



## A through I

---

- [aaa accounting vrrs](#), on page 2
- [accounting delay \(VRRS\)](#), on page 4
- [accounting method \(VRRS\)](#), on page 5
- [attribute list \(VRRS\)](#), on page 6
- [fhrp version vrrp v3](#), on page 8
- [glbp authentication](#), on page 9
- [glbp client-cache maximum](#), on page 11
- [glbp forwarder preempt](#), on page 13
- [glbp ip](#), on page 14
- [glbp ipv6](#), on page 16
- [glbp load-balancing](#), on page 18
- [glbp name](#), on page 20
- [glbp preempt](#), on page 22
- [glbp priority](#), on page 23
- [glbp sso](#), on page 24
- [glbp timers](#), on page 25
- [glbp timers redirect](#), on page 27
- [glbp weighting](#), on page 29
- [glbp weighting track](#), on page 31
- [ip gdp](#), on page 33
- [ip irdp](#), on page 34

## aaa accounting vrrs

To enable authentication, authorization, and accounting (AAA) accounting of requested services for billing or security purposes when you use the Virtual Router Redundancy Service (VRRS), use the **aaa accounting vrrs** command in global configuration mode. To disable AAA accounting for VRRS, use the **no** form of this command.

```
aaa accounting vrrs
default list-name
start-stop method1 [{method2...}]
no aaa accounting vrrs
default list-name
start-stop method1 [{method2...}]
```

### Syntax Description

<b>default</b>	Uses the listed accounting methods that follow this keyword as the default list of methods for accounting services.
<i>list-name</i>	Character string used to name the list of accounting methods. If no list name is specified, the system uses the default value.
<b>start-stop</b>	Sends an accounting-on notice. The accounting-on record is sent in the background. The requested user process begins regardless of whether the accounting-on notice is received by the accounting server.
<i>method1</i> [ <i>method2...</i> ]	(Optional) Character string used to name at least one of the accounting methods, tried in the specified sequence.

### Command Default

AAA accounting is disabled for VRRS

### Command Modes

Global configuration (config)

### Command History

Release	Modification
Cisco IOS XE Release 2.6	This command was introduced.
15.1(1)S	This command was integrated into Cisco IOS Release 15.1(1)S.

### Usage Guidelines

Use the **aaa accounting vrrs** command to define a AAA accounting method list. If you define the AAA default accounting method list, you are defining the AAA accounting method list for all the VRRS servers. The default AAA accounting method list is applied to all VRRS groups. To specify a group-specific VRRS method list, use the **accounting method** command in VRRS configuration mode.

### Examples

The following example shows how to configure VRRP group 1 with the group name “vrrp-name-1” to use VRRS method list vrrs-mlist-1:

```
Router(config)# aaa accounting vrrs vrrp-mlist-1 start-stop group radius
!
Router(config-if)# vrrs vrrp-name-1
Router(config)# accounting mlist vrrs-mlist-1
```

```
!  
Router(config)# interface gigabitethernet0/2/2  
Router(config-if)# ip address 10.0.1.  
Router(config-if)# vrrp 1 ip 10.1.0.10  
Router(config-if)# vrrp 1 name vrrp-name-1
```

**Related Commands**

Command	Description
<b>vrrp ip</b>	Enables the VRRP on an interface and identifies the IP address of the virtual router.
<b>vrrp name</b>	Links a VRRS client to a VRRP group.

## accounting delay (VRRS)

To specify a delay time for sending accounting-off messages for the Virtual Router Redundancy Service (VRRS), use the **accounting delay** command in VRRS configuration mode. To return to the default accounting delay value, use the **no** form of this command.

**accounting delay** *seconds*  
**no accounting delay**

### Syntax Description

<i>seconds</i>	Time, in seconds, to wait before sending accounting-off messages. Range is from 1 to 30. The default is 0.
----------------	--

### Command Default

Accounting-off messages for VRRS are sent without delay.

### Command Modes

VRRS configuration (config-vrrs)

### Command History

Release	Modification
Cisco IOS XE Release 2.6	This command was introduced.
15.1(1)S	This command was integrated into Cisco IOS Release 15.1(1)S.

### Usage Guidelines

Use the **accounting delay** command to control the timing of sending accounting-off messages for VRRS. This command does not apply to accounting-on messages. If the default is specified, this command is not saved to the running configuration and accounting-off messages are sent immediately when the event occurs. Otherwise, a delay of the configured number of seconds is applied.

### Examples

The following example shows how to specify a delay time of 10 seconds for sending accounting-off messages for the VRRS:

```
Router(config)# vrrs vrrp-name-1
Router(config-vrrs)# accounting delay 10
```

### Related Commands

Command	Description
<b>aaa accounting vrrs</b>	Enables AAA accounting of requested services for billing or security purposes when you use VRRS.
<b>accounting method (VRRS)</b>	Enables VRRS accounting for a VRRP group.
<b>attribute list (VRRS)</b>	Specifies additional attributes to include in VRRS accounting-on and accounting-off messages.
<b>vrrs</b>	Enables VRRS and enters VRRS configuration mode.

## accounting method (VRRS)

To enable Virtual Router Redundancy Service (VRRS) accounting for a Virtual Router Redundancy Protocol (VRRP) group, use the **accounting method** command in VRRS configuration mode. To specify the default VRRS accounting method list as the target for VRRS accounting, use the **no** form of this command.

