SRstackware® Intelligent Network Software

Layer 3 Configuration Guide

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About this Manual

Overview of Contents

Network administrators and application developers intending to configure SRstackware® protocols should use this manual.

This manual attempts to make configuration simpler by adding topology illustrations and configuration samples. It covers basic configurations for NSM, OSPF, and RIP. It also covers basic configurations for IPv6 protocols and RIPng. Use this manual in conjunction with the Command References to get complete information on the commands used in the configurations displayed in this guide.

This manual is divided into the following chapters and appendix.

Abbreviations

This document uses the following abbreviations:

Abbreviation	Definition
AMC	Alarm Management Controller
BGP	Border Gateway Protocol
LDP	Label Distribution Protocol
LSP	Labeled Switch Path
OSPF	Open Shortest Path First
RIP	Routing Information Protocol
RSVP	Resource Reservation Protocol
RSVP-TE	Resource Reservation Protocol-Traffic Engineering

Conventions

The following table describes the conventions used throughout this manual.

Notation	Description
0x00000000	Typical notation for hexadecimal numbers (digits are 0 through F), for example used for addresses and offsets
0b0000	Same for binary numbers (digits are 0 and 1)
bold	Used to emphasize a word
`Screen`	Used for on-screen output and code related elements or commands. `Sample of Programming used in a table (9pt)`
`Courier + Bold`	Used to characterize user input and to separate it from system output
Reference	Used for references and for table and figure descriptions
File > Exit	Notation for selecting a submenu
<text>	Notation for variables and keys
[text]	Notation for software buttons to click on the screen and parameter description
...	Repeated item for example node 1, node 2, ..., node 12
. . .	Omission of information from example/command that is not necessary at the time
..	Ranges, for example: 0..4 means one of the integers 0,1,2,3, and 4 (used in registers)
|	Logical OR
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury

Notation	Description
	Indicates a property damage message
	Indicates a hot surface that could result in moderate or serious injury
	Indicates an electrical situation that could result in moderate injury or death
	Indicates that when working in an ESD environment care should be taken to use proper ESD practices
	No danger encountered, pay attention to important information

Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806800N89E	April 2020	Rebranded to SMART Embedded Computing. Updated Abbreviations table.
6806800N89D	July 2017	Added registered trademark to SRstackware
6806800N89C	June 2014	Re-branded to Artesyn template.
6806800N89B	October 2012	Updated the document with Notes that the chapter/section is relevant only if LAYER3SRS is licensed.
6806800N89A	February 2012	Initial Release

Introduction

1.1 Format Used in the Configuration Examples

Format	Description
Scenario Description The examples begin with a description of the topology and the scenario. This is an explanation of what is to be achieved by the specified configuration.	Enabling RIP This example shows the minimum configuration required for enabling RIP on an interface.....
Illustration This section includes the illustration of the complete topology used in the example. The figure uses the exact IP addresses and names of routers used in the example.	

Configuration
Includes the complete configuration of the routers involved in the example. The prompt shows the execution modes of the commands. Each example begins from the Privileged Exec mode. The method to reach every command mode is illustrated in the *Daemon Command Modes* section. For modes specific to different protocols, please refer to the corresponding Command Reference (for OSPF command modes, refer to the *OSPF Command Reference*).
	R1
	`# configure terminal`
	`(config)# router rip`
	`(config-router)# net..`
	`(config-router)# net..`
	Enter the Configure mode.
	Define the RIP process...
	Associate networks with....

Format	Description
Explanation This is the grey section next to the configuration statements and is not to be typed in the CLI. It provides step-by-step explanation of the actions performed by the configuration.	

Format	Description
Names of Commands Used This section lists the names of the commands used in the example. Use these command names to look up the command details in the Command References. To avoid repetition, this list does not include a few common commands such as `configure terminal` or `interface`. These common commands are explained in the *Switch Configuration Command Reference*.	Names of Commands Used router rip, network
Validation Commands These commands are usually show commands that display outputs and are used to validate the configuration.	Validation Commands show ip rip

1.2 Command Line Interface Primer

The SRstackware® Command Line Interface (CLI) is a text-based facility similar to industry standards. Many of the commands may be used in scripts to automate many configuration tasks. Each command CLI is usually associated with a specific function or a common function performing a specific task. Multiple users can telnet and issue commands using the Exec mode and the Privileged Exec mode. However, only one user is allowed to use the Configure mode at a time, to avoid multiple users from issuing configuration commands simultaneously.

The VTY shell, described in the *SRstackware VTY Shell User Guide*, gives users and administrators the ability to issue commands to several daemons from a single telnet session.

1.2.1 Command Line Help

The SRstackware CLI contains a text-based help facility. Access this help by typing in the full or partial command string then typing "?". The SRstackware CLI displays the command keywords or parameters plus a short description.

For example, at the CLI command prompt, type show ? (the CLI does not display the question mark).

The CLI displays this keyword list with short descriptions for each keyword:

```
bgpd# show
  debugging       Debugging functions (see also 'undebug')
  history         Display the session command history
  ip              IP information
  memory          Memory statistics
  route-map       route-map information
  running-config  running configuration
  startup-config  Contents of startup configuration
  version         Displays SRstackware version
```

1.2.2 Syntax Help

The SRstackware CLI can complete the spelling of command or parameter keywords. Begin typing the command or parameter then press TAB. At the CLI command prompt type `sh`:

```
Router> sh
```

Press TAB. The CLI shows:

```
Router> show
```

If the command or parameter partial spelling is ambiguous, the SRstackware CLI displays the choices that match the abbreviation. Type `show i`. Press TAB. The CLI shows:

```
Router> show i
interface  ip
Router> show i
```

The interface displays the `interface` and `ip` keywords. Type `n` to select `interface` and press TAB. The CLI shows:

```
Router> show in
```

```
Router> show interface
```

Type ? and the CLI shows the list of parameters for the `show interface` command.

```
  [IFNAME] Interface name
```

```
Router> show interface
```

This command has but one positional parameter, an interface name. Supply a value for the `IFNAME` parameter.

1.2.2.1 Command Abbreviations

The SRstackware CLI accepts abbreviations for commands. For example,

```
sh in 7
```

is the abbreviation for the `show interface` command.

1.2.2.2 Command Line Errors

If the router does not recognize the command after ENTER is pressed, it displays this message:

```
% Unknown command.
```

If a command is incomplete it displays this message:

```
% Command incomplete.
```

Some commands are too long for the display line and can wrap in mid-parameter or mid-keyword if necessary:

```
area 10.10.0.18 virtual-link 10.10.0.19 authentication-key 57393
```

1.3 Daemon Command Modes

The commands available for each protocol are separated into several modes (nodes) arranged in a hierarchy; Exec is the lowest. Each mode has its own special commands; in some modes, commands from a lower mode are available.

Multiple users can telnet and issue commands using the Exec mode and the Privileged Exec mode. However, only one user is allowed to use the Configure mode at a time, to avoid multiple users from issuing configuration commands simultaneously.

1.3.1 Modes Common to Protocols

Exec

This mode, also called the View mode, is the base mode from where users can perform basic commands like show, exit, quit, help, list, and enable. All SRstackware daemons have this mode.

Privileged Exec

This mode, also called the Enable mode, allows users to perform debugging commands, the write commands (for saving and viewing the configuration), show commands, and so on.

Configure

Sometimes referred to as Configure Terminal, this mode serves as a gateway into the Interface, Router, Line, Route Map, Key Chain and Address Family modes. All SRstackware daemons have this mode.

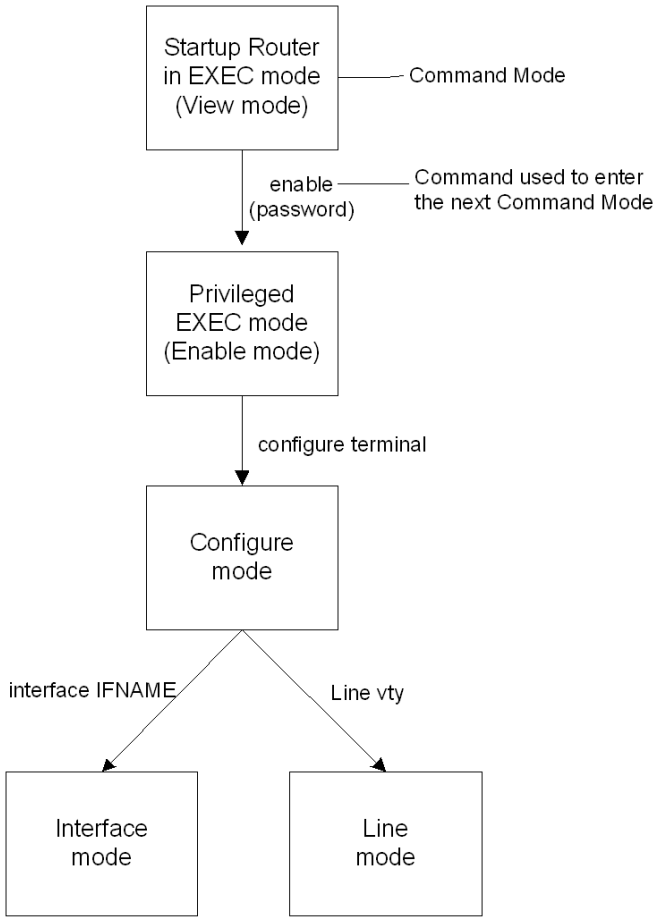
Interface

This mode is used to configure protocol-specific settings for a particular interface. Any attribute configured in this mode overrides an attribute configured in the router mode.

Line

This mode makes available access-class commands.

Figure 1-1 Modes Common to Protocols



1.3.2 Modes Specific to Protocols

The following command modes are not common to all protocols and the command used to enter these modes is different for different protocols. For an illustration of these command modes refer to the corresponding Command References.

Router

Sometimes referred to as Configure Router mode, this mode is available for the LDP, BGP, OSPF, RSVP-TE and RIP protocols only and makes available router and routing commands.

Route-map

This mode is used to set route metric, route-length and cost data. It is available for the BGP, OSPF, and RIP protocols only.

Address Family

This mode allows support for multiprotocol BGP extension. It includes address family-specific commands.

