



Link Bundling Commands

This module provides command line interface (CLI) commands for configuring Link Bundle interfaces on the Cisco CRS Router.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

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backbone interface

To configure interchassis group ICCP backbone interface, use the **backbone interface** command in the redundancy group ICCP configuration mode. To return to the default behavior, use the **no** form of this command.

backbone interface *type interface-path-id*

Syntax Description	<i>type</i>	Interface type. For more information, use the question mark (?) online help function.
	<i>interface-path-id</i>	Physical interface or virtual interface.
	Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (?) online help function.
Command Default	None	
Command Modes	Redundancy group ICCP configuration	
Command History	Release	Modification
	Release 4.3.2	This command was introduced.
Usage Guidelines	No specific guidelines impact the use of this command.	
Task ID	Task ID	Operations
	config-services	read, write
Examples	This example shows how to configure interchassis group ICCP backbone interface:	
	<pre>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# redundancy iccp group 10 RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# backbone interface GigabitEthernet 0/2/1/0 RP/0/RP0/CPU0:router(config-redundancy-iccp-group)#</pre>	
Related Commands	Command	Description
	redundancy iccp group, on page 42	Configures Inter Chassis Communication Protocol (ICCP) parameters.

bundle lacp delay

To apply delay of a specified duration in adding a member to a specific bundle, use the **bundle lacp-delay** command in the interface configuration mode.

bundle lacp-delay

Syntax Description	<i>lacp-delay</i> Duration of delay before a member is added to the bundle. The range is from 1 sec to 15 sec.
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Command Default	No default behavior or values. If not configured, there is no delay that is imposed on bundle members.
------------------------	--

Command Modes	Interface configuration
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Command History	Release	Modification
	Release 6.1.1	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
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Task ID	Task ID	Operations
	bundle	read, write

Examples

The following example shows how to set the delay for a newly added member on a bundle interface. In this example, the delay defined is for 6 secs:

```
RP/0/RP0/CPU0:router(config)# int bundle-ether 1
RP/0/RP0/CPU0:router(config-if)##bundle lacp-delay ?
<1000-15000> LACP-delay timeout in milliseconds
RP/0/RP0/CPU0:router(config-if)##bundle lacp-delay 6000
RP/0/RP0/CPU0:router(config-if)##commit
```

Related Commands	Command	Description
	bundle maximum-active links, on page 13	
	show bundle, on page 43	Displays information about configured bundles.

bundle-hash

To display the source and destination IP addresses for the member links, distributed by the load balancing feature, in a multilink interface bundle, use the **bundle-hash** command in EXEC mode.

bundle-hash **Bundle-Ether** *bundle-id* | **Bundle-POS** **bundle-id** | **members** **GigabitEthernet** | **TenGigabitEthernet** | **POS** *interface-path-id*

Syntax Description	
Bundle-Ether <i>bundle-id</i>	Specifies an Ethernet bundle for which you want to calculate load balancing. Range is 1- 65535.
Bundle-POS <i>bundle-id</i>	Specifies a POS bundle for which you want to calculate load balancing. Range is 1- 65535.
members	Identifies specific bundle member links for which you want to calculate load balancing.
GigabitEthernet	Specifies the Gigabit Ethernet interface for which you want to calculate load balancing.
TenGigE	Specifies the 10 Gigabit Ethernet interface for which you want to calculate load balancing.
POS	Specifies the POS interface for which you want to calculate load balancing.
<i>interface-path-id</i>	Physical interface or virtual interface. Note Use the show interfaces command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
location	Location of source interface.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines Bundle interface traffic is distributed over the various member links of a bundle according to a hash function. The **bundle-hash** command allows you to determine which bundle member link will carry a particular flow of traffic.

You can use the **bundle-hash** command to get these information:

- Which members are used for a specified source/destination address pair, such as 10.10.10.1 20.20.20.1
- The destination IP address for a specified source IP address on a specified member.

- The load balancing distribution—how many times the members of a bundle are used for a specified range of IP addresses.

The **bundle-hash** command does not display all possible IP addresses in an entire series. It stops displaying addresses after all the addresses for all the members of the bundle have been displayed once.

The **bundle-hash** command invokes a utility that initially prompts you to select some options. Based on the options you select, the utility prompts you more options to select. The initial options to select are as follows:

- L3/3-tuple or L4/7-tuple
- Single pair or Range
- IPv4 or IPv6

The **bundle-hash** command utility prompts you for these options as follows:

- Specify load-balance configuration (L3/3-tuple or L4/7-tuple) (L3,L4):
- Single SA/DA pair (IPv4,IPv6) or range (IPv4 only): S/R [S]:
- Enter bundle type IP V4 (1) or IP V6 (2):
- Enter source IP V4 address:
- Enter destination IP V4 address:
- Compute destination address set for all members? [y/n]:
- Enter subnet prefix for destination address set:
- Enter bundle IP V4 address [10.10.10.10]:

You may also be prompted to make further option choices depending on your selections.

[Table 1: bundle-hash Command Options, on page 6](#) provides a general summary of the options and the information you need to provide for each selected option. The actual information that you need to provide depends on the selections you make and may vary from the information provided in [Table 1: bundle-hash Command Options, on page 6](#).

Table 1: bundle-hash Command Options

Option	Information You Need to Provide
L3/3-tuple	L3 information: <ul style="list-style-type: none"> • Source IP address • Destination IP address • Destination subnet prefix • Bundle IP address

Option	Information You Need to Provide
L4/7-tuple	<p>L3 information:</p> <ul style="list-style-type: none"> • Source IP address • Destination IP address • Protocol <p>L4 information:</p> <ul style="list-style-type: none"> • Source port • Destination port <p>Platform-related information:</p> <ul style="list-style-type: none"> • Router ID • Ingress interface
Single pair	<p>Information for a single source port and destination port. The utility uses this information to calculate the hash and display the bundle load-balance distribution among the user-provided physical/bundle links.</p> <p>The default is single mode.</p> <p>While in single mode, you may receive the following prompt:</p>
Range	<p>Information for sets of source and destination addresses to generate a packet flow for each set. The utility uses this information to calculate the hash for the generated packet flows and display the user-provided egress member links/bundle interfaces and the number of packet flows on each link.</p>
IPv4	IPv4 addresses
IPv6	IPv6 addresses

```
Compute destination address set for all members [y|n]:
```

If you enter y(es), several sample IPv4 addresses in the destination subnet are generated, and the link is calculated for each sample address. During this calculation, the destination network address is derived from the destination IPv4 address and the subnet prefix.

