

Sun Ethernet Fabric Operating System CLI Reference Manual, Vol. 5

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Using This Documentation

- **Overview** – Provides information on Oracle's SEFOS CLI commands
- **Audience** – Users and system administrators who configure SEFOS through the CLI
- **Required knowledge** – Basic knowledge of UNIX CLI command syntax

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CHAPTER 29

DHCP

DHCP (Dynamic Host Configuration Protocol) is used in a wide variety of devices like ISDN routers, firewalls, and so on, for assigning IP addresses to workstations. Besides obtaining IP address, other configuration parameters for a workstation can also be configured in a DHCP server. DHCP clients can retrieve these parameters along with the IP address.

DHCP is based on the client-server architecture. DHCP servers are configured with an IP address and several other configuration parameters. DHCP clients, typically workstations, obtain this IP address at start-up. The client obtains the address for a time period termed as the “lease” period. DHCP clients renew the address by sending a request for the IP address before the lease expires.

DHCP uses UDP as its transport protocol and a UDP port for communication. DHCP relay agents connect servers present on one LAN with the client present on another.

29.1 DHCP Client

DHCP client uses DHCP to temporarily receive a unique IP address from the DHCP server. It also receives other network configuration information, such as default gateway, from the DHCP server.

29.1.1 debug ip dhcp client

Command Objective This command enables the tracking of the DHCP client operations as per the configured debug levels. The debug statements are generated for the specified trace levels.

The no form of the command disables the tracking of the DHCP client operations. The debug statements are not generated for the specified trace levels.

This command allows combination of debug levels to be configured (that is, more than one level of trace can be enabled or disabled). The debug levels are configured one after the other and not in single execution of the command.

Syntax

```
debug ip dhcp client { all | event | packets | errors | bind }  
  
no debug ip dhcp client { all | event | packets | errors | bind }
```

Parameter Description

- **all** - Generates debug statements for all kind of failure traces.
- **event** - Generates debug statements for DHCP client events that provide DHCP client service status. The DHCP client events are generated when any of the packets are sent successfully or when an ACK is received.
- **packets** - Generates debug statements for packets-related messages. These messages are generated for all events generated during processing of packets.
- **errors** - Generates debug statements for trace error code debug messages. These messages are generated for all error events generated.
- **bind** - Generates debug statements for trace bind messages. These messages are generated when a DHCP ACK is received.

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default Tracking of the DHCP client operations is disabled.

Example SEFOS# debug ip dhcp client all

Related Command(s)

- **show debugging** - Displays state of each debugging option.

29.1.2 release dhcp

Command Objective	<p>This command immediately releases the DHCP lease obtained for an IP address from a DHCP server and assigned to the specified interface. The current lease assigned to that interface is terminated manually.</p> <p>The lease is terminated to reset the DHCP client which faces a connectivity problem. The DHCP lease provided by the DHCP server represents the time interval till which the DHCP client can use the assigned IP address.</p>
Syntax	<pre>release dhcp { vlan <vlan-id (1-4094)> <interface-type> <interface-id> }</pre> <p>When WGS is enabled:</p> <pre>release dhcp { vlanMgmt <interface-type> <interface-id> }</pre>
Parameter Description	<ul style="list-style-type: none">• <vlan-id (1-4094)> - Releases the DHCP lease for the specified VLAN ID. This is a unique value that represents the specific VLAN created. This value ranges from 1 to 4094.• vlanMgmt - Releases the DHCP lease for the management VLAN interface.• <interface-type> - Releases the DHCP lease for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.<hr/><p>Note: As of release 2.0.0.3, all interfaces are referred to as extreme-ethernet.</p><hr/><ul style="list-style-type: none">▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ i-lan – Internal LAN created on a bridge per IEEE 802.1ap.• <interface-id> - Releases the DHCP lease for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan ID is provided for interface type i-lan. For example: 1 represents i-lan ID.
Mode	Privileged EXEC Mode

Package	Workgroup, Enterprise, Metro, and Metro_E
Note:	This command executes successfully only if the VLAN interfaces and router ports are in BOUND state (that is, IP address is dynamically acquired from DHCP server and an active lease is bound to the interface). The port should have been configured as router port for dynamically acquiring an IP address from DHCP server.
Example	SEFOS# release dhcp vlan 1
Related Command(s)	<ul style="list-style-type: none">• no switchport – Configures the port as a router port.• ip address - rarp/dhcp - Configures the current VLAN or OOB interface to dynamically acquire an IP address from the RARP or DHCP server.• show ip dhcp client stats - Displays the DHCP client statistics information for interfaces that are configured to acquire IP address dynamically from the DHCP server.• show ip interfaces - Displays the IP interface configuration for all interfaces available in the switch.

29.1.3 renew dhcp

Command Objective	This command immediately renews the DHCP lease for the interface specified. The current lease acquired by the specified interface is manually renewed. A new DHCP lease is acquired for the interface whose lease is terminated. The DHCP lease is automatically renewed once the lease expires.
Syntax	<pre>renew dhcp { vlan <vlan-id (1-4094)> <interface-type> <interface-id> }</pre> <p>When WGS is enabled,</p> <pre>renew dhcp { vlanMgmt <interface-type> <interface-id> }</pre>
Parameter Description	<ul style="list-style-type: none">• vlan <vlan-id (1-4094)> - Renews the DHCP lease for the specified VLAN ID. This is a unique value that represents the specific VLAN created. This value ranges from 1 to 4094.• vlanMgmt - Renews the DHCP lease for the management VLAN interface.• <interface-type> - Renews the DHCP lease for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ xL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ i-lan – Internal LAN created on a bridge per IEEE 802.1ap.• <interface-id> - Renews the DHCP lease for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan ID is provided for interface type i-lan. For example: 1 represents i-lan ID.
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Note:	This command executes successfully only if the VLAN interfaces and router ports are in BOUND state (that is, IP address is dynamically acquired from DHCP server and an active lease is bound to the interface). The port should have been configured as router port for dynamically acquiring an IP address

from DHCP server.

Example

SEFOS# renew dhcp vlan 1

Related Command(s)

- **no switchport** – Configures the port as a router port.
 - **ip address - rarp/dhcp** - Configures the current VLAN or OOB interface to dynamically acquire an IP address from the RARP or DHCP server.
 - **show ip dhcp client stats** - Displays the DHCP client statistics information for interfaces that are configured to acquire IP address dynamically from the DHCP server.
 - **show ip interface** - Displays the IP interface configuration for all interfaces available in the switch.
-

29.1.4 show ip dhcp client stats

Command Objective This command displays the DHCP client statistics information for interfaces that are configured to acquire IP address dynamically from the DHCP server.

The statistics information contains interface name, IP address assigned by DHCP server, DHCP lease details, details regarding number of DHCPDISCOVER, DHCPREQUEST, DHCPDECLINE, DHCPRELEASE and DHCPINFORM packets received, and number of DHCPOFFER packets sent from the DHCP client.

Syntax `show ip dhcp client stats`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example `SEFOS# show ip dhcp client stats`

```
Dhcp Client Statistics
-----
Interface                : vlan1
Client IP Address         : 12.0.0.21
Client Lease Time         : 3600
Client Remain Lease Time  : 3569
Message Statistics
-----
DHCP DISCOVER             : 1
DHCP REQUEST              : 1
DHCP DECLINE              : 0
DHCP RELEASE              : 0
DHCP INFORM               : 0
DHCP OFFER                : 1
```

Related Command(s)

- **ip address - rarp/dhcp** - Configures the current VLAN or OOB interface to dynamically acquire an IP address from the RARP or DHCP server.
 - **release dhcp** - Releases, on the specified interface, the DHCP lease obtained for an IP address from a DHCP server.
 - **renew dhcp** - Renews the DHCP lease for the interface specified.
-

29.1.5 ip dhcp client discovery timer

Command Objective This command configures DHCP Client Discovery timer, which denotes the time to wait between discovery messages sent by the DHCP client. This value ranges from 1 to 9.

The no form of the command resets DHCP Client Discovery timer with its default values.

Syntax `ip dhcp client discovery timer <integer (1-9)>`

`no ip dhcp client discovery timer`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default

- If DHCP fast mode is enabled, the default DHCP Client Discovery timer is 5.
- If DHCP fast mode is disabled, the default DHCP Client Discovery timer is 15.

Example `SEFOS# ip dhcp client discovery timer 8`

Related Command(s)

- `show ip dhcp client fast-access` - Displays DHCP fast access details.
- `ip dhcp client fast-access` - Enables DHCP fast access mode.

29.1.6 ip dhcp client idle timer

Command Objective	<p>This command configures DHCP Client idle timer which specifies the time to wait after four unsuccessful DHCP Client Discovery messages. This value ranges from 1 to 30.</p> <p>The no form of the command resets the DHCP Client Idle timer with the default values.</p>
Syntax	<pre>ip dhcp client idle timer <integer (1-30)> no ip dhcp client idle timer</pre>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• If DHCP fast mode is enabled, the default DHCP Client Idle timer is 1.• If DHCP fast mode is disabled, the default DHCP Client Idle timer is 180.
Example	<pre>SEFOS# ip dhcp client idle timer 8</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>show ip dhcp client fast-access</code> - Displays DHCP fast access details.• <code>ip dhcp client fast-access</code> - Enables DHCP fast access mode.

29.1.7 ip dhcp client arp-check timer

Command Objective	<p>This command configures DHCP client retransmission timeout between ARP messages. This value ranges from 1 to 20.</p> <p>The no form of the command resets DHCP Client ARP timer with the default values.</p>
Syntax	<pre>ip dhcp client arp-check timer <integer (1-20)></pre> <pre>no ip dhcp client arp-check timer</pre>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• If DHCP fast mode is enabled, the default DHCP Client arp-check timer is 1.• If DHCP fast mode is disabled, the default DHCP Client arp-check timer is 3.
Example	<pre>SEFOS# ip dhcp client arp-check timer 8</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ip dhcp client fast-access</code> - Enables DHCP fast access mode.• <code>show ip dhcp client fast-access</code> - Displays DHCP fast access details.

29.1.8 ip dhcp client fast-access

Command Objective This command enables DHCP fast access mode.

If fast access mode is enabled, time to wait between discovery messages, that is, discovery timeout, and time to wait after four unsuccessful discoveries will be user-configurable. The default value for discovery timeout is 5 seconds and null state timeout is 1 second.

The no form of the command disables DHCP Client fast access mode. If the mode is disabled, default value for discovery timeout and null state timeout will be 15 seconds and 180 seconds respectively. The timeout values cannot be changed under disabled mode.

Syntax `ip dhcp client fast-access`
`no ip dhcp client fast-access`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example `SEFOS# ip dhcp client fast-access`

Related Command(s)

- `ip dhcp client discovery timer` – Configures DHCP Client Discovery timer.
- `ip dhcp client idle timer` – Configures DHCP client idle timer.
- `ip dhcp client arp-check timer` - Configures DHCP client retransmission timeout between ARP messages.
- `show ip dhcp client fast-access` - Displays DHCP fast access details.

29.1.9 ip dhcp client client-id

Command Objective This command sets unique identifier to DHCP client identifier. This command advertises the client-id in the DHCP control packets.

The no form of the command resets the DHCP client identifier.

Syntax

```
ip dhcp client client-id {<interface-type> <interface-id>
| vlan <vlan-id (1-4094)> | port-channel <port-channel-id
(1-65535)> | tunnel <tunnel-id (0-128)> | loopback
<interface-id (0-100)> | ascii <string> | hex <string> }

no ip dhcp client client-id
```

Parameter Description

- **<interface-type>** - Configures interface type for the DHCP client-id for the specified type of interface. The interface can be:
 - **fastethernet** – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.
 - **XL-ethernet** – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.
 - **extreme-ethernet** – A version of Ethernet that supports data transfer up to 10 Gigabits per second.
 - **i-lan** – Internal LAN created on a bridge per IEEE 802.1ap.
 - **<interface-id>** - Configures interface ID for the DHCP client-id for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan ID is provided for interface type i-lan. For example: 1 represents i-lan ID.
 - **<vlan-id (1-4094)>** - Configures DHCP client-id for the specified VLAN ID. This is a unique value that represents the specific VLAN created. This value ranges from 1 to 4094.
 - **<port-channel-id (1-65535)>** - Configures the port to be used by the host to configure the router. This value ranges from 1 to 65535. The port channel identifier can be created or port channel-related configuration can be done, only if the LA feature is enabled in the switch.
 - **tunnel<tunnel-id (0-128)>** - Configures the tunnel identifier. This value ranges from 0 to 128.
 - **loopback <interface-id (0-100)>** - Configures the loopback identifier. This value ranges from 0 to 100.
-

- **ascii <string>** - Configures the client-id in ASCII format. The client-id is given as a string.
- **hex <string>** - Configures the client-id in hexadecimal format. The input type is a string.

Mode	Interface Configuration Mode (VLAN / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS (config-if)# ip dhcp client client-id extreme-ethernet 0/1</code>
Related Command(s)	<ul style="list-style-type: none"> • <code>show ip dhcp client client-id</code> - Displays client identifier of the DHCP client.

29.1.10 ip dhcp client request

Command Objective This command sets the DHCP option type to request the server. This is required to send DHCP request to get the TFTP server name, boot file name, SIP server name and option240.

The no form of the command resets the DHCP option type to request the server.

Syntax `ip dhcp client request { tftp-server-name | boot-file-name | sip-server-info | option240 }`

`no ip dhcp client request { tftp-server-name | boot-file-name | sip-server-info | option240 }`

Parameter Description

- `tftp-server-name` - Sends the DHCP requests to get the TFTP server's domain name.
- `boot-file-name` - Sends the DHCP requests to get the boot file name.
- `sip-server-info` - Sends the DHCP requests to get the SIP server details.
- `option240` - Sends the DHCP requests to get the option240 information.

Mode Interface Configuration Mode (VLAN / Router)

Package Workgroup, Enterprise, Metro, and Metro_E

Note: This command executes successfully only if the VLAN interfaces and router ports are in BOUND state (that is, IP address is dynamically acquired from DHCP server and an active lease is bound to the interface).

Example `SEFOS (config-if)# ip dhcp client request option240`

Related Command(s)

- `show ip dhcp client option` – Displays DHCP client options set by the server.

29.1.11 show ip dhcp client fast-access

Command Objective	This command displays DHCP fast access information such as Fast Access Mode status, DHCP Client Fast Access DiscoverTimeOut, DHCP Client Fast Access NullStateTimeOut, and DHCP Client Fast Access ARP Check TimeOut values.
--------------------------	--

Syntax	<code>show ip dhcp client fast-access</code>
---------------	--

Mode	Privileged EXEC Mode
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Package	Workgroup, Enterprise, Metro, and Metro_E
----------------	---

Example	<pre>SEFOS# show ip dhcp client fast-access DHCP Client Timer Settings ---- Fast Access Mode : Enable Dhcp Client Fast Access DiscoverTimeOut : 5 Dhcp Client Fast Access NullStateTimeOut : 1 Dhcp Client Fast Access Arp Check TimeOut : 1</pre>
----------------	--

Related Command(s)	<ul style="list-style-type: none">• <code>ip dhcp client discovery timer</code> – Configures DHCP Client Discovery timer.• <code>ip dhcp client idle timer</code> – Configures DHCP client idle timer.• <code>ip dhcp client arp-check timer</code> - Configures DHCP client retransmission timeout between ARP messages.• <code>ip dhcp fast-access</code> - Enables DHCP fast access mode.
---------------------------	---

29.1.12 show ip dhcp client option

Command Objective This command displays DHCP client options set by server which provides the details like interface, interface type, length, and value.

Syntax `show ip dhcp client option`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example `SEFOS# show ip dhcp client option`

Dhcp Client Options

Interface	Type	Len	Value
-----	----	---	-----
vlan1	43		
vlan1	60	6	vendor
vlan1	66		
vlan1	67		
vlan1	120		
vlan1	240		

Related Command(s)

- `ip dhcp client request` – Sets the DHCP option type to request the server.
- `ip dhcp client vendor-specific` - Configures vendor-specific information for the DHCP client.

29.1.13 show ip dhcp client client-id

Command Objective	This command displays the unique identifier to DHCP client.
Syntax	<code>show ip dhcp client client-id</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# show ip dhcp client client-id</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ip dhcp client client-id</code> - Sets unique identifier to DHCP client.• <code>ip dhcp client request</code> - Sets the DHCP option type to request the server.

29.1.14 clear ip dhcp client statistics

Command Objective	This command clears the DHCP client statistics for all ports or for the specified interface created in the system.
Syntax	<code>clear ip dhcp client statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <vlan-id (1-4094)> - Clears the DHCP client statistics for the specified VLAN ID. This is a unique value that represents the specific VLAN created. This value ranges from 1 to 4094.• <interface-type> - Clears the DHCP client statistics for the specified type of interface. The interfaces are:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Clears the DHCP client statistics for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than internal-lan and port-channel. For Example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan and port-channel ID is provided, for interface types internal-lan and port-channel. For Example: 1 represents internal-lan and port-channel ID.
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# clear ip dhcp client statistics</code>
Related Command(s)	<ul style="list-style-type: none">• show ip dhcp client statistics - Displays the DHCP client statistics information for interfaces that are configured to acquire IP address dynamically from the DHCP server.

29.1.15 ip dhcp client vendor-specific

Command Objective	This command configures vendor-specific information for the DHCP client. The no form of this command removes vendor-specific information.
Syntax	<pre>ip dhcp client vendor-specific <vendor-info> no ip dhcp client vendor-specific</pre>
Mode	Interface Configuration Mode (VLAN / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (config-if)# ip dhcp client vendor-specific vendor</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>show ip dhcp client option</code> – Displays DHCP client options set by the server.

29.2 DHCP Relay

DHCP relay agent is a host or an IP router that allows the DHCP client and DHCP server in different subnets to communicate with each other, so that the DHCP client can obtain its configuration information while booting. The relay agent receives packets from the client, inserts information such as network details, and forwards the modified packets to the server. The server identifies the client's network from the received packets, allocates the IP address accordingly, and sends a reply to the relay. The relay strips the information inserted by the server and broadcasts the packets to the client's network.

29.2.1 service dhcp-relay

Command Objective This command enables the DHCP relay agent in the switch. DHCP relay agent relays DHCP messages between DHCP client and DHCP server located in different subnets.

The no form of the command disables the DHCP relay agent.

Syntax

```
service dhcp-relay
```

```
no service dhcp-relay
```

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default DHCP relay agent is disabled (that is, the switch acts as a DHCP client).

Note: The DHCP relay agent can be enabled in the switch, only if the DHCP server is disabled in the switch.

Example SEFOS (config) # `service dhcp-relay`

Related Command(s)

- `no service dhcp-service` – Disables the DHCP server.
- `show ip dhcp relay information` - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.

29.2.2 ip dhcp server

Command Objective This command adds the configured IP address to the IP address list created for the DHCP server. The switches or systems having these IP addresses represent the DHCP servers to which the DHCP relay agent can forward the packets that are received from DHCP clients.

The DHCP relay agent broadcasts the received packets to the entire network except the network from which the packets are received, if the DHCP server list is empty (that is IP address is configured as 0.0.0.0).

The no form of the command deletes the mentioned IP address from the IP address list.

Note: The IP address list can contain only 5 IP addresses (that is, only a maximum of 5 DHCP servers can be listed).

Syntax `ip dhcp server <ip address>`
`no ip dhcp server <ip address>`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default DHCP server list

Example `SEFOS(config)# ip dhcp server 12.0.0.1`

Related Command(s)

- `show ip dhcp relay information` - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.
- `show dhcp server` - Displays the DHCP servers' IP addresses.

29.2.3 ip helper-address

Command Objective This command sets the IP address of the DHCP server. The relay agent starts forwarding the packets (that is, UDP broadcasts including BOOTP) from the client to the specified DHCP server. This command allows the addition of more than one DHCP server.

This command is a complete standardized implementation of the existing command `ip dhcp server` and operates similar to the command `ip dhcp server`. This command also explicitly enables the DHCP relay and disables the DHCP server.

The no form of the command deletes the IP address of the DHCP server.

Syntax `ip helper-address <ip address>`
`no ip helper-address <ip address>`

Mode Interface Configuration Mode (Physical)

Package Workgroup, Enterprise, Metro, and Metro_E

Default The IP address is 0.0.0.0 and the status of only the DHCP Relay Servers is disabled.

Note: The relay agent will start forwarding the packets from the client to a specific DHCP server only when the relay agent is in the enabled state.

Example `SEFOS(config-if)# ip helper-address 12.0.0.1`

Related Command(s)

- `show ip dhcp relay information` - Displays the DHCP relay information.
- `show dhcp server` - Displays the DHCP server information.

29.2.4 ip dhcp relay information option

Command Objective This command enables the DHCP relay agent to perform processing related to DHCP relay agent information option.

The options contain a sub-option for agent circuit ID details and another sub-option for agent remote ID details. The processing involves:

- Insertion of DHCP relay information option in DHCP request messages forwarded to a DHCP server from a DHCP client.
- Examining or removing of DHCP relay information option from DHCP response messages forwarded to the DHCP client from the DHCP server.

The no form of the command disables the processing related to DHCP relay agent information option.

Syntax

```
ip dhcp relay information option
```

```
no ip dhcp relay information option
```

Mode Global Configuration Mode

Note: This command can also be executed in the VLAN Interface Configuration Mode for a code base using industry standard commands.

Package Workgroup, Enterprise, Metro, and Metro_E

Default Processing related to DHCP relay agent information option is disabled.

Example SEFOS(config)# ip dhcp relay information option

Related Command(s)

- **ip dhcp relay circuit-id option** – Defines the type of information to be present in circuit ID sub-option that is used in the DHCP relay agent information option.
- **show ip dhcp relay information** - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.

29.2.5 ip dhcp relay circuit-id option

Command Objective	This command defines the type of information to be present in circuit ID sub-option that is used in the DHCP relay agent information option.
Syntax	<code>ip dhcp relay circuit-id option [router-index] [vlanid] [recv-port]</code>
Parameter Description	<ul style="list-style-type: none">• <code>router-index</code> - Adds information related to router interface indexes in the circuit ID sub-option.• <code>vlanid</code> - Adds information related to VLAN IDs in the circuit ID sub-option.• <code>recv-port</code> - Adds information related to physical interfaces or LAG ports in the circuit ID sub-option.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	router-index
Note:	The type of information to be present in the circuit ID sub-option can be configured, only if the DHCP relay agent is enabled to perform processing related to DHCP relay agent information option.
Example	<code>SEFOS(config)# ip dhcp relay circuit-id option vlanid</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ip dhcp relay information option</code> - Enables the DHCP relay agent to perform processing related to DHCP relay agent information option.• <code>show ip dhcp relay information</code> - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.

29.2.6 ip dhcp relay circuit id

Command Objective This command configures circuit ID value for an interface.

The circuit ID uniquely identifies a circuit over which the incoming DHCP packet is received. In DHCP relay, it is used to identify the correct circuit over which the DHCP responses should be relayed.

The configured circuit ID is used in the DHCP relay agent information option to inform the DHCP server about the interface from which DHCP packet is received. The circuit ID is unique for the interfaces and ranges from 1 to 2147483647.

The minimum value depends upon the number of interfaces that can be created. For example, if a total of 160 interfaces are allowed to be created in the switch, then the circuit ID value range starts from 161 only. The interfaces include all physical interfaces, port channels, and logical L3 interfaces.

The no form of the command deletes the circuit ID configuration for the interface (that is, the circuit ID is configured as 0).

Syntax `ip dhcp relay circuit-id <circuit-id>`

`no ip dhcp relay circuit-id`

Mode Interface Configuration Mode (VLAN / Router Ports)

Package Workgroup, Enterprise, Metro, and Metro_E

Note: This command is available only for the VLAN interfaces and ports that are configured as router ports.

Example `SEFOS(config-if)# ip dhcp relay circuit-id 1`

Related Command(s)

- `no switchport` – Configures the port as a router port.
- `show ip dhcp relay information` - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.

29.2.7 ip dhcp relay remote id

Command Objective	<p>This command configures remote ID value for an interface.</p> <p>The configured remote ID is used to inform the DHCP client about the remote circuit to which the DHCP packets should be forwarded from the interface. The remote ID is globally unique and an octet string of maximum size of 32. The remote ID should not be same as that of the default value.</p> <p>The no form of the command deletes the remote ID configuration for the interface (that is, the remote ID is set with a string of length zero).</p>
Syntax	<pre>ip dhcp relay remote-id <remote-id name> no ip dhcp relay remote-id</pre>
Mode	Interface Configuration Mode (VLAN / Router Ports)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	XYZ. This value is internally assigned.
Note:	This command is available only for the VLAN interfaces and ports that are configured as router ports.
Example	<pre>SEFOS(config-if)# ip dhcp relay remote-id Oracle</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as a router port.• <code>show ip dhcp relay information</code> - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.

29.2.8 debug ip dhcp relay

Command Objective	<p>This command enables the tracking of the DHCP relay module operations as per the configured debug levels. The debug statements are generated for the configured trace level.</p> <p>The no form of the command disables the tracking of the DHCP relay module operations. The debug statements are not generated for the configured trace levels.</p>
Syntax	<pre>debug ip dhcp relay {all errors} no debug ip dhcp relay {all errors}</pre>
Parameter Description	<ul style="list-style-type: none">• all - Generates debug statements for all kind of failure traces.• errors - Generates debug statements for trace error code debug messages. These messages are generated for all error events generated.
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Tracking of the DHCP relay module operation is disabled.
Example	<pre>SEFOS# debug ip dhcp relay all</pre>
Related Command(s)	<ul style="list-style-type: none">• show ip dhcp relay information -Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.• show debugging - Displays state of each debugging option.

29.2.9 show ip dhcp relay information

Command Objective	<p>This command displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces in which relay agent details are configured.</p> <p>The information contains status of the DHCP relay, DHCP server IP addresses, status of relay information option, configured debug level and statistics details regarding number of packets affected by relay information option, circuit ID sub-option, remote ID sub-option, and subnet mask sub-option.</p>
Syntax	<pre>show ip dhcp relay information [vlan <vlan-id>] [<iftype> <ifnum>]</pre>
Parameter Description	<ul style="list-style-type: none">• vlan<vlan-id> - Displays the DHCP relay agent configuration information for the specified VLAN ID. This is a unique value that represents the specific VLAN created. This value ranges from 1 to 4094.• <iftype> - Displays the DHCP relay agent configuration information for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.• <ifnum> - Displays the DHCP relay agent configuration information for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan ID is provided, for interface types i-lan and port-channel. For example: 1 represents internal-lan.
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ip dhcp relay information Dhcp Relay : Enabled Dhcp Relay Servers only : Enabled DHCP server 1 : 12.0.0.1</pre>

```

Dhcp Relay RAI option      : Enabled
Default Circuit Id information : Vlan-Id
Debug Level                : 0x1
No of Packets inserted RAI option      : 0
No of Packets inserted circuit ID suboption : 0
No of Packets inserted remote ID suboption : 0
No of Packets inserted subnet mask suboption : 0
No of Packets dropped                : 0
No of Packets which did not inserted RAI option : 0

Interface vlan1
Circuit ID : 1
Remote ID : Oracle
Interface Ex0/2
Circuit ID : 2
Remote ID : Oracle1

SEFOS# show ip dhcp relay information extreme-ethernet 0/2
Interface Ex0/2
Circuit ID : 2
Remote ID : Oracle1

```

Related Command(s)

- **service dhcp-relay** - Enables the DHCP relay agent in the switch.
 - **ip dhcp server** - Adds the configured IP address to the IP address list created for the DHCP server.
 - **ip dhcp relay information option** - Enables the DHCP relay agent to perform processing related to DHCP relay agent information option.
 - **ip dhcp relay circuit-id option** - Defines the type of information to be present in circuit ID sub-option that is used in the DHCP relay agent information option.
 - **ip dhcp relay circuit-id** – Configures circuit ID value for an interface.
 - **ip dhcp relay remote-id** – Configures remote ID value for an interface.
 - **debug ip dhcp relay** - Enables the tracking of the DHCP relay module operations as per the configured debug levels.
 - **ip helper-address** - Sets the IP address of the DHCP server.
-

29.2.10 show dhcp server

Command Objective	This command displays the DHCP servers' IP addresses. These addresses denote the PCs or switches that can act as a DHCP server.
Syntax	<code>show dhcp server</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show dhcp server DHCP server: 12.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ip dhcp server</code> - Adds the configured IP address to the IP address list created for the DHCP server.• <code>ip helper-address</code> - Sets the IP address of the DHCP server.

29.2.11 clear ip dhcp relay statistics

Command Objective	This command clears the DHCP relay statistics.
Syntax	<code>clear ip dhcp server statistics</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# clear ip dhcp relay statistics</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ip dhcp relay information</code> - Displays the DHCP relay agent configuration information for a specific VLAN interface or all interfaces.

29.3 DHCP Server

DHCP server is responsible for dynamically assigning unique IP address and other configuration parameters such as gateway, to interfaces of a DHCP client. The IP address is leased to the interface only for a particular time period as mentioned in the DHCP lease. The interface should renew the DHCP lease once it expires. The DHCP server contains a pool of IP address from which one address is assigned to the interface.

29.3.1 service dhcp-server

Command Objective This command enables the DHCP server in the switch (that is, the switch acts as DHCP server). The DHCP server assigns unique IP address and other configuration parameters such as gateway, to interfaces of a DHCP client.

The no form of the command disables the DHCP server in the switch.

Syntax `service dhcp-server`
`no service dhcp-server`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default DHCP server is disabled (that is, the switch acts as a DHCP client).

Note: The DHCP server can be enabled in the switch, only if the DHCP relay agent is disabled in the switch.

Example `SEFOS (config)# service dhcp-server`

Related Command(s)

- `no service dhcp-relay` - Disables the DHCP relay agent in the switch.
- `show ip dhcp server information` - Displays the DHCP server configuration information.
- `show ip dhcp server binding` - Displays the DHCP server binding information.
- `show ip dhcp server statistics` - Displays various DHCP server statistics-related information such as number of DHCPDECLINE messages received, DHCPOFFER messages sent and so on.

29.3.2 service dhcp

Command Objective This command enables the DHCP server in the switch and relay agent features on the router which assigns unique IP address and other configuration parameters to interfaces of a DHCP client.

The no form of this command disables the DHCP server.

This command is a complete standardized implementation of the existing command and operates similar to the command `service dhcp-server`.

Syntax `service dhcp`
`no service dhcp`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default DHCP server is disabled.

Example `SEFOS(config)# service dhcp`

Related Command(s)

- `no service dhcp-relay` - Disables the DHCP relay agent in the switch.
- `show ip dhcp server information` - Displays the DHCP server configuration information.
- `show ip dhcp server binding` - Displays the DHCP server binding information.
- `show ip dhcp server statistics` - Displays various DHCP server statistics related information such as number of DHCPDECLINE messages received, DHCPOFFER messages sent and so on.

29.3.3 ip dhcp pool

Command Objective This command creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.

The address pool has a range of IP addresses that can be assigned to the DHCP client and also information about client configuration parameters such as domain name.

The no form of the command deletes the existing DHCP server address pool.

Syntax

```
ip dhcp pool <index (1-2147483647)> [<Pool Name>]  
  
no ip dhcp pool <index (1-2147483647)>
```

Parameter Description

- **index (1-2147483647)** - Creates pool with a unique ID for the specified DHCP server address pool. This value ranges from 1 to 2147483647.
- **<Pool Name>** - Configures the name for the pool which is created. The name should be specified as a string.

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example SEFOS (config)# ip dhcp pool 1 pool1

Related Command(s)

- **network** - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- **excluded-address** - Creates an excluded pool that defines a range of IP addresses, which need to be excluded from the created subnet pool.
- **domain-name** - Configures the domain name option for the corresponding DHCP server address pool.
- **dns-server** - Configures the IP address of a DNS server for the corresponding DHCP server address pool.
- **netbios-name-server** - Configures the IP address of a NetBIOS and WINS name server that is available to Microsoft DHCP clients.
- **netbios-node-type** - Configures the NetBIOS node type for Microsoft

DHCP clients, for the corresponding DHCP server address pool.

- **default-router** - Configures the IP address of a default router to which a DHCP client should send packets after booting, for the corresponding DHCP server address pool.
 - **option** - Configures, for the corresponding DHCP server address pool, the various available DHCP server options with the corresponding specific values.
 - **lease** - Configures, for the corresponding DHCP server, the DHCP lease period for an IP address that is assigned from a DHCP server to a DHCP client.
 - **utilization threshold** - Configures pool utilization threshold value (in percentage) for the corresponding DHCP server address pool.
 - **host hardware-type** - Configures host hardware type and its DHCP option with specific values for the corresponding DHCP server address pool.
 - **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
 - **show ip dhcp server statistics** - Displays various DHCP server statistics related information such as number of DHCPDECLINE messages received, DHCP OFFER messages sent and so on.
-

29.3.4 ip dhcp next-server

Command Objective This command sets the IP address of the boot server (that is, TFTP server) from which the initial boot file is to be loaded in a DHCP client. This boot server acts as a secondary server.

The no form of the command deletes the boot server details and resets to its default value.

The DHCP server is used as the boot server, if no TFTP server is configured as the boot server.

Syntax `ip dhcp next-server <ip address>`
`no ip dhcp next-server`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro and Metro_E

Default 0.0.0.0 (No boot server is defined. DHCP server is used as the boot server)

Example `SEFOS (config)# ip dhcp next-server 12.0.0.1`

Related Command(s)

- `ip dhcp bootfile` - Configures the name of the initial boot file to be loaded in a DHCP client.
- `show ip dhcp server information` - Displays the DHCP server configuration information.

29.3.5 ip dhcp bootfile

Command Objective This command configures the name of the initial boot file to be loaded in a DHCP client. The file name is a string whose maximum size is 63. The boot file contains the boot image that is used as the operating system for the DHCP client.

The no form of the command deletes the boot file name (that is, no file is specified as the initial boot file).

Syntax `ip dhcp bootfile <bootfile (63)>`

`no ip dhcp bootfile`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro and Metro_E

Example `SEFOS (config)# ip dhcp bootfile 53`

Related Command(s)

- `ip dhcp next-server` - Sets the IP address of the boot server (that is, TFTP server) from which the initial boot file is to be loaded.
- `show ip dhcp server information` - Displays the DHCP server configuration information.

29.3.6 bootfile config-file

Command Objective This command defines the name of the boot image file that the DHCP client should download during auto install process. The DHCP server passes this file name to the DHCP client. The maximum size of the string is 63.

The no form of this command deletes the specified boot file name and assigns the value of boot file name as None (that is, no file is set as boot image file).

This command is a complete standardized implementation of the existing command and operates similar to the command `ip dhcp bootfile`.

Syntax `bootfile config-file <bootfile (63)>`

`no bootfile config-file`

Mode Global Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default None (Null terminated string)

Example `SEFOS(config)# bootfile config-file boot.img`

Related Command(s)

- `show ip dhcp server information` - Displays the DHCP server information.

29.3.7 ip dhcp

Command Objective	<p>This command enables ICMP echo mechanism or configures offer-reuse timeout for the DHCP server. These parameters are used to control the allocation of IP address to a DHCP client.</p> <p>The no form of the command disables ICMP echo mechanism, resets server offer-reuse time to its default value or removes a bind entry from a server binding table.</p>
Syntax	<pre>ip dhcp { ping packets [<count(0-10)>] server offer-reuse <timeout (1-120)> } no ip dhcp { ping packets server offer-reuse binding <ip address> }</pre>
Parameter Description	<ul style="list-style-type: none">• ping packets - Enables or disables ICMP echo mechanism. This mechanism allows the DHCP server to verify the availability of an IP address before assigning it to a DHCP client. DHCP server sends ping packets to the IP address that is intended to be assigned for the DHCP client. If the ping operation fails, DHCP server assumes that the address is not in use and assigns the address to the requesting DHCP client.• <count (0-10)> - Configures the number of ping packets to be sent from the DHCP server to the pool address before assigning the address to a requesting client. The pinging of pool addresses is disabled, if the count value is set as 0. This value ranges from 0 to 10. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.• server offer-reuse - Configures the amount of time (in seconds), the DHCP server entity should wait for the DHCP REQUEST from the DHCP client before reusing the lease offer for other DHCP client. This value ranges from 1 to 120 seconds.• binding - Deletes the specified IP address entry from the server binding table. This frees the IP address allocated to a DHCP client, so that the IP address can be allocated for another DHCP client.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• ping packets - ICMP echo mechanism feature is disabled.• server offer-reuse - 5
Example	<pre>SEFOS (config)# ip dhcp ping packets</pre>

Related Command(s)

- **show ip dhcp server information** - Displays the DHCP server configuration information.
 - **show ip dhcp server binding** - Displays the DHCP server binding information.
 - **show ip dhcp server statistics** - Displays various DHCP server statistics related information such as number of DHCPDECLINE messages received, DHCP OFFER messages sent and so on.
-

29.3.8 ip dhcp option

Command Objective	<p>This command sets the DHCP server options. This command globally configures the various available DHCP server options with the corresponding specific values. These values can be an ASCII string, hexadecimal string, or IP address. These global options are applicable for all DHCP server address pools.</p> <p>The no form of the command deletes the existing DHCP server option.</p>
Syntax	<pre>ip dhcp option <code (1-2147483647)> { ascii <string> hex <Hex String> ip <address> } no ip dhcp option <code (1-2147483647)></pre>
Parameter Description	<ul style="list-style-type: none">• <code (1-2147483647)> - Configures the unique DHCP option code that represents a specific DHCP option used in a DHCP OFFER message in response to a DHCP DISCOVER message. This value ranges from 1 to 2147483647.• ascii<string> - Configures the ASCII value to be set for the corresponding option code that accepts ASCII string. This value is a character string that should contain only characters from NVT ASCII character set.• hex<Hex String> - Configures the hexadecimal value to be set for the corresponding option code that accepts hexadecimal string.• ip<address> - Configures the unicast IP address to be set for the corresponding option code that accepts IP address.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS(config)# ip dhcp option 19 hex d</pre>
Related Command(s)	<ul style="list-style-type: none">• show ip dhcp server pools - Displays global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.9 network

Command Objective	<p>This command creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.</p> <p>The no form of the command deletes the created subnet pool.</p>
Syntax	<pre>network <start- IP> [{ <mask> / <prefix-length (1-31)> }] [end ip]</pre> <pre>no network</pre>
Parameter Description	<ul style="list-style-type: none">• <start-IP> - Configures the IP subnet address for the DHCP pool. The addresses within the specified network subnet are assigned to the DHCP client, if no restriction is applied. For example, when the value is configured as 20.0.0.0, then any one of the addresses within the range from 20.0.0.1 to 20.255.255.254 can be assigned to the DHCP client if no other limitations such as end IP address, are set. This value should be unique (that is, one subnet address can be assigned only for one DHCP address pool).• <mask> - Configures the subnet mask for the network IP address. This is a 32-bit number which is used to divide the IP address into network address and host address. This value is used to automatically calculate the end IP address for the pool. For example, the value 254.0.0.0 represents that the end IP address is 21.255.255.254, if the network subnet is set as 20.0.0.0.• <prefix-length (1-31)> - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value should be preceded by a slash (/) with space before and after the slash. This value is used to automatically calculate the end IP address for the pool and set the mask for the subnet. For example, the value 20.0.0.0 / 6 represents that the end IP address is 23.255.255.254 and the mask is 252.0.0.0.• <end ip> - Configures the end IP address for the network IP subnet, set for the DHCP address pool. This value restricts the IP addresses that can be assigned to the DHCP client. This value is used to manually set the end IP address. This value overrides the end IP address calculated automatically using the mask or prefix-length.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• mask - 255.0.0.0

-
- **end ip** - Represents the last possible subnet address. For example, if network subnet address is mentioned as 20.0.0.0, then end IP address would be 20.255.255.254.
-

Example

```
SEFOS (dhcp-config) # network 20.0.0.0 255.0.0.0 20.0.0.50
```

Related Command(s)

- **ip dhcp pool** - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
 - **excluded-address** - Creates an excluded pool that defines a range of IP addresses which need to be excluded from the created subnet pool.
 - **domain-name** - Configures the domain name option for the corresponding DHCP server address pool.
 - **dns-server** - Configures the IP address of a DNS server for the corresponding DHCP server address pool.
 - **netbios-name-server** - Configures the IP address of a NetBIOS and WINS name server that is available to Microsoft DHCP clients.
 - **netbios-node-type** - Configures the NetBIOS node type for Microsoft DHCP clients, for the corresponding DHCP server address pool.
 - **netbios-node-type** - Configures the IP address of a default router to which a DHCP client should send packets after booting, for the corresponding DHCP server address pool.
 - **option** - Configures, for the corresponding DHCP server address pool, the various available DHCP server options with the corresponding specific values.
 - **lease** - Configures, for the corresponding DHCP server, the DHCP lease period for an IP address that is assigned from a DHCP server to a DHCP client.
 - **utilization threshold** - Configures pool utilization threshold value (in percentage) for the corresponding DHCP server address pool.
 - **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
-

29.3.10 excluded-address

Command Objective This command creates an excluded pool that defines a range of IP addresses which needs to be excluded from the created subnet pool. That is, the IP addresses in this range, including start and end IP address of the excluded pool, are not assigned to any DHCP client.

The no form of the command deletes the created excluded pool. The same start IP address and end IP address of the already created excluded pool should be provided while executing the no form of the command.

Syntax `excluded-address <low-address> <high-address>`
`no excluded-address <low-address> [<high-address>]`

Parameter Description

- **<low-address>** - Sets the start IP address for an excluded pool. This address denotes the first IP address of a range of IP addresses which needs to be excluded from the created subnet pool. This IP address should be:
 - lower than the end IP address, and
 - in the same network of the subnet pool's start IP address.
- **<high-address>** - Sets the end IP address for an excluded pool. This address denotes the last IP address of a range of IP addresses which needs to be excluded from the created subnet pool. This IP address should be:
 - higher than the start IP address, and
 - within or equal to the subnet pool's end IP address.

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: This command is executed successfully, only if a subnet pool is already created for the DHCP address pool.

Example `SEFOS (dhcp-config)# excluded-address 20.0.0.1 20.0.0.30`

Related Command(s)

- `ip dhcp pool` - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- `network` - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- `show ip dhcp server pools` - Displays the global DHCP option configuration for all DHCP server address pools.

29.3.11 ip dhcp excluded-address

Command Objective	<p>This command creates an excluded pool to prevent DHCP server from assigning certain addresses to DHCP clients. The no form of the command deletes the excluded pool.</p> <p>This command is a complete standardized implementation of the existing command <code>excluded-address</code>. This command is used to exclude a single IP address or a range of IP addresses.</p>
Syntax	<pre>ip dhcp excluded-address <low-address> [<high-address>] no ip dhcp excluded-address <low-address> [high-address]</pre>
Parameter Description	<ul style="list-style-type: none">• low-address - Configures the excluded IP address or first IP address, in an excluded address range.• high-address - Configures the last IP address in the excluded address range.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
	<p><u>Note:</u> Subnet pool should have been created before creating an excluded pool. This excluded pool should be within the range of the created subnet pool.</p> <p>For example, the excluded pool 20.0.0.20 – 20.0.0.30 created using this command is within the already created subnet pool 20.0.0.0 – 20.0.0.100.</p>
Example	<pre>SEFOS(config)# ip dhcp excluded-address 20.0.0.20 20.0.0.30</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and places the user in the DHCP pool configuration mode.• network - Sets the network IP and mask in DHCP server configuration parameters.• service dhcp-server - Enables the DHCP server.• show ip dhcp server information - Displays the server information.• show ip dhcp server pools - Displays the DHCP server pools.• show ip dhcp server binding - Displays the DHCP server binding information.

-
- `show ip dhcp server statistics` - Displays the DHCP server statistics.
-

29.3.12 domain-name

Command Objective This command configures the domain name option for the corresponding DHCP server address pool. A DHCP client uses this domain name while resolving host names through a domain name system. The DHCP option code is 15. This value is a string whose maximum size is 63.

The no form of the command deletes the domain name option configuration for the DHCP server address pool. The domain name option configuration is deleted, if the no form of the network command is executed successfully.

Syntax `domain-name <domain (63)>`

`no domain-name`

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The domain name configuration takes effect only after creating a subnet pool for a DHCP server address pool.

Example `SEFOS(dhcp-config)# domain-name Oracle`

Related Command(s)

- `ip dhcp pool` - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- `network` - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- `show ip dhcp server pools` - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.13 dns-server

Command Objective	<p>This command configures the IP address of a DNS server for the corresponding DHCP server address pool. The client correlates the DNS IP address with the host name. The DNS server is used to translate domain names and hostnames into corresponding IP addresses.</p> <p>The no form of the command deletes the DNS server IP address option configuration for the DHCP server address pool. The DNS server IP address option configuration is deleted, if the no form of the network command is executed successfully.</p>
Syntax	<pre>dns-server <ip address> [<ip address>] no dns-server</pre>
Parameter Description	<ul style="list-style-type: none">• <ip address> [<ip address>] - Configures the unicast IP address to be set for the corresponding DNS server that accepts IP address.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Note:	The DNS server IP address configuration takes effect only after creating a subnet pool for a DHCP server address pool.
Example	<pre>SEFOS (dhcp-config)# dns-server 12.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• network - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.14 netbios-name-server

Command Objective This command configures, for the corresponding DHCP server address pool, the IP address of a NetBIOS (Network Basic Input / Output System) and WINS (Windows Internet Naming Service) name server that is available to Microsoft DHCP clients.

The no form of the command deletes the NetBIOS and WINS name server IP address configuration for the DHCP server address pool. The NetBIOS WINS name server option configuration is deleted, if the no form of the network command is executed successfully.

The NetBIOS name server provides the following three distinct services:

1. Name service for name registration and resolution.
2. Session service for connection-oriented communication.
3. Datagram distribution service for connectionless communication.

Syntax `netbios-name-server <ip address>`

`no netbios-name-server`

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The NetBIOS WINS name server configuration takes effect only after creating a subnet pool for a DHCP server address pool.

Example `SEFOS(dhcp-config)# netbios-name-server 20.0.0.3`

Related Command(s)

- `ip dhcp pool` - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- `network` - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- `show ip dhco server pools` - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.15 netbios-node-type

Command Objective This command configures the NetBIOS node type for Microsoft DHCP clients, for the corresponding DHCP server address pool. The node type denotes the method used to register and resolve NetBIOS names to IP addresses.

The no form of the command deletes the NetBIOS node type option configuration for the DHCP server address pool.

Syntax

```
netbios-node-type { <0-FF> | b-node | h-node | m-node | p-node }  
  
no netbios-node-type
```

Parameter Description

- **<0-FF>** - Allows NetBIOS over TCP/IP clients. This value ranges from 0 to 255.
- **b-node** - Configures the DHCP server address pool to broadcast IP messages for registering and resolving NetBIOS names to IP addresses. The node type value is set as 1.
- **h-node** - Configures the DHCP server address pool to initially query name server and subsequently broadcast IP messages for registering and resolving NetBIOS names to IP addresses. The node type value is set as 8. This node type is the best option for all conditions.
- **m-node** - Configures the DHCP server address pool to initially broadcast the IP message and then query name server for registering and resolving NetBIOS names to IP addresses. The node type value is set as 4.
- **p-node** - Configures the DHCP server address pool to have point-to-point communication with a NetBIOS name server for registering and resolving NetBIOS names to IP addresses. The node type value is set as 2.

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The NetBIOS node type configuration takes effect only after creating a subnet pool for a DHCP server address pool.

Example SEFOS (dhcp-config) # netbios-node-type h-node

Related Command(s)

- **ip dhcp pool** - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- **network** - Creates a subnet pool that defines a network IP subnet address

for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.