Key Chain

This mode, available for the RIP protocol only, manages the key chain.

Trunk

This mode is used to create or modify RSVP trunks. A trunk is the static definition for a Labeled Switch Path (LSP). Each trunk creates a corresponding LSP, and this LSP is signalled from the machine where the trunk was created, to the egress, as specified in the trunk's configuration.

Path

Use this mode to create or modify RSVP paths. You can define a possible path to be taken between two points in a network. This path could be a complete description (with each node specified) or a partial one specifying certain hops that the path must take.

IPv4 Configuration

2.1 Introduction

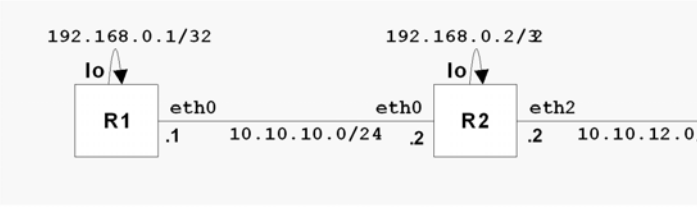
This chapter contains basic IPv4 configuration examples. To see details on the commands used in these examples refer to *SRstackware® Intelligent Network Software Layer 2 Command Reference*, *SRstackware Intelligent Network Software Layer 3 Command Reference*, and the *SRstackware Intelligent Network Software Switch Configuration Command Reference*. To avoid repetition, some common commands, like `configure terminal`, have not been listed under the *Names of Commands Used* section.

2.2 Enabling Static Routing

This example shows the complete configuration required to enable static routing in a simple network topology. Static routes are useful in small networks. They are simple solutions for making a few destinations reachable. Large networks use dynamic routing protocols. A static route is composed of a network prefix (host address) and a nexthop (gateway).

Router R1 is configured with three static routes, one for the remote network 10.10.12.0/24, and one each for the loopback addresses (host addresses) of routers R2 and R3. In all three routes, interface eth0 of router R2 is the gateway. Router R3 is configured with a default static route that is equivalent to configuring separate static routes with the same gateway or nexthop address. Router R2 has two routes, one for each of the remote routers' loopback address.

Figure 2-1 IPv4 Configuration



R1	
`# configure terminal`	Enter Configure mode.
`(config)# interface lo`	Specify loopback as the interface you want to configure.
`(config-if)# ip address 192.168.0.1/32`	Configure the IP address on this interface, and specify a 32-bit mask, making it a host address.

R1	
(config-if)# exit	Exit Interface mode, and return to Configure mode.
(config)# **ip route 10.10.12.0/24 10.10.10.2** (config)# **ip route 192.168.0.2/32 10.10.10.2** (config)# **ip route 192.168.0.3/32 10.10.10.2**	Specify the destination prefix and mask for the network for which a gateway is required, for example, 10.10.12.0/24. Add a gateway for each of them (in this case, 10.10.10.2 for all). Since R2 is the only next hop available, you can configure a default route, instead of configuring the same static route for individual addresses, see the configuration of R3.

R2	
# configure terminal	Enter Configure mode.
(config)# **interface lo**	Specify loopback as the interface you want to configure.
(config-if)# **ip address 192.168.0.2/32**	Configure the IP address on this interface, and specify a 32-bit mask, making it a host address.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **ip route 192.168.0.1/32 10.10.10.1** (config)# **ip route 192.168.0.3/32 10.10.12.3**	Specify the destination and mask for the network for which gateway is required, and add a gateway for each of them.

R3	
# configure terminal	Enter Configure mode.
(config)# **interface lo**	Specify loopback as the interface you want to configure.
(config-if)# **ip address 192.168.0.3/32**	Configure the IP address on this interface, and specify a 32-bit mask, making it a host address.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.

R3	
(config)# **ip route 0.0.0.0/0 10.10.12.2**	Specify 10.10.12.2 as a default gateway to reach any network. Since 10.10.12.2 is the only available route, you can specify it as the default gateway, instead of specifying it as the gateway for individual network or host addresses.

Names of Commands Used

`ip route, ip address, interface`

Validation Commands

`show ip route, show running-config`

For sample outputs of the validation commands, refer to *IPv4 Configuration on page 61*.

IPv6 Configuration

3.1 Introduction

IPv6 is a Layer3 transport protocol superseding the IPv4 protocol. Two of the major changes from IPv4 are: a different header, and an increase in the address size from 32 bits to 128 bits.

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3.2 IPv6 Addresses

3.2.1 Basic Format

IPv6 addresses are 128 bits long. This number of bits generates high decimal numbers with up to 39 digits. These numbers are difficult to work with and memorize. To represent such big numbers, designers use the hexadecimal format. In hexadecimal, 4 bits are represented by a digit or character from 0-9 and a-f (10-15). This format reduces the length of the IPv6 address to 32 characters. To avoid mix-up or loss of single hexadecimal digits, IPv6 designers chose a hexadecimal format with a colon separator after each block of 16 bits. The following is an example of an IPv6 address:

`3ffe:ffff:0100:f101:0210:a4ff:fee3:9566`

3.2.2 Simplifying the Addresses

To make using the addresses simpler, leading zeros of each 16-bit block are omitted:

`3ffe:ffff:100:f101:210:a4ff:fee3:9566`

Sequences of 16 bit blocks containing only zeros are replaced with two colons:: (not more than once per address). The new address looks like:

`3ffe:ffff:100:f101::1 (Basic – 3ffe:ffff:0100:f101:0:0:0:1)`

3.2.3 Special Addresses

The initial part of the IPv6 address space is reserved, and out of this prefix, certain special addresses have been defined:

Unspecified Address

The unspecified address (similar to 0.0.0.0 in IPv4) for IPv6 is:

`0000:0000:0000:0000:0000:0000:0000:0000 (or ::)`

Localhost Address

The special address for the loopback interface (similar to IPv4 localhost address 127.0.0.1) for IPv6 is:

`0000:0000:0000:0000:0000:0000:0000:0001 (or ::1)`

Link Local Address

The link local address is assigned automatically to an interface when IPv6 is enabled. It is used only on local links for link communication purposes. The link local addresses typically begin with fe80.

Site Local Address

The site local addresses typically start with fec0, and are used within a site. They are not for global use.

Aggregatable Global Unicast Addresses

Composed of a 3-bit prefix 001, followed by four components: Top Level Aggregator (TLA), Next Level Aggregator (NLA), Site Local Aggregator, and an Interface Identifier. The Aggregatable Global Unicast Address must be globally unique over the whole Internet.

Multicasting Addresses

Multicast capability is formally added into the IPv6 protocol. The multicasting addresses begin with ff0x, where x is any hexadecimal number. An example of multicast address is ff02::1. This represents all nodes of an address.

3.3 IPv6 Networking Utilities

3.3.1 Linux

When installing the standard Linux kernel version 2.4, the IPv6 protocol stack is enabled if the IPv6 option is selected before building the kernel. To make use of utilities for Linux, download and install the net-tools and iputils packages. The net-tools package includes utilities, such as, ifconfig, netstat, route, and hostname; the iputils package contains ping6,

tracepath6, and traceroute6. For detailed information on how to install the utilities, and compile the source code, go to *http://net-tools.sourceforge.net/*.

The utilities to be used when working with IPv6 are similar to the IPv4 utilities. The Man pages and Help screens display online help for all Linux utilities. They can be accessed by entering:

`man UTILITYNAME (where UTILITYNAME is the name of the utility)`

`parameter --help (for example, ifconfig --help)`

`ifconfig`

Use this tool for general network configuration of the Linux box. Using the address family flag lets you switch between IPv4 and IPv6 address families. Use `ifconfig` to start and stop the interface and other statistics.

`netstat`

This tool provides options and statistics, such as, port information, routing table, and interface table.

`ping6, traceroute6 and tracepath6`

These are similar to the IPv4 utilities. Instead of using `ping` or `traceroute`, use `ping6` or `traceroute6`. The `tracepath6` tool displays the path and MTU information.

3.4 Before Configuring IPv6 Protocols

3.4.1 Linux

Before configuring the SRstackware® ARS IPv6 protocols on Linux, make sure your current kernel supports IPv6.

To verify if your current kernel supports IPv6, check your `/proc-file-system`. The following entry must exist:

`/proc/net/if_inet6`

Then, use `ping6` to check if the IPv6 communication can be established. Make sure you have root privileges to run `ping6`. An example of the `ping6` command is:

`ping6 -I <if-name> <ipv6-address>`

where `if-name` is the name of the interface, and `ipv6-address` is a link-local IPv6 address, or a multicast address.

For example, use the following command to check communication to all IPv6 enabled hosts on the same network:

```
ping6 -I eth0 ff02::1
```

General information on enabling IPv6 for Redhat Linux OS is available online at:
http://ibiblio.org/gferg/ldp/css/Linux+IPv6-HOWTO/index.html

RIP Configuration

4.1 Introduction

This chapter contains basic RIP configuration examples. To see details on the commands used in these examples refer to *SRstackware® Intelligent Network Software RIP Command Reference*. To avoid repetition, some common commands, like `configure terminal`, have not been listed under the *Names of Commands Used* section. For more information refer to *SRstackware® Intelligent Network Software Layer 2 Command Reference*, *SRstackware® Intelligent Network Software Layer 3 Command Reference*, and the *SRstackware® Intelligent Network Software Switch Configuration Command Reference*.

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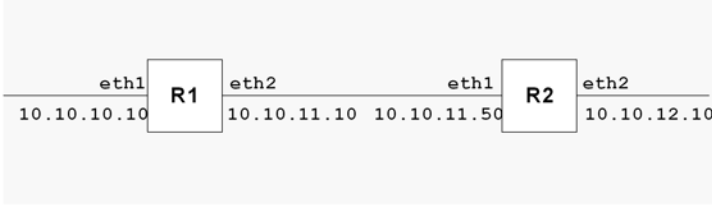
4.2 Enabling RIP

This example shows the minimum configuration required for enabling RIP on an interface. R1 and R2 are two routers connecting to network 10.10.11.0/24. R1 and R2 are also connected to networks 10.10.10.0/24 and 10.10.12.0/24, respectively. To enable RIP, first define the RIP routing process, then associate a network with the routing process.