Task ID

Task ID	Operations
bundle read	

Examples

The following example shows the **members** keyword prompts and options:

```
RP/0/RP0/CPU0:router# bundle-hash members pos 0/2/0/1
```

```

Thu Aug 20 20:19:21.241 DST
Single SA/DA pair or range: S/R [S]: s
Enter source IP V4 address: 10.10.10.10
Enter source IP V4 address: 10.10.10.10
Enter destination IP V4 address: 20.20.20.20
Compute destination address set for all members? [y/n]: y
Enter subnet prefix for destination address set: 8
Enter bundle IP V4 address [10.10.10.10]: 10.10.10.11

Link hashed [hash:0] to is POS0/2/0/1 member id 0 ifh 0x3000f00

Destination address set for subnet 20.0.0.0:
  20.0.0.1 [hash:4] hashes to link POS0/2/0/1

Another? [y]:

```

The following example shows how to calculate load balancing across the members of a link bundle (bundle-ether 28) using the 3-tuple hash algorithm, a single source and destination, and IPv4 addresses:

```

RP/0/RP0/CPU0:router# bundle-hash bundle-ether 28

Specify load-balance configuration (L3/3-tuple or L4/7-tuple) (L3,L4): 13
Single SA/DA pair (IPv4,IPv6) or range (IPv4 only): S/R [S]: s

Enter bundle type IP V4 (1) or IP V6 (2): 1
Enter source IP V4 address: 10.12.28.2
Enter destination IP V4 address: 10.12.28.1
Compute destination address set for all members? [y/n]: y
Enter subnet prefix for destination address set: 8
Enter bundle IP V4 address [10.12.28.2]: 10.12.28.2

Link hashed to is GigabitEthernet0/6/5/7

Destination address set for subnet 10.0.0.0:
  10.0.0.6 hashes to link GigabitEthernet0/1/5/6
  10.0.0.8 hashes to link GigabitEthernet0/6/5/5
  10.0.0.12 hashes to link GigabitEthernet0/6/5/6
  10.0.0.2 hashes to link GigabitEthernet0/6/5/7
  10.0.0.1 hashes to link GigabitEthernet0/1/5/7

```

The following example shows how to calculate load balancing across the members of a link bundle (bundle-ether 28) using the 3-tuple hash algorithm, a range of source and destinations, and IPv4 addresses:

```

RP/0/RP0/CPU0:router# bundle-hash bundle-ether 28

Specify load-balance configuration (L3/3-tuple or L4/7-tuple) (L3,L4): 13
Single SA/DA pair (IPv4,IPv6) or range (IPv4 only): S/R [S]: r

Maximum number of flows (num src addr * num dst addr): 65536

Enter first source IP address: 10.12.28.2
Enter subnet prefix for source address set: 8
Enter number of source addresses (1-245): 20
Enter source address modifier (1-12) [def:1]: 5

Enter destination IP address: 10.12.28.1
Enter subnet prefix for destination address set: 8

```



```

Enter number of destination addresses (1-245): 20
Enter destination address modifier (1-12) [1]: 5
Many to many (M) or simple pairs (S)? [M]: s

```

```
Calculating simple pairs...
```

```

Total number of hits 20
Member GigabitEthernet0/1/5/6 has 6 hits
Member GigabitEthernet0/6/5/5 has 2 hits
Member GigabitEthernet0/6/5/6 has 2 hits
Member GigabitEthernet0/6/5/7 has 9 hits
Member GigabitEthernet0/1/5/7 has 1 hits

```

The following example shows how to calculate load balancing across the members of a link bundle (bundle-ether 202) using the 7-tuple hash algorithm, a single source and destination, and IPv4 addresses:

```
RP/0/RP0/CPU0:router# bundle-hash bundle-ether 202
```

```
Specify load-balance configuration (L3/3-tuple or L4/7-tuple) (L3,L4): 14
Single SA:SP/DA:SP pair (IPv4,IPv6) or range (IPv4 only): S/R [S]: s
```

```
Enter bundle type IP V4 (1) or IP V6 (2): 1
Enter source IP V4 address: 172.20.180.167
Enter destination IP V4 address: 172.30.15.42
```

```

Ingress interface --
- physical interface format: [ POS | GigabitEthernet | TenGigE ]R/S/I/P
- bundle interface format: [ Bundle-Ether | Bundle-POS ]bundle-id
Enter ingress interface: GigabitEthernet0/2/0/3

```

```

Enter L4 protocol (TCP,UDP,SCTP,L2TPV3,NONE): UDP
Enter src port: 1000
Enter destination port: 2000

```

```
Compute destination address set for all members? [y/n]: n
```

```
S/D pair 172.20.180.167:1000/172.30.15.42:2000 -- Link hashed to is GigabitEthernet0/3/3/6
```

```
Another? [y]: y
```

```

Enter bundle type IP V4 (1) or IP V6 (2): 1
Enter source IP V4 address [172.20.180.167]: 172.20.180.167
Enter destination IP V4 address [172.30.15.42]: 172.30.15.42

```

```

Ingress interface --
- physical interface format: [ POS | GigabitEthernet | TenGigE ]R/S/I/P
- bundle interface format: [ Bundle-Ether | Bundle-POS ]bundle-id
Enter ingress interface [GigabitEthernet0/2/0/3]: GigabitEthernet0/2/0/3

```

```

Enter L4 protocol (TCP,UDP,SCTP,L2TPV3,NONE) [udp]: UDP
Enter src port [1000]: 1000
Enter destination port [2000]: 2000

```

```
Compute destination address set for all members? [y/n]: y
```

```

Enter subnet prefix for destination address set: 24
Enter bundle IP V4 address [172.20.180.167]: 209.165.200.225

```

```
S/D pair 172.20.180.167:1000/172.30.15.42:2000 -- Link hashed to is GigabitEthernet0/3/3/6
```

```
Destination address set for subnet 172.30.15.0:
```

```

S/D pair 172.20.180.167:1000/172.30.15.1:2000 hashes to link GigabitEthernet0/3/3/6
S/D pair 172.20.180.167:1000/172.30.15.6:2000 hashes to link GigabitEthernet0/2/0/1

```

```
S/D pair 172.20.180.167:1000/172.30.15.3:2000 hashes to link GigabitEthernet0/2/0/2
S/D pair 172.20.180.167:1000/172.30.15.5:2000 hashes to link GigabitEthernet0/0/3/0
```

Another? [y]: **n**

The following example shows how to calculate load balancing across the members of a link bundle (bundle-ether 28) using the 7-tuple hash algorithm, a range of source and destinations, and IPv4 addresses:

```
RP/0/RP0/CPU0:HUCRS1#bundle-hash bundle-ether 33509
Thu May 18 00:07:56.222 EDT
Specify load-balance configuration (L3/3-tuple or L4/7-tuple) (L3,L4): L4
Single SA:SP/DA:SP pair (IPv4,IPv6) or range (IPv4 only) or Entropy Label (MPLS only): S/R/E
[S]: S
Enter bundle type IP V4 (1) or IP V6 (2): 1
Enter source IP V4 address: 45.227.0.25
Enter destination IP V4 address: 35.227.0.25
  Ingress interface handler --
  Note: interface handler can be gotten by 'sh im data interface'
  Enter ingress interface handler (hex format): 0x000841b0
  Ingress interface Bundle-Ether218
  Enter L4 protocol (TCP,UDP,SCTP,L2TPV3,NONE): NONE
  Enter L4 protocol field [0]: 253
Compute destination address set for all members? [y/n]: n
S/D pair 45.227.0.25/35.227.0.25 -- Link hashed to is TenGigE0/5/0/1
```



Note To ensure that the hashing is done correctly, do not set the L4 protocol field value to 0.

