



SRstackware[®] Intelligent Network Software

Layer 3 Command Reference

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Table of Contents

About this Manual	13
1 IP Commands	17
1.1 arp A.B.C.D MAC	17
1.1.1 Command Syntax.....	17
1.1.2 Command Mode.....	17
1.1.3 Examples	17
1.2 ip proxy-arp	17
1.2.1 Command Syntax.....	17
1.2.2 Command Mode.....	18
1.2.3 Example	18
1.3 clear ip route kernel	18
1.3.1 Command Syntax.....	18
1.3.2 Default	18
1.3.3 Command Mode.....	18
1.3.4 Examples	18
1.3.5 Related Commands	18
1.4 ip address	19
1.4.1 Command Syntax.....	19
1.4.2 Command mode.....	19
1.4.3 Usage.....	19
1.4.4 Examples	19
1.4.5 Validation commands.....	19
1.5 ip forwarding	20
1.5.1 Command Syntax.....	20
1.5.2 Command Mode.....	20
1.5.3 Examples	20
1.6 ip route	20
1.6.1 Command Syntax.....	20
1.6.2 Command Mode.....	21
1.6.3 Usage.....	21
1.6.4 Examples	21
1.6.5 Validation Commands	21
1.7 show ip forwarding	21
1.7.1 Command Syntax.....	21
1.7.2 Command Mode.....	22

Table of Contents

1.7.3	Usage	22
1.7.4	Examples	22
1.8	show ip interface brief	22
1.8.1	Command Syntax	22
1.8.2	Command Mode	22
1.8.3	Usage	22
1.8.4	Examples	23
1.8.5	Related Commands	23
1.9	show ip route	23
1.9.1	Command Syntax	23
1.9.2	Command Mode	24
1.9.3	Usage	24
1.9.4	Examples	25
1.9.5	Related Commands	25
1.10	show ip route database	25
1.10.1	Command Syntax	25
1.10.2	Command Mode	25
1.10.3	Usage	26
1.10.4	Examples	27
1.10.5	Related Commands	27
1.11	show ip route summary	27
1.11.1	Command Syntax	27
1.11.2	Command Mode	27
1.11.3	Examples	27
1.11.4	Related Commands	27
1.12	show router-id	28
1.12.1	Command Syntax	28
1.12.2	Command Mode	28
1.12.3	Usage	28
1.12.4	Examples	28
2	IPv6 Commands	29
2.1	clear ipv6 neighbors	29
2.1.1	Command Syntax	29
2.1.2	Command Mode	29
2.2	ipv6 address	29
2.2.1	Command Syntax	29
2.2.2	Command Mode	29

Table of Contents

2.2.3	Examples	30
2.2.4	Validation Commands	30
2.3	ipv6 forwarding	30
2.3.1	Command Syntax	30
2.3.2	Command Mode	30
2.3.3	Examples	30
2.4	ipv6 nd current-hoplimit	30
2.4.1	Command Syntax	30
2.4.2	Command Mode	31
2.4.3	Example	31
2.5	ipv6 nd link-mtu	31
2.5.1	Command Syntax	31
2.5.2	Command Mode	31
2.5.3	Example	31
2.6	ipv6 nd managed-config-flag	31
2.6.1	Command Syntax	32
2.6.2	Default	32
2.6.3	Command Mode	32
2.6.4	Example	32
2.6.5	Related Commands	32
2.7	ipv6 nd minimum-ra-interval	32
2.7.1	Command Syntax	32
2.7.2	Command Mode	32
2.7.3	Example	33
2.8	ipv6 nd other-config-flag	33
2.8.1	Command Syntax	33
2.8.2	Default	33
2.8.3	Command Mode	33
2.8.4	Example	33
2.8.5	Related Commands	33
2.9	ipv6 nd prefix	34
2.9.1	Command Syntax	34
2.9.2	Default	34
2.9.3	Command Mode	34
2.9.4	Usage	34
2.9.5	Example	34
2.9.6	Related Commands	34
2.10	ipv6 nd prefix no-autoconf	35

Table of Contents

2.10.1	Command Syntax	35
2.10.2	Command Mode	35
2.10.3	Example	35
2.11	ipv6 nd prefix offlink	35
2.11.1	Command Syntax	35
2.11.2	Command Mode	35
2.11.3	Example	36
2.12	ipv6 nd prefix preferred-lifetime	36
2.12.1	Command Syntax	36
2.12.2	Command Mode	36
2.12.3	Example	36
2.13	ipv6 nd prefix valid-lifetime	36
2.13.1	Command Syntax	37
2.13.2	Command Mode	37
2.13.3	Example	37
2.14	ipv6 nd ra-interval	37
2.14.1	Command Syntax	37
2.14.2	Default	37
2.14.3	Command Mode	37
2.14.4	Example	38
2.14.5	Related Commands	38
2.15	ipv6 nd ra-lifetime	38
2.15.1	Command Syntax	38
2.15.2	Default	38
2.15.3	Command Mode	38
2.15.4	Usage	38
2.15.5	Example	39
2.15.6	Related Commands	39
2.16	ipv6 nd reachable-time	39
2.16.1	Command Syntax	39
2.16.2	Default	39
2.16.3	Command Mode	39
2.16.4	Example	39
2.16.5	Related Commands	39
2.17	ipv6 nd retransmission-time	40
2.17.1	Command Syntax	40
2.17.2	Command Mode	40
2.17.3	Example	40

2.18	ipv6 nd suppress-ra	40
2.18.1	Command Syntax	40
2.18.2	Default	40
2.18.3	Command Mode	40
2.18.4	Example	41
2.18.5	Related Commands	41
2.19	ipv6 neighbor	41
2.19.1	Command Syntax	41
2.19.2	Command Mode	41
2.20	ipv6 route	41
2.20.1	Command Syntax	41
2.20.2	Command Mode	42
2.20.3	Examples	42
2.20.4	Validation Commands	42
2.21	show ipv6 forwarding	42
2.21.1	Command Syntax	42
2.21.2	Command Mode	42
2.21.3	Usage	42
2.21.4	Examples	43
2.22	show ipv6 interface brief	43
2.22.1	Command Syntax	43
2.22.2	Command Mode	43
2.22.3	Usage	43
2.22.4	Examples	44
2.22.5	Related Commands	44
2.23	show ipv6 neighbors	44
2.23.1	Command Syntax	44
2.23.2	Command Mode	44
2.24	show ipv6 route	44
2.24.1	Command Syntax	44
2.24.2	Command Mode	45
2.24.3	Usage	45
2.24.4	Examples	45
2.25	show ipv6 route summary	46
2.25.1	Command Syntax	46
2.25.2	Command Mode	46
2.25.3	Examples	46
2.25.4	Related Commands	46

Table of Contents

3	IGMP Multicast Commands	47
3.1	Overview	47
3.2	IGMP Commands	47
3.3	clear ip igmp	47
3.3.1	Command Syntax	47
3.3.2	Command Mode	47
3.3.3	Usage	47
3.3.4	Example	47
3.3.5	Related Commands	48
3.4	clear ip igmp groups	48
3.4.1	Command Syntax	48
3.4.2	Command Mode	48
3.4.3	Usage	48
3.4.4	Examples	48
3.4.5	Related Commands	48
3.5	clear ip igmp interface	49
3.5.1	Command Syntax	49
3.5.2	Command Mode	49
3.5.3	Usage	49
3.5.4	Example	49
3.5.5	Related Commands	49
3.6	debug igmp	49
3.6.1	Command Syntax	49
3.6.2	Command Modes	50
3.6.3	Usage	50
3.6.4	Example	50
3.7	ip igmp	50
3.7.1	Command Syntax	50
3.7.2	Command Mode	51
3.7.3	Default	51
3.7.4	Usage	51
3.7.5	Example	51
3.8	ip igmp access-group	51
3.8.1	Command Syntax	51
3.8.2	Command Mode	51
3.8.3	Default	51
3.8.4	Usage	52
3.8.5	Examples	52