**accounting method** {**default***accounting-method-list*}  
**no accounting method**

Syntax Description	default	Enables VRRS accounting for all VRRP groups.
	<i>accounting-method-list</i>	Name of the accounting method list for which VRRS must be enabled.

**Command Default** The default VRRS accounting method list is used.

**Command Modes** VRRS Configuration (config-vrrs)

Command History	Release	Modification
	Cisco IOS XE Release 2.6	This command was introduced.
	15.1(1)S	This command was integrated into Cisco IOS Release 15.1(1)S.

**Usage Guidelines** Configuring the **default** keyword does not save it to the running configuration and the VRRS accounting type default method list is automatically applied to the VRRS group being configured. The **default** keyword also enables VRRS accounting for all VRRP groups.

The valued specified for the *accounting-method-list* argument must match a named list configured by the **aaa accounting vrrs** command. When there is no match, a warning message is displayed. However, the configuration is still saved.

With this approach, you can configure the desired accounting method list using the **aaa accounting vrrs** command without configuring the **accounting method** command again.

### Examples

The following example shows how to configure VRRS to use the accounting list named METHOD1:

```
Router(config)# vrrs VRRS1
Router(config-vrrs)# accounting method METHOD1
```

Related Commands	Command	Description
	<b>aaa accounting vrrs</b>	Enables AAA accounting of requested services for billing or security purposes when you use VRRS.
	<b>accounting delay (VRRS)</b>	Specifies a delay time for sending accounting-off messages for VRRS.
	<b>attribute list (VRRS)</b>	Specifies additional attributes to include in VRRS accounting-on and accounting-off messages.

## attribute list (VRRS)

To specify additional attributes to include in Virtual Router Redundancy Service (VRRS) accounting-on and accounting-off messages, use the **attribute list** command in VRRS configuration mode. To configure VRRS to send only default attributes in VRRS accounting messages, use the **no** form of this command.

**attribute list** *list-name*

**no attribute list**

### Syntax Description

<i>list-name</i>	Specifies a AAA accounting list, as defined by the <b>aaa attribute list</b> global configuration command.
------------------	--

### Command Default

Default attributes are sent in VRRS accounting messages.

### Command Modes

VRRS configuration (config-vrrs)

### Command History

Release	Modification
Cisco IOS XE Release 2.6	This command was introduced.

### Usage Guidelines

Use the **attribute list** (VRRS) command to specify additional attributes to be included in both VRRS accounting-on and accounting-off messages. Before configuring this command, define a list name using the **aaa attribute list** global configuration command. If you enter a list name that is not defined in the **aaa attribute list** global configuration command, a warning message is displayed. However, this command is still accepted.

The following RADIUS attributes are included in VRRS accounting messages by default:

- Attribute 4, NAS-IP-Address
- Attribute 26, Cisco VSA Type 1, vrrs
- Attribute 40, Acct-Status-Type
- Attribute 41, Acct-Delay-Type
- Attribute 44 Acct-Session-Id

### Examples

The following example configures VRRS to use the AAA accounting list named vrrp-1-attr:

```
Router(config)# aaa accounting vrrs default start-stop group radius
Router(config)# aaa attribute list vrrp-1-attr
Router(config-attr-list)# attribute type account-delay "10"
Router(config-attr-list)# exit
Router(config)# vrrs vrrp-name-1
Router(config-vrrs)# accounting delay 10
Router(config-vrrs)# attribute list vrrp-1-attr
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>aaa accounting vrrs</b>	Enables AAA accounting of requested services for billing or security purposes when you use VRRS.
<b>aaa attribute list</b>	Defines a AAA attribute list locally on a router.
<b>accounting delay (VRRS)</b>	Specifies a delay time for sending accounting-off messages for VRRS.
<b>accounting method (VRRS)</b>	Enables VRRS accounting for a VRRP group.

## fhrp version vrrp v3

To enable Virtual Router Redundancy Protocol version 3 (VRRPv3) and Virtual Router Redundancy Service (VRRS) configuration on a device, use the **fhrp version vrrp v3** command in global configuration mode. To disable the ability to configure VRRPv3 and VRRS on a device, use the **no** form of this command.

**fhrp version vrrp v3**  
**no fhrp version vrrp v3**

**Syntax Description** This command has no keywords or arguments.

**Command Default** VRRPv3 and VRRS configuration on a device is not enabled.

**Command Modes** Global configuration (config)

### Command History

Release	Modification
15.2(4)M	This command was introduced.
15.3(3)M	This command was integrated into Cisco IOS Release 15.3(3)M.

**Usage Guidelines** When VRRPv3 is in use, VRRP version 2 (VRRPv2) is unavailable.

### Examples

In the following example, a tracking process is configured to track the state of an IPv6 object using a VRRPv3 group. VRRP on GigabitEthernet interface 0/0/0 then registers with the tracking process to be informed of any changes to the IPv6 object on the VRRPv3 group. If the IPv6 object state on serial interface VRRPv3 goes down, then the priority of the VRRP group is reduced by 20:

```
Device(config)# fhrp version vrrp v3
Device(config)# interface GigabitEthernet 0/0/0
Device(config-if)# vrrp 1 address-family ipv6
Device(config-if-vrrp)# track 1 decrement 20
```

### Related Commands

Command	Description
<b>track (VRRP)</b>	Enables an object to be tracked using a VRRPv3 group.
<b>vrrp name</b>	Links a VRRS client to a VRRP group.



## glbp authentication

To configure an authentication string for the Gateway Load Balancing Protocol (GLBP), use the **glbp authentication** command in interface configuration mode. To disable authentication, use the **no** form of this command.