Figure 4-1 Enabling RIP



R1	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Define a RIP routing process, and enter Router mode.
`(config-router)# network 10.10.10.0/24` `(config-router)# network 10.10.11.0/24`	Associate networks with the RIP process.

R2	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Define a RIP routing process, and enter Router mode.
`(config-router)# network 10.10.11.0/24` `(config-router)# network 10.10.12.0/24`	Associate networks with the RIP process.

Names of Commands Used

`router rip, network`

Validation Commands

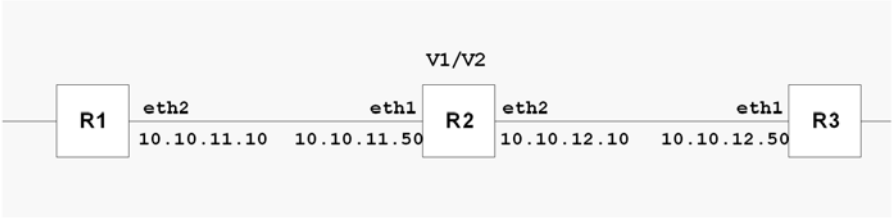
`show ip rip, show run, show ip protocols rip, show ip rip interface, show ip route`

For sample output of the validation commands, refer to *RIP Configuration on page 82*.

4.3 Specifying the RIP Version

Configure a router to receive and send specific versions of packets on an interface. In this example, router R2 is configured to receive and send RIP version 1 and version 2 information on both eth1 and eth2 interfaces.

Figure 4-2 Specifying the RIP Version



R2	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Enable the RIP routing process.
`(config-router)# exit`	Quit Router mode, and return to Configure mode.
`(config)# interface eth1`	Specify interface eth1 as an interface you want to configure.

R2	
(config-if)# **ip rip send version 1 2**	Allow sending RIP version 1 and version 2 packets out of this interface.
(config-if)# **ip rip receive version 1 2**	Allow receiving RIP version 1 and version 2 packets from the eth1 interface.
(config-if)# **quit**	Quit Interface mode, and return to Configure mode to configure the next interface.
(config)# **interface eth2**	Specify interface eth2 as the interface you want to configure.
(config-if)# **ip rip send version 1 2**	Allow sending RIP version 1 and version 2 packets out of this interface.
(config-if)# **ip rip receive version 1 2**	Allow receiving RIP version 1 and version 2 packets from the eth2 interface.

Names of Commands Used

`ip rip send version, ip rip receive version`

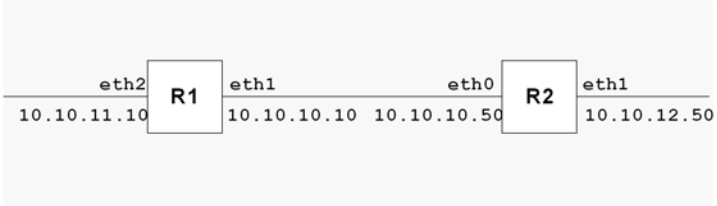
Validation Commands

`show ip rip, show run, show ip protocols rip, show ip rip interface, show ip route`

4.4 RIPv2 Authentication (Single Key)

SRstackware RIP implementation provides the choice of configuring authentication for a single key or for multiple keys. This example illustrates authentication of the routing information exchange process for RIP using a single key. Routers R1 and R2 are running RIP, and exchanging routing updates. To configure single-key authentication on R1, specify an interface, then define a key or password for that interface. Next, specify an authentication mode. Any receiving RIP packet on this specified interface should have the same string as the password. For an exchange of updates between R1 and R2, define the same password and authentication mode on R2.

Figure 4-3 RIPv2 Authentication (Single Key)



R1	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Define a RIP routing process, and enter Router mode.
`(config-router)# network 10.10.10.0/24`	Associate network 10.10.10.0/24 with the RIP process.
`(config-router)# redistribute connected`	Enable redistributing from connected routes.
`(config-router)# exit`	Quit Router mode, and return to Configure mode.
`(config)# interface eth1`	Specify the interface (eth1) for authentication.
`(config-if)# ip rip authentication string IPI`	Specify the authentication string (IPI) for this interface.
`(config-if)# ip rip authentication mode md5`	Specify the authentication mode to be MD5.

R2	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Define a RIP routing process, and enter Router mode.
`(config-router)# network 10.10.10.0/24`	Associate network 10.10.10.0/24 with the RIP process.
`(config-router)# redistribute connected`	Enable redistributing from connected routes.
`(config-router)# exit`	Quit Router mode, and return to Configure mode.

R2	
(config)# **interface eth0**	Specify the interface (eth0) for authentication.
(config-if)# **ip rip authentication string IPI**	Specify the authentication string (IPI) on this interface.
(config-if)# **ip rip authentication mode md5**	Specify the authentication mode to be MD5.

Names of Commands Used

`ip rip authentication string, ip rip authentication mode, redistribute, network`

Validation Commands

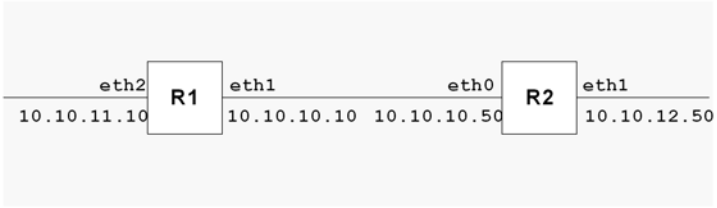
`show run, show ip rip, show ip protocol rip, show ip rip interface, show ip route`

4.5 RIPv2 Text Authentication (Multiple Keys)

This example illustrates text authentication of the routing information exchange process for RIP using multiple keys. Routers R1 and R2 are running RIP, and exchanging routing updates. To configure authentication on R1, define a key chain, specify keys in the key chain, then define the authentication string or passwords to be used by the keys. Set the time period during which it is valid to receive or send the authentication key by specifying the accept and send lifetimes. After defining the key string, specify the key chain (or set of keys) that will be used for authentication on each interface, and the authentication mode to be used.

R1 receives all packets that contain any key string that matches one of the key strings included in the specified key chain (within the accept lifetime) on that interface. The key ID is not considered for matching. For additional security, the accept lifetime and send lifetime are configured such that every fifth day, the key ID and key string changes. To maintain continuity, the accept lifetimes should be configured to overlap. This will accommodate different time setup on machines. However, the send lifetime is not required to overlap, and IPI recommends configuring no overlapping for the send lifetime.

Figure 4-4 RIPv2 Text Authentication (Multiple Keys)



R1	
`# configure terminal`	Enter Configure mode.
`(config)# router rip`	Define a RIP routing process, and enter Router mode.
`(config-router)# network 10.10.10.0/24`	Associate network 10.10.10.0/24 with the RIP process.
`(config-router)# redistribute connected`	Enable redistributing from connected routes.
`(config-router)# exit`	Quit Router mode, and return to Configure mode.
`(config)# key chain SUN`	Enter Keychain management mode to add keys to the key chain SUN.
`(config-keychain)# key 10`	Add authentication key ID (10) to the key chain SUN.
`(config-keychain-key)# key-string IPI`	Specify a password (IPI) to be used by the specified key.
`(config-keychain-key)# accept-lifetime 12:00:00 Mar 2 2003 14:00:00 Mar 7 2003`	Specify the time period during which authentication key string IPI can be received. In this case, key string IPI can be received from noon of March 2 to 2 pm March 7, 2003.
`(config-keychain-key)# send-lifetime 12:00:00 Mar 2 2003 12:00:00 Mar 7 2003`	Specify the time period during which authentication key string IPI can be sent. In this case, key string IPI can be sent from noon of March 2 to noon of March 7, 2003.
`(config-keychain-key)# exit`	Exit Keychain-Key mode, and return to Keychain mode.

R1	
(config-keychain)# **key 20**	Add another authentication key (20) to the key chain SUN.
(config-keychain-key)# **key-string Earth**	Specify a password (Earth) to be used by the specified key.
(config-keychain-key)# **accept-lifetime 12:00:00 Mar 7 2003 14:00:00 Mar 12 2003**	Specify the time period during which authentication key string Earth can be received. In this case, key string Earth can be received from noon of March 7 to 2 pm March 12, 2003.
(config-keychain-key)# **send-lifetime 12:00:00 Mar 7 2003 12:00:00 Mar 12 2003**	Specify the time period during which authentication key string Earth can be sent. In this case, key string IPI can be sent from noon of March 7 to noon of March 12, 2003.
(config-keychain-key)# **end**	Enter Privileged Exec mode.
# **configure terminal**	Enter Configure mode.
(config)# **interface eth1**	Specify interface eth1 as the interface you want to configure.
(config-if)# **ip rip authentication key** chain SUN	Enable RIPv2 authentication on the eth1 interface, and specify the key chain SUN to be used for authentication.
(config-if)# **ip rip authentication mode text**	Specify text authentication mode to be used for RIP packets. This step is optional, because text is the default mode.

R2	
# **configure terminal**	Enter Configure mode.
(config)# **router rip**	Define a RIP routing process, and enter Router mode.
(config-router)# **network 10.10.10.0/24**	Associate network 10.10.10.0/24 with the RIP process.
(config-router)# **redistribute connected**	Enable redistributing from connected routes.
(config-router)# **exit**	Quit Router mode, and return to Configure mode.