Related Commands

Command	Description
show bundle, on page 43	Displays information about configured bundles.

bundle id

To add a port to an aggregated interface (or bundle), enter the **bundle id** command in interface configuration mode. To remove a port from the bundle, use the **no** form of the command.

bundle id *bundle-id* [**mode active** | **on** | **passive**]

Syntax Description

bundle-id Number of the bundle (from 1 to 65535) on which you want to add a port.

mode (Optional) Specifies the mode of operation, as follows:

- **active**—Use the **mode active** keywords to run Link Aggregation Control Protocol (LACP) in active mode over the port. When you specify **active**, the port joins the bundle and is activated if LACP determines that it is compatible.
- **on**—Use the **mode on** keywords to configure an Etherchannel link over the port (no LACP running over the port).
- **passive**—Use the **mode passive** keywords to run LACP in passive mode over the port. When you specify **passive**, LACP packets are sent only if the other end of the link is using active LACP. The link joins the bundle and is activated if LACP packets are exchanged and the port is compatible.

Command Default

The default setting is **mode on**.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The bundle id command syntax was changed from bundle-id .

Usage Guidelines

If you enter the **bundle id** command and specify a port that is already bound to a bundle, the port unbinds from the original bundle and becomes attached to the new bundle. If the bundle numbers are the same, then the port does not unbind, but the mode changes to mode you specified with the **bundle id** command.

Task ID

Task ID	Operations
bundle	read, write

Examples

This example shows how to add a port onto a bundle:

```
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/1/5/0
RP/0/RP0/CPU0:router(config-if)# bundle id 1
```

This example shows how to add an active LACP port onto an aggregated interface (or bundle):

```
RP/0/RP0/CPU0:router(config)# interface GigabitEthernet 0/6/5/7
RP/0/RP0/CPU0:router(config-if)# bundle id 5 mode active
```


Related Commands

Command	Description
show bundle, on page 43	Displays information about configured bundles.
show interfaces	Displays statistics for all interfaces configured on the router or for a specific node.
show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.
show lacp port, on page 71	

bundle maximum-active links

To designate one active link and one link in standby mode that can take over immediately for a bundle if the active link fails, use the **bundle maximum-active links** command in interface configuration mode. To return to the default maximum active links value, use the **no** form of this command.

bundle maximum-active links *links* [**hot-standby**]

Syntax Description	<p><i>links</i> Number of active links you want to bring up in the specified bundle, up to the maximum supported on the platform. The range is 1 to 64.</p> <p>hot-standby Modifies some default timeouts, such as wait-while timer and suppress-flaps, to avoid bundle-level flaps when the highest priority link fails or recovers.</p>						
Command Default	No default behavior or values						
Command Modes	Interface configuration						
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.3.0</td> <td>This command was introduced.</td> </tr> <tr> <td>Release 3.8.0</td> <td>The hot-standby keyword was added.</td> </tr> </tbody> </table>	Release	Modification	Release 3.3.0	This command was introduced.	Release 3.8.0	The hot-standby keyword was added.
Release	Modification						
Release 3.3.0	This command was introduced.						
Release 3.8.0	The hot-standby keyword was added.						
Usage Guidelines	<p>Misconfiguration or inconsistent configuration with a remote side can be causing traffic loss even though the bundle is up. We recommend that you use LACP protocol to better protect against the misconfiguration.</p> <p>By default, multiple links can actively carry traffic for a bundle. However, if one of the links fails, there is no dedicated standby link to take its place. The bundle maximum-active links command enables you to implement the optional 1:1 link protection, which means for the specified bundle, you designate one active link and one or more standby links that can take over immediately if the active link fails.</p> <p>By setting the bundle maximum-active links command to 1, the highest-priority link within the bundle becomes active (distributing state) and the remaining links are in standby mode. If a standby link meets one of the following criteria, it is in the collecting state:</p> <p>If a standby link does not meet either of these criteria, it is in the waiting state.</p> <p>The second highest-priority link within the bundle becomes the standby link that takes over immediately if the active link fails. The priority is based on the value from the bundle port-priority command, where a lower value is a higher priority. Therefore, you must configure the highest priority (lowest value) for the link that you want to be active and the second-highest priority for the link that you want to act as a backup to the active link.</p>						
 Note	We recommend designating only one backup link to the active link. Although you can designate an additional backup link, maintaining two backup links consumes more bandwidth and offsets any benefits that may be gained.						



Note If a link is not running LACP, the configuration of the **bundle maximum-active links** and **bundle port-priority** commands or equivalent commands must be the same on both ends of the link. If a link is running LACP, the configuration of the **bundle maximum-active links** command only must be the same on both ends of the link.

The **hot-standby** option of using an IEEE standard-based switchover (the default) or a faster proprietary optimized switchover is available only for active and standby links running LACP. For links not running LACP, the proprietary optimized switchover option is used.

When using one of the **hot-standby** options on a Cisco IOS XR device, the peer device must have a standby link configured and be one of the following:

- Another Cisco IOS XR device using the same option.
- Another device using an IEEE standard-based switchover. (Cisco does not recommend using this option because unexpected behavior, such as the peer sending traffic on the standby link, can occur.)

When you configure the **hot-standby** keyword, if the partner device is not XR, you may have to further modify the timeouts. Use the commands that are used for refining the timeouts on the partner device as well. For best performance, do not configure with **bundle-maximum-active links** command on the partner device.

The **bundle maximum-active links hot-standby** command can be configured at both ends. However, this will impact the switchover times.