- **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
-

29.3.16 default-router

Command Objective	<p>This command configures the IP address of a default router to which a DHCP client should send packets after booting, for the corresponding DHCP server address pool.</p> <p>The no form of the command deletes the default router IP address configuration for the DHCP server address pool. The default router IP address configuration is deleted, if the no form of the network command is executed successfully.</p>
Syntax	<pre>default-router <ip address></pre> <pre>no default-router</pre>
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Note:	<ul style="list-style-type: none">• The configured IP address of the default router should be on the same subnet of the DHCP client.• The default router IP address configuration takes effect only after creating a subnet pool for a DHCP server address pool.
Example	<pre>SEFOS(dhcp-config)# default-router 10.23.2.99</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• network - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.17 option

Command Objective	<p>This command configures, for the corresponding DHCP server address pool, the various available DHCP server options with the corresponding specific values. These values can be an ASCII string, hexadecimal string, or IP address.</p> <p>The no form of the command deletes the DHCP server option for the DHCP server address pool. The DHCP server option configuration is deleted, if the no form of the network command is executed successfully.</p>
Syntax	<pre>option <code (1-2147483647)> { ascii <string> hex <Hex String> ip <address> } no option <code (1-2147483647)></pre>
Parameter Description	<ul style="list-style-type: none">• <code (1-2147483647)> - Configures the unique DHCP option code that represents a specific DHCP option used in a DHCP OFFER message in response to a DHCP DISCOVER message. This value ranges from 1 to 2147483647.• ascii<string> - Configures the ASCII value to be set for the corresponding option code that accepts ASCII string. This value is a character string that should contain only characters from NVT ASCII character set.• hex<Hex String> - Configures the hexadecimal value to be set for the corresponding option code that accepts hexadecimal string.• ip<address> - Configures the unicast IP address to be set for the corresponding option code that accepts IP address.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Option code - 1
	<p><u>Note:</u> The DHCP server options configuration takes effect only after creating a subnet pool for a DHCP server address pool.</p>
Example	<pre>SEFOS(dhcp-config) # option 19 hex f</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• network - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be

assigned to the DHCP client.

- **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
-

29.3.18 lease

Command Objective This command configures, for the corresponding DHCP server, the DHCP lease period for an IP address that is assigned from a DHCP server to a DHCP client.

The DHCP lease period represents the time interval (in seconds) till which the DHCP client can use the assigned IP address. The time interval is internally calculated in seconds based on the number of days, hours and minutes configuration.

The no form of the command resets the DHCP lease period to its default value for the DHCP server address pool. The DHCP lease period configuration is deleted and reset, if the no form of the network command is executed successfully.

Syntax `lease { <days (0-365)> [<hours (0-23)> [<minutes (1-59)>]]
| infinite }`

`no lease`

Parameter Description

- **<days (0-365)>** - Configures the number of days that is used to calculate the DHCP lease period. The period also depends on the configured number of hours and minutes. This value ranges from 0 to 365. The value 0 is valid only if either number of hours or minutes is configured with any value other than 0.
- **<hours (0-23)>** - Configures the number of hours that is used to calculate the DHCP lease period. The period also depends on the configured number of days and minutes. This value ranges from 0 to 23. The value 0 is valid only if either number of days or minutes is configured with any value other than 0.
- **<minutes (1-59)>** - Configures the number of minutes that is used to calculate the DHCP lease period. The period also depends on the configured number of days and hours. This value ranges from 1 to 59.
- **infinite** - Configures the DHCP lease period as 2147483647 seconds.

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default 3600 seconds (1 hour)

Note: The DHCP lease period configuration takes effect only after creating a subnet pool for a DHCP server address pool.

Example**SEFOS (dhcp-config) # lease 1**

Related Command(s)

- **ip dhcp pool** - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
 - **network** - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
 - **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
-

29.3.19 utilization threshold

Command Objective This command configures pool utilization threshold value (in percentage) for the corresponding DHCP server address pool.

The no form of the command resets the pool utilization threshold to its default value for the DHCP server address pool.

If the pool utilization exceeds the configured threshold value, a syslog event and an SNMP trap message are generated. The threshold value ranges from 0 to 100 percentage.

Syntax `utilization threshold { <integer (0-100)> }`
`no utilization threshold`

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default 75 percent

Note: The pool utilization threshold configuration takes effect only after creating a subnet pool for a DHCP server address pool.

Example `SEFOS(dhcp-config)# utilization threshold 76`

Related Command(s)

- `ip dhcp pool` - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- `network` - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- `show ip dhcp server pools` - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.20 host hardware-type

Command Objective	<p>This command configures host hardware type and its DHCP option with specific values for the corresponding DHCP server address pool.</p> <p>The no form of the command deletes the hardware type and its DHCP option.</p>
Syntax	<pre>host hardware-type <type (1-2147483647)> client-identifier <mac-address> { ip <address> option <code (1- 2147483647)> { ascii <string> hex <Hex String> ip <address> }} no host hardware-type <host-hardware-type (1-2147483647)> client-identifier <client-mac-address> [{ ip option <code (1-2147483647)> }]</pre>
Parameter Description	<ul style="list-style-type: none">• <type (1-2147483647)> - Configures the host hardware type for which the host address and the DHCP options need to be configured. This value ranges from 1 to 2147483647. Only the value 1 is supported, which represents that the hardware type is Ethernet.• client identifier<mac-address> - Configures the DHCP client identifier in a host declaration so that a host record can be found using this client identifier. The client identifier represents the physical address (MAC address) of a network card.• ip <address> - Configures the IPv4 address for the DHCP host.• option <code (1-2147483647)> - Configures the unique DHCP option code that represents a specific DHCP option used in a DHCP OFFER message in response to a DHCP DISCOVER message. This value ranges from 1 to 2147483647.<ul style="list-style-type: none">▪ ascii<string> - Configures the ASCII value to be set for the corresponding option code that accepts ASCII string. This value is a character string that should contain only characters from NVT ASCII character set.▪ hex<Hex String> - Configures the hexadecimal value to be set for the corresponding option code that accepts hexadecimal string.▪ ip <address> - Configures the unicast IP address to be set for the corresponding option code that accepts IP address.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS(dhcp-config)# host hardware-type 1 client-identifier 00:11:22:33:44:55 option 1 ip 10.0.0.1</pre>

Related Command(s)

- **ip dhcp pool** - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
 - **show ip dhcp server pools** - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.
 - **show ip dhcp server binding** - Displays the DHCP server binding information.
-

29.3.21 debug ip dhcp server

Command Objective	<p>This command enables the tracking of the DHCP server operations as per the configured debug levels. The debug statements are generated for the configured trace levels.</p> <p>The no form of the command disables the tracking of the DHCP server operations. The debug statements are not generated for the configured trace levels.</p> <p>This command allows combination of debug levels to be configured (that is, more than one level of trace can be enabled or disabled). The debug levels are configured one after the other and not in single execution of the command.</p>
Syntax	<pre>debug ip dhcp server { all events packets errors bind linkage } no debug ip dhcp server { all events packets errors bind linkage }</pre>
Parameter Description	<ul style="list-style-type: none">• all - Generates debug statements for all kind of failure traces.• events - Generates debug statements for DHCP server events that provide DHCP server service status. The DHCP server events are generated when any of the packets are sent successfully or when an ACK is received.• packets - Generates debug statements for packet-related messages. These messages are generated for all events generated during processing of packets.• errors - Generates debug statements for trace error code debug messages. These messages are generated for all error events generated.• bind - Generates debug statements for trace bind messages. These messages are generated when a DHCP ACK is received.• linkage - Generates debug statements for database linkage messages. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Tracking of the DHCP server operations is disabled.

Example

```
SEFOS# debug ip dhcp server all
```

Related Command(s)

- `show ip dhcp server information` - Displays the DHCP server configuration information.
 - `show debugging` - Displays state of each debugging option.
-

29.3.22 show ip dhcp server information

Command Objective	This command displays the DHCP server configuration information. The information contains status of DHCP server, ICMP echo mechanism status, debug level, boot server IP address, boot file name, and server offer reuse time.
Syntax	<code>show ip dhcp server information</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ip dhcp server information DHCP server status : Enable Send Ping Packets : Disable Debug level : None Server Address Reuse Timeout : 5 secs Next Server Address : 0.0.0.0 Boot file name :</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>service dhcp-server</code> - Enables the DHCP server in the switch (that is, switch acts as DHCP server).• <code>ip dhcp next-server</code> - Sets the IP address of the boot server (that is, TFTP server) from which the initial boot file is to be loaded.• <code>ip dhcp bootfile</code> - Configures the name of the initial boot file to be loaded in a DHCP client.• <code>ip dhcp</code> - Enables ICMP echo mechanism or configures offer-reuse timeout for the DHCP server.• <code>debug ip dhcp server</code> - Enables the tracking of the DHCP server operations as per the configured debug levels.

29.3.23 show ip dhcp server pools

Command Objective This command displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

Syntax `show ip dhcp server pools`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example `SEFOS# show ip dhcp server pools`

```
Global Options
-----
Code      :      1, Value      : 12.0.0.1
Code      :      6, Value      : 12.0.0.1
Code      :     19, Value      : 0
Code      :     42, Value      : 12.0.0.1
Code      :    120, Value      : str,str1

Pool Id           : 1
-----
Pool Name          : pool1
Subnet             : 20.0.0.0
Subnet Mask        : 255.0.0.0
Lease time         : 86400 secs
Utilization threshold : 76%
Start Ip           : 20.0.0.1
End Ip             : 20.0.0.50
Exclude Address Start IP : 20.0.0.1
Exclude Address End IP  : 20.0.0.30

Subnet Options
-----
Code      :      1, Value      : 255.0.0.0
```

```

Code       :      6, Value       : 12.0.0.1
Code       :     15, Value       : Oracle
Code       :     19, Value       : 0
Code       :     42, Value       : 12.0.0.1
Code       :     43, Value       : ven
Code       :     44, Value       : 20.0.0.3
Code       :     46, Value       : 8
Code       :    120, Value       : 12.0.0.1

```

Host Options

```

-----
Client Identifier      Hardware type      Code
Value
00:11:22:33:44:55    1                  1
10.0.0.1
00:11:22:33:44:55    1                  6
12.0.0.1
00:11:22:33:44:55    1                  42
12.0.0.1
00:11:22:33:44:55    1                  120
12.0.0.1

```

Related Command(s)

- **ip dhcp option** - Configures the various available DHCP server options with the corresponding specific values globally.
- **ip dhcp pool** - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- **ip dhcp sip-server** - Sets SIP servers in the global DHCP server configuration parameters.
- **network** - Creates a subnet pool that defines a network IP subnet address for the corresponding DHCP address pool and contains IP addresses to be assigned to the DHCP client.
- **excluded-address** - Creates an excluded pool that defines a range of IP addresses which need to be excluded from the created subnet pool.
- **domain-name** - Configures the domain name option for the corresponding DHCP server address pool.
- **dns-server** - Configures the IP address of a DNS server for the corresponding DHCP server address pool.
- **netbios-name-server** - Configures the IP address of a NetBIOS and WINS name server that is available to Microsoft DHCP clients.

-
- **netbios-node-type** - Configures the NetBIOS node type for Microsoft DHCP clients, for the corresponding DHCP server address pool.
 - **default-router** - Configures the IP address of a default router to which a DHCP client should send packets after booting, for the corresponding DHCP server address pool.
 - **option** - Configures, for the corresponding DHCP server address pool, the various available DHCP server options with the corresponding specific values.
 - **lease** - Configures, for the corresponding DHCP server, the DHCP lease period for an IP address that is assigned from a DHCP server to a DHCP client.
 - **utilization threshold** - Configures pool utilization threshold value (in percentage) for the corresponding DHCP server address pool.
 - **host hardware-type** - Configures host hardware type and its DHCP option with specific values for the corresponding DHCP server address pool.
 - **show ip dhcp server statistics** - Displays various DHCP server statistics-related information such as number of DHCPDECLINE messages received, DHCPPOFFER messages sent and so on.
-

29.3.24 show ip dhcp server binding

Command Objective This command displays the DHCP server binding information.

A DHCP binding is created when a DHCP server assigns an IP address to a DHCP client. The information contains the allocated IP address, host hardware type, host hardware address, binding state and expiry time of the allocated DHCP lease.

Syntax `show ip dhcp server binding`

Mode Privileged EXEC Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The DHCP server binding information is displayed, only if the DHCP server is enabled and the DHCP binding is created.

Example

```
SEFOS# show ip dhcp server binding
Ip          Hw          Hw          Binding    Expire
Address    Type        Address      State      Time
-----    -
12.0.0.2   Ethernet    00:02:02:03:04:01  Assigned  May 12
13:22:41  2009
```

Related Command(s)

- `service dhcp-server` - Enables the DHCP server in the switch.
- `ip dhcp` - Enables ICMP echo mechanism or configures offer-reuse timeout for the DHCP server.
- `host hardware-type` - Configures host hardware type and its DHCP option with specific values for the corresponding DHCP server address pool.

29.3.25 show ip dhcp server statistics

Command Objective	This command displays various DHCP server statistics-related information such as number of DHCPDECLINE messages received, DHCPPOFFER messages sent and so on.
Syntax	<code>show ip dhcp server statistics</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ip dhcp server statistics Address pools : 2 Message Received ----- - DHCPDISCOVER 6 DHCPREQUEST 2 DHCPDECLINE 0 DHCPRELEASE 0 DHCPINFORM 0 Message Sent ----- - DHCPPOFFER 6 DHCPACK 2 DHCPNAK 0</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>service dhcp-server</code> - Enables the DHCP server in the switch.• <code>ip dhcp pool</code> - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• <code>ip dhcp</code> - Enables ICMP echo mechanism or configures offer-reuse timeout for the DHCP server.• <code>show ip dhcp server pools</code> - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.26 clear ip dhcp server statistics

Command Objective	This command clears the DHCP server statistics.
Syntax	<code>clear ip dhcp server statistics</code>
Mode	Privileged EXEC Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# clear ip dhcp server statistics</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ip dhcp server statistics</code> - Displays various DHCP server statistics-related information.

29.3.27 ip dhcp sip-server

Command Objective	<p>This command sets SIP servers in the global DHCP server configuration parameters.</p> <p>The no form of the command deletes SIP servers from the global DHCP server configuration parameters.</p>
Syntax	<pre>ip dhcp sip-server { {domain <string> [<string>] } {ip <ip_addr> [<ip_addr>] } } no ip dhcp sip-server</pre>
Parameter Description	<ul style="list-style-type: none">• domain <string> [<string>] - Configures domain names for the server. The domain name should be specified as ASCII string.• ip <ip_addr> [<ip_addr>] - Configures the unicast IP address to be set for the corresponding SIP servers in the global DHCP server configuration.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (config)# ip dhcp sip-server domain str str1</pre>
Related Command(s)	<ul style="list-style-type: none">• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.28 ip dhcp ntp-server

Command Objective	<p>This command sets NTP servers in the global DHCP server configuration parameters.</p> <p>The no form of the command deletes NTP server from the global DHCP server configuration parameters.</p>
Syntax	<pre>ip dhcp ntp-server <ip address> [<ip address>] no ip dhcp ntp-server</pre>
Parameter Description	<p><ip address> [<ip address>] - Configures the unicast IP address to be set for the corresponding NTP servers in the global DHCP server configuration.</p>
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (config)# ip dhcp ntp-server 12.0.0.1 14.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none"><code>show ip dhcp server pools</code> - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.29 ip dhcp dns-server

Command Objective	<p>This command sets DNS servers in the global DHCP server configuration parameters.</p> <p>The no form of the command deletes DNS server from the global DHCP server configuration parameters.</p>
Syntax	<pre>ip dhcp dns-server <ip address> [<ip address>] no ip dhcp dns-server</pre>
Parameter Description	<p><ip address> [<ip address>] - Configures the unicast IP address to be set for the corresponding DNS servers in the global DHCP server configuration.</p>
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (config)# ip dhcp dns-server 12.0.0.1 13.0.0.0</pre>
Related Command(s)	<ul style="list-style-type: none"><code>show ip dhcp server pools</code> - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.30 ntp-server

Command Objective This command sets NTP servers in the pool-specific DHCP server configuration parameters.

The no form of the command deletes NTP server from the pool-specific DHCP server configuration parameters.

Syntax `ntp-server <ip address> [<ip address>]`

`no ntp-server`

Parameter Description `<ip address> [<ip address>]` - Configures the unicast IP address to be set for the corresponding NTP servers in the pool-specific DHCP server configuration.

Mode DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Example `SEFOS (dhcp-config)# ntp-server 12.0.0.1 13.0.0.0`

Related Command(s)

- `ip dhcp pool` - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.
- `show ip dhcp server pools` - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.31 sip-server

Command Objective	<p>This command sets SIP servers in the pool-specific DHCP server configuration parameters.</p> <p>The no form of the command deletes SIP server from the pool-specific DHCP server configuration parameters.</p>
Syntax	<pre>sip-server { {domain <string> [<string>]} {ip <ip_addr> [<ip_addr>]} } no sip-server</pre>
Parameter Description	<ul style="list-style-type: none">• domain <string> [<string>] - Configures domain names for the server. The domain name should be specified as ASCII string.• ip <ip_addr> [<ip_addr>] - Configures the unicast IP address to be set for the corresponding SIP servers in the pool-specific DHCP server configuration.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (dhcp-config)# sip-server domain str str1 SEFOS (dhcp-config)# sip-server ip 12.0.0.1 13.0.0.0</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.32 vendor-specific

Command Objective	<p>This command sets Vendor Specific Information in the pool-specific DHCP server configuration parameters. This value is a string of maximum size 254.</p> <p>The no form of the command deletes Vendor Specific Information from the pool-specific DHCP server configuration parameters.</p>
Syntax	<pre>vendor-specific {<vendor-specific-string> [<string>]} no vendor-specific</pre>
Parameter Description	<ul style="list-style-type: none">• <vendor-specific-string> [<string>] - Configures vendor-specific details for the DHCP server.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (dhcp-config)# vendor-specific ven</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.33 host hardware-type - sip-server

Command Objective	<p>This command sets SIP servers in the host-specific DHCP server configuration parameters.</p> <p>The no form of the command deletes SIP servers from the host-specific DHCP server configuration parameters.</p>
Syntax	<pre>host hardware-type <integer (1-2147483647)> client- identifier <ucast_mac> sip-server { {domain <string> [<string>]} {ip <ip_addr> [<ip_addr>]} } no host hardware-type <host-hardware-type (1-2147483647)> client-identifier <client-mac-address> sip-server</pre>
Parameter Description	<ul style="list-style-type: none">• <integer (1-2147483647)> - Creates host hardware address type for the SIP servers whose value range from 1 to 2147483647.• <ucast_mac> - Configures the client identifier with the host MAC address.• domain <string> [<string>] - Configures domain names for the server. The domain name should be specified as ASCII string.• ip <ip_addr> [<ip_addr>] - Configures the unicast IP address to be set for the corresponding SIP servers in the host-specific DHCP server configuration.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (dhcp-config)# host hardware-type 1 client- identifier 00:11:22:33:44:55 sip-server domain sipsrv sipsrv1</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.34 host hardware-type - dns-server

Command Objective	<p>This command sets DNS servers in the host-specific DHCP server configuration parameters.</p> <p>The no form of the command deletes DNS servers from the host-specific DHCP server configuration parameters.</p>
Syntax	<pre>host hardware-type <integer (1-2147483647)> client- identifier <ucast_mac> dns-server <ip address> [<ip address>]</pre> <pre>no host hardware-type <integer (1-2147483647)> client- identifier <ucast_mac> dns-server</pre>
Parameter Description	<ul style="list-style-type: none">• <integer (1-2147483647)> - Creates host hardware type for the DNS servers. This value ranges from 1 to 2147483647.• <ucast_mac> - Configures the client identifier with the host MAC address.• dns-server <ip address> [<ip address>] - Configures the unicast IP address to be set for the corresponding DNS servers in the host-specific DHCP server configuration.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (dhcp-config)# host hardware-type 1 client- identifier 00:11:22:33:44:55 dns-server 12.0.0.1 13.0.0.0</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

29.3.35 host hardware-type - ntp-server

Command Objective	<p>This command sets NTP servers in the host-specific DHCP server configuration parameters.</p> <p>The no form of the command deletes NTP servers from the host-specific DHCP server configuration parameters.</p>
Syntax	<pre>host hardware-type <integer (1-2147483647)> client- identifier <ucast_mac> ntp-server <ip address> [<ip address>]</pre> <pre>no host hardware-type <integer (1-2147483647)> client- identifier <ucast_mac> ntp-server</pre>
Parameter Description	<ul style="list-style-type: none">• <integer (1-2147483647)> - Creates host hardware type for the NTP servers. This value ranges from 1 to 2147483647.• client-identifier <ucast_mac> - Configures the client identifier with the host MAC address.• ntp-server <ip address> [<ip address>] - Configures the unicast IP address to be set for the corresponding NTP servers in the host-specific DHCP server configuration.
Mode	DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS (dhcp-config)# host hardware-type 1 client- identifier 00:11:22:33:44:55 ntp-server 12.0.0.1 13.0.0.0</pre>
Related Command(s)	<ul style="list-style-type: none">• ip dhcp pool - Creates a DHCP server address pool and enters into the DHCP pool configuration mode in which the pool is customized.• show ip dhcp server pools - Displays the global DHCP option configuration for all DHCP server address pools and configuration information, such as utilization threshold, of address pools for which subnet pool is created or host options are configured.

CHAPTER 30

DHCPv6

DHCPv6 (Dynamic Host Configuration Protocol for IPv6) enables DHCP servers to pass configuration parameters, such as IPv6 network addresses, to IPv6 nodes. It enables automatic allocation of reusable network addresses and provides additional configuration flexibility.

Oracle DHCPv6 has DHCPv6 client, DHCPv6 server, and DHCPv6 relay functionalities. Oracle DHCPv6 runs as an application over IPv6 and uses SLI (Socket Layer Interface) to send or receive messages from the corresponding client or server.

30.1 DHCPv6 Client

The DHCPv6 client is a node that initiates requests on a link to obtain configuration parameters (such as list of available DNS (Domain Name Server) servers) from DHCPv6 servers. It transmits and receives DHCP messages using link-local address or addresses determined through other mechanisms.

30.1.1 snmp-server enable traps ipv6 dhcp client

Command Objective	<p>This command enables the SNMP traps notification messages for DHCPv6 client. It enables all the traps, when executed without any option.</p> <p>This command allows enabling multiple SNMP traps for the DHCPv6 client. That is, both the specified trap notifications can be enabled one after the other.</p> <p>The no form of the command disables the SNMP traps for the DHCPv6 client. It sets the trap as none, when executed without any option.</p>
Syntax	<pre>snmp-server enable traps ipv6 dhcp client [invalid-pkt] [auth-fail] no snmp-server enable traps ipv6 dhcp client [invalid-pkt] [auth-fail]</pre>
Parameter Description	<ul style="list-style-type: none">• invalid-pkt - Enables or disables the transmission of invalid packet trap notification message. This trap notification message is generated, when the received reply message is invalid.• auth-fail - Enables or disables the transmission of HMAC authentication fail trap notification. This trap notification is generated, when the received reply message contains the authentication TLV and digest calculated at the client side that does not match with the received digest value. The digest is calculated at the client side with the realm and key-id values.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	SNMP traps are disabled for the DHCPv6 client.
Example	<pre>SEFOS(config)# snmp-server enable traps ipv6 dhcp client invalid-pkt</pre>
Related Command(s)	<ul style="list-style-type: none">• show ipv6 dhcp – Displays the configuration information.

30.1.2 ipv6 dhcp client port

Command Objective	This command configures the listen or transmit UDP (User Datagram Protocol) ports, which contains the UDP listen port number. The client provides the listen port number in the UDP header of Information Request message. The client processes the received reply message only when the destination port number in the UDP header is equal to port value.
Syntax	<pre>ipv6 dhcp client port { listen <value (1-65535)> transmit <value(1-65535)>}</pre>
Parameter Description	<ul style="list-style-type: none">• listen<value (1-65535)> - Configures the UDP listen port number to be provided in UDP header of the information-request message. This value ranges from 1 to 65535.• transmit<value (1-65535)> - Configures the UDP (User Datagram Protocol) destination port number to be provided in UDP header of the information-request message. This value ranges from 1 to 65535.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• listen - 546• transmit - 547
	<p><u>Note:</u> Client processes the received reply message, only when the destination port number in the UDP header is equal to the client listen port number.</p>
Example	<pre>SEFOS(config)# ipv6 dhcp client port listen 540</pre>
Related Command(s)	<ul style="list-style-type: none">• show ipv6 dhcp – Displays the configuration information.

30.1.3 ipv6 dhcp client syslog

Command Objective	This command enables or disables the syslog generation and transmission of syslog notification messages. The DHCPv6 client will generate the syslog messages only when syslog is set as enabled.
Syntax	<code>ipv6 dhcp client syslog {enable disable}</code>
Parameter Description	<ul style="list-style-type: none">• enable - Enables the transmission of syslog notification messages. DHCPv6 client generates syslog messages.• disable - Disables the transmission of syslog notification messages. DHCPv6 client does not generate any syslog messages.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	disable
Example	<code>SEFOS(config)# ipv6 dhcp client syslog enable</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ipv6 dhcp</code> – Displays the configuration information.

30.1.4 ipv6 address dhcp

Command Objective	<p>This command enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.</p> <p>The no form of the command disables the DHCPv6 client functionality over the interface.</p>
Syntax	<pre>ipv6 address dhcp</pre> <pre>no ipv6 address dhcp</pre>
Mode	Interface Configuration Mode (VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	DHCPv6 client functionality is disabled.
Example	<pre>SEFOS(config-if)# ipv6 address dhcp</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 dhcp authentication client</code>– Defines the domain, client identifier, and the corresponding authentication MD5 keys used to authenticate the information-request message and validate reply message.• <code>ipv6 dhcp client-id type</code> – Configures the DUID type to be used for the client identifier.• <code>ipv6 dhcp client-id interface</code> – Configures the interface that is used in the formation of the DUID based on LLT or on LL.• <code>ipv6 dhcp timer</code> – Configures various timer parameters for a retransmission algorithm of the information-request message.• <code>ipv6 dhcp client information refresh minimum</code> – Sets the minimum refresh timer value for the information-request message for client.• <code>clear ipv6 dhcp client statistics</code> – Clears the DHCPv6 client statistics for the specified interface or all the interfaces.• <code>show ipv6 dhcp interface</code> – Displays the configuration information and the DHCPv6 information received from the server for client, relay, and server interfaces.

-
- `show ipv6 dhcp client statistics` – Displays the DHCPv6 client statistics.
-

30.1.5 ipv6 dhcp authentication client

Command Objective	This command defines the domain, client identifier, and the corresponding authentication MD5 (Message Digest 5) keys used to authenticate the information-request message and validate reply message.
Syntax	<code>ipv6 dhcp authentication client {realm <string(1-128)> key <string (1-64)> keyid <value>}</code>
Parameter Description	<ul style="list-style-type: none">• <code>realm<string(1-128)</code> - Configures the unique name of the container for the HMAC-MD5 (Hash Message Authentication Code - Message Digest 5) authentication key. This value is a string of size varying between 1 and 128.• <code>key<string (1-64)></code> - Configures the HMAC-MD5 key string which is used to authenticate the information-request message. This value is a string of size varying between 1 and 64.• <code>keyid<value></code> - Configures the key identifier which is transmitted in information-request message as part of authentication information. The server searches its local database, using this key identifier for the related key to calculate the HMAC. This value ranges from 0 to 4294967295.
Mode	Interface Configuration Mode(VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	keyid - 1
	<u>Note:</u> The DHCPv6 client functionality should be enabled in the interface, before executing this command.
Example	<code>SEFOS(config-if)# ipv6 dhcp authentication client realm 1</code>
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 address dhcp</code> – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.• <code>show ipv6 dhcp interface</code> – Displays the configuration information and also the DHCPv6 information received from the server for client, relay, and server interfaces.

30.1.6 ipv6 dhcp client-id type

Command Objective This command configures the DUID (DHCP Unique Identifier) type to be used for the client identifier. DUID consists of a two-octet type code represented in network byte order and a variable number of octets, to make an actual identifier. This DUID is used to identify the client in messages where the client sends a client identifier TLV (Type Length Value) in the information-request message. The clients must treat DUIDs as opaque values and must compare DUIDs for equality clients.

Syntax `ipv6 dhcp client-id type {llt | en | ll}`

Parameter Description

- **llt** - Configures the DUID which is formed based on LLT (Link-Layer Address plus Time). The DHCPv6 client uses the link layer address of the interface and current system time value for the client identifier option TLV value. This type of DUID consists of a two octet type field containing the value one, a two octet hardware type code, four octets containing a time value, and a link-layer address of any one network interface that is connected to the DHCP device at the time of generation of the DUID.
 - For client ID configured as `llt`, the DHCPv6 client and server should:
 - Compulsorily have a stable storage.
 - Store DUID-LLT in stable storage.
 - Continue to use DUID-LLT, even if network interface used to generate the DUID-LLT is removed.
 - Attempt to configure the time prior to generation of DUID, if possible, and should use time source (for example, real-time clock) for generating the DUID, even if the source is not configurable prior to the generation of the DUID.
 - **en** - Configures the DUID which is assigned by the vendor based on EN (Enterprise Number). The DHCPv6 client uses the vendor-assigned unique ID based on the EN for the client identifier option TLV value. This type of DUID consists of vendor's registered private enterprise number as maintained by IANA (Internet Assigned Numbers Authority) and a unique identifier assigned by the vendor.
 - For client ID configured as `en`:
 - The identifier assigned by the vendor should be unique to device.
 - The unique identifier should be assigned to the device during its manufacture itself and should be stored in a non-volatile storage.
 - The generated DUID should be recorded in a non-erasable storage.
 - **ll** - Configures the DUID which is formed based on LL (Link-layer Address). The DHCPv6 client uses the link layer address for the client identifier option TLV value. This type of DUID consists of two octets
-

containing the DUID type 3, a two octet network hardware type code, and a link-layer address of any one network interface that is permanently connected to the client or server device.

- For client ID configured as 11:
- DHCP-LL should not be used by clients or servers that cannot identify whether a network interface is permanently attached to the device on which the DHCP client is running.
- Same DHCP-LL should be used in configuring all network interfaces connected to the device, regardless of usage of any interface's link-layer address to generate the DUID.

Mode Interface Configuration Mode (VLAN Interface Mode / Router)

Package Workgroup, Enterprise, Metro, and Metro_E

Default ll

Note: The DHCPv6 client functionality should be enabled in the interface, before executing this command.

Example SEFOS (config-if) # `ipv6 dhcp client-id type 11`

Related Command(s)

- `no switchport` – Configures the port as router port.
- `ipv6 address dhcp` – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.
- `show ipv6 dhcp interface` – Displays the configuration information and also the DHCPv6 information received from the server for client, relay, and server interfaces.

30.1.7 ipv6 dhcp client-id interface

Command Objective	This command configures the interface that is used in the formation of the DUID based on LLT or on LL.
Syntax	<code>ipv6 dhcp client-id interface {<interface-type> <interface-id> }</code>
Parameter Description	<ul style="list-style-type: none">• <interface-type> - Configures DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ xL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Configures DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan and port-channel ID.
Mode	Interface Configuration Mode(VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	An arbitrary interface value is used.
Note:	This command executes only if <ul style="list-style-type: none">• The DHCPv6 client functionality is enabled in the interface.• The physical interface that is configured to be used in the formation of DUID is configured as router port.
Example	<pre>SEFOS(config-if)# ipv6 dhcp client-id interface extreme-ethernet 0/2</pre>

Related Command(s)

- `no switchport` – Configures the port as router port.
 - `ipv6 address dhcp` – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.
 - `show ipv6 dhcp interface` - Displays DHCPv6 interface-specific information.
-

30.1.8 ipv6 dhcp timer

Command Objective This command is used to set the various timer parameters for a retransmission algorithm of the information-request message. The no form of the command is used to reset the timer parameters to the default value.

By default, the client calculates the retransmission time for the information-request message using the following formula:

$$RT = IRT + RAND * IRT$$

Where

- **RT** - Retransmission Time
- **IRT** - Initial Retransmission Time
- **RAND** - Random number between -0.1 and +0.1

If the calculated **RT** becomes greater than the **MRT** (Maximum Retransmission Time), then the client calculates the **RT** using the following formula:

$$RT = MRT + RAND * MRT$$

Where

- **RT** - Retransmission Time
- **MRT** - Maximum Retransmission Time
- **RAND** - Random number between -0.1 and +0.1

Syntax

```
ipv6 dhcp timer { irt <value(1-255)> | mrt <value(0-120)>
| mrc <value(0-10)> | mrd <value(0-100)>}
```

```
no ipv6 dhcp timer [( irt | mrt | mrc | mrd )]
```

Parameter Description

- **irt<value(1-255)>** - Configures the initial retransmission time value. This value ranges from 1 to 255 seconds.
 - **mrt<value(0-120)>** - Configures retransmission time value. This value ranges from 0 to 120 seconds.
 - **mrc<value(0-10)>** - Configures the maximum retransmission count value. This value ranges from 0 to 10. If MRC (Maximum Retransmission Count) is zero, the client continues to transmit the information-request message until it receives a reply response. If MRC is non-zero, the client
-

terminates the information-request message exchange and considers it as fail, on transmitting the information-request message MRC time.

- **mrdd<value (0-100)>** - Configures the maximum retransmission delay value. This value ranges from 0 to 100 seconds. If MRD (Maximum Retransmission Delay) is zero, client continues to transmit the information-request message until it receives a reply response. If MRD is non-zero, client terminates the information-request message exchange and considers it as fail, once MRD is elapsed since the initial transmission of the message.

Mode Interface Configuration Mode(VLAN Interface Mode / Router)

Package Workgroup, Enterprise, Metro, and Metro_E

Default

- irt - 1
- mrt - 120
- mrc - 0
- mrd - 0

Note: DHCPv6 client functionality should be enabled in the interface, before executing this command.

Example SEFOS(config-if)# ipv6 dhcp timer irt 10

Related Command(s)

- **no switchport** – Configures the port as router port.
- **ipv6 address dhcp** – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.
- **show ipv6 dhcp interface** – Displays the configuration information and also the DHCPv6 information received from the server for client, relay, and server interfaces.

30.1.9 ipv6 dhcp client information refresh minimum

Command Objective	<p>This command sets the minimum refresh timer value for the information-request message, at the client side. The client once again sends information-request message to the server for acquiring configuration information, if the refresh timer is expired. The configured minimum refresh timer value is used, if an information refresh time option sent by the server is less than the configured value. This value ranges from 600 to 4294967295 seconds.</p> <p>The no form of the command sets the refresh timer value to default value.</p>
Syntax	<pre>ipv6 dhcp client information refresh minimum <seconds value (600-4294967295)></pre> <pre>no ipv6 dhcp client information refresh minimum</pre>
Mode	Interface Configuration Mode (VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	86400 Seconds (24 Hours)
<u>Note:</u>	The DHCPv6 client functionality should be enabled in the interface, before executing this command.
Example	<pre>SEFOS(config-if)# ipv6 dhcp client information refresh minimum 10000</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 address dhcp</code> – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.• <code>show ipv6 dhcp interface</code> – Displays the configuration information and also the DHCPv6 information received from the server for client, relay, and server interfaces.

30.1.10 debug ipv6 dhcp client

Command Objective	<p>This command sets the debug traces for the DHCPv6 client.</p> <p>The no form of the command resets the debug traces for the DHCPv6 client.</p>
Syntax	<pre>debug ipv6 dhcp client {[init-shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] [all]} no debug ipv6 dhcp client {[init-shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] [all]}</pre>
Parameter Description	<ul style="list-style-type: none">• init-shut - Generates debug messages for init and shutdown traces. These traces are used during the module initialization and shut down, and for cases such as failure of RBTtree creation and so on.• mgmt - Generates debug messages for management traces.• ctrl - Generates debug messages for control plane traces. These traces are used for cases such as MBSM card removal, failure of state change and so on.• pkt - Generates debug messages for packet dump traces. These traces are used during the reception and transmission of packets.• resource - Generates debug messages for traces related to all resources such as memory, data structure and the like. These traces are used for failure of memory allocation and so on.• fail - Generates debug messages for all failure traces. These traces are used for all valid and invalid failures. The valid failures represent expected errors. The invalid failures represent unexpected errors.• buffer - Generates debug messages for buffer allocation or release traces.• critical - Generates debug messages for SL (Stateless)-DHCPv6 client critical traces. These traces are used for cases such as failure of RBTtree addition, failure to program the hardware, and so on.• all - Generates debug messages for all traces.
Mode	Privileged Exec Mode / User Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	critical

Example

```
SEFOS# debug ipv6 dhcp client mgmt
```

30.1.11 clear ipv6 dhcp client statistics

Command Objective	This command clears the DHCPv6 client statistics for the specified interface or all the interfaces.
Syntax	<pre>clear ipv6 dhcp client statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</pre>
Parameter Description	<ul style="list-style-type: none">• vlan<VlanId(1-4094)> - Configures DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <interface-type> - Configures DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ xL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Configures DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# clear ipv6 dhcp client statistics interface extreme-ethernet 0/1</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 address dhcp – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.• show ipv6 dhcp client statistics – Displays the DHCPv6 client statistics.

30.1.12 show ipv6 dhcp

Command Objective	This command displays the configuration information.
--------------------------	--

Syntax	<code>show ipv6 dhcp</code>
---------------	-----------------------------

Mode	Privileged Exec Mode
-------------	----------------------

Package	Workgroup, Enterprise, Metro, and Metro_E
----------------	---

Example	<pre>SEFOS# show ipv6 dhcp Client information: Listen UDP port : 546 Transmit UDP port : 547 Sys log status : disabled SNMP traps : none Server information: Listen UDP port : 547 Client Transmit UDP port : 546 Relay Transmit UDP port : 547 Sys log status : disabled SNMP traps : none Authentication Information: Client DUID : 636c69656e7431 Realm Name : reall Key Value : 1 Key Identifier : 74:72:69:61:6c Relay information: Listen UDP port : 547 Client Transmit UDP port : 546 Server Transmit UDP port : 547 Sys log status : disabled SNMP traps : none</pre>
----------------	--

Related Command(s)	<ul style="list-style-type: none">• <code>snmp-server enable traps ipv6 dhcp client</code> – Enables the SNMP traps for DHCPv6 client.• <code>ipv6 dhcp client port</code> – Configures the listen or transmit UDP ports.
---------------------------	--

-
- `ipv6 dhcp client syslog` – Enables or disables the syslog generation.
-

30.1.13 show ipv6 dhcp interface

Command Objective	This command displays the configuration information and also the DHCPv6 information received from the server for client, relay, and server interfaces.
Syntax	<code>show ipv6 dhcp interface [{vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vlan<VlanId(1-4094)></code> - Displays DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <code><interface-type></code> - Displays DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ <code>fastethernet</code> – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ <code>XL-ethernet</code> – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ <code>extreme-ethernet</code> – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ <code>i-lan</code>– Internal LAN created on a bridge per IEEE 802.1ap.• <code><interface-id></code> - Displays DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan is provided, for interface types i-lan. For example: 1 represents i-lan ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp interface extreme-ethernet 0/3 is in client mode DHCPv6 unique type(DUID Type) : Link-layer Address Plus Time DHCPv6 unique identifier(DUID): 00010002000031b9fe80000000000000020102fffe0304 01 Minimum Refresh Time : 86400 sec Current Refresh Time : 86400 sec Retransmission counters:</pre>

```
Maximum Ret Count : 0
Maximum Ret Delay : 0   sec
Maximum Ret Time  : 120 sec
Initial Ret Time  : 1   sec
Current Ret Time  : 0   sec
Authentication information:
  Realm Name      : -
  Key Identifier   : -
  Key value       : 1
List of known servers:
  Address        : fe80::202:2ff:fe03:401
  DUID           :
0001000200001b5bfe80000000000000020302fffe030401
  Preference     : 5
  Status Code    : (Success)-SUCCESS
  SIP domain list : Oracle.com
  SIP servers     : fe80::200d:88ff:fe67:6666
  DNS servers     : fe80::200d:88ff:fe67:6666
  DNS search list : Oracle.com
```

Related Command(s)

- **ipv6 address dhcp** – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.
 - **ipv6 dhcp authentication client** – Defines the domain, client identifier, and the corresponding authentication MD5 (Message Digest 5) keys used to authenticate the information-request message and validate reply message.
 - **ipv6 dhcp client-id type** – Configures the DUID type to be used for the client identifier.
 - **ipv6 dhcp timer** – Configures various timer parameters for a retransmission algorithm of the information-request message.
 - **ipv6 dhcp client information refresh minimum** – Sets the minimum refresh timer value for the information-request message, at the client side.
-

30.1.14 show ipv6 dhcp client statistics

Command Objective	This command displays the DHCPv6 client statistics such as number of PDUs (Protocol Data Units) transmitted or received, for the specified interface or all the interfaces.
Syntax	<code>show ipv6 dhcp client statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vlan<VlanId(1-4094)></code> - Displays DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <code><interface-type></code> - Displays DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ <code>fastethernet</code> – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ <code>XL-ethernet</code> – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ <code>extreme-ethernet</code> – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ <code>internal-lan</code> – Internal LAN created on a bridge per IEEE 802.1ap.▪ <code>port-channel</code> – Logical interface that represents an aggregator which contains several ports aggregated together.• <code><interface-id></code> - Displays DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than internal-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp client statistics extreme-ethernet 0/1 Transmitted: information-request : 1 Received:</pre>

```
reply          : 1
invalid        : 0
hmac-failure   : 0

vlan 1
Transmitted:
  information-request : 1
Received:
  reply            : 1
  invalid          : 0
  hmac-failure     : 0
```

```
SEFOS# show ipv6 dhcp client statistics interface extreme-ethernet 0/1
```

```
extreme-ethernet 0/1
Transmitted:
  information-request : 1
Received:
  reply            : 1
  invalid          : 0
  hmac-failure     : 0
```

```
SEFOS# show ipv6 dhcp client statistics interface vlan 1
```

```
vlan 1
Transmitted:
  information-request : 1
Received:
  reply            : 1
  invalid          : 0
  hmac-failure     : 0
```

Related Command(s)

- **ipv6 address dhcp** – Enables the DHCPv6 client functionality over the interface and requests for configuration information from the client.
 - **clear ipv6 dhcp client statistics** – Clears the DHCPv6 client statistics for the specified interface or all the interfaces.
-

30.2 DHCPv6 Relay

The DHCPv6 relay is an intermediate node that relays DHCP messages between the DHCPv6 clients and DHCPv6 servers on different links.

30.2.1 snmp-server enable traps ipv6 dhcp relay

Command Objective	<p>This command enables the transmission of SNMP traps notification messages for DHCPv6 relay. It enables all the traps, when executed without any option.</p> <p>This command allows enabling multiple SNMP traps for the DHCPv6 relay. That is, both the specified trap notifications can be enabled one after the other.</p> <p>The no form of the command disables the SNMP traps for the DHCPv6 relay. It sets the trap as none, when executed without any option.</p>
Syntax	<pre>snmp-server enable traps ipv6 dhcp relay [invalid-pkt] [max-hop-count] no snmp-server enable traps ipv6 dhcp relay [invalid-pkt] [max-hop-count]</pre>
Parameter Description	<ul style="list-style-type: none">• invalid-pkt - Enables or disables the transmission of invalid packet trap notification, based on the relay agent which declares the received notification message as invalid. This trap notification is generated, when the received message is invalid or when the AdminControl value is set with value 0.• max-hop-count - Enables or disables the transmission of maximum hop count trap notification, based on the relay agent which receives the relay forward message with hop count value less than one configured hop count. This trap notification is generated, when the relay agent is not able to add the relay header, as the received hop count value is equal to the configured maximum hop threshold limit.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	SNMP traps are disabled for the DHCPv6 relay .
Example	<pre>SEFOS(config)# snmp-server enable traps ipv6 dhcp relay max-hop-count</pre>
Related Command(s)	<ul style="list-style-type: none">• show ipv6 dhcp – Displays the DHCPv6 relay global configurations.

30.2.2 ipv6 dhcp relay syslog

Command Objective	This command enables or disables the transmission of syslog notification messages for the DHCPv6 relay.
Syntax	<code>ipv6 dhcp relay syslog {enable disable}</code>
Parameter Description	<ul style="list-style-type: none">• enable - Configures the DHCPv6 relay to generate syslog messages when the transmission of syslog notification messages enabled.• disable - Configures the DHCPv6 relay not to generate any syslog messages, when the transmission of syslog notification messages is disabled.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Disable
Example	<code>SEFOS(config)# ipv6 dhcp relay syslog enable</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ipv6 dhcp</code> – Displays the DHCPv6 relay global configurations.

30.2.3 ipv6 dhcp relay port

Command Objective	This command sets the listen UDP port number, and client and server transmit. And, configures the port on which the DHCPv6 relay agent listens on. This command facilitates the DHCPv6 relay to co-exist with the DHCPv6 server which can listen on a different port.
Syntax	<code>ipv6 dhcp relay port {listen <value(1-65535)> client transmit <value(1-65535)> server transmit <value(1-65535)>}</code>
Parameter Description	<ul style="list-style-type: none">• <code>listen<value(1-65535)></code> - Configures the UDP port number on which the DHCPv6 relay should listen. This value ranges from 1 to 65535.• <code>client transmit<value(1-65535)></code> - Configures the UDP port number on which the DHCPv6 relay sends reply message. This value ranges from 1 to 65535.• <code>server transmit<value(1-65535)></code> - Configures the UDP port number on which the DHCPv6 relay sends relay-forward message. This value ranges from 1 to 65535.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• listen - 547• client transmit - 546• server transmit - 547
Example	<code>SEFOS(config)# ipv6 dhcp relay port listen 34</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ipv6 dhcp</code> – Displays the DHCPv6 relay global configurations.

30.2.4 ipv6 dhcp relay

Command Objective This command enables the DHCPv6 relay feature on an interface and optionally sets the destination server address and the outgoing interface.

The no form of the command disables the DHCPv6 relay feature on the interface, and optionally resets the destination server address and the outgoing interface.

Syntax

```
ipv6 dhcp relay [destination <prefix> [{link-local | <prefix Len> }]] [interface {Vlan <vlan-id (1-4094)> | <interface-type> <interface-id>}]]
```

```
no ipv6 dhcp relay [destination <prefix> [{link-local | <prefix Len> }]] [interface {Vlan <vlan-id (1-4094)> | <interface-type> <interface-id>}]]
```

Parameter Description

- **destination <prefix>** - Configures the IPv6 address of the destination DHCPv6 server.
- **link-local** - Configures the Link-local type IPv6 address of the DHCP Relay.
- **<prefix Len>** - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 0 to 128.
- **Vlan<vlan-id (1-4094)>** - Configures DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.
- **<interface-type>** - Configures DHCPv6 for the specified type of interface. The interface can be:
 - **fastethernet** – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.
 - **XL-ethernet** – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.
 - **extreme-ethernet** – A version of Ethernet that supports data transfer up to 10 Gigabits per second.
 - **internal-lan**– Internal LAN created on a bridge per IEEE 802.1ap.
- **<interface-id>** - Configures DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1

represents that the slot number is 0 and port number is 1. Only i-lan is provided, for interface types i-lan. For example: 1 represents internal-lan ID.

Mode Interface Configuration Mode(VLAN Interface Mode / Router)

Package Workgroup, Enterprise, Metro, and Metro_E

Default DHCPv6 relay feature is disabled.

Example

```
SEFOS(config-if)# ipv6 dhcp relay destination 1111::2222
128 interface vlan 1
```

Related Command(s)

- `no switchport` – Configures the port as router port.
- `ipv6 dhcp relay hop-threshold` – Sets the hop threshold limit for the DHCPv6 relay packets.
- `ipv6 dhcp relay remote-id type` - Sets the type of the remote-id option for the DHCPv6 relay.
- `ipv6 dhcp relay remote-id duid` - Configures DHCPv6 Relay Unique Identifier (DUID) value for the interface.
- `clear ipv6 dhcp relay statistics` – Clears DHCPv6 relay transmit and receive statistics for a particular interface or for all the interfaces.
- `ipv6 dhcp relay remote-id userDefined` - Configures DHCPv6 relay user-defined value for the interface.
- `show ipv6 dhcp interface` – Displays the DHCPv6 relay configurations on a particular interface or all the interfaces.
- `show ipv6 dhcp relay statistics` – Displays the DHCPv6 relay statistics on a particular interface or on all the interfaces.