R2	
(config)# **key chain MOON**	Enter Keychain management mode to add keys to the key chain MOON.
(config-keychain)# **key 30**	Add authentication key ID (30) to the key chain MOON.
(config-keychain-key)# **key-string IPI**	Specify a password (IPI) to be used by the specified key.
(config-keychain-key)# **accept-lifetime 12:00:00 Mar 2 2003 14:00:00 Mar 7 2003**	Specify the time period during which authentication key string IPI can be received. In this case, key string IPI can be received from noon of March 2 to 2 pm March 7, 2003.
(config-keychain-key)# **send-lifetime 12:00:00 Mar 2 2003 12:00:00 Mar 7 2003**	Specify the time period during which authentication key string IPI can be sent. In this case, key string IPI can be sent from noon of March 2 to noon of March 7, 2003.
(config-keychain)# **key 40**	Add another authentication key (40) to the key chain MARS.
(config-keychain-key)# **key-string Earth**	Specify a password (Earth) to be used by the specified key.
(config-keychain-key)# **accept-lifetime 12:00:00 Mar 7 2003 14:00:00 Mar 12 2003**	Specify the time period during which authentication key string Earth can be received. In this case, key string Earth can be received from noon of March 7 to 2 pm March 12, 2003.
(config-keychain-key)# **send-lifetime 12:00:00 Mar 7 2003 12:00:00 Mar 12 2003**	Specify the time period during which authentication key string Earth can be sent. In this case, key string IPI can be sent from noon of March 7 to noon of March 12, 2003.
(config-keychain-key)# **end**	Enter Privileged Exec mode.
# **configure terminal**	Enter Configure mode.
(config)# **interface eth0**	Specify interface eth0 as the interface you want to configure.
(config-if)# **ip rip authentication key chain MARS**	Enable RIPv2 authentication on the eth1 interface, and specify the key chain MARS to be used for authentication.

R2	
(config-if)# **ip rip authentication mode text**	Specify text authentication mode to be used for RIP packets. This step is optional, because text is the default mode.

Names of Commands Used

`key chain, key, key-string, accept-lifetime, send-lifetime, ip rip authentication key-chain, ip rip authentication mode`

Validation Commands

`show run, show ip rip, show ip protocol rip, show ip rip interface, show ip route`

RIPng Configuration

5.1 Introduction

This chapter contains a basic RIPng configuration example. To see details on the commands used in these examples refer *RIP Command Reference*. To avoid repetition, some common commands, like `configure terminal`, have not been listed under the *Commands Used* section. For more information refer to *SRstackware® Intelligent Network Software Layer 2 Command Reference*, *SRstackware® Intelligent Network Software Layer 3 Command Reference*, and the *SRstackware® Intelligent Network Software Switch Configuration Command Reference*.

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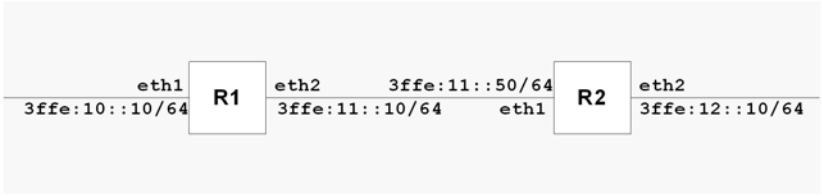
.This example shows the minimum configuration required for enabling RIPng on an interface. R1 and R2 are two routers connecting to network 3ffe:11::/64. To enable RIPng, first define the RIPng routing process, then enable RIPng on each interface.

Figure 5-1 RIPng Configuration



R1	
`# configure terminal`	Enter Configure mode.
`(config)# interface eth1`	Specify the interface (eth1)to be configured, and enter Interface mode.
`(config-if)# ipv6 router rip`	Enable RIPng routing on interface eth1.
`(config-if)# exit`	Exit Interface mode, and enter Configure mode.
`(config)# interface eth2`	Specify the interface (eth2)to be configured, and enter Interface mode.
`(config-if)# ipv6 router rip`	Enable RIPng routing on interface eth2.
`(config-if)# exit`	Exit Interface mode, and enter Configure mode.

R1	
(config)# **router ipv6 rip**	Define a RIPng routing process, and enter Router mode.

R2	
# **configure terminal**	Enter Configure mode.
(config)# **interface eth1**	Specify the interface (eth1)to be configured, and enter Interface mode.
(config-if)# **ipv6 router rip**	Enable RIPng routing on interface eth1.
(config-if)# **exit**	Exit Interface mode, and enter Configure mode.
(config)# **interface eth2**	Specify the interface (eth2)to be configured, and enter Interface mode.
(config-if)# **ipv6 router rip**	Enable RIPng routing on interface eth2.
(config-if)# **exit**	Exit Interface mode, and enter Configure mode.
(config)# **router ipv6 rip**	Define a RIPng routing process, and enter Router mode.

Names of Commands Used

`router ipv6 rip, ipv6 router rip`

Validation Commands

`show ipv6 rip`

For sample output of the validation commands, refer to *RIPng Configuration on page 108*.

OSPF Configuration

6.1 Introduction

This chapter contains basic OSPF configuration examples. To see details on the commands used in these examples refer OSPF Command Reference. To avoid repetition, some common commands, such as `configure terminal`, have not been listed under the *Names of Commands Used* section. For more information refer to *SRstackware® Intelligent Network Software Layer 2 Command Reference*, *SRstackware® Intelligent Network Software Layer 3 Command Reference*, and the *SRstackware® Intelligent Network Software Switch Configuration Command Reference*.

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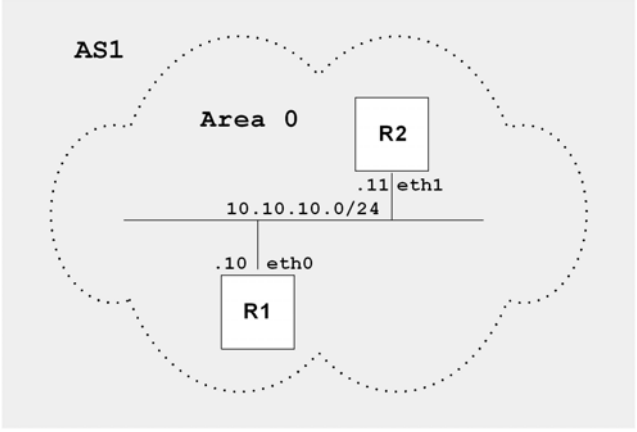
6.2 Enabling OSPF on an Interface

This example shows the minimum configuration required for enabling OSPF on an interface. R1 and R2 are two routers in Area 0 connecting to network 10.10.10.0/24.

NOTE: Configure one interface so that it belongs to only one area. However, you can configure different interfaces on a router to belong to different areas.

Figure 6-1 Enabling OSPF on an Interface



R1	
# configure terminal	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0**	Define the interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface (area ID 0 specifies the backbone area).

R2	
(config)# **router ospf 200**	Configure the routing process, and specify the Process ID (200). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0**	Define the interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface.

Names of Commands Used

`network area`, `router ospf`

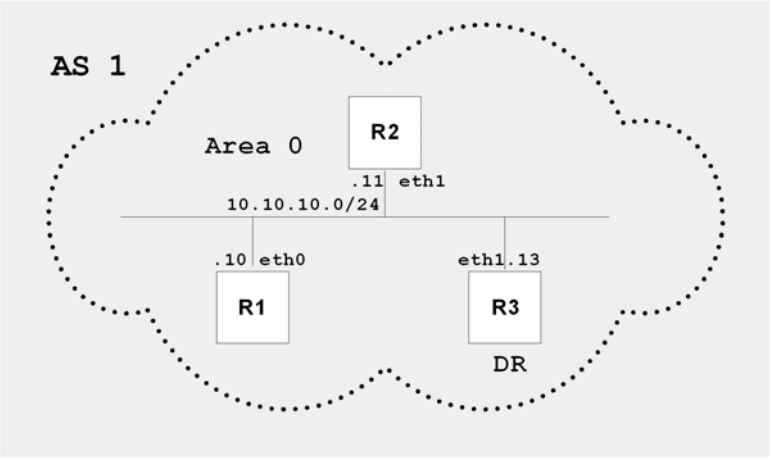
Validation Commands

`show ip ospf`, `show ip ospf interface`, `show ip ospf neighbor`, `show ip ospf route`

6.3 Setting Priority

This example shows setting the priority for an interface. Set a high priority for a router to make it the Designated Router (DR). Router R3 is configured to have a priority of 10, which is higher than the default priority (1) of R1 and R2; making it the DR.

Figure 6-2 Setting Priority



R1	
# **configure terminal**	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0**	Define the interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface (area ID 0 specifies the backbone area).

R2	
(config)# **router ospf 200**	Configure the routing process, and specify the Process ID (200). The Process ID should be a unique positive integer identifying the routing process.

R2	
(config-router)# **network 10.10.10.0/24 area 0**	Define the interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface.

R3	
(config)# **interface eth1**	Specify the interface (eth1)to be configured.
(config-if)# **ip ospf priority 10**	Specify the router priority to a higher priority (10) to make R3 the Designated Router (DR).
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0**	Define the interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface.

Names of Commands Used

`network area, ip ospf priority`

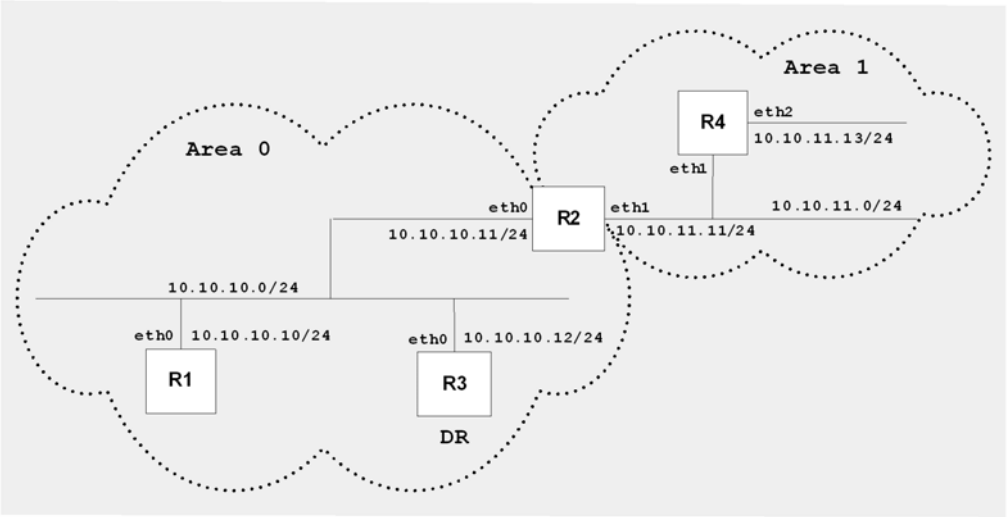
Validation Commands

`show ip ospf neighbor, show ip ospf interface`

6.4 Configuring an Area Border Router

This example shows configuration for an Area Border Router. R2 is an Area Border Router (ABR). On R2, Interface eth0 is in Area 0, and Interface eth1 is in Area 1.