```
gglbp authentication command glbp group-number authentication {text string | md5 {key-string
[{0 | 7}] key | key-chain name-of-chain}}
no glbp group-number authentication {text string | md5 {key-string [{0 | 7}] key | key-chain
name-of-chain}}
```

Syntax Description		
	<i>group-number</i>	GLBP group number in the range from 0 to 1023.
	<b>text</b> <i>string</i>	Specifies an authentication string. The number of characters in the command plus the text string must not exceed 255 characters.
	<b>md5</b>	Message Digest 5 (MD5) authentication.
	<b>key-string</b> <i>key</i>	Specifies the secret key for MD5 authentication. The key string cannot exceed 100 characters in length. We recommend using at least 16 characters.
	<b>0</b>	(Optional) Unencrypted key. If no prefix is specified, the key is unencrypted.
	<b>7</b>	(Optional) Encrypted key.
	<b>key-chain</b> <i>name-of-chain</i>	Identifies a group of authentication keys.

**Command Default** No authentication of GLBP messages occurs.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.3(2)T	The <b>md5</b> keyword and associated parameters were added.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

**Usage Guidelines** The same authentication method must be configured on all the routers that are configured to be members of the same GLBP group, to ensure interoperability. A router will ignore all GLBP messages that contain the wrong authentication information.

If password encryption is configured with the **service password-encryption** command, the software saves the key string in the configuration as encrypted text.

## Examples

The following example configures stringxyz as the authentication string required to allow GLBP routers in group 10 to interoperate:

```
Router(config)# interface fastethernet 0/0
Router(config-if)# glbp 10 authentication text stringxyz
```

In the following example, GLBP queries the key chain “AuthenticateGLBP” to obtain the current live key and key ID for the specified key chain:

```
Router(config)# key chain AuthenticateGLBP
Router(config-keychain)# key 1
Router(config-keychain-key)# key-string ThisIsASecretKey
Router(config-keychain-key)# key-string ThisIsASecretKey
Router(config-keychain-key)# exit
Router(config-keychain)# exit
Router(config)# interface Ethernet0/1
Router(config-if)# ip address 10.0.0.1 255.255.255.0
Router(config-if)# glbp 2 authentication md5 key-chain AuthenticateGLBP
```

## Related Commands

Command	Description
<b>glbp ip</b>	Enables GLBP.
<b>service password-encryption</b>	Encrypts passwords.

## glbp client-cache maximum

To enable the Gateway Load Balancing Protocol (GLBP) client cache, use the **glbp client-cache** command in interface configuration mode. To disable a GLBP client cache, use the **no** form of this command.

**glbp group client-cache maximum** *number* [**timeout** *minutes*]  
**no glbp group-number client-cache maximum** *number* [**timeout** *minutes*]

Syntax Description		
	<i>group</i>	GLBP group number in the range from 0 to 1023.
	<i>number</i>	Specifies the maximum number of clients the cache will hold for this GLBP group. The range is from 8 to 2000.
	<b>timeout</b> <i>minutes</i>	(Optional) The maximum amount of time, in minutes, a client entry can stay in the GLBP client cache after the client information was last updated. The range is from 1 to 1440.

**Command Default** The GLBP client cache is disabled.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.4(15)T	This command was introduced.
	12.2(33)SXI	This command was integrated into Cisco IOS Release 12.2(33)SXI.

**Usage Guidelines** This command enables a GLBP client cache on a single group only. To enable the client cache on multiple GLBP groups, you must apply this command to each group for which a client cache is required.

You must specify a maximum number of clients that the client cache will hold for a GLBP group to limit the size of the cache. If a GLBP client cache already exists when this command is entered and there are already more clients in the cache than the required number, all of the existing cache entries are discarded.

If you enter the **no** form of this command when there are already client entries in the cache, all of the client entries are discarded before the GLBP client cache is disabled.



**Note** For IPv4 networks, Cisco recommends setting a GLBP client cache timeout value that is slightly longer than the maximum expected end-host Address Resolution Protocol (ARP) cache timeout value.

### Examples

The following example shows how to enable a GLBP client cache with a maximum of 1200 clients:

```
Router(config-if)# glbp 10 client-cache maximum 1200 timeout 245
```

---

**Related Commands**

Command	Description
<b>show glbp</b>	Displays GLBP information.

# glbp forwarder preempt

To configure a router to take over as active virtual forwarder (AVF) for a Gateway Load Balancing Protocol (GLBP) group if the current AVF falls below its low weighting threshold, use the **glbp forwarder preempt** command in interface configuration mode. To disable this function, use the **no** form of this command.

```
glbp group forwarder preempt [delay minimum seconds]
no glbp group forwarder preempt [delay minimum]
```

Syntax Description		
	<i>group</i>	GLBP group number in the range from 0 to 1023.
	<b>delay minimum</b> <i>seconds</i>	(Optional) Specifies a minimum number of seconds that the router will delay before taking over the role of AVF. The range is from 0 to 3600 seconds with a default delay of 30 seconds.

**Command Default** Forwarder preemption is enabled with a default delay of 30 seconds.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

## Examples

The following example shows a router being configured to preempt the current AVF when the current AVF falls below its low weighting threshold. If the router preempts the current AVF, it waits 60 seconds before taking over the role of the AVF.