3.8.6	Related Commands	52
3.9	ip igmp immediate-leave	52
3.9.1	Command Syntax	52
3.9.2	Command Mode	52
3.9.3	Default	53
3.9.4	Usage	53
3.9.5	Examples	53
3.9.6	Related Commands	53
3.10	ip igmp join-group	53
3.10.1	Command Syntax	53
3.10.2	Parameters	53
3.10.3	Command Mode	54
3.10.4	Examples	54
3.11	ip igmp last-member-query-count	54
3.11.1	Command Syntax	54
3.11.2	Command Mode	54
3.11.3	Default	54
3.11.4	Usage	54
3.11.5	Example	55
3.12	ip igmp last-member-query-interval	55
3.12.1	Command Syntax	55
3.12.2	Command Mode	55
3.12.3	Default	55
3.12.4	Usage	55
3.12.5	Examples	55
3.12.6	Related Commands	56
3.13	ip igmp limit	56
3.13.1	Command Syntax	56
3.13.2	Command Mode	56
3.13.3	Usage	56
3.13.4	Examples	57
3.14	ip igmp mroute-proxy	57
3.14.1	Command Syntax	57
3.14.2	Command Mode	57
3.14.3	Usage	57
3.14.4	Example	58
3.15	ip igmp offlink	58
3.15.1	Command Syntax	58

Table of Contents

3.15.2	Parameter	58
3.15.3	Command Mode	58
3.15.4	Example	58
3.16	ip igmp proxy-service	59
3.16.1	Command Syntax	59
3.16.2	Command Mode	59
3.16.3	Usage	59
3.16.4	Example	59
3.17	ip igmp querier-timeout	60
3.17.1	Command Syntax	60
3.17.2	Command Mode	60
3.17.3	Default	60
3.17.4	Usage	60
3.17.5	Examples	60
3.17.6	Related Commands	60
3.18	ip igmp query-interval	61
3.18.1	Command Syntax	61
3.18.2	Command Mode	61
3.18.3	Default	61
3.18.4	Usage	61
3.18.5	Example	61
3.19	ip igmp query-max-response-time	62
3.19.1	Command Syntax	62
3.19.2	Command Mode	62
3.19.3	Default	62
3.19.4	Usage	62
3.19.5	Examples	62
3.20	ip igmp robustness-variable	63
3.20.1	Command Syntax	63
3.20.2	Command Mode	63
3.20.3	Default	63
3.20.4	Usage	63
3.20.5	Example	63
3.21	ip igmp ssm-map enable	63
3.21.1	Command Syntax	63
3.21.2	Command Mode	64
3.21.3	Usage	64
3.21.4	Example	64

3.21.5 Related Commands	64
3.22 ip igmp ssm-map static	64
3.22.1 Command Syntax	64
3.22.2 Command Mode	65
3.22.3 Usage	65
3.22.4 Examples	65
3.22.5 Related Commands	65
3.23 ip igmp static-group	65
3.23.1 Command Syntax	65
3.23.2 Command Mode	66
3.23.3 Usage	66
3.23.4 Examples	66
3.24 ip igmp version	67
3.24.1 Command Syntax	67
3.24.2 Command Mode	68
3.24.3 Usage	68
3.24.4 Default	68
3.24.5 Example	68
3.25 show debugging igmp	68
3.25.1 Command Syntax	68
3.25.2 Command Mode	68
3.25.3 Examples	68
3.26 show ip igmp groups	69
3.26.1 Command Syntax	69
3.26.2 Command Mode	69
3.26.3 Examples	69
3.27 show ip igmp interface	70
3.27.1 Command Syntax	70
3.27.2 Command Mode	71
3.27.3 Example	71
4 Bidirectional Forwarding Detection Commands	73
4.1 Overview	73
4.2 bfd disable	73
4.2.1 Command Syntax	73
4.2.2 Command Mode	73
4.2.3 Examples	74
4.3 bfd interval	74

Table of Contents

4.3.1	Command Syntax	74
4.3.2	Command Mode	75
4.3.3	Examples	75
4.4	bfd session	75
4.4.1	Command Syntax	75
4.4.2	Command mode	75
4.4.3	Examples	75
4.5	show bfd	75
4.5.1	Command Syntax	75
4.5.2	Command Mode	76
4.5.3	Examples	76
A	Related Documentation	77
A.1	Penguin Solutions Documentation	77

About this Manual

Overview of Contents

Network administrators and application developers who install and configure SRstackware IP routing software should use this Command Reference.

This document provides the information on the following chapters:

Chapter 1, IP Commands on page 17

Chapter 2, IPV6 Commands on page 29

Chapter 3, IGMP Multicast Commands on page 47

Chapter 4, Bidirectional Forwarding Detection Commands on page 73

Appendix A, Related Documentation on page 77

SRstackware provides Telnet services so that users can log into any of the routing module layers and control the module by using the Command Line Interface (CLI).



Abbreviations






This document uses the following abbreviations:

Abbreviation	Definition
CLI	Command Line Interface
FSM	Finite State Machine
GMP	Group Management Protocols
IGMP	Internet Group Management Protocol
MLD	Multicast Listener Discovery
MTU	Maximum Transmission Unit
SRS	Server Routing Suite
SRstackware	Switching and Routing stackware
TIB	Tree Information Base

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
<i>Reference</i>	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
	<p>Indicates a property damage message</p>
	<p>Indicates a hot surface that could result in moderate or serious injury</p>
	<p>Indicates an electrical situation that could result in moderate injury or death</p>
<p>Use ESD protection</p> 	<p>Indicates that when working in an ESD environment care should be taken to use proper ESD practices</p>
	<p>No danger encountered, pay attention to important information</p>

Summary of Changes

This manual has been revised and replaces all prior editions.

Part Number	Publication Date	Description
6806800N93G	August 2022	Rebrand to Penguin Solutions.
6806800N93F	March 2020	Rebrand to SMART Embedded Computing. Corrected cross-references to supporting reference guides.
6806800N93E	July 2017	Added registered trademark to SRstackware
6806800N93D	February 2015	Added <i>ip proxy-arp</i> on page 17 and <i>Chapter 4, Bidirectional Forwarding Detection Commands</i> on page 73. Updated <i>ip route</i> on page 20.
6806800N93C	June 2014	Rebrand to Artesyn template.
6806800N93B	October 2012	Added <i>ip igmp join-group</i> on page 53 and <i>ip igmp offlink</i> on page 58.
6806800N93A	February 2012	EA Release

IP Commands

1.1 arp A.B.C.D MAC

Use this command to create a static group ARP entry.

Use the `no` parameter to remove the static group ARP entry.



This command is available only if LAYER3SRS is licensed.

1.1.1 Command Syntax

```
arp A.B.C.D MAC (alias | )
no arp A.B.C.D
A.B.C.D IP address
MAC MAC address
```

1.1.2 Command Mode

Configure mode

1.1.3 Examples

```
# configure terminal
(config)# arp 10.10.10.10 0010.2355.4566 alias
```

1.2 ip proxy-arp

This command configures proxy ARP on a particular interface and thus enabling it to accept and respond to proxy ARP. Use `no` along with the command to disable the proxy ARP as shown in the syntax.

Proxy ARP is a technique by which a device on a given network answers the ARP queries for a network address that is not on that network.

1.2.1 Command Syntax

```
ip proxy-arp
no ip proxy-arp
```

IP Commands

1.2.2 Command Mode

Interface mode

1.2.3 Example

```
(config)#interface xe1 (config-if)#ip proxy-arp
(config)#interface xe1
(config-if)#no ip proxy-arp
```

1.3 clear ip route kernel

Use this command to clear IPv4 stale kernel routes from NSM RIB and FIB.



This command is available only if LAYER3SRS is licensed.

1.3.1 Command Syntax

```
clear ip route kernel
```

1.3.2 Default

None

1.3.3 Command Mode

Privileged Exec mode

1.3.4 Examples

```
# clear ip route kernel
```

1.3.5 Related Commands

```
clear ipv6 route kernel, fib retain
```

1.4 ip address

Use this command to set the IP address of an interface.

Use the `no` parameter with this command to remove the IP address from an interface.

1.4.1 Command Syntax

```
ip address IP-ADDRESS (secondary)
```

```
no ip address IP-ADDRESS
```

```
no ip address
```

`IP-ADDRESS A.B.C.D/M` Specifies the IP address and prefix length of an interface.

`secondary` Specifies the IP address as secondary.

1.4.2 Command mode

Interface mode

1.4.3 Usage

When the `secondary` parameter is not specified with this command, this command overwrites the primary IP address. When the `secondary` parameter is specified with this command, this command adds a new IP address to the interface.

The secondary address cannot be configured in the absence of a primary IP address.

The primary address cannot be removed when a secondary address is present.

1.4.4 Examples

```
# configure terminal
(config)# interface eth0
(config-if)# ip address 10.10.10.50/24
(config-if)# ip address 10.10.11.50/24 secondary
```

1.4.5 Validation commands

show running-config, show interface, show ip interface brief

1.5 ip forwarding

Use this command to turn on IP forwarding.