Figure 6-3 Configuring an Area Border Router



R2	
# **configure terminal**	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0**	Define one interface (10.10.10.0/24) on which OSPF runs, and associate the area ID (0) with the interface.
(config-router)# **network 10.10.11.0/24 area 1**	Define the other interface (10.10.11.0/24) on which OSPF runs, and associate the area ID (1) with the interface.

Names of Commands Used

`network area`

Validation Commands

`show ip ospf, show ip ospf interface`

6.5 Configuring Cost

You can make a route the preferred route by changing its cost. In this example, the cost has been configured to make R2 the next hop for R1.

The default cost on each interface is 10. Interface eth2 on R2 has a cost of 100, and Interface eth2 on R3 has a cost of 150. The total cost to reach 10.10.14.0/24 (R4) through R2 and R3:

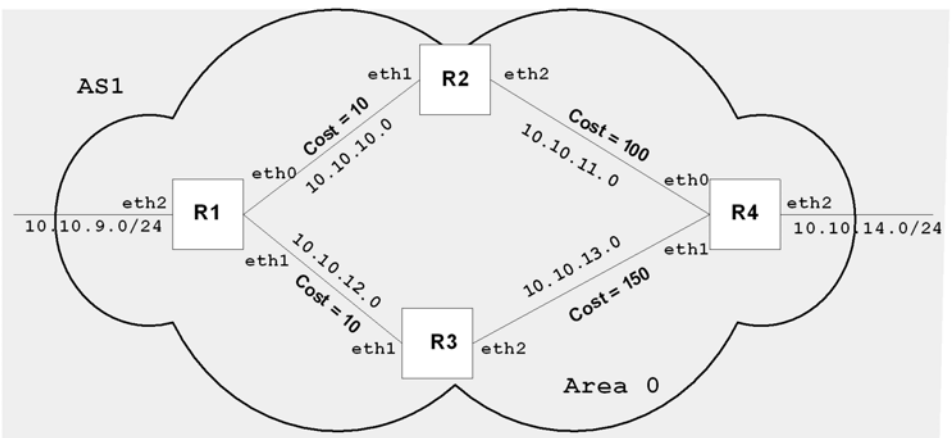
R2: 10+100 = 110

R3: 10+150 = 160

Therefore, R1 chooses R2 as its next hop for destination 10.10.14.0/24

.

Figure 6-4 Configuring Cost



R1	
# **configure terminal**	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.9.0/24 area 0** (config-router)# **network 10.10.10.0/24 area 0** (config-router)# **network 10.10.12.0/24 area 0**	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface (area ID 0 specifies the backbone area).

R2	
(config)# **interface eth2**	Specify the interface (eth2)to be configured.
(config-if)# **ip ospf cost 100**	Set the OSPF cost of this link to 100.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0** (config-router)# **network 10.10.11.0/24 area 0**	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface.

R3	
(config)# **interface eth2**	Specify the interface (eth2)to be configured.
(config-if)# **ip ospf cost 150**	Set the OSPF cost of this link to 100.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.

R3	
`(config)# router ospf 100`	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
`(config-router)# network 10.10.12.0/24 area 0` `(config-router)# network 10.10.13.0/24 area 0`	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface.

R4	
`(config)# router ospf 100`	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.

`(config-router)# network 10.10.11.0/24 area 0`
`(config-router)# network 10.10.13.0/24 area 0`
`(config-router)# network 10.10.14.0/24 area 0`
	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface.

Names of Commands Used

`network area, ip ospf cost`

Validation Commands

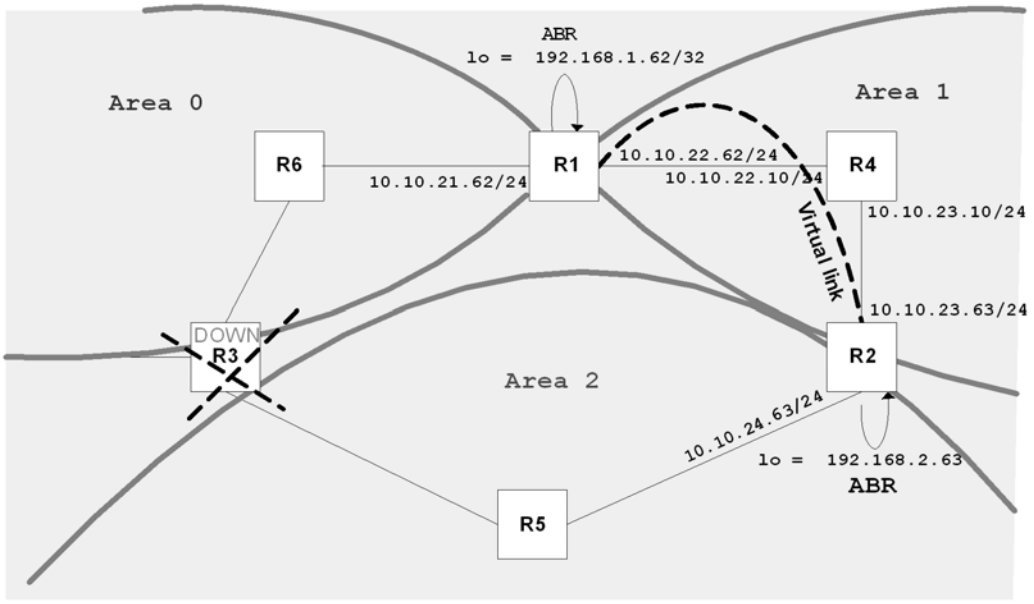
`show ip ospf route`

For sample output of the validation commands, refer *OSPF Configuration on page 109*.

6.6 Configuring Virtual Links

Virtual links are used to connect a temporarily disjointed non-backbone area to the backbone area, or to repair a non-contiguous backbone area. In this example, the ABR R3 has temporarily lost connection to Area 0, in turn, disconnecting Area 2 from the backbone area. The virtual link between ABR R1 and ABR R2 connects Area 2 to Area 0. Area 1 is used as a transit area.

Figure 6-5 Configuring Virtual Links



R1	
# **configure terminal**	Enter Configure mode.
(config)# **interface lo**	Specify loopback as the interface you want to configure.
(config-if)# **ip address 192.168.1.62/32**	Configure the IP address on this interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.

R1	
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **ospf router-id 192.168.1.62**	Configure the OSPF Router ID (192.168.1.62) for this router.
(config-router)# **network 10.10.21.0/24 area 0** (config-router)# **network 10.10.22.0/24 area 1**	Define interfaces on which OSPF runs, and associate the area IDs (0 and 1) with the interface.
(config-router)# **area 1 virtual-link 192.168.2.63**	Configure a virtual link between this router R1 and R2 (Router ID 192.168.2.63) through transit area 1.

R2	
(config)# **interface lo**	Specify loopback as the interface you want to configure.
(config-if)# **ip address 192.168.2.63/32**	Configure the IP address on this interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **ospf router-id 192.168.2.63**	Configure the OSPF Router ID (192.168.1.63) for this router.
(config-router)# **network 10.10.23.0/24 area 1** (config-router)# **network 10.10.24.0/24 area 2** (config-router)# **network 192.168.2.63/32 area 2**	Define interfaces on which OSPF runs, and associate the area IDs (1 and 2) with the interface.

R2	
(config-router)# **area 1 virtual-link 192.168.1.62**	Configure a virtual link between this router R2 and R1 (Router ID 192.168.2.62) through transit area 1.

Names of Commands Used

`area virtual-link, network area`

Validation Commands

`show ip ospf virtual link, show ip ospf neighbor, show ip ospf, show ip ospf route`

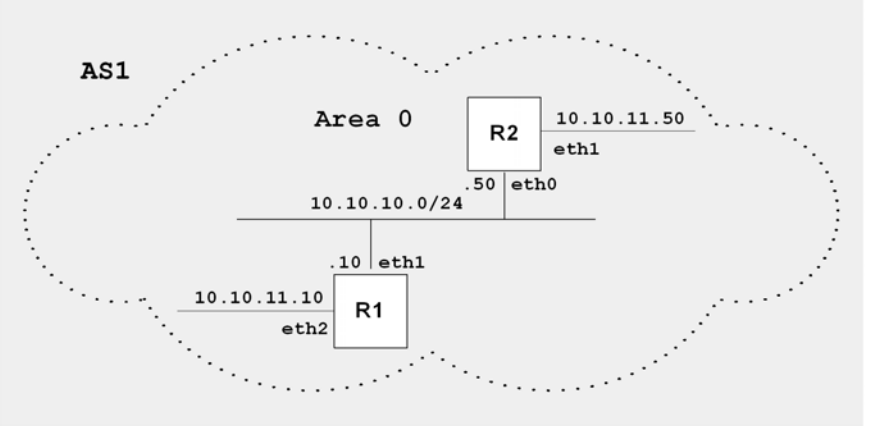
6.7 OSPF Authentication

There are three types of OSPF authentications--Null (Type 0), Simple Text (Type 1), and MD5 (Type 2). With Null authentication, routing exchanges over the network are not authenticated. In Simple Text authentication, the authentication type is the same for all routers that communicate using OSPF in a network. For MD5 authentication, configure a key and a key ID on each router. The router generates a message digest on the basis of the key, key ID, and OSPF packet, and adds it to the OSPF packet.

The authentication type can be configured on a per-interface basis or a per-area basis. Additionally, Interface and Area authentication can be used together. Area authentication is used for an area, and interface authentication is used for a specific interface in the area. If the Interface authentication type is different from the Area authentication type, the Interface authentication type overrides the Area authentication type. If the Authentication type is not specified for an interface, the Authentication type for the area is used. The authentication command descriptions contain details of each type of authentication.

In the example below, R1 and R2 are configured for both the interface and area authentications. The authentication type of interface eth1 on R1 and interface eth0 on R2 is MD5 mode, and is defined by the area authentication command; however, the authentication type of interface eth2 on R1 and interface eth1 on R2 is plain text mode, and is defined by the ip ospf authentication command. This interface command overrides the area authentication command.