Task ID

Task ID **Operations**

bundle read,
write

Examples

The following example shows how to display information about Ethernet bundle 5:

```
RP/0/RP0/CPU0:router# show bundle bundle-ether 5

State: 0 - Port is Detached. 1 - Port is Waiting.
       2 - Port is Attached. 3 - Port is Collecting.
       4 - Port is Distributing.

Bundle-Ether 5
  B/W (Kbps)  MAC address      Minimum active   Maximum active
  -----
10000000001d.e5eb.2898111

  Port          State  Port ID          B/W (Kbps)  MAC address
  -----
Te0/1/0/1      4      0x8000, 0x0001  10000000    0000.abab.0001
Te0/1/0/0      3      0x8000, 0x0002  10000000    0000.abab.0000
```

In the **show bundle bundle-ether 5** command output, the state of the active link is 4, which indicates that the port is distributing. The state of the standby link is 3, which indicates that the port is collecting.

In the following example, the user implements 1:1 link protection for Ethernet bundle 5 and does not specify the **hot-standby** keyword, because the user wants to use the default IEEE standard-based switchover on the LACP-enabled active and standby links:

```
RP/0/RP0/CPU0:router(config)# interface bundle-ether 5
RP/0/RP0/CPU0:router(config-if)# bundle maximum-active links 1
```

The following example shows how to set default values for timeouts, to avoid bundle-level flaps when the highest priority link fails or recovers:

```
RP/0/RP0/CPU0:router(config)# interface bundle-ether 5
RP/0/RP0/CPU0:router(config-if)# bundle maximum-active links 1 hot-standby
```

The following example shows how to display information about Ethernet bundle 5:

```
RP/0/RP0/CPU0:router# show bundle bundle-ether 5

State: 0 - Port is Detached. 1 - Port is Waiting.
       2 - Port is Attached. 3 - Port is Collecting.
       4 - Port is Distributing.

Bundle-Ether 5

  B/W (Kbps)  MAC address          Minimum active   Maximum active
  -----    -
  10000000001d.e5eb.2898111

  Port        State  Port ID          B/W (Kbps)  MAC address
  -----    -
  Te0/1/0/1   4      0x8000, 0x0001  10000000    0000.abab.0001
  Te0/1/0/0   10x8000, 0x0002  10000000    0000.abab.0000
```

In the **show bundle bundle-ether 5** command output, the state of the active link is 4, which indicates that the port is distributing. The state of the standby link is 1, which indicates that the port is waiting.

In the following example, the user implements 1:1 link protection for Ethernet bundle 5 and does not specify the **hot-standby** keyword, because the LACP-disabled link automatically uses the proprietary optimized switchover:

```
RP/0/RP0/CPU0:router(config)# interface bundle-ether 5
RP/0/RP0/CPU0:router(config-if)# bundle maximum-active links 1
```

The following example shows how to display information about Ethernet bundle 5:

```
RP/0/RP0/CPU0:router# show bundle bundle-ether 5

State: 0 - Port is Detached. 1 - Port is Waiting.
       2 - Port is Attached. 3 - Port is Collecting.
       4 - Port is Distributing.

Bundle-Ether 5

  B/W (Kbps)  MAC address          Minimum active   Maximum active
  -----    -
  10000000001d.e5eb.2898111

  Port        State  Port ID          B/W (Kbps)  MAC address
  -----    -
  Te0/1/0/1   4      0x8000, 0x0001  10000000    0000.abab.0001
  Te0/1/0/0   10x8000, 0x0002  10000000    0000.abab.0000
```

bundle maximum-active links

```

Te0/1/0/1      4      0x8000, 0x0001    10000000  0000.abab.0001
Te0/1/0/0      3      0x8000, 0x0002    10000000  0000.abab.0000

```

In the **show bundle bundle-ether 5** command output, the state of the active link is 4, which indicates that the port is distributing. The state of the standby link is 3, which indicates that the port is collecting.

Related Commands

Command	Description
bundle minimum-active links, on page 18	Sets the number of active links required to bring up a specific bundle.
show bundle, on page 43	Displays information about configured bundles.
show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.

bundle minimum-active bandwidth

To set the minimum amount of bandwidth required before a user can bring up a specific bundle, use the **bundle minimum-active bandwidth** command in interface configuration mode.

bundle minimum-active bandwidth *kbps*

Syntax Description	<i>kbps</i> Minimum bandwidth required before you can bring up a bundle. Range is from 1 through a number that varies depending on the platform and the bundle type.				
Command Default	<i>kbps</i> : 1				
Command Modes	Interface configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 3.3.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 3.3.0	This command was introduced.
Release	Modification				
Release 3.3.0	This command was introduced.				
Usage Guidelines	No specific guidelines impact the use of this command.				
Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>bundle</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	bundle	read, write
Task ID	Operations				
bundle	read, write				
Examples	<p>This example shows how to set the minimum amount of bandwidth required before a user can bring up a specific bundle. In this example, the user sets the minimum amount of bandwidth required to bring up Ethernet bundle 1 to 620000:</p> <pre>RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 1 RP/0/RP0/CPU0:router(config-if)# bundle minimum-active bandwidth 620000</pre>				
Related Commands	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>show bundle, on page 43</td> <td>Displays information about configured bundles.</td> </tr> </tbody> </table>	Command	Description	show bundle, on page 43	Displays information about configured bundles.
Command	Description				
show bundle, on page 43	Displays information about configured bundles.				

bundle minimum-active links

To set the number of active links required to bring up a specific bundle, use the **bundle minimum-active links** command in interface configuration mode.

bundle minimum-active links *links*

Syntax Description	<i>links</i> Minimum number of active links allowed in the specified bundle. The range is from 1 through 64.
---------------------------	---

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	Interface configuration
----------------------	-------------------------

Command History	Release	Modification
	Release 3.3.0	This command was introduced.
	Release 3.9.0	The command range maximum was changed from 32 to 64.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task	Operations
	bundle	read, write

Examples

The following example shows how to set the number of active links required to bring up a specific bundle. In this example, the user configures Ethernet bundle 5 so that two links must be active before the bundle can be brought up:

```
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 5
RP/0/RP0/CPU0:router(config-if)# bundle minimum-active links 2
```

Related Commands	Command	Description
	bundle maximum-active links, on page 13	
	show bundle, on page 43	Displays information about configured bundles.

bundle port-priority

To configure a port priority for a bundle member link, enter the **bundle port-priority** command in interface configuration mode. To return to the default priority value, use the **no** form of this command.

bundle port-priority *priority*

Syntax Description

priority Priority for this port, where a lower value equals a higher priority. Replace the *priority* argument with a number. Range is from 1 through 65535.

Command Default

priority: 32768

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.3.0	The command name was changed from lACP port-priority to bundle port-priority .

Usage Guidelines

The **bundle port-priority** command enables you to determine whether or not similar ports, for example, Gigabit Ethernet ports with Link Aggregation Control Protocol (LACP) enabled or with LACP disabled, are aggregated based on the priority of the port.