Use the `no` parameter with this command to turn off IP forwarding.

1.5.1 Command Syntax

```
(no) ip forwarding
```

1.5.2 Command Mode

Configure mode

1.5.3 Examples

```
Router# configure terminal
Router(config)# ip forwarding
```

1.6 Ip route

Use this command to establish the distance for static routes of a subnet mask. Use the `no` form of this command to disable the distance for static routes of a subnet mask.

1.6.1 Command Syntax

```
(no) ip route DESTPREFIX IPADDRESSMASK GATEWAYIP | INTERFACE
(DISTVALUE)
```

```
(no) ip route DESTPREFIX/M GATEWAYIP | INTERFACE (DISTVALUE)
```

DESTPREFIX = A.B.C.D Specifies the IP destination prefix.

DESTPREFIX/M = A.B.C.D/M Specifies the IP destination prefix and a mask length <0-32>.

IPADDRESSMASK = A.B.C.D Specifies the IP destination prefix mask.

GATEWAYIP = A.B.C.D Specifies the IP gateway address.

DISTVALUE = <1-255> Specifies the distance value for the route.

INTERFACE = Specifies the name of the interface.

fail-over = Specify fail-over detection method

bfd = Bidirectional Forwarding Detection (BFD)

1.6.2 Command Mode

Configure mode

1.6.3 Usage

While creating a static-route, BFD can be enabled using fail-over bfd option. BFD session will be established only when the peer also participates in it. So, user needs to initiate BFD session on the nexthop for this static-route. Once the BFD session is established, BFD starts detecting the liveness of the nexthop.

NOTICE

When static-route is enabled with BFD, it responds only to the BFD session-down event and removes the static-route from RIB.

Static-routing with BFD is effective as long as it is the sole owner of the BFD session. In a static-route, only one DESTPREFIX per nexthop can be used in conjunction with BFD.

1.6.4 Examples

```
# configure terminal
(config)# ip route 192.168.3.0 255.255.255.0 2.2.2.2 128
(config)# ip route 1.1.1.0/24 eth0 32
```

1.6.5 Validation Commands

show ip route, show running-config

1.7 show ip forwarding

Use this command to display the IP forwarding status.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

1.7.1 Command Syntax

```
show ip forwarding
```

IP Commands

1.7.2 Command Mode

Exec mode and Privileged Exec mode

1.7.3 Usage

The following is a sample output of the `show ip forwarding` command displaying the IP forwarding status.

```
# show ip forwarding
IP forwarding is on
```

1.7.4 Examples

```
# show ip forwarding
```

1.8 show ip interface brief

Use this command to display brief information about interfaces and the IP addresses assigned to them. To display information about a specific interface, specify the interface name with the command.

To modify the lines displayed, use the `|` (output modifier token); to save the output to a file, use the `>` output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

1.8.1 Command Syntax

```
show ip interface [IFNAME] brief
IFNAME Specify the name of the interface.
```

1.8.2 Command Mode

Exec mode and Privileged Exec mode

1.8.3 Usage

The following is a sample output from the `show ip interface brief` command:

```
# show ip interface brief
Interface          IP-Address      Status          Protocol
lo                 127.0.0.1      up              up
```

gre0	unassigned	administratively down	down
eth0	10.10.0.142	up	up
eth1	10.10.11.123	up	up
eth2	unassigned	administratively down	down
eth3	unassigned	administratively down	down
sit0	unassigned	administratively down	down
tun24	unassigned	administratively down	down
tun10	unassigned	administratively down	down

1.8.4 Examples

```
# show ip interface eth0 brief
```

1.8.5 Related Commands

```
show ipv6 interface brief
```

1.9 show ip route

Use this command to display the IP routing table for a protocol or from a particular table.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.



show ip route (bgp/connected/kernel/ospf/rip/static) are available in LAYER3SRS alone.

1.9.1 Command Syntax

```
show ip route (bgp |connected |kernel |ospf |rip |static |A.B.C.D
|A.B.C.D/M)
```

bgp = Display selected BGP routes.

connected = Display selected connected routes.

kernel = Display selected kernel routes.

ospf = Display selected OSPF routes.

rip = Display selected RIP routes.

static = Display selected static routes.

IP Commands

A.B.C.D = Network in the IP routing table to display

A.B.C.D/M = IP prefix <network>/<length>, e.g., 35.0.0.0/8

1.9.2 Command Mode

Exec mode and Privileged Exec mode

1.9.3 Usage

When multiple entries are available for the same prefix, NSM uses an internal route selection mechanism based on protocol administrative distance and metric values to choose the best route. All best routes are entered into the FIB, and can be viewed using the this command. To display all routes (selected and not selected), use the `show ip route database` command. The following show output displays only the best routes. To illustrate the difference between the `show ip route database` output and this output, the same configuration has been used in both examples.

For a detailed line-by-line description of an output of this command, see the *SRstackware Intelligent Network Software Troubleshooting Guide*

```
# 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

O      1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:00:10
C      2.2.2.0/24 is directly connected, eth2
C      3.3.3.0/24 is directly connected, eth1
O IA   4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:00:10
K      10.10.0.0/24 via 10.70.0.1, eth0
C      10.70.0.0/24 is directly connected, eth0
C      33.33.33.33/32 is directly connected, lo
C      127.0.0.0/8 is directly connected, lo
K      169.254.0.0/16 is directly connected, eth0
```


The following is a show output of this command with the `ospf` parameter, displaying only the selected OSPF routes learned by NSM:

```
# show ip route ospf
O      1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:00:44
O IA   4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:00:44
```

1.9.4 Examples

```
# show ip route ospf
```

1.9.5 Related Commands

`show ip route database`

1.10 show ip route database

Use this command to display all routing entries known by NSM. When multiple entries are available for the same prefix, NSM uses an internal route selection mechanism based on protocol administrative distance and metric values to choose the best route. All best routes are entered into the FIB, and can be viewed using the `show ip route` command.

To modify the lines displayed, use the `|` (output modifier token), to save the output to a file use the `>` output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

1.10.1 Command Syntax

```
show ip route database (bgp|connected|isis|kernel|ospf|rip|static)
```

`bgp` Display all the BGP routes learned by NSM.

`connected` Display all the connected routes learned by NSM.

`isis` Display all the IS-IS routes learned by NSM.

`kernel` Display all the kernel routes learned by NSM.

`ospf` Display all the OSPF routes learned by NSM.

`rip` Display all the RIP routes learned by NSM.

`static` Display all the static routes learned by NSM.

1.10.2 Command Mode

Exec mode and Privileged Exec mode

1.10.3 Usage

The following is an output of this command displaying all routes learned by NSM.

This output shows selected as well as non selected routes.

To illustrate the difference between the `show ip route` output and this output, the same configuration has been used in both examples.

For a detailed line-by-line description of an output of this command, see the *SRstackware Intelligent Network Software Troubleshooting Guide*.

```
# show ip route database
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
       > - selected route, * - FIB route, p - stale info

O    *> 1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:01:26
O      2.2.2.0/24 [110/10] is directly connected, eth2, 00:02:16
C    *> 2.2.2.0/24 is directly connected, eth2
C    *> 3.3.3.0/24 is directly connected, eth1
O IA *> 4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:01:26
K    *> 10.10.0.0/24 via 10.70.0.1, eth0
K    * 10.70.0.0/24 is directly connected, eth0
C    *> 10.70.0.0/24 is directly connected, eth0
C    *> 33.33.33.33/32 is directly connected, lo
S      100.100.100.0/24 [1/0] via 5.5.5.1 inactive
C    *> 127.0.0.0/8 is directly connected, lo
K    *> 169.254.0.0/16 is directly connected, eth0
```

The following is a show output of this command with the `ospf` parameter, displaying all OPSF routes learned by NSM:

```
# show ip route database ospf
O    *> 1.1.1.0/24 [110/20] via 2.2.2.1, eth2, 00:01:26
O      2.2.2.0/24 [110/10] is directly connected, eth2, 00:02:16
O IA *> 4.4.4.0/24 [110/21] via 2.2.2.1, eth2, 00:01:26
```

1.10.4 Examples

```
# show ip route database static
```

1.10.5 Related Commands

show ip route

1.11 show ip route summary

Use this command to display the summary of the current NSM RIB entries.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

1.11.1 Command Syntax

```
show ip route summary
```

1.11.2 Command Mode

Exec mode and Privileged Exec mode

1.11.3 Examples

```
# show ip route summary
IP routing table name is Default-IP-Routing-Table(0)
IP routing table maximum-paths is 4
RouteSource      Networks
kernel           1
connected        5
ospf              2
Total            8
FIB              2
```

1.11.4 Related Commands

show ip route, show ip route database

1.12 show router-id

Use this command to display the Router ID of the current system.