30.2.5 ipv6 dhcp relay hop-threshold

Command Objective	<p>This command sets the hop threshold limit for the DHCPv6 relay packets. The limit represents the maximum number of hop count allowed by relay agent to pass through it. Packets are dropped at the relay agent, if the hop count in the DHCP message is greater than the threshold limit. This value ranges from 0 to 32.</p> <p>The no form of the command resets the threshold limit to default value.</p>
Syntax	<pre>ipv6 dhcp relay hop-threshold <count></pre> <pre>no ipv6 dhcp relay hop-threshold</pre>
Mode	Interface Configuration Mode(VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	4
	<p><u>Note:</u> The DHCPv6 relay feature should be enabled in the interface, before executing this command.</p>
Example	<pre>SEFOS(config-if)# ipv6 dhcp relay hop-threshold 3</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 dhcp relay</code>- Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.• <code>show ipv6 dhcp interface</code> – Displays the DHCPv6 relay configurations on a particular interface or all the interfaces.

30.2.6 debug ipv6 dhcp relay

Command Objective	<p>This command sets the debug trace levels for the DHCPv6 relay.</p> <p>The no form of the command resets the debug trace levels for the DHCPv6 relay.</p>
Syntax	<pre>debug ipv6 dhcp relay {[init- shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] all} no debug ipv6 dhcp relay {[init- shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] all}</pre>
Parameter Description	<ul style="list-style-type: none">• init-shut - Generates debug messages for init and shutdown traces. These traces are used during the module initialization and shutdown, and for cases such as failure of RBTtree creation etc.• mgmt - Generates debug messages for management traces.• ctrl - Generates debug messages for control plane traces. These traces are used for cases such as MBSM card removal, failure of state change and so on.• pkt - Generates debug messages for packet dump traces. These traces are used during the reception and transmission of packets.• resource - Generates debug messages for traces related to all resources such as memory, data structure and the like. These traces are used for instances such as failure of memory allocation.• fail - Generates debug messages for all failure traces. These traces are used for all valid and invalid failures. The valid failures represent expected errors. The invalid failures represent unexpected errors.• buffer - Generates debug messages for buffer allocation or release traces.• critical - Generates debug messages for SL-DHCPv6 relay critical traces. These traces are used for cases such as failure of RBTtree addition, failure to program the hardware, and so on.• all - Generates debug messages for all traces.
Mode	Privileged Exec Mode / User Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E

Default

Critical

Example

SEFOS# debug ipv6 dhcp relay all

Related command(s)

- **show debugging** - Displays state of each debugging option.
-

30.2.7 clear ipv6 dhcp relay statistics

Command Objective	This command clears DHCPv6 relay transmit and receive statistics for a particular interface or for all the interfaces.
Syntax	<code>clear ipv6 dhcp relay statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• vlan<VlanId(1-4094)> - Configures DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <interface-type> - Configures DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Configures DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# clear ipv6 dhcp relay statistics</code>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp relay – Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.• show ipv6 dhcp relay statistics – Displays the DHCPv6 relay statistics on a particular interface or on all the interfaces.

30.2.8 show ipv6 dhcp

Command Objective	This command displays the DHCPv6 relay global configurations.
Syntax	show ipv6 dhcp
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp Client information: Listen UDP port : 546 Transmit UDP port : 547 Sys log status : disabled SNMP traps : none Server information: Listen UDP port : 547 Client Transmit UDP port : 546 Relay Transmit UDP port : 547 Sys log status : disabled SNMP traps : none Authentication Information: - Relay information: Listen UDP port : 34 Client Transmit UDP port : 546 Server Transmit UDP port : 547 Sys log status : enabled SNMP traps : max-hop-count Remote-ID (Option 37) : enabled PD Forwarding : enabled</pre>
Related Command(s)	<ul style="list-style-type: none">• snmp-server enable traps ipv6 dhcp – Enables the SNMP traps

for DHCPv6 relay.

- `ipv6 dhcp relay syslog` – Enables or disables the syslog feature for the DHCPv6 relay.
 - `ipv6 dhcp relay port` – Sets the listen UDP port number, and client and server transmit UDP port numbers.
 - `ipv6 dhcp relay remote-id` - Enables or disables insertion of DHCPv6 option37-Remote-id option in DHCPv6 Relay FWD messages.
 - `ipv6 relay pd forwarding` - Enables insertion of DHCPv6 Prefix delegated routes into the routing table.
-

30.2.9 show ipv6 dhcp interface

Command Objective	This command displays the DHCPv6 relay configurations on a particular interface or all the interfaces.
Syntax	<code>show ipv6 dhcp interface [{vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• vlan<VlanId(1-4094)> - Displays DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <interface-type> - Displays DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ i-lan– Internal LAN created on a bridge per IEEE 802.1ap.• <interface-id> - Displays DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan ID is provided, for interface types i-lan. For example: 1 represents i-lan.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp interface extreme-ethernet 0/2 is in relay mode HopThreshold value : 3 Remote-Id Option Type : duid Remote-Id Option Value : 12:12:ab Server Address : unicast to configured servers only 1111::2222 : vlan1 vlan 1 is in relay mode</pre>

```
HopThreshold value : 3
Remote-Id Option Type : duid
Remote-Id Option Value : 12:12:aa
Server Address      : unicast to configured servers only
1111::2222 : vlan1
```

Related Command(s)

- **ipv6 dhcp relay** – Enables the relay feature on an interface and optionally sets the destination server address and an outgoing interface.
 - **ipv6 dhcp relay hop-threshold** – Sets the hop threshold limit for the DHCPv6 relay packets.
 - **ipv6 dhcp relay remote-id type** - Sets the type of the remote-id option for the DHCPv6 relay.
 - **ipv6 dhcp relay remote-id userDefined** - Configures DHCPv6 relay user-defined value for the interface.
 - **ipv6 dhcp relay remote-id duid** - Configures DHCPv6 Relay Unique Identifier (DUID) value for the interface.
-

30.2.10 show ipv6 dhcp relay statistics

Command Objective	This command displays the DHCPv6 relay statistics on a particular interface or on all the interfaces.
Syntax	<code>show ipv6 dhcp relay statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vlan<VlanId(1-4094)></code> - Displays DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <code><interface-type></code> - Displays DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ <code>fastethernet</code> – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ <code>XL-ethernet</code> – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ <code>extreme-ethernet</code> – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ <code>internal-lan</code> – Internal LAN created on a bridge per IEEE 802.1ap.▪ <code>port-channel</code> – Logical interface that represents an aggregator which contains several ports aggregated together.• <code><interface-id></code> - Displays DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than internal-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents internal-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp relay statistics extreme-ethernet 0/2 Received: information-request : 0 relay-forward : 0 relay-reply : 0</pre>

```
invalid                : 0
```

```
vlan 1
```

```
Received:
```

```
information-request   : 0
```

```
relay-forward         : 0
```

```
relay-reply           : 0
```

```
invalid               : 0
```

Related Command(s)

- **ipv6 dhcp relay** – Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.
 - **clear ipv6 dhcp relay statistics** – Clears DHCPv6 relay transmit and receive statistics for a particular interface or for all the interfaces.
-

30.2.11 ipv6 dhcp relay remote-id

Command Objective	This command enables or disables insertion of DHCPv6 option37-Remote-id option in DHCPv6 Relay FWD messages.
Syntax	<code>ipv6 dhcp relay remote-id {enable disable}</code>
Parameter Description	<ul style="list-style-type: none">• enable - Enables insertion of DHCPv6 option 37 Remote-ID in DHCPv6 Relay Forward Messages• disable - Disables insertion of DHCPv6 option 37 Remote-ID in DHCPv6 Relay Forward Messages
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Remote-Id Option is disabled.
Example	<pre>SEFOS(config)# ipv6 dhcp relay remote-id enable</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp relay remote-id type</code> - Sets the type of the remote-id option for the DHCPv6 relay.• <code>ipv6 dhcp relay remote-id duid</code> - Configures DHCPv6 Relay Unique Identifier (DUID) value for the interface.• <code>ipv6 dhcp relay remote-id userDefined</code> - Configures DHCPv6 relay user-defined value for the interface.• <code>show ipv6 dhcp</code> – Displays the DHCPv6 relay global configurations.

30.2.12 ipv6 dhcp relay remote-id type

Command Objective	This command sets the type of the remote-id option for the DHCPv6 relay.
Syntax	<code>ipv6 dhcp relay remote-id type {duid switch-name mgmt-ip userDefined }</code>
Parameter Description	<ul style="list-style-type: none">• <code>duid</code> - Configures the remote-id option as DHCP Unique Identifier.• <code>switch-name</code> - Configures the remote-id option as Current System Name.• <code>mgmt-ip</code> - Configures the remote-id option as Management IP of the system.• <code>userDefined</code> - Sets the type of the remote-id option for the DHCPv6 relay as <code>userDefined</code>.
Mode	Interface Configuration Mode(VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	switch-name
Example	<code>SEFOS(config-if)# ipv6 dhcp relay remote-id type duid</code>
Note:	This command executes only if <ul style="list-style-type: none">• The DHCPv6 relay feature is enabled in the interface.• Remote-Id option is enabled.
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 dhcp relay</code>- Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.• <code>ipv6 dhcp relay remote-id</code> - Enables or disables insertion of DHCPv6 option37-Remote-id option in DHCPv6 Relay FWD messages.• <code>show ipv6 dhcp interface</code> – Displays the DHCPv6 relay configurations on a particular interface or all the interfaces.

30.2.13 ipv6 dhcp relay remote-id duid

Command Objective This command configures DHCPv6 Relay Unique Identifier (DUID) value for the interface. DHCPv6 servers use the DUID to make decisions about information such as addresses, delegated prefixes, configuration parameters, and so on, that the client is to receive.

Relay agent uses the DUID to have a unique remote-id for its enterprise number, as sequence of enterprise number followed by remote-id must be globally unique.

DHCPv6 Relay DUID is a 128 octets long identifier, which can have Link-Layer Address as DUID octets, Link-Layer address along with some other parameter having variable octets, or can have any sequence of octets representing unique DUID.

Syntax `ipv6 dhcp relay remote-id duid <duid-id string(128)>`

Mode Interface Configuration Mode(VLAN Interface Mode / Router)

Package Workgroup, Enterprise, Metro, and Metro_E

Default All octets are zero

Example `SEFOS(config-if)# ipv6 dhcp relay remote-id duid 12:12:aa`

Note: This command executes only if

- The DHCPv6 relay feature is enabled in the interface.
- Remote-Id option is enabled.

Related Command(s)

- `no switchport` – Configures the port as router port.
 - `ipv6 dhcp relay`- Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.
 - `ipv6 dhcp relay remote-id` - Enables or disables insertion of DHCPv6 option37-Remote-id option in DHCPv6 Relay FWD messages.
 - `show ipv6 dhcp interface` – Displays the DHCPv6 relay configurations on a particular interface or all the interfaces.
-

30.2.14 ipv6 dhcp relay remote-id userDefined

Command Objective	This command configures DHCPv6 relay user-defined value for this interface.
Syntax	<code>ipv6 dhcp relay remote-id userDefined <user-specific-ascii string(128)></code>
Mode	Interface Configuration Mode(VLAN Interface Mode / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS(config-if)# ipv6 dhcp relay remote-id userDefined 1</code>
Note:	This command executes only if <ul style="list-style-type: none">• The DHCPv6 relay feature is enabled in the interface.• Remote-Id option is enabled.
Related Command(s)	<ul style="list-style-type: none">• <code>no switchport</code> – Configures the port as router port.• <code>ipv6 dhcp relay</code>- Enables the relay feature on an interface and optionally sets the destination server address and configures an outgoing interface.• <code>ipv6 dhcp relay remote-id</code> - Enables or disables insertion of DHCPv6 option37-Remote-id option in DHCPv6 Relay FWD messages.• <code>show ipv6 dhcp interface</code> – Displays the DHCPv6 relay configurations on a particular interface or all the interfaces.

30.2.15 ipv6 dhcp relay pd forwarding

Command Objective	<p>This command enables insertion of DHCPv6 Prefix delegated routes into the routing table.</p> <p>The no form of this command deletes the DHCPv6 Prefix delegated routes from the routing table and the subsequent learned routes are not added.</p>
Syntax	<pre>ipv6 dhcp relay pd forwarding</pre> <pre>no ipv6 dhcp relay pd forwarding</pre>
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	Prefix Delegation is enabled.
<u>Note:</u>	This command should be executed prior to any relay configuration.
Example	<pre>SEFOS(config)# ipv6 dhcp relay pd forwarding</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>show running config</code> - Displays the configuration information currently running on the router.• <code>show ipv6 dhcp</code> – Displays the DHCPv6 relay global configurations.

30.3 DHCPv6 Server

The DHCPv6 server is a node that responds to requests from the DHCPv6 clients. It can be on the same link as the clients or on the different link. It receives DHCP messages from the clients using a reserved, link-scoped multicast address.

30.3.1 snmp-server enable traps ipv6 dhcp server

Command Objective	<p>This command enables the transmission of SNMP traps notification messages for DHCPv6 server. It enables all the traps, when executed without any option.</p> <p>This command allows enabling multiple SNMP traps for the DHCPv6 client. That is, all the three specified trap notifications can be enabled one after the other.</p> <p>The no form of the command disables the SNMP traps for the DHCPv6 server. It sets the trap as none, when executed without any option.</p>
Syntax	<pre>snmp-server enable traps ipv6 dhcp server [unknown-tlv] [invalid-pkt] [auth-fail] no snmp-server enable traps ipv6 dhcp server [unknown-tlv] [invalid-pkt] [auth-fail]</pre>
Parameter Description	<ul style="list-style-type: none">• unknown-tlv - Enables or disables the transmission of unknown TLV trap notification, based on the server which declares the received notification message as unknown TLV. This trap notification is generated, when received information-request or relay forward message contains invalid TLV type.• invalid-pkt - Enables or disables the transmission of invalid packet trap notification, based on the server which declares the received notification message as invalid. This trap notification is generated, when the received information-request or relay forward message is invalid.• auth-fail - Enables or disables the transmission of HMAC authentication fail trap notification, based on the server which declares the received notification message as authentication fail. This trap notification is generated, when the received information-request or relay forward message contains the authentication TLV and digest calculated at the server side that does not match with the received digest value. The digest is calculated at the server side with the realm and key-id values.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	SNMP traps are disabled for the DHCPv6 server.
Example	<pre>SEFOS(config)# snmp-server enable traps ipv6 dhcp server auth-fail</pre>
Related Command(s)	<ul style="list-style-type: none">• show ipv6 dhcp – Displays the various configuration information at server end.

30.3.2 ipv6 dhcp server port

Command Objective	This command configures the information request listen, reply transmit, and relay-reply transmit UDP ports. The server processes the received information request message and relay-forward only when destination port number in UDP header is equal to the configured listen port number.
Syntax	<code>ipv6 dhcp server port {listen <value(1-65535)> client transmit <value(1-65535)> relay transmit <value(1-65535)>}</code>
Parameter Description	<ul style="list-style-type: none">• <code>listen<value(1-65535)></code> - Configures the UDP listen port number. This value ranges from 1 to 65535.• <code>client transmit<value(1-65535)></code> - Configures the UDP transmit port, which is set as the destination port number in UDP header of the reply message. This value ranges from 1 to 65535.• <code>relay transmit<value(1-65535)></code> - Configures the UDP transmit port, which is set as the destination port number in UDP header of the relay-reply message. This value ranges from 1 to 65535.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	<ul style="list-style-type: none">• listen - 547• client transmit - 546• relay transmit - 547
Example	<code>SEFOS(config)# ipv6 dhcp server port listen 800</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ipv6 dhcp</code> – Displays the various configuration information at server end.

30.3.3 ipv6 dhcp server syslog

Command Objective	This command enables or disables the transmission of syslog notification messages for the DHCPv6 server.
Syntax	<code>ipv6 dhcp server syslog {enable disable}</code>
Parameter Description	<ul style="list-style-type: none">• enable - Configures the DHCPv6 relay to generate syslog messages when the transmission of syslog notification messages enabled.• disable - Configures the DHCPv6 relay not to generate any syslog messages, when the transmission of syslog notification messages is disabled.
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	disable
Example	<code>SEFOS(config)# ipv6 dhcp server syslog enable</code>
Related Command(s)	<ul style="list-style-type: none">• <code>show ipv6 dhcp</code> – Displays the various configuration information at server end.

30.3.4 ipv6 dhcp authentication server client-id

Command Objective	<p>This command creates client configuration pool at the server and enters into the client information configuration mode. It allows creation of multiple client configuration pools at the server.</p> <p>The no form of the command deletes the client configuration pool maintained at the server.</p>
Syntax	<pre>ipv6 dhcp authentication server client-id <string(128)> {llt en ll} no ipv6 dhcp authentication server client-id string(1-128)</pre>
Parameter Description	<ul style="list-style-type: none">• <string(128)> - Configures the string as the name of the client. This value is a string of size varying between 1 and 128.• llt - Generates DUID based on LLT (Link-Layer Address plus Time) and indicates that the DHCPv6 client uses the link layer address of the interface and current system time value for the client identifier option TLV value. This type of DUID consists of a two octet type field containing the value 1, a two octet hardware type code, four octets containing a time value, and a link-layer address of any one network interface that is connected to the DHCP device at the time of generation of the DUID.<ul style="list-style-type: none">▪ For client ID configured as llt, the DHCPv6 client and server should:<ul style="list-style-type: none">▪ Compulsorily have a stable storage.▪ Store DUID-LLT in stable storage.▪ Continue to use DUID-LLT, even if network interface used to generate the DUID-LLT is removed.▪ Attempt to configure the time prior to generation of DUID, if possible, and should use time source (for example, real-time clock) for generating the DUID, even if the source is not configurable prior to the generation of the DUID.• en - Assigns DUID by the vendor based on EN and indicates that the DHCPv6 client uses the vendor-assigned unique ID based on the EN for the client identifier option TLV value. This type of DUID consists of vendor's registered private enterprise number as maintained by IANA and a unique identifier assigned by the vendor.<ul style="list-style-type: none">▪ For client ID configured as en:<ul style="list-style-type: none">▪ The identifier assigned by the vendor should be unique to device.▪ The unique identifier should be assigned to the device during its manufacture itself and should be stored in a non-volatile storage.▪ The generated DUID should be recorded in a non-erasable storage.

- **11** - Generates DUID based on LL (Link-layer Address) and indicates that the DHCPv6 client uses the link layer address for the client identifier option TLV value. This type of DUID consists of two octets containing the DUID type 3, a two octet network hardware type code, and a link-layer address of any one network interface that is permanently connected to the client or server device.
 - For client ID configured as **11**:
 - DHCP-LL should not be used by clients or servers that cannot identify whether a network interface is permanently attached to the device on which the DHCP client is running.
 - Same DHCP-LL should be used in configuring all network interfaces connected to the device, regardless of usage of any interface's link-layer address to generate the DUID.

Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS(config)# ipv6 dhcp authentication server client-id client1 en SEFOS(config-d6clnt) #</pre>
Related Command(s)	<ul style="list-style-type: none"> • ipv6 dhcp authentication – Configures the realm and key value. • show ipv6 dhcp – Displays the various configuration information at server end.

30.3.5 ipv6 dhcp authentication

Command Objective	<p>This command configures the realm and key value through which the server authenticates the received information request with the HMAC MD5 algorithm when the received message contains the authentication option TLV.</p> <p>The no form of the command deletes the realm and key value.</p>
Syntax	<pre>ipv6 dhcp authentication realm <string (1-128)> key <string (1-64)> no ipv6 dhcp authentication realm <string (1-128)> [key <string (1-64)>]</pre>
Parameter Description	<ul style="list-style-type: none">• realm<string (1-128)> - Configures the name of the container used to store the HMAC-MD5 authentication keys, where realms are containers for authentication information. The maximum string size is 128.• key<string (1-64)> - Configures the HMAC-MD5 key string used to authenticate the information-request message, where the authentication key IDs are assigned to the clients. The maximum string size is 64.
Mode	Client Information Configuration mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Note:	<ul style="list-style-type: none">• The client configuration pool should be created, before configuring the realm and key value.• When this command is executed for next client ID with the same container name, the key-identifier and key value of the previous client-ID is inherited to the new client ID and then the concerned key identifier and key value are assigned to the new client ID based on the configuration.
Example	<pre>SEFOS(config-d6clnt)# ipv6 dhcp authentication realm products key SEFOS</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp authentication server client-id – Creates client configuration pool at the server and enters into the client pool configuration mode.• show ipv6 dhcp – Displays the various configuration information at server end.

30.3.6 ipv6 dhcp pool

Command Objective	<p>This command creates a DHCPv6 server pool and enters into IPv6 DHCP pool configuration mode where the pool is configured independently of the DHCPv6 service. The configuration information pool is a named entity that includes information about available configuration parameters and policies that control assignment of the parameters to clients from the pool. The maximum string size is 64.</p> <p>The no form of the command deletes the DHCPv6 server pool.</p>
Syntax	<pre>ipv6 dhcp pool <string (1-64)> no ipv6 dhcp pool <string (1-64)></pre>
Mode	Global Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS(config)# ipv6 dhcp pool dhcp6pool1 SEFOS(config-d6pool)#</pre>
Related Command(s)	<ul style="list-style-type: none">• vendor-specific – Enters into vendor-specific configuration mode with vendor-specific identification number.• sub option – Enables a sub-option of the configured vendor-specific information.• link-address – Sets a link-address IPv6 prefix.• domain-name – Defines the DNS domain suffix which is provided to the client in reply message on request.• dns-server – Defines the DNS server IP address which is provided to the client in reply message on request.• sip address – Defines the SIP server IP address which is provided to the client in reply message on request.• sip domain-name – Defines the SIP domain name which is provided to the client in reply message on request.• option – Sets pool-specific DHCPv6 server option.• ipv6 dhcp server-id type – Configures the DUID type to be used for the server identifier.

-
- **ipv6 dhcp server-id interface** – Configures the interface that is used in the formation of the DUID based on LLT or on LL.
 - **information refresh** – Configures the refresh time value that is to be sent to the client.
 - **show ipv6 dhcp pool** – Displays the DHCPv6 server pool information.
 - **show ipv6 dhcp interface** – Displays the various configuration information at server end for specified interface or all the interfaces.
-

30.3.7 vendor-specific

Command Objective	<p>This command enters into vendor-specific configuration mode with vendor-specific identification number and options which the server will reply in response to an information-request or relay-forward message. This value ranges from 1 to 2147483647.</p> <p>The no form of the command deletes all configured vendor-specific information.</p>
Syntax	<pre>vendor-specific <vendor-id (1-2147483647)> no vendor-specific <vendor-id (1-2147483647)></pre>
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
<u>Note:</u>	The DHCPv6 server address pool should be created, before configuring the vendor-specific information.
Example	<pre>SEFOS (config-d6pool) # vendor-specific 10 SEFOS (d6pool-vendor) #</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp pool</code> – Creates a DHCPv6 server address pool.• <code>sub option</code> – Enables a sub-option of the configured vendor-specific information.• <code>show ipv6 dhcp pool</code> – Displays the DHCPv6 server pool information.

30.3.8 sub option

Command Objective	<p>This command enables a sub-option of the configured vendor-specific information. This entry is not lost upon reboot. It is backed up by stable storage. Each entry in this table contains the required attribute values.</p> <p>The no form of the command deletes the sub-option.</p>
Syntax	<pre>sub option <option-id (1-4294967295)> { address <IPv6-address> ascii <ASCII-string> hex <hex_string>} no sub option <option-id> { address <IPv6-address> ascii <ASCII-string> hex <hex_string>}</pre>
Parameter Description	<ul style="list-style-type: none">• <option-id(1-4294967295)> - Indicates a unique sub-option type. This value ranges from 1 to 4294967295.• address<IPv6-address> - Configures an IPv6 address that can be provided as a sub-option value.• ascii<ASCII-string> - Configures an ASCII string that can be provided as a sub-option value. The maximum string size is 255.• hex<hex_string> - Configures a hexadecimal string that can be provided as a sub-option value. This value is an octet string of size varying between 1 and 32.
Mode	Vendor Specific Information Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
<u>Note:</u>	The DHCPv6 server address pool should be created and the vendor-specific information should be configured, before enabling sub-option of the vendor-specific information.
Example	<pre>SEFOS(d6pool-vendor)# sub option 3 address 0000::1111</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp pool – Creates a DHCPv6 server address pool.• vendor-specific – Enters into vendor-specific configuration mode with vendor-specific identification number.• show ipv6 dhcp pool - Displays the DHCPv6 server pool information.

30.3.9 link-address

Command Objective This command sets a link-address IPv6 prefix. The server uses the configuration information pool, when an address on the incoming interface or a link-address in the packet matches the specified IPv6-prefix.

The no form of the command removes the link-address IPv6 prefix.

Syntax `link-address <IPv6-Prefix>`
`no link-address <IPv6-Prefix>`

Mode IPv6 DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The DHCPv6 server address pool should be created before executing this command.

Example `SEFOS (config-d6pool) # link-address 2222::1111`

Related Command(s)

- `ipv6 dhcp pool`— Creates a DHCPv6 server address pool.
- `show ipv6 dhcp pool`— Displays the DHCPv6 server pool information.

30.3.10 domain-name

Command Objective	<p>This command defines the DNS domain suffix which is provided to the client in reply message on request.</p> <p>The no form of the command deletes the DNS domain suffix.</p>
Syntax	<pre>domain-name <domain name> [preference <value (0-255)>] no domain-name <domain name> [preference value]</pre>
Parameter Description	<ul style="list-style-type: none">• <domain name> - Configures the domain name prefix that is used to resolve a domain name. The maximum string size is 64.• preference<value (0-255)> - Configures the preference value of the pool. This value ranges from 0 to 255. The DHCPv6 client uses this value to select the best information on receiving multiple reply messages from different servers.
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
	<p><u>Note:</u> The DHCPv6 server address pool should be created before executing this command.</p>
Example	<pre>SEFOS(config-d6pool)# domain-name 34 preference 56</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp pool - Creates a DHCPv6 server address pool.• show ipv6 dhcp pool - Displays the DHCPv6 server pool information.

30.3.11 dns-server

Command Objective	This command defines the DNS server IP address which is provided to the client in the reply message on request. The no form of the command deletes the DNS server IP address.
Syntax	<code>dns-server <ipv6-address></code> <code>no dns-server <ipv6-address></code>
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
<u>Note:</u>	The DHCPv6 server address pool should be created before executing this command.
Example	<code>SEFOS(config-d6pool)# dns-server 3333::2222</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp pool</code> – Creates a DHCPv6 server address pool.• <code>show ipv6 dhcp pool</code> – Displays the DHCPv6 server pool information.

30.3.12 sip address

Command Objective	<p>This command defines the SIP server IP address which is provided to the client in reply message on request.</p> <p>The no form of the command deletes the SIP server IP address.</p>
Syntax	<pre>sip address <ipv6-address> [preference <value (0-255)>] no sip address <ipv6-address></pre>
Parameter Description	<ul style="list-style-type: none">• <ipv6-address> - Configures an IPv6 address that can be set as a SIP server.• preference<value (0-255)> - Configures the preference value of the pool. This value ranges from 0 to 255. The DHCPv6 client uses this value to select the best information on receiving multiple reply messages from different servers.
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
	<p><u>Note:</u> The DHCPv6 server address pool should be created before executing this command.</p>
Example	<pre>SEFOS(config-d6pool)# sip address 0000::2222 preference 34</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp pool – Creates a DHCPv6 server address pool.• show ipv6 dhcp pool – Displays the DHCPv6 server pool information.

30.3.13 sip domain-name

Command Objective This command defines the SIP domain name which is provided to the client in reply message on request. The maximum string size is 64.

The no form of the command deletes the SIP domain name.

Syntax

```
sip domain-name <domain-name>
```

```
no sip domain-name <domain-name>
```

Mode IPv6 DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Note: The DHCPv6 server address pool should be created before executing this command.

Example SEFOS(config-d6pool)# sip domain-name sip

Related Command(s)

- `ipv6 dhcp pool` – Creates a DHCPv6 server address pool.
- `show ipv6 dhcp pool` – Displays the DHCPv6 server pool information.

30.3.14 option

Command Objective	This command sets pool-specific DHCPv6 server option. The no form of the command deletes the pool-specific DHCPv6 server option.
Syntax	<pre>option <code (1-65535)> { ascii <string> hex <Hex String> ipv6 <address> } no option <code (1-65535)> { ascii <string> hex <hex_str> ipv6 <address> }</pre>
Parameter Description	<ul style="list-style-type: none">• <code (1-65535)> - Indicates a unique option type. This value ranges from 1 to 65535.• ascii<string> - Configures an ASCII string that can be provided as an option value. The maximum string size is 255.• hex<Hex String> - Configures a hexadecimal string that can be provided as an option value. This value is an octet string of size varying between 1 and 32.• ipv6 <address> - Configures an IPv6 address that can be provided as an option value.
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
<u>Note:</u>	The DHCPv6 server address pool should be created before executing this command.
Example	<pre>SEFOS(config-d6pool)# option 30 ipv6 2222::1111</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp pool – Creates a DHCPv6 server address pool.• show ipv6 dhcp pool – Displays the DHCPv6 server pool information.

30.3.15 ipv6 dhcp server-id type

Command Objective This command configures the DUID type to be used for the server identifier. DUID consists of a two-octet type code represented in network byte order and a variable number of octets, to make an actual identifier. Server sends a server identifier TLV in the reply message.

Syntax `ipv6 dhcp server-id type {llt | en | ll}`

Parameter Description

- **llt** - Configures the DUID formed based on LLT. The DHCPv6 server uses the link layer address of the interface and current system time value for the server identifier option TLV value. This type of DUID consists of a two octet type field containing the value 1, a two octet hardware type code, four octets containing a time value, and a link-layer address of any one network interface that is connected to the DHCP device at the time of generation of the DUID.
 - For server ID configured as `llt`, the DHCPv6 client and server should:
 - Compulsorily have a stable storage.
 - Store DUID-LLT in stable storage.
 - Continue to use DUID-LLT, even if network interface used to generate the DUID-LLT is removed.
 - Attempt to configure the time prior to generation of DUID, if possible, and should use time source (for example, real-time clock) for generating the DUID, even if the source is not configurable prior to the generation of the DUID.
 - **en** - Configures the DUID which is assigned by the vendor based on EN. The DHCPv6 server uses the vendor-assigned unique ID based on the EN for the server identifier option TLV value. This type of DUID consists of vendor's registered private enterprise number as maintained by IANA and a unique identifier assigned by the vendor.
 - For server ID configured as `en`:
 - The identifier assigned by the vendor should be unique to device.
 - The unique identifier should be assigned to the device during its manufacture itself and should be stored in a non-volatile storage.
 - The generated DUID should be recorded in a non-erasable storage.
 - **ll** - Configures the DUID formed based on LL. The DHCPv6 server uses the link layer address for the server identifier option TLV value. This type of DUID consists of two octets containing the DUID type 3, a two octet network hardware type code, and a link-layer address of any one network interface that is permanently connected to the client or server device.
 - For server ID configured as `ll`:
 - DHCP-LL should not be used by clients or servers that cannot
-

identify whether a network interface is permanently attached to the device on which the DHCP client is running.

- Same DHCP-LL should be used in configuring all network interfaces connected to the device, regardless of usage of any interface's link-layer address to generate the DUID.

Mode IPv6 DHCP Pool Configuration Mode

Package Workgroup, Enterprise, Metro, and Metro_E

Default llt

Note: The DHCPv6 server address pool should be created before executing this command.

Example SEFOS(config-d6pool)# `ipv6 dhcp server-id type en`

Related Command(s)

- `ipv6 dhcp pool` – Creates a DHCPv6 server address pool.
- `show ipv6 dhcp pool` – Displays the DHCPv6 server pool information.

30.3.16 ipv6 dhcp server-id interface

Command Objective	This command is used to configure the interface that is used in the formation of the DUID based on LLT or on LL.
Syntax	<code>ipv6 dhcp server-id interface <interface-type> <interface-id></code>
Parameter Description	<ul style="list-style-type: none">• <interface-type> - Configures DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Configures DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than internal-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan or port-channel ID is provided, for interface types internal-lan and port-channel. For example: 1 represents i-lan and port-channel ID.
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	An arbitrary interface value is used.
	<p><u>Note:</u></p> <ul style="list-style-type: none">• The DHCPv6 server address pool should be created before executing this command.• The physical interface configured to be used in the formation of DUID should have been already configured as router port.
Example	<pre>SEFOS(config-d6pool)# ipv6 dhcp server-id interface extreme-ethernet 0/3</pre>

Related Command(s)

- `ipv6 dhcp pool` – Creates a DHCPv6 server address pool.
 - `show ipv6 dhcp interface` – Displays the information at server end for specified interface.
-

30.3.17 information refresh

Command Objective	<p>This command configures the refresh time value that is to be sent to the client. The minimum refresh time value that is to be set is 600 seconds (10 minutes).</p> <p>The no form of the command deletes the refresh timer option from the pool.</p>
Syntax	<pre>information refresh {days < value integer(0-7) > [hours < value integer(0-24)> minutes(0-60) < value integer>] infinity} no information refresh</pre>
Parameter Description	<ul style="list-style-type: none">• days< value integer(0-7) > - Configures the refresh time to be specified as number of days. This value ranges from 0 to 7.• hours< value integer(0-24)> - Configures the refresh time to be specified as number of hours. This value ranges from 0 to 24.• minutes(0-60) < value integer> - Configures the refresh time to be specified as number of minutes. This value ranges from 0 to 60.• infinity - Sets IPv6 value of 0xffffffff that is used to configure the information refresh time to infinity. That is, sets the refresh time value as 4294967295 seconds.
Mode	IPv6 DHCP Pool Configuration Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
	<p><u>Note:</u> The DHCPv6 server address pool should be created before executing this command.</p>
Example	<pre>SEFOS(config-d6pool)# information refresh days 4 hours 5 minutes 56</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 dhcp pool – Creates a DHCPv6 server address pool.• show ipv6 dhcp pool – Displays the DHCPv6 server pool information.

30.3.18 ipv6 dhcp server

Command Objective	<p>This command associates the DHCPv6 server pool with an interface.</p> <p>The no form of the command removes the association of the server pool with the interface.</p>
Syntax	<pre>ipv6 dhcp server [<pool-name (1-64)> [preference <value (0-255)>]]</pre> <pre>no ipv6 dhcp server</pre>
Parameter Description	<ul style="list-style-type: none">• <pool-name (1-64)> - Configures the pool name which should be a unique and NULL terminated string. The maximum string size is 64.• preference<value (0-255)> - Configures the preference value of the pool. This value ranges from 0 to 255. The DHCPv6 client uses this value to select the best information on receiving multiple reply messages from different servers.
Mode	Interface Configuration Mode (VLAN / Router)
Package	Workgroup, Enterprise, Metro, and Metro_E
Default	preference - 0
Example	<pre>SEFOS(config-if)# ipv6 dhcp server 33 preference 45</pre>
Related Command(s)	<ul style="list-style-type: none">• no switchport – Configures the port as router port.• clear ipv6 dhcp server statistics – Clears DHCPv6 server statistics for a particular interface or for all the interfaces.• show ipv6 dhcp pool1 – Displays the DHCPv6 server pool information.• show ipv6 dhcp interface – Displays the various configuration information at server end for specified interface or all the interfaces.• show ipv6 dhcp server statistics – Displays the DHCPv6 server statistics.

30.3.19 debug ipv6 dhcp server

Command Objective	<p>This command sets the debugging options and traces in the DHCPv6 server.</p> <p>The no form of the command unsets the debugging options and traces in the DHCPv6 server, and resets the trace to the default value.</p>
Syntax	<pre>debug ipv6 dhcp server {[init-shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] [all]} no debug ipv6 dhcp server {[init-shut] [mgmt] [ctrl] [pkt] [resource] [fail] [buffer] [critical] [all]}</pre>
Parameter Description	<ul style="list-style-type: none">• init-shut - Generates debug messages for init and shutdown traces. These traces are used during the module initialization and shutdown, and for cases such as failure of RBTtree creation and so on.• mgmt - Generates debug messages for management traces.• ctrl - Generates debug messages for control plane traces. These traces are used for cases such as MBSM card removal, failure of state change and so on.• pkt - Generates debug messages for packet dump traces. These traces are used during the reception and transmission of packets.• resource - Generates debug messages for traces related to all resources such as memory, data structure and the like. These traces are used for failure of memory allocation and so on.• fail - Generates debug messages for all failure traces. These traces are used for all valid and invalid failures (expected and unexpected errors).• buffer - Generates debug messages for buffer allocation or release traces.• critical - Generates debug messages for SL-DHCPv6 server critical traces. These traces are used for cases such as failure of RBTtree addition, failure to program the hardware, and so on.• all - Generates debug messages for all traces.
Mode	Privileged Exec Mode / User Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E

Default

critical

Example

SEFOS# debug ipv6 dhcp server mgmt

D6SR: Trace Option Set enable mgmt

30.3.20 clear ipv6 dhcp server statistics

Command Objective	This command clears DHCPv6 server statistics for a particular interface or for all the interfaces.
Syntax	<code>clear ipv6 dhcp server statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vlan<VlanId(1-4094)></code> - Clears DHCPv6 server statistics for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <code><interface-type></code> - Clears DHCPv6 server statistics for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ <code>fastethernet</code> – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ <code>XL-ethernet</code> – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ <code>extreme-ethernet</code> – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ <code>internal-lan</code> – Internal LAN created on a bridge per IEEE 802.1ap.▪ <code>port-channel</code> – Logical interface that represents an aggregator which contains several ports aggregated together.• <code><interface-id></code> - Clears DHCPv6 server statistics for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than Internal-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan or port-channel ID is provided, for interface types internal-lan and port-channel. For example: 1 represents internal-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<code>SEFOS# clear ipv6 dhcp server statistics</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp server</code> – Associates the DHCPv6 server pool with an interface.• <code>show ipv6 dhcp server ststatistics</code> – Displays the DHCPv6 server statistics.

30.3.21 show ipv6 dhcp

Command Objective	This command displays the DHCPv6 configuration information at server end.
Syntax	show ipv6 dhcp
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp Client information: Listen UDP port : 546 Transmit UDP port : 547 Sys log status : disabled SNMP traps : none Server information: Listen UDP port : 45 Client Transmit UDP port : 546 Relay Transmit UDP port : 547 Sys log status : enabled SNMP traps : auth-fail Authentication Information: Client DUID : ers Realm Name : 33 Key Value : 1 Key Identifier : 33:33 Relay information: Listen UDP port : 34 Client Transmit UDP port : 546 Server Transmit UDP port : 547 Sys log status : enabled SNMP traps : invalid-pkt,max- hop-count</pre>
Related Command(s)	<ul style="list-style-type: none">• snmp-server enable traps ipv6 dhcp server – Enables the SNMP traps for DHCPv6 server.

-
- `ipv6 dhcp server port` – Configures the information-request listen, reply transmit, and relay-reply transmit UDP ports.
 - `ipv6 dhcp server syslog` – Enables or disables the syslog feature in DHCPv6 server.
 - `ipv6 dhcp authentication server client-id` – Creates client configuration pool at the server and enters into the client pool configuration mode.
 - `ipv6 dhcp authentication` – Configures the realm and key value.
-

30.3.22 show ipv6 dhcp pool

Command Objective	This command displays the DHCPv6 server pool information.
Syntax	<code>show ipv6 dhcp pool [<pool-name (1-64)>]</code>
Parameter Description	<ul style="list-style-type: none">• <code><pool-name (1-64)></code> - Displays the server pool information of the configured pool. This name should be a unique and NULL terminated string.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp pool server-pool1 Pool : server-pool1 ACTIVE DHCPv6 unique type(DUID Type) : Link-layer Address Plus Time DHCPv6 unique identifier(DUID): 0001000200000167fe80000000000000020102ff fe030401 Preference : 255 Associated Interfaces : X10/3 Associated IPv6 Prefix : SIP servers : fe80::200d:88ff:fe67:6666 DNS servers : fe80::200d:88ff:fe67:6666 SIP domain list : Oracle.com DNS search list : Oracle.com</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp pool</code> – Creates a DHCPv6 server address pool.• <code>vendor-specific</code> – Enters into vendor-specific configuration mode with vendor-specific identification number.• <code>link-address</code> – Sets a link-address IPv6 prefix.• <code>domain-name</code> – Defines the DNS domain suffix which is provided to the client in reply message on request.• <code>dns-server</code> – Defines the DNS server IP address which is provided to the client in reply message on request.

-
- **sip address** – Defines the SIP server IP address which is provided to the client in reply message on request.
 - **sip domain-name** – Defines the SIP domain name which is provided to the client in reply message on request.
 - **option** – Sets pool-specific DHCPv6 server option.
 - **ipv6 dhcp server-id type** – Configures the DUID type to be used for the server identifier.
 - **information refresh** – Configures the refresh time value that is to be sent to the client.
-

30.3.23 show ipv6 dhcp interface

Command Objective	This command displays the DHCPv6 configuration information at server end for specified interface or all the interfaces.
Syntax	<code>show ipv6 dhcp interface [{vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vlan<VlanId(1-4094)></code> - Displays DHCPv6 for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <code><interface-type></code> - Displays DHCPv6 for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ <code>fastethernet</code> – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ <code>XL-ethernet</code> – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ <code>extreme-ethernet</code> – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ <code>i-lan</code>– Internal LAN created on a bridge per IEEE 802.1ap.• <code><interface-id></code> - Displays DHCPv6 for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan ID is provided, for interface types i-lan. For example: 1 represents i-lan ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp interface extreme-ethernet 0/3 is in server mode Preference value : 255 Using pool : server-pool1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 dhcp pool</code> – Creates a DHCPv6 server address pool.• <code>ipv6 dhcp server</code> – Associates the DHCPv6 server pool with an interface.

30.3.24 show ipv6 dhcp server statistics

Command Objective	This command displays the DHCPv6 server statistics such as number of PDUs transmitted or received.
Syntax	<code>show ipv6 dhcp server statistics [interface {vlan <VlanId(1-4094)> <interface-type> <interface-id>}]</code>
Parameter Description	<ul style="list-style-type: none">• vlan<VlanId(1-4094)> - Displays DHCPv6 server statistics for the specified VLAN ID. This is a unique value that represents the specific VLAN created or to be created. This value ranges from 1 to 4094.• <interface-type> - Displays DHCPv6 server statistics for the specified type of interface. The interface can be:<ul style="list-style-type: none">▪ fastethernet – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.▪ XL-ethernet – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.▪ extreme-ethernet – A version of Ethernet that supports data transfer up to 10 Gigabits per second.▪ internal-lan – Internal LAN created on a bridge per IEEE 802.1ap.▪ port-channel – Logical interface that represents an aggregator which contains several ports aggregated together.• <interface-id> - Displays DHCPv6 server statistics for the specified interface identifier. This is a unique value that represents the specific interface. This value is a combination of slot number and port number separated by a slash, for interface type other than internal-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only internal-lan or port-channel ID is provided, for interface types internal-lan and port-channel. For example: 1 represents internal-lan and port-channel ID.
Mode	Privileged Exec Mode
Package	Workgroup, Enterprise, Metro, and Metro_E
Example	<pre>SEFOS# show ipv6 dhcp server statistics extreme-ethernet 0/3 Transmitted: reply : 1 relay-reply : 0</pre>

Received:

information-request : 1
relay-forward : 0
invalid : 0
hmac-failure : 0
lastUnknownTlv : 0

Related Command(s)

- **ipv6 dhcp server** – Associates the DHCPv6 server pool with an interface.
 - **clear ipv6 dhcp server statistics** – Clears DHCPv6 server statistics for a particular interface or for all the interfaces.
-

CHAPTER 31

RIP

RIP (Routing Information Protocol) is a widely used protocol for managing router information within a self-contained network such as a corporate local area network or an interconnected group of such LANs. RIP is classified by the IETF (Internet Engineering Task Force) as one of several internal gateway protocols.

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

- The list of CLI commands for the configuration of RIP is common to both Single Instance and Multiple Instance except for a difference in the prompt that appears for the switch with Multiple Instance support.

The prompt for the Switch Configuration Mode is,

```
SEFOS (config-switch) #
```

- The parameters specific to Multiple Instance are stated so, against the respective parameter descriptions in this document.
- The output of the `show` commands differ for Single Instance and Multiple Instance. Hence both the output are documented while depicting the `show` command examples.

31.1 router rip

Command Objective	<p>This command enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.</p> <p>The no form of the command disables RIP on all the interfaces for the default or specific VRF instance. The default instance is used, if the VRF name is not specified.</p>
Syntax	<pre>router rip [vrf <name>] no router rip [vrf <name>]</pre>
Parameter Description	<ul style="list-style-type: none">vrf<name> - Enables or disables RIP for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string whose maximum size is 32.
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Default	Router RIP is disabled.
	<p><u>Note:</u> VRF instance should be created before executing this command to enable the RIP in the specific context.</p>
Example	<pre>SEFOS (config)# router rip SEFOS (config-router)#</pre>
Related Command(s)	<ul style="list-style-type: none">ip vrf - Creates VRF instance.ip rip default route originate - Sets the metric to be used for default route propagated over the VLAN interface or router port in a RIP update message and generates a default route into RIP.ip rip summary-address - Sets route aggregation over a VLAN interface or router port for all subnet routes that fall under the specified IP address and mask.ip rip default route install - Installs the default route received in updates to the RIP database.ip rip send version - Sets the IP RIP version number for transmitting advertisements.ip rip receive version - Sets IP RIP version number for receiving advertisements.

-
- **ip rip authentication mode** - Configures the authentication mode and key to be used in RIP packets for VLAN interface or router port.
 - **timers basic** - Configures update, route age, and garbage collection timers for the VLAN interface or router port.
 - **ip split-horizon** - Enables the split horizon updates for the RIP.
 - **debug ip rip** – Sets the debug level for RIP module.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **show ip protocols** - Displays information about the active routing protocol process.
 - **rip - authentication last-key infinite lifetime** - Configures the crypto authentication type.
 - **ip rip auth-type** - Configures authentication type for crypto authentication.
 - **ip rip authentication key-id** - Configures the authentication key-id and key.
 - **ip rip key-id start-accept** - Configures the time when the router starts accepting RIP updates for the specified key-id.
 - **ip rip key-id stop-accept** - Configures the time when the router stops accepting RIP updates for the specified key-id.
 - **ip rip key-id start-generate** - Configures the time when the router starts generating RIP updates for the specified key-id.
 - **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **version** - Sets global version of RIP.
 - **version none** - Sets IP RIP transmitting advertisements to neither be sent nor received.
 - **redistribute** – Enables or disables RIP participation in Route Redistribution.
 - **redistribute -isis** – Enables or disables RIP participation in Route Redistribution for ISIS.
-

31.2 ip rip security

Command Objective	<p>This command configures the security level of the RIP in the system to accept or ignore RIPv1 packets when authentication is in use.</p> <p>The no form of the command sets the security level to its default value.</p>
Syntax	<pre>ip rip security { minimum maximum } no ip rip security</pre>
Parameter Description	<ul style="list-style-type: none">• minimum - Denotes that the RIPv1 packets will be accepted even when authentication is in use.• maximum - Denotes that the RIPv1 packets will be ignored when authentication is in use.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	Maximum
Example	<pre>SEFOS(config-router)# ip rip security minimum</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance.• show ip protocols - Displays information about the active routing protocol process.

31.3 ip rip retransmission

Command Objective	<p>This command configures the retransmission timeout interval and number of retries to retransmit the update request packet or an unacknowledged update response packet.</p> <p>The no form of the command sets the retransmission timeout interval or the number of retransmission retries to its default value.</p> <p>If no response is received during retries, then the routes through the next hop router are marked as unreachable.</p>
Syntax	<pre>ip rip retransmission { interval <timeout-value (5-10)> retries <value (10-40)> } no ip rip retransmit { interval retries }</pre>
Parameter Description	<ul style="list-style-type: none">• interval<timeout-value (5-10)> - Configures the timeout interval to be used to retransmit the update request packet or an unacknowledged update response packet. The packets are transmitted at the specified interval till a response is received or till the maximum number of retries. This value ranges from 5 to 10.• retries<value (10-40)> - Configures the maximum number of retransmissions of the update request and update response packets. This value ranges from 10 to 40.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• interval - 5• retries - 36
Example	<pre>SEFOS(config-router)# ip rip retransmission retries 30</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance.• show ip protocols - Displays information about the active routing protocol process.