In cases where LACP is enabled on aggregated ports, the port priority forms part of the port ID, which is transmitted within a packet when a device exchanges packets with its peer. The peers use the port ID within the packets to determine whether a given port should carry traffic for the bundle.

In cases where LACP is disabled, the port priority is used locally, and a device does not communicate its priority to a peer. Therefore, the peers should have the same priority configured to avoid a mismatch in which links are used for carrying traffic. For example, you could set up the port priorities so that a device would use links 1, 3, and 4 for carrying traffic, and its peer would use links 1, 2, and 3, where links use the same numbering sequence at both ends.



Note A lower value is a higher priority for the port.

Task ID

Task ID	Operations
bundle	read, write

Examples

The following example shows how to configure the priority of a port:

```
RP/0/RP0/CPU0:router# config
```

```
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/1
RP/0/RP0/CPU0:router(config-if)# bundle port-priority 1
```

Related Commands	Command	Description
	bundle id, on page 11	Adds a port to an aggregated interface or bundle.
	show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.
	show lacp port, on page 71	
	show lacp system-id, on page 74	Displays the local system ID used by the LACP.

bundle wait-while

To specify the duration of the wait-while timer for a bundle, use the **bundle wait-while** command in the bundle interface configuration mode. To disable waiting, use the **no** form of the command.

bundle wait-while *wait-while-time*

Syntax Description	<i>wait-while-time</i> Wait-while time, in milliseconds. The range is between 0 to 2000.
---------------------------	--

Command Default	The default wait-while time is 2000 milliseconds.
------------------------	---

Command Modes	Bundle interface configuration (config-if)
----------------------	--

Command History	Release	Modification
	Release 5.1.3	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task ID	Operation
	bundle	read, write
	interface	read, write

The following example shows how to configure the wait-while time.

```
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 100
RP/0/RP0/CPU0:router(config-if)# bundle wait-while 20
```

clear lacp counters

To clear Link Aggregation Control Protocol (LACP) counters for all members of all bundles, all members of a specific bundle, or for a specific port, enter the **clear lacp counters** command in EXEC mode.

clear lacp counters [**bundle** **Bundle-Ether** *bundle-id* | **Bundle-POS** *bundle-id* | **port** **GigabitEthernet** *interface-path-id* | **TenGigE** *interface-path-id* | **POS** *interface-path-id*]

Syntax Description

bundle	(Optional) Clears LACP counters for all members of a bundle.
Bundle-Ether <i>node-id</i>	(Optional) Ethernet bundle. Use the <i>node-id</i> argument to specify the node ID number of the LACP counters you want to clear. Range is 1 through 65535.
Bundle-POS <i>bundle-id</i>	(Optional) POS bundle. Use the <i>bundle-id</i> argument to specify the bundle ID number of the LACP counters you want to clear. Range is from 1 through 65535.
port	(Optional) Clears all LACP counters on the specified bundle or interface.
GigabitEthernet	(Optional) Gigabit Ethernet interface. Use the <i>interface-path-id</i> argument to specify the Gigabit Ethernet interface whose LACP counters you want to clear.
TenGigE	(Optional) Ten Gigabit Ethernet interface. Use the <i>interface-path-id</i> argument to specify the Ten Gigabit Ethernet interface whose LACP counters you want to clear.
POS	(Optional) Packet-over-SONET/SDH (POS) interface. Use the <i>interface-path-id</i> argument to specify the POS interface whose LACP counters you want to clear.
<i>interface-path-id</i>	Physical interface or virtual interface.
Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
	For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

For the *interface-path-id* argument, use the following guidelines:

- If specifying a physical interface, the naming notation is *rack/slot/module/port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:
 - *rack*: Chassis number of the rack.
 - *slot*: Physical slot number of the line card.

- *module*: Module number. A physical layer interface module (PLIM) is always 0.
- *port*: Physical port number of the interface.
- If specifying a virtual interface, the number range varies, depending on interface type.

Task ID	Task ID	Operations
	bundle	execute
	basic-services	read, write

Examples

The following example shows how to clear LACP counters:

```
RP/0/RP0/CPU0:router# clear lacp counters
```

Related Commands	Command	Description
	show lacp counters, on page 63	Displays LACP statistics.

interface (bundle)

To create a new bundle and enter interface configuration mode for that bundle, use the **interface (bundle)** command in Global Configuration mode. To delete a bundle, use the **no** form of this command.

interface Bundle-Ether | **Bundle-POS** *bundle-id*

Syntax Description	Bundle-Ether	Bundle-POS	<i>bundle-id</i>
	Specifies or creates an Ethernet bundle interface.	Specifies or creates a POS bundle interface.	Number from 1 to 65535 that identifies a particular bundle.

Command Default No bundle interface is configured.

Command Modes Global Configuration mode

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task	Operation
	bundle	read, write

This example shows how to create an Ethernet bundle and enter interface configuration mode:

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 3
RP/0/RP0/CPU0:router(config-if)#
```

This example shows how to create a new POS bundle and enter interface configuration mode:

```
RP/0/RP0/CPU0:router(config)# interface Bundle-POS 10
RP/0/RP0/CPU0:router(config-if)#
```

Related Commands	Command	Description
	show bundle, on page 43	Displays information about configured bundles.

isolation recovery-delay

To specify a delay before clearing the isolation condition after recovery from failure, use the **isolation recovery-delay** command in the redundancy group ICCP configuration mode. To return to the default value, use the **no** form of this command.

isolation recovery-delay *seconds*

Syntax Description

seconds Recovery delay in seconds.

Command Default

By default, the delay is set to 180 seconds.

Command Modes

Redundancy group ICCP configuration

Command History

Release	Modification
Release 4.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Examples

This example shows how to configure ICCP parameters:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# redundancy iccp group 10
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# isolation recovery-delay 35
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)#
```

Task ID

Task ID	Operations
config-services	read, write

Related Commands

Command	Description
redundancy iccp group, on page 42	Configures Inter Chassis Communication Protocol (ICCP) parameters.

lACP fast-switchover

To disable the wait-while timer in the LACP state machine, use the **lACP fast-switchover** command in interface configuration mode. To re-enable the wait-while timer, use the **no** form of this command.

lACP fast-switchover

Syntax Description

This command has no keywords or arguments.

Command Default

The wait-while timer in the LACP state machine is enabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
Release 3.8.0	This command was introduced.

Usage Guidelines

If you have 1:1 link protection enabled (you set the value of the **bundle maximum-active links** command to 1) on a bundle with member links running LACP, you can optionally disable the wait-while timer in the LACP state machine. Disabling this timer causes a bundle member link in standby mode to expedite its normal state negotiations, thereby enabling a faster switchover from a failed active link to the standby link.