This command is available only if LAYER3SRS is licensed.

1.12.1 Command Syntax

```
show router-id
```

1.12.2 Command Mode

Privileged Exec mode

1.12.3 Usage

```
> show router-id  
Router ID: 10.55.0.2 (automatic)
```

1.12.4 Examples

```
# show router-id
```

IPv6 Commands



The commands in this chapter are available only if LAYER3SRS is licensed.

2.1 clear ipv6 neighbors

Use this command to clear all dynamic IPv6 neighbor entries.

2.1.1 Command Syntax

```
clear ipv6 neighbors
```

2.1.2 Command Mode

Privileged Exec mode

2.2 ipv6 address

Use this command to set the IPv6 address of an interface. Use the no form of this command to disable this function.

2.2.1 Command Syntax

```
ipv6 address IPADDRESS
```

```
no ipv6 address
```

IPADDRESS = X:X::X:X/M Specifies the IP destination prefix and a mask length <0-128>.

2.2.2 Command Mode

Interface mode

IPV6 Commands

2.2.3 Examples

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 address 3ffe:506::1/48
```

2.2.4 Validation Commands

show running-config, show interface, show ipv6 route

2.3 ipv6 forwarding

Use this command to turn on IPv6 forwarding.

Use the `no` parameter with this command to turn off IPv6 forwarding.

2.3.1 Command Syntax

```
(no)ipv6 forwarding
```

2.3.2 Command Mode

Configure mode

2.3.3 Examples

```
Router# configure terminal
Router(config)# ipv6 forwarding
```

2.4 ipv6 nd current-hoplimit

Use this command to set an advertised hop limit for the interface.

Use the `no` option with the command to remove the current hop limit.

2.4.1 Command Syntax

```
(no) ipv6 nd current-hoplimit <0-255>
<0-255> Set a hop limit within this range
```

2.4.2 Command Mode

Interface mode

2.4.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd current-hoplimit 10
(config-if)# no ipv6 nd current-hoplimit
```

2.5 ipv6 nd link-mtu

Use this command to set an advertised MTU option.

Use the `no` option with the command to reset the MTU option to the default state.

2.5.1 Command Syntax

```
ipv6 nd link-mtu
no ipv6 nd link-mtu [default]
default Reset the MTU option to the default state
```

2.5.2 Command Mode

Interface mode

2.5.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd link-mtu
(config-if)# no ipv6 nd link-mtu
```

2.6 ipv6 nd managed-config-flag

Use this command to set the managed address configuration flag in the Router Advertisement to be used for the IPv6 address auto-configuration.

Use the `no` parameter with this command to reset the value to default.

IPv6 Commands

2.6.1 Command Syntax

(no) ipv6 nd managed-config-flag

2.6.2 Default

Unset

2.6.3 Command Mode

Interface mode

2.6.4 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd managed-config-flag
(config-if)# no ipv6 nd suppress-ra
```

2.6.5 Related Commands

ipv6 nd suppress-ra, ipv6 nd prefix, ipv6 nd other-config-flag

2.7 ipv6 nd minimum-ra-interval

Use this command to set a minimum Router Advertisement (RA) interval for the interface.

Use the `no` option with the command to remove the minimum RA interval.

2.7.1 Command Syntax

(no) ipv6 nd minimum-ra-interval <3-1350>
<3-1350> **Minimum RA interval, in seconds**

2.7.2 Command Mode

Interface mode

2.7.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd minimum-ra-interval 500
(config-if)# no ipv6 nd minimum-ra-interval
```

2.8 ipv6 nd other-config-flag

Use this command to set the other stateful configuration flag in Router Advertisement to be used for IPv6 address auto-configuration.

Use no parameter with this command to reset the value to default.

2.8.1 Command Syntax

```
(no) ipv6 nd other-config-flag
```

2.8.2 Default

Unset

2.8.3 Command Mode

Interface mode

2.8.4 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd other-config-flag
(config-if)# no ipv6 nd suppress-ra
```

2.8.5 Related Commands

ipv6 nd suppress-ra, ipv6 nd prefix, ipv6 nd managed-config-flag

2.9 ipv6 nd prefix

Use this command to specify the IPv6 prefix information that is advertised by the Router Advertisement for IPv6 address auto-configuration.

Use `no` parameter with this command to reset the IPv6 prefix.

2.9.1 Command Syntax

```
(no) ipv6 nd prefix X:X::X:X/M <preferred-lifetime> <valid-lifetime> (off-link|) (no-autoconf|)
```

`X:X::X:X/M` Specify the IPv6 prefix.

`<valid-lifetime>` Specify the IPv6 prefix valid lifetime.

`<preferred-lifetime>` Specify the IPv6 prefix preferred lifetime.

`off-link` Specify the IPv6 prefix off-link flag.

`no-autoconf` Specify the IPv6 prefix no autoconfiguration flag.

2.9.2 Default

Unspecified

2.9.3 Command Mode

Interface mode

2.9.4 Usage

This command specifies the IPv6 prefix that is advertised by the Router Advertisement message.

2.9.5 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd prefix 2001:ffff::/64
(config-if)# no ipv6 nd suppress-ra
```

2.9.6 Related Commands

`ipv6 nd suppress-ra`, `ipv6 nd prefix`

2.10 ipv6 nd prefix no-autoconf

Use this command to set the prefix list option flag for no-configuration.

Use the `no` option with this command to unset the no auto-configuration prefix list option flag.

2.10.1 Command Syntax

```
(no) ipv6 nd prefix no-autoconf
```

2.10.2 Command Mode

Interface mode

2.10.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd prefix no-autoconf
(config-if)# no ipv6 nd prefix no-autoconf
```

2.11 ipv6 nd prefix offlink

Use this command to set the IPv6 prefix list option offlink flag.

Use the `no` option with this command to unset the prefix list option offlink flag.

2.11.1 Command Syntax

```
(no) ipv6 nd prefix offlink
```

2.11.2 Command Mode

Interface mode

2.11.3 Example

```
# configure terminal
(config)# eth0
(config-if)# ipv6 nd prefix offlink
(config-if)# no ipv6 nd prefix offlink
```

2.12 ipv6 nd prefix preferred-lifetime

Use this command to configure the IPv6 preferred lifetime prefix list option for Route Advertisement.

Use the `no` option with this command to reset the preferred lifetime prefix list option.

2.12.1 Command Syntax

```
(no) ipv6 nd prefix preferred-lifetime <0-4294967295>
<0-4294967295> Range of values for preferred lifetime, in seconds
```

2.12.2 Command Mode

Interface mode

2.12.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd prefix preferred-lifetime 55000000
(config-if)# no ipv6 nd prefix preferred-lifetime
```

2.13 ipv6 nd prefix valid-lifetime

Use this command to configure the IPv6 valid lifetime prefix list option for Route Advertisement.

Use the `no` option with this command to reset the valid lifetime prefix list option.

2.13.1 Command Syntax

```
(no) ipv6 nd prefix valid-lifetime <0-4294967295>
```

<0-4294967295> Range for valid lifetime, in seconds

2.13.2 Command Mode

Interface mode

2.13.3 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd prefix valid-lifetime 55000000
(config-if)# no ipv6 nd prefix valid-lifetime
```

2.14 ipv6 nd ra-interval

Use this command to specify the interval between IPv6 Router Advertisements (RA).

Use `no` parameter with this command to reset the value to default.

2.14.1 Command Syntax

```
(no) ipv6 nd ra-interval <4-1800>
```

2.14.2 Default

600 seconds.

2.14.3 Command Mode

Interface mode

IPv6 Commands

2.14.4 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd ra-interval 60
(config-if)# ipv6 nd prefix 3ffe:ffff:ffff::/64
(config-if)# no ipv6 nd suppress-ra
```

2.14.5 Related Commands

ipv6 nd suppress-ra, ipv6 nd prefix

2.15 ipv6 nd ra-lifetime

Use this command to specify the lifetime of this router enabling it to act as a default gateway for the network.

Use `no` parameter with this command to reset the value to default.

2.15.1 Command Syntax

```
(no) ipv6 nd ra-lifetime <0-9000>
```

2.15.2 Default

1800 seconds

2.15.3 Command Mode

Interface mode

2.15.4 Usage

This command specifies the lifetime of the current router to be announced in IPv6 Router Advertisement.

2.15.5 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd ra-lifetime 9000
(config-if)# no ipv6 nd suppress-ra
```

2.15.6 Related Commands

ipv6 nd suppress-ra, ipv6 nd prefix

2.16 ipv6 nd reachable-time

Use this command to specify the reachable time in the Router Advertisement to be used for detecting unreachability of the IPv6 neighbor.