Figure 6-6 OSPF Authentication



R1	
# **configure terminal**	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0** (config-router)# **network 10.10.11.0/24 area 0**	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface (area ID 0 specifies the backbone area).
(config-router)# **area 0 authentication message-digest**	Enable MD5 authentication on area 0.
(config-router)# **exit**	Exit Router mode, and return to Configure mode.
(config)# **interface eth1**	Specify the interface (eth1)to be configured.

R1	
(config-if)# **ip ospf message-digest-key 1 md5 test**	Register the MD5 key test for OSPF authentication. The key ID is 1.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode
(config)# **interface eth2**	Specify the interface (eth2)to be configured.
(config-if)# **ip ospf authentication**	Enable the OSPF packet to use text authentication on the current interface (eth2).
(config-if)# **ip ospf authentication-key test**	Specify an OSPF authentication password (test) for the neighboring routers.

R2	
# **configure terminal**	Enter Configure mode.
(config)# **router ospf 100**	Configure the routing process, and specify the Process ID (100). The Process ID should be a unique positive integer identifying the routing process.
(config-router)# **network 10.10.10.0/24 area 0** (config-router)# **network 10.10.11.0/24 area 0**	Define interfaces on which OSPF runs, and associate the area ID (0) with the interface (area ID 0 specifies the backbone area).
(config-router)# **area 0 authentication message-digest**	Enable MD5 authentication on area 0.
(config-router)# **exit**	Exit Router mode, and return to Configure mode.
(config)# **interface eth0**	Specify the interface (eth0)to be configured.
(config-if)# **ip ospf message-digest-key 1 md5 test**	Register MD5 key test for OSPF authentication. The key ID is 1.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.

R2	
(config)# **interface eth1**	Specify the interface (eth2)to be configured.
(config-if)# **ip ospf authentication**	Enable the OSPF packet to use text authentication on the current interface (eth1).
(config-if)# **ip ospf authentication-key test**	Specify an OSPF authentication password test for the neighboring routers.

Names of Commands Used

`ip ospf authentication, ip ospf authentication-key, network area, area authentication message-digest`

Validation Commands

`show run, show ip ospf neighbor`

For sample output of the validation commands, refer *OSPF Configuration on page 109*.

6.8 Configuring Multiple OSPF Instances

By using multiple OSPF instances, OSPF routes can be segregated, based on their instance number. Routes of one instance are stored differently from routes of another instance running in the same router.

To configure multiple OSPF instances, perform the following, described in the topology and procedures which follow:

- Enable OSPF on an interface
- Enable multiple instances
- Configure redistribution among multiple instances.

NOTE: Optionally, redistribution can be configured with the metric, type or route-map options.

Figure 6-7 Configuring Multiple OSPF Instances

6.8.1 Enabling OSPF on an Interface

This example shows enabling OSPF on an interface.

R1 and R2 are two routers in Area 0 connecting to network 2.2.2.0/24.

R1	
(config)# **int eth1**	Specify the interface on which OSPF is to be enabled.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 10**	Configure an OSPF instance with an instance ID of 10.
(config-router)# **router-id 5.5.5.5**	Configure the router ID to be used on this instance.
(config-router)# **network 2.2.2.0/24 area 0**	Advertise the network with the area ID.

R2	
(config)# **int eth1**	Specify the interface on which OSPF is to be enabled.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 10**	Configure an OSPF instance with an instance ID of 10.
(config-router)# **router-id 6.6.6.6**	Configure the router ID to be used on this instance.
(config-router)# **network 2.2.2.0/24 area 0**	Advertise the network with the area ID.

6.8.2 Enabling Multiple OSPF Instances on a Router

In this example, routers R1, R2, and R3 are in Area 0, and all run OSPF.

R1	
(config)# **int eth1**	Specify the interface on which OSPF is to be enabled.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 10**	Configure an OSPF instance with an instance ID of 10.
(config-router)# **router-id 5.5.5.5**	Configure the router ID to be used on this instance.
(config-router)# **network 2.2.2.0/24 area 0**	Advertise the network with the area ID.

R2	
(config)# **int eth1**	Specify the interface on which OSPF is to be enabled.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 10**	Configure an OSPF instance with an instance ID of 10.
(config-router)# **router-id 6.6.6.6**	Configure the router ID to be used on this instance.
(config-router)# **network 2.2.2.0/24 area 0**	Advertise the network with the area ID.
(config)# **int eth2**	Specify the interface on which OSPF is to be enabled.
(config-if)# **ip address 4.4.4.4/24**	Configure the IP address.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.

R2	
(config)# **router ospf 15**	Configure an OSPF instance with an instance ID of 15.
(config-router)# **router-id 6.6.6.6**	Configure the router ID to be used on this instance.
(config-router)# **network 4.4.4.0/24 area 0**	Advertise the network with the area ID.

R3	
(config)# **int eth1**	Specify the interface on which OSPF is to be enabled.
(config-if)# **ip address 4.4.4.5/24**	Configure the IP address.
(config-if)# **no shutdown**	Activate the interface.
(config-if)# **exit**	Exit Interface mode, and return to Configure mode.
(config)# **router ospf 15**	Configure an OSPF instance with an instance ID of 15.
(config-router)# **router-id 7.7.7.7**	Configure the router ID to be used on this instance.
(config-router)# **network 4.4.4.0/24 area 0**	Advertise the network with the area ID.

Validation Commands Sample Output

A.1 Overview

This chapter provides the sample outputs of the validation commands for IPv4 configuration, RIP configuration, RIPng configuration, and OSPF configuration.

A.2 IPv4 Configuration

A.2.1 Show ip route

```
blade-SLOT1#show ip route
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       * - candidate default

C       127.0.0.0/8 is directly connected, lo
C       192.168.7.0/24 is directly connected, xe3
C       192.168.11.0/24 is directly connected, vlan2.11
C       192.168.21.0/24 is directly connected, vlan1.21
C       192.168.22.0/24 is directly connected, vlan1.22
C       192.168.24.0/24 is directly connected, vlan1.24
```

A.2.2 Show running-config

```
blade-SLOT1#show running-config
!
no service password-encryption
!
log file /var/log/srstackware.log
!
key chain srs-key
 key 1
  key-string pinv
```

```
 key 2
  key-string srs
!
vrrp vmac enable
maximum-paths 8
bridge 1 protocol ieee vlan-bridge
bridge 2 protocol ieee vlan-bridge
!
vlan database
 vlan 5 bridge 1 name VLAN0005 state enable
 vlan 21 bridge 1 name VLAN21 state enable intervlan-route enable
 vlan 22 bridge 1 name VLAN22 state enable intervlan-route enable
 vlan 24 bridge 1 name VLAN24 state enable intervlan-route enable
 vlan 93 bridge 1 name VLAN93 state enable
 vlan 11 bridge 2 name VLAN11 state enable intervlan-route enable
 vlan 12 bridge 2 name VLAN12 state enable intervlan-route enable
 vlan 91 bridge 2 name VLAN91 state enable
!
interface ge1
 description BC3 - Slot 3
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge2
 description BC4 - Slot 4
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
```

```
 shutdown
!
interface ge3
 description BC5 - Slot 5
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge4
 description BC6 - Slot 6
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge5
 description BC7 - Slot 7
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge6
 description BC8 - Slot 8
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
```

```
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge7
 description BC9 - Slot 9
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge8
 description BC10 - Slot 10
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge9
 description BC11 - Slot 11
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
```

```
interface ge10
 description BC12 - Slot 12
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge11
 description BC13 - Slot 13
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge12
 description BC14 - Slot 14
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge13
 description BC15 - Slot 15 or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge14
 description BC16 - Slot 16 or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge15
 description BC1[A]
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 24
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 24 egress-tagged disable
 no shutdown
!
interface ge16
 description BC1[B]
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 24
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 24 egress-tagged disable
 no shutdown
!
interface ge17
 description BC2 - Xlink
```

```
 bridge-group 1 spanning-tree disable
 switchport mode trunk
 switchport mode trunk ingress-filter disable
 switchport trunk allowed vlan add 21
 switchport trunk allowed vlan add 22
 no shutdown
!
interface ge18
 description Base AMC 0
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge19
 description x-connect or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge20
 description Base TopSync or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
```

```
!
interface ge21
 description Base RTM SFP 1G Uplink 1 (ETH8)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface ge22
 description Base RTM SFP 1G Uplink 2 (ETH9)
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.5.1/24
 no shutdown
!
interface ge23
 description Base RTM SFP 1G Uplink 3 (ETH10)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface ge24
 description Base RTM SFP 1G Uplink 4 (ETH11)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface ge25
```

```
 description Slot 15 or topsync
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface ge26
 description Slot 16 or FC1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface ge27
 description Fabric AMC - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface ge28
 description Fabric UC [3/4]
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
```

```
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface lo
 no switchport
 ip address 127.0.0.1/8
 ipv6 address ::1/128
 no shutdown
!
interface xe1
 description Base RTM SFP+ 10G Uplink 1 (ETH1)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface xe2
 description Base RTM SFP+ 10G Uplink 2 (ETH2)
 bridge-group 1
 switchport mode hybrid
 switchport hybrid vlan 5
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 5 egress-tagged disable
 no shutdown
!
interface xe3
 description Base Front Panel SFP+ 10G Link 1(ETH3)
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.7.1/24
 no shutdown
 no ip rip receive-packet
 ip rip authentication mode md5
 ip rip authentication string srs
```

```
!
interface xe4
 description Base Front Panel SFP+ 10G Link 2 - (ETH4)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface xe5
 description FC2 - slot3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe6
 description FC3 - slot4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe7
 description FC4 - slot5
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe8
 description FC5 - slot6
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe9
 description FC6 - slot7 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe10
 description FC6 - slot7 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe11
 description FC6 - slot7 - Port 3
```

```
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe12
 description FC6 - slot7 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe13
 description FC7 - slot8 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe14
 description FC7 - slot8 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
```

```
 shutdown
!
interface xe15
 description FC7 - slot8 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe16
 description FC7 - slot8 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe17
 description FC8 - slot9
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe18
 description FC9 - slot10
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
```

```
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe19
 description FC10 - slot11
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe20
 description FC11 - slot12
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe21
 description FC12 - slot13 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
```

```
interface xe22
 description FC12 - slot13 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe23
 description FC12 - slot13 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe24
 description FC12 - slot13 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe25
 description FC13 - slot14 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe26
 description FC13 - slot14 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe27
 description FC13 - slot14 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe28
 description FC13 - slot14 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe29
 description Fabric RTM QSFP 40G (ETH7)
```

```
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe30
 description Fabric RTM SFP+ 10G (ETH6)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe31
 description Fabric RTM SFP+ 10G (ETH5)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe32
 description Fabric RTM SFP+ 10G (ETH4)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe33
 description Fabric RTM SFP+ 10G (ETH3)
```

```
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe34
 description Fabric Front Panel QSFP 10G (ETH1) - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe35
 description Fabric Front Panel QSFP 10G (ETH1) - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe36
 description Fabric Front Panel QSFP 10G (ETH1) - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe37
 description Fabric Front Panel QSFP 10G (ETH1) - Port 4
```

```
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe38
 description Fabric Front Panel QSFP 40G (ETH2)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface vlan1.1
 no shutdown
!
interface vlan1.5
 no shutdown
!
interface vlan1.21
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.21.1/24
 no shutdown
!
interface vlan1.22
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.22.1/24
 no shutdown
!
interface vlan1.24
 no switchport
```

```
 arp-ageing-timeout 3000
 ip address 192.168.24.1/24
 no shutdown
!
interface vlan1.93
 no shutdown
!
interface vlan2.1
 shutdown
!
interface vlan2.11
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.11.1/24
 no shutdown
!
interface vlan2.12
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.12.1/24
 no shutdown
!
interface vlan2.91
 no shutdown
!
router rip
 network 192.168.7.0/24
 redistribute connected
!
line con 0
 login
line vty 0 4
 login
!
end
```