Regardless of the type of switchover you are using, the default IEEE standard-based or the faster proprietary optimized switchover, the state negotiations of the standby link is expedited. (For more information about the switchover types, refer to the [bundle maximum-active links, on page 13](#) command.) However, enabling the **lACP fast-switchover** command provides a greater benefit if used with the IEEE standard-based switchover.

Examples

The following example shows how to disable the wait-while timer for LACP-enabled member links of Bundle-Ether 28:

```
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 28
RP/0/RP0/CPU0:router(config-if)# lACP fast-switchover
```

The following example shows how to re-enable the wait-while timer for LACP-enabled member links of Bundle-Ether 28:

```
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 28
RP/0/RP0/CPU0:router(config-if)# no lACP fast-switchover
```

Related Commands

Command	Description
bundle maximum-active links, on page 13	

lACP non-revertive

To configure the currently active but lower priority port to remain active port even after a higher priority port is capable of being operational, use the **lACP non-revertive** command in the bundle interface configuration mode. To revert to the default configuration, use the **no** form of this command.

lACP non-revertive

This command has no keywords or arguments.

Command Default

A higher priority port would become the active port after it becomes operational again.

Command Modes

Bundle interface configuration mode

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
	read, write

Example

The following example shows how to configure the non-revertive behaviour on an LACP bundle interface.

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface bundle-ether 1
RP/0/RP0/CPU0:router(config-if)# lACP non-revertive
```

lACP packet-capture

To capture LACP packets so that their information can be displayed by the **show lACP packet-capture** command, use the **lACP packet-capture** command in EXEC mode.

lACP packet-capture **gigabitEthernet** *interface-path-id* | **pos** **interface-path-id** | **tengige** *interface-path-id* *number-of-packets*

To stop capturing LACP packets or to clear captured LACP packets, use the **lACP packet-capture stop** or **lACP packet-capture clear** command in EXEC mode.

lACP packet-capture [**bundle-ether** *bundle-id*] [**bundle-pos** *bundle-id*] [**gigabitEthernet** *interface-path-id*] [**pos** *interface-path-id*] [**tengige** *interface-path-id*] **clear** | **stop**

Syntax Description

bundle-ether	Ethernet bundle interface specified by <i>bundle-id</i> .
bundle-pos	Packet-over-SONET (POS) bundle interface specified by <i>bundle-id</i> .
GigabitEthernet	Gigabit Ethernet interface specified by <i>interface-path-id</i> .
POS	Packet-over-SONET (POS) interface specified by <i>interface-path-id</i> .
TenGigE	Ten Gigabit Ethernet interface specified by <i>interface-path-id</i> .
<i>interface-path-id</i>	Physical interface or virtual interface.
Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
	For more information about the syntax for the router, use the question mark (?) online help function.
<i>bundle-id</i>	Number specifying the bundle interface. The range is 1 to 65535.
<i>number-of-packets</i>	Number of packets to capture.
clear	Clears all currently captured packets.
stop	Stops capturing packets.

Command Default

The default (no parameters) executes globally for all interfaces on the line card.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines

The **lACP packet-capture** command captures transmitted and received LACP packets on a single bundle member interface. The contents of these packets can then be displayed by the **show lACP packet-capture**

command. If the **lACP packet-capture** command is not issued, the **show lACP packet-capture** command does not display any information.

The **lACP packet-capture** command continues capturing LACP packets until the **stop** keyword is issued for that port or that bundle. Captured packets are stored and continue to be displayed until the **clear** keyword is issued for that port or that bundle.

LACP packets can only be captured for one port on a line card at a time. Starting a packet capture on a port implicitly stops and clears all packet-captures on all other ports on that line card.

To **stop** capturing LACP packets before the specified number of packets have been captured, issue the **stop** keyword.

If **stop** is specified for a single interface, packet capturing is stopped only on that interface.

If **stop** is specified for a bundle interface, packet capturing is stopped on all members of that bundle.

If **stop** is specified globally (the default - no parameters), packet capturing is stopped on all bundle interfaces on the router.

To **clear** all captured LACP packets that are stored for an interface, issue the **clear** keyword.

If **clear** is specified for a single interface, packets are cleared only on that interface.

If **clear** is specified for a bundle interface, packets are cleared on all members of that bundle.

If **clear** is specified globally (the default - no parameters), packets are cleared on all bundle interfaces on the router.

Task ID	Task ID	Operations
	bundle	read

Examples

The following example shows how to capture LACP packets on a POS interface:

```
RP/0/RP0/CPU0:router# lACP packet-capture pos 0/1/0/0 100
```

The following example shows how to stop capturing LACP packets on a POS interface:

```
RP/0/RP0/CPU0:router# lACP packet-capture pos 0/1/0/0 stop
```

The following example shows how to clear all captured LACP packets on a POS interface:

```
RP/0/RP0/CPU0:router# lACP packet-capture pos 0/1/0/0 clear
```

The following example shows how to capture LACP packets on a Gigabit Ethernet interface:

```
RP/0/RP0/CPU0:router# lACP packet-capture gigabitEthernet 0/2/0/0 100
```

The following example shows how to stop capturing LACP packets on a Gigabit Ethernet interface:

```
RP/0/RP0/CPU0:router# lACP packet-capture gigabitEthernet 0/2/0/0 stop
```

Related Commands	Command	Description
	show lACP io, on page 65	Displays the LACP transmission information that used by the transmitting device for sending packets on an interface.
	show lACP packet-capture, on page 68	Displays the contents of LACP packets that are sent and received on an interface.
	lACP period short, on page 31	Enables a short period time interval for the transmission and reception of LACP packets.

lacp period short

To enable a short period time interval for the transmission and reception of Link Aggregation Control Protocol (LACP) packets, use the **lacp period short** command in interface configuration mode. To return to the default short period, use the **no** form of this command.

lacp period short [*receive interval*] [*transmit interval*]

Syntax Description

receive interval	Time interval (in milliseconds) for receiving LACP packets when LACP short period is enabled. The range is 100 to 1000 and must be multiples of 100, such as 100, 200, 300, and so on.
transmit interval	Time interval (in milliseconds) for transmitting LACP packets when LACP short period is enabled. The range is 100 to 1000 and must be multiples of 100, such as 100, 200, 300, and so on.

Command Default

The default is 1000.

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.2	This command was introduced.
Release 3.9.0	The keywords transmit and receive were added.

Usage Guidelines

When you configure a custom LACP short period *transmit* interval at one end of a link, you must configure the same time period for the *receive* interval at the other end of the link.



Note You must always configure the *transmit* interval at both ends of the connection before you configure the *receive* interval at either end of the connection. Failure to configure the *transmit* interval at both ends first results in route flapping (a route going up and down continuously). When you remove a custom LACP short period, you must do it in reverse order. You must remove the *receive* intervals first and then the *transmit* intervals.



Note Starting with Cisco IOS XR Software Release 7.1.1, the `lacp period short receive` and `lacp period short transmit` commands are deprecated. Use the `lacp period <time in milliseconds>` command to configure LACP receive and transmit time. Before using this command, you must first execute `lacp cisco enable` command in the bundle interface mode. Without `lacp cisco enable` command, the members may still transmit at the standard interval of 1 second.

Task ID	Task ID	Operations
	bundle	read, write

Examples

The following example shows how to enable a default Link Aggregation Control Protocol (LACP) short period on a Gigabit Ethernet interface:

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short
RP/0/RP0/CPU0:router(config-if)# commit
```