Use the `no` parameter with this command to reset the value to default.

2.16.1 Command Syntax

```
(no) ipv6 nd reachable-time <0-3600000>
```

2.16.2 Default

0 milliseconds

2.16.3 Command Mode

Interface mode

2.16.4 Example

```
# configure terminal
(config)# interface eth0
(config-if)# ipv6 nd reachable-time 1800000
(config-if)# no ipv6 nd suppress-ra
```

2.16.5 Related Commands

ipv6 nd suppress-ra, ipv6 nd prefix

2.17 ipv6 nd retransmission-time

Use this command to establish an IPv6 advertised retransmission time for the current interface. Use the `no` form of the command to remove the retransmission time.

2.17.1 Command Syntax

```
ipv6 nd retransmission-time <1000-3600000>  
<1000-3600000> The retransmission time in milliseconds
```

2.17.2 Command Mode

Interface mode

2.17.3 Example

```
# configure terminal  
(config)# interface eth0  
(config-if)# ipv6 nd retransmission-time 1200  
(config-if)# no ipv6 nd retransmission-time
```

2.18 ipv6 nd suppress-ra

Use this command to control IPv6 Router Advertisement (RA) transmission for the current interface. Router Advertisement is used for IPv6 stateless auto-configuration.

Use `no` parameter with this command to enable Router Advertisement transmission.

2.18.1 Command Syntax

```
(no) ipv6 nd suppress-ra
```

2.18.2 Default

Suppressed

2.18.3 Command Mode

Interface mode

2.18.4 Example

```
# configure terminal
(config)# interface eth0
(config-if)# no ipv6 nd suppress-ra
```

2.18.5 Related Commands

ipv6 nd ra-interval, ipv6 nd prefix

2.19 ipv6 neighbor

Use this command to add an IPv6 neighbor entry. Use the `no` form of this command to remove an IPv6 neighbor entry.

2.19.1 Command Syntax

```
ipv6 neighbor ADDRESS IF NAME MAC
no ipv6 neighbor ADDRESS IF NAME
ADDRESS = X:X::X:X neighbor's IPv6 address
IFNAME = interface name
MAC = HHHH.HHHH.HHHH MAC hardware address
```

2.19.2 Command Mode

Configure mode

2.20 ipv6 route

Use this command to establish the distance for static routes of a subnet mask. Use the `no` form of this command to disable the distance for static routes of a subnet mask.

2.20.1 Command Syntax

```
(no) ipv6 route DESTPREFIX/M GATEWAYIP|INTERFACE DISTVALUE
DESTPREFIX = Specifies the IP destination prefix.
DESTPREFIX/M = X:X::X:X/M Specifies the IP destination prefix and a mask
length <0-128>.
GATEWAYIP = X:X::X:X Specifies the IP gateway address.
```

IPv6 Commands

`DISTVALUE = <1-255>` Specifies the distance value for the route.

`INTERFACE =` Specifies the name of the interface

2.20.2 Command Mode

Configure mode

2.20.3 Examples

```
# configure terminal
(config)# ipv6 route 3ffe:506::1 128
(config)# ipv6 route 3ffe:506::1/128 myintname 32
```

2.20.4 Validation Commands

show running-config, show ipv6 route

2.21 show ipv6 forwarding

Use this command to display IPv6 forwarding status.

To modify the lines displayed, use the `|` (output modifier token); to save the output to a file, use the `>` output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

2.21.1 Command Syntax

```
show ipv6 forwarding
```

2.21.2 Command Mode

Exec mode and Privileged Exec mode

2.21.3 Usage

The following is a sample output of the `show ipv6 forwarding` command displaying the IPv6 forwarding status.

```
# show ipv6 forwarding
ipv6 forwarding is on
```

2.21.4 Examples

```
# show ipv6 forwarding
```

2.22 show ipv6 interface brief

Use this command to display brief information about interfaces and the IPv6 address assigned to them. To display information about a specific interface, specify the interface name with the command.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

2.22.1 Command Syntax

```
show ipv6 interface [IFNAME] brief
IFNAME Specify the name of the interface.
```

2.22.2 Command Mode

Exec mode and Privileged Exec mode

2.22.3 Usage

The following is a sample output from the `show ipv6 interface brief` command:

```
# show ipv6 interface brief
lo                                [up/up]
   ::1
gre0                               [administratively down/down]  unassigned
eth0                               [up/up]
   3ffe:abcd:104::1
   3ffe:abcd:103::1
   fe80::2e0:29ff:fe6f:cf0
eth1                               [up/up]
   fe80::260:97ff:fe20:f257
eth2                               [administratively down/down]  unassigned
eth3                               [administratively down/down]  unassigned
sit0                               [administratively down/down]  unassigned
```

IPv6 Commands

tun24	[administratively down/down]	unassigned
tun10	[administratively down/down]	unassigned

2.22.4 Examples

```
# show ipv6 interface eth0 brief
```

2.22.5 Related Commands

```
show ip interface brief
```

2.23 show ipv6 neighbors

Use this command to display all IPv6 neighbors.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

2.23.1 Command Syntax

```
show ipv6 neighbors
```

2.23.2 Command Mode

Exec mode and Privileged Exec mode

2.24 show ipv6 route

Use this command to display the IP routing table for a protocol or from a particular table.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

2.24.1 Command Syntax

```
show ipv6 route  
(bgp|connected|kernel|ospf|rip|static|X:X::X:X|X:X::X:X/M)  
bgp = Border Gateway Protocol (BGP)  
connected = connected
```

```
kernel = kernel
ospf = Open Shortest Path First (OSPF)
rip = Routing Information Protocol (RIP)
static = static routes
X:X::X:X = Network in the IP routing table to display
X:X::X:X/M = IP prefix <network>/<length>, e.g., 35.0.0.0/8
```

2.24.2 Command Mode

Exec mode and Privileged Exec mode

2.24.3 Usage

The following is a sample output of the `show ipv6 route` command displaying the IPv6 routing table.

```
# show ipv6 route
Codes: K - kernel route, C - connected, S - static, R - RIPng, O -
OSPFv3,
       I - IS-IS, B - BGP, > - selected route, * - FIB route, p -
stale info.
C> * ::1/128 is directly connected, lo
C> * 3ffe:1::/48 is directly connected, eth1
C> * 3ffe:2:2::/48 is directly connected, eth2
C * fe80::/10 is directly connected, eth1
C * fe80::/10 is directly connected, eth2
C * fe80::/10 is directly connected, eth3
C> * fe80::/10 is directly connected, eth0
```

2.24.4 Examples

```
# show ipv6 route ospf
```

2.25 show ipv6 route summary

Use this command to display the summary of the current NSM RIB entries.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *tSRstackware® Intelligent Network Software VRRP Command Reference*.

2.25.1 Command Syntax

```
show ipv6 route summary
```

2.25.2 Command Mode

Exec mode and Privileged Exec mode

2.25.3 Examples

```
# show ipv6 route summary
IPv6 routing table name is Default-IPv6-Routing-Table(0)
IPv6 routing table maximum-paths is 4
```

RouteSource	Networks
connected	4
ospf	5
Total	9
FIB	5

2.25.4 Related Commands

show ip route, show ip route database

IGMP Multicast Commands

3.1 Overview

This chapter lists configuration, clear, and show commands related to Group Management Protocols (GMPs), IGMP, and MLD.



The commands in this chapter are available only if LAYER3SRS is licensed.

3.2 IGMP Commands

The Internet Group Management Protocol (IGMP) module includes the IGMP Proxy service and IGMP Snooping functionalities. Some of the following commands may have commonalities and restrictions: these are described under the Usage section for each command.

3.3 clear ip igmp

Use this command to clear all IGMP local-memberships on all interfaces.

3.3.1 Command Syntax

```
clear ip igmp
```

3.3.2 Command Mode

Privileged Exec mode

3.3.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.3.4 Example

```
# clear ip igmp
```

IGMP Multicast Commands

3.3.5 Related Commands

clear ip igmp groups, clear ip igmp interface

3.4 clear ip igmp groups

Use this command to clear IGMP specific local-membership(s) on all interfaces.

3.4.1 Command Syntax

```
clear ip igmp (vrf VRFNAME) groups * | A.B.C.D
```

VRFNAME Optional. Specify the VRF name.