A.3 RIP Configuration

This section is relevant only if LAYER3SRS is licensed.

A.3.1 Show ip rip

```
blade-SLOT1#show ip rip

Codes: R - RIP, Rc - RIP connected, Rs - RIP static, K - Kernel,
       C - Connected, S - Static, O - OSPF, I - IS-IS, B - BGP

   Network            Next Hop         Metric From            If     Time
Rc 192.168.7.0/24                           1                  xe3
C  192.168.11.0/24                          1                  vlan2.11
C  192.168.21.0/24                          1                  vlan1.21
C  192.168.22.0/24                          1                  vlan1.22
C  192.168.24.0/24                          1                  vlan1.24
```

A.3.2 Show ip protocols rip

```
blade-SLOT1#show ip protocols rip
Routing Protocol is "rip"
  Sending updates every 30 seconds with +/-50%, next due in 18 seconds
  Timeout after 180 seconds, garbage collect after 120 seconds
  Outgoing update filter list for all interface is not set
  Incoming update filter list for all interface is not set
  Default redistribution metric is 1
  Redistributing: connected
  Default version control: send version 2, receive version 2
    Interface        Send  Recv   Key-chain
    xe3              2     2
  Routing for Networks:
    192.168.7.0/24
  Routing Information Sources:
```

```
    Gateway          Distance  Last Update  Bad Packets  Bad Routes
192.168.7.2           120        00:00:11   0               0
  Number of routes (excluding connected): 1
  Distance: (default is 120)
```

A.3.3 Show ip rip interface

```
blade-SLOT1#show ip rip interface
ge1 is up, line protocol is up
  RIP is not enabled on this interface
ge2 is down, line protocol is down
  RIP is not enabled on this interface
ge3 is down, line protocol is down
  RIP is not enabled on this interface
ge4 is down, line protocol is down
  RIP is not enabled on this interface
ge5 is down, line protocol is down
  RIP is not enabled on this interface
ge6 is down, line protocol is down
  RIP is not enabled on this interface
ge7 is up, line protocol is up
  RIP is not enabled on this interface
ge8 is down, line protocol is down
  RIP is not enabled on this interface
ge9 is up, line protocol is up
  RIP is not enabled on this interface
ge10 is up, line protocol is up
  RIP is not enabled on this interface
ge11 is down, line protocol is down
  RIP is not enabled on this interface
ge12 is down, line protocol is down
  RIP is not enabled on this interface
ge13 is down, line protocol is down
  RIP is not enabled on this interface
ge14 is down, line protocol is down
  RIP is not enabled on this interface
```

```
ge15 is up, line protocol is up
  RIP is not enabled on this interface
ge16 is up, line protocol is up
  RIP is not enabled on this interface
ge17 is up, line protocol is up
  RIP is not enabled on this interface
ge18 is down, line protocol is down
  RIP is not enabled on this interface
ge19 is down, line protocol is down
  RIP is not enabled on this interface
ge20 is down, line protocol is down
  RIP is not enabled on this interface
ge21 is down, line protocol is down
  RIP is not enabled on this interface
ge22 is down, line protocol is down
  RIP is not enabled on this interface
ge23 is down, line protocol is down
  RIP is not enabled on this interface
ge24 is down, line protocol is down
  RIP is not enabled on this interface
ge25 is down, line protocol is down
  RIP is not enabled on this interface
ge26 is up, line protocol is up
  RIP is not enabled on this interface
ge27 is up, line protocol is up
  RIP is not enabled on this interface
ge28 is down, line protocol is down
  RIP is not enabled on this interface
lo is up, line protocol is up
  RIP is not enabled on this interface
vlan1.21 is up, line protocol is up
  RIP is not enabled on this interface
vlan1.22 is up, line protocol is up
  RIP is not enabled on this interface
vlan1.24 is up, line protocol is up
  RIP is not enabled on this interface
```

```
vlan2.11 is up, line protocol is up
  RIP is not enabled on this interface
vlan2.12 is down, line protocol is down
  RIP is not enabled on this interface
xe1 is down, line protocol is down
  RIP is not enabled on this interface
xe2 is up, line protocol is up
  RIP is not enabled on this interface
xe3 is up, line protocol is up
  Routing Protocol: RIP
    Disable to receive RIP packets
    Send RIP packets
    Passive interface: Disabled
    Split horizon: Enabled with Poisoned Reversed
    IP interface address:
      192.168.7.1/24
xe4 is down, line protocol is down
  RIP is not enabled on this interface
xe5 is down, line protocol is down
  RIP is not enabled on this interface
xe6 is down, line protocol is down
  RIP is not enabled on this interface
xe7 is up, line protocol is up
  RIP is not enabled on this interface
xe8 is up, line protocol is up
  RIP is not enabled on this interface
xe9 is down, line protocol is down
  RIP is not enabled on this interface
xe10 is down, line protocol is down
  RIP is not enabled on this interface
xe11 is down, line protocol is down
  RIP is not enabled on this interface
xe12 is down, line protocol is down
  RIP is not enabled on this interface
xe13 is down, line protocol is down
  RIP is not enabled on this interface
```

```
xe14 is down, line protocol is down
  RIP is not enabled on this interface
xe15 is down, line protocol is down
  RIP is not enabled on this interface
xe16 is down, line protocol is down
  RIP is not enabled on this interface
xe17 is up, line protocol is up
  RIP is not enabled on this interface
xe18 is up, line protocol is up
  RIP is not enabled on this interface
xe19 is up, line protocol is up
  RIP is not enabled on this interface
xe20 is up, line protocol is up
  RIP is not enabled on this interface
xe21 is down, line protocol is down
  RIP is not enabled on this interface
xe22 is down, line protocol is down
  RIP is not enabled on this interface
xe23 is down, line protocol is down
  RIP is not enabled on this interface
xe24 is down, line protocol is down
  RIP is not enabled on this interface
xe25 is down, line protocol is down
  RIP is not enabled on this interface
xe26 is down, line protocol is down
  RIP is not enabled on this interface
xe27 is down, line protocol is down
  RIP is not enabled on this interface
xe28 is down, line protocol is down
  RIP is not enabled on this interface
xe29 is down, line protocol is down
  RIP is not enabled on this interface
xe30 is down, line protocol is down
  RIP is not enabled on this interface
xe31 is down, line protocol is down
  RIP is not enabled on this interface
```

```
xe32 is down, line protocol is down
  RIP is not enabled on this interface
xe33 is down, line protocol is down
  RIP is not enabled on this interface
xe34 is down, line protocol is down
  RIP is not enabled on this interface
xe35 is down, line protocol is down
  RIP is not enabled on this interface
xe36 is down, line protocol is down
  RIP is not enabled on this interface
xe37 is down, line protocol is down
  RIP is not enabled on this interface
xe38 is down, line protocol is down
  RIP is not enabled on this interface
```