31.4 network

Command Objective This command enables RIP on an IP network for an unnumbered VLAN interface or router port. It configures a list of networks for the RIP routing process. RIP routing updates will be sent and received only through the specified interfaces on this network. If an interface's network is not specified, then the network will not be advertised in any RIP update.

The no form of the command disassociates RIP routing process with the specified IP network for an unnumbered VLAN interface or router port.

Syntax

```
network <ip-address>[unnum {vlan <vlan-id/vfi-id> [switch <switch-name>] | <iftype> <ifnum>}]
```

```
no network <ip-address> [unnum {vlan <vlan-id/vfi-id> [switch <switch-name>] | <iftype> <ifnum>}]
```

Parameter Description

- **<ip-address>** - Configures the IP network address of the interface that is to be associated with RIP routing process.
 - The network IP address specified must not contain any subnet information. RIP routing updates will be sent and received only through interfaces on this network.
 - The IP address should be same as that of the existing VLAN interface or router port.
- **vlan <vlan-id/vfi-id>** - Configures the unnumbered VLAN / VFI ID that is to be associated with RIP routing process. This value ranges from 1 to 65535.
 - **<vlan -id>** - VLAN ID is a unique value that represents the specific VLAN. This value ranges from 1 to 4094.
 - **<vfi-id>** - VFI ID is a VLAN created in the system which contains pseudowires and attachment circuits as member ports. This creates a logical LAN for the VPLS service. This value ranges from 4096 to 65535.

Note: The VLAN ID 4095 is reserved and may be used to indicate a wildcard match for the VID in management operations or filtering database entries.

Note: VFI IDs 4096 and 4097 are reserved identifiers used in MPLS PW.

Note: The theoretical maximum for the maximum number of VFI is 65535 but the actual number of VFI supported is a sizing constant. Based on this, the maximum number of VFI ID accepted in the management interface is restricted. For example if 100 VFIs are supported, the maximum number of VFI supported will be restricted to 100 added to the maximum number of VLANs. An error message is

displayed for any value beyond this range.

- **switch<switch-name>** - Configures switch context for the unnumbered VLAN ID. This value represents unique name of the switch context. This value is a string whose maximum size is 32. This parameter is specific to multiple instance feature.
- **<iftype>** - Configures the type of unnumbered router interface that is to be associated with RIP routing process. The interface can be:
 - **fastethernet** – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.
 - **XL-ethernet** – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.
 - **extreme-ethernet** – A version of Ethernet that supports data transfer up to 10 Gigabits per second.
 - **i-lan / internal-lan** – Internal LAN created on a bridge per IEEE 802.1ap.
 - **port-channel** – Logical interface that represents an aggregator which contains several ports aggregated together.
- **<ifnum>** - Configures the unnumbered router interface identifier. This is a unique value that represents the specific interface that is to be associated with RIP routing process. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan or port-channel ID.

Mode	RIP Router Configuration Mode
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Package	Enterprise and Metro_E
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<u>Note:</u>	The IPv4 address can be set for the interface only after creating and mapping the VRF instance to it, for enabling RIP in the VRF instance.
--------------	---

Example	<code>SEFOS(config-router)# network 12.0.0.1</code>
----------------	---

Related Command(s)	<ul style="list-style-type: none">• ip address – Creates an IP address.• router rip - Enables RIP for default VRF instance.• passive-interface – Suppresses the RIP routing updates on a specified VLAN interface in a defined L2 switch context or default context, or on a specified router port.• ip rip default route originate - Sets the metric to be used for default route propagated over the VLAN interface or router port in a RIP update message and generates a default route into RIP.
---------------------------	---

-
- **ip rip summary-address** - Sets route aggregation over a VLAN interface or router port for all subnet routes that fall under the specified IP address and mask.
 - **ip rip default route install** - Installs the default route received in updates to the RIP database.
 - **ip rip send version** - Sets the IP RIP version number for transmitting advertisements.
 - **ip rip receive version** - Sets IP RIP version number for receiving advertisements.
 - **ip rip authentication mode** - Configures the authentication mode and key to be used in RIP packets for VLAN interface or router port.
 - **timers basic** - Configures update, route age, and garbage collection timers for the VLAN interface or router port.
 - **ip split-horizon** - Enables the split horizon updates for the RIP.
 - **show ip rip** - Displays IP RIP protocol database or statistics.
 - **show ip protocols** - Displays information about the active routing protocol process.
 - **rip - authentication last-key infinite lifetime** - Configures the crypto authentication type.
 - **ip rip auth-type** - Configures authentication type for crypto authentication.
 - **ip rip authentication key-id** - Configures the authentication key-id and key.
 - **ip rip key-id start-accept** - Configures the time when the router starts accepting RIP updates for the specified key-id.
 - **ip rip key-id stop-accept** - Configures the time when the router stops accepting RIP updates for the specified key-id.
 - **ip rip key-id start-generate** - Configures the time when the router starts generating RIP updates for the specified key-id.
 - **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **version** - Sets global version of RIP.
 - **version none** - Sets IP RIP transmitting advertisements to neither be sent nor received.
-

31.5 neighbor

Command Objective This command adds a trusted neighbor router with which routing information can be exchanged and from which RIP packets can be accepted. This command permits the point-to-point (nonbroadcast) exchange of routing information. When used in combination with the passive-interface VLAN, router configuration command, routing information can be exchanged between a subset of routers and access servers. On a LAN, multiple `neighbor` commands can be used to specify additional neighbors or peers.

The `no` form of the command deletes a trusted neighbor router.

Syntax `neighbor <ip address>`
`no neighbor <ip address>`

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

Example `SEFOS (config-router) # neighbor 10.0.0.5`

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.
- `show ip protocols` - Displays information about the active routing protocol process.

31.6 passive-interface

Command Objective This command suppresses the RIP routing updates on a specified VLAN interface in a defined L2 switch context or default context, or on a specified router port. It denotes that the RIP process runs in a passive VLAN interface or passive router port.

If the sending of routing updates is disabled on an interface, the particular subnet will continue to be advertised to other interfaces, and updates from other routers on that interface continue to be received and processed.

The no form of the command restricts suppressing of RIP routing updates from an interface.

Syntax

```
passive-interface {vlan <vlan-id/vfi-id> [switch <switch-name>] | <interface-type> <interface-id>}  
  
no passive-interface {vlan <vlan-id/vfi-id> [switch <switch-name>] | <interface-type> <interface-id>}
```

Parameter Description

- **vlan <vlan-id/vfi-id>** - Sets the specified VLAN/VFI interface as a passive interface on which RIP routing updates are suppressed. This value ranges from 1 to 65535.
 - **<vlan -id>** - VLAN ID is a unique value that represents the specific VLAN. This value ranges from 1 to 4094.
 - **<vfi-id>** - VFI ID is a VLAN created in the system which contains pseudowires and attachment circuits as member ports. This creates a logical LAN for the VPLS service. This value ranges from 4096 to 65535.

Note: The VLAN ID 4095 is reserved and may be used to indicate a wildcard match for the VID in management operations or filtering database entries.

Note: VFI IDs 4096 and 4097 are reserved identifiers used in MPLS PW.

Note: The theoretical maximum for the maximum number of VFI is 65535 but the actual number of VFI supported is a sizing constant. Based on this, the maximum number of VFI ID accepted in the management interface is restricted. For example if 100 VFIs are supported, the maximum number of VFI supported will be restricted to 100 added to the maximum number of VLANs. An error message is displayed for any value beyond this range.

- **switch <switch-name>** - Configures the switch context for the VLAN interface that is set as passive interface. This value represents unique name of the switch context. This value is a string whose maximum size is 32. This parameter is specific to multiple instance feature. This feature has

been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.

- **<interface-type>** - Sets the specified type of router interface as passive interface. The interface can be:
 - **fastethernet** – Officially referred to as 100BASE-T standard. This is a version of LAN standard architecture that supports data transfer up to 100 Megabits per second.
 - **XL-ethernet** – A version of LAN standard architecture that supports data transfer up to 40 Gigabits per second.
 - **extreme-ethernet** – A version of Ethernet that supports data transfer up to 10 Gigabits per second.
 - **i-lan**– Internal LAN created on a bridge per IEEE 802.1ap.
- **<interface-id>** - Configures the specified interface identifier. This is a unique value that represents the specific interface which is to be set as passive interface. This value is a combination of slot number and port number separated by a slash, for interface type other than i-lan and port-channel. For example: 0/1 represents that the slot number is 0 and port number is 1. Only i-lan or port-channel ID is provided, for interface types i-lan and port-channel. For example: 1 represents i-lan or port-channel ID.

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

Example SEFOS (config-router) # **passive-interface vlan 1**

Note: This command executes only if RIP is enabled on an IP network.

Related Command(s)

- **router rip** - Enables RIP for default VRF instance.
 - **network** – Enables RIP on an IP network for an unnumbered VLAN interface or router port.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
-

31.7 output-delay

Command Objective This command enables interpacket delay for RIP updates, where the delay is in milliseconds between packets in a multiple-packet RIP update. This interpacket delay feature helps in preventing the routing table from losing information due to flow of RIP updates from high speed router to low speed router.

The no form of the command disables interpacket delay for RIP updates.

Syntax `output-delay`
`no output-delay`

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

Default Disabled (Interpacket delay feature is disabled)

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

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.
- `show ip protocols` - Displays information about the active routing protocol process.
- `output-delay-value` - Enables interpacket delay for RIP updates, where the delay is in milliseconds between packets in a multiple-packet RIP update.

31.8 redistribute

Command Objective	<p>This command enables RIP participation in Route Redistribution.. When enabled, RIP starts advertising the routes learned by other protocols.</p> <p>The no form of the command disables RIP participation in Route Redistribution. When disabled, RIP will stop redistribution of routes but will continue to send updates to the RTM.</p>
Syntax	<pre>redistribute { all bgp connected ospf static } [route-map <string(20)>]</pre> <pre>no redistribute { all bgp connected ospf static } [route-map <string(20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• all - Specifies that all routes have to be imported from the RIP. Redistributes all routes that are learned into RIP process.• bgp - Imports routes that are learned by BGP into RIP process.• connected - Imports directly connected network routes into RIP routing process.• ospf - Imports routes that are learned by the OSPF process into RIP routing process.• static - Imports routes configured statically, into RIP routing process.• route-map<string(20)> - Specifies the name of the route-map in the list of route-maps. This value is a string with the maximum size of 20.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	By default, Route Redistribution is disabled.
Example	<pre>SEFOS(config-router)# redistribute all</pre> <pre>SEFOS(config-router)# redistribute connected route-map route1</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance.• default-metric – Sets the RIP default metric.• show ip protocols - Displays information about the active routing protocol process.

31.9 redistribute-isis

Command Objective	<p>This command enables RIP participation in Route Redistribution for ISIS. When enabled, RIP will start advertising the routes learned by ISIS protocol.</p> <p>The no form of the command disables RIP participation in Route Redistribution for ISIS. When disabled, RIP will stop redistribution of routes but will continue to send updates to the RTM.</p>
Syntax	<pre>redistribute { isis } [{level-1 level-2 level-1-2}] [route-map <string(20)>] no redistribute { isis } [{level-1 level-2 level-1-2 }] [route-map <string(20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• isis - Imports routes that are learned by ISIS into RIP routing process.• level-1 - Specifies that Level-1 routes have to be imported from ISIS.• level-2 - Specifies that Level-2 routes have to be imported from ISIS.• level-1-2 - Specifies that Level-1-2 routes have to be imported from ISIS.• route-map<string(20)> - Specifies the name of the route-map in the list of route-maps. This value is a string with the maximum size 20.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	By default, Route Redistribution is disabled.
Example	<pre>SEFOS(config-router)# redistribute isis level-1 route-map route1</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance.• default-metric - Sets the RIP default metric.• show ip protocols - Displays information about the active routing protocol process.

31.10 distribute-list route-map

Command Objective	<p>This command enables route-map filtering for inbound or outbound routes and defines the conditions for distributing the routes from one routing protocol to another.</p> <p>The no form of the command disables route-map filtering for inbound or outbound routes.</p>
Syntax	<pre>distribute-list route-map <name(1-20)> {in out} no distribute-list route-map <name(1-20)> {in out}</pre>
Parameter Description	<ul style="list-style-type: none">• <name(1-20)> - Configures the name of the existing route-map for which filtering should be enabled. This value is a string with the maximum size of 20.• in - Sets route-map filtering for inbound routes.• out - Sets route-map filtering for outbound routes.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
	<p><u>Note:</u> Only one route-map can be set for inbound or outbound routes. Another route-map can be assigned, only if the already assigned route-map is disabled.</p>
Example	<pre>SEFOS(config-router)# distribute-list route-map rmap-test in</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance.

31.11 default-metric

Command Objective This command sets the default metric values to be used for redistributed routes for RIP, where the default metric will be used for the imported routes from RTM. The command is used in conjunction with the redistribute, router command to cause the current routing protocol to use the same metric value for all redistributed routes. A default metric helps solve the problem of redistributing routes with incompatible metrics. The default metric provides a reasonable substitute and enables the redistribution to proceed further. The metric value ranges between 1 and 16.

The no form of the command sets the metric used with redistributed routes to its default value.

Note: The metric value given in the no form of the command will be ignored during the execution of the command.

Syntax `default-metric [<value>]`

`no default-metric [<short (1-16)>]`

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

Default 3

Example `SEFOS(config-router)# default-metric 1`

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.
- `redistribute` – Enables or disables RIP participation in Route Redistribution.
- `redistribute -isis` – Enables or disables RIP participation in Route Redistribution for ISIS.
- `show ip protocols` - Displays information about the active routing protocol process.

31.12 distance

Command Objective	<p>This command enables the administrative distance (that is, the metric to reach the destination) of the routing protocol and sets the administrative distance value. The distance value ranges between 1 and 255.</p> <p>This distance value will not be used for distribute list. The administrative distance can be enabled for only one route-map. The distance should be disabled for the already assigned route-map, if distance needs to be enabled for another route-map.</p> <p>The no form of the command disables the administrative distance.</p>
Syntax	<pre>distance <1-255> [route-map <name (1-20)>] no distance [route-map <name (1-20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• <code>route-map <name (1-20)></code> - Configures the name of the existing route-map for which the distance value should be enabled and set. This value is a string with the maximum size of 20.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	121
Example	<pre>SEFOS(config-router)# distance 10 route-map rmap-test</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> - Enables RIP for default VRF instance.

31.13 auto-summary - enable | disable

Command Objective	This command enables or disables the auto summarization of routes in RIP and restores the default behavior of automatic summarization of subnet routes into network-level routes.
Syntax	<code>auto-summary {enable disable}</code>
Parameter Description	<ul style="list-style-type: none">• enable - Enables auto summarization feature in RIP, so that the summary routes are sent in regular updates for RIP.• disable - Disables auto summarization feature in RIP, so that either individual subnet route is sent or subnet routes are sent based on the specific aggregation configured over the interface.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	enable
	<u>Note:</u> Auto-summarization feature must be disabled to configure interface-specific aggregation with RIP version 2.
Example	<code>SEFOS(config-router)# auto-summary disable</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> - Enables RIP for default VRF instance.• <code>ip rip summary-address</code> - Sets route aggregation over a VLAN interface or router port for all subnet routes that fall under the specified IP address and mask.• <code>show ip rip</code> - Displays IP RIP protocol database or statistics.• <code>show ip protocols</code> - Displays information about the active routing protocol process.• auto-summary - Enables the auto summarization of routes in RIP and restores the default behavior of automatic summarization of subnet routes into network-level routes.

31.14 ip rip default route originate

Command Objective This command sets the metric to be used for default route propagated over the VLAN interface or router port in a RIP update message and generates a default route into RIP. The metric value ranges between 1 and 15.

The no form of the command disables origination of default route over the interface.

Syntax `ip rip default route originate <metric(1-15)>`
`no ip rip default route originate`

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Default Default route origination is disabled.

Note:

- This command executes only if RIP is enabled in the switch.
- Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.

Example `SEFOS(config-if)# ip rip default route originate 10`

Related Command(s)

- `router rip` – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.
- `network` – Enables RIP on an IP network for an unnumbered VLAN interface or router port.
- `show ip protocols` - Displays information about the active routing protocol process.
- `default-information originate` - Sets the metric to be used for default route propagated over the interface.

31.15 ip rip summary-address

Command Objective	<p>This command sets route aggregation over a VLAN interface or router port for all subnet routes that fall under the specified IP address and mask.</p> <p>The no form of the command disables route aggregation with the specified IP address and mask.</p>
Syntax	<pre>ip rip summary-address <ip-address> <mask> no ip rip summary-address <ip-address> <mask></pre>
Parameter Description	<ul style="list-style-type: none">• ip-address - Configures the IP address that is to be combined with the subnet mask to set route aggregation for all subnet routes that fall under the specified IP address and mask of the interface-specific aggregation.• mask - Configures the subnet mask that is to be combined with the IP address to set route aggregation for all subnet routes that fall under the specified mask and IP address of the interface-specific aggregation.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.• This command should not be used with RIPv1 send version.• Auto-summarization overrides interface-specific aggregation. Therefore, auto-summarization should be disabled for interface-specific route aggregation.
Example	<pre>SEFOS(config-if)# ip rip summary-address 12.0.0.0 255.0.0.0</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• auto-summary enable-disable – Enables or disables auto summarization of routes in RIP.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.

-
- `show ip protocols` - Displays information about active routing protocol.
-

31.16 ip rip default route install

Command Objective	<p>This command installs the default route received in updates to the RIP database.</p> <p>The no form of the command blocks the installation of default route received in updates to the RIP database.</p>
Syntax	<pre>ip rip default route install</pre> <pre>no ip rip default route install</pre>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	The installation of default route to the RIP database is restricted.
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<pre>SEFOS(config-if)# ip rip default route install</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• show ip protocols - Displays information about the active routing protocol process.

31.17 ip rip send version

Command Objective	<p>This command sets the IP RIP version number for transmitting advertisements (that is, version of RIP updates to be sent on a VLAN interface or router port).</p> <p>The no form of the command sets IP RIP send version number to its default value.</p>
Syntax	<pre>ip rip send [demand] version { [1] [2] } no ip rip send version</pre>
Parameter Description	<ul style="list-style-type: none">• demand - Configures the RIP version number for demand trigger updates.• version { [1] [2] } - Configures version of RIP updates to be sent. The options are:<ul style="list-style-type: none">▪ 1 - Sends only RIP updates compliant with RFC 1058, on the interface.▪ 2 - Sends only multicasting RIP updates on the interface.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<pre>SEFOS(config-if)# ip rip send version 1</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• show ip protocols - Displays information about the active routing protocol process.

31.18 ip rip receive version

Command Objective	<p>This command sets IP RIP version number for receiving advertisements (that is, version of RIP updates to be received on a VLAN interface or router port).</p> <p>The no form of the command sets IP RIP receive version number to its default value.</p>
Syntax	<pre>ip rip receive version { [1] [2] } no ip rip receive version</pre>
Parameter Description	<ul style="list-style-type: none">• 1 - Receives only RIP updates compliant with RFC 1058, on the interface.• 2 - Receives only multicasting RIP updates on the interface.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<pre>SEFOS(config-if)# ip rip receive version 1</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• show ip protocols - Displays information about the active routing protocol process.

31.19 ip rip authentication mode - key-chain

Command Objective	<p>This command configures the authentication mode and key to be used in RIP packets for VLAN interface or router port.</p> <p>The no form of the command disables authentication.</p>
Syntax	<pre>ip rip authentication mode { text md5 } key-chain <key-chain-name (16)> no ip rip authentication</pre>
Parameter Description	<ul style="list-style-type: none">• text - Configures the authentication type as simple text.• md5 - Configures the authentication type as keyed MD5 (Message Digest 5) authentication.• key-chain <key-chain-name (16)> - Configures the key-chain value to be used as the authentication key. If a string shorter than 16 octets is supplied, it will be left-justified and padded to 16 octets, on the right, with nulls (0x00).
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	None (No authentication is set)
	<p><u>Note:</u></p> <ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<pre>SEFOS(config-if)# ip rip authentication mode text key-chain abcdea</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• show ip protocols - Displays information about the active routing protocol process.• ip rip authentication mode - Configures the authentication mode

for RIP version 2.

- `ip rip authentication key-chain` - Configures the interface RIP version 2 authentication string.
-

31.20 timers basic – update-value

Command Objective	<p>This command configures update, route age, and garbage collection timers for the VLAN interface or router port.</p> <p>The no form of the command sets update, route age, and garbage collection timers to the default values.</p>
Syntax	<pre>timers basic <update-value (10-3600)> <routeage-value (30-500)> <garbage-value (120-180)></pre> <pre>no timers basic</pre>
Parameter Description	<ul style="list-style-type: none">• update-value (10-3600) - Configures the time interval (in seconds) at which the RIP updates should be sent. This is the fundamental timing parameter of the routing protocol. This value ranges from 10 to 3600 seconds.• routeage-value (30-500) - Configures the time (in seconds) after which the route entry is put into garbage collect (that is, marked as invalid). This value ranges from 30 to 500 seconds.• garbage-value (120-180) - Configures the time (in seconds) after which the route entry marked as invalid is deleted. The advertisements of this entry are set to INFINITY while being sent to others. This value ranges from 120 to 180 seconds.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• update-value - 30• routeage-value - 180• garbage-value - 120
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<pre>SEFOS (config-if)# timers basic 360 300 130</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.

-
- **network** – Enables RIP on an IP network for an unnumbered VLAN interface or router port.
 - **show ip protocols** - Displays information about the active routing protocol process.
 - **timers basic** - Configures update, route age, and garbage collection timers for the VLAN interface or router port.
-

31.21 ip split-horizon

Command Objective This command enables the split horizon updates for the RIP which prevents the routing loops in distance routing protocol, by prohibiting the router from advertising a route back onto the interface. The split horizon updates are applied in the response packets sent.

The no form of the command disables the split horizon updates.

Syntax `ip split-horizon [poisson]`

`no ip split-horizon`

Parameter Description

- `poisson` - Configures the split horizon with poisson reverse enabled.

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Default Split horizon with poisson reverse is enabled.

Note:

- This command executes only if RIP is enabled in the switch.
- Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.

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

Related Command(s)

- `router rip` – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.
- `network` – Enables RIP on an IP network for an unnumbered VLAN interface or router port.
- `show ip protocols` - Displays information about the active routing protocol process.

31.22 debug ip rip

Command Objective	<p>This command sets the debug level for RIP module.</p> <p>The no form of the command resets the debug level for RIP module.</p> <p>This command allows combination of debug levels to be configured (that is, more than one level of trace can be enabled or disabled). The debug levels are configured one after the other and not in single execution of the command.</p>
Syntax	<pre>debug ip rip [vrf <name>] { all init data control dump os mgmt failure buffer } no debug ip rip [vrf <name>]{ all init data control dump os mgmt failure buffer }</pre>
Parameter Description	<ul style="list-style-type: none">• vrf <name> - Configures debug level for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string whose maximum size is 32. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.• all - Generates debug messages for all traces.• init - Generates debug messages for initialization traces. This trace is generated on failed initialization of RIP-related entries.• data - Generates debug messages for data path traces. This trace is generated during failure in packet processing.• control - Generates debug messages for control plane traces.• dump - Generates debug messages for packet dump traces.• os - Generates debug messages for OS resource traces. This trace is generated during failure in message queues.• mgmt - Generates debug messages for management traces. This trace is generated during failure in configuration of any of the RIP features.• failure - Generates debug messages for all failure messages (All failures including packet validation).• buffer - Generates debug messages for buffer traces.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E

Default `init`

Example `SEFOS# debug ip rip all`

Note: This command executes only if RIP is enabled.

Related Command(s)

- `router rip` – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.
 - `debug ip rip - database/events/trigger` - Sets the debug level for RIP module.
-

31.23 show ip rip

Command Objective	This command displays IP RIP protocol database ,statistics, or authentication-related information.
Syntax	<pre>show ip rip [vrf <name>] { database [<ip-address> <ip-mask>] statistics authentication}</pre>
Parameter Description	<ul style="list-style-type: none">• vrf<name> - Displays RIP database or statistics-related information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• database [<ip-address> <ip-mask>] - Displays the RIP protocol database details for all RIP interface entry or for entry with the specified IP address and IP mask.• statistics - Displays the RIP statistics on the router.• authentication - Displays the authentication-related information configured for the RIP interface entry. The authentication information include the authentication type, authentication key-ids configured, and its associated lifetime values.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip rip database Vrf default 12.0.0.0/8 [1] auto-summary 12.0.0.0/8 [1] directly connected, vlan1 15.0.0.0/8 [3] auto-summary 15.0.0.0/8 [3] directly connected, vlan2 20.0.0.0/8 [4] auto-summary 20.0.0.0/8 [4] via 12.0.0.2, vlan1 Vrf vrf1 12.0.0.0/8 [1] auto-summary 12.0.0.0/8 [1] directly connected, vlan2 SEFOS# show ip rip vrf default statistics Vrf default RIP Global Statistics: -----</pre>

```

-----
Total number of route changes is 1
Total number of queries responded is 1
Total number of dropped packets is 0
RIP Interface Statistics:
-----
Interface Periodic  BadRoutes  Triggered  BadPackets Admin
IP Address Updates Sent Received Updates Sent Received
Status
-----
12.0.0.1          19           1           2           0  Enabled
SEFOS# show ip rip authentication

```

```

RIP Interface Authentication Statistics:
-----
Vrf default
Interface Name          vlan1
Authentication Type     3
Authentication KeyId in use: 0
Authentication Last key status: false

```

```

RIP Authentication Key Info:
-----
Authentication KeyId      0
Start Accept Time         2013-06-03,17:00:00
Start Generate Time       2013-06-03,17:00:00
Stop Generate Time        2013-06-03,17:00:00
Stop Accept Time          2013-06-03,17:00:00

```

```

RIP Authentication Key Info:
-----
Authentication KeyId      1
Start Accept Time         2013-06-03,16:35:00
Start Generate Time       2013-06-03,16:35:00
Stop Generate Time        2136-02-06,06:28:15
Stop Accept Time          2136-02-06,06:28:15

```

Related Command(s)

- **router rip** – Enables RIP for default VRF instance or a specific VRF instance
-

-
- **network** – Enables RIP on an IP network for an unnumbered VLAN interface or router port.
 - **passive-interface** – Suppresses the RIP routing updates on a specified VLAN interface in a defined L2 switch context or default context, or on a specified router port.
 - **auto-summary enable-disable** - Enables or disables auto summarization of routes in RIP.
 - **rip - authentication last-key infinite lifetime** - Configures the crypto authentication type.
 - **ip rip auth-type** - Configures authentication type for crypto authentication.
 - **ip rip authentication key-id** - Configures the authentication key-id and key.
 - **ip rip key-id start-accept** - Configures the time when the router starts accepting RIP updates for the specified key-id.
 - **ip rip key-id stop-accept** - Configures the time when the router stops accepting RIP updates for the specified key-id.
 - **ip rip key-id start-generate** - Configures the time when the router starts generating RIP updates for the specified key-id.
 - **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
-

31.24 ip rip send version none

Command Objective	This command stops the IP RIP transmitting advertisements to be sent on a VLAN interface or router port.
Syntax	<code>ip rip send [demand] none</code>
Parameter Description	<ul style="list-style-type: none">• demand - Configures the RIP version number for demand trigger updates.• none - Configures version of RIP updates to be sent as <code>none</code> and no RIP advertisements are sent.
.Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• RIP should be enabled in the switch before executing this command.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<code>SEFOS(config-if)# ip rip send none</code>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• network – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• show ip protocols - Displays information about the active routing protocol process.

31.25 ip rip receive version none

Command Objective	This command sets that no IP RIP transmitting advertisements are received on a VLAN interface or router port.
Syntax	<code>ip rip receive version none</code>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command executes only if RIP is enabled in the switch.• Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<code>SEFOS(config-if)# ip rip receive version none</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• <code>network</code> – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• <code>show ip protocols</code> - Displays information about the active routing protocol process.

31.26 rip - authentication last-key infinite lifetime

Command Objective	This command sets the flag to decide whether the last authentication key on expiry, should take its lifetime to be infinite or not.
Syntax	<pre>rip [vrf <name>] authentication last-key infinite lifetime { true false }</pre>
Parameter Description	<ul style="list-style-type: none">• vrf<name> - Enables RIP Crypto authentication for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string whose maximum size is 32.• true - Sets the lifetime of last key to be infinite. The last key on expiry resets its lifetime to be infinite and continues to be the Key until new Authentication key-id is configured.• false - Sets the lifetime of last key not to be infinite. After the last key expires, the received RIP updates will be dropped and the routes may tear down. No updates will be sent on that interface.
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Default	true
Note:	This command executes only if RIP is enabled for default VRF instance or specific VRF instance.
Example	<pre>SEFOS(config)# rip vrf vrf1 authentication last-key infinite lifetime true</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip - Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• ip vrf - Creates VRF instance.• ip rip auth-type - Configures authentication type for crypto authentication.• ip rip authentication key-id - Configures the authentication key-id and key.• ip rip key-id start-accept - Configures the time when the router starts accepting RIP updates for the specified key-id.• ip rip key-id stop-accept - Configures the time when the router stops accepting RIP updates for the specified key-id.

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- `ip rip key-id start-generate` - Configures the time when the router starts generating RIP updates for the specified key-id.
 - `ip rip key-id stop-generate` - Configures the time when the router stops generating RIP updates for the specified key-id.
 - `show ip rip` – Displays IP RIP protocol database or statistics.
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31.27 ip rip auth-type

Command Objective	This command configures authentication type for crypto authentication.
Syntax	<pre>ip rip auth-type { md5 sha-1 sha-256 sha-384 sha-512 }</pre>
Parameter Description	<ul style="list-style-type: none">• md5 - Configures the authentication type as keyed MD5 (Message Digest 5) authentication.• sha-1 - Configures the authentication type as Secure Hash Algorithm 1 (SHA1) authentication. SHA1 generates authentication digest of length 20 bytes.• sha-256 - Configures the authentication type as Secure Hash Algorithm 256 (SHA256) authentication. SHA256 generates authentication digest of length 32 bytes.• sha-384 - Configures the authentication type as Secure Hash Algorithm 384 (SHA384) authentication. SHA384 generates authentication digest of length 48 bytes.• sha-512 - Configures the authentication type as Secure Hash Algorithm 512 (SHA512) authentication. SHA512 generates authentication digest of length 64 bytes.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	md5
Example	<pre>SEFOS(config-if)# ip rip auth-type md5</pre>
Related Command(s)	<ul style="list-style-type: none">• rip - authentication last-key infinite lifetime - Configures the crypto authentication type.• ip rip authentication key-id - Configures the authentication key-id and key.• ip rip key-id start-accept - Configures the time when the router starts accepting RIP updates for the specified key-id.• ip rip key-id stop-accept - Configures the time when the router stops accepting RIP updates for the specified key-id.• ip rip key-id start-generate - Configures the time when the

router starts generating RIP updates for the specified key-id.

- **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **show ip protocols** - Displays information about the active routing protocol process.
 - **network** - Enables RIP on an IP network for an unnumbered VLAN interface or router port.
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31.28 ip rip authentication key-id

Command Objective	<p>This command configures the authentication key-id and the authentication key.</p> <p>The no form of the command deletes the authentication key-id.</p>
Syntax	<pre>ip rip authentication key-id <integer (0-255)> key <string (16)></pre> <pre>no ip rip authentication key-id <integer (0-255)></pre>
Parameter Description	<ul style="list-style-type: none">• <integer (0-255)> - Configures the active authentication key ID currently used in the particular interface for sending RIP updates. This value ranges from 0 to 255.• key <string (16)> - Configures the key used as the authentication key. If a string shorter than 16 octets is supplied, it will be left-justified and padded to 16 octets, on the right, with nulls (0x00).
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-if)# ip rip authentication key-id 0 key key1</pre>
Related Command(s)	<ul style="list-style-type: none">• rip - authentication last-key infinite lifetime - Configures the crypto authentication type.• ip rip auth-type - Configures authentication type for crypto authentication.• ip rip key-id start-accept - Configures the time when the router starts accepting RIP updates for the specified key-id.• ip rip key-id stop-accept - Configures the time when the router stops accepting RIP updates for the specified key-id.• ip rip key-id start-generate - Configures the time when the router starts generating RIP updates for the specified key-id.• ip rip key-id stop-generate - Configures the time when the router stops generating RIP updates for the specified key-id.• show ip rip - Displays IP RIP protocol database or statistics.• network - Enables RIP on an IP network for an unnumbered VLAN interface or router port.

31.29 ip rip key-id - start-accept

Command Objective	This command configures the time when the router starts accepting RIP updates for the specified key-id.
Syntax	<code>ip rip key-id <integer (0-255)> start-accept <key></code>
Parameter Description	<ul style="list-style-type: none">• <code><integer (0-255)></code> - Configures the active authentication key-id currently used in the particular interface for sending RIP updates. This value ranges from 0 to 255.• <code>start-accept <key></code> - Configures the time the router will start accepting packets that have been created with this key. If the value is not set, current time (time at which authentication key-id is configured) will be taken as start-accept time. <p>Note: For example, Tuesday May 26, 1992 at 1:30:15 PM should be entered as, 1992-5-26,13:30:15 (YYYY-MM-DD,hh:mm:ss format).</p>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	This command only executes when <ul style="list-style-type: none">• RIP is enabled on the interface.• RIP Authentication mode is configured.
Example	<pre>SEFOS(config-if)# ip rip key-id 0 start-accept 2014-07-22,12:26:30</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>rip - authentication last-key infinite lifetime</code> - Configures the crypto authentication type.• <code>ip rip auth-type</code> - Configures authentication type for crypto authentication.• <code>ip rip authentication key-id</code> - Configures the authentication key-id and key.• <code>ip rip key-id stop-accept</code> - Configures the time when the router stops accepting RIP updates for the specified key-id.• <code>ip rip key-id start-generate</code> - Configures the time when the router starts generating RIP updates for the specified key-id.

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- **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **show ip protocols** - Displays information about the active routing protocol process.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **network** - Enables RIP on an IP network for an unnumbered VLAN interface or router port.
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31.30 ip rip key-id - stop-accept

Command Objective	This command configures the time when the router stops accepting RIP updates for the specified key-id.
Syntax	<code>ip rip key-id <integer (0-255)> stop-accept <key></code>
Parameter Description	<ul style="list-style-type: none">• <code><integer (0-255)></code> - Configures the active authentication key-id that is currently used in the particular interface for sending RIP updates. This value ranges from 0 to 255.• <code>stop-accept <key></code> - Configures the time the router will stop accepting packets that have been created with this key. If the value is not set, then it will be taken as infinite and displayed as 2136-02-06, 06:28:15, the maximum date time equivalent. <hr/><p>Note: For example, Tuesday May 26, 1992 at 1:30:15 PM should be configured as, 1992-5-26,13:30:15(YYYY-MM-DD,hh:mm:ss format)</p><hr/>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	This command only executes when <ul style="list-style-type: none">• RIP is enabled on the interface.• RIP Authentication mode is configured.
Example	<pre>SEFOS(config-if)# ip rip key-id 0 stop-accept 2014-07-22,12:26:30</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>rip - authentication last-key infinite lifetime</code> - Configures the crypto authentication type.• <code>ip rip auth-type</code> - Configures authentication type for crypto authentication.• <code>ip rip authentication key-id</code> - Configures the authentication key-id and key.• <code>ip rip key-id start-accept</code> - Configures the time when the router starts accepting RIP updates for the specified key-id.• <code>ip rip key-id start-generate</code> - Configures the time when the router starts generating RIP updates for the specified key-id.

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- **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **network** - Enables RIP on an IP network for an unnumbered VLAN interface or router port.
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31.31 ip rip key-id - start-generate

Command Objective	This command configures the time when the router starts generating RIP updates for the specified key-id.
Syntax	<code>ip rip key-id <integer (0-255)> start-generate <key></code>
Parameter Description	<ul style="list-style-type: none">• <code><integer (0-255)></code> - Configures the active authentication key-id that is currently used in the particular interface for sending RIP updates. This value ranges from 0 to 255.• <code>start-generate <key></code> - Configures the time that the router will start using this key for packet generation. If the value is not set, current time (time at which authentication key-id is configured) will be taken as start-generate time. <p>Note: For example, Tuesday May 26, 1992 at 1:30:15 PM should be configured as, 1992-5-26,13:30:15 (YYYY-MM-DD,hh:mm:ss format)</p>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	This command only executes when <ul style="list-style-type: none">• RIP is enabled on the interface.• RIP Authentication mode is configured.
Example	<pre>SEFOS(config-if)# ip rip key-id 0 start-generate 2014-07-22,12:26:30</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>rip - authentication last-key infinite lifetime</code> - Configures the crypto authentication type• <code>ip rip auth-type</code> - Configures authentication type for crypto authentication.• <code>ip rip authentication key-id</code> - Configures the authentication key-id and key.• <code>ip rip key-id start-accept</code> - Configures the time when the router starts accepting RIP updates for the specified key-id.• <code>ip rip key-id stop-accept</code> - Configures the time when the router stops accepting RIP updates for the specified key-id.

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- **ip rip key-id stop-generate** - Configures the time when the router stops generating RIP updates for the specified key-id.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **network** - Enables RIP on an IP network for an unnumbered VLAN interface or router port.
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31.32 ip rip key-id - stop-generate

Command Objective	This command configures the time when the router stops generating RIP updates for the specified key-id.
Syntax	<code>ip rip key-id <integer (0-255)> stop-generate <key></code>
Parameter Description	<ul style="list-style-type: none">• <code><integer (0-255)></code> - Configures the active authentication key-id that is currently used in the particular interface for sending RIP updates. This value ranges from 0 to 255.• <code>stop-generate <key></code> - Configures the time that the router will stop using this key for packets generation. If the value is not set, then it will be taken as infinite and displayed as 2136-02-06, 06:28:15, the maximum date time equivalent. <hr/>Note: For example, Tuesday May 26, 1992 at 1:30:15 PM should be configured as, 1992-5-26,13:30:15 (YYYY-MM-DD,hh:mm:ss format)<hr/>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	This command only executes when <ul style="list-style-type: none">• RIP is enabled on the interface.• RIP Authentication mode is configured.
Example	<pre>SEFOS(config-if)# ip rip key-id 0 stop-generate 2014-07-22,12:26:30</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>rip - authentication last-key infinite lifetime</code> - Configures the crypto authentication type.• <code>ip rip auth-type</code> - Configures authentication type for crypto authentication.• <code>ip rip authentication key-id</code> - Configures the authentication key-id and key.• <code>ip rip key-id start-accept</code> - Configures the time when the router starts accepting RIP updates for the specified key-id.• <code>ip rip key-id stop-accept</code> - Configures the time when the router stops accepting RIP updates for the specified key-id.

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- **ip rip key-id start-generate** - Configures the time when the router starts generating RIP updates for the specified key-id.
 - **show ip rip** – Displays IP RIP protocol database or statistics.
 - **network** - Enables RIP on an IP network for an unnumbered VLAN interface or router port.
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31.33 version

Command Objective	This command sets the global version of RIP. The no form of the command sets the RIP global version to its default value.
Note:	This command is a complete standardized implementation of the existing commands and operates similar to the commands <code>ip rip send version</code> and <code>ip rip receive version</code> .
Syntax	<code>version ([1] [2])</code> <code>no version</code>
Parameter Description	<ul style="list-style-type: none">• <code>1</code> - Sets global version of RIP as 1. This implies that RIP updates are sent or received in compliance with RFC 1058.• <code>2</code> - Sets global version of RIP as 2. This implies that only multicasting RIP updates are sent or received.
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Default	1 and 2
Note:	Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<code>SEFOS(config-router)# version 1</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• <code>network</code> – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• <code>show ip protocols</code> - Displays information about the active routing protocol process.• <code>version none</code> - Sets IP RIP transmitting advertisements to neither be sent nor received.

31.34 version none

Command Objective	This command sets the RIP version as none which implies that no RIP transmitting advertisements are sent or received.
Note:	This command is a complete standardized implementation of the existing commands and operates similar to the commands <code>ip rip send version none</code> and <code>ip rip receive version none</code> .
Syntax	<code>version none</code>
Mode	RIP Router Configuration Mode
Package	Enterprise and Metro_E
Note:	Only the configurations that are done after associating the IP address of the VLAN interface or router port with the RIP routing process, are applied to the RIP.
Example	<code>SEFOS(config-router)# version none</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• <code>network</code> – Enables RIP on an IP network for an unnumbered VLAN interface or router port.• <code>show ip protocols</code> - Displays information about the active routing protocol process.• <code>version</code> - Sets global version of RIP.

31.35 auto-summary

Command Objective This command enables the auto summarization of routes in RIP and restores the default behavior of automatic summarization of subnet routes into network-level routes.

The no form of the command disables the auto summarization of routes in RIP.

This command is a standardized implementation of the existing command `auto-summary enable-disable`. It operates similar to the existing command.

Syntax `auto-summary`

`no auto-summary`

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

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

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.

31.36 output-delay -value

Command Objective This command enables interpacket delay for RIP updates, where the delay is in milliseconds between packets in a multiple-packet RIP update. This interpacket delay feature helps in preventing the routing table from losing information due to flow of RIP updates from high speed router to low speed router. The delay value ranges from 8 to 50 milliseconds.

This command is a standardized implementation of the existing command `output-delay`. It operates similar to the existing command.

Syntax `output-delay <milli-seconds (8-50)>`

Mode RIP Router Configuration Mode

Package Enterprise and Metro_E

Example `SEFOS (config-router)# output-delay 10`

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.

31.37 default-information originate

Command Objective This command sets the metric to be used for default route propagated over the interface. This distance value will not be used for distribute list. The administrative distance can be enabled for only one route-map. The distance should be disabled for the already assigned route-map, if distance needs to be enabled for another route-map.

The no form of the command disables origination of default route over the interface.

This command is a standardized implementation of the existing command `ip rip default route originate`. It operates similar to the existing command.

Syntax `default-information originate <metric (1-15)> [route-map <string(32)>]`

`no default-information originate`

Parameter Description

- `<metric (1-15)>` - Sets the metric value. This value ranges from 1 to 15.
- `route-map <name (1-20)>` - Configures the name of the existing route-map for which the metric value should be enabled and set. This value is a string with a maximum size of 32.

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Example `SEFOS(config-if)# default-information originate 10`

Related Command(s)

- `router rip` - Enables RIP for default VRF instance.
- `network` – Enables RIP on an IP network for an unnumbered VLAN interface or router port.

31.38 ip rip authentication mode

Command Objective	<p>This command configures the authentication mode for RIP version 2.</p> <p>The no form of the command disables authentication mode for RIP version 2.</p> <p>This command is a standardized implementation of the existing command <code>ip rip authentication mode - key-chain</code>. It operates similar to the existing command.</p>
Syntax	<pre>ip rip authentication mode { text md5 } no ip rip authentication</pre>
Parameter Description	<ul style="list-style-type: none">• <code>text</code> - Configures the authentication type as simple text.• <code>md5</code> - Configures the authentication type as keyed MD5 (Message Digest 5) authentication.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	None (No authentication is set)
Example	<pre>SEFOS(config-if)# ip rip authentication mode text</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.• <code>network</code> – Enables RIP on an IP network for an unnumbered VLAN interface or router port.

31.39 ip rip authentication key-chain

Command Objective This command configures the interface RIP version 2 authentication string. This value is a string of size 16.

The no form of the command disables authentication mode for RIP version 2.

This command is a standardized implementation of the existing command `ip rip authentication mode - key-chain`. It operates similar to the existing command.

Syntax `ip rip authentication key-chain <key-chain-name (16)>`
`no ip rip authentication key-chain <key-chain-name (16)>`

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Example `SEFOS(config-if)# ip rip authentication key-chain abc`

Related Command(s)

- `router rip` – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.

31.40 timers basic

Command Objective	<p>This command configures update, route age, and garbage collection timers for the VLAN interface or router port.</p> <p>This command is a standardized implementation of the existing command <code>timers basic - update-value</code>. It operates similar to the existing command.</p>
Syntax	<pre>timers basic <update-interval (10-3600)> <invalid (30-500)> <holddown (10-3600)> <flush (120-180)> <sleep (10-3600)></pre>
Parameter Description	<ul style="list-style-type: none">• <code><update-interval (10-3600)></code> - Configures the time interval (in seconds) at which the RIP updates should be sent. This is the fundamental timing parameter of the routing protocol. This value ranges from 10 to 3600 seconds.• <code><invalid (30-500)></code> - Configures the time (in seconds) after which the route entry is put into garbage collect (that is, marked as invalid). This value ranges from 30 to 500 seconds.• <code><flush (120-180)></code> - Configures the time (in seconds) after which the route entry marked as invalid is deleted. The advertisements of this entry is set to INFINITY while sending to others. This value ranges from 120 to 180 seconds.• <code><sleep (10-3600)></code> - Configures interval (in milliseconds) for postponing routing updates in the event of a flash update. This value ranges from 10 to 3600 milliseconds.
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• update-value - 30• routeage-value - 180• garbage-value - 120
Example	<pre>SEFOS(config-if)# timers basic 360 300 130 125 3000</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router rip</code> – Enables RIP and enters the router configuration mode.• <code>network</code> – Enables RIP on an IP network for an unnumbered VLAN interface or router port.

31.41 debug ip rip - database/events/triggers

Command Objective	<p>This command sets the debug level for RIP module.</p> <p>The no form of the command resets the debug level for RIP module.</p> <p>This command is a standardized implementation of the existing command <code>debug ip rip</code>. It operates similar to the existing command.</p>
Syntax	<pre>debug ip rip { [database] [events] [triggers] } no debug ip rip { [database] [events] [triggers] }</pre>
Parameter Description	<ul style="list-style-type: none">• database - Generates debug messages for database-related traces.• events - Generates debug messages for events-related traces.• triggers - Generates debug messages for triggers-related traces.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# debug ip rip database</pre>
Related Command(s)	<ul style="list-style-type: none">• router rip – Enables RIP for default VRF instance or a specific VRF instance and enters the router configuration mode.

CHAPTER 32

RIPv6

RIPv6 functions the same and offers the same benefits as RIP in IPv4. RIP enhancements for IPv6, detailed in RFC 2080, include support for IPv6 addresses and prefixes, and the use of all-RIP-routers multicast group address as the destination address for RIP update messages. RIPv6 process maintains a local routing table, referred to as a RIB (Routing Information Database). The RIPv6 RIB contains a set of RIPv6 routes learned from all its neighboring networking devices.

Before configuring the router to run IPv6 RIP, the IPv6 unicast-routing must be enabled globally, and IPv6 must be enabled on any interface in which IPv6 RIP is to be processed.

32.1 ipv6 router rip

Command Objective	<p>This command enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.</p> <p>The no form of the command disables RIPv6 on all VLAN interfaces and router ports.</p>
Syntax	<pre>ipv6 router rip</pre> <pre>no ipv6 router rip</pre>
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if IPv6 unicast routing (IPv6 forwarding) is enabled globally.
Example	<pre>SEFOS(config)# ipv6 router rip</pre>
Related Command(s) (s)	<ul style="list-style-type: none">• ipv6 unicast-routing - Enables unicast routing.• distance - Enables the administrative distance of the routing protocol and sets the administrative distance value.• redistribute – Enables or disables redistribution of direct, static, and OSPF routes into RIPv6.• redistribute-isis – Enables or disables redistribution of ISIS routes into RIPv6.• redistribute bgp – Enables redistribution of IPv6 prefix from configured protocol into RIPv6.• distribute prefix – Enables redistribution of IPV6 prefix from BGP protocol into RIPv6.• distribute-list route-map - Enables route-map filtering for inbound or outbound routes.• ipv6 rip peer status – Set the peer list to allow or deny.• ipv6 peer triggered-updated-interval – Configures the time interval, in seconds, by which further triggered updates are delayed after one triggered update is sent.