The following example shows how to configure custom Link Aggregation Control Protocol (LACP) short period transmit and receive intervals at both ends of a connection:

Router A

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short
RP/0/RP0/CPU0:router(config-if)# commit
```

Router B

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short
RP/0/RP0/CPU0:router(config-if)# commit
```

Router A

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short transmit 500
RP/0/RP0/CPU0:router(config-if)# commit
```

Router B

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short transmit 500
RP/0/RP0/CPU0:router(config-if)# commit
```

Router A

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lACP period short receive 500
RP/0/RP0/CPU0:router(config-if)# commit
```


Router B

```
RP/0/RP0/CPU0:router# config
RP/0/RP0/CPU0:router(config)# interface gigabitethernet 0/1/0/0
RP/0/RP0/CPU0:router(config-if)# lacp period short receive 500
RP/0/RP0/CPU0:router(config-if)# commit
```

Related Commands	Command	Description
	show lacp io, on page 65	Displays the LACP transmission information that used by the transmitting device for sending packets on an interface.
	show lacp packet-capture, on page 68	Displays the contents of LACP packets that are sent and received on an interface.
	lacp packet-capture, on page 28	Captures LACP packets so that their information can be displayed.

lACP system priority

To configure the priority for the current system, enter the **lACP system priority** command in Global Configuration mode. To return to the default LACP system priority value, use the **no** form of this command.

lACP system priority *priority*

Syntax Description

s Priority for this system. Replace *priority* with a number. Range is from 1 through 65535. A lower value is higher priority.

Command Default

priority: 32768

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

The system priority value forms part of the LACP system ID, which is transmitted within each LACP packet. The system ID, port ID and key combine to uniquely define a port within a LACP system.

Task ID

Task ID	Operations
bundle read, write	

Examples

The following example shows how to configure an LACP priority of 100 on a router:

```
RP/0/RP0/CPU0:router(config)# lACP system priority 100
```

The following example shows how to configure an LACP priority of 10 and MAC address on the Bundle-Ether interface:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 1
RP/0/RP0/CPU0:router(config-if)# lACP system priority 10
RP/0/RP0/CPU0:router(config-if)# lACP system mac 00c1.4c00.bd15
RP/0/RP0/CPU0:router(config-if)# commit
```

Related Commands

Command	Description
show lACP system-id, on page 74	Displays the local system ID used by the LACP.

Command	Description
show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.
show lacp port, on page 71	

mlacp connect

To specify configuration options for connecting to mLACP peers, use the **mlacp connect** command in the redundancy ICCP group configuration mode. To disable this feature, use the **no** form of this command.

mlacp connect timeout *seconds*

Syntax Description	timeout Specifies the time to wait before assuming mLACP peer is down.
	<i>seconds</i> Number of seconds to wait before assuming the mLACP peer is down.

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	Redundancy ICCP group configuration
----------------------	-------------------------------------

Command History	Release	Modification
	Release 4.3.2	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task ID	Operations
	bundle read,	write

Examples This example shows how to specify configuration options for connecting to mLACP peers:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# redundancy iccp group 10
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# mlacp connect timeout 100
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)#
```

Related Commands	redundancy iccp group Configures ICCP parameters.
-------------------------	--

mlacp iccp-group

To configure ICCP redundancy group for a bundle, use the **mlacp iccp-group** command in bundle interface configuration mode. To return to the default value, use the **no** form of this command.

mlacp iccp-group *group-id*

Syntax Description	<i>group-id</i> Specifies the ICCP redundancy group in which the bundle should operate. The group-id value ranges between 1-4294967295.				
Command Default	The bundle behaves as a single chassis LAG.				
Command Modes	Bundle interface configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.3.2</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.3.2	This command was introduced.
Release	Modification				
Release 4.3.2	This command was introduced.				
Usage Guidelines	No specific guidelines impact the use of this command.				
Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>Bundle</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	Bundle	read, write
Task ID	Operations				
Bundle	read, write				
Examples	<p>The following example shows how to configure an ICCP redundancy group for a bundle:</p> <pre>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 30 RP/0/RP0/CPU0:router(config-if)# mlacp iccp-group 200 RP/0/RP0/CPU0:router(config-if)#</pre>				

mlacp node

To configure the mLACP node ID to be used in the ICCP group, use the **mlacp node** command in the redundancy ICCP group configuration mode. To return to the default value, use the **no** form of this command.

mlacp node *node-id*

Syntax Description	<i>node-id</i> Specifies the unique node ID in the ICCP group for this system. The node-id value ranges between 0 to 7.
---------------------------	---

Command Default	No default behavior or values
------------------------	-------------------------------

Command Modes	Redundancy ICCP group configuration
----------------------	-------------------------------------

Command History	Release	Modification
	Release 4.3.2	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task ID	Operations
	bundle	read, write

Examples	This example shows how to configure the mLACP node ID to be used in the ICCP group:
-----------------	---

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# redundancy iccp group 10
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# mlacp node 3
```

Related Commands	redundancy iccp group Configures ICCP parameters.
-------------------------	--

mlacp port-priority

To set the priority for all member links, use the **mlacp port-priority** command in bundle interface configuration mode. To return to the default value, use the **no** form of this command.

mlacp port-priority *priority*

Syntax Description	<i>priority</i> Specifies the priority for member ports. The priority value ranges between 1-65535. A lower value indicates higher priority.				
Command Default	No default behavior or values				
Command Modes	Bundle interface configuration				
Command History	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 4.0.0</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 4.0.0	This command was introduced.
Release	Modification				
Release 4.0.0	This command was introduced.				
Usage Guidelines	No specific guidelines impact the use of this command.				
Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>Bundle</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	Bundle	read, write
Task ID	Operations				
Bundle	read, write				
Examples	<p>This example shows how to set the priority for all member links:</p> <pre>RP/0/RP0/CPU0:router# configure RP/0/RP0/CPU0:router(config)# interface Bundle-Ether 30 RP/0/RP0/CPU0:router(config-if)# mlacp port-priority 20</pre>				

mlacp system mac

To configure the LACP system ID to be used in an ICCP group, use the **mlacp system mac** command in the redundancy ICCP group configuration mode. To return to the default value, use the **no** form of this command.

mlacp system mac *mac-id*

Syntax Description *mac-id* Specifies the unique ID for the system.