* Clears all groups on all interfaces. This is an alias to the `clear ip igmp` command.

A.B.C.D Specifies the group address's local-membership to be cleared from all interfaces.

3.4.2 Command Mode

Privileged Exec mode

3.4.3 Usage

This command applies to groups learned by IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.4.4 Examples

```
# clear ip igmp group *  
# clear ip igmp group 224.1.1.1
```

3.4.5 Related Commands

clear ip igmp, clear ip igmp interface

3.5 clear ip igmp interface

Use this command to clear IGMP interface entries.

3.5.1 Command Syntax

```
clear ip igmp (vrf VRFNAME) interface IFNAME
```

VRFNAME Optional. Specify the VRF name.

IFNAME Specifies name of the interface; all groups learned from this interface are deleted.

3.5.2 Command Mode

Privileged Exec mode

3.5.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.5.4 Example

```
# clear ip igmp interface eth1
```

3.5.5 Related Commands

clear ip igmp, clear ip igmp groups

3.6 debug igmp

Use this command to enable debugging of all IGMP, or a specific component of IGMP.

Use the `no` parameter with this command to disable all IGMP debugging, or debugging of a specific component of IGMP.

3.6.1 Command Syntax

```
debug igmp (vrf VRFNAME) all|decode|events|fsm|tib
```

```
no debug igmp (vrf VRFNAME) all|decode|events|fsm|tib
```

IGMP Multicast Commands

`VRFNAME` Optional. Specify the VRF name.

`all` debug all IGMP

`decode` debug IGMP decoding

`encode` debug IGMP encoding

`events` debug IGMP events

`fsm` debug IGMP Finite State Machine (FSM)

`tib` debug IGMP Tree Information Base (TIB)

3.6.2 Command Modes

Privileged Exec mode and Configure mode

3.6.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.6.4 Example

```
# configure terminal
(config)# debug igmp all
```

3.7 ip igmp

Use this command to enable the IGMP protocol operation on an interface. This command enables IGMP protocol operation in stand-alone mode, and can be used to learn local membership information prior to enabling a multicast routing protocol on the interface.

Use the `no` parameter with this command to return all IGMP related configuration to the default (including IGMP Snooping or IGMP Proxy service).

3.7.1 Command Syntax

```
ip igmp
no ip igmp
```

3.7.2 Command Mode

Interface mode

3.7.3 Default

Disabled

3.7.4 Usage

This command will have no effect on interfaces configured for IGMP Proxy.

3.7.5 Example

```
# configure terminal
(config)# interface ethernet 0
(config-if)# ip igmp
```

3.8 ip igmp access-group

Use this command to control the multicast local-membership groups learnt on an interface.

Use the `no` parameter with this command to disable this access control.

3.8.1 Command Syntax

```
ip igmp access-group <1-199>|WORD
```

```
no ip igmp access-group <1-199>
```

<1-199> Access-list number.

WORD Standard IP access-list name.

3.8.2 Command Mode

Interface mode

3.8.3 Default

No access list configured

IGMP Multicast Commands

3.8.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.8.5 Examples

In the following example, hosts serviced by Ethernet interface 0 can only join the group 225.2.2.2:

```
# configure terminal
(config)# access-list 1 permit 225.2.2.2 0.0.0.0
(config)# interface eth0
(config-if)# ip igmp access-group 1
```

3.8.6 Related Commands

None

3.9 ip igmp immediate-leave

In IGMP version 2, use this command to minimize the leave latency of IGMP memberships. This command is used when only one receiver host is connected to each interface.

To disable this feature, use the `no` parameter with this command.

3.9.1 Command Syntax

```
ip igmp immediate-leave group-list ACCESSLIST
no ip igmp immediate-leave
ACCESSLIST <1-99>|<1300-1999>|WORD Standard access-list name or number
that defines multicast groups in which the immediate leave feature is enabled.
<1-99> Access-list number.
<1300-1999> Access-list number (expanded range).
WORD Standard IP access-list name.
```

3.9.2 Command Mode

Interface mode

3.9.3 Default

Disabled

3.9.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.9.5 Examples

The following example shows how to enable the immediate-leave feature on an interface for a specific range of multicast groups. In this example, the router assumes that the group access-list consists of groups that have only one host membership at a time per interface:

```
# configure terminal
(config)# interface eth 0
(config-if)# ip igmp immediate-leave group-list 34
(config-if)# exit
(config)# access-list 34 permit 225.192.20.0 0.0.0.255
```

3.9.6 Related Commands

ip igmp last-member-query-interval

3.10 ip igmp join-group

Use this command to join a multicast group.

Use the `no` parameter with this command to disable this access control.

3.10.1 Command Syntax

```
ip igmp join-group [A.B.C.D |source |A.B.C.D]
no ip igmp join-group [A.B.C.D |source |A.B.C.D]
```

3.10.2 Parameters

A.B.C.D Multicast IPv4 address to be joined

source Static source to be joined

A.B.C.D Source IPv4 address to be joined

IGMP Multicast Commands

3.10.3 Command Mode

Interface mode

3.10.4 Examples

In the following example, hosts serviced by the Ethernet interface `xe21` can only join the group `225.2.2.2`:

```
#configure terminal
(config)#interface xe21
(config-if)#ip igmp join-group 225.2.2.2 source 1.1.1.2
(config)#interface xe21
(config-if)#no ip igmp join-group 225.2.2.2 source 1.1.1.2
```

3.11 ip igmp last-member-query-count

Use this command to set the last-member query-count value. To return to the default value on an interface, use the `no` parameter with this command.

3.11.1 Command Syntax

```
ip igmp last-member-query-count <2-7>
no ip igmp last-member-query-count
<2-7> last member query count value
```

3.11.2 Command Mode

Interface mode

3.11.3 Default

The default last member query count value is 2.

3.11.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.11.5 Example

```
# configure terminal
(config)# interface ethernet 0
(config-if)# ip igmp last-member-query-count 3
```

3.12 ip igmp last-member-query-interval

Use this command to configure the frequency at which the router sends IGMP group-specific host query messages.

To set this frequency to the default value, use the `no` parameter with this command.

3.12.1 Command Syntax

```
ip igmp last-member-query-interval INTERVAL
no ip igmp last-member-query-interval
INTERVAL = <1000-25500> Frequency (in milliseconds) at which IGMP group-specific host query messages are sent.
```

3.12.2 Command Mode

Interface mode

3.12.3 Default

1000 milliseconds

3.12.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.12.5 Examples

The following example changes the IGMP group-specific host query message interval to 2 seconds:

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp last-member-query-interval 2000
```

IGMP Multicast Commands

3.12.6 Related Commands

`ip igmp immediate-leave`

3.13 ip igmp limit

Use this command to configure the limit on the maximum number of group membership states, at either the router level, or for the specified interface. Once the specified number of group memberships is reached, all further local memberships will be ignored. Optionally, an exception access-list can be configured to specify the group-address(es) to be excluded from being subject to the limit.

Use the `no` parameter with this command to unset the limit and any specified exception access-list.

3.13.1 Command Syntax

```
ip igmp (vrf VRFNAME) limit LIMITVALUE (except ACCESSLIST)
```

```
no ip igmp (vrf VRFNAME) limit
```

VRFNAME Optional. Specify the VRF name.

LIMITVALUE <1-2097152> Maximum number of group membership states

ACCESSLIST <1-99>|<1300-1999>|WORD Number or name that defines multicast groups which are exempted from being subject to configured limit.

<1-99> Access-list number

<1300-1999> Access-list number (expanded range)

WORD Standard IP access-list name

3.13.2 Command Mode

Global Config mode and Interface mode

3.13.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

When configured for IGMP Snooping, this command can be issued on only VLAN interfaces. The limit applies, individually, to each of its constituent interfaces.

3.13.4 Examples

The following example configures an IGMP limit of 100 group-membership states across all interfaces on which IGMP is enabled, and excludes group 224.1.1.1 from this limitation:

```
# configure terminal
(config)# access-list 1 deny 224.1.1.1 0.0.0.0
(config)# ip igmp limit 100 except 1
```

The following example configures an IGMP limit of 100 group-membership states on eth0:

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp limit 100
```

3.14 ip igmp mroute-proxy

Use this command to specify the IGMP Proxy service (upstream host-side) interface with which to be associated. IGMP router-side protocol operation is enabled only when the specified upstream proxy-service interface is functional.

Use the `no` parameter with this command to remove the association with the proxy-service interface.