```
Router(config-if)# glbp 10 forwarder preempt delay minimum 60
```

Related Commands	Command	Description
	<b>glbp ip</b>	Enables GLBP.

# glbp ip

To activate the Gateway Load Balancing Protocol (GLBP), use the **glbp ip** command in interface configuration mode. To disable GLBP, use the **no** form of this command.

```
glbp group ip [ip-address [secondary]]
no glbp group ip [ip-address [secondary]]
```

## Syntax Description

<i>group</i>	GLBP group number in the range from 0 to 1023.
<i>ip-address</i>	(Optional) Virtual IP address for the GLBP group. The IP address must be in the same subnet as the interface IP address.
<b>secondary</b>	(Optional) Indicates that the IP address is a secondary GLBP virtual address.

## Command Default

GLBP is disabled by default.

## Command Modes

Interface configuration (config-if)

## Command History

Release	Modification
12.2(14)S	This command was introduced.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

## Usage Guidelines

The **glbp ip** command activates GLBP on the configured interface. If an IP address is specified, that address is used as the designated virtual IP address for the GLBP group. If no IP address is specified, the designated address is learned from another router configured to be in the same GLBP group. For GLBP to elect an active virtual gateway (AVG), at least one router on the cable must have been configured with the designated address. A router must be configured with, or have learned, the virtual IP address of the GLBP group before assuming the role of a GLBP gateway or forwarder. Configuring the designated address on the AVG always overrides a designated address that is in use.

When the **glbp ip** command is enabled on an interface, the handling of proxy Address Resolution Protocol (ARP) requests is changed (unless proxy ARP was disabled). ARP requests are sent by hosts to map an IP address to a MAC address. The GLBP gateway intercepts the ARP requests and replies to the ARP on behalf of the connected nodes. If a forwarder in the GLBP group is active, proxy ARP requests are answered using the MAC address of the first active forwarder in the group. If no forwarder is active, proxy ARP responses are suppressed.

## Examples

The following example activates GLBP for group 10 on Fast Ethernet interface 0/0. The virtual IP address to be used by the GLBP group is set to 10.21.8.10.

```
Router(config)# interface fastethernet 0/0
Router(config-if)# ip address 10.21.8.32 255.255.255.0
Router(config-if)# glbp 10 ip 10.21.8.10
```

The following example activates GLBP for group 10 on Fast Ethernet interface 0/0. The virtual IP address used by the GLBP group will be learned from another router configured to be in the same GLBP group.

```
Router(config)# interface fastethernet 0/0
Router(config-if)# glbp 10 ip
```

## Related Commands

Command	Description
<code>show glbp</code>	Displays GLBP information.

# glbp ipv6

To activate the Gateway Load Balancing Protocol (GLBP) in IPv6, use the **glbp ipv6** command in interface configuration mode. To disable GLBP, use the **no** form of this command.

```
glbp group ipv6 [{ipv6-address | autoconfig}]
no glbp group ipv6 [{ipv6-address | autoconfig}]
```

## Syntax Description

<i>group</i>	GLBP group number in the range from 0 to 1023.
<i>ip-address</i>	(Optional) Virtual IPv6 address for the GLBP group. The IPv6 address must be in the same subnet as the interface IPv6 address.
<b>autoconfig</b>	(Optional) Indicates a default IPv6 address can be created based on a MAC address.

## Command Default

GLBP is disabled by default.

## Command Modes

Interface configuration

## Command History

Release	Modification
12.4(6)T	This command was introduced.
12.2(33)SXI	This command was modified. It was integrated into Cisco IOS Release 12.2(33)SXI.

## Usage Guidelines

The **glbp ipv6** command activates GLBP on the configured interface. If an IPv6 address is specified, that address is used as the designated virtual IPv6 address for the GLBP group. If no IPv6 address is specified, the designated address is learned from another router configured to be in the same GLBP group. For GLBP to elect an active virtual gateway (AVG), at least one router on the cable must have been configured with the designated address. A router must be configured with, or have learned, the virtual IPv6 address of the GLBP group before assuming the role of a GLBP gateway or forwarder. Configuring the designated address on the AVG always overrides a designated address that is in use.

When the **glbp ipv6** command is enabled on an interface, the handling of proxy Address Resolution Protocol (ARP) requests is changed (unless proxy ARP was disabled). ARP requests are sent by hosts to map an IPv6 address to a MAC address. The GLBP gateway intercepts the ARP requests and replies to the ARP on behalf of the connected nodes. If a forwarder in the GLBP group is active, proxy ARP requests are answered using the MAC address of the first active forwarder in the group. If no forwarder is active, proxy ARP responses are suppressed.

## Examples

The following example enables GLBP on an IPv6 configured interface:

```
Router(config-if)# glbp ipv6
```

## Related Commands

Command	Description
<b>glbp ip</b>	Activates the GLBP in IPv4.



Command	Description
show glbp	Displays GLBP information.

## glbp load-balancing

To specify the load-balancing method used by the active virtual gateway (AVG) of the Gateway Load Balancing Protocol (GLBP), use the **glbp load-balancing** command in interface configuration mode. To disable load balancing, use the **no** form of this command.