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- **show ipv6 rip** – Displays IPv6 Local RIB and routing protocol information.
 - **show ipv6 rip stats** - Displays all the interface statistics-related information.
 - **show ipv6 rip filter** - Displays the details of the Advfilter type table.
 - **show ipv6 peer-table-status** – Displays the status of the peers filter.
 - **show ipv6 peer-trig-update-interval** – Displays the delayed triggered time interval.
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32.2 ipv6 router rip - name

Command Objective	<p>This command enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.</p> <p>The no form of the command disables RIPv6 on all VLAN interfaces and router ports.</p> <p>This command is a complete standardized implementation of the existing command and operates similar to the command <code>ipv6 router rip</code>.</p>
Syntax	<pre>ipv6 router rip <name></pre> <pre>no ipv6 router rip <name></pre>
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if IPv6 unicast routing (IPv6 forwarding) is enabled globally.
Example	<pre>SEFOS (config)# ipv6 router rip router1</pre> <p>For RIPv6, process name is not supported.</p>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 unicast-routing</code> - Enables unicast routing.• <code>distance</code> - Enables the administrative distance of the routing protocol and sets the administrative distance value.• <code>redistribute</code> – Enables redistribution of IPv6 prefix from configured protocol into RIPv6.• <code>redistribute bgp</code> – Enables redistribution of IPv6 prefix from configured protocol into RIPv6.• <code>distribute prefix</code> – Enables redistribution of IPv6 prefix from BGP protocol into RIPv6.• <code>distribute-list route-map</code> - Enables route-map filtering for inbound or outbound routes.• <code>show ipv6 rip</code> – Displays IPv6 Local RIB and routing protocol information.• <code>redistribute</code> – Enables or disables redistribution of direct, static, and OSPF routes into RIPv6.

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- **redistribute isis** – Enables or disables redistribution of ISIS routes into RIP6.
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32.3 ipv6 split-horizon

Command Objective	<p>This command enables the split horizon updates for the RIPv6 which prevents the routing loops in distance routing protocol, by prohibiting the router from advertising a route back onto the interface. The split horizon updates are applied in the response packets sent.</p> <p>The no form of the command disables the split horizon updates.</p>
Syntax	<pre>ipv6 split-horizon</pre> <pre>no ipv6 split-horizon</pre>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	Split horizon with poison reverse is enabled.
Note:	<ul style="list-style-type: none">• The split horizon updates can be configured, only if the IPv6 processing is enabled.• The configuration done is applied for all VLAN interfaces and router ports, in which RIPv6 processing is enabled.
Example	<pre>SEFOS (config-if)# ipv6 split-horizon</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 enable – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.• show ipv6 rip – Displays IPv6 Local RIB and routing protocol information.

32.4 ipv6 rip enable

Command Objective	This command enables RIPv6 routing process on a VLAN interface or router port. The no form of the command disables the RIPv6 routing process.
Syntax	<code>ipv6 rip enable</code> <code>no ipv6 rip</code>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	The RIPv6 routing process can be configured, only if the IPv6 processing is enabled.
Example	<code>SEFOS (config-if)# ipv6 rip enable</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 enable</code> – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.• <code>show ipv6 rip</code> – Displays IPv6 Local RIB and routing protocol information.• <code>show ipv6 rip stats</code> - Displays all the interface statistics-related information.• <code>show ipv6 rip filter</code> - Displays the details of the Advfilter type table.• <code>show ipv6 peer-table-status</code> – Displays the status of the peers filter.• <code>show ipv6 peer-trig-update-interval</code> – Displays the delayed triggered time interval.

32.5 ipv6 rip enable - name

Command Objective	<p>This command enables specified RIPv6 routing process on a VLAN interface or router port.</p> <p>The no form of the command disables the specified RIPv6 routing process.</p> <p>This command is a complete standardized implementation of the existing command and operates similar to the command <code>ipv6 rip enable</code>.</p>
Syntax	<pre>ipv6 rip <name> enable</pre> <pre>no ipv6 rip <name> enable</pre>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
<u>Note:</u>	The RIPv6 routing process can be configured, only if the IPv6 processing is enabled.
Example	<pre>SEFOS (config-if)# ipv6 rip rip1 enable</pre> <p>For RIPv6, process name is not supported</p>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 enable</code> – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.• <code>show ipv6 rip</code> – Displays IPv6 Local RIB and routing protocol information.• <code>show ipv6 rip stats</code> - Displays all the interface statistics-related information.• <code>show ipv6 rip filter</code> - Displays the details of the and Advfilter type table.• <code>show ipv6 peer-table-status</code> – Displays the status of the peers filter.• <code>show ipv6 peer-trig-update-interval</code> – Displays the delayed triggered time interval.

32.6 ipv6 poison reverse

Command Objective	This command enables poison reverse, which informs all routers that the path back to the originating node for a particular packet has an infinite metric. It will advertise that same route out of that same interface, to that same neighbor. The poison reverse algorithm is applied in the response packets sent.
Syntax	<code>ipv6 poison reverse</code>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Default	Poison reverse algorithm is enabled.
<u>Note:</u>	The poison reverse algorithm can be configured, only if the IPv6 processing is enabled.
Example	<code>SEFOS (config-if)# ipv6 poison reverse</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 enable</code> – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.• <code>show ipv6 rip</code> – Displays IPv6 Local RIB and routing protocol information.

32.7 ipv6 rip default-information originate

Command Objective This command configures handling of default route origination. This command originates a default IPv6 route into RIP and also forces the advertisement of the route in router updates sent on the interface. The advertisement of the route occurs regardless of whether the route is present in the IPv6 routing table or not.

The routing process ignores all default routes received on any interface, after originating the IPv6 default route out of any interface to avoid routing loops.

The no form of the command disables handling of default route origination.

Syntax `ipv6 rip default-information originate`

`no ipv6 rip default-information`

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Note: The default route origination can be configured only if the IPv6 processing is enabled.

Example `SEFOS (config-if)# ipv6 rip default-information originate`

Related Command(s)

- `ipv6 enable` – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.

32.8 ipv6 rip default-information - originate | only

Command Objective This command originates the IPv6 default route into the specified RIP routing process updates, sent from the specified interface. The advertisement of the route in the process updates occurs regardless of whether the route is present in the IPv6 routing table or not.

This command is a complete standardized implementation of the existing command and operates similar to the command `ipv6 rip default-information originate`.

The routing process ignores all default routes received on any interface, after originating the IPv6 default route out of any interface to avoid routing loops.

Syntax `ipv6 rip <process-name> default-information { originate | only } [metric <value>]`

Parameter Description

- **<process-name>** - Configures the RIPv6 process name for which the IPv6 default route should be originated. The name identifies a specific IPv6 RIP routing process and enables the router to run multiple segregated RIP processes on the same router. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported. The value entered is ignored during the command execution.
- **originate** - Advertises the IPv6 default route in addition to all other routes in the updates sent from the interface.
- **only** - Advertises the IPv6 default route, while suppressing all other routes in the updates sent from the interface. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.
- **metric <value>** - Configures the `metric value` keyword and argument, which allow more flexibility in topologies with multiple RIP routers on a LAN, and redistribute the routes. This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.

Mode Interface Configuration Mode (VLAN Interface / Router port)

Package Enterprise and Metro_E

Note: The default route origination can be configured only if the IPv6 processing is enabled.

Example `SEFOS (config-if)# ipv6 rip pname1 default-information only`

For RIP6, process name is not supported

metric | only are not supported

Related Command(s)

- **ipv6 enable** – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.
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32.9 ipv6 rip metric-offset

Command Objective	This command sets the IPv6 RIP metric for an interface and adjusts default metric increment. The configured metric value is added before the received IPv6 RIP route prior to insertion of the route into the routing table. Therefore, increasing the IPv6 RIP metric offset of an interface increases the metric value of IPv6 RIP routes received over the interface. The value of the metric offset integer ranges between 1 and 15.
Syntax	<code>ipv6 rip metric-offset <integer (1-15)></code>
Mode	Interface Configuration Mode (VLAN Interface / Router port)
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command is used in conjunction with the redistribute command to cause the current routing protocol to use the same metric value for all redistributed routes.• The maximum metric that RIP can advertise is 16, and a metric of 16 denotes a route that is unreachable.• The metric offset can be configured, only if the IPv6 processing is enabled.
Example	<code>SEFOS (config-if)# ipv6 rip metric-offset 3</code>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 enable</code> – Enables IPv6 processing on VLAN interface or switch port that is not configured with an explicit IPv6 address.

32.10 redistribute

Command Objective	<p>This command enables redistribution of direct, static, and OSPF routes into RIP6. When enabled, the routes from the specified protocols will be imported into RIP.</p> <p>The no form of the command disables redistribution of direct, static, and OSPF routes into RIP6. When disabled, the routes learned from the specified protocols will be removed from RIP and no route will be either distributed to, or imported.</p>
Syntax	<pre>redistribute { static connected ospf } [metric <integer(0-16)>] [route-map <string(20)>] no redistribute {static connected ospf} [route-map <string(20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• static - Redistributes statically configured routes into RIPv6 process.• connected - Redistributes the connected routes into RIPv6 process.• ospf - Redistributes the OSPF routes into RIPv6 process.• metric<integer(0-16)> - Configures the metric to be used for the imported routes from RTM6. If 0, then the metric value from the RTM6 will be used. This value ranges from 1 to 16.• route-map<string(20)> - Specifies the name of the route-map in the list of route-maps. This value is a string with the maximum size 20.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
	<p><u>Note:</u></p> <ul style="list-style-type: none">• A route must be advertised with a metric of value 15 or less, as the RIP router always adds an interface cost (default 1) onto the metric of the received route. This makes the metric 16, which denotes that the route is unreachable.
Default	<p>By default, route redistribution is enabled.</p> <p>Metric - 0</p>
Example	<pre>SEFOS (config-router)# redistribute static metric 6</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 router rip - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.

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- **show ipv6 rip** – Displays IPv6 Local RIB and routing protocol information.
-

32.11 redistribute-isis

Command Objective	<p>This command enables redistribution of ISIS routes into RIP. When enabled, the routes from ISIS will be imported into RIP.</p> <p>The no form of the command disables redistribution of ISIS routes into RIP. When disabled, the routes learned from ISIS will be removed from RIP.</p>
Syntax	<pre>redistribute { isis } [{level-1 level-2 level-1-2}] metric <integer(0-16)> [route-map <string(20)>] no redistribute { isis } [{level-1 level-2 level-1-2}] [route-map <string(20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• isis - Specifies that routes from ISIS can be redistributed into RIP.• level-1 - Specifies that ISIS Level-1 routes can be redistributed into RIP.• level-2 - Specifies that ISIS Level-2 routes can be redistributed into RIP.• level-1-2 - Specifies that ISIS Level-1-2 routes can be redistributed into RIP.• route-map<string(20)> - Specifies the name of the route-map in the list of route-maps. This value is a string with the maximum size 20.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• A route must be advertised with a metric of value 15 or less, as the RIP router always adds an interface cost (default 1) onto the metric of the received route. This makes the metric 16, which denotes that the route is unreachable.
Default	<p>By default, route redistribution is enabled.</p> <p>Metric - 0</p>
Example	<pre>SEFOS (config-router)# redistribute isis level-1 metric 2 route-map routel</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 router rip - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.• show ipv6 rip - Displays IPv6 Local RIB and routing protocol

information.

32.12 redistribute bgp

Command Objective This command redistributes IPv6 prefix from BGP protocol into RIPv6. This command controls redistribution of BGP routes into RIP.

This command has been included to adhere to the Industry Standard CLI syntax. This command is currently not supported (that is, BGP redistribution is not supported).

Syntax `redistribute bgp <as-no> [metric <integer (0-16)>]`

Parameter Description

- `<as-no>` - Configures the autonomous system number that identifies the BGP router to other routers and tags the routing information passed along. This value ranges from 1 to 65535.
- `metric<integer (0-16)>` - Configures the metric to be used for the BGP redistributed routes. This value ranges from 0 to 16.

Mode RIPv6 Router Configuration Mode

Package Enterprise and Metro_E

Note: A route must be advertised with a metric of value 15 or less, as the RIP router always adds an interface cost (default 1) onto the metric of the received route. This makes the metric 16, which denotes that the route is unreachable.

Example `SEFOS (config-router)# redistribute bgp 10 metric 10`

Related Command(s)

- `ipv6 router rip` - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.
- `show ipv6 rip` - Displays IPv6 Local RIB and routing protocol information.

32.13 distribute prefix

Command Objective	<p>This command enables filter network in routing updates which are sent or received.</p> <p>The no form of the command disables the filter network in routing updates which are sent or received.</p>
Syntax	<pre>distribute prefix <ip6_addr> {in out} no distribute prefix <ip6_addr> {in out}</pre>
Parameter Description	<ul style="list-style-type: none">• <ip6_addr> - Configures the IPv6 address of the filter network.• in - Applies the configured filter network in routing updates which are received. Input distribute lists control route reception. Input filtering is applied to advertisements received from neighbors. Only those routes that pass input filtering are inserted into the RIP local routing table and become candidates for insertion into the IPv6 routing table.• out - Applies the configured filter network in routing updates which are sent out. Output distribute lists control route advertisement. Output filtering is applied to route advertisements sent to neighbors. Only those routes passing output filtering will be advertised.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS (config-router)# distribute prefix fe80::208:2ff:fe02:408 in</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 router rip - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process• show ipv6 rip filter – Displays peer and Advfilter table.• ipv6 rip peer status - Sets the peer list to allow or deny.• show ipv6 peer-table-status – Displays the status of the peers filter.

32.14 distribute-list route-map

Command Objective	<p>This command enables route-map filtering for inbound or outbound routes and defines the conditions for distributing the routes from one routing protocol to another.</p> <p>The route-map filtering already enabled for inbound or outbound routes should be disabled, if another route-map should be enabled for inbound or outbound routes.</p> <p>The no form of the command disables route-map filtering for inbound or outbound routes.</p>
Syntax	<pre>distribute-list route-map <name(1-20)> {in out} no distribute-list route-map <name(1-20)> {in out}</pre>
Parameter Description	<ul style="list-style-type: none">• <name (1-20) - Configures the name of the existing route-map for which filtering should be enabled. This value is a string whose maximum size is 20.• in - Sets route-map filtering for the inbound routes.• out - Sets route-map filtering for the outbound routes.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS (config-router)# distribute-list route-map rmap-test in</pre>
Related Command(s)	<ul style="list-style-type: none">• ipv6 router rip - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.

32.15 distance

Command Objective	<p>This command enables the administrative distance (that is, the metric to reach destination) of the routing protocol and sets the administrative distance value. The distance value ranges between 1 and 255.</p> <p>This distance value will not be used for distribute list. The administrative distance can be enabled for only one route-map. The distance should be disabled for the already assigned route-map, if distance needs to be enabled for another route-map.</p> <p>The no form of the command disables the administrative distance.</p>
Syntax	<pre>distance <1-255> [route-map <name (1-20)>] no distance [route-map <name (1-20)>]</pre>
Parameter Description	<ul style="list-style-type: none">• <code>route-map <name (1-20)></code> - Configures the name of the existing route-map for which the distance value should be enabled and set. This value is a string whose maximum size is 20.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Default	120 (Represents RIP route)
Example	<pre>SEFOS (config-router)# distance 10 route-map rmap-test</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 router rip</code> - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.• <code>show ipv6 rip</code> - Displays IPv6 Local RIB and routing protocol information.

32.16 debug ipv6 rip

Command Objective	<p>This command sets debug level for RIPv6 module.</p> <p>The no form of the command disables debug level for RIPv6 module.</p> <p>This command allows combination of debug levels to be configured (that is, more than one level of trace can be enabled or disabled). The debug levels are configured one after the other and not in single execution of the command.</p>
Syntax	<pre>debug ipv6 rip { all data control } no debug ipv6 rip</pre>
Parameter Description	<ul style="list-style-type: none">• all - Generates debug messages for all traces.• data - Generates debug messages for data path traces.• control - Generates debug messages for control plane traces.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Default	Debug level is disabled.
Example	<pre>SEFOS# debug ipv6 rip all</pre>

32.17 show ipv6 rip

Command Objective	This command displays information in current IPv6 Local RIB and about RIPv6 routing protocol.
Syntax	<code>show ipv6 rip [database]</code>
Parameter Description	<ul style="list-style-type: none">• <code>database</code> - Displays the details of the entries in the RIP IPv6 routing table database.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Note:	The command displays the RIPv6 details only if the RIPv6 routing process is enabled in any one of the VLAN interface or router port.
Example	<pre>SEFOS# show ipv6 rip database RIP local RIB 4444::/64, metric 10, local vlan1/::, expires in 180 secs 5555::/64, metric 10, local vlan2/::, expires in 180 secs 6666::/64, metric 7, static tunnel0/::, expires in 180 secs SEFOS# show ipv6 rip RIP port 521, multicast-group ff02::9,Maximum paths is 16 Updates every 30 seconds; expire after 180 Garbage Collect after 120 seconds Poison Reverse is on Interface: Redistribution: Routes Redistribution is enabled.</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 split-horizon</code> – Enables the split horizon updates for the RIPv6• <code>ipv6 rip enable / ipv6 rip enable - name</code> – Enables RIPv6 routing process on a VLAN interface or router port.• <code>ipv6 poison reverse</code> – Enables poison reverse.

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- **ipv6 rip default-information originate** – Configures handling of default route originate.
 - **ipv6 rip default-information - originate | only-**
Originates the IPv6 default route into the specified RIP routing process updates sent from the specified interface.
 - **ipv6 rip metric-offset** – Adjusts default metric increment.
 - **redistribute** – Enables or disables redistribution of direct, static, and OSPF routes into RIPv6.
 - **redistribute** – Enables or disables redistribution of ISIS routes into RIPv6.
 - **distribute prefix** – Enables filter network in routing updates sent or received.
 - **debug ipv6 rip** – Enables IPv6 RIP routing protocol debugging.
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32.18 show ipv6 rip stats

Command Objective	This command displays statistics-related information (such as number of requests received) for all VLAN interfaces or router ports in which the RIPv6 routing process is enabled.
Syntax	show ipv6 rip stats
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ipv6 rip stats Interface Index vlan1 ***** *** Rcvd : Messages 0 Requests 0 Responses 0 UnknownComnds 0 OtherVer 0 Discards 0 Sent : Messages 1 Requests 1 Responses 0 Trigger Updates 0</pre>
Related Command(s)	<ul style="list-style-type: none">ipv6 rip enable / ipv6 rip enable - name – Enables RIPv6 routing process on a VLAN interface or router port.

32.19 show ipv6 rip filter

Command Objective	This command displays the filtering details (such as filter address) available in the Advfilter type table.
Syntax	<code>show ipv6 rip filter</code>
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ipv6 rip filter Filter Address FilterType ***** fe80::200:ff:febb:e01 IN fe80::200:ff:fecc:102 IN 3333::1111 OUT</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>distribute prefix</code> – Enables filter network in routing updates sent or received.• <code>ipv6 rip enable / ipv6 rip enable - name</code> – Enables RIPv6 routing process on a VLAN interface or router port.

32.20 ipv6 rip peer status

Command Objective	This command sets the flag to enable filtering of routes in the RIPv6 responses to be advertised.
Syntax	<code>ipv6 rip peer status { disable enable }</code>
Parameter Description	<ul style="list-style-type: none">• disable - Sets the peer list to deny. This disables the filter which implies that all the entries in the response message are going to be advertised.• enable - Sets the peer list to allow. This enables filtering of the corresponding routing entries in the response, match the Advertising Filter list.
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Default	disable
Example	<code>SEFOS (config-router) # ipv6 rip peer status enable</code>
Related Command(s) (s)	<ul style="list-style-type: none">• <code>ipv6 router rip</code> - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.• <code>show ipv6 peer-table-status</code> - Displays the status of the peers filter.

32.21 ipv6 peer triggered-updated-interval

Command Objective	This command configures the time interval in seconds by which further triggered updates are delayed after one triggered update is sent. This value ranges from 1 to 10.
Syntax	<code>ipv6 rip peer triggered-updated-interval <seconds (1-10)></code>
Mode	RIPv6 Router Configuration Mode
Package	Enterprise and Metro_E
Default	5
Example	<pre>SEFOS (config-router) # ipv6 rip peer triggered-updated-interval 1</pre>
Related Command(s) (s)	<ul style="list-style-type: none">• <code>ipv6 router rip</code> - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.• <code>show ipv6 peer-trig-update-interval</code> – Displays the delayed triggered time interval.

32.22 show ipv6 rip peer-table-status

Command Objective	This command displays the status of the peer filter table.
Syntax	<code>show ipv6 rip peer-table-status</code>
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ipv6 rip peer-table-status Peer Filter Status : Enabled</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 rip enable / ipv6 rip enable - name</code> – Enables RIPv6 routing process on a VLAN interface or router port.• <code>ipv6 router rip</code> - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.• <code>distribute prefix</code> - Enables filter network in routing updates which are sent or received.• <code>ipv6 rip peer status</code> – Set the peer list to allow or deny.

32.23 show ipv6 rip peer-trig-update-interval

Command Objective	This command displays the delayed, triggered time interval.
Syntax	<code>show ipv6 rip peer-trig-update-interval</code>
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ipv6 rip peer-trig-update-interval Triggered Delay Time : 5</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>ipv6 peer triggered-updated-interval</code> – Configures the time interval, in seconds, by which further triggered updates are delayed after one triggered update is sent.• <code>ipv6 router rip</code> - Enables RIPv6 routing process and enters into the router configuration mode for the RIPv6 routing process.

CHAPTER 33

BGP

The BGP (Border Gateway Protocol) is an inter-autonomous system routing protocol. An autonomous system is a network or group of networks under a common administration and with common routing policies. BGP is a protocol for exchanging routing information between gateway hosts (each with its own router) in a network of autonomous systems and is used between Internet Service Providers (ISPs). BGP is often the protocol used between gateway hosts on the Internet. The routing table contains a list of known routers, the addresses they can reach, and a cost metric associated with the path to each router so that the best available route is chosen.

Hosts using BGP communicate using the Transmission Control Protocol (TCP) and send updated router table information only when one host has detected a change. BGP is commonly used within and between Internet Service Providers (ISPs).

33.1 router bgp

Command Objective	This command configures the AS (Autonomous System) number of the BGP Speaker and enters into BGP router configuration mode. The no form of the command configures the AS number of the BGP Speaker to its default value.
Note:	If this value is already configured to a non-zero value, it must be reset to zero (using no form of the command) before reconfiguring. The no router bgp or no router bgp vrf default command deletes all the BGP configurations done on all VRs.
Syntax	<pre>router bgp <AS no> [vrf <vrf-name>] no router bgp [vrf <string (32)>]</pre>
Parameter Description	<ul style="list-style-type: none">vrf <vrf-name> - Configures the AS (Autonomous System) number of the BGP Speaker for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32. <hr/>Note: When VRF is not specified, the configurations are done for the default VRF.<AS no> - Configures the AS (Autonomous System) number of the BGP Speaker and enters into BGP router configuration mode. The AS number identifies the BGP router to other routers and tags the routing information passed along. This command also allows you to set up a distributed routing core that automatically guarantees the loop-free exchange of routing information between autonomous systems. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535. <hr/>Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535. Note: When four-bit-asn is disabled, this value ranges from 1 to 65535 or between 0.1 and 0.65535. Note: When bgp asnotation is enabled, the AS number of the BGP speaker is displayed in the range 0.1 to 65535.65535.
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Default	0
Example	<pre>SEFOS(config)# router bgp 100</pre>
Related Command(s)	<ul style="list-style-type: none">as-num - Sets the autonomous number for the router.

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- **ip address** - Sets the IP address for an interface.
 - **router-id** - Sets the router ID's address for the router.
 - **ip bgp dampening** – Configures the Dampening parameters.
 - **ip bgp overlap-policy** – Configures the Overlap Route policy for the BGP Speaker.
 - **ip bgp synchronization / synchronization** – Enables synchronization between BGP and IGP.
 - **bgp router-id** – Configures the BGP Identifier of the BGP Speaker.
 - **bgp default local-preference** – Configures the Default Local Preference value.
 - **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
 - **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - ebgp-multihop** – Enables BGP to establish connection with external peers.
 - **neighbor - next-hop-self** – Enables BGP to send itself as the next hop for advertised routes.
 - **neighbor - interval** – Configures neighbor interval.
 - **neighbor - timers**– Configures neighbor KeepAlive Time and Hold Time intervals.
 - **neighbor - shutdown** – Disables the peer session.
 - **neighbor - update-source** - Configures the source address for routing updates and for TCP connection establishment with a peer.
 - **neighbor - gateway** - Configures gateway router's address that will be used as nexthop in the routes advertised to the peer.
 - **neighbor - network-address** - Configures peer's remote IPv6 network address for IPv4 peer and peer's remote IPv4 network address for IPv6 peer.
 - **neighbor - default - originate** - Enables advertisement of the default route to the peer.
 - **neighbor - send-community** – Enables advertisement of community attributes (standard or extended) to peer.
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- **neighbor - capability** - Enables the specific BGP capability to be advertised and received from the peer.
 - **neighbor - delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor - damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor - maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - allow-autostop** - Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - connect-retrycount** - Sets the retry count for the BGP peer.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **bgp nonbgproute-advrt** - Controls the advertisement of Non-BGP routes.
 - **no ip bgp overlap-policy** - Resets the Overlap route policy to default.
 - **redistribute** - Configures the protocol from which the routes have to be redistributed into BGP.
 - **redistribute - isis** - Controls redistribution of ISIS routes into BGP.
 - **bgp always-compare-med** - Enables the comparison of MED for routes received from different autonomous systems.
 - **default-metric** - Configures the Default IGP Metric value.
 - **bgp med** - Configures an entry in MED table.
 - **bgp local-preference** - Configures an entry in local preference table.
 - **bgp update-filter** - Configures an entry in update filter table.
 - **aggregate-address index** - Configures an entry in aggregate table.
 - **bgp cluster-id** - Configures the Cluster ID for route reflector.
 - **bgp client-to-client reflection** - Configures the route reflector to support route reflection to client peers.
 - **neighbor - route-reflector-client** - Configures the peer as
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client of the route reflector.

- **bgp comm-route** – Configures an entry in additive or delete-community table.
 - **bgp comm-filter** – Allows or filters the community attribute while receiving or advertising.
 - **bgp comm-policy** – Configures the community attribute advertisement policy for specific destination.
 - **bgp ecomm-route** – Configures an entry in additive or delete-extended community table.
 - **bgp ecomm-filter** – Allows or filters the extended community attribute while receiving or advertising.
 - **bgp ecomm-policy** – Configures the extended community attribute advertisement policy for specific destination.
 - **bgp confederation identifier** – Specifies the BGP confederation identifier.
 - **bgp confederation peers** – Configures the ASs that belong to the confederation.
 - **bgp bestpath med confed** – Enables MED comparison among paths learned from confederation peers.
 - **neighbor - password** – Configures the password for TCP-MD5 authentication with peer.
 - **bgp graceful-restart** - Enables the graceful restart capability.
 - **bgp update-delay** - Configures the selection deferral time interval.
 - **restart-support** - Enables the graceful restart support.
 - **restart-reason** - Configures the reason for BGP graceful restart.
 - **distribute-list route-map** - Enables route-map filtering for inbound or outbound routes.
 - **distance** - Enables the administrative distance of the routing protocol and sets the administrative distance value.
 - **debug ip bgp** – Configures the Trace levels.
 - **bgp trap** – Enables or disables the BGP trap notification.
 - **show bgp-version** – Displays the BGP Version information.
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- **show ip bgp** – Displays the BGP-related information.
 - **show ip bgp community - routes**– Displays routes that belong to specified BGP communities.
 - **show ip bgp extcommunity - routes** – Displays routes that belong to specified BGP extended-communities.
 - **show ip bgp summary** – Displays the status of all BGP4 connections.
 - **show ip bgp filters** – Displays the contents of filter table.
 - **show ip bgp aggregate** – Displays the contents of Aggregate table.
 - **show ip bgp med** – Displays the contents of MED table.
 - **show ip bgp dampening** – Displays the contents of Dampening table.
 - **show ip bgp local-pref** – Displays the contents of Local Preference table.
 - **show ip bgp timers** – Displays the value of BGP timers.
 - **show ip bgp info** – Displays the general information about BGP protocol.
 - **show ip bgp rfl info** – Displays information about RFL feature.
 - **show ip bgp confed info** – Displays information about confederation feature.
 - **show ip bgp community** – Displays the contents of community tables.
 - **show ip bgp extcommunity** – Displays the contents of ext-community tables.
 - **nexthop processing-interval** - Configures the interval at which next hops are monitored for reachability.
 - **redistribute ospf** - Configures the OSPF protocol from which the routes are redistributed into BGP.
 - **show ip bgp - tcp-ao mkt summary** - Displays the BGP-related TCP-AO MKT information.
 - **show bgp ipv6 tcp-ao neighbor** - Displays the BGP(v6) neighbor TCP-AO related information.
 - **tcp-ao mkt key-id - receive-key-id** - Creates a TCP-AO MKT in the BGP instance.
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- **neighbor - tcp-ao mkt** - Associates a TCP-AO MKT to the BGP peer.
 - **neighbor - tcp-ao** - Sets BGP peer TCP-AO configurations.
 - **ip bgp four-byte-asn** - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
 - **bgp asnotation dot** - Changes the output format of BGP ASNs from asplain to asdot notation.
 - **neighbor fall-over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **address-family vpnv4** - Enables configuration of the session that carries standard vpnv4 address prefixes.
 - **label-allocation-mode** - Configures label allocation policy.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
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33.2 ip bgp dampening

Command Objective This command configures the dampening parameters, changes various BGP route dampening factors, and also enables BGP dampening in the system or the specified VRF instance when none of the RFD parameters are specified.

The no form of the command disables the dampening feature in the system or in the specified VRF instance. When the RFD parameter options are not specified in the no form of the command, it disables the dampening features and does not reset the values related to RFD. But when the RFD parameter options are specified in the no form of the command, the parameters are reset to its default values.

Note: The RFD parameters configured can be viewed using the `show ip bgp dampening` command even when RFD is disabled.

Syntax

```
ip bgp dampening [vrf <vrf-name>] [HalfLife-Time <integer(600-2700)>] [Reuse-Value <integer(100-1999)>] [Suppress-Value <integer(2000-3999)>] [Max-Suppress-Time <integer(1800-10800)>] [-s Decay-Granularity <integer(1-10800)>] [Reuse-Granularity <integer(15-10800)>] [Reuse-Array-Size <integer(256-65535)>]
```

```
no ip bgp dampening [vrf <vrf-name>] [HalfLife-Time [Reuse-Value [Suppress-Value [Max-Suppress-Time]]]] [-s Decay-Granularity [Reuse-Granularity [Reuse-Array-Size]]]
```

Parameter Description

- **vrf <vrf-name>** - Configures the dampening parameters for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.

Note: When VRF is not specified the configurations are done for the default VRF.

- **HalfLife-Time<integer(600-2700)>** - Configures the time (in seconds) after which a penalty is decreased by half after the half-life period. Once a route has been assigned a penalty, the penalty is decreased for every 5 seconds. BGP's route flap damping algorithm calculates penalty for each route. This penalty increases by a fixed value when a flap occurs, and decreases exponentially when the route is stable. This value ranges from 600 to 2700.
- **Reuse Value integer(100-1999)>** - Configures the reuse value. If the penalty for a flapping route falls below this value, the route is reused. The unsuppressing of routes occurs at 10-second increments. This value ranges from 100 to 1999.

Note: Reuse value can be configured only if the HalfLife Time value is set.

- **Suppress Value<integer(2000-3999)>** - Configures the suppress
-

value. The route is suppressed if the penalty associated with the route exceeds this value. This value ranges from 2000 to 3999.

Note: Suppress value can be configured only if the HalfLife Time and Reuse value are set.

- **Max-Suppress Time<integer (1800-10800)** - Configures the maximum time (in seconds) a route can be suppressed. This value ranges from 1800 to 10800. Max-Suppress Time can be configured only if the HalfLife Time, Reuse Value, and Suppress Value are set.
- **-s Decay Granularity<integer (1-10800)>** - Configures the time granularity in seconds used to perform all decay computations. This value ranges from 1 to 10800.
- **Reuse Granularity<integer (15-10800)>** - Configures the time interval between evaluations of the reuse-lists. Each reuse list corresponds to an additional time increment. This value ranges from 15 to 10800.
- **Reuse Array Size<integer (256-65535)>** - Configures the size of reuse index arrays. This size determines the accuracy with which suppressed routes can be placed within the set of reuse lists when suppressed for a long time. This value ranges from 256 to 65535.

Mode Global Configuration Mode

Package Enterprise and Metro_E

Default

- HalfLife-Time - 900 seconds
- Reuse Value - 750
- Suppress Value - 2000
- Max-Suppress Time - 3600 seconds
- Decay Granularity - 1 second
- Reuse Granularity - 15
- Reuse Array Size - 1024

Note: This command executes only if BGP Speaker Local AS number is configured.

Example

```
SEFOS(config)# ip bgp dampening HalfLife-Time 1000 reuse-  
Value 1998 Suppress-Value 2000 -s Decay-Granularity 1  
reuse-Granularity 135 reuse-Array-Size 257
```

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **bgp dampening** – Sets the BGP dampening parameters.
 - **show ip bgp dampening** – Displays the contents of Dampening table.
-

33.3 bgp dampening

Command Objective This command configures the dampening parameters or changes various BGP route dampening factors. The arguments `half-life`, `reuse`, `suppress`, and `max-suppress-time` are position-dependent. Hence, if any of them are used, they must all be specified.

The no form of the command disables the BGP dampening feature and does not reset the other configured RFD parameters.

Note: The RFD parameters configured can be viewed by using the `show ip bgp dampening` command even when RFD is disabled.

This command is a complete standardized implementation of the existing command and operates similar to the command `ip bgp dampening`.

Syntax

```
bgp dampening <HalfLife-Time (600-2700)> <Reuse-Value (100-10800)> <Suppress-Value (2000-3999)> <Max-Suppress-Time (1800-10800)>
```

```
no bgp dampening
```

Parameter Description

- **<HalfLife-Time (600-2700)>** - Configures the time (in seconds) after which a penalty is decreased by half. Once a route has been assigned a penalty, the penalty is decreased for every 5 seconds. BGP's route flap damping algorithm calculates penalty for each route. This penalty increases by a fixed value when a flap occurs, and decreases exponentially when the route is stable. This value ranges from 600 to 2700.
- **<Reuse Value (100-10800)>** - Configures the reuse value. If the penalty for a flapping route falls below this value, the route is reused. The unsuppressing of routes occurs at 10-second increments. This value ranges from 100 to 10800.

Note: Reuse value can be configured only if the HalfLife Time value is set.

- **<Suppress Value (2000-3999)>** - Configures the suppress value. The route is suppressed if the penalty associated with the route exceeds this value. This value ranges from 2000 to 3999.

Note: Suppress value can be configured only if the HalfLife Time and Reuse value are set.

- **<Max-Suppress Time (1800-10800)>** - Configures the maximum time (in seconds) a route can be suppressed. This value ranges from 1800 to 10800.

Note: Max-Suppress Time can be configured only if the

HalfLife Time, Reuse Value and Suppress Value are set.

Mode BGP Router Configuration Mode

Package Enterprise and Metro_E

- Default**
- HalfLife-Time - 900 seconds
 - Reuse Value - 750
 - Suppress Value - 2000
 - Max-Suppress Time - 3600 seconds
-

Example SEFOS(config-router)# `bgp dampening 1000 300 2000 5000`

- Related Command(s)**
- `router bgp` – Sets the AS number of the BGP Speaker.
 - `ip bgp dampening` – Sets the BGP dampening parameters.
 - `show ip bgp dampening` – Displays the contents of Dampening table.
-

33.4 ip bgp overlap-policy

Command Objective	<p>This command configures the BGP Speaker's policy for handling the overlapping routes.</p> <p>The no form of the command resets the Overlap route policy to its default value. By default, both less and more-specific routes are installed.</p>
Syntax	<pre>ip bgp overlap-policy [vrf <vrf-name>] {more-specific less-specific both} no ip bgp overlap-policy [vrf <vrf-name>]</pre>
Parameter Description	<ul style="list-style-type: none">• vrf <vrf-name> - Configures the BGP Speaker's policy for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• more-specific - Configures the Overlap Policy for BGP Speaker as more-specific. This implies that when an overlapping route is received, more-specific routes are installed in the RIB tree.• less-specific - Configures the Overlap Policy for BGP Speaker as less-specific. This implies that when an overlapping route is received, less-specific routes are installed in the RIB tree.• both - Configures the Overlap Policy for BGP Speaker as both. This implies that when an overlapping route is received, both more-specific and less-specific routes are installed in the RIB tree.
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Default	both
	<p><u>Note:</u> This command executes only if BGP Speaker Local AS number is configured and BGP Administrative status is DOWN.</p>
Example	<pre>SEFOS(config)# ip bgp overlap-policy more-specific</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• do shutdown ip bgp – Sets the BGP Speaker Global Admin status DOWN.• show ip bgp info – Displays the general information about BGP protocol.

33.5 default-information originate

Command Objective This command enables and controls redistribution of default routes of a protocol or network into the BGP and advertisement of the default route (0.0.0.0/0). The default route advertisement is possible only if the default route is present in the IP FDB or it is received from any peers.

The no form of the command disables redistribution and advertisement of the default route. The default routes are not redistributed into BGP.

Syntax `default-information originate [vrf <vrf-name>]`
`no default-information originate [vrf <vrf-name>]`

Parameter Description

- `vrf <vrf-name>` - Enables and controls redistribution and advertisement of default routes for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.

Mode Global Configuration Mode

Package Enterprise and Metro_E

Default Default Information Originate is disabled.

Note: This command executes only if BGP Speaker local AS number is configured.

Example `SEFOS(config)# default-information originate`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `show ip bgp info` - Displays the general information about BGP protocol.

33.6 ip bgp synchronization

Command Objective This command enables synchronization between Border Gateway Protocol (BGP) and Interior Gateway Protocol (IGP). BGP Speaker does not advertise a route to an external neighbor unless that route is local or exists in the IGP.

This command allows routers and access servers within an autonomous system to have the route before BGP makes it available to other autonomous systems.

The no form of the command disables synchronization between BGP and IGP.

Syntax

```
ip bgp synchronization [vrf <vrf-name>]

no ip bgp synchronization [vrf <vrf-name>]
```

Parameter Description **vrf <vrf-name>** - Enables synchronization between BGP and IGP for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.

Mode Global Configuration Mode

Package Enterprise and Metro_E

Default Synchronization between BGP and IGP is disabled.

Note: This command executes only if BGP Speaker local AS number is configured.

Example SEFOS(config)# ip bgp synchronization

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
- **synchronization** - Enables synchronization between Border Gateway Protocol (BGP) and Interior Gateway Protocol (IGP).
- **show ip bgp info** – Displays the general information about BGP protocol.

33.7 synchronization

Command Objective	<p>This command enables synchronization between Border Gateway Protocol (BGP) and Interior Gateway Protocol (IGP). BGP Speaker does not advertise a route to an external neighbor unless that route is local or exists in the IGP. This command allows routers and access servers within an autonomous system to have the route before BGP makes it available to other autonomous systems. The no form of the command disables synchronization between BGP and IGP.</p> <p>This command is a complete standardized implementation of the existing command and operates similar to the command <code>ip bgp synchronization</code>.</p>
Syntax	<pre>synchronization no synchronization</pre>
Mode	BGP Router Configuration Mode
Package	Enterprise and Metro_E
Default	The synchronization between the BGP and IGP is disabled.
Example	<pre>SEFOS(config-router) # synchronization</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>ip bgp synchronization</code> - Enables synchronization between Border Gateway Protocol (BGP) and Interior Gateway Protocol (IGP).• <code>show ip bgp info</code> – Displays the general information about BGP protocol.

33.8 bgp router-id

Command Objective	<p>This command configures fixed BGP router identifier for a BGP-speaking router. If loopback interface exists, the router ID is set to the highest address for loopback interface. Otherwise, it is set to the highest IP configured on the IP interfaces. Peering sessions will be reset if the router ID is changed. BGP router-id is a unique number associated with the BGP Speaker. This router-id is advertised to other peers and identifies the BGP Speaker uniquely. Administrator can set the router-id of BGP to any value. If router-id is changed, then all the active peer sessions will go DOWN and will be restarted with the new configured router-id.</p> <p>The no form of the command resets the BGP Identifier of the BGP speaker to its default value.</p>
Syntax	<pre>bgp router-id <bgp router id (ip-address)> no bgp router-id</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	The highest interface address is used as the router-id
Example	<pre>SEFOS(config-router)# bgp router-id 10.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>show ip bgp</code> – Displays the BGP-related information.• <code>show ip bgp summary</code> – Displays the status of all BGP4 connections.• <code>show bgp ipv6</code> - Displays the BGPv6-related information.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.9 bgp default local-preference

Command Objective	<p>This command configures the default local preference value that is to be sent in updates to internal peers. The preference is sent to all routers and access servers in the local autonomous system. This value ranges from 1 to 2147483647.</p> <p>The no form of the command resets the default local preference to its default value.</p>
Syntax	<pre>bgp default local-preference <Local Pref Value> no bgp default local-preference</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	100.
Example	<pre>SEFOS(config-router)# bgp default local-preference 150</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>show ip bgp info</code> – Displays the general information about BGP protocol.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.10 bgp default ipv4-unicast

Command Objective	<p>This command enables default routing to IPv4-unicast. By default the MP (Multi Protocol) IPv4 Unicast Address Family Capability is negotiated for a peer, when the peer is created. It will not be negotiated for a peer if the default routing configuration is reset. This command affects the negotiation of the MP IPv4 Unicast Address Family Capability for the peers newly created and will not affect the MP IPV4 Unicast negotiation status of the already existing peer.</p> <p>The no form of the command disables default routing to IPv4 unicast which implies that if a neighbor is created, then IPv4 unicast capability will not be negotiated unless IPv4 unicast capability is explicitly configured for that neighbor.</p>
Syntax	<pre>bgp default ipv4-unicast no bgp default ipv4-unicast</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	The default routing to IPv4-unicast is enabled.
Example	<pre>SEFOS(config-router)# bgp default ipv4-unicast</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.11 neighbor - remote-as

Command Objective This command creates a peer, initiates the connection to the peer, and adds an entry to the BGP or multiprotocol BGP neighbor table. This specifies a neighbor with an autonomous system number that identifies the neighbor as internal to the local autonomous system. Otherwise, the neighbor is considered as external. By default, neighbors that are defined using this command in router configuration mode exchange only unicast address prefixes.

The administrator can create a peer and set the peer AS number with this command. The configured peer AS number is compared with the AS number received in the open message and a peer session is initiated only if both the AS numbers match.

The no form of the command disables the peer session and deletes the peer information.

Syntax

```
neighbor <ip-address / peer-group-name> remote-as <AS no>
[allow-autostart [idlehold-time <integer(1-65535)>]]

no neighbor <random_str> [remote-as <AS no> [allow-
autostart]]
```

Parameter Description

- **<ip-address> / <random_str>** - Configures the BGP peer's remote IP address.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.

Note: The peer group has be configured prior to setting the remote-as number for the peer group.

- **remote-as<AS no(1-65535)>** - Configures the autonomous system number of the peer. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535.

Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 1 to 65535 or between 0.1 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.1 to 65535.65535.

- **allow-autostart** - Starts BGP session with the associated peer automatically. The peer session is automatically started in the IDLE state, after a BGP peer session is brought down either by Autostop or through reception of invalid BGP message. The BGP session is automatically

started after an interval specified by idle hold timer.

- **idlehold-time** <integer(1-65535)> - Configures the idle hold time. This specifies the length of time the BGP peer is held in the idle state prior to the next automatic restart. This value ranges from 1 to 65535.

Note: The IdleHoldTime can be configured only when the allow-autostart is enabled.
After each dampening, the value of the Idle Hold Time is doubled consecutively.

Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 remote-as 66</pre>
Default	<ul style="list-style-type: none">• allow-autostart is disabled• idlehold-time-60 seconds
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - activate – Enables default capabilities for the peer and restarts the connection to the peer if the negotiated capabilities change.• neighbor - peer-group – Creates a peer group.• neighbor - ebgp-multihop – Enables BGP to establish connection with external peers.• neighbor - next-hop-self – Enables BGP to send itself as the next hop for advertised routes.• neighbor - interval – Configures neighbor interval.• neighbor - timers – Configures neighbor KeepAlive Time and Hold Time intervals.• neighbor - shutdown – Disables the peer session.• neighbor - update-source - Configures the source address for routing updates and for TCP connection establishment with a peer.• neighbor - gateway - Configures gateway router's address that will be used as nexthop in the routes advertised to the peer.• neighbor - network-address - Configures peer's remote IPv6 network address for IPv4 peer and peer's remote IPv4 network address for IPv6 peer.• neighbor - default-originate - Enables advertisement of the

default route to the peer.

- **neighbor - send-community** – Enables advertisement of community attributes (standard or extended) to peer.
 - **neighbor - capability** - Enables the specific BGP capability to be advertised and received from the peer.
 - **neighbor - password** – Configures the password for TCP-MD5 authentication with peer.
 - **neighbor delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - allow-autostop** - Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **neighbor <ip-address> peer-group** – Adds the neighbor as a member of the specified peer group.
 - **neighbor - connect-retrycount** - Sets the retry count for the BGP peer.
 - **show ip bgp summary** – Displays the status of all BGP4 connections.
 - **show ip bgp** – Displays the BGP-related information.
 - **show ip bgp restart mode** - Displays the restart mode of the BGP router and neighbors.
 - **show ip bgp EndOfRIBMarkerStatus** - Displays the End_Of_RIB marker status of the BGP router and neighbors.
 - **show ip bgp restartexitreason** - Displays the restart exit reason of the BGP.
 - **show ip bgp restartsupport** - Displays the restart support of the BGP.
 - **show ip bgp restartstatus** - Displays the restart status of the BGP.
 - **show ip bgp timers** - Displays the value of BGP timers.
-

-
- **show ip bgp info** – Displays the general information about BGP protocol.
 - **show bgp ipv6** - Displays the BGPv6-related information.
 - **show ip bgp peer-group** – Displays information about the peer group.
 - **address-family** - Enters the router into the address-family router configuration mode.
 - **neighbor - tcp-ao** - Sets BGP peer TCP-AO configurations.
 - **neighbor - tcp-ao mkt** - Associates a TCP-AO MKT to the BGP peer.
 - **neighbor tcp-ao mkt - start-accept** - Configures the start accept value for the MKT for the specified BGP peer.
 - **neighbor tcp-ao mkt - stop-accept** - Configures the stop accept value for the MKT for the specified BGP peer.
 - **neighbor tcp-ao mkt - start-generate** - Configures the start generate value for the MKT for the specified BGP peer.
 - **neighbor tcp-ao mkt - stop-generate** - Configures the stop generate value for the MKT for the specified BGP peer.
 - **ip bgp four-byte-asn** - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
 - **bgp asnotation dot** - Changes the output format of BGP ASNs from asplain to asdot notation.
 - **show ip bgp - tcp-ao neighbor** - Displays the TCP-AO information for the specified BGP peer.
 - **show bgp ipv6 tcp-ao neighbor** - Displays the BGP(v6) neighbor TCP-AO related information.
 - **neighbor fall-over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
-

33.12 neighbor - activate

Command Objective	<p>This command enables the default capabilities associated with the address-family of the peer. If the capabilities negotiated with the peer are modified due to enabling of the default capabilities, the connection with the peer will be restarted. The default local capabilities for IPv4 peer are “IPv4 Unicast” and “Route Refresh”. The default local capabilities for IPv6 peer are “IPv6 Unicast” and “Route Refresh”</p> <p>The no form of the command resets the peer after disabling the default capabilities associated with the address-family of the peer.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> activate</pre> <pre>no neighbor <ip-address> activate</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Enables default capabilities for the specified BGP peer's IP address.• <peer-group-name> - Enables default capabilities for the specified BGP peer group.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 activate</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp – Displays the BGP-related information.• show ip bgp info – Displays the general information about BGP protocol.• show bgp ipv6 - Displays the BGPv6-related information.• show ip bgp peer-group – Displays information about the peer group.• address-family - Enters the router into the address-family router

configuration mode.

- **neighbor fall-over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **address-family vpnv4** - Enables configuration of the session that carries standard vpnv4 address prefixes.
-

33.13 neighbor - ebgp-multihop

Command Objective This command enables BGP to establish connection with external peers residing on networks that are not directly connected.