3.14.1 Command Syntax

```
ip igmp mroute-proxy IFNAME
no ip igmp mroute-proxy
```

3.14.2 Command Mode

Interface mode

3.14.3 Usage

This command should not be used when configuring interfaces enabled for IGMP in association with a multicast routing protocol, otherwise the behavior will be undefined.

IGMP Multicast Commands

3.14.4 Example

The following example configures the eth 0 interface as the upstream proxy-service interface for the downstream router-side interface, eth 1.

```
# configure terminal
(config)# interface eth1
(config-if)# ip igmp mroute-proxy eth0
```

3.15 ip igmp offlink

Use this command to specify the IGMP proxy service (upstream host-side) interface with an offlink condition.

Use the `no` parameter with this command to remove the offlink association from the interface.

Source must also pass RPF check for the subnet to record the group information.

3.15.1 Command Syntax

```
ip igmp offlink
no ip igmp offlink
```

3.15.2 Parameter

None

3.15.3 Command Mode

Interface mode

3.15.4 Example

The following example configures the xe21 interface as an offlink interface.

```
#configure terminal
(config)#interface xe21
(config-if)#ip igmp offlink
```

3.16 ip igmp proxy-service

Use this command to designate an interface to be the IGMP proxy-service (upstream host-side) interface, thus enabling IGMP host-side protocol operation on this interface. All associated downstream router-side interfaces will have their memberships consolidated on this interface, according to IGMP host-side functionality.

Use the `no` parameter with this command to remove the designation of the interface as an upstream proxy-service interface.

3.16.1 Command Syntax

```
ip igmp proxy-service
no ip igmp proxy-service
```

3.16.2 Command Mode

Interface mode

3.16.3 Usage

This command should not be used when configuring interfaces enabled for IGMP in association with a multicast-routing protocol, otherwise the behavior will be undefined.

3.16.4 Example

The following example designates the eth 0 interface as the upstream proxy-service interface.

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp proxy-service
```

3.17 ip igmp querier-timeout

Use this command to configure the timeout period before the router takes over as the querier for the interface after the previous querier has stopped querying.

To restore the default value, use the `no` parameter with this command.

3.17.1 Command Syntax

```
ip igmp querier-timeout TIMEOUT
```

```
no ip igmp querier-timeout
```

`TIMEOUT` = <60-300> Number of seconds that the router waits after the previous querier has stopped querying before it takes over as the querier.

3.17.2 Command Mode

Interface mode

3.17.3 Default

255 seconds

3.17.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.17.5 Examples

The following example configures the router to wait 120 seconds from the time it received the last query before it takes over as the querier for the interface:

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp querier-timeout 120
```

3.17.6 Related Commands

`ip igmp query-interval`

3.18 ip igmp query-interval

Use this command to configure the frequency of sending IGMP host query messages.

To return to the default frequency, use the `no` parameter with this command.

3.18.1 Command Syntax

```
ip igmp query-interval INTERVAL
```

```
no ip igmp query-interval
```

INTERVAL = <1-18000> Frequency (in seconds) at which IGMP host query messages are sent.

3.18.2 Command Mode

Interface mode

3.18.3 Default

The default query interval is 125 seconds.

3.18.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.18.5 Example

The following example changes the frequency of sending IGMP host-query messages to 2 minutes:

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp query-interval 120
```

3.19 ip igmp query-max-response-time

Use this command to configure the maximum response time advertised in IGMP queries.

To restore the default value, use the `no` parameter with this command.

3.19.1 Command Syntax

```
ip igmp query-max-response-time RESPONSETIME
no ip igmp query-max-response-time
RESPONSETIME = <1-240> Maximum response time (in seconds) advertised in
IGMP queries.
```

3.19.2 Command Mode

Interface mode

3.19.3 Default

10 seconds

3.19.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.19.5 Examples

The following example configures a maximum response time of 8 seconds:

```
# configure terminal
(config)# interface eth0
(config-if)# ip igmp query-max-response-time 8
```

3.20 ip igmp robustness-variable

Use this command to change the robustness variable value on an interface.

To return to the default value on an interface, use the `no` parameter with this command.

3.20.1 Command Syntax

```
ip igmp robustness-variable <2-7>
no ip igmp robustness-variable
```

3.20.2 Command Mode

Interface mode

3.20.3 Default

The default robustness variable value is 2.

3.20.4 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.20.5 Example

```
# configure terminal
(config)# interface ethernet 0
(config-if)# ip igmp robustness-variable 3
```

3.21 ip igmp ssm-map enable

Use this command to enable SSM mapping on the router.

Use the `no` parameter with this command to disable SSM mapping.

3.21.1 Command Syntax

```
ip igmp (vrf VRFNAME) ssm-map enable
no ip igmp (vrf VRFNAME) ssm-map enable
VRFNAME Optional. Specify the VRF name.
```

IGMP Multicast Commands

3.21.2 Command Mode

Global Config mode

3.21.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.21.4 Example

This example shows how to configure SSM mapping on the router.

```
# configure terminal
(config)# ip igmp ssm-map enable
```

3.21.5 Related Commands

`ip igmp ssm-map static`

3.22 ip igmp ssm-map static

Use this command to specify the static mode of defining SSM mapping. SSM mapping statically assigns sources to IGMPv1 and IGMPv2 groups to translate such (*,G) groups' memberships to (S,G) memberships for use with PIM-SSM.

Use the `no` parameter with this command to remove the SSM map association.

3.22.1 Command Syntax

```
ip igmp (vrf VRFNAME) ssm-map static ACCESSLIST A.B.C.D
no ip igmp (vrf VRFNAME) ssm-map static ACCESSLIST A.B.C.D
VRFNAME Optional. Specify the VRF name.
ACCESSLIST
<1-99> Access-list number
<1300-1999> Access-list number (expanded range).
A.B.C.D Standard IP access-list name.
```


3.22.2 Command Mode

Global Config mode

3.22.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.22.4 Examples

This example shows how to configure an SSM static mapping for group-address 224.1.1.1.

```
# configure terminal
(config)# ip igmp ssm-map static 1 1.2.3.4
(config)# access-list 1 permit 224.1.1.1 0.0.0.0
```

3.22.5 Related Commands

`ip igmp ssm-map enable`

3.23 ip igmp static-group

Use this command to statically configure group membership entries on an interface. To statically add only a group membership, do not specify any parameters.

Use the `no` parameter with this command to delete static group membership entries.

3.23.1 Command Syntax

```
ip igmp static-group A.B.C.D (source [E.F.G.H|ssm-map]) (interface IFNAME)
```

```
no ip igmp static-group A.B.C.D (source [E.F.G.H|ssm-map])
(interface IFNAME)
```

A.B.C.D Standard IP Multicast group address to be configured as a static group member.

source Optional.

E.F.G.H Standard IP source address to be configured as a static source from where multicast packets originate.

IGMP Multicast Commands

`ssm-map` Mode of defining SSM mapping. SSM mapping statically assigns sources to IGMPv1 and IGMPv2 groups to translate these (*, G) groups' memberships to (S, G) memberships for use with PIM-SSM.

`interface` Optional. Physical interface. Use this parameter on VLAN interfaces when static configuration is required for IGMP snooping. If used, static configuration is applied to the physical interface specified in `IFNAME`. If not used, static configuration is applied on all VLAN constituent interfaces.

`IFNAME` Physical interface name.

3.23.2 Command Mode

Interface mode

3.23.3 Usage

This command applies to IGMP operation on a specific interface to statically add group and/or source records or to IGMP Snooping on a VLAN interface to statically add group and/or source records.

3.23.4 Examples

The following examples show how to statically add group and/or source records for IGMP:

```
# configure terminal
(config)#interface eth0
(config-if)# ip igmp static-group 226.1.2.3
```

```
# configure terminal
(config)#interface eth0
(config-if)#ip igmp static-group 226.1.2.4 source 1.2.3.4
```

```
# configure terminal
(config)#interface eth0
(config-if)# ip igmp static-group 226.1.2.5 source ssm-map
```

The following examples show how to statically add group and/or source records for IGMP Snooping:

```
# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.3
```

```
# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.6 source 1.2.3.4

# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.6 source ssm-map

# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.3 interface eth0

# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.6 source 1.2.3.4
interface eth0

# configure terminal
(config)#interface vlan1.1
(config-if)# ip igmp static-group 226.1.2.6 source ssm-map
interface eth0
```

3.24 ip igmp version

Use this command to set the current IGMP protocol version on an interface.

To return to the default version, use the `no` parameter with this command.

3.24.1 Command Syntax