```
glbp group load-balancing [{host-dependent | round-robin | weighted}]
no glbp group load-balancing
```

### Syntax Description

<i>group</i>	GLBP group number in the range from 0 to 1023.
<b>host-dependent</b>	(Optional) Specifies a load balancing method based on the MAC address of a host where the same forwarder is always used for a particular host while the number of GLBP group members remains unchanged.
<b>round-robin</b>	(Optional) Specifies a load balancing method where each virtual forwarder in turn is included in address resolution replies for the virtual IP address. This method is the default.
<b>weighted</b>	(Optional) Specifies a load balancing method that is dependent on the weighting value advertised by the gateway.

### Command Default

The round-robin method is the default.

### Command Modes

Interface configuration (config-if)

### Command History

Release	Modification
12.2(14)S	This command was introduced.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
12.4(24)T2	This command was modified. When the <b>no</b> form of this command is configured, if the AVG does not have an AVF, it preferentially replies to ARP requests with the MAC address of the first listening virtual forwarder.
15.0(1)M1	This command was modified. When the <b>no</b> form of this command is configured, if the AVG does not have an Active Virtual Forwarder (AVF), it preferentially replies to ARP requests with the MAC address of the first listening virtual forwarder.
15.1(2)T	This command was modified. When the <b>no</b> form of this command is configured, if the AVG does not have an AVF, it preferentially replies to ARP requests with the MAC address of the first listening virtual forwarder.

---

**Usage Guidelines**

Use the host-dependent method of GLBP load balancing when you need each host to always use the same router. Use the weighted method of GLBP load balancing when you need unequal load balancing because routers in the GLBP group have different forwarding capacities.

---

**Examples**

The following example shows the host-dependent load-balancing method being configured for the AVG of the GLBP group 10:

```
Router(config)# interface fastethernet 0/0
Router(config-if)# glbp 10 ip 10.21.8.10
Router(config-if)# glbp 10 load-balancing host-dependent
```

---

**Related Commands**

Command	Description
<b>show glbp</b>	Displays GLBP information.

# glbp name

To enable IP redundancy by assigning a name to the Gateway Load Balancing Protocol (GLBP) group, use the **glbp name** command in interface configuration mode. To disable IP redundancy for a group, use the **no** form of this command.

```
glbp group-number name group-name
no glbp group-number name group-name
```

Syntax Description	
<i>group-number</i>	GLBP group number. Range is from 0 to 1023.
<i>group-name</i>	GLBP group name specified as a character string. Maximum number of characters is 255.

**Command Default** IP redundancy for a group is disabled.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.3(7)T	This command was introduced.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

**Usage Guidelines** The GLBP redundancy client must be configured with the same GLBP group name so that the redundancy client and the GLBP group can be connected.

## Examples

The following example assigns the abccomp name to GLBP group 10:

```
Router(config-if)# glbp 10 name abccomp
```

Related Commands	Command	Description
	<b>glbp authentication</b>	Configures an authentication string for the GLBP.
	<b>glbp forwarder preempt</b>	Configures a router to take over as AVF for a GLBP group if it has higher priority than the current AVF.
	<b>glbp ip</b>	Activates GLBP.
	<b>glbp load-balancing</b>	Specifies the load-balancing method used by the AVG of GLBP.
	<b>glbp preempt</b>	Configures the gateway to take over as AVG for a GLBP group if it has higher priority than the current AVG.

<b>Command</b>	<b>Description</b>
<b>glbp priority</b>	Sets the priority level of the gateway within a GLBP group.
<b>glbp timers</b>	Configures the time between hello packets sent by the GLBP gateway and the time for which the virtual gateway and virtual forwarder information is considered valid.
<b>glbp timers redirect</b>	Configures the time during which the AVG for a GLBP group continues to redirect clients to a secondary AVF.
<b>glbp weighting</b>	Specifies the initial weighting value of the GLBP gateway.
<b>glbp weighting track</b>	Specifies a tracking object where the GLBP weighting changes based on the availability of the object being tracked.
<b>show glbp</b>	Displays GLBP information.
<b>track</b>	Configures an interface to be tracked where the GLBP weighting changes based on the state of the interface.

## glbp preempt

To configure the gateway to take over as active virtual gateway (AVG) for a Gateway Load Balancing Protocol (GLBP) group if it has higher priority than the current AVG, use the **glbp preempt** command in interface configuration mode. To disable this function, use the **no** form of this command.

**glbp group preempt** [**delay minimum seconds**]  
**no glbp group preempt** [**delay minimum**]

Syntax Description		
	<i>group</i>	GLBP group number in the range from 0 to 1023.
	<b>delay minimum</b> <i>seconds</i>	(Optional) Specifies a minimum number of seconds that the router will delay before taking over the role of AVG. The range is from 0 to 3600 seconds with a default delay of 30 seconds.

**Command Default** A GLBP router with a higher priority than the current AVG cannot assume the role of AVG. The default delay value is 30 seconds.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

### Examples

The following example shows a router being configured to preempt the current AVG when its priority of 254 is higher than that of the current AVG. If the router preempts the current AVG, it waits 60 seconds before assuming the role of AVG.

