

Sun Ethernet Fabric Operating System

RIP Administration Guide

ORACLE®

Part No: E21705-04
July 2015

Part No: E21705-04

Copyright © 2010, 2015, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Référence: E21705-04

Copyright © 2010, 2015, Oracle et/ou ses affiliés. Tous droits réservés.

Ce logiciel et la documentation qui l'accompagne sont protégés par les lois sur la propriété intellectuelle. Ils sont concédés sous licence et soumis à des restrictions d'utilisation et de divulgation. Sauf stipulation expresse de votre contrat de licence ou de la loi, vous ne pouvez pas copier, reproduire, traduire, diffuser, modifier, breveter, transmettre, distribuer, exposer, exécuter, publier ou afficher le logiciel, même partiellement, sous quelque forme et par quelque procédé que ce soit. Par ailleurs, il est interdit de procéder à toute ingénierie inverse du logiciel, de le désassembler ou de le décompiler, excepté à des fins d'interopérabilité avec des logiciels tiers ou tel que prescrit par la loi.

Les informations fournies dans ce document sont susceptibles de modification sans préavis. Par ailleurs, Oracle Corporation ne garantit pas qu'elles soient exemptes d'erreurs et vous invite, le cas échéant, à lui en faire part par écrit.

Si ce logiciel, ou la documentation qui l'accompagne, est concédé sous licence au Gouvernement des Etats-Unis, ou à toute entité qui délivre la licence de ce logiciel ou l'utilise pour le compte du Gouvernement des Etats-Unis, la notice suivante s'applique:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

Ce logiciel ou matériel a été développé pour un usage général dans le cadre d'applications de gestion des informations. Ce logiciel ou matériel n'est pas conçu ni n'est destiné à être utilisé dans des applications à risque, notamment dans des applications pouvant causer des dommages corporels. Si vous utilisez ce logiciel ou matériel dans le cadre d'applications dangereuses, il est de votre responsabilité de prendre toutes les mesures de secours, de sauvegarde, de redondance et autres mesures nécessaires à son utilisation dans des conditions optimales de sécurité. Oracle Corporation et ses affiliés déclinent toute responsabilité quant aux dommages causés par l'utilisation de ce logiciel ou matériel pour ce type d'applications.

Oracle et Java sont des marques déposées d'Oracle Corporation et/ou de ses affiliés. Tout autre nom mentionné peut correspondre à des marques appartenant à d'autres propriétaires qu'Oracle.

Intel et Intel Xeon sont des marques ou des marques déposées d'Intel Corporation. Toutes les marques SPARC sont utilisées sous licence et sont des marques ou des marques déposées de SPARC International, Inc. AMD, Opteron, le logo AMD et le logo AMD Opteron sont des marques ou des marques déposées d'Advanced Micro Devices. UNIX est une marque déposée d'The Open Group.

Ce logiciel ou matériel et la documentation qui l'accompagne peuvent fournir des informations ou des liens donnant accès à des contenus, des produits et des services émanant de tiers. Oracle Corporation et ses affiliés déclinent toute responsabilité ou garantie expresse quant aux contenus, produits ou services émanant de tiers, sauf mention contraire stipulée dans un contrat entre vous et Oracle. En aucun cas, Oracle Corporation et ses affiliés ne sauraient être tenus pour responsables des pertes subies, des coûts occasionnés ou des dommages causés par l'accès à des contenus, produits ou services tiers, ou à leur utilisation, sauf mention contraire stipulée dans un contrat entre vous et Oracle.

Accessibilité de la documentation

Pour plus d'informations sur l'engagement d'Oracle pour l'accessibilité à la documentation, visitez le site Web Oracle Accessibility Program, à l'adresse <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Accès au support électronique

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> ou le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> si vous êtes malentendant.

