1. On switch 1, enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# end
```

2. Enable the debug level.

```
SEFOS# debug ip rip all  
  
RIP: Sending regular Update over this interface 0  
RIP: Authentication not needed for this interface, So 25 routes can  
be composed  
RIP: If Agg Rt added to update with metric : 3  
RIP: Sending RIP update through Port 0  
RIP: Sending regular Update over this interface 0  
RIP: Authentication not needed for this interface, So 25 routes can  
be composed  
RIP: If Agg Rt added to update with metric : 3  
RIP: Sending RIP update through Port 0  
RIP: Sending regular Update over this interface 0  
RIP: Authentication not needed for this interface, So 25 routes can  
be composed  
RIP: If Agg Rt added to update with metric : 3
```

## ▼ Disable Debug

1. Enter the configuration mode for the router.

```
SEFOS# configure terminal  
SEFOS(config)# router rip  
SEFOS(config-router)# network 10.0.0.1  
SEFOS(config-router)# end
```

2. Disable the debug level.

```
SEFOS# no debug ip rip all
```