```
Router(config-if)# glbp 10 preempt delay minimum 60
Router(config-if)# glbp 10 priority 254
```

Related Commands	Command	Description
	<b>glbp ip</b>	Enables GLBP.
	<b>glbp priority</b>	Sets the priority level of the router within a GLBP group.

# glbp priority

To set the priority level of the gateway within a Gateway Load Balancing Protocol (GLBP) group, use the **glbp priority** command in interface configuration mode. To remove the priority level of the gateway, use the **no** form of this command.

**glbp group priority level**  
**no glbp group priority level**

Syntax Description	
<i>group</i>	GLBP group number in the range from 0 to 1023.
<i>level</i>	Priority of the gateway within the GLBP group. The range is from 1 to 255. The default is 100.

**Command Default** The GLBP virtual gateway preemptive scheme is disabled

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

**Usage Guidelines** Use this command to control which virtual gateway becomes the active virtual gateway (AVG). After the priorities of several different virtual gateways are compared, the gateway with the numerically higher priority is elected as the AVG. If two virtual gateways have equal priority, the gateway with the higher IP address is selected.

## Examples

The following example shows a virtual gateway being configured with a priority of 254:

```
Router(config-if)# glbp 10 priority 254
```

Related Commands	Command	Description
	<b>glbp ip</b>	Enables GLBP.
	<b>glbp preempt</b>	Configures a router to take over as the AVG for a GLBP group if it has higher priority than the current AVG.

# glbp sso

To enable Gateway Load Balancing Protocol (GLBP) support of Stateful Switchover (SSO) if it has been disabled, use the **glbp sso** command in global configuration mode. To disable GLBP support of SSO, use the **no** form of this command.

```
glbp sso
no glbp sso
```

**Syntax Description** This command has no arguments or keywords.

**Command Default** GLBP Support for SSO is enabled by default.

**Command Modes** Global configuration (config)

Release	Modification
12.2(31)SB2	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.

**Usage Guidelines** Use this command to enable GLBP support of SSO if it has been manually disabled by the **no glbp sso** command.

**Examples** The following example show how to disable GLBP support of SSO:

```
Router(config)# no glbp sso
```

Command	Description
<b>debug glbp events</b>	Displays debugging messages about GLBP events.
<b>show glbp</b>	Displays GLBP information.



## glbp timers

To configure the time between hello packets sent by the Gateway Load Balancing Protocol (GLBP) gateway and the time that the virtual gateway and virtual forwarder information is considered valid, use the **glbp timers** command in interface configuration mode. To restore the timers to their default values, use the **no** form of this command.

```
glbp group timers [msec] hellotime [msec] holdtime
no glbp group timers
```

### Syntax Description

<i>group</i>	GLBP group number in the range from 0 to 1023.
<i>msec</i>	(Optional) Specifies that the following ( <i>hellotime</i> or <i>holdtime</i> ) argument value will be expressed in milliseconds rather than seconds.
<i>hellotime</i>	Hello interval. The default is 3 seconds (3000 milliseconds).
<i>holdtime</i>	Time before the virtual gateway and virtual forwarder information contained in the hello packet is considered invalid. The default is 10 seconds (10,000 milliseconds).

### Command Default

GLBP timers are set to their default values.

### Command Modes

Interface configuration (config-if)

### Command History

Release	Modification
12.2(14)S	This command was introduced.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

### Usage Guidelines

Routers on which timer values are not configured can learn timer values from the active virtual gateway (AVG). The timers configured on the AVG always override any other timer settings. All routers in a GLBP group should use the same timer values. If a GLBP gateway sends a hello message, the information should be considered valid for one holdtime. Normally, holdtime is greater than three times the value of hello time, ( $holdtime > 3 * hellotime$ ). The range of values for holdtime force the holdtime to be greater than the hello time.

### Examples

The following example shows the GLBP group 10 on Fast Ethernet interface 0/0 timers being configured for an interval of 5 seconds between hello packets, and the time after which virtual gateway and virtual forwarder information is considered to be invalid to 18 seconds:

```
Router(config)# interface fastethernet 0/0
Router(config-if)# glbp 10 ip
Router(config-if)# glbp 10 timers 5 18
```

**Related Commands**

Command	Description
<b>glbp ip</b>	Activates GLBP.
<b>show glbp</b>	Displays GLBP information.

## glbp timers redirect

To configure the time during which the active virtual gateway (AVG) for a Gateway Load Balancing Protocol (GLBP) group continues to redirect clients to a secondary active virtual forwarder (AVF), use the **glbp timers redirect** command in interface configuration mode. To restore the redirect timers to their default values, use the **no** form of this command.

```
glbp group timers redirect redirect timeout
no glbp group timers redirect redirect timeout
```

### Syntax Description

<i>group</i>	GLBP group number in the range from 0 to 1023.
<i>redirect</i>	The redirect timer interval in the range from 0 to 3600 seconds. The default is 600 seconds (10 minutes).  <b>Note</b> The zero value for the <i>redirect</i> argument cannot be removed from the range of acceptable values because preexisting configurations of Cisco IOS software already using the zero value could be negatively affected during an upgrade. However, be advised that a zero setting is not recommended and, if used, results in a redirect timer that never expires. If the redirect timer does not expire, then when a router fails, new hosts continue to be assigned to the failed router instead of being redirected to the backup.
<i>timeout</i>	The time interval, in the range from 600 to 64,800 seconds, before the secondary virtual forwarder becomes unavailable. The default is 14,400 seconds (4 hours).

### Command Default

The GLBP redirect timers are set to their default values.

### Command Modes

Interface configuration (config-if)

### Command History

Release	Modification
12.2(14)S	This command was introduced.
12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

### Usage Guidelines

A virtual forwarder that is assigned a virtual MAC address by the AVG is known as a primary virtual forwarder. If the virtual forwarder has learned the virtual MAC address from hello messages, it is referred to as a secondary virtual forwarder.

The redirect timer sets the time delay between a forwarder failing on the network and the AVG assuming that the forwarder will not return. The virtual MAC address to which the forwarder was responsible for replying

is still given out in Address Resolution Protocol (ARP) replies, but the forwarding task is handled by another router in the GLBP group.



---

**Note** The zero value for the *redirect* argument cannot be removed from the range of acceptable values because preexisting configurations of Cisco IOS software already using the zero value could be negatively affected during an upgrade. However, be advised that a zero setting is not recommended and, if used, results in a redirect timer that never expires. If the redirect timer does not expire, then when a router fails, new hosts continue to be assigned to the failed router instead of being redirected to the backup.

---

The timeout interval is the time delay between a forwarder failing on the network and the MAC address for which the forwarder was responsible becoming inactive on all of the routers in the GLBP group. After the timeout interval, packets sent to this virtual MAC address will be lost. The timeout interval must be long enough to allow all hosts to refresh their ARP cache entry that contained the virtual MAC address.

---

## Examples

The following example shows the commands used to configure GLBP group 1 on Fast Ethernet interface 0/0 with a redirect timer of 1800 seconds (30 minutes) and timeout interval of 28,800 seconds (8 hours):