Contents

Using This Documentation	7
Product Documentation Library	7
Acronyms and Abbreviations	7
CLI Command Modes	7
Feedback	8
RIP Overview	9
Protocol Description	9
Configuring the RIP Topology Example	9
RIP Topology 1	10
RIP Topology 2	10
▼ Configure Switch 1	11
▼ Configure Switch 2	11
▼ Configure Switch 3	12
General Configurations	15
Managing RIP	15
▼ Enable RIP	16
▼ Disable RIP	16
▼ Enabling RIP on an IP Network	16
Configuring RIP Security	17
▼ Enable RIP Security	17
▼ Disable RIP Security	18
Configuring the RIP Packet Retransmission Interval and Retry Count	18
▼ Set the RIP Packet Retransmission Interval and Retry Count	18
▼ Reset the Retransmission Interval and Retry Count	19
Configuring RIP Neighbors	20
▼ Add a RIP Neighbor	20
▼ Remove a RIP Neighbor	21
Configuring the RIP Passive Interface	21

▼ Enable the RIP Passive Interface	21
▼ Disable the RIP Passive Interface	22
Configuring the Output Delay	23
▼ Enable the Output Delay	23
▼ Disable the Output Delay	24
Configuring Redistribution	25
▼ Enable Redistribution	25
▼ Test Redistribution	25
▼ Disable Redistribution	27
Configuring the Default Metric	28
▼ Set the Default Metric	28
▼ Test the Default Metric	29
▼ Reset the Default Metric	31
Managing the auto-summary Option	31
▼ Disable the auto-summary Option	32
▼ Enable the auto-summary Option	33
Configuring Interface-Specific RIP Parameters	33
Configuring Interface-Specific Authentication	34
Configuring the RIP Default Route Propagation	36
Configuring the Version for Receiving RIP Advertisement	40
Configuring the Summary Address	41
▼ Configure Basic Timers	43
Configuring the split-horizon Option	44
Configuring the Debug Level for RIP	46
▼ Enable Debug	46
▼ Disable Debug	47

Using This Documentation

- **Overview** – Describes RIP topologies and how to configure RIP software
- **Audience** – Users implementing RIP protocol with other protocols in the router stack
- **Required Knowledge** – Basic knowledge of the RIP protocol

Product Documentation Library

Documentation and resources for this product and related products are available at:

- http://www.oracle.com/goto/es2-72_es2-64/docs
- <http://www.oracle.com/goto/ES1-24/docs>
- <http://www.oracle.com/goto/sn-10gbE-72p/docs>
- <http://www.oracle.com/goto/sb6k-24p-10gbe/docs>

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

CLI Command Modes

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

Feedback

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	SEFOS>	Use <code>logout</code> or <code>exit</code> 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 Privileged EXEC mode, use the <code>configure terminal</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the interface <code>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.

Feedback

Provide feedback on this documentation at:

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

RIP Overview

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

- [“Protocol Description” on page 9](#)
- [“Configuring the RIP Topology Example” on page 9](#)

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.

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 10](#)
- [“RIP Topology 2” on page 10](#)
- [“Configure Switch 1” on page 11](#)
- [“Configure Switch 2” on page 11](#)

- [“Configure Switch 3” on page 12](#)

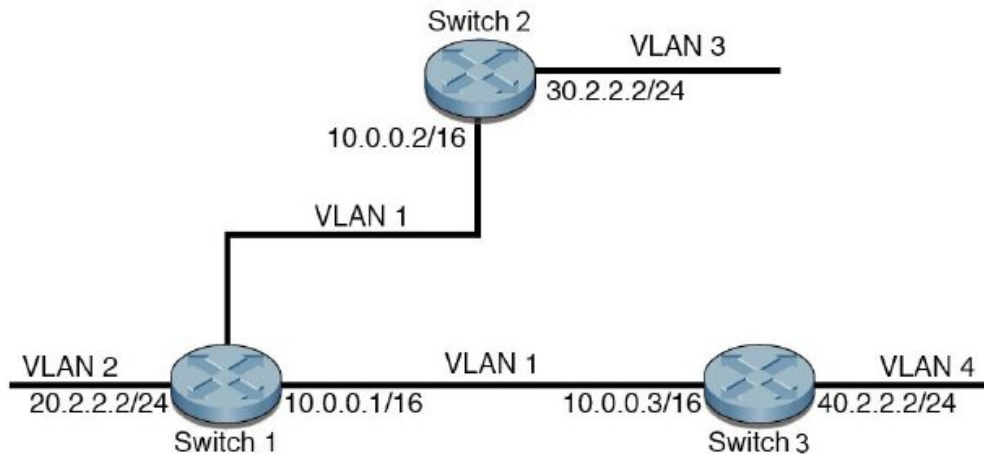
RIP Topology 1

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 4 configured, and switch 2 has VLAN 3 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 grp 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 9](#) 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 11](#). To configure switch 2, see [“Configure Switch 2” on page 11](#), and to configure switch 3, see [“Configure Switch 3” on page 12](#). RIP is disabled by default.