By default external BGP peers need to be directly connected. If external BGP peers are not connected directly, then EBGp-Multihop is enabled to initiate the connection with that external peer. If EBGp-Multihop is disabled and external BGP peers are indirectly connected, then BGP peer session will not be established.

The no form of the command disables the peer EBGp-Multihop feature.

Syntax `neighbor <ip-address | peer-group-name> ebgp-multihop ebgp-multihop [ttl]`

`no neighbor <ip-address | peer-group-name> ebgp-multihop`

Parameter Description

- **<ip-address>** - Configures the IP address of the BGP-speaking neighbor.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.
- **ttl** - Configures the maximum hop limit that is allowed for indirect BGP session. This value ranges from 1 to 255.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Default EBGp Multihop is disabled.

ttl-1

Note: This command executes only if Peer or Peer Group is created and Peer AS is configured.

Example `SEFOS(config-router)# neighbor 23.45.0.1 ebgp-multihop ttl 20`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
 - `neighbor - remote-as` – Creates a peer and initiates the connection to the peer.
 - `neighbor - peer-group` – Creates a peer group.
-

-
- **show ip bgp info** – Displays the general information about BGP protocol.
 - **show bgp ipv6** - Displays the BGPv6-related information.
 - **show ip bgp peer-group** – Displays information about the peer group.
 - **address-family** - Enters the router into the address-family router configuration mode.
-

33.14 neighbor - next-hop-self

Command Objective This command configures the router as the next hop for BGP-speaking neighbor or peer group and enables BGP to send itself as the next hop for advertised routes. Administrator uses this command to make BGP Speaker fill its address when advertising routes to the BGP peer. This command is useful in non-meshed networks where BGP neighbors may not have direct access to all other neighbors on the same IP subnet.

The no form of the command resets the peer nexthop-self status to default. The next hop will be generated based on the IP address of the destination and the present next hop in the route information.

Syntax

```
neighbor <ip-address | peer-group-name> next-hop-self
```

```
no neighbor <ip-address | peer-group-name> next-hop-self
```

Parameter Description

- **<ip-address>** - Configures the IP address of the BGP peer.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Note: This command executes only if Peer or Peer Group is created and Peer AS is configured.

Example SEFOS(config-router)# neighbor 23.45.0.1 next-hop-self

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
- **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
- **neighbor - peer-group** – Creates a peer group.
- **show ip bgp info** – Displays the general information about BGP protocol.
- **show bgp ipv6** - Displays the BGPv6-related information.
- **show ip bgp peer-group** – Displays information about the peer group.
- **address-family** - Enters the router into the address-family router

configuration mode.

- **address-family vpnv4** - Enables configuration of the session that carries standard vpnv4 address prefixes.
-

33.15 neighbor - interval

Command Objective This command configures the minimum neighbor interval between the sending of BGP routing updates.

The no form of the command configures the neighbor interval to its default value.

Syntax

```
neighbor <ip-address | peer-group-name> {advertisement-  
interval <seconds (1-65535)> | as-origination-interval  
<seconds (1-65535)> | connect-retry-interval <seconds (1-  
65535)>}
```

```
no neighbor <ip-address | peer-group-name> {advertisement-  
interval | as-origination-interval | connect-retry-  
interval}
```

Parameter Description

- **<ip-address>** - Configures the IP address of the BGP peer
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.
- **advertisement-interval<seconds (1-65535)>** - Configures the advertisement interval which is the time-interval (in seconds) for spacing advertisements of successive external route-updates to the same destination. This value ranges from 1 to 65535.
- **as-origination-interval<seconds (1-65535)>** - Configures the AS origination interval which is the time-interval (in seconds) for spacing successive route-updates originating within the same AS. This value ranges from 1 to 65535.
- **connect-retry-interval<seconds (1-65535)>** - Configures the time interval (in seconds) after which a transport connection with peer is re-initiated. This value ranges from 1 to 65535.

Mode

BGP Router Configuration Mode / Address Family Router Configuration Mode

Package

Enterprise and Metro_E

Default

- advertisement-interval - 30 seconds for EBGp Connections, 5 seconds for IBGP Connections
- as-origination-interval - 15 seconds
- connect-retry-interval - 30 seconds

Note: This command executes only if Peer or Peer Group is created and Peer AS is

configured.

Example

```
SEFOS(config-router)# neighbor 23.45.0.1 advertisement-  
interval 45
```

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
 - `neighbor - remote-as` – Creates a peer and initiates the connection to the peer.
 - `neighbor - peer-group` – Creates a peer group.
 - `show ip bgp` – Displays the BGP-related information.
 - `show ip bgp info` – Displays the general information about BGP protocol.
 - `show ip bgp timers` - Displays the value of BGP timers.
 - `show bgp ipv6` - Displays the BGPv6-related information.
 - `address-family` - Enters the router into the address-family router configuration mode.
-

33.16 neighbor - timers

Command Objective This command configures neighbor KeepAlive Time and Hold Time Intervals and sets the timers for a specific BGP peer or peer group.

The no form of the command configures the neighbor KeepAlive Time and Hold Time Intervals to its default value.

Syntax

```
neighbor <ip-address | peer-group-name> timers {keepalive  
< (1-21845) seconds> | holdtime < (3-65535) seconds> |  
delayopentime <(0-65535) seconds>}
```

```
no neighbor <ip-address | peer-group-name> timers  
{keepalive | holdtime| delayopentime}
```

Parameter Description

- **<ip-address>** - Configures the BGP peer or peer group IP address.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.
- **keepalive < (1-21845) seconds>** - Configures the keep-alive interval (in seconds) or frequency with keep-alive messages are sent to its peer for the peer session. The keep-alive value must always be less than the configured hold-time value. This value ranges from 1 to 21845.
- **holdtime < (3-65535) seconds>** - Configures the hold-time interval (in seconds) for the peer, which is sent in the OPEN message to the peer. This is the time interval in seconds for the Hold Time configured for BGP Speaker with the peer. The system declares a peer dead, after ensuring that keep-alive message is not received within this time period from the peer. This value ranges from 3 to 65535 seconds.
- **delayopentime <(0-65535) seconds>** - Configures the delay open time which is the amount of time that the BGP peer should delay in sending the OPEN message to the remote peer. This value ranges from 0 to 65535.

Note: The value 0 implies that the BGP peer can send an OPEN message without any delay to its neighbor.

Mode

BGP Router Configuration Mode / Address Family Router Configuration Mode

Package

Enterprise and Metro_E

Default

- keepalive - 30 seconds
- holdtime - 90 seconds
- Delayopentime - 0 seconds

Note: This command executes only if Peer or Peer Group is created and Peer AS is configured.

Example SEFOS(config-router)# neighbor 23.45.0.1 timers keepalive 40

- Related Command(s)**
- **router bgp** – Sets the AS number of the BGP Speaker.
 - **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
 - **neighbor - peer-group** – Creates a peer group.
 - **show ip bgp** – Displays the BGP-related information.
 - **show ip bgp info** – Displays the general information about BGP protocol.
 - **show ip bgp timers** - Displays the value of BGP timers.
 - **show bgp ipv6** - Displays the BGPv6-related information.
 - **address-family** - Enters the router into the address-family router configuration mode.
-

33.17 neighbor - shutdown

Command Objective	<p>This command disables the peer session and terminates any active session for the specified neighbor or peer group and removes all associated routing information. In the case of a peer group, a large number of peering sessions could be terminated suddenly.</p> <p>The no form of the command enables the peer session for the specified neighbor.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> shutdown</pre> <pre>no neighbor <ip-address peer-group-name> shutdown</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer's IP address.• <peer-group-name> - Configures a BGP peer group by using the <code>peer-group-name</code> argument. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 shutdown</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• neighbor - peer-group - Creates a peer group.• show ip bgp - Displays the BGP-related information.• show bgp ipv6 - Displays the BGPv6-related information.• show ip bgp peer-group - Displays information about the peer group.• address-family - Enters the router into the address-family router configuration mode.

33.18 neighbor - update-source

Command Objective	<p>This command configures the source-address for routing updates and allows BGP sessions to use any operational interface for TCP connection establishment with a peer.</p> <p>The no form of the command disables configured source-address for routing updates and for TCP connection establishment with a peer.</p>
Syntax	<pre>neighbor < ip-address > update-source <random_str> no neighbor < ip-address > update-source <random_str></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer's IP address• <random_str> - Configures the IP address to be used as source for routing updates and TCP connection establishment. This IP address can be any interface address.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	The source address is set as 0.0.0.0, and the TCP fills the source address of the TCP session.
Note:	This command executes only if peer is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 update-source 40.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> - Sets the AS number of the BGP Speaker.• <code>neighbor - remote-as</code> - Creates a peer and initiates the connection to the peer.• <code>show ip bgp</code> - Displays the BGP-related information.• <code>show bgp ipv6</code> - Displays the BGPv6-related information.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.19 neighbor – gateway

Command Objective	This command configures gateway router's address that will be used as nexthop in the routes advertised to the peer. This ensures that the traffic coming from this peer is routed through the gateway configured. The no form of the command resets the configured gateway router's address.
Syntax	<pre>neighbor < ip-address > gateway <random_str> no neighbor < ip-address > gateway</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer's IP address.• <random_str> - Configures the IP address of the gateway to be used as next hop.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if peer is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 gateway 10.0.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>neighbor - remote-as</code> – Creates a peer and initiates the connection to the peer.• <code>show ip bgp</code> – Displays the BGP-related information.• <code>show bgp ipv6</code> - Displays the BGPv6-related information.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.20 neighbor - network-address

Command Objective	<p>This command configures peer's remote IPv6 network address for IPv4 peer and peer's remote IPv4 network address for IPv6 peer.</p> <p>The peer's network address carries the IPv6 network address if the peer's remote address is an IPv4 address. The peer's network address carries the IPv4 network address if the peer's remote address is an IPv6 address.</p> <p>The no form of the command resets network address configured for the peer.</p>
Syntax	<pre>neighbor < ip-address > network-address <random_str> no neighbor < ip-address > network-address <random_str></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer's IP address.• <random_str> - Configures the Remote IP address of the peer.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	<ul style="list-style-type: none">• This command executes only if peer is created and Peer AS is configured.• The peer's remote network address can be configured only after configuring the peer's remote address and the corresponding local interface.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 network-address 3399::11 SEFOS(config-router)# neighbor 3399::11 network-address 23.45.0.1</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• show bgp ipv6 - Displays the BGPv6-related information.• address-family - Enters the router into the address-family router configuration mode.

33.21 neighbor - default-originate

Command Objective	<p>This command enables advertisement of the default route to the peer or neighbor for use as a default route. This command overrides the global default route configuration and sends a default route to the peer with self next-hop.</p> <p>The advertisement occurs irrespective of the presence of default route in FDB. This command does not require the presence of 0.0.0.0 in the local router. When used with a route-map, the default route 0.0.0.0 is injected if the route-map contains a match ip address clause. The route-map can contain other match clauses also.</p> <p>The no form of the command disables advertisement of the default route to the peer.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> default-originate</pre> <pre>no neighbor <ip-address peer-group-name> default-originate</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer's IP address.• <peer-group-name> - Configures a BGP peer group by using the <code>peer-group-name</code> argument. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	The advertisement of default route to the peer is disabled.
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 default-originate</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp info - Displays the general information about BGP protocol.• address-family - Enters the router into the address-family router

configuration mode.

33.22 neighbor - send-community

Command Objective	<p>This command sends community attribute to a BGP neighbor and enables advertisement of community attributes (standard or extended) to the peer.</p> <p>The no form of the command disables advertisement of community attributes (standard or extended) to the peer.</p>
Syntax	<pre>neighbor < ip-address peer-group-name > send-community {both standard extended} no neighbor < ip-address peer-group-name > send-community {both standard extended}</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the peer IP address.• <peer-group-name> - Configures a BGP peer group by using the <code>peer-group-name</code> argument. The members of the peer group will inherit the characteristic configured with this command.• send-community - Sends the communities to the peer.<ul style="list-style-type: none">▪ both - Sends both standard and extended communities to the peer.▪ standard - Sends only standard communities to the peer.▪ extended - Sends only extended communities to the peer.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	send-community - both
	<p><u>Note:</u> This command executes only if Peer or Peer Group is created and Peer AS is configured.</p>
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 send-community both</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp info – Displays the general information about BGP protocol.

-
- **address-family** - Enters the router into the address-family router configuration mode.
 - **address-family vpv4** - Enables configuration of the session that carries standard vpv4 address prefixes.
-

33.23 neighbor - capability

Command Objective This command enables the specific BGP capability to be advertised and received from the peer.

The no form of the command disables the capability for the peer.

Syntax

```
neighbor <ip-address|peer-group-name> capability {ipv4-unicast|ipv6-unicast|route-refresh | orf prefix-list {send | receive | both}}
```

```
no neighbor <ip-address|peer-group-name> capability {ipv4-unicast|ipv6-unicast|route-refresh | orf prefix-list {send | receive | both}}
```

IF VPLSADS_WANTED Flag is enabled,

```
neighbor <ip-address|peer-group-name> capability {ipv4-unicast|ipv6-unicast|route-refresh | orf prefix-list {send | receive | both} | l2vpn-vpls}
```

```
no neighbor <ip-address|peer-group-name> {capability ipv4-unicast|ipv6-unicast|route-refresh | orf prefix-list {send | receive | both} }
```

Parameter Description

- **<ip-address>** - Configures the BGP peer's IP address.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.
- **ipv4-unicast** - Sets the IPv4 unicast address family capability.
- **ipv6-unicast** - Sets the MP IPv6 unicast address family capability.
- **route-refresh** - Sets the route refresh capability.
- **orf prefix-list** - Enables address prefix-based Outbound Route Filter (ORF) for the specified BGP peer group.
 - **send** - Enables ORF send capability.
 - **receive** - Enables ORF receive capability.
 - **both** - Enables both send and receive ORF capability.
- **l2vpn-vpls** - Sets the peer capability for L2VPN address family.

Mode

BGP Router Configuration Mode / Address Family Router Configuration Mode

Package

Enterprise and Metro_E

Default

By default IPv4 unicast and route refresh capabilities are enabled for a peer.

Note:

This command executes only if Peer or Peer Group is created and Peer AS is configured.

Example

```
SEFOS(config-router)# neighbor 23.45.0.1 capability ipv4-unicast
```

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
 - `neighbor - remote-as` – Creates a peer and initiates the connection to the peer.
 - `neighbor - peer-group` – Creates a peer group.
 - `show ip bgp neighbor` – Displays the neighbor configurations.
 - `address-family` - Enters the router into the address-family router configuration mode.
-

33.24 bgp nonbgproute-advt

Command Objective	<p>This command configures the peer type to whom non-BGP routes can be propagated and controls the advertisement of non-BGP routes either to the external peer or both internal and external peer.</p> <p>The no form of the command resets the non-BGP routes advertisement policy to its default value. The administrator can effectively control the advertisement of the route learned through redistribution.</p>
Syntax	<pre>bgp nonbgproute-advt <external both></pre> <pre>no bgp nonbgproute-advt</pre>
Parameter Description	<ul style="list-style-type: none">• external - Indicates that the non-BGP routes can be exported only to external peers. All types of non-BGP routes can be propagated to external peers.• both - Indicates that the non-BGP routes can be propagated to both internal and external peers.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	both
Example	<pre>SEFOS(config-router)# bgp nonbgproute-advt both</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• show ip bgp info – Displays the general information about BGP protocol.

33.25 redistribute

Command Objective This command controls redistribution of direct, static, and RIP routes into BGP and configures the protocol from which the routes have to be redistributed into BGP after applying the specified route-map. If this is set to enable, only the routes from the protocols are imported into BGP and BGP routes will not be distributed. If this is set as disable, then the routes learned from protocols are removed from BGP and no route is distributed.

The no form of the command disables the redistribution of routes from the given protocol into BGP. The route-map is dissociated from the redistribution, if the no form of the command specifies the route-map.

Syntax

```
redistribute {static | connected | rip | all} [route-map <string(20)>] [metric <integer>]
```

```
no redistribute { static | connected | rip | all } [route-map <string(20)>] [metric]
```

Parameter Description

- **static** - Redistributes routes, configured statically, in the BGP routing process.
- **connected** - Redistributes directly connected networks routes, in the BGP routing process.
- **rip** - Redistributes routes that are learned by the RIP process, in the BGP routing process.
- **all** - Redistributes routes, that are learned by all processes (RIP, statically configured, and connected routes), in the BGP routing process.
- **route-map <string(20)>** - Identifies the specified route-map in the list of route-maps during redistribution of routes to BGP. If this is not specified, all routes are redistributed. This value is a string with the maximum size of 20.
- **metric <integer>** - Specifies the metric value for the routes to redistribute to BGP. This value ranges from 0 to 4294967295. If the metric value is not specified, default metric value is considered.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Default Redistribution is disabled.

Note: Redistribution can be configured for only one route-map. Another route-map can be assigned, only if the already assigned route-map is disabled.

Example

```
SEFOS(config-router)# redistribute all route-map rm metric 500
```

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **show ip bgp info** – Displays the general information about BGP protocol.
 - **address-family** - Enters the router into the address-family router configuration mode.
-

33.26 import route

Command Objective	This command adds non-BGP IP routes imported into the BGP RIB and allows importing a static route into BGP, after updating the RIB tree. If there is any change in the best route selected, then the route is updated to the Common Forwarding table.
Note:	This command is available only if RTM is disabled.
Syntax	<pre>import route ip-address prefixlen nexthop metric ifindex protocol action route-count</pre>
Parameter Description	<ul style="list-style-type: none">• ip-address - Configures the prefix of the route to be imported.• prefixlen - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 1 to 32.• nexthop - Configures the Nexthop IP address for the route.• metric - Configures the metric value for the routes being imported. This value ranges from 1 to 2147483647.• ifindex - Configures the interface index of the route. This value ranges from 1 to 2147483647.• protocol - Configures the protocol value for the non-BGP routes. The values can be:<ul style="list-style-type: none">▪ 2 – Local▪ 3 – Static▪ 8 – RIP▪ 13 – OSPF<hr/><p style="text-align: center;">Note: Only Static routes (protocol 3) can be added through Common Forwarding table. All non-BGP protocol (Local, Static, RIP, and OSPF) routes can be viewed.</p><hr/>• action - Controls addition or deletion of the non-BGP routes. The options are as follows:<ul style="list-style-type: none">▪ Add – Specifies the addition of non-BGP routes.▪ Delete - Specifies the deletion of non-BGP routes.• route-count - Configures the number of routes to be imported.
Mode	BGP Router Configuration Mode
Package	Enterprise and Metro_E

Example

```
SEFOS(config-router)# import route 23.45.0.1 10 23.45.0.10  
10 2 3 add 4
```

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
-

33.27 bgp always-compare-med

Command Objective	<p>This command enables the comparison of Multi Exit Discriminator (MED) for routes received from different autonomous systems. The MED is one of the parameters that is considered when selecting the best path among many alternative paths. The path with a lower MED is preferred over a path with a higher MED.</p> <p>The no form of the command disables the comparison of MED for routes received from different autonomous systems. MED will be compared only for routes from same neighboring autonomous system.</p>
Syntax	<pre>bgp always-compare-med</pre> <pre>no bgp always-compare-med</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	The comparison of MED for routes received from different autonomous systems is disabled.
Example	<pre>SEFOS (config-router) # bgp always-compare-med</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp info</code> – Displays the general information about BGP protocol.

33.28 default-metric

Command Objective	<p>This command configures the default IGP metric value for routes redistributed into BGP with the <code>redistribute</code> command. A default metric can be configured to solve the problem of redistributing routes with incompatible metrics. Assigning the default metric will allow redistribution to occur. This value ranges from 0 to 2147483647.</p> <p>The no form of the command resets the Default IGP Metric value to its default value 0. If configured to 0, the metric received from the IGP route will be used. If configured to any other value, the MED value of the redistributed routes take this value. This value will have no effect on the direct routes.</p>
Syntax	<pre>default-metric <Default Metric Value (0-2147483647)> no default-metric</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	0
Example	<pre>SEFOS(config-router)# default-metric 300</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp info</code> – Displays the general information about BGP protocol.

33.29 bgp med

Command Objective This command configures an entry in BGP4 MED table and contains the MED values that are to be assigned to routes.

The no form of the command deletes the entry from MED table and BGP4 MED table. The entry will not be matched when the MED value for an update is calculated, if the prefix length is set as zero.

Syntax

```
bgp med <1-100> remote-as <AS no> <ip-address> <prefixlen>
[intermediate-as <AS-no list- AS1,AS2,...>] value <value>
direction {in|out} [override]
```

```
no bgp med <1-100>
```

Parameter Description

- **med <1-100>** - Configures the entry containing information about the MED value. This value ranges from 1 to 100.
- **remote-as < AS no >** - Configures the autonomous system number that identifies the BGP router to other routers and tags the routing information passed along. This value ranges from 0 to 4294967295 or 0.1 to 65535.65535.
 - Note: When four-bit-asn is enabled, this value ranges from 0 to 4294967295 or between 0.0 and 65535.65535.
 - Note: When four-bit-asn is disabled, this value ranges from 0 to 65535 or between 0.0 and 0.65535.
 - Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.0 to 65535.65535.
 - Note: A value of zero indicates that this entry is not valid and will not be matched when the MED value for an update is calculated.
- **<ip-address>** - Configures the route-prefix on which MED policy needs to be applied.
- **<prefixlen>** - Configures the number of high-order bits in the IP address. This is the length of the IP address prefix in the Network Layer Reachability Information (NLRI) field. These bits are common among all hosts within a network. This value ranges from 0 to 32.
 - Note: A value of zero indicates that this entry is not valid and will not be matched when the MED value for an update is calculated.
- **intermediate-as<AS-no list- AS1,AS2,...>** - Configures the sequence of intermediate autonomous system numbers through which the route update is expected to travel. This is a comma-separated list of AS

numbers that are to be checked against the AS_PATH attribute of the updates. This value is a string with a maximum size of 100.

- **value <value>** - Configures the value assigned to the MED attribute for the route present in NLRI. This value ranges from 0 to 2147483647.
- **direction** - Configures the direction of application of MED policy.
 - **in** – Indicates that on received route-update with other matching attributes like as-number, intermediate-as numbers.
 - **out** - Indicates that on route-update that needs to be advertised to peer.
- **override** - Decides whether the configured MED value will override the received MED value.

Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• remote-as - 0• Prefixlen - 0• direction - In• Value - 0
Example	<pre>SEFOS(config-router)# bgp med 5 remote-as 200 212.23.45.0 24 intermediate-as 150 value 50 direction in override</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp med – Displays the contents of MED table.• ip bgp four-byte-asn - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.• bgp asnotation dot - Changes the output format of BGP ASNs from asplain to asdot notation.

33.30 bgp local-preference

Command Objective This command configures an entry in the Local Preference table. This table contains the value that is to be assigned to the Local Preference attribute.

The no form of the command deletes the entry from Local Preference table.

Syntax

```
bgp local-preference <1-100> remote-as <AS no> <ip-  
address> <prefixlen> [intermediate-as <AS-no list-  
AS1,AS2,...>] value <value> direction {in|out} [override]
```

```
no bgp local-preference <1-100>
```

Parameter Description

- **local-preference <1-100>** - Configures the local preference index. This value ranges from 1 to 100.
- **remote-as <AS no>** - Specifies the remote autonomous system number for which the local preference is associated. This value ranges from 0 to 4294967295 or 0.0 to 65535.65535.

Note: When four-bit-asn is enabled, this value ranges from 0 to 4294967295 or between 0.0 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 0 to 65535. or between 0.0 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.0 to 65535.65535.

- **<ip-address>** - Configures the route prefix in the Network Layer Reachability Information on which local preference policy needs to be applied. The input route IP address can be an IPv4 or an IPv6 address.
- **<prefixlen>** - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 0 to 32 for IPv4 address and 0 to 128 for IPv6 address.

Note: A value of zero indicates that the entry is not valid and will not be matched when the local preference value for an update is calculated.

- **intermediate-as<AS-no list- AS1,AS2,...>** - Configures the sequence of intermediate AS numbers through which the route update is expected to travel or a comma separated list of AS numbers that are to be checked against the AS_PATH attribute of the updates. This value is a list with a maximum size of 100.
 - **value <value>** - Configures the local preference value that needs to be associated with the route-update. This value ranges from 0 to 2147483647.
-

- **direction** - Specifies the direction of the application of local preference policy with which the entry is to be associated.
 - **in** – Indicates that on received route-update with other matching attributes like as-number, intermediate-as numbers.
 - **out** - Indicates that on route-update that needs to be advertised to peer.
- **override** - Decides whether configured local preference value overrides the received local preference value. If this keyword is not specified, then the received value will have precedence over the configured value.

Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none"> • remote-as - 0 • direction - in • Value - 100 • ip-address - 0.0.0.0 • prefixlen - 0
Example	<pre>SEFOS(config-router)# bgp local-preference 5 remote-as 200 21.3.0.0 16 intermediate-as 150 value 250 direction out override</pre>
Related Command(s)	<ul style="list-style-type: none"> • router bgp – Sets the AS number of the BGP Speaker. • address-family - Enters the router into the address-family router configuration mode. • show ip bgp local-pref – Displays the contents of Local Preference table. • ip bgp four-byte-asn - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system. • bgp asnotation dot - Changes the output format of BGP ASNs from asplain to asdot notation.

33.31 bgp update-filter

Command Objective This command configures an entry in Update Filter Table which contains rules to filter out updates based on the AS from which it is received, Network Layer Reachability Information (NLRI), and AS through which it had passed.

The no form of the command deletes the entry from Update Filter Table.

Syntax

```
bgp update-filter <1-100> {permit|deny} remote-as <AS no>
<ip-address> <prefixlen> [intermediate-as <AS-no list-
AS1,AS2,...>] direction {in|out}

no bgp update-filter <1-100>
```

Parameter Description

- **update-filter <1-100>** - Configures the entry containing information about the updates that are to be filtered. This value ranges from 1 to 100.
- **permit** - Allows the route to pass filter policy test.
- **deny** - Filters the routes when it passes through filter policy test.
- **remote-as <AS no>** - Configures the autonomous system number that identifies the BGP router to other routers and tags the routing information passed along. This value ranges from 0 to 4294967295 or 0.1 to 65535.65535.

Note: When four-bit-asn is enabled, this value ranges from 0 to 4294967295 or between 0.0 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 0 to 65535. or between 0.0 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.0 to 65535.65535.

- **<ip-address>** - Configures route prefix in the Network Layer Reachability Information on which the filter needs to be applied
- **<prefixlen>** - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 0 to 32.

Note: The NLRI field will not be matched if the prefix length is set as zero.

- **intermediate-as <AS-no list-AS1,AS2,...>** - Configures the sequence of intermediate AS numbers through which the route update is expected to travel or a comma separated list of AS numbers that are to be checked against the AS_PATH attribute of the updates. This value is a list with a maximum size of 100.
-

- **direction** - Specifies the direction of the application of filters with which the entry is to be associated.
 - **in** – Indicates that on received route-update with other matching attributes like as-number, intermediate-as nos.
 - **out** - Indicates that on route-update that needs to be advertised to peer.

Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none"> • remote-as - 0 • direction - in • ip-address - 0.0.0.0 • prefixlen - 0
Example	<pre>SEFOS(config-router)# bgp update-filter 6 deny remote-as 145 72.93.0.0 14 intermediate-as 150 direction in</pre>
Related Command(s)	<ul style="list-style-type: none"> • router bgp – Sets the AS number of the BGP Speaker. • address-family - Enters the router into the address-family router configuration mode. • show ip bgp filters – Displays the contents of filter table. • ip bgp four-byte-asn - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system. • bgp asnotation dot - Changes the output format of BGP ASNs from asplain to asdot notation.

33.32 aggregate-address index

Command Objective This command creates an aggregate entry in a BGP or multiprotocol BGP routing table if any more-specific BGP or multiprotocol BGP routes are available that fall in the specified range. The entries in the table specify the IP address based on which the routing information has to be aggregated. The aggregate route will be advertised as coming from autonomous system. The atomic aggregate attribute will be set only if some of the information in the AS PATH is missing in the aggregated route, else it will not be set.

The no form of the command deletes the specified entry from the Aggregate table.

Syntax

```
aggregate-address index <1-100> <ip-address> <prefixlen>
[summary-only] [as-set] [suppress-map map-name]
[advertise-map map-name] [attribute-map map-name]

no aggregate-address index <1-100>
```

Parameter Description

- **index <1-100>** - Configures the entry containing information about the IP address on which the aggregation has to be done. This value ranges from 1 to 100.
- **<ip-address>** - Configures route prefix in the Network Layer Reachability Information on which aggregate policy needs to be applied.
- **<prefixlen>** - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 0 to 32 for IPv4 address and between 0 and 128 for IPv6 address.
- **summary-only** - Specifies that aggregated (summarized) route alone will be sent to the peers.

Note: If this is not specified, both the summary and the more-specific routes based on which the summary entry was generated are advertised to the peers.

- **as-set** - Generates autonomous system set path information.
 - **suppress-map map-name** - Specifies the name of the route-map used to select the routes to be suppressed. The route-map contains the rules for suppressing the more-specific routes in forming the aggregate route. When suppress-map configuration is used along with summary-only option, summary-only configuration command does not have any effect. And the more-specific routes that the suppress-map suppresses are not advertised. Other routes are advertised in addition to the aggregated route. This value is a string with a maximum length of 20.
 - **advertise-map map-name** - Specifies the name of the route-map used
-

to select for forming aggregate routes. The route-map contains the rules for selecting specific routes for aggregation. Other routes are advertised. When advertise-map is used, only advertise-map influences the creation of aggregate entry. In absence of advertise-map, the aggregate route inherits the attributes of the more specific routes, both suppressed and unsuppressed. This value is a string with a maximum length of 20.

- **attribute-map map-name** - Specifies the name of the route-map used to form the attribute of the aggregate route. The route-map contains the rules for setting the attributes for the aggregated route. When attribute-map and advertise-map, along with autonomous system set path information, are enabled and other configurations, the attribute-map overrides the attribute that is formed with the routes selected by the advertise-map. This value is a string with a maximum length of 20.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Note: The IP address and the prefix length can be configured, only if the aggregate admin status of the BGP is down.

Example SEFOS (config-router) # aggregate-address index 1 21.1.0.0
16 summary-only

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **address-family** - Enters the router into the address-family router configuration mode.
 - **show ip bgp aggregate** – Displays the contents of Aggregate table.
-

33.33 bgp cluster-id

Command Objective This command configures the Cluster ID for the Router Reflector of the BGP cluster which has more than one route reflector. This value ranges from 1 to 4294967295.

Usually in a cluster of clients with single route reflector the cluster is identified by the router ID of the route reflector. In order to increase redundancy and avoid a single point of failure, a cluster might have more than one route reflector. In this case, all route reflectors in the cluster must be configured with the 4-byte cluster ID so that a route reflector can recognize updates from route reflectors in the same cluster.

The no form of the command resets the Cluster ID for the route reflector.

Syntax `bgp cluster-id {cluster id value ip_address/integer}`
`no bgp cluster-id`

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Example `SEFOS(config-router)# bgp cluster-id 10.0.0.1`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `address-family` - Enters the router into the address-family router configuration mode.
- `show ip bgp rfl info` – Displays information about RFL feature.

33.34 bgp client-to-client reflection

Command Objective	<p>This command configures the route reflector to support route reflection to client peers. By default, the clients of a route reflector are not required to be fully meshed and the routes from a client are reflected to other clients. If the clients are fully meshed, route reflection is not required.</p> <p>The no form of the command disables client-to-client reflection. If disabled, then route reflector will not advertise routes learned from a client peer to other client peers. This occurs when all peers within a cluster are fully meshed and the client peer itself is able to advertise routes to other clients of the route reflector.</p>
Syntax	<pre>bgp client-to-client reflection</pre> <pre>no bgp client-to-client reflection</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro
Default	Route reflector will reflect routes learned from a client peer to all other client peers.
Example	<pre>SEFOS(config-router)# bgp client-to-client reflection</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp rfl info</code> – Displays information about RFL feature.

33.35 neighbor - route-reflector-client

Command Objective This command controls client-to-client reflection and configures the specified peer as client of the route reflector. All the neighbors configured with this command will be members of the client group and the remaining IBGP peers will be members of the non-client group for the local route reflector.

The no form of the command resets the peer as conventional BGP peer.

Syntax

```
neighbor <ip-address | peer-group-name> route-reflector-client
```

```
no neighbor <ip-address | peer-group-name> route-reflector-client
```

Parameter Description

- **<ip-address>** - Configures the peer's remote IP address of the BGP neighbor being identified as a client.
- **<peer-group-name>** - Configures a BGP peer group by using the `peer-group-name` argument. The members of the peer group will inherit the characteristic configured with this command.

Note: This feature has been included to adhere to the Industry Standard CLI syntax. This feature is currently not supported.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Note: This command executes only if peer is created.

Example SEFOS (config-router)# neighbor 23.45.0.1 route-reflector-client

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
- **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
- **address-family** - Enters the router into the address-family router configuration mode.
- **show ip bgp rfl info** – Displays information about RFL feature.
- **address-family** - Enters the router into the address-family router configuration mode.

33.36 bgp comm-route

Command Objective	<p>This command configures an entry in additive or delete-community table for a given destination.</p> <p>The no form of the command removes the entry from additive or delete-community table.</p>
Syntax	<pre>bgp comm-route {additive delete} <ip-address> <prefixlen> comm-value <4294967041-4294967043,65536-4294901759> no bgp comm-route {additive delete} <ip-address> <prefixlen> comm-value <4294967041-4294967043,65536- 4294901759></pre>
Parameter Description	<ul style="list-style-type: none">• additive - Adds associated community value with the already existing communities in the route update.• delete - Removes the community attribute from the route-prefix when it passes through the filter process.• <ip-address> - Configures the route prefix on which community policy needs to be applied.• <prefixlen> - Configures the IP prefix length for the destination. These bits are common among all hosts within a network. This value ranges from 1 to 32.• comm-value <4294967041-4294967043,65536-4294901759> - Configures the community attribute value. This value ranges from 4294967041 to 4294967043 or from 65536 to 4294901759.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# bgp comm-route additive 24.5.0.0 16 comm-value 429490</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp community– Displays the contents of route, peer, filter, and policy community tables.

33.37 bgp comm-filter

Command Objective	<p>This command allows or filters the community attribute while receiving or advertising. The rules to filter out the updates are based on the AS from which it is received, NLRI, and AS through which it had passed.</p> <p>The no form of the command removes the filter policy for the community attribute.</p>
Syntax	<pre>bgp comm-filter <comm-value (4294967041-4294967043, 65536-4294901759)> <permit deny> <in out></pre> <pre>no bgp comm-filter <comm-value (4294967041-4294967043, 65536-4294901759)> <permit deny> <in out></pre>
Parameter Description	<ul style="list-style-type: none">• comm-value (4294967041-4294967043, 65536-4294901759) > - Configures the community attribute value. This value ranges from 4294967041 to 4294967043 or from 65536 to 4294901759.• permit - Allows a particular community attribute to be received or advertised in updates.• deny - Filters the routes containing the community attribute value in received or advertised updates.• in - Configures the direction of route-updates on which the community filter policy needs to be applied as <i>in</i>. This indicates that the community filter needs to be applied on received routes.• out - Configures the direction of route-updates on which the community filter policy needs to be applied as <i>out</i>. This indicates that the community filter needs to be applied on routes advertised to peers.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	permit
Example	<pre>SEFOS(config-router)# bgp comm-filter 75100 deny in</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp community – Displays the contents of route, peer, filter, and policy community tables.

33.38 bgp comm-policy

Command Objective	<p>This command configures the community attribute advertisement policy for a specific destination.</p> <p>The no form of the command removes the community attribute advertisement policy for a specific destination.</p>
Syntax	<pre>bgp comm-policy <ip-address> <prefixlen> <set-add set- none modify></pre> <pre>no bgp comm-policy <ip-address> <prefixlen></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the route prefix on which community policy needs to be applied.• <prefixlen> - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 1 to 32.• set-add - Sends only the configured additive communities with associated route.• set-none - Sends the associated route without any communities.• modify - Removes the associated route with received delete communities and adds the configured additive communities.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro
Default	modify
Example	<pre>SEFOS(config-router)# bgp comm-policy 24.5.0.0 10 set-none</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp community– Displays the contents of policy community tables.

33.39 bgp ecomm-route

Command Objective	<p>This command configures an entry in additive or delete extended community table.</p> <p>The no form of the command removes the entry from additive or delete-extended community table.</p>
Syntax	<pre>bgp ecomm-route {additive delete} <ip-address> <prefixlen> ecomm-value <value (xx:xx:xx:xx:xx:xx:xx:xx)> no bgp ecomm-route {additive delete} <ip-address> <prefixlen> ecomm-value <value (xx:xx:xx:xx:xx:xx:xx:xx)></pre>
Parameter Description	<ul style="list-style-type: none">• additive - Adds associated extended community value with the already existing communities in the route updates.• delete - Removes the extended community attribute from the route prefix when it passes through the filter process.• <ip-address> - Configures the route prefix on which extended community policy needs to be applied.• <prefixlen> - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 1 to 32.• ecomm-value <value (xx:xx:xx:xx:xx:xx:xx:xx)> - Configures the Extended Community Attribute Value. This is an octet string value.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# bgp ecomm-route additive 12.0.0.0 2 ecomm-value 01:01:22:33:44:55:66:77</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp extcommunity – Displays the contents of route ext-community route tables.

33.40 bgp ecomm-filter

Command Objective	<p>This command allows or filters the extended community attribute while receiving or advertising.</p> <p>The no form of the command removes the filter policy for the extended community attribute.</p>
Syntax	<pre>bgp ecomm-filter <ecomm-value (xx:xx:xx:xx:xx:xx:xx:xx) > {permit deny} {in out} no bgp ecomm-filter <ecomm-value (xx:xx:xx:xx:xx:xx:xx:xx) > {permit deny} {in out}</pre>
Parameter Description	<ul style="list-style-type: none">• <ecomm-value (xx:xx:xx:xx:xx:xx:xx:xx) > - Configures the extended community value. This is an octet string value in the form xx:xx:xx:xx:xx:xx:xx:xx.• permit - Allows the route-update with the associated extended community value to pass the filter test.• deny - Denies the route-update with the associated extended community value to pass the filter test.• in - Configures the incoming direction of applied filter.• out - Configures the outgoing direction of applied filter.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	permit
Example	<pre>SEFOS(config-router)# bgp ecomm-filter 01:01:22:33:23:43:44:22 deny in</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp extcommunity – Displays the contents of ext-community route table.

33.41 bgp ecomm-policy

Command Objective	<p>This command configures the extended community attribute advertisement policy for a specific destination.</p> <p>The no form of the command removes the extended community attribute advertisement policy for a specific destination.</p>
Syntax	<pre>bgp ecomm-policy <ip-address> <prefixlen > <set-add set- none modify></pre> <pre>no bgp ecomm-policy <ip-address> <prefixlen></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the route prefix on which extended community policy needs to be applied.• <prefixlen> - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 1 to 32.• set-add - Sends associated route with configured additive-extended communities only.• set-none - Sends the associated route without any extended-communities.• modify - Strips the associated route with received delete-extended communities and adds the configured additive-extended communities.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS (config-router) # bgp ecomm-policy 12.0.0.0 14 set-add</pre>
Default	modify
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp extcommunity – Displays the contents of policy ext-community route tables.

33.42 bgp confederation identifier

Command Objective This command configures the BGP confederation identifier which specifies the confederation to which the autonomous systems belong to. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535.

The no form of the command removes the configured BGP confederation identifier and resets the identifier to its default value.

Note: If this value is already configured to a non-zero value, it must be reset to zero (using no form of the command) before reconfiguring.

Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 1 to 65535 or between 0.1 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.1 to 65535.65535.

Note:

Syntax `bgp confederation identifier <AS no>`
`no bgp confederation identifier`

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro

Default 0

Example `SEFOS(config-router)# bgp confederation identifier 1000`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `address-family` - Enters the router into the address-family router configuration mode.
- `show ip bgp confed info` – Displays information about confederation feature.
- `ip bgp four-byte-asn` - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
- `bgp asnotation dot` - Changes the output format of BGP ASNs from asplain to asdot notation.

33.43 bgp confederation peers

Command Objective This command configures the autonomous systems that belong to the confederation. The autonomous systems specified in this command are visible internally to a confederation. Each autonomous system is fully meshed within itself. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535.

Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 1 to 65535 or between 0.1 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.1 to 65535.65535.

The no form of the command removes the autonomous systems from the confederation.

Syntax `bgp confederation peers <AS no>`
`no bgp confederation peers <AS no>`

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Default By default no AS will be added to the confederation.

Note: This command executes only if the peer AS number is not equal to BGP Speaker Local AS number.

Example `SEFOS(config-router)# bgp confederation peers 100`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `show ip bgp confed info` – Displays information about confederation feature.
- `ip bgp four-byte-asn` - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
- `bgp asnotation dot` - Changes the output format of BGP ASNs from asplain to asdot notation.

33.44 bgp bestpath med confed

Command Objective	<p>This command enables MED comparison among paths learned from confederation peers. The comparison between MEDs is only made if there are no external autonomous systems in the path. If there is an external autonomous system in the path, then the external MED is passed transparently through the confederation, and the comparison is not made.</p> <p>The no form of the command disables MED comparison among paths learned from confederation peers and prevent the software from considering the MED attribute in comparing paths.</p>
Syntax	<pre>bgp bestpath med confed</pre> <pre>no bgp bestpath med confed</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	In BGP route selection algorithm, MED attributes comparison between two routes originating within the local confederation is disabled.
Example	<pre>SEFOS(config-router)# bgp bestpath med confed</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp confed info</code> – Displays information about confederation feature.

33.45 neighbor – password

Command Objective	<p>This command enables Message Digest 5 (MD5) authentication on a TCP connection between two BGP peers where each segment sent on the TCP connection between the peers is verified. The MD5 authentication must be configured with the same password on both BGP peers. If not, the connection between them will not be made.</p> <p>The no form of the command resets the TCP-MD5 password set for the peer.</p>
Syntax	<pre>neighbor <ip-address> password password-string</pre> <pre>no neighbor <ip-address> password</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Specifies the IP address of the BGP peer for which the TCP MD5 authentication password is to be set.• password- string - Configures the TCP MD5 authentication password that has to be sent with all TCP packets originating from the peer. This value is a string with a maximum size of 80.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	By default, the MD5 password setting is disabled.
Note:	This command executes only if peer is created.
Example	<pre>SEFOS(config-router)# neighbor 10.0.0.2 password abcdef</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp info – Displays the general information about BGP protocol.

33.46 import ipv6-route

Command Objective	This command adds non-BGP IPv6 routes into BGP.
Note:	This command is available only if RTM is disabled.
Syntax	<pre>import ipv6-route ip-address prefixlen nexthop metric ifindex protocol action route-count</pre>
Parameter Description	<ul style="list-style-type: none">• ip-address - Configures the prefix of the route to be imported.• prefixlen - Configures the number of high-order bits in the IP address. These bits are common among all hosts within a network. This value ranges from 1 to 32.• nexthop - Configures the nexthop IP address for the route.• metric - Configures the metric value for the route. This value ranges from 1 to 2147483647.• ifindex - Configures the interface index of the route. This value ranges from 1 to 2147483647.• protocol - Configures the protocol value for the non-BGP routes. This value can be:<ul style="list-style-type: none">▪ 2 – Local▪ 3 – Static▪ 8 – RIP▪ 13 – OSPF<hr/><p>Note: Only static routes (protocol 3) can be added through Common Forwarding Table. All non-BGP protocol (Local, Static, RIP, or OSPF) routes can be viewed.</p><hr/>• action - Controls addition or deletion of routes. The options are:<ul style="list-style-type: none">▪ add – Specifies the addition of non-BGP routes.▪ delete - Specifies the deletion of non-BGP routes.• route-count - Configures the number of routes to be imported.
Mode	BGP Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# import ipv6-route 23.45.0.1 10 23.45.0.10 10 2 3 add 4</pre>

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
-

33.47 address-family

Command Objective	<p>This command enters the router into the address-family router configuration mode. Routing information is advertised for IPv4 address family when a BGP session is configured, unless the default advertising is reset.</p> <p>The no form of the command deletes the peers belonging to the IPV4, IPv6, and VPNv4 address family.</p>
Syntax	<pre>address-family [ipv4 ipv6 l2vpn] [vrf <vrf-name>] no address-family { ipv4 ipv6 l2vpn } [vrf <vrf-name>]</pre>
Parameter Description	<ul style="list-style-type: none">• ipv4 - Configures session that carries standard IPv4 address prefixes.• ipv6 - Configures session that carries standard IPv6 address prefixes.• l2vpn - Configures session that carries L2VPN VPLS address prefixes. <hr/><p>Note: This parameter is applicable only for Metro_E package with VPLS ADS enabled.</p><hr/>• vrf <vrf-name> - Configures the address-family router configuration for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	BGP Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# address-family ipv4 SEFOS(config-router-af4)# SEFOS(config-router)# address-family ipv6 SEFOS(config-router-af6)# SEFOS(config-router)# address-family l2vpn SEFOS af12vpn)#)#</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• show ip bgp – Displays the BGP-related information.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.

-
- **neighbor - interval** – Configures neighbor interval.
 - **neighbor - timers**– Configures neighbor KeepAlive Time and Hold Time intervals.
 - **neighbor - shutdown** – Disables the peer session.
 - **neighbor - update-source** - Configures the source address for routing updates and for TCP connection establishment with a peer.
 - **neighbor - gateway** - Configures gateway router's address that will be used as nexthop in the routes advertised to the peer.
 - **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor - maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor - allow-autostop** - Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - connect-retrycount** - Sets the retry count for the BGP peer.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **neighbor - peer-group** – Creates a peer group.
 - **tcp-ao mkt key-id - receive-key-id** - Creates a TCP-AO MKT in the BGP instance.
 - **neighbor - tcp-ao** - Sets BGP peer TCP-AO configurations.
 - **neighbor - tcp-ao mkt** - Associates a TCP-AO MKT to the BGP peer.
 - **neighbor fall-over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **neighbor - capability** - Enables the specific BGP capability to be advertised and received from the peer.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
-

-
- **redistribute** – Configures the protocol from which the routes have to be redistributed into BGP.
 - **redistribute ospf** - Configures the OSPF protocol from which the routes are redistributed into BGP.
 - **redistribute - isis** – Controls redistribution of ISIS routes into BGP.
-

33.48 bgp graceful-restart

Command Objective	<p>This command enables graceful restart capability in router which allows forwarding of data packets to continue along known routes, while the routing protocol information is being restored following a processor switch over. When graceful restart is enabled, peer networking devices are informed, through protocol extensions prior to the event.</p> <p>The no form of the command disables the graceful restart capability and resets the restart-time or stalepath-time to the default value.</p>
Syntax	<pre>bgp graceful-restart [restart-time <(1-4096)<seconds>] [stalepath-time <(90-3600)<seconds>] no bgp graceful-restart [restart-time] [stalepath-time]</pre>
Parameter Description	<ul style="list-style-type: none">• restart-time<(1-4096)<seconds> - Configures the estimated time (in seconds) taken for re-establishing a BGP session after restart. The default value for this should be less than or equal to Hold Time carried in OPEN message. This value ranges from 1 to 4096 seconds.• stalepath-time<(90-3600)<seconds> - Configures the time (in seconds) until which the router retains the stale routes. This value ranges from 90 to 3600 seconds.
Mode	BGP Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• Graceful restart is disabled.• restart-time -90 seconds• stalepath-time-150 seconds
Example	<pre>SEFOS(config-router)# bgp graceful-restart restart-time 33 stalepath 789</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• show ip bgp info – Displays the general information about BGP protocol.• show ip bgp timers - Displays the value of BGP timers.

33.49 bgp update-delay

Command Objective This command configures the selection deferral time interval. This time interval represents the time (in seconds) until which the router defers its route selection. This value ranges from 60 to 1800 seconds.

This time interval should be configured to provide enough time for all the peers of the restarting speaker to send all the routes to the restarting speaker.

The no form of the command resets the time interval to its default value.