```
Router# config terminal
Router(config)# interface fastEthernet 0/0
Router(config-if)# glbp 1 timers redirect 1800 28800
```

# glbp weighting

To specify the initial weighting value of the Gateway Load Balancing Protocol (GLBP) gateway, use the **glbp weighting** command in interface configuration mode. To restore the default values, use the **no** form of this command.

```
glbp group weighting maximum [lower lower] [upper upper]
no glbp group weighting
```

Syntax Description		
<i>group</i>		GLBP group number in the range from 0 to 1023.
<i>maximum</i>		Maximum weighting value in the range from 1 to 254. Default value is 100.
<b>lower</b> <i>lower</i>		(Optional) Specifies a lower weighting value in the range from 1 to the specified maximum weighting value. Default value is 1.
<b>upper</b> <i>upper</i>		(Optional) Specifies an upper weighting value in the range from the lower weighting to the maximum weighting value. The default value is the specified maximum weighting value.

**Command Default** The default gateway weighting value is 100 and the default lower weighting value is 1.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

**Usage Guidelines** The weighting value of a virtual gateway is a measure of the forwarding capacity of the gateway. If a tracked interface on the router fails, the weighting value of the router may fall from the maximum value to below the lower threshold, causing the router to give up its role as a virtual forwarder. When the weighting value of the router rises above the upper threshold, the router can resume its active virtual forwarder role.

Use the **glbp weighting track** and **track** commands to configure parameters for an interface to be tracked. If an interface on a router goes down, the weighting for the router can be reduced by a specified value.

## Examples

The following example shows the weighting of the gateway for GLBP group 10 being set to a maximum of 110 with a lower weighting limit of 95 and an upper weighting limit of 105:

```
Router(config)# interface fastethernet 0/0
Router(config-if)# ip address 10.21.8.32 255.255.255.0
Router(config-if)# glbp 10 weighting 110 lower 95 upper 105
```

**Related Commands**

Command	Description
<b>glbp weighting track</b>	Specifies an object to be tracked that affects the weighting of a GLBP gateway.
<b>track</b>	Configures an interface to be tracked.

# glbp weighting track

To specify a tracking object where the Gateway Load Balancing Protocol (GLBP) weighting changes based on the availability of the object being tracked, use the **glbp weighting track** command in interface configuration mode. To remove the tracking, use the **no** form of this command.

```
glbp group weighting track object-number [decrement value]
no glbp group weighting track object-number [decrement value]
```

Syntax Description		
<i>group</i>		GLBP group number in the range from 0 to 1023.
<i>object-number</i>		Object number representing an item to be tracked. The valid range is 1 to 1000. Use the <b>track</b> command to configure the tracked object.
<b>decrement</b> <i>value</i>		(Optional) Specifies an amount by which the GLBP weighting for the router is decremented (or incremented) when the interface goes down (or comes back up). The value range is from 1 to 254, with a default value of 10.

**Command Default** Objects are not tracked for GLBP weighting changes.

**Command Modes** Interface configuration (config-if)

Command History	Release	Modification
	12.2(14)S	This command was introduced.
	12.2(15)T	This command was integrated into Cisco IOS Release 12.2(15)T.
	12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
	12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
	Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
	15.1(3)T	This command was modified. The valid range for the <i>object-number</i> argument increased to 1000.
	15.1(1)S	This command was modified. The valid range for the <i>object-number</i> argument increased to 1000.
	12.2(50)SY	This command was modified. The valid range for the <i>object-number</i> argument increased to 1000.

**Usage Guidelines** This command ties the weighting of the GLBP gateway to the availability of its interfaces. It is useful for tracking interfaces that are not configured for GLBP.

When a tracked interface goes down, the GLBP gateway weighting decreases by 10. If an interface is not tracked, its state changes do not affect the GLBP gateway weighting. For each GLBP group, you can configure a separate list of interfaces to be tracked.

The optional *value* argument specifies by how much to decrement the GLBP gateway weighting when a tracked interface goes down. When the tracked interface comes back up, the weighting is incremented by the same amount.

When multiple tracked interfaces are down, the configured weighting decrements are cumulative.

Use the **track** command to configure each interface to be tracked.

As of Cisco IOS Release 15.1(3)T, 15.1(1)S and 12.2(50)SY, a maximum of 1000 objects can be tracked. Although 1000 tracked objects can be configured, each tracked object uses CPU resources. The amount of available CPU resources on a router is dependent upon variables such as traffic load and how other protocols are configured and run. The ability to use 1000 tracked objects is dependent upon the available CPU. Testing should be conducted on site to ensure that the service works under the specific site traffic conditions.

## Examples

In the following example, Fast Ethernet interface 0/0 tracks two interfaces represented by the numbers 1 and 2. If interface 1 goes down, the GLBP gateway weighting decreases by the default value of 10. If interface 2 goes down, the GLBP gateway weighting decreases by 5.