A.3.4 show running-config

```
blade-SLOT1#show running-config
!
no service password-encryption
!
log file /var/log/srstackware.log
!
key chain srs-key
 key 1
  key-string pinv
 key 2
  key-string srs
!
vrrp vmac enable
maximum-paths 8
bridge 1 protocol ieee vlan-bridge
bridge 2 protocol ieee vlan-bridge
!
vlan database
 vlan 5 bridge 1 name VLAN0005 state enable
```

```
 vlan 21 bridge 1 name VLAN21 state enable intervlan-route enable
 vlan 22 bridge 1 name VLAN22 state enable intervlan-route enable
 vlan 24 bridge 1 name VLAN24 state enable intervlan-route enable
 vlan 93 bridge 1 name VLAN93 state enable
 vlan 11 bridge 2 name VLAN11 state enable intervlan-route enable
 vlan 12 bridge 2 name VLAN12 state enable intervlan-route enable
 vlan 91 bridge 2 name VLAN91 state enable
!
interface ge1
 description BC3 - Slot 3
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge2
 description BC4 - Slot 4
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge3
 description BC5 - Slot 5
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
```

```
 shutdown
!
interface ge4
 description BC6 - Slot 6
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge5
 description BC7 - Slot 7
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge6
 description BC8 - Slot 8
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge7
 description BC9 - Slot 9
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
```

```
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge8
 description BC10 - Slot 10
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge9
 description BC11 - Slot 11
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge10
 description BC12 - Slot 12
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
```

```
interface ge11
 description BC13 - Slot 13
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge12
 description BC14 - Slot 14
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge13
 description BC15 - Slot 15 or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge14
 description BC16 - Slot 16 or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 shutdown
!
interface ge15
 description BC1[A]
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 24
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 24 egress-tagged disable
 no shutdown
!
interface ge16
 description BC1[B]
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 24
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 24 egress-tagged disable
 no shutdown
!
interface ge17
 description BC2 - Xlink
 bridge-group 1 spanning-tree disable
 switchport mode trunk
 switchport mode trunk ingress-filter disable
 switchport trunk allowed vlan add 21
 switchport trunk allowed vlan add 22
 no shutdown
!
interface ge18
 description Base AMC 0
 bridge-group 1 spanning-tree disable
```

```
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge19
 description x-connect or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge20
 description Base TopSync or rtm
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 21
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 21 egress-tagged disable
 no shutdown
!
interface ge21
 description Base RTM SFP 1G Uplink 1 (ETH8)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
```

```
interface ge22
 description Base RTM SFP 1G Uplink 2 (ETH9)
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.5.1/24
 no shutdown
!
interface ge23
 description Base RTM SFP 1G Uplink 3 (ETH10)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface ge24
 description Base RTM SFP 1G Uplink 4 (ETH11)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface ge25
 description Slot 15 or topsync
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface ge26
```

```
 description Slot 16 or FC1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface ge27
 description Fabric AMC - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface ge28
 description Fabric UC [3/4]
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface lo
 no switchport
 ip address 127.0.0.1/8
 ipv6 address ::1/128
 no shutdown
!
interface xe1
```

```
 description Base RTM SFP+ 10G Uplink 1 (ETH1)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
interface xe2
 description Base RTM SFP+ 10G Uplink 2 (ETH2)
 bridge-group 1
 switchport mode hybrid
 switchport hybrid vlan 5
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 5 egress-tagged disable
 no shutdown
!
interface xe3
 description Base Front Panel SFP+ 10G Link 1(ETH3)
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.7.1/24
 no shutdown
 no ip rip receive-packet
 ip rip authentication mode md5
 ip rip authentication string srs
!
interface xe4
 description Base Front Panel SFP+ 10G Link 2 - (ETH4)
 bridge-group 1 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 93
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 93 egress-tagged disable
 shutdown
!
```

```
interface xe5
 description FC2 - slot3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe6
 description FC3 - slot4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe7
 description FC4 - slot5
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe8
 description FC5 - slot6
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe9
 description FC6 - slot7 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe10
 description FC6 - slot7 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe11
 description FC6 - slot7 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe12
 description FC6 - slot7 - Port 4
```

```
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe13
 description FC7 - slot8 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe14
 description FC7 - slot8 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe15
 description FC7 - slot8 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
```

```
 shutdown
!
interface xe16
 description FC7 - slot8 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe17
 description FC8 - slot9
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe18
 description FC9 - slot10
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe19
 description FC10 - slot11
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
```

```
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe20
 description FC11 - slot12
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 no shutdown
!
interface xe21
 description FC12 - slot13 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe22
 description FC12 - slot13 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
```

```
interface xe23
 description FC12 - slot13 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe24
 description FC12 - slot13 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe25
 description FC13 - slot14 - Port 1
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe26
 description FC13 - slot14 - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
```

```
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe27
 description FC13 - slot14 - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe28
 description FC13 - slot14 - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport mode hybrid ingress-filter disable
 switchport hybrid vlan 11
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 11 egress-tagged disable
 shutdown
!
interface xe29
 description Fabric RTM QSFP 40G (ETH7)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe30
 description Fabric RTM SFP+ 10G (ETH6)
 bridge-group 2 spanning-tree disable
```

```
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe31
 description Fabric RTM SFP+ 10G (ETH5)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe32
 description Fabric RTM SFP+ 10G (ETH4)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe33
 description Fabric RTM SFP+ 10G (ETH3)
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe34
 description Fabric Front Panel QSFP 10G (ETH1) - Port 1
 bridge-group 2 spanning-tree disable
```

```
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe35
 description Fabric Front Panel QSFP 10G (ETH1) - Port 2
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe36
 description Fabric Front Panel QSFP 10G (ETH1) - Port 3
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe37
 description Fabric Front Panel QSFP 10G (ETH1) - Port 4
 bridge-group 2 spanning-tree disable
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface xe38
 description Fabric Front Panel QSFP 40G (ETH2)
 bridge-group 2 spanning-tree disable
```

```
 switchport mode hybrid
 switchport hybrid vlan 91
 switchport mode hybrid acceptable-frame-type all
 switchport hybrid allowed vlan add 91 egress-tagged disable
 shutdown
!
interface vlan1.1
 no shutdown
!
interface vlan1.5
 no shutdown
!
interface vlan1.21
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.21.1/24
 no shutdown
!
interface vlan1.22
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.22.1/24
 no shutdown
!
interface vlan1.24
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.24.1/24
 no shutdown
!
interface vlan1.93
 no shutdown
!
interface vlan2.1
 shutdown
!
```

```
interface vlan2.11
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.11.1/24
 no shutdown
!
interface vlan2.12
 no switchport
 arp-ageing-timeout 3000
 ip address 192.168.12.1/24
 no shutdown
!
interface vlan2.91
 no shutdown
!
router rip
 network 192.168.7.0/24
 redistribute connected
!
line con 0
 login
line vty 0 4
 login
!
end
```

A.3.5 show ip route

```
blade-SLOT1#show ip route
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter
area
       * - candidate default
```

```
C       127.0.0.0/8 is directly connected, lo
C       192.168.7.0/24 is directly connected, xe3
C       192.168.11.0/24 is directly connected, vlan2.11
C       192.168.21.0/24 is directly connected, vlan1.21
C       192.168.22.0/24 is directly connected, vlan1.22
C       192.168.24.0/24 is directly connected, vlan1.24
```

A.4 RIPng Configuration

This section is relevant only if LAYER3SRS is licensed.

A.4.1 Show ipv6 rip

```
imish# show ipv6 rip
Codes: R - RIP, Rc - RIP connected, Rs - RIP static, Ra - RIP aggregated,
               Rcx - RIP connect suppressed, Rsx - RIP static suppressed,
                 K - Kernel, C - Connected, S - Static, O - OSPF, I - IS-
IS, B - BGP
 Network                     Next Hop                 If     Met Tag  Time
C  fec0::c400:0:0:0:0/54       ::                       ge47     1   0 ^M
Rc fec0::cc00:0:0:0:0/54       ::                       xe3      1   0 ^M
imish#*****
```

A.5 OSPF Configuration

A.5.1 Show ip ospf

This section is relevant only if LAYER3SRS is licensed.

```
Atca-#show ip ospf

Routing Process "ospf 100" with ID 192.168.12.1
Process uptime is 0 minute
Process bound to VRF default
Conforms to RFC2328, and RFC1583 Compatibility flag is disabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
Supports Graceful Restart
SPF schedule delay min 0.500 secs, SPF schedule delay max 50.0 secs
Refresh timer 10 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum 0x000000
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 0
External LSA database is unlimited.
Number of LSA originated 0
Number of LSA received 0
Number of areas attached to this router: 1
Area 0.0.0.0 (BACKBONE) (Inactive)
Number of interfaces in this area is 0(0)
Number of fully adjacent neighbors in this area is 0
Area has no authentication
SPF algorithm executed 0 times
Number of LSA 0. Checksum 0x000000
```

A.5.2 Show ip ospf neighbor

```
imish# show ip ospf neighbor
OSPF process 1:
Neighbor ID   Pri   State    Dead Time   Address      Interface
192.168.7.2    1  Full/DR   00:00:32    192.168.7.2     xe1
```

A.5.3 Show ip ospf route

```
imish# show ip ospf route
OSPF process 1:
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
E2 192.168.6.0/24 [1/20] via 192.168.7.2,    xe1
C  192.168.7.0/24 [1] is directly connected, xe1, Area 0.0.0.0
E2 192.168.11.0/24 [1/20] via 192.168.7.2,   xe1
E2 192.168.12.0/24 [1/20] via 192.168.7.2,   xe1
E2 192.168.21.0/24 [1/20] via 192.168.7.2,   xe1
E2 192.168.22.0/24 [1/20] via 192.168.7.2,   xe1
```

A.5.4 show ip ospf interface

```
atca-#show ip ospf interface vlan2.2005
vlan2.2005 is up, line protocol is up
  Internet Address 192.168.205.2/24, Area 0.0.0.1, MTU 1500
Process ID 1, Router ID 10.10.10.10, Network Type BROADCAST, Cost: 1
  Transmit Delay is 1 sec, State Waiting, Priority 1
  No designated router on this network
  No backup designated router on this network
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:01
  Neighbor Count is 0, Adjacent neighbor count is 0
  Crypt Sequence Number is 1304618141
  Hello received 0 sent 4, DD received 0 sent 0
  LS-Req received 0 sent 0, LS-Upd received 0 sent 0
  LS-Ack received 0 sent 0, Discarded 0
```

Related Documentation

B.1 SMART Embedded Computing Documentation

The documentation listed is referenced in this manual. Technical documentation can be found by using the Documentation Search at *https://www.smartembedded.com/ec/support/* or you can obtain electronic copies of SMART EC documentation by contacting your local sales representative.

Table B-1 SMART EC Publications

Document Title and Source	Publication Number
SRstackware Intelligent Network Software Troubleshooting Guide	6806800N83
SRstackware Intelligent Network Software VRRP Command Reference	6806800N84
SRstackware Intelligent Network Software RIP Command Reference	6806800N85
SRstackware Intelligent Network Software Layer 2 Configuration Guide	6806800N86
SRstackware Intelligent Network Software OSPF Command Reference	6806800N87
SRstackware Application Programming Interface Developer Guide	6806800N90
SRstackware Intelligent Network Software Layer 2 Command Reference	6806800N88
SRstackware Intelligent Network Software Switch Configuration Command Reference	6806800N92
SRstackware Intelligent Network Software Layer3 Command Reference	6806800N93
SRstackware Intelligent Network Software Protocol Demo Guide	6806800N07
SRstackware FAQ	6806800N91

Related Documentation