- [“Managing RIP” on page 15](#)
- [“Configuring RIP Security” on page 17](#)
- [“Configuring the RIP Packet Retransmission Interval and Retry Count” on page 18](#)
- [“Configuring RIP Neighbors” on page 20](#)
- [“Configuring the RIP Passive Interface” on page 21](#)
- [“Configuring the Output Delay” on page 23](#)
- [“Configuring Redistribution” on page 25](#)
- [“Configuring the Default Metric” on page 28](#)
- [“Managing the auto-summary Option” on page 31](#)
- [“Configuring Interface-Specific RIP Parameters” on page 33](#)
- [“Configuring the Debug Level for RIP” on page 46](#)

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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Enable RIP” on page 16](#)
- [“Disable RIP” on page 16](#)
- [“Enabling RIP on an IP Network” on page 16](#)

▼ 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# show ip rip database

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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Enable RIP Security” on page 17](#)
- [“Disable RIP Security” on page 18](#)

▼ Enable RIP Security

1. Enter the configuration mode for the router.

```

SEFOS# configure terminal
SEFOS(config)# router rip

```

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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Set the RIP Packet Retransmission Interval and Retry Count” on page 18](#)
- [“Reset the Retransmission Interval and Retry Count” on page 19](#)

▼ 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 10](#). 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 11](#). For instructions on how to configure switch 3, see [“Configure Switch 3” on page 12](#).

- [“Add a RIP Neighbor” on page 20](#)
- [“Remove a RIP Neighbor” on page 21](#)

▼ 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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Enable the RIP Passive Interface” on page 21](#)
- [“Disable the RIP Passive Interface” on page 22](#)

▼ 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             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 10. For instructions on how to configure switch 1, see “[Configure Switch 1](#)” on page 11. For instructions on how to configure switch 2, see “[Configure Switch 2](#)” on page 11.

- “[Enable the Output Delay](#)” on page 23
- “[Disable the Output Delay](#)” on page 24

▼ 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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Enable Redistribution” on page 25](#)
- [“Test Redistribution” on page 25](#)
- [“Disable Redistribution” on page 27](#)

▼ 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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Set the Default Metric” on page 28](#)
- [“Test the Default Metric” on page 29](#)
- [“Reset the Default Metric” on page 31](#)

▼ 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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Disable the auto-summary Option” on page 32](#)
- [“Enable the auto-summary Option” on page 33](#)

▼ 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 10](#). For instructions on how to configure switch 1, see [“Configure Switch 1” on page 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Configuring Interface-Specific Authentication” on page 34](#)

- [“Configuring the RIP Default Route Propagation” on page 36](#)
- [“Configuring the Version for Receiving RIP Advertisement” on page 40](#)
- [“Configuring the Summary Address” on page 41](#)
- [“Configure Basic Timers” on page 43](#)
- [“Configuring the split-horizon Option” on page 44](#)

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 34](#)
- [“Enable Authentication on Both Switches” on page 34](#)
- [“Disable Interface-Specific Authentication” on page 36](#)

▼ 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 36](#)
- [“Install the Default Route” on page 37](#)
- [“Test the Default Route Origination and Installation” on page 37](#)
- [“Disable the Default Route” on page 40](#)

▼ 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 40](#)
- [“Reset the Version” on page 41](#)

▼ 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 42](#)
- [“Test the Summary Address Configuration” on page 42](#)

▼ 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 44](#)
- [“Enable the split-horizon Option With Poison Reverse” on page 45](#)
- [“Disable the split-horizon Option” on page 46](#)

▼ 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 10](#). 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 11](#). For instructions on how to configure switch 2, see [“Configure Switch 2” on page 11](#).

- [“Enable Debug” on page 46](#)
- [“Disable Debug” on page 47](#)

▼ 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
```