Syntax `bgp update-delay <(60-1800) seconds>`
`no bgp update-delay`

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Default 60 seconds

Example `SEFOS(config-router)# bgp update-delay 90`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `address-family` - Enters the router into the address-family router configuration mode.
- `show ip bgp timers` - Displays the value of BGP timers.

33.50 restart-support

Command Objective This command enables the graceful restart support. Graceful restart support is provided for both planned and unplanned restart, if the command is executed without any option.

The entity should save any change made using this command in a non-volatile storage, as the configuration set using this command is persistent.

The no form of the command disables the graceful restart support.

Syntax `restart-support [plannedOnly]`
`no restart-support`

Parameter Description

- `plannedOnly` - Supports only the planned restarts (such as restarting a control plane after a planned downtime).

Mode BGP Router Configuration Mode

Package Enterprise and Metro_E

Default Graceful restart support is disabled.

Note: This command executes only if the graceful restart capability is disabled.

Example `SEFOS(config-router)# restart-support`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `no bgp graceful-restart` - Disables the graceful restart capability and resets the restart-time or stalepath-time to default value.
- `show ip bgp restartsupport` - Displays the restart support of the BGP.

33.51 restart-reason

Command Objective This command configures the reason for the graceful restart of the BGP router. The reason for restart can be unknown, software upgrade, scheduled restart, or switching to a redundant router.

The entity should save any change made using this command in a non-volatile storage, as the configuration set using this command is persistent.

The no form of the command resets the reason for restart.

Syntax `restart-reason [{unknown | softwareRestart | swReloadUpgrade}]`

`no restart-reason [{unknown | softwareRestart | swReloadUpgrade}]`

Parameter Description

- **unknown** - Configures reason for graceful restart of the BGP router as restart due to unplanned events (such as restarting after a crash).
- **softwareRestart** - Configures reason for graceful restart of the BGP router as restart due to restart of software.
- **swReloadUpgrade** - Configures reason for graceful restart of the BGP router as restart due to reload or upgrade of software.

Mode BGP Router Configuration Mode

Package Enterprise and Metro_E

Default softwareRestart

Example `SEFOS(config-router)# restart-reason swReloadUpgrade`

Related Command(s)

- `router bgp` – Sets the AS number of the BGP Speaker.
- `show ip bgp restartreason` - Displays the restart reason of the BGP.

33.52 distribute-list route-map

Command Objective	This command enables route-map filtering for inbound or outbound routes and defines the conditions for distributing the routes from one routing protocol to another. The no form of the command disables inbound filtering for the routes.
Syntax	<pre>distribute-list route-map <name (1-20)> {in out} no distribute-list route-map <name (1-20)> {in out}</pre>
Note:	This command is available only if route-map is enabled.
Parameter Description	<ul style="list-style-type: none">• <name (1-20)> - Specifies the name of the route-map to be used for filtering. This value is a string with the maximum size of 20.• in - Sets filtering for inbound routes.• out - Sets filtering for outbound routes.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode.
Package	Enterprise and Metro_E
Note:	Only one route-map can be set for inbound or outbound routes. Another route-map can be assigned, only if the already assigned route-map is disabled.
Example	<pre>SEFOS(config-router)# distribute-list route-map rmap-test in</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.

33.53 distance

Command Objective	<p>This command enables the administrative distance value which is used as a preference parameter in IP for best route selection. This value ranges from 1 to 255.</p> <p>The no form of the command disables the administrative distance.</p>
Syntax	<pre>distance <1-255> [route-map <name (1-20)>]</pre> <pre>no distance [route-map <name (1-20)>]</pre> <p>If Routemap is disabled</p> <pre>distance <1-255></pre> <pre>no distance</pre>
Parameter Description	<ul style="list-style-type: none">• <code>route-map <name (1-20)></code> - Configures the name of the route-map for which the distance value should be enabled and set. This value is a string with the maximum size of 20.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	Distance can be set for only one route-map. Another route-map can be assigned, only if the already assigned route-map is disabled.
Example	<pre>SEFOS(config-router)# distance 10 route-map rmap-test</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.

33.54 clear ip bgp

Command Objective This command resets the BGP connection dynamically for inbound and outbound route policy. The inbound routing tables are updated dynamically or by generating new updates using stored update information.

If the keyword `soft` and the associated direction are not specified, then this causes hard clear, that is, the BGP session with peer is reset.

Syntax

```
clear ip bgp [vrf <string (32)>] {dampening [<random_str>
<num_str>] | flap-statistics [<random_str> <num_str>] | {
* | <AS no>| external | ipv4 | ipv6 | <random_str> } [soft
[{{in [prefix-filter]|out}}]] }
```

Parameter Description

- **vrf <vrf-name>** - Resets the BGP connection for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
- **dampening [<random_str><num_str>]** - Clears the dampening-related configuration for the BGP.
 - **<random_str>** - Clears dampening information for the specified IPv4 or IPv6 address.
 - **<num_str>** - Specifies the prefix length of the route. This value ranges from 0 to 128.
- **flap-statistics [<random_str> <num_str>]** - Clears the route flap statistics for the BGP.
 - **<random_str>** - Clears flap statistics for the specified IPv4 or IPv6 address.
 - **<num_str>** - Specifies the prefix length of the route. This value ranges from 0 to 128.
- ***** - Resets All BGP peers
- **<AS no>** - Clear peers with the specified AS number. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535.

Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535.

Note: When four-bit-asn is disabled, this value ranges from 1 to 65535 or between 0.1 and 0.65535.

Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.1 to 65535.65535.

- **external** - Clear all external peers.
-

- **ipv4** - Resets the BGP connection dynamically for all IPv4 address family peers.
- **ipv6** - Resets the BGP connection dynamically for all IPv6 address family peers.
- **<random_str>** - Resets the BGP connection dynamically for the specified IP address or the configured peer group name.
 - **<ip-address>** - Resets the BGP connection for the specified peer identified with the IP address.
 - **<peer-group-name>** - Resets the BGP connection dynamically for all the members of the given peer group.
- **soft** - Configures the soft clear which is automatically assumed when the route refresh capability is supported.
 - **in** - Initiates inbound soft reconfiguration which causes the software to store all received updates without modification regardless of whether an update is accepted by the inbound policy.
 - **prefix-filter** - Pushes out prefix-list ORF and initiates inbound soft reconfiguration.
 - **out** - Initiates outbound soft configuration which does not have any memory overhead and does not require any preconfiguration. An outbound reconfiguration can be triggered on the other side of the BGP session to make the new inbound policy take effect.

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example SEFOS# `clear ip bgp dampening 12.0.0.1 0`

Related Command(s)

- **bgp dampening** – Sets the BGP dampening parameters.
 - **ip bgp dampening** - Configures the dampening parameters and changes various BGP route dampening factors.
 - **show ip bgp** – Displays the BGP-related information.
 - **ip bgp four-byte-asn** - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
 - **bgp asnotation dot** - Changes the output format of BGP ASNs from asplain to asdot notation.
-

33.55 clear bgp ipv6

Command Objective This command dynamically resets the BGPv6 connection for inbound or outbound route policy.

If the keyword `soft` and the associated direction are not specified, then this causes hard clear (that is, the BGP session with peer is reset).

Note: This command is available only if IP6RTR is enabled.

Syntax `clear bgp [vrf <vrf-name>] ipv6 <*> [ipv6-address] [soft <in[<prefix-filter>] | out>]`

Parameter Description

- **vrf <vrf-name>** - Resets the BGPv6 connection for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
- ***** - Configures all the BGP peers.
- **<ip-address>** - Configures the remote IP address which is associated with specific BGP peer.
- **soft** - Initiates soft reset (that is, the BGP session with peer is not reset). The available options are:
 - **in** – Performs a dynamic soft inbound reset.
 - **prefix-filter** - Pushes out prefix-list ORF and initiates inbound soft reconfiguration.
 - **out** – Performs a dynamic soft outbound reset.

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example `SEFOS# clear bgp ipv6 1111::2222`

Related Command(s)

- `show bgp ipv6` – Shows the BGP IPv6-related information.

33.56 do shutdown ip bgp

Command Objective	<p>This command sets the BGP Speaker Global Admin status DOWN.</p> <p>The no form of the command sets the BGP Speaker Global Admin status UP. BGP functionally is active only when the global admin status is UP.</p> <p>The <code>shutdown</code> command does not affect all the configurations. All peer sessions go down and routes learned through redistribution are lost. If RFD is enabled, then routes history is cleared.</p>
Syntax	<pre>do shutdown ip bgp [vrf <vrf-name>] no shutdown ip bgp [vrf <vrf-name>]</pre>
Parameter Description	<p><code>vrf <vrf-name></code> - Sets the BGP Speaker Global Admin status up or down for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.</p>
Mode	Global Configuration Mode
Package	Enterprise and Metro_E
Default	The BGP Speaker Global Admin status is DOWN.
	<p><u>Note:</u> The BGP Speaker Global Admin status can be made UP only if the BGP Speaker Local AS Number is configured.</p>
Example	<pre>SEFOS(config)# do shutdown ip bgp</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> - Configures the AS number of the BGP Speaker.• <code>ip bgp overlap-policy</code> – Configures the Overlap Route policy for the BGP Speaker.• <code>ip bgp synchronization / synchronization</code> – Enables synchronization between BGP and IGP.• <code>show ip bgp info</code> – Displays the general information about BGP protocol.

33.57 debug ip bgp

Command Objective This command enables the tracing of the BGP module as per the configured debug levels. The trace statements are generated for the configured trace levels.

The no form of the command disables the tracing of the BGP module as per the configured debug levels. The trace statements are not generated for the configured trace levels.

Syntax

```
debug ip bgp [vrf <vrf-name> ] [{all|ipv4 unicast |ipv6 unicast | <random_str>}] [{peer | update | fdb | keep | in | out | damp | events | gr | vpls}]
```

```
no debug ip bgp [vrf <vrf-name> ]{peer | update | fdb | keep | in | out | damp | events | gr | vpls | all}
```

Parameter Description

- **vrf <vrf-name>** - Generates debug statements for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
 - **all** - Generates debug statements for all peers.
 - **ipv4 unicast** - Generates debug statements for the trace code related to IPv4 peers or related IPv4 unicast address family peers.
 - **ipv6 unicast** - Generates debug statements for the trace code related to IPv6 peers or related IPv6 unicast address family peers.
 - **<random_str>** - Generates debug statements for the trace code related to the specified IPv4 or IPv6 peer address.
 - **peer** - Generates debug statements for the trace code related to peer processing.
 - **update** - Generates debug statements for the trace code related to update processing.
 - **fdb** - Generates debug statements for the trace code related to update of FDB.
 - **keep** - Generates debug statements for the trace code related to keep-alives.
 - **in** - Generates debug statements for the trace code related to incoming messages.
 - **out** - Generates debug statements for the trace code related to outgoing
-

messages.

- **damp** - Generates debug statements for the trace code related to dampening parameters.
- **events** - Generates debug statements for the trace code related to BGP event processing.
- **gr** - Generates debug statements for the trace code related to graceful restart.
- **vp1s** - Generates debug statements for the trace code related to BGP L2VPN-VPLS event processing.
- **all** - Generates debug statements for all the BGP trace codes.

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Note: This command executes only if BGP Speaker local AS number is configured.

Example SEFOS# debug ip bgp peer

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.

33.58 show bgp-version

Command Objective	This command displays the BGP Version information.
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Syntax	<code>show bgp-version</code>
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Mode	Privileged EXEC Mode
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Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show bgp-version OracleBGP Version : 4</pre>
----------------	--

33.59 show ip bgp

Command Objective	This command displays the BGP-related information.
--------------------------	--

Syntax	<pre>show ip bgp [vrf <vrf-name>] {[neighbor [<peer-addr> [received prefix-filter]]] [rib] [stale] [<ip_addr>] [prefix-len]}</pre>
---------------	--

Parameter Description	<ul style="list-style-type: none">• vrf <vrf-name> - Displays the BGP-related information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• neighbor <peer-addr> - Displays BGP information for the specified IP address of the neighbor.<ul style="list-style-type: none">▪ received prefix-filter - Displays the received ORF entries.• rib - Displays the BGP local RIB (Routing Information Base).• stale - Displays the routes which have gone stale due to graceful restart.• <ip addr> - Displays BGP information for the specified unicast IP address representing BGP identifier.• prefix-len - Displays BGP information for the specified prefix length. This value ranges from 0 to 32.
------------------------------	--

Mode	Privileged EXEC Mode
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Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show ip bgp neighbor 60.0.0.5 BGP neighbor is 12.0.0.1, remote AS 100, external link BGP version 0, remote router ID 0.0.0.0 Network Address: None BGP state = Idle Configured BGP Maximum Prefix Limit 10 AutomaticStart DISABLED AutomaticStop DISABLED DampPeer Oscillations DISABLED DelayOpen DISABLED Configured Connect Retry Count 5 Current Connect Retry Count 0 Default-originate : DISABLED</pre>
----------------	---

```

-----
Peer Passive : DISABLED
Peer Status : NOT DAMPED
GateWay Address : NONE

Rcvd update before 0 secs, hold time is 90, keepalive
interval is 30 secs

BFD Monitoring : Enabled
Ip Prefix-list IN : aa
Received 0 messages, 0 Updates
Sent 0 messages, 0 Updates
Route refresh: Received 0, sent 0.
Minimum time between advertisement runs is 30 seconds
Connections established 0 time(s)
Graceful Restart Capability: advertised
Local host: 12.0.0.4, Local port: 0
Foreign host: 12.0.0.1, Foreign port: 0
Last Error: Code 0, SubCode 0.
Update Source 12.0.0.4
Next-Hop is automatic
MultiHop Status - disabled
Send-Community is standard,extended

```

SEFOS# show ip bgp rib

Context Name : default

```

-----
BGP table version is 1,local router ID is 60.0.0.2
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Type Network      NextHop          Metric LocPrf Path
Origin
-----
> 66.0.0.0/8      60.0.0.66/4     0      -      ?

```

SEFOS# show ip bgp stale

Context Name : default

```

-----
BGP table version is 7,local router ID is 60.0.0.5
Origin codes: i - IGP, e - EGP, ? - incomplete
Network      NextHop          Metric LocPrf Path Origin
-----

```

66.0.0.0/8	60.0.0.66/4	100	200	?
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Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **bgp router-id** – Configures the BGP Identifier of the BGP Speaker.
 - **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
 - **neighbor - interval** – Configures neighbor interval.
 - **neighbor - timers** – Configures neighbor KeepAlive Time and Hold Time intervals.
 - **neighbor - shutdown** – Disables the peer session.
 - **neighbor - update-source** - Configures the source address for routing updates and for TCP connection establishment with a peer.
 - **neighbor - gateway** - Configures gateway router's address that will be used as nexthop in the routes advertised to the peer.
 - **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor - maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor - allow-autostop** - Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - connect-retrycount** - Sets the retry count for the BGP peer.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **neighbor - peer-group** – Creates a peer group.
 - **clear ip bgp** – Resets the BGP connection dynamically for inbound and outbound route policy.
 - **neighbor - Local-as** - Updates the local AS used for the peer connection.
-

-
- **neighbor - fall over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
-

33.60 show ip bgp restart mode

Command Objective	This command displays the restart mode of the BGP router and neighbors. The BGP Speaker can be in restarting or receiving mode.
Note:	The <code>show</code> command displays information for all VRF instances only if the <code>address-family</code> is set for the specified instance.
Syntax	<code>show ip bgp {restartmode [neighbor [<peer-addr>]]}</code>
Parameter Description	<ul style="list-style-type: none">• <code>restartmode</code> - Displays the restart mode of the BGP router.• <code>neighbor <peer-addr></code> - Displays the restart mode for the specified IP address of the neighbor.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp restartmode neighbor 10.2.4.5 Context Name : default ----- Oracle BGP4:- In Receiving Mode Neighbor RestartMode ----- - 10.2.4.5 None SEFOS# show ip bgp restartmode neighbor 23.45.0.1 Context Name : default ----- Oracle BGP4:- Restart feature is not enabled Neighbor RestartMode ----- - 23.45.0.1 None Context Name : vrf1 ----- Oracle BGP4:- Restart feature is not enabled Context Name : vrf2 ----- Oracle BGP4:- Restart feature is not enabled</pre>

Related Command(s)

- `bgp graceful-restart` - Enables the graceful restart capability.
 - `neighbor - remote-as` - Creates a peer and initiates the connection to the peer.
-

33.61 show ip bgp EndOfRIBMarkerStatus

Command Objective	This command displays the End_Of_RIB marker status of the BGP router and neighbors.
--------------------------	---

Syntax	<code>show ip bgp [vrf <vrf-name>] {EndOfRIBMarkerStatus [neighbor [<peer-addr>]]}</code>
---------------	---

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Parameter Description	<ul style="list-style-type: none">• <code>vrf <vrf-name></code> - Displays the End_Of_RIB marker status for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <code>neighbor<peer-addr></code> - Displays the End_Of_RIB marker status for the specified IP address of the neighbor.
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Mode	Privileged EXEC Mode
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Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show ip bgp EndOfRIBMarkerStatus Context Name : default ----- Neighbor EORSent EORRcvd ----- ----- ----- 60.0.0.5 NA Received 30.0.0.4 Sent Received SEFOS# show ip bgp EndOfRIBMarkerStatus neighbor 60.0.0.5 Context Name : default ----- Neighbor EORSent EORRcvd ----- ----- ----- 60.0.0.5 NA Received SEFOS# show ip bgp vrf vrf1 EndOfRIBMarkerStatus Context Name : vrf1 ----- Neighbor EORSent EORRcvd ----- ----- -----</pre>
----------------	---

23.45.0.1 NA NA

Related Command(s)

- **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
-

33.62 show ip bgp restartreason

Command Objective	This command displays the restart reason of the BGP.
--------------------------	--

Syntax	<code>show ip bgp restartreason</code>
---------------	--

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
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Mode	Privileged EXEC Mode
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Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show ip bgp restartreason Context Name : default ----- Oracle BGP4: Restart reason is software restart SEFOS# show ip bgp restartreason Context Name : default ----- Oracle BGP4: Restart reason is software upgrade SEFOS# show ip bgp restartreason Context Name : vrf1 ----- Oracle BGP4: Restart reason is unknown</pre>
----------------	--

Related Command(s)	<ul style="list-style-type: none"><code>restart-reason</code> - Configures the reason for BGP graceful restart.
---------------------------	---

33.63 show ip bgp restartexitreason

Command Objective This command displays the restart exit reason of the BGP. This is the outcome of the last attempt at a graceful restart.

The valid exit reasons can be:

- None – The speaker has not restarted.
- InProgress - A restart attempt is currently underway.
- Success - A restart is completed successfully.
- Failure - Failure due to the speaker is not completed the restart process within the restart interval.

Note: The `show` command displays information for all VRF instances only if the address-family is set for the specified instance.

Syntax `show ip bgp restartexitreason`

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example

```
SEFOS# show ip bgp restartexitreason
Context Name : default
-----
Oracle BGP4: Restart In Progress

SEFOS# show ip bgp restartexitreason
Context Name : default
-----
Oracle BGP4: Speaker has not restarted

SEFOS# show ip bgp restartexitreason
Context Name : default
-----
Oracle BGP4: GR Exit Reason is Success

SEFOS# show ip bgp restartexitreason
Context Name : default
-----
Oracle BGP4: GR Exit Reason is Failure
```

Related Command(s)

- `neighbor - remote-as` – Creates a peer and initiates the connection to the peer.
 - `bgp graceful-restart` - Enables the graceful restart capability.
-

33.64 show ip bgp restartsupport

Command Objective	This command displays the restart support of the BGP.
Note:	The <code>show</code> command displays information for all VRF instances only if the <code>address-family</code> is set for the specified instance.
Syntax	<code>show ip bgp restartsupport</code>
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp restartsupport Oracle BGP4: Both planned and unplanned restart are supported SEFOS# show ip bgp restartsupport Oracle BGP4: Planned restart is supported SEFOS# show ip bgp restartsupport Oracle BGP4: Speaker does not have restart support</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>neighbor - remote-as</code> - Creates a peer and initiates the connection to the peer.• <code>restart-support</code> - Enables the graceful restart support.

33.65 show ip bgp restartstatus

Command Objective This command displays the current restart status of the BGP. This indicates if the speaker is restarted or not. If it is restarted, whether it is a planned restart or unplanned restart.

Note: The `show` command displays information for all VRF instances only if the address-family is set for the specified instance.

Syntax `show ip bgp restartstatus`

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example

```
SEFOS# show ip bgp restartstatus
Context Name : default
-----
Oracle BGP4: Restart status in none
Context Name : vrf1
-----
Oracle BGP4: Restart status in unplanned
Context Name : vrf2
-----
Oracle BGP4: Restart status in none
```

Related Command(s)

- `bgp graceful-restart` - Enables the graceful restart capability.
- `neighbor - remote-as` - Creates a peer and initiates the connection to the peer.

33.66 show ip bgp community community-number

Command Objective	This command displays routes that belong to specified BGP communities.
--------------------------	--

Syntax	<code>show ip bgp community community-number (4294967041-4294967043,65536-4294901759) [exact]</code>
---------------	--

Note:	To execute this command L3VPN flag should be enabled.
--------------	---

Parameter Description	<ul style="list-style-type: none"><code>community-number (4294967041-4294967043, 65536-4294901759)</code> - Displays the routes that belong to the specified BGP community attribute. This value ranges from 4294967041 to 4294967043 or from 65536 to 4294901759.<code>exact</code> - Displays the routes that have the same specified communities.
------------------------------	---

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
----------------	------------------------

Example	<pre>SEFOS# show ip bgp community community-number 75000 BGP table version is 5,local router ID is 10.0.0.2 Status codes: d damped * valid, > best, i - internal Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Path ----- 76.0.0.0/8 10.0.0.1 1 100 77.0.0.0/8 10.0.0.1 1 100 78.0.0.0/8 10.0.0.1 1 100</pre>
----------------	--

Related Command(s)	<ul style="list-style-type: none"><code>router bgp</code> – Sets the AS number of the BGP Speaker.<code>bgp comm-route</code> – Configures an entry in additive or delete-community table.
---------------------------	---

33.67 show ip bgp extcommunity – routes

Command Objective	This command displays routes that belong to specified BGP extended communities.
--------------------------	---

Syntax	<code>show ip bgp extcommunity <value (xx:xx:xx:xx:xx:xx:xx:xx)> [exact]</code>
---------------	---

Note:	To execute this command L3VPN flag should be enabled.
--------------	---

Parameter Description	<ul style="list-style-type: none">• <code><value (xx:xx:xx:xx:xx:xx:xx:xx)></code> - Displays the routes for the specified extended community value. This is an octet string value in the form xx:xx:xx:xx:xx:xx:xx:xx.• <code>exact</code> - Displays the routes that has the same specified extended communities.
------------------------------	--

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
----------------	------------------------

Example	<pre>SEFOS# show ip bgp extcommunity 01:02:33:33:33:33:33:33 BGP table version is 5,local router ID is 10.0.0.2 Status codes: d damped * valid, > best, i - internal Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Path ----- 75.0.0.0/8 10.0.0.1 1 100 79.0.0.0/8 10.0.0.1 1 100 SEFOS# show ip bgp extcommunity 01:02:33:33:33:33:33:33 exact BGP table version is 5,local router ID is 10.0.0.2 Status codes: d damped * valid, > best, i - internal Origin codes: i - IGP, e - EGP, ? - incomplete Network Next Hop Metric LocPrf Path ----- 75.0.0.0/8 10.0.0.1 1 100</pre>
----------------	---

Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>bgp ecomm-route</code> – Configures an entry in additive or delete-extended community table.
---------------------------	---

33.68 show ip bgp summary

Command Objective This command displays the status of all BGP4 connections. If the VRF option is specified, it displays the status of BGP4 connection for the specified VRF instance.

Note: The `show` command displays information for all VRF instances only if the address-family is set for the specified instance.

Syntax `show ip bgp summary [vrf <vrf-name>]`

Parameter Description `vrf <vrf-name>` - Displays the status of BGP4 connections for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example

```
SEFOS# show ip bgp summary
Context Name : default
-----

BGP router identifier is 12.0.0.1, local AS number 1
Forwarding State is enabled

BGP router identifier is 12.0.0.1, local AS number 1

BGP table version is 0
Neighbor   Version   AS      MsgRcvd  MsgSent  Up/Down
State/PfxRcd
-----
23.45.0.1   4        66      0        0        -
Idle
Context Name : vrf1
-----

BGP router identifier is 0.0.0.0, local AS number 1
Forwarding State is enabled
```

BGP router identifier is 0.0.0.0, local AS number 1

BGP table version is 0

Neighbor State/PfxRcd	Version	AS	MsgRcvd	MsgSent	Up/Down
--------------------------	---------	----	---------	---------	---------

-----	-----	--	-----	-----	-----
-------	-------	----	-------	-------	-------

Context Name : vrf2

BGP router identifier is 0.0.0.0, local AS number 1
Forwarding State is enabled

BGP router identifier is 0.0.0.0, local AS number 1

BGP table version is 0

Neighbor State/PfxRcd	Version	AS	MsgRcvd	MsgSent	Up/Down
--------------------------	---------	----	---------	---------	---------

-----	-----	--	-----	-----	-----
-------	-------	----	-------	-------	-------

SEFOS # show ip bgp summary vrf default

Context Name : default

BGP router identifier is 12.0.0.1, local AS number 1
Forwarding State is enabled

BGP router identifier is 12.0.0.1, local AS number 1

BGP table version is 0

Neighbor State/PfxRcd	Version	AS	MsgRcvd	MsgSent	Up/Down
--------------------------	---------	----	---------	---------	---------

-----	-----	--	-----	-----	-----
-------	-------	----	-------	-------	-------

23.45.0.1	4	66	0	0	-
-----------	---	----	---	---	---

Idle

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **bgp router-id** – Configures the BGP Identifier of the BGP Speaker.
-

-
- `neighbor - remote-as` – Creates a peer and initiates the connection to the peer.
 - `neighbor - peer-group` – Creates a peer group.
-

33.69 show ip bgp filters

Command Objective	This command displays the contents of filter table.
--------------------------	---

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Syntax	<code>show ip bgp filters [vrf <vrf-name>]</code>
---------------	---

Parameter Description	<code>vrf <vrf-name></code> - Displays the contents of filter table for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
------------------------------	--

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show ip bgp filters Context Name : default ----- Index AdminStatus Remote-AS Prefix PrefixLen Inter-AS Direction Action ----- 6 up 145 72.93.0.0 16 150 in filter Context Name : vrf1 ----- Index AdminStatus Remote-AS Prefix PrefixLen Inter-AS Direction Action ----- ----- SEFOS# show ip bgp filters vrf default Context Name : default ----- Index AdminStatus Remote-AS Prefix PrefixLen Inter-AS Direction Action ----- -- 6 up 145 72.93.0.0 16 150 in filter</pre>
----------------	--

Related Command(s)	<ul style="list-style-type: none"><code>bgp update-filter</code> – Configures an entry in Update Filter Table.
---------------------------	--

33.70 show ip bgp aggregate

Command Objective	This command displays the contents of Aggregate table.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp aggregate [vrf <vrf-name>]</code>
Parameter Description	<code>vrf <vrf-name></code> - Displays the contents of the Aggregate table for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp aggregate Context Name : default ----- Index AdminStatus Prefix PrefixLen Advertise ----- 1 up 10.0.0.0 8 all 2 up 20.0.0.0 8 summary-only 3 up 50.0.0.0 8 all</pre>
Related Command(s)	<ul style="list-style-type: none"><code>aggregate-address index</code> – Configures an entry in Aggregate table.

33.71 show ip bgp med

Command Objective	This command displays the contents of MED table.
--------------------------	--

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Syntax	<code>show ip bgp med [vrf <vrf-name>]</code>
---------------	---

Parameter Description	<code>vrf <vrf-name></code> - Displays the contents of MED table for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
------------------------------	---

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
----------------	------------------------

Example	<pre>SEFOS# show ip bgp med Context Name : default ----- Index Admin Remote-AS Prefix PrefixLen Inter-AS Direction Value PreferenceStatus ----- ----- 5 up 200 212.23.45.0 24 150 in 50 true Context Name : vrf1 ----- Index Admin Remote-AS Prefix PrefixLen Inter-AS Direction Value PreferenceStatus ----- ----- SEFOS# show ip bgp med default Context Name : default ----- Index Admin Remote-AS Prefix PrefixLen Inter-AS Direction Value PreferenceStatus ----- ----- 5 up 200 212.23.45.0 24 150 in 50 true</pre>
----------------	---

Related Command(s)

- `bgp med` – Configures an entry in MED table.
 - `bgp bestpath med confed` – Enables MED comparison among paths learned from confederation peers.
-

33.72 show ip bgp dampening

Command Objective	This command displays the contents of Dampening table.
--------------------------	--

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Syntax	<code>show ip bgp dampening [vrf <vrf-name>] [{flap-statistics dampened-paths}]</code>
---------------	--

Parameter Description	<ul style="list-style-type: none">• <code>vrf <vrf-name></code> - Displays the contents of Dampening table for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <code>flap-statistics</code> - Displays the flap-statistic contents of Dampening table.• <code>dampened-paths</code> - Displays the dampened-path contents of Dampening table.
------------------------------	---

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
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Example	<pre>SEFOS# show ip bgp dampening Context Name : default ----- Half Life Time is 900 Reuse value is 750 Suppress value is 2000 Max Suppress time is 3600 Decay timer granularity is 1 Reuse timer granularity is 15 Reuse index array size is 1024 Context Name : vrf1 ----- Half Life Time is 1000 Reuse value is 1998 Suppress value is 2000 Max Suppress time is 3600</pre>
----------------	---

```
Decay timer granularity is 1
Reuse timer granularity is 135
Reuse index array size is 257
```

```
Context Name : vrf2
```

```
-----
Half Life Time is 2000
Reuse value is 1990
Suppress value is 2050
Max Suppress time is 3600
Decay timer granularity is 1
Reuse timer granularity is 135
Reuse index array size is 257
```

```
SEFOS# show ip bgp dampening vrf default
```

```
Context Name : default
```

```
-----
Half Life Time is 601
Reuse value is 750
Suppress value is 2000
Max Suppress time is 3600
Decay timer granularity is 1
Reuse timer granularity is 15
Reuse index array size is 1024
```

```
SEFOS# show ip bgp dampening flap-statistics
```

```
Context Name : default
```

```
-----
BGP table version is 3,local router ID is 12.0.0.2
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
```

```
          S Stale
```

```
Origin codes: i - IGP, e - EGP, ? - incomplete
```

```
Type   Network   NextHop   Flaps   Duration   Reuse   Path
Origin
```

```
-----
--
>   40.0.0.0/8   12.0.0.1   1   00:00:4:8   -   100
?
```

```
SEFOS# show ip bgp dampening dampened-paths
```

Context Name : default

BGP table version is 7, local router ID is 12.0.0.2

Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal

S Stale

Origin codes: i - IGP, e - EGP, ? - incomplete

Type	Network	NextHop	Reuse	Path
Origin				
---	-----	-----	-----	-----

h	40.0.0.0/8	12.0.0.1	00:1:40:45	100
?				

Related Command(s)

- **ip bgp dampening** – Configures the Dampening parameters.
 - **bgp dampening** – Configures the Dampening parameters.
-

33.73 show ip bgp local-pref

Command Objective	This command displays the contents of Local Preference table.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp local-pref [vrf <vrf-name>]</code>
Parameter Description	<code>vrf <vrf-name></code> - Displays the contents of Local Preference table for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp local-pref Context Name : default ----- Cluster id is 12.0.0.1 Desired Support of the route reflector - Client Support BGP Peer Extension Table Peer Address Client/Non-Client ----- 13.0.0.25 Non-client Context Name : vrf1 ----- Cluster id is None Desired Support of the route reflector - Client Support BGP Peer Extension Table Peer Address Client/Non-Client ----- 25.0.0.25 Non-client SEFOS# show ip bgp local-pref vrf default Context Name : default ----- Cluster id is 12.0.0.1 Desired Support of the route reflector - Client Support</pre>

BGP Peer Extension Table	
Peer Address	Client/Non-Client

13.0.0.25	Non-client

Related Command(s)

- **bgp local-preference** – Configures an entry in Local Preference table.
-

33.74 show ip bgp timers

Command Objective	This command displays the value of BGP timers.
--------------------------	--

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Syntax	<code>show ip bgp timers [vrf <vrf-name>]</code>
---------------	--

Parameter Description	<code>vrf <vrf-name></code> - Displays the value of BGP timers for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
------------------------------	---

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
----------------	------------------------

Example	<pre>SEFOS# show ip bgp timers Context Name : default ----- Graceful restart Timers ----- Restart Time 90 Stale Time 150 Selection Deferral Timer Time 60 Peer Timers Peer Address Holdtime KeepAliveTime ConnectRetry ASOrig IdleHoldTime DelayOpenTime RouteAdvt RestartTime ----- 23.45.0.1 90 30 NA 30 15 60 Context Name : vrf1 ----- Graceful restart Timers ----- Restart Time 90 Stale Time 150 Selection Deferral Timer Time 60 Peer Timers</pre>
----------------	---

```

-----
Peer Address Holdtime KeepAliveTime ConnectRetry
ASOrig IdleHoldTime DelayOpenTime RouteAdvt RestartTime
-----
-----

```

```
Context Name : vrf2
-----
```

```
Graceful restart Timers
-----
```

```
Restart Time    90
Stale Time      150
Selection Deferral Timer Time  60
```

```
Peer Timers
```

```
Peer Address Holdtime KeepAliveTime ConnectRetry
ASOrig IdleHoldTime DelayOpenTime RouteAdvt RestartTime
-----
-----
```

SEFOS# show ip bgp timers vrf default

```
Context Name : default
-----
```

```
Graceful restart Timers
-----
```

```
Restart Time    90
Stale Time      150
Selection Deferral Timer Time  60
```

```
Peer Timers
```

```
Peer Address Holdtime KeepAliveTime ConnectRetry
ASOrig IdleHoldTime DelayOpenTime RouteAdvt RestartTime
-----
-----
```

```

23.45.0.1      90      30      NA      30      15
60             0       30

```

Related Command(s)

- **ip bgp dampening** – Configures the Dampening parameters.
- **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
- **neighbor - interval** – Configures neighbor interval.
- **neighbor - timers** – Configures neighbor KeepAlive Time and Hold Time intervals.

-
- `neighbor - peer-group` – Creates a peer group.
 - `bgp graceful-restart` - Enables the graceful restart capability.
 - `bgp update-delay` - Configures the selection deferral time interval.
-

33.75 show ip bgp info

Command Objective	This command displays the general information about BGP protocol.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp info [vrf <vrf-name>]</code>
Parameter Description	<code>vrf <vrf-name></code> - Displays the general information about BGP protocol for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp info Context Name : default ----- Routing Protocol is "bgp 100" Bgp Trap : Enabled The route change interval is "60" IGP synchronization is disabled Both more-specific and less-specificoverlap route policy is set Administrative Distance is 122 Default IPv4 Unicast Capability Status is set Local Preference is 100 Non-bgp routes are advertised to bothexternal and internal peers MED Comparision is disabled Metric is 0 Default Originate Disable Redistributing: BGP GR admin status is enabled Maximum paths: ibgp - 1 ebgp - 1 eibgp - 1 Maximum paths (Operational): ibgp - 1 ebgp - 1 eibgp - 1</pre>

Peer Table

Peer	Address	RemoteAS	NextHop	MultiHop	send-community
23.45.0.1	66	self		enable	standard,extended

Context Name : vrf1

Routing Protocol is "bgp 1"

Bgp Trap : Enabled

The route change interval is "60"

IGP synchronization is enabled

More-specific overlap route policy is set

Administrative Distance is 122

Default IPv4 Unicast Capability Status is set

Local Preference is 100

Non-bgp routes are advertised to both external and internal peers

MED Comparison is disabled

Metric is 0

Default Originate Enable

Redistributing:

BGP GR admin status is disabled

Maximum paths: ibgp - 1 ebgp - 1 eibgp - 64

Maximum paths (Operational): ibgp - 1 ebgp - 1 eibgp - 1

Peer Table

Peer	Address	RemoteAS	NextHop	MultiHop	send-community
------	---------	----------	---------	----------	----------------

Context Name : vrf2

Routing Protocol is "bgp 1"

Bgp Trap : Enabled

The route change interval is "60"

IGP synchronization is enabled

```
Both more-specific and less-specific overlap route policy
is set
Administrative Distance is 122
Default IPv4 Unicast Capability Status is set
Local Preference is 100
Non-bgp routes are advertised to both external and internal
peers
MED Comparision is disabled
Metric is 0
Default Originate Enable
Redistributing:
  BGP GR admin status is disabled
Maximum paths: ibgp - 1 ebgp - 1 eibgp - 64
Maximum paths (Operational): ibgp - 1 ebgp - 1 eibgp - 1

Peer Table
Peer Address RemoteAS NextHop MultiHop send-community
-----
```

SEFOS# show ip bgp info vrf default

Context Name : default

```
-----
Routing Protocol is "bgp 100"
Bgp Trap : Enabled
The route change interval is "60"
IGP synchronization is disabled
More-specific overlap route policy is set
Administrative Distance is 122
Default IPv4 Unicast Capability Status is set
Local Preference is 100
Non-bgp routes are advertised to both external and internal
peers
MED Comparision is disabled
Metric is 0
Default Originate Disable
Redistributing:
  BGP GR admin status is disabled
Maximum paths: ibgp - 1 ebgp - 1 eibgp - 64
```

Maximum paths (Operational): `ibgp - 1 ebgp - 1 eibgp - 1`

Peer Table

Peer Address	RemoteAS	NextHop	MultiHop	send-community
60.0.0.5	500	automatic	disable	standard,extended

Related Command(s)

- **router bgp** – Sets the AS number of the BGP Speaker.
 - **ip bgp overlap-policy** – Configures the Overlap Route policy for the BGP Speaker.
 - **default-information originate** - Enables redistribution and advertisement of the default router.
 - **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
 - **neighbor - peer-group** – Creates a peer group.
 - **ip bgp synchronization / synchronization** – Enables synchronization between BGP and IGP.
 - **bgp default local-preference** – Configures the Default Local Preference value.
 - **neighbor - ebgp-multihop** – Enables BGP to establish connection with external peers.
 - **neighbor - next-hop-self** – Enables BGP to send itself as the next hop for advertised routes.
 - **neighbor - interval** – Configures neighbor interval.
 - **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - send-community** – Enables advertisement of community attributes to (standard or extended) peer.
 - **neighbor - timers** – Configures neighbor KeepAlive Time and Hold Time intervals.
 - **bgp nonbgproute-adv** – Controls the advertisement of Non-BGP routes.
 - **redistribute** – Configures the protocol from which the routes have to be redistributed into BGP.
 - **redistribute - isis** – Controls redistribution of ISIS routes into BGP.
-

-
- **bgp always-compare-med** – Enables the comparison of MED for routes received from different autonomous systems.
 - **default-metric** – Configures the Default IGP Metric value.
 - **neighbor - password** – Configures the password for TCP-MD5 authentication with peer.
 - **bgp graceful-restart** - Enables the graceful restart capability.
 - **do shutdown ip bgp** – Sets the BGP Speaker Global Admin status DOWN.
 - **bgp trap** - Enables or disables the BGP trap notification.
 - **nexthop processing-interval** - Configures the interval at which next hops are monitored for reachability.
 - **redistribute ospf** - Configures the OSPF protocol from which the routes are redistributed into BGP.
 - **maximum-paths** - Sets the BGP multipath count.
-

33.76 show ip bgp rfl info

Command Objective	This command displays information about route reflector feature.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp rfl info [vrf <vrf-name>]</code>
Parameter Description	<code>vrf <vrf-name></code> - Displays the information about route reflector feature for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp rfl info Context Name : default ----- Cluster id is 12.0.0.1 Desired Support of the route reflector - Client Support BGP Peer Extension Table Peer Address Client/Non-Client ----- 23.45.0.1 Non-client Context Name : vrf1 ----- Cluster id is None Desired Support of the route reflector - Client Support BGP Peer Extension Table Peer Address Client/Non-Client ----- SEFOS# show ip bgp rfl info vrf default Context Name : default ----- Cluster id is 12.0.0.1 Desired Support of the route reflector - Client Support BGP Peer Extension Table</pre>

Peer Address	Client/Non-Client
--------------	-------------------

23.45.0.1	Non-client
-----------	------------

Related Command(s)

- **bgp nonbgproute-advt** – Controls the advertisement of Non-BGP routes either to the external peer (1) or both to internal & external peer (2).
 - **bgp client-to-client reflection** – Configures the route reflector to support route reflection to client peers.
 - **neighbor - route-reflector-client** – Configures the peer as client of the route reflector.
 - **bgp cluster-id** – Configures the Cluster ID for route reflector.
-

33.77 show ip bgp confed info

Command Objective	This command displays information about confederation feature.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp confed info [vrf <vrf-name>]</code>
Mode	Privileged EXEC Mode
Parameter Description	<code>vrf <vrf-name></code> - Displays the information about confederation feature for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp confed info Context Name : default ----- Confederation Identifier is 1000 Confederation best path med comparision is set Confederation peers: 100 Context Name : vrf1 ----- Confederation Identifier is 0 Confederation best path med comparision is not set Confederation peers: None Context Name : vrf2 ----- Confederation Identifier is 0 Confederation best path med comparision is not set Confederation peers: None SEFOS# show ip bgp confed info vrf default Context Name : default ----- Confederation Identifier is 0 Confederation best path med comparision is not set Confederation peers: None</pre>

Related Command(s)

- **bgp confederation identifier** – Configures the BGP confederation identifier.
 - **bgp bestpath med confed** – Enables MED comparison among paths learned from confederation peers.
 - **bgp confederation peers** – Configures the autonomous systems that belong to the confederation.
-

33.78 show ip bgp community

Command Objective	This command displays the contents of community tables.
--------------------------	---

Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
--------------	--

Syntax	<code>show ip bgp community [vrf <vrf-name>] {route policy filter}</code>
---------------	---

Parameter Description	<ul style="list-style-type: none">• <code>vrf <vrf-name></code> - Displays contents of community tables for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <code>route</code> - Displays the entry in additive or delete-community table.• <code>policy</code> - Displays the community attribute advertisement policy for specific destination.• <code>filter</code> - Displays the filter community attribute while receiving or advertising.
------------------------------	---

Mode	Privileged EXEC Mode
-------------	----------------------

Package	Enterprise and Metro_E
----------------	------------------------

Example	<pre>SEFOS# show ip bgp community route Context Name : default ----- Additive Community Table Prefix PrefixLen AddCommVal ----- 30.0.0.0 8 70000 60.0.0.0 8 75000 75.0.0.0 8 70000 76.0.0.0 8 75000 77.0.0.0 8 75000 78.0.0.0 8 75000 78.0.0.0 8 76000 Delete Community Table Prefix PrefixLen DeleteCommVal ----- -----</pre>
----------------	--

```
40.0.0.0      8          80000
70.0.0.0      8          85000
```

SEFOS# show ip bgp community filter

Context Name : default

Incoming Filter Table

CommValue	FilterStatus
-----------	--------------

70000	accept
-------	--------

80000	deny
-------	------

Outgoing Filter Table

CommValue	FilterStatus
-----------	--------------

75000	accept
-------	--------

85000	deny
-------	------

SEFOS# show ip bgp community policy

Context Name : default

Community Policy Table

Prefix	PrefixLen	SendStatus
--------	-----------	------------

20.0.0.0	8	set-add
----------	---	---------

30.0.0.0	8	set-none
----------	---	----------

40.0.0.0	8	modify
----------	---	--------

Related Command(s)

- **bgp comm-route** – Configures an entry in additive or delete-community table.
 - **bgp comm-filter** – Allows or filters the community attribute while receiving or advertising.
 - **bgp comm-policy** – Configures the community attribute advertisement policy for specific destination.
-

33.79 show ip bgp extcommunity

Command Objective This command displays the contents of extended community tables.

Note: The `show` command displays information for all VRF instances only if the address-family is set for the specified instance.

Syntax `show ip bgp [vrf <vrf-name>] extcommunity {route|policy|filter}`

Parameter Description

- **vrf <vrf-name>** - Displays the contents of extended community tables for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
- **route** - Displays the entry in additive or delete-extended community table.
- **policy** - Displays the extended community attribute advertisement policy for specific destination.
- **filter** - Displays the extended community filters attribute while receiving or advertising.

Mode Privileged EXEC Mode

Package Enterprise and Metro_E

Example

```
SEFOS# show ip bgp extcommunity route
Context Name : default
-----
Additive Ext-Community Table
Prefix      PrefixLen  AddEcommVal
-----
30.0.0.0    8          1:1:22:33:44:55:66:77
60.0.0.0    8          1:1:22:33:44:55:66:88
75.0.0.0    8          1:1:33:33:33:33:33:33
76.0.0.0    8          1:2:44:33:33:33:33:33
78.0.0.0    8          1:2:33:33:33:33:33:33
78.0.0.0    8          1:2:33:33:33:33:33:44
79.0.0.0    8          1:2:33:33:33:33:33:44
79.0.0.0    8          1:2:33:33:33:33:33:33
Delete Ext-Community Table
Prefix      PrefixLen  DeleteEcommVal
-----
```

```

-----
40.0.0.0      8      1:1:55:33:44:55:66:77
70.0.0.0      8      1:1:22:33:44:55:66:99

```

Context Name : vrf1

Additive Ext-Community Table

Prefix	PrefixLen	AddEcommVal
-----	-----	-----

Delete Ext-Community Table

Prefix	PrefixLen	DeleteEcommVal
--------	-----------	----------------

SEFOS# show ip bgp extcommunity filter

Context Name : default

Incoming Filter Table

EcommValue	FilterStatus
-----	-----

1:1:22:33:44:55:34:77	deny
1:1:22:33:44:55:66:77	accept

Outgoing Filter Table

EcommValue	FilterStatus
-----	-----

1:1:22:33:44:55:99:77	accept
1:1:44:33:77:66:99:56	deny

SEFOS# show ip bgp extcommunity policy

Context Name : default

Community Policy Table

Prefix	PrefixLen	SendStatus
-----	-----	-----

20.0.0.0	8	set-add
30.0.0.0	8	set-none
40.0.0.0	8	modify

Related Command(s)

- **bgp ecomm-route** – Configures an entry in additive or delete-extended community table.
- **bgp ecomm-filter** – Allows or filters the extended community attribute

while receiving or advertising.