```
Router(config)# interface fastethernet 0/0
Router(config-if)# ip address 10.21.8.32 255.255.255.0
Router(config-if)# glbp 10 weighting track 1
Router(config-if)# glbp 10 weighting track 2 decrement 5
```

## Related Commands

Command	Description
<b>glbp weighting</b>	Specifies the initial weighting value of a GLBP gateway.
<b>track</b>	Configures an interface to be tracked.



# ip gdp

To configure the router discovery mechanism, use the **ipgdp** command in global configuration mode. To disable the configuration, use the **no** form of this command.

```
ip gdp {eigrp | irdp [multicast] | rip}
no ip gdp {eigrp | irdp [multicast] | rip}
```

## Syntax Description

<b>eigrp</b>	Configures a gateway to discover routers transmitting Enhanced Interior Gateway Routing Protocol (EIGRP) router updates.
<b>irdp</b>	Configures a gateway to discover routers transmitting ICMP Router Discovery Protocol (IRDP) router updates.
<b>multicast</b>	(Optional) Specifies the router to multicast IRDP solicitations.
<b>rip</b>	Configures a gateway to discover routers transmitting Routing Information Protocol (RIP) router updates.

## Command Default

The router discovery mechanism is not configured.

## Command Modes

Global configuration (config)

## Command History

Release	Modification
15.0(1)M	This command was introduced in a release earlier than Cisco IOS Release 15.0(1)M.

## Usage Guidelines

You must disable IP routing to configure the **ipgdp** command.

## Examples

The following example shows how to configure the RIP router discovery mechanism:

```
Router# configure terminal
Router(config)# ip gdp rip
```

## Related Commands

Command	Description
<b>ip host</b>	Defines static hostname-to-address mappings in the DNS hostname cache for a DNS view.
<b>ip route</b>	Establishes static routes.

# ip irdp

To enable ICMP Router Discovery Protocol (IRDP) processing on an interface, use the **ip irdp** command in interface configuration mode. To disable IRDP routing, use the **no** form of this command.

```
ip irdp [{multicast | holdtime seconds | maxadvertinterval seconds | minadvertinterval seconds |
preference number | address address [number]}]
no ip irdp
```

## Syntax Description

<b>multicast</b>	(Optional) Use the multicast address (224.0.0.1) instead of IP broadcasts.
<b>holdtime</b> <i>seconds</i>	(Optional) Length of time in seconds that advertisements are held valid. Default is three times the <b>maxadvertinterval</b> value. Must be greater than <b>maxadvertinterval</b> and cannot be greater than 9000 seconds.
<b>maxadvertinterval</b> <i>seconds</i>	(Optional) Maximum interval in seconds between advertisements. The range is from 1 to 1800. A value of 0 means only advertise when solicited. The default is 600 seconds.
<b>minadvertinterval</b> <i>seconds</i>	(Optional) Minimum interval in seconds between advertisements. The range is from 1 to 1800. The default is 450 seconds.
<b>preference</b> <i>number</i>	(Optional) Preference value. The allowed range is -2 31 to 2 31 . The default is 0. A higher value increases the preference level of the router. You can modify a particular router so that it will be the preferred router to which other routers will home.
<b>address</b> <i>address</i> [ <i>number</i> ]	(Optional) IP address ( <i>address</i> ) to proxy advertise, and optionally, its preference value ( <i>number</i> ).

## Command Default

IRDP is disabled by default. When enabled, IRDP uses these defaults:

- Broadcast IRDP advertisements
- Maximum interval between advertisements: 600 seconds
- Minimum interval between advertisements: 450 seconds
- Preference: 0

## Command Modes

Interface configuration (config-if)

## Command History

Release	Modification
10.0	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

---

**Usage Guidelines**

If you change the **maxadvertinterval** value, the other two values also change, so it is important to change the **maxadvertinterval** value before changing either the **holdtime** or **minadvertinterval** values.

The **ip irdp multicast** command allows for compatibility with Sun Microsystems Solaris, which requires IRDP packets to be sent out as multicasts. Many implementations cannot receive these multicasts; ensure end-host ability before using this command.

---

**Examples**

The following example sets the various IRDP processes:

```
Router(config)# interface ethernet 0 !Enable irdp on interface Ethernet 0.
Router(config-if)# ip irdp
Router(config-if)# ip irdp multicast !Send IRDP advertisements to the multicast address.
Router(config-if)# ip irdp preference 900 !Increase router preference from 0 to 900.
Router(config-if)# ip irdp maxadvertinterval 400 !Set maximum time between advertisements
to 400 secs.
Router(config-if)# ip irdp minadvertinterval 100 !Set minimum time between advertisements
to 100 secs.
Router(config-if)# ip irdp holdtime 6000 !Advertisements are good for 6000 seconds.
Router(config-if)# ip irdp address 10.108.14.5 !Proxy-advertise 10.108.14.5 with default
router preference.
Router(config-if)# ip irdp address 10.108.14.6 50 !Proxy-advertise 10.108.14.6 with preference
of 50.
```

---

**Related Commands**

Command	Description
<b>show ip irdp</b>	Displays IRDP values.