```
ip igmp version <1-3>
no ip igmp version
<1-3> IGMP protocol version number
```

IGMP Multicast Commands

3.24.2 Command Mode

Interface mode

3.24.3 Usage

This command applies to interfaces configured for IGMP Layer 3 multicast protocols, IGMP Snooping, or IGMP Proxy.

3.24.4 Default

The default IGMP protocol version number is 3.

3.24.5 Example

```
# configure terminal
(config)# interface ethernet0
(config-if)# ip igmp version 2
```

3.25 show debugging igmp

Use this command to display the status of the debugging of the IGMP system.

To modify the lines displayed, use the | (output modifier token) to save the output to a file use the > (output redirection token). For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

3.25.1 Command Syntax

```
show debugging igmp
```

3.25.2 Command Mode

Exec and Privileged Exec mode

3.25.3 Examples

```
# show debugging igmp
```

3.26 show ip igmp groups

Use this command to display the multicast groups with receivers directly connected to the router, and learned through IGMP.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

3.26.1 Command Syntax

```
show ip igmp groups (A.B.C.D|IFNAME |detail)
```

A.B.C.D Address of the multicast group.

IFNAME Interface name for which to display local information.

3.26.2 Command Mode

Exec mode and Privileged Exec mode

3.26.3 Examples

The following command displays local-membership information for all interfaces:

```
# show ip igmp groups
IGMP Connected Group Membership
Group Address      Interface      Uptime      Expires      Last Reporter
224.0.1.1          eth2           00:00:09    00:04:17    10.10.0.82
224.0.1.24         eth2           00:00:06    00:04:14    10.10.0.84
224.0.1.40         eth2           00:00:09    00:04:15    10.10.0.91
224.0.1.60         eth2           00:00:05    00:04:15    10.10.0.7
224.100.100.100    eth2           00:00:11    00:04:13    10.10.0.91
228.5.16.8         eth2           00:00:11    00:04:16    10.10.0.91
228.81.16.8        eth2           00:00:05    00:04:15    10.10.0.91
228.249.13.8       eth2           00:00:08    00:04:17    10.10.0.91
235.80.68.83       eth2           00:00:12    00:04:15    10.10.0.40
239.255.255.250    eth2           00:00:12    00:04:15    10.10.0.228
239.255.255.254    eth2           00:00:08    00:04:13    10.10.0.84
```

IGMP Multicast Commands

The following describes significant fields shown in the display above:

Field	Description
Group Address	Address of the multicast group.
Interface	Interface through which the group is reachable.
Uptime	For the time period (in weeks, days, hours, minutes, and seconds) this multicast group is known.
Expires	Time (in hours, minutes, and seconds) until the entry expires.
Last Reporter	Last host to report being a member of the multicast group.

The following command displays local-membership details for a specific group:

```
# show ip igmp groups 224.1.1.1 detail
Interface:      eth1
Group:         224.1.1.1
Uptime:        00:00:42
Group mode:    Include
Last reporter: 192.168.50.111
TIB-A Count:   2
TIB-B Count:   0
Group source list: (R - Remote, M - SSM Mapping)
  Source Address  Uptime    v3 Exp   Fwd  Flags
  192.168.55.55   00:00:42  00:03:38 Yes  R
192.168.55.66   00:00:42  00:03:38 Yes  R
```

3.27 show ip igmp interface

Use this command to display the state of IGMP, IGMP Proxy service, and IGMP Snooping for a specified interface, or all interfaces.

To modify the lines displayed, use the | (output modifier token), to save the output to a file use the > output redirection token. For more information, see Chapter 1 in the *SRstackware® Intelligent Network Software VRRP Command Reference*.

3.27.1 Command Syntax

```
show ip igmp interface IFNAME
IFNAME Interface name
```

3.27.2 Command Mode

Exec and Privileged Exec mode

3.27.3 Example

The following command displays the IGMP interface status on all interfaces enabled for IGMP.

```
# show ip igmp interface
Interface vlan1.1 (Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router is 0.0.0.0
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
Last member query response interval is 1000 milliseconds
Group Membership interval is 260 seconds|
IGMP Snooping is globally enabled|
IGMP Snooping is enabled on this interface
IGMP Snooping fast-leave is not enabled
IGMP Snooping querier is not enabled
IGMP Snooping report suppression is enabled
```


Bidirectional Forwarding Detection Commands

4.1 Overview

Bidirectional Forwarding Detection (BFD) is a detection protocol designed to provide low overhead, short-duration detection of failures in the path between adjacent routers, including the interfaces, data links, and forwarding planes.

BFD is a detection protocol that can be enabled at the interface and routing protocol levels. Product Name Short BFD module supports only asynchronous-mode, which depends on the sending of BFD control packets between two systems to activate and maintain BFD neighbor sessions between routers. To create BFD session, you need to configure BFD on both systems. Once BFD is enabled on the interfaces and at the router level for the appropriate routing protocols, a BFD session is created, BFD timers are negotiated, and the BFD peers will begin to send BFD control packets to each other at the negotiated interval. Upon detecting a failure, BFD informs its registered clients (routing protocols) about the failure.

With the availability of BFD to work in conjunction with routing protocols (BFD Clients), faster failure detection times are available.



**Make sure that the BRD-client must take action to bypass a failed peer.
The commands in this chapter are available only if LAYER3SRS is licensed.**

4.2 bfd disable

This command is used to disable BFD session on an interface.

4.2.1 Command Syntax

```
bfd disable
```

4.2.2 Command Mode

```
Interface mode
```

Bidirectional Forwarding Detection Commands

4.2.3 Examples

```
(config)#interface xel
(config-if)#bfd disable
```

4.3 bfd interval

This command is used to enable BFD on an interface with the configuration parameters such as transmit interval, receive interval, and the detection multiplier.



This command is available only if LAYER3SRS is licensed.

4.3.1 Command Syntax

```
bfd interval <100-1000> ( (minRx <100-1000>|) (multiplier <1-65>|)
(sipv4 A.B.C.D dipv4 A.B.C.D|) |)
```

Parameter	Description
Interval	Desired minimum Tx Interval.
<100-1000>	Interval in milliseconds.
minRx	Required minimum Rx Interval. Default is 100 milliseconds.
<100-1000>	Interval in milliseconds.
multiplier	Desired Detection Time Multiplier.
<1-65>	Valid range for DetectMulti. Default is 3.
sipv4	IPv4 address of Source.
dipv4	IPv4 address of Destination.



All BFD timer values are in milliseconds.

At maximum, only a single BFD session per interface is supported.

4.3.2 Command Mode

Interface mode

4.3.3 Examples

```
(config)#interface xe1
(config-if)# bfd interval 100 minrx 100 multiplier 5
```

4.4 bfd session

This command is used to administratively enable or disable a configured BFD session.

4.4.1 Command Syntax

```
bfd session(admin-down| admin-up)
```

Parameter	Description
admin-down	Session Admin down
admin-up	Session Admin up

4.4.2 Command mode

Interface mode

4.4.3 Examples

```
(config)#interface xe1
(config-if)# bfd sessionadmin-down
(config-if)# bfd sessionadmin-up
```

4.5 show bfd

This command is used to displays details of all interfaces configured for BFD.

4.5.1 Command Syntax

```
show bfd (IFNAME)
IFNAME= Interface name
```

Bidirectional Forwarding Detection Commands

4.5.2 Command Mode

Privilege Exec mode

4.5.3 Examples

```
#show bfd
Interface:    xe5      IfIndex:    12
Local state:  UP        Remote state:  UP
Local Diag:   None     Remote Diag:  None
Local Discriminator: 0x3739c6fc Remote Discriminator: 0x106df909
MinTx:       1000ms   MinRx:      100ms
Remote MinTx: 1000ms   Remote MinRx: 100ms
Multiplier:  3        Detection Time: 3000
Local Port:   49153    Remote Port:  3784
Local Address: 30.0.0.2 Remote Address: 30.0.0.1
```

Related Documentation

A.1 Penguin Solutions Documentation

Technical documentation can be found by using the Documentation Search at <https://www.penguinsolutions.com/edge/support/> or you can obtain electronic copies of documentation by contacting your local sales representative.

Table A-1 Penguin Solutions Documentation

Document Title and Source	Document 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 3 Configuration Guide	6806800N89
SRstackware Intelligent Network Software Switch Configuration Command Reference	6806800N92
SRstackware Intelligent Network Software Layer 2 Command Reference	6806800N88
SRstackware Intelligent Network Software Protocol Demo Guide	6806800N07
SRstackware FAQ	6806800N91

Related Documentation

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