- `bgp ecomm-policy` – Configures the extended community attribute advertisement policy for specific destination.
-

33.80 show bgp ipv6

Command Objective	This command displays the BGPv6-related information.
Note:	The <code>show</code> command displays information for all VRF instances only if the <code>address-family</code> is set for the specified instance.
Syntax	<pre>show bgp [vrf <vrf-name>] ipv6 {[neighbor [<peer-addr> [received prefix-filter]]] [rib] [stale] [[ip6_addr] [ip6_prefix]]}</pre>
Parameter Description	<ul style="list-style-type: none">• vrf <vrf-name> - Displays the BGPv6-related information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• neighbor [<peer-addr>] - Displays BGPv6 information for the specified IPv6 address of the neighbor.<ul style="list-style-type: none">▪ received prefix-filter - Displays the received ORF entries.• rib - Displays BGP local RIB (Routing Information Base) related information.• stale - Displays the information related to routes that have gone stale due to restart.• ip6_addr - Displays BGPv6 information for the specified IPv6 address from the RIB.• ip6_prefix - Displays BGPv6 information for the specified destination prefix length from the RIB. This value ranges from 0 to 128.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show bgp ipv6 neighbor Context Name : default ----- BGP neighbor is 2130::1, remote AS 10, external link BGP version 4, remote router ID 13.0.0.1 BGP state = Established, up for 11 minutes 19 seconds Rcvd update before 677 secs, hold time is 90, keepalive interval is 30 secs</pre>

```
Neighbors Capability:
Route-Refresh: Advertised and received
Address family IPv4 Unicast: Advertised and received
Received 24 messages, 1 Updates
Sent 24 messages, 0 Updates
Route refresh: Received 0, sent 0.
Minimum time between advertisement runs is 30 seconds
Connections established 1 time(s)
Local host: 0.0.48.33, Local port: 49153
Foreign host: 0.0.48.33, Foreign port: 179
Last Error: Code 0, SubCode 0.
BGP neighbor is 2340::4, remote AS 40, external link
BGP version 4, remote router ID 34.0.0.4
BGP state = Established, up for 11 minutes 18 seconds
Rcvd update before 0 secs, hold time is 90, keepalive
interval
is 30 secs
```

```
Neighbors Capability:
Route-Refresh: Advertised and received
Address family IPv4 Unicast: Advertised and received
Received 23 messages, 0 Updates
Sent 24 messages, 1 Updates
Route refresh: Received 0, sent 0.
Minimum time between advertisement runs is 30 seconds
Connections established 1 time(s)
Local host: 0.0.64.35, Local port: 179
Foreign host: 0.0.64.35, Foreign port: 49153
Last Error: Code 0, SubCode 0.
```

```
SEFOS# show bgp ipv6 neighbor 2130::1
```

```
Context Name : default
```

```
-----
```

```
BGP neighbor is 2130::1, remote AS 10, external link
BGP version 4, remote router ID 13.0.0.1
BGP state = Established, up for 12 minutes 18 seconds
Rcvd update before 736 secs, hold time is 90, keepalive
interval is 30 secs
```

```
Neighbors Capability:
```

```
Route-Refresh: Advertised and received
Address family IPv4 Unicast: Advertised and received
Received 26 messages, 1 Updates
Sent 25 messages, 0 Updates
Route refresh: Received 0, sent 0.
Minimum time between advertisement runs is 30 seconds
Connections established 1 time(s)
Local host: 0.0.48.33, Local port: 49153
Foreign host: 0.0.48.33, Foreign port: 179
Last Error: Code 0, SubCode 0.
```

SEFOS# show bgp ipv6 rib

Context Name : default

BGP table version is 1,local router ID is 13.0.0.3

Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal

Origin codes: i - IGP, e - EGP, ? - incomplete

Type	Network	NextHop	Metric	LocPrf	Path	Origin
>	2091::/24	2130::1/16	1	100	10	
?						

SEFOS# show bgp ipv6 stale

Context Name : default

BGP table version is 1,local router ID is 13.0.0.3

Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	NextHop	Metric	LocPrf	Path	Origin
2091::/24	2130::1/16	1	100	10	?

Related Command(s)

- **neighbor - remote-as** – Creates a peer and initiates the connection to the peer.
 - **neighbor - fall over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **neighbor - peer-group** – Creates a peer group.
-

-
- **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - ebgp-multihop** – Enables BGP to establish connection with external peers.
 - **neighbor - next-hop-self** – Enables BGP to send itself as the next hop for advertised routes.
 - **neighbor - interval** – Configures neighbor interval.
 - **neighbor - timers** – Configures neighbor KeepAlive Time and Hold Time intervals.
 - **neighbor - shutdown** – Disables the peer session.
 - **neighbor - update-source** - Configures the source address for routing updates and for TCP connection establishment with a peer.
 - **neighbor - capability** - Enables the specific BGP capability to be advertised and received from the peer.
 - **neighbor - gateway** - Configures gateway router's address that will be used as nexthop in the routes advertised to the peer.
 - **clear bgp ipv6** – Dynamically resets the BGP IPv6-related information.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
-

33.81 neighbor - maximum-prefix

Command Objective This command configures the maximum number of peers supported by BGP. BGP Speaker imposes a locally-configured upper bound on the number of address prefixes the speaker is willing to accept from a neighbor.

The no form of the command resets the maximum number of routes that are learned from that particular peer.

Syntax

```
neighbor <ip-address|peer-group-name> maximum-prefix <prefix-limit>
```

```
no neighbor <ip-address|peer-group-name> maximum-prefix
```

Parameter Description

- **<ip-address>** - Configures the remote BGP peer IP address for which the maximum peer is to be set.
- **<peer-group-name>** - Specifies the name of the BGP peer group for which the maximum peer is to be set. The members of the peer group will inherit the characteristic configured with this command.
- **maximum-prefix <prefix-limit>** - Configures the maximum number of address prefixes that the BGP peer is willing to accept from the neighbor. This value ranges from 1 to 2147483647.

Mode BGP Router Configuration Mode / Address Family Router Configuration Mode

Package Enterprise and Metro_E

Default 100

Note: This command executes only if Peer or Peer Group is created and Peer AS is configured.

Example SEFOS(config-router)# neighbor 23.45.0.1 maximum-prefix 255

Related Command(s)

- **router bgp** - Sets the AS number of the BGP Speaker.
- **address-family** - Enters the router into the address-family router configuration mode.
- **neighbor - remote-as** - Creates a peer and initiates the connection to the peer.
- **neighbor - peer-group** - Creates a peer group.
- **show ip bgp neighbor** - Displays neighbor-related information for the

peer.

33.82 neighbor - connect-retry-count

Command Objective	<p>This command sets the retry count for the BGP peer. This counter denotes the number of times the BGP peer should try to establish a TCP-Connect issue with its neighboring peers. The default value for the counter is set as 5. If the BGP peer exceeds the maximum count value, automatic stop event takes place and the BGP peer is brought down to the Idle State.</p> <p>The no form of the command resets the retry count of the BGP peer.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> connect-retry-count <value (1-50)></pre> <pre>no neighbor <ip-address peer-group-name> connect-retry-count</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the remote IP address of the BGP peer for which the retry count is to be set.• <peer-group-name> - Specifies the name of the BGP peer group for which the retry count is to be set. The members of the peer group will inherit the characteristic configured with this command.• connect-retry-count <value (1-50)> - Configures the retry count which specifies the number of times the BGP peer should try to establish a TCP-Connect issue with its neighboring peers. If the BGP peer exceeds the maximum count value, automatic stop event takes place and the BGP peer is brought down to the Idle State. This value ranges from 1 to 50.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	5
	<p><u>Note:</u> This command executes only if Peer or Peer Group is created and Peer AS is configured.</p>
Example	<pre>SEFOS(config-router)# neighbor 12.0.0.1 connect-retry-count 50</pre>
Related Command(s)	<ul style="list-style-type: none">• as-num - Sets the AS (Autonomous System) number for the router.• router-id - Sets the router ID's address for the router.• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to

the peer.

- **neighbor - peer-group** – Creates a peer group.
 - **show ip bgp neighbor** – To display neighbor-related information for the peer.
 - **address-family** - Enters the router into the address-family router configuration mode.
-

33.83 neighbor - allow-autostop

Command Objective	This command enables the auto stop option to stop the BGP peer and BGP connection automatically. The no form of this command disables the auto stop option.
Syntax	<pre>neighbor <ip-address peer-group-name> allow-autostop</pre> <pre>no neighbor <ip-address peer-group-name> allow-autostop</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the remote IP address of the BGP peer for which the auto stop option is set.• <peer-group-name> - Specifies the name of the BGP peer group for which the auto stop option is set. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	Auto stop option is disabled.
	<u>Note:</u> This command executes only if Peer or Peer Group is created and Peer AS is configured
Example	<pre>SEFOS(config-router)# neighbor 12.0.0.1 allow-autostop</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – To display neighbor-related information for the peer.• address-family - Enters the router into the address-family router configuration mode.

33.84 neighbor - damp-peer-oscillations

Command Objective	<p>This command enables the damp peer oscillation option. On implementing this logic, oscillations of BGP peers, in the face of sequences of automatic start and automatic stop in the IDLE state, are damped.</p> <p>The no form of this command disables the damp peer oscillation option.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> damp-peer-oscillations</pre> <pre>no neighbor <ip-address peer-group-name> damp-peer-oscillations</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the remote IP address of the BGP peer for which the damp peer oscillation option is set.• <peer-group-name> - Specifies the name of the BGP peer group for which the damp peer oscillation option is set. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	Damp peer oscillation option is disabled.
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 12.0.0.1 damp-peer-oscillations</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays neighbor-related information for the peer.• address-family - Enters the router into the address-family router configuration mode.

33.85 neighbor delay-open

Command Objective	<p>This command configures a delay in sending the first OPEN message to the BGP peer for a specific time period.</p> <p>The no form of the command disables the delay open option.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> delay-open</pre> <pre>no neighbor <ip-address peer-group-name> delay-open</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the remote IP address of the BGP peer for which the delay open option is set.• <peer-group-name> - Specifies the name of the BGP peer group for which the delay open option is set. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	Delay open option is disabled.
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 12.0.0.1 delay-open</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays neighbor-related information for the peer.• address-family - Enters the router into the address-family router configuration mode.

33.86 bgp trap

Command Objective	This command enables or disables the BGP trap notification.
Syntax	<code>bgp trap <enable disable></code>
Parameter Description	<ul style="list-style-type: none">• enable - Enables the trap notification for the BGP system. When there is any change in the graceful restart state of the router or peer, the BGP system sends the notification messages to the SNMP manager. For every graceful restart, appropriate trace messages are generated.• disable - Disables the trap notification for the BGP system and does not send the notification messages to the SNMP manager.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	enable
Example	<code>SEFOS (config-router)# bgp trap enable</code>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp info – Displays the general information about BGP protocol.

33.87 neighbor – peer group

Command Objective	<p>This command creates a peer group with the specified peer group name. This value is a string with the maximum size of 20.</p> <p>The no form of the command deletes the peer group.</p>
Syntax	<pre>neighbor <peer-group-name> peer-group</pre> <pre>no neighbor <peer-group-name> peer-group</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS(config-router)# neighbor a1 peer-group</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor <ip-address> peer-group – Adds the neighbor as a member of the specified peer group.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - activate – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.• neighbor - ebgp-multihop – Enables BGP to establish connection with external peers.• neighbor - next-hop-self – Enables BGP to send itself as the next hop for advertised routes.• neighbor - interval – Configures neighbor interval.• neighbor - timers – Configures neighbor KeepAlive Time and Hold Time intervals.• neighbor - shutdown – Disables the peer session.• neighbor - default-originate - Enables advertisement of the default route to the peer.• neighbor - send-community – Enables advertisement of community attributes (standard or extended) to peer.

-
- **neighbor - capability** - Enables the specific BGP capability to be advertised and received from the peer.
 - **neighbor delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - allow-autostop** - Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **neighbor - connect-retrycount** - Sets the retry count for the BGP peer.
 - **show ip bgp peer-group** - Displays information about the peer group.
 - **address-family** - Enters the router into the address-family router configuration mode.
 - **neighbor - fall over bfd** - Enables BFD monitoring for the peer IP address or peer group name.
 - **neighbor - as-override** - Enables the override capability for the CE peer.
-

33.88 neighbor <ip-address> peer-group

Command Objective	<p>This command adds the neighbor as the member of the specified peer group.</p> <p>The no form of the command removes the neighbor as the member of the specified peer group.</p>
Syntax	<pre>neighbor <ip-address> peer-group <peer-group-name></pre> <pre>no neighbor <ip-address> peer-group <peer-group-name></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Specifies the IP address of the peer or neighbor to be added or removed from the peer group.• peer-group-name - Specifies the peer group name to which the neighbor is to be added or removed.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	<p>This command executes only if:</p> <ul style="list-style-type: none">• Peer is created and Peer AS is configured.• Peer group is created.
Example	<pre>SEFOS (config-router)# neighbor 10.3.4.5 peer-group a1</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• neighbor - peer-group - Creates a peer group.• show ip bgp neighbor - Displays neighbor-related information for the peer.• address-family - Enters the router into the address-family router configuration mode.• neighbor - fall over bfd - Enables BFD monitoring for the peer IP address or peer group name.

33.89 neighbor – routemap

Command Objective	<p>This command enables route-map or IP prefix list for the neighbor.</p> <p>The no form of the command disables route-map or IP prefix list for the neighbor.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> { route-map <name (1-20)> prefix-list <ipprefixlist_name (1-20)>} {in out} no neighbor <ip-address peer-group-name> { route-map <name (1-20)> prefix-list <ipprefixlist_name (1-20)>} {in out}</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Enables or disables route-map or IP prefix list for the specified BGP peer's remote IP address.• <peer-group-name> - Enables or disables route-map for the specified BGP peer group. This value is a string with the maximum size of 20.• route-map <name (1-20)> - Specifies the name of the route-map. This value is a string with the maximum size of 20.• prefix-list <ipprefixlist_name> - Configures IP prefix list for neighbor. This value is a string with the maximum size of 20.• in - Enables or disables route-map or IP prefix list for inbound routes.• out - Enables or disables route-map or IP prefix list for outbound routes.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured
Example	<pre>SEFOS(config-router)# neighbor 10.3.4.5 route-map r1 in</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays neighbor-related information for the

peer.

- **address-family** - Enters the router into the address-family router configuration mode.
-

33.90 neighbor - transport connection-mode

Command Objective	This command configures the BGP Peer Transport Connection status as active or passive.
Syntax	<code>neighbor <ip-address peer-group-name> transport connection-mode <active passive></code>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the transport connection status for the specified BGP peer's remote IP address.• <peer-group-name> - Specifies name of the BGP peer group for which the transport connection mode is set. The members of the peer group will inherit the characteristic configured with this command.• active - Sets the BGP peer as active. When a peer transport connection is made active, the peer will immediately initiate the session with the peer by sending an open message to it.• passive - Sets the BGP peer as passive. When the peer transport connection is passive, the peer will not immediately initiate the session. Instead, it waits for the peer to send the open message so that it can respond to it to create the session.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	active
	<u>Note:</u> This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 10.3.4.5 transport connection-mode passive</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays neighbor-related information for the peer.• address-family - Enters the router into the address-family router configuration mode.

33.91 nexthop processing-interval

Command Objective	This command configures the interval at which next hops are monitored for reachability. This value ranges from 1 to 120.
Syntax	<code>nexthop processing-interval <Next-Hop-Processing-Interval (1-120)></code>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	60
Example	<code>SEFOS (config)# nexthop processing-interval 100</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> - Configures the AS (Autonomous System) number of the BGP Speaker and enters into BGP router configuration mode.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp info</code> - Displays the general info about BGP protocol.

33.92 bgp redistribute internal

Command Objective	This command enables IBGP routes to be redistributed to other IGP protocols. The no form of the command disables IBGP routes to be redistributed to other IGP protocols.
Syntax	bgp redistribute-internal no bgp redistribute-internal
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	IBGP route redistribution is disabled.
Example	SEFOS (config-router) # bgp redistribute-internal
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• address-family - Enters the router into the address-family router configuration mode.

33.93 show ip bgp peer-group

Command Objective	This command displays information about the peer group.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp [vrf <vrf-name>] peer-group [<peer-group-name> [summary]]</code>
Parameter Description	<ul style="list-style-type: none">• vrf <vrf-name> - Displays information about the peer group for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <peer-group-name> - Displays information for the specified BGP peer group.• summary - Displays the summary of the peer group neighbors.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp peer-group Context Name : default ----- BGP peer-group is al, Remote AS 1 BGP Version 0 For address family: IPv4 Unicast BGP neighbor is al,peer-group internal, members: 12.3.3.3 BGP Maximum Prefix Limit: 2 Connect Retry Count: 2 Peer Passive :Enabled Damp Peer oscillatios:Enabled Rfl Status :Non Client In Route Map: n1 Out Route Map: - SEFOS# show ip bgp peer-group summary Context Name : default</pre>

```

-----
BGP router identifier is 12.0.0.2, local AS number 1
Forwarding State is enabled
BGP table version is 0
Neighbor  Version  AS  MsgRcvd  MsgSent  Up/Down
State/PfxRcd
-----  -----  --  -----  -----  -----
--
12.3.3.3    4      1      0        0        -
Connect

```

Related Command(s)

- **neighbor - peer-group** – Creates a peer group.
 - **neighbor <ip-address> peer-group** – Adds the neighbor as a member of the specified peer group.
 - **neighbor - remote-as** – Creates a peer and initiates the connection to the peer
 - **neighbor - activate** – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.
 - **neighbor - ebgp-multihop** – Enables BGP to establish connection with external peers.
 - **neighbor - next-hop-self** – Enables BGP to send itself as the next hop for advertised routes.
 - **neighbor - shutdown** – Disables the peer session.
 - **neighbor delay open** - Configures a delay in sending the first OPEN message to the BGP peer for a specific time period.
 - **neighbor damp-peer-oscillations** - Enables the damp peer oscillation option.
 - **neighbor maximum prefix** - Configures the maximum number of peers supported by BGP.
 - **neighbor - allow-autostop** – Enables the auto stop option to stop the BGP peer and BGP connection automatically.
 - **neighbor - transport connection-mode** - Configures the BGP Peer Transport Connection status as active or passive.
 - **neighbor - connect-retrycount** – Sets the retry count for the BGP peer.
 - **neighbor - local-as** - Updates the local AS used for the peer connection.
-

33.94 redistribute ospf

Command Objective	<p>This command configures the redistribution of OSPF routes into BGP.</p> <p>The no form of the command disables the redistribution of routes from the OSPF protocol into BGP. The route-map is dissociated from the redistribution, if the no form of the command specifies the route-map.</p>
Syntax	<pre>redistribute ospf [match {external internal nssa-external}] [route-map <string>] [metric <integer(0-4294967295)>]</pre> <pre>no redistribute ospf [match {external internal nssa-external}] [route-map <string>] [metric <integer>]</pre>
Parameter Description	<ul style="list-style-type: none">• match {external internal nssa-external} - Matches the OSPF route type to be redistributed into BGP.<ul style="list-style-type: none">▪ external - Redistributes OSPF external routes.▪ internal - Redistributes OSPF internal routes.▪ nssa-external - Redistributes OSPF NSSA external routes.• route-map <string(20)> - Identifies the specified route-map in the list of route-maps during redistribution of routes to BGP. If this is not specified, all routes are redistributed. This value is a string with the maximum size of 20.• metric <integer(0-4294967295)> - Specifies the metric value for the protocol specified. This value ranges from 0 to 4294967295. If the metric value not specified, default metric value is considered.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	<ul style="list-style-type: none">• Redistribution is disabled• Metric - 0
Note:	<ul style="list-style-type: none">• Redistribution can be configured for only one route-map.• Another route-map can be assigned, only if the already assigned route-map is disabled.
Example	<pre>SEFOS(config-router)# redistribute ospf match external route-map rm metric 500</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.

-
- **address-family** - Enters the router into the address-family router configuration mode.
 - **show ip bgp info** – Displays the general information about BGP protocol.
-

33.95 neighbor – local-as

Command Objective	<p>This command updates the local AS used for the peer connection.</p> <p>The no form of the command resets the local AS used for the peer connection to the global local AS.</p>
Syntax	<pre>neighbor <ip-address peer-group-name> local-as <AS no></pre> <pre>no neighbor <ip-address peer-group-name> local-as</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Updates the local AS for the IP address of the peer used for the peer connection.• peer-group-name - Updates the local AS for the peer group name to which the neighbor is to be added or removed.• local-as <AS no> - Configures the autonomous system number for the specified IP address of the peer or peer group name. This value ranges from 1 to 4294967295 or 0.1 to 65535.65535.<ul style="list-style-type: none">Note: When four-bit-asn is enabled, this value ranges from 1 to 4294967295 or between 0.1 and 65535.65535.Note: When four-bit-asn is disabled, this value ranges from 1 to 65535. or between 0.0 and 0.65535.Note: When bgp asnotation is enabled, the AS number of the BGP Speaker is displayed in the range 0.1 to 65535.65535.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 10.3.4.5 local-as 1</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays neighbor-related information for the peer.

-
- **show ip bgp peer-group** - Displays information about the peer group.
 - **address-family** - Enters the router into the address-family router configuration mode.
 - **ip bgp four-byte-asn** - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.
 - **bgp asnotation dot** - Changes the output format of BGP ASNs from asplain to asdot notation.
-

33.96 maximum-paths

Command Objective	<p>This command sets the BGP multipath count. This is the maximum number BGP multipath routes to be added per destination network in the routing table.</p> <hr/> <p>Note: This configuration is effective only after hard or soft reset.</p> <hr/> <p>The no form of the command resets the BGP multipath count to its default value.</p> <hr/> <p>Note: If the no command is executed without the parameter <code>ibgp</code> or <code>eibgp</code>, the maximum path count is set to the default value 1 only for <code>ebgp</code>.</p>
Syntax	<pre>maximum-paths [{ibgp eibgp}] <maximum path> no maximum-paths [{ibgp eibgp}]</pre>
Parameter Description	<ul style="list-style-type: none">• <code>ibgp</code> - Sets the maximum number of internal BGP multipath routes to be added per destination network in the routing table.• <code>eibgp</code> - Sets the maximum number of external and internal BGP multipath routes (with same AS PATH) to be added per destination network in the routing table.• <code><maximum path></code> - Configures the maximum path count for the specified IBGP or EIBGP. This value ranges from 1 to 64. <hr/> <p>Note: If this is set to 1, only the best route is added to the forwarding table.</p> <p>Note: If the command is executed without the parameter <code>ibgp</code> or <code>eibgp</code>, the maximum path count is configured for <code>ebgp</code>.</p>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	1
Example	<pre>SEFOS(config-router)# maximum-paths eibgp 1 SEFOS(config-router-af4)# maximum-paths ibgp 1</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> - Sets the AS number of the BGP Speaker.• <code>neighbor - remote-as</code> - Creates a peer and initiates the connection

to the peer.

- **address-family** - Enters the router into the address-family router configuration mode.
 - **show ip bgp info** – Displays the general information about BGP protocol.
-

33.97 tcp-ao mkt key-id - receive-key-id

Command Objective	<p>This command creates a TCP-AO Master Key Tuple (MKT) in the BGP instance.</p> <p>The no form of the command deletes a TCP-AO MKT in the BGP instance.</p>
Syntax	<pre>tcp-ao mkt key-id <Key Id(0-255)> receive-key-id <Rcv Key Id (0-255)> algorithm {hmac-sha-1 aes-128-cmac} key <master-key> [tcp-option-exclude]</pre> <pre>no tcp-ao mkt key-id <Key Id(0-255)></pre>
Parameter Description	<ul style="list-style-type: none">• key-id <Key Id(0-255)> - Configures the send key-id of the MKT. This value is used to fill the key-id field in the TCP-AO option in the TCP header. This value ranges from 0 to 255.• receive-key-id <Rcv Key Id (0-255)> - Configures the Receive key-id of the MKT. The MKT ready at the sender to be used for authenticating received segments is indicated to the peer by filling the receive key-id of the MKT in of the TCP-AO option in TCP header. This value ranges from 0 to 255.• algorithm {hmac-sha-1 aes-128-cmac} - Configures the algorithm used for TCP-AO MAC or KDF calculation.<ul style="list-style-type: none">▪ hmac-sha-1 - Sets the algorithm type as hmac-sha-1.▪ aes-128-cmac - Sets the algorithm type as aes-128-cmac. <u>Note:</u> This algorithm type is currently not supported.• key <master-key> - Configures the master key corresponding to the MKT. This value is an octet string with the size between 1 and 80.• tcp-option-exclude - Sets the exclude TCP option which excludes the TCP options other than TCP-AO during MAC calculation. If this is not set, TCP-AO MAC will be calculated on TCP segment including all other TCP options.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	algorithm - hmac-sha-1
Note:	This command executes only if BGP Speaker Local AS number is configured.
Example	<pre>SEFOS(config-router)# tcp-ao mkt key-id 1 receive-key-id 1</pre>

`algorithm hmac-sha-1 key key1`

Related Command(s)

- `router bgp` - Sets the AS number of the BGP Speaker.
 - `address-family` - Enters the router into the address-family router configuration mode.
 - `neighbor - tcp-ao` - Sets BGP peer TCP-AO configurations.
 - `neighbor - tcp-ao mkt` - Associates a TCP-AO MKT to the BGP peer.
 - `show ip bgp - tcp-ao mkt summary` - Displays the BGP-related TCP-AO MKT information.
 - `show bgp ipv6 tcp-ao neighbor` - Displays the BGP(v6) neighbor TCP-AO related information.
-

33.98 neighbor - tcp-ao

Command Objective	<p>This command sets TCP-AO configurations for the specified BGP peer.</p> <p>The no form of the command deletes TCP-AO configurations for the specified BGP peer.</p>
Syntax	<pre>neighbor <ip-address> tcp-ao { icmp-accept no-mkt-match packet-discard}</pre> <pre>no neighbor <ip-address> tcp-ao { icmp-accept no-mkt-match packet-discard}</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO configurations are done.• icmp-accept - Accepts ICMPv4 type 3 and ICMPv6 type 1 messages for the TCP-AO authenticated peer.• no-mkt-match packet-discard - Discards packets for the peer, if packets are received with TCP-AO and no matching MKT is found.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if BGP Speaker Local AS number and peer is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 tcp-ao icmp-accept</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• tcp-ao mkt key-id - receive-key-id - Creates a TCP-AO MKT in the BGP instance.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp - tcp-ao neighbor - Displays the TCP-AO information for the specified BGP peer.• show bgp ipv6 tcp-ao neighbor - Displays the BGP(v6) neighbor TCP-AO related information.

33.99 neighbor - tcp-ao mkt

Command Objective	<p>This command associates a TCP-AO MKT to the BGP peer.</p> <p>The no form of the command dissociates a TCP-AO MKT to the BGP peer.</p>
Syntax	<pre>neighbor <ip-address> tcp-ao mkt <Key Id(0-255)></pre> <pre>no neighbor <ip-address> tcp-ao mkt <Key Id(0-255)></pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO MKT configurations are done.• <Key Id(0-255)> - Configures the key-id of the MKT which needs to be associated with the peer. This value ranges from 0 to 255.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Note:	This command executes only if BGP Speaker Local AS number and peer is configured.
Example	<pre>SEFOS (config-router)# neighbor 20.45.0.1 tcp-ao mkt 2</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• tcp-ao mkt key-id - receive-key-id - Creates a TCP-AO MKT in the BGP instance.• address-family - Enters the router into the address-family router configuration mode.• show ip bgp - tcp-ao neighbor - Displays the BGP(v4) neighbor TCP-AO related information.• show ip bgp - tcp-ao mkt summary - Displays the BGP-related TCP-AO MKT information.• show bgp ipv6 tcp-ao neighbor - Displays the BGP(v6) neighbor TCP-AO related information.

33.100 neighbor - tcp-ao mkt - start-accept

Command Objective	This command configures the time the router will start accepting packets that have been created with the MKT specified by the key-id.
Note:	This command is currently not supported.
Syntax	<pre>neighbor <ip-address> tcp-ao mkt <Key Id(0-255)> start-accept <DD-MON-YEAR,HH:MM></pre> <p>Example: <code>neighbor 5.5.5.5 tcp-ao mkt 1 start-accept 10-Jan-2012,10:10</code></p>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO MKT configurations are done.• <Key Id(0-255)> - Configures the key-id of the MKT which needs to be associated with the peer. This value ranges from 0 to 255.• <DD-MON-YEAR,HH:MM> - Configures the date and time the router will start accepting packets that have been created with the MKT specified by the key-id. For the router to start accepting packets by 10am on 10 January 2012, the input is given as 10-Jan-2012,10:00.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	0000000000000000
Note:	This command executes only if BGP Speaker Local AS number and peer is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 tcp-ao mkt 2 start-accept 10-Jun-2013,10:00</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• show ip bgp neighbor - Displays neighbor-related information for the peer.• show ip bgp peer-group - Displays information about the peer group.• address-family - Enters the router into the address-family router

configuration mode.

33.101 neighbor - tcp-ao mkt - stop-accept

Command Objective	This command configures the time the router will stop accepting packets that have been created with the MKT specified by the key-id.
Note:	This command is currently not supported.
Syntax	<pre>neighbor <ip-address> tcp-ao mkt <Key Id(0-255)> stop-accept <DD-MON-YEAR,HH:MM></pre> <p>Example: <code>neighbor 5.5.5.5 tcp-ao mkt 1 stop-accept 10-Jan-2012,10:10</code></p>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO MKT configurations are done.• <Key Id(0-255)> - Configures the key-id of the MKT which needs to be associated with the peer. This value ranges from 0 to 255.• <DD-MON-YEAR,HH:MM> - Configures the date and time the router will stop accepting packets that have been created with the MKT specified by the key-id. For the router to stop accepting packets by 10am on 10 January 2012, the input is given as 10-Jan-2012,10:00.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	0000000000000000
Note:	This command executes only if BGP Speaker Local AS number and peer is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 tcp-ao mkt 1 stop-accept 10-Jun-2013,10:00</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• show ip bgp neighbor - Displays neighbor-related information for the peer.• show ip bgp peer-group - Displays information about the peer group.• address-family - Enters the router into the address-family router

configuration mode.

33.102 neighbor - tcp-ao mkt - start-generate

Command Objective	This command configures the time the router will start generating packets that have been created with the MKT specified by the key-id.
Note:	This command is currently not supported.
Syntax	<pre>neighbor <ip-address> tcp-ao mkt <Key Id(0-255)> start-generate <DD-MON-YEAR,HH:MM></pre> <p>Example: <code>neighbor 5.5.5.5 tcp-ao mkt 1 start-generate 10-Jan-2012,10:10</code></p>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO MKT configurations are done.• <Key Id(0-255)> - Configures the key-id of the MKT which needs to be associated with the peer.. This value ranges from 0 to 255.• <DD-MON-YEAR,HH:MM> - Configures the date and time the router will start using the MKT specified by the key-id for packets generation. For the router to start generating packets by 10am on 10 January 2012, the input is given as 10-Jan-2012,10:00.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	0000000000000000
Note:	This command executes only if BGP Speaker Local AS number and peer is configured
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 tcp-ao mkt 1 start-generate 10-Jan-2012,10:10</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• show ip bgp neighbor - Displays neighbor-related information for the peer.• show ip bgp peer-group - Displays information about the peer group.• address-family - Enters the router into the address-family router

configuration mode.

33.103 neighbor - tcp-ao mkt - stop-generate

Command Objective	This command configures the time the router will stop generating packets that have been created with the MKT specified by the key-id.
Note:	This command is currently not supported.
Syntax	<pre>neighbor <ip-address> tcp-ao mkt <Key Id(0-255)> stop-generate <DD-MON-YEAR,HH:MM></pre> <p>Example: <code>neighbor 5.5.5.5 tcp-ao mkt 1 stop-generate 10-Jan-2012,10:10</code></p>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the BGP peer for which the TCP-AO MKT configurations are done.• <Key Id(0-255)> - Configures the key-id of the MKT which needs to be associated with the peer. This value ranges from 0 to 255.• <DD-MON-YEAR,HH:MM> - Configures the date and time the router will stop using the MKT specified by the key-id for packets generation. For the router to stop generating packets by 10am on 10 January 2012, the input is given as 10-Jan-2012,10:00.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	0000000000000000
Note:	This command executes only if BGP Speaker Local AS number and peer is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 tcp-ao mkt 1 stop-generate 10-Jan-2012,10:10</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp - Sets the AS number of the BGP Speaker.• neighbor - remote-as - Creates a peer and initiates the connection to the peer.• show ip bgp neighbor - Displays neighbor-related information for the peer.• show ip bgp peer-group - Displays information about the peer group.• address-family - Enters the router into the address-family router

configuration mode.

33.104 show bgp ipv6 tcp-ao neighbor

Command Objective	This command displays the BGP(v6) neighbor TCP-AO related information.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show bgp [vrf <vrf-name>] ipv6 tcp-ao neighbor [<peer-addr>]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vrf <vrf-name></code> - Displays TCP-AO related information for the BGPv6 neighbor in the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <code>[<peer-addr></code> - Displays TCP-AO information for the specified BGPv6 neighbor.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show bgp ipv6 tcp-ao neighbor TCP-AO authentication neighbor summary ----- Context Name : default ----- Neighbor : 1111::2222 MKT Assigned : 1 ICMP Processing : Disabled No MKT Discard : Enabled MKT In-use : None</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>tcp-ao mkt key-id - receive-key-id</code> - Creates a TCP-AO MKT in the BGP instance.• <code>neighbor - remote-as</code> - Creates a peer and initiates the connection to the peer.• <code>neighbor - tcp-ao mkt</code> - Associates a TCP-AO MKT to the BGP peer.• <code>neighbor - tcp-ao</code> - Sets BGP peer TCP-AO configurations.

33.105 show ip bgp - tcp-ao neighbor

Command Objective	This command displays the BGP neighbor TCP-AO related information.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp [vrf <vrf-name>] tcp-ao neighbor [<random_str>]</code>
Parameter Description	<ul style="list-style-type: none">• <code>vrf <vrf-name></code> - Displays BGP neighbor TCP-AO related information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.• <code><random_str></code> - Displays the BGP neighbor TCP-AO configurations for the specified BGP peer.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp tcp-ao neighbor 23.45.0.1 TCP-AO authentication neighbor summary ----- Context Name : default ----- Neighbor : 23.45.0.1 MKT Assigned : 2 ICMP Processing : Enabled No MKT Discard : Disabled MKT In-use : None TCP-AO authentication neighbor summary ----- Context Name : vrf1 ----- Neighbor : 23.45.0.1</pre>

TCP-AO is not enabled for this peer!!

Related Command(s)

- **neighbor - remote-as** - Creates a peer and initiates the connection to the peer.
 - **neighbor - tcp-ao** - Sets BGP peer TCP-AO configurations.
 - **tcp-ao mkt key-id - receive-key-id** - Creates a TCP-AO MKT in the BGP instance.
-

33.106 show ip bgp - tcp-ao mkt summary

Command Objective	This command displays the BGP-related TCP-AO MKT information.
Note:	The <code>show</code> command displays information for all VRF instances only if the address-family is set for the specified instance.
Syntax	<code>show ip bgp [vrf <vrf-name>] tcp-ao mkt summary</code>
Parameter Description	<ul style="list-style-type: none"><code>vrf <vrf-name></code> - Displays the BGP-related TCP-AO MKT information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.
Mode	Privileged EXEC Mode
Package	Enterprise and Metro_E
Example	<pre>SEFOS# show ip bgp tcp-ao mkt summary TCP-AO MKT Table ----- Context Name : default ----- ID(send) Receive ID Algorithm MasterKey OptionsExclude Status ----- ----- ----- ----- ----- 0 1 HMAC-SHA-1 ***** 1 Active 255 255 HMAC-SHA-1 ***** 1 Active TCP-AO MKT Table ----- Context Name : vrf1 ----- ID(send) Receive ID Algorithm MasterKey OptionsExclude Status ----- ----- ----- ----- ----- 1 1 HMAC-SHA-1 ***** 1 Active</pre>
Related Command(s)	<ul style="list-style-type: none"><code>tcp-ao mkt key-id - receive-key-id</code> - Creates a TCP-AO MKT in

the BGP instance.

- `neighbor - tcp-ao mkt` - Associates a TCP-AO MKT to the BGP peer.
-

33.107 ip bgp four-byte-asn

Command Objective This command enables 4-byte ASN support in BGP Speaker or in the specified VRF instance created in the system. This value is a string with a maximum size of 32.

Note: When VRF is not specified, the configurations are done for the default VRF.

The no form of the command disables 4-byte ASN support in BGP or the specified VRF instance created in the system.

Syntax

```
ip bgp four-byte-asn [vrf <vrf-name>]
no ip bgp four-byte-asn [vrf <vrf-name>]
```

Mode Global Configuration Mode

Package Enterprise and Metro_E

Default enabled

Note: This command executes only when BGP Speaker Global Admin status is shut down in the system or the specified VRF instance.

Example SEFOS(config)# ip bgp four-byte-asn

Related Command(s)

- `router-id` - Sets the router ID's address for the router.
- `bgp router-id` - Configures the BGP Identifier of the BGP Speaker.
- `show ip bgp` - Displays the BGP-related information.
- `show ip bgp neighbor` - Displays neighbor-related information for the peer.

33.108 bgp asnotation dot

Command Objective	<p>This command changes the output format of BGP ASNs from asplain to asdot notation.</p> <p>The no form of the command resets the output format of BGP ASNs from asdot to asplain notation.</p>
Syntax	<pre>bgp asnotation dot</pre> <pre>no bgp asnotation dot</pre>
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	By default , the output format of BGP ASNs is asplain.
<u>Note:</u>	BGP asnotation can be changed only if four-byte-asn is enabled.
Example	<pre>SEFOS (config-router)# bgp asnotation dot</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>address-family</code> - Enters the router into the address-family router configuration mode.• <code>show ip bgp neighbor</code> – Displays neighbor-related information for the peer.• <code>show ip bgp info</code> – Displays the BGP-related information.• <code>ip bgp four-byte-asn</code> - Enables 4-byte ASN support in BGP or in the specified VRF instance created in the system.

33.109 neighbor - fall-over bfd

Command Objective	<p>This command enables BFD monitoring for the peer IP address or peer group name. On enabling, BGP registers with BFD for IP path monitoring when the session state becomes ESTABLISHED.</p> <p>The no form of the command disables BFD monitoring for the peer IP address or peer group name. On disabling, BGP de-registers with BFD if it was already registered.</p>
Syntax	<pre>neighbor <ipv4-address ipv6-address peer-group-name> fall-over bfd no neighbor <ipv4-address ipv6-address peer-group- name> fall-over bfd</pre>
Parameter Description	<ul style="list-style-type: none">• neighbor <ipv4-address ipv6-address peer-group-name> - Specifies the BGP peer remote IPv4 or IPv6 address or name of the peer group for which BFD monitoring is to be enabled.• fall-over bfd - Configures BFD to monitor the IP path for sessionfall on the lost peer route.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Metro and Metro_E
Default	BFD Monitoring is disabled
Example	<pre>SEFOS (config-router)# neighbor 12.0.0.1 fall-over bfd SEFOS (config-router-af4)# neighbor 12.0.0.1 fall-over bfd</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker and enters into router configuration mode.• address-family - Enters the router into the address-family router configuration mode.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - activate – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.• neighbor - peer-group – Creates a peer group.• neighbor <ip-address> peer-group – Adds the neighbor as a

member of the specified peer group.

- **show ip bgp** – Displays the BGP-related information.
 - **show bgp ipv6** - Displays the BGPv6-related information.
 - **show bfd neighbors** - Displays the BFD neighbor-related information.
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33.110 address-family vpv4

Command Objective	<p>This command enables configuration of the session that carries standard vpv4 address prefixes and enters into VPN Address Family Configuration Mode .</p> <p>BGP4 VPN allows the Service Providers to use their IP backbone to provide VPN services to their customers. BGP is used to distribute VPN routing information across the provider's backbone and MPLS is used to forward VPN traffic from one VPN site to another.</p> <p>The no form of this command disables configuration of the session that carries standard vpv4 address prefixes.</p>
Syntax	<pre>address-family vpv4 no address-family vpv4</pre>
Mode	BGP Router Configuration Mode
Package	Metro_E
Example	<pre>SEFOS (config-router) # address-family vpv4 SEFOS (config-router-afvpv4) #</pre>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.• <code>neighbor - activate</code> – Enables default capabilities for the peer and restarts the connection to the peer if negotiated capabilities change.• <code>neighbor - next-hop-self</code> – Enables BGP to send itself as the next hop for advertised routes.• <code>neighbor - send-community</code> – Enables advertisement of community attributes (standard or extended) to peer.• <code>neighbor - as-override</code> - Enables the override capability for the CE peer.• <code>show ip bgp vpv4</code> - Displays the status of all BGP4 vpv4 routes.

33.111 label-allocation-mode

Command Objective	This command configures label allocation policy used for allocating the vpn label to be used for advertising the VPN routes.
Syntax	<code>label-allocation-mode { per-vrf per-route }</code>
Parameter Description	<ul style="list-style-type: none">• <code>per-vrf</code> - Configures label allocation policy as per VRF to advertise all routes learned in the router with the same label.• <code>per-route</code> - Configures label allocation policy as per route to advertise all routes learned in the router with the unique label.
Mode	BGP Router Configuration Mode
Package	Metro_E
Default	Per vrf
Example	<code>SEFOS(config-router)# label-allocation-mode per-route</code>
Related Command(s)	<ul style="list-style-type: none">• <code>router bgp</code> – Sets the AS number of the BGP Speaker.

33.112 show ip bgp vpnv4

Command Objective	This command displays the status of all BGP4 vpnv4 routes.
Syntax	<code>show ip bgp vpnv4 {all vrf <string(32)> <ip-addr> [prefix-len]}</code>
Parameter Description	<ul style="list-style-type: none"><code>all</code> - Displays the status of all BGP4 vpnv4 routes.<code>vrf <vrf-name></code> - Displays BGP4 vpnv4 routes-related information for the specified VRF instance. This value represents unique name of the VRF instance. This value is a string with a maximum size of 32.<code><ip-address></code> - Displays the BGP4 vpnv4 routes-related information for the specified IP address of the BGP4 vpnv4 route.<code>[prefix-len]</code> - Specifies the prefix length for the specified BGP4 vpnv4 route.
Mode	Privileged EXEC Mode
Package	Metro_E
Note:	This command displays the output only if MPLS and BGP for L3VPN is configured.
Example	<pre>SEFOS # show ip bgp vpnv4 all Context Name : default ----- BGP table version is 2,local router ID is 12.0.0.2 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal S Stale m - Multipath Origin codes: i - IGP, e - EGP, ? - incomplete Type Network NextHop Metric LocPrf Path Origin Labels Weight ----- >i 100:1:25.0.0.0/8 22.22.22.22 0 100 - i 300001 0 >i 100:1:55.0.0.0/8 22.22.22.22 0 100</pre>

300 i 300002 0

Context Name : vrf1

BGP table version is 8,local router ID is 15.0.0.2

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal

S Stale m - Multipath

Origin codes: i - IGP, e - EGP, ? - incomplete

Type	Network	NextHop	Metric	LocPrf
Path	Origin	Labels	Weight	
----	-----	-----	-----	-----
-	100:1:15.0.0.0/8	0.0.0.0	0	0
	i 300001	32768		
>i	100:1:25.0.0.0/8	22.22.22.22	0	100
-	i 300001	0		
200	100:1:45.0.0.0/8	15.0.0.1	0	100
	i 300002	0		
>i	100:1:55.0.0.0/8	22.22.22.22	0	100
300	i 300002	0		

SEFOS # show ip bgp vpnv4 vrf vrf1

Context Name : vrf1

BGP table version is 8,local router ID is 15.0.0.2

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal

S Stale m - Multipath

Origin codes: i - IGP, e - EGP, ? - incomplete

Type	Network	NextHop	Metric	LocPrf
Path	Origin	Labels	Weight	
----	-----	-----	-----	-----
-	100:1:15.0.0.0/8	0.0.0.0	0	0
	i 300001	32768		
>i	100:1:25.0.0.0/8	22.22.22.22	0	100
-	i 300001	0		
	100:1:45.0.0.0/8	15.0.0.1	0	100

```

200          i          300002          0
    >i      100:1:55.0.0.0/8      22.22.22.22          0      100
300          i          300002          0

```

Related Command(s)

- **router bgp** - Configures the AS (Autonomous System) number of the BGP Speaker.
 - **address-family** - Enters the router into the address-family router configuration mode.
 - **address-family vpvv4** - Enables configuration of the session that carries standard vpvv4 address prefixes.
 - **label-allocation-mode** - Configures label allocation by using per VRF and per route.
 - **neighbor - remote-as** - Creates a peer, initiates the connection to the peer, and adds an entry to the BGP or multiprotocol BGP neighbor table.
 - **neighbor - activate** - Enables the default capabilities associated with the address-family of the peer.
 - **mpls ip** - Enables MPLS on the specified interface.
 - **entity** - Creates an LDP entity and enters into MPLS LDP Entity sub mode.
 - **mpls static binding ipv4** - Configures the static binding of labels to IPv4 prefixes.
 - **ldp - interface** - Enables label distribution protocol on the interface.
 - **label distribution** - Configures the label distribution method.
 - **ip vrf forwarding** - Maps the VLAN interfaces with the specified unique VRF name to the given virtual router.
 - **ip route** - Adds a static route.
 - **rd** - Sets the RD for the specified VRF.
 - **route-target** - Configures the route-target (RT) for the specified MPLS VRF name.
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33.113 show ip bgp l2vpn vpls

Command Objective	This command displays the L2VPN routes of BGP.
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Syntax	<code>show ip bgp l2vpn vpls</code>
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Mode	Privileged EXEC Mode
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Package	Metro_E
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Note:	This command displays the output only if the VFI mode is selected as Autodiscover using the <code>l2 vfi</code> command. The L2VPN uses signaling protocol BGP to discover the PEs which are the part of the specified VPLS.
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Example	<pre>SEFOS# show ip bgp l2vpn vpls Context Name : default ----- BGP table version is 1,local router ID is 12.0.0.7 Status codes: s suppressed, d damped, h history, * valid, > best, i - internal S Stale m - Multipath Origin codes: i - IGP, e - EGP, ? - incomplete Type Network NextHop RcvdLabel LocalLabel RT RD VEid VBO ----- > 1/32 0.0.0.0 noLabel 400001 100:1 100:1 1 1</pre>
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Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• rd - Configures the Route Distinguisher value (RD) for the specified VPLS.• rt- Configures the route-target (RT) and the apply policy for the specified VPLS instance.• site-identifier - Configures the VPLS Entity value and name.• address-family - Enters the router into the address-family router configuration mode.
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- **neighbor - remote-as** - Creates a peer, initiates the connection to the peer, and adds an entry to the BGP or multiprotocol BGP neighbor table.
 - **neighbor - activate** - Enables the default capabilities associated with the address-family of the peer.
-

33.114 neighbor - as-override

Command Objective	This command configures the override capability for a CE peer. The no form of the command disables the override capability for the CE peer.
Syntax	<pre>neighbor <ip-address peer-group-name> as-override</pre> <pre>no neighbor <ip-address peer-group-name> as-override</pre>
Parameter Description	<ul style="list-style-type: none">• <ip-address> - Configures the override capability for the specified BGP peer's IP address.• <peer-group-name> - Configures the override capability for the specified BGP peer group. The members of the peer group will inherit the characteristic configured with this command.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	Override capability is disabled.
	<u>Note:</u> This command executes only if Peer or Peer Group is created and Peer AS is configured.
Example	<pre>SEFOS(config-router)# neighbor 23.45.0.1 as-override</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• neighbor - remote-as – Creates a peer and initiates the connection to the peer.• neighbor - peer-group – Creates a peer group.• show ip bgp neighbor – Displays the neighbor configurations.• address-family - Enters the router into the address-family router configuration mode.• address-family vpnv4 - Enables configuration of the session that carries standard vpnv4 address prefixes.

33.115 redistribute isis

Command Objective	<p>This command controls redistribution of ISIS routes into BGP after applying the specified route-map.</p> <p>The no form of the command disables the redistribution of routes from ISIS into BGP. The route-map is dissociated from the redistribution, if the no form of the command specifies the route-map.</p>
Syntax	<pre>redistribute { isis } [{level-1 level-2 level-1-2}] [route-map <string(20)>] [metric <integer(0-4294967295)>] no redistribute { isis } [{level-1 level-2 level-1-2}] [route-map <string(20)>] [metric]</pre>
Parameter Description	<ul style="list-style-type: none">• isis - Redistributes routes learned by ISIS in the BGP routing process.<ul style="list-style-type: none">▪ level-1 - Imports routes learned by ISIS level-1 in the BGP routing process.▪ level-2 - Imports routes learned by ISIS level-2 in the BGP routing process.▪ level-1-2 - Imports all routes learned by ISIS in the BGP routing process.• route-map <string(20)> - Identifies the specified route-map in the list of route-maps during redistribution of routes to BGP. If this is not specified, all routes are redistributed. This value is a string with the maximum size of 20.• metric <integer(0-4294967295)> - Specifies the metric value for the routes to redistribute to BGP. This value ranges from 0 to 4294967295. If the metric value is not specified, default metric value is considered.
Mode	BGP Router Configuration Mode / Address Family Router Configuration Mode
Package	Enterprise and Metro_E
Default	Redistribution is disabled
Note:	Redistribution can be configured for only one route-map. Another route-map can be assigned, only if the already assigned route-map is disabled.
Example	<pre>SEFOS(config-router)# redistribute isis level-1-2 route- map rm metric 500</pre>
Related Command(s)	<ul style="list-style-type: none">• router bgp – Sets the AS number of the BGP Speaker.• show ip bgp info – Displays the general information about BGP

protocol.

- **address-family** - Enters the router into the address-family router configuration mode.
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