Note A non-zero value is permitted.

Command Default No default behavior or values

Command Modes Redundancy ICCP group configuration

Command History	Release	Modification
	Release 4.3.2	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	bundle	read, write

Examples The following example shows how to configure the LACP system ID to be used in an ICCP group:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# redundancy iccp group 10
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# mlacp system mac 1.1.1
```

Related Commands	Command	Description
	redundancy iccp group	Configures ICCP parameters.

mlacp system priority

To configure the LACP system priority to be used in the ICCP group, use the **mlacp system priority** command in the redundancy ICCP group configuration mode. To return to the default value, use the **no** form of this command.

mlacp system priority *priority*

Syntax Description

priority Specifies the priority for the system.

Note Lower value indicates higher priority.

Command Default

No default behavior or values

Command Modes

Redundancy ICCP group configuration

Command History

Release	Modification
Release 4.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
bundle	read, write

Examples

This example shows how to configure the LACP system priority to be used in the ICCP Group:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# redundancy iccp group 10
RP/0/RP0/CPU0:router(config-redundancy-iccp-group)# mlacp system priority 10
```

Related Commands

redundancy iccp group	Configures ICCP parameters.
------------------------------	-----------------------------

redundancy iccp group

To configure Inter Chassis Communication Protocol (ICCP) parameters, use the **redundancy iccp group** command in the Global Configuration mode. To return to the default, use the **no** form of this command.

redundancy iccp group *group-id*

Syntax Description	<i>group-id</i> Specifies ICCP group ID.
---------------------------	--

Command Default	ICCP redundancy is disabled.
------------------------	------------------------------

Command Modes	Global Configuration mode
----------------------	---------------------------

Command History	Release	Modification
	Release 4.3.2	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
-------------------------	--

Task ID	Task ID	Operations
	config-services	read, write

Examples The following example shows how to configure ICCP parameters:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router (config)# redundancy iccp group 10
RP/0/RP0/CPU0:router (config-redundancy-iccp-group)#
```

show bundle

To display information about all bundles or a specific bundle of a particular type, use the **show bundle** command in EXEC mode.

show bundle [**Bundle-Ether** | **Bundle-POS** *bundle-id*]

Syntax Description	Bundle-Ether	Bundle-POS	<i>bundle-id</i>
	Displays information for the specified Ethernet bundle.	Displays information for the specified POS bundle.	Number from 1 to 65535 that identifies a particular bundle.

Command Default Information is displayed for all configured bundles.

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.2	This command was introduced.
	Release 3.3.0	<ul style="list-style-type: none"> The output for this command was modified. The reasons keyword was added.
	Release 4.0.0	The output for this command was replaced with a new format.
	Release 4.1.0	The following output fields were added: <ul style="list-style-type: none"> Load-balancing Cisco extensions
	Release 5.3.2	The "Non-revertive" output field was added.

Usage Guidelines To see information for all bundles configured on the router, use the **show bundle** form of the command. To see information for a specific bundle, use the **show bundle Bundle-Ether***bundle-id* or **show bundle Bundle-POS***bundle-id* form of the command with the number of the configured bundle.

Task ID	Task	Operation
	bundle	read

The following example shows output for all bundle interfaces that are configured on the router:

```
RP/0/RP0/CPU0:router# show bundle
Sun Mar  6 12:16:25.601 PST

Bundle-Ether10
  Status:                               Up
  Local links <active/standby/configured>:  1 / 1 / 2
```

```

Local bandwidth <effective/available>: 1000000 (1000000) kbps
MAC address (source): f866.f213.25a8 (Gi0/1/0/16)
Minimum active links / bandwidth: 1 / 1 kbps
Maximum active links: 1
Wait while timer: 2000 ms
Load balancing: Default
LACP: Operational
  Flap suppression timer: Off
  Cisco extensions: Disabled
  Non-revertive: Disabled
mLACP: Not configured
IPv4 BFD: Not operational
  State: Off
  Fast detect: Enabled
  Start timer: Off
  Neighbor-unconfigured timer: Off
  Preferred min interval: 150 ms
  Preferred multiple: 3
  Destination address: Not Configured

```

```

Port          Device          State          Port ID          B/W, kbps
-----
Gi0/1/0/9    Local          Active         0x0001, 0x0001  1000000
  Link is Active
Gi0/1/0/10   Local          Standby        0x0002, 0x0002  1000000
  Link is Standby due to maximum-active links configuration

```

Table 2: show bundle Field Descriptions

Field	Description
Bundle- <i>typenumber</i>	Full name of the bundle interface, where <i>type</i> is Ether (Ethernet) or POS, followed by the configured <i>number</i> of the bundle.
Status:	<p>State of the bundle on the local device, with one of the following possible values:</p> <ul style="list-style-type: none"> • Admin down—The bundle has been configured to be shut down. • Bundle shut—The bundle is holding all links in Standby state and will not support any traffic. • Down—The bundle is operationally down. It has no Active members on the local device. • • • Nak—The local and peer devices cannot resolve a configuration error. • Partner down—The partner system indicates that the bundle is unable to forward traffic at its end. • PE isolated—The bundle is isolated from the core. • Up—The bundle has Active members on this device.

Field	Description
Local links <active/standby/configured>:	<p>The number of links on the device (from 0 to the maximum number of supported links for the bundle) in the format</p> <p>$x/y/z$, with the following values:</p> <ul style="list-style-type: none"> • x—Number of links in Active state on the bundle. • y—Number of links in Standby state on the bundle. • z—Total number of links configured on the bundle.
Local bandwidth <effective/available>:	<p>Bandwidth characteristics on the bundle in kilobits per second (kbps) in the format x/y, with the following values:</p> <ul style="list-style-type: none"> • x—Current bandwidth of the bundle (this effective bandwidth might be limited by configuration). • y—Available bandwidth of the bundle that is the sum of the bandwidths of all of the locally active links.
MAC address (source):	<p>Layer 2 MAC address on the bundle interface in the format</p> <p>xxxx.xxxx.xxxx. The (<i>source</i>) of the address is shown in parentheses with the following possible values:</p> <ul style="list-style-type: none"> • Interface name—The MAC address is from the displayed member interface type and path. • Configured—The MAC address is explicitly configured. • Chassis pool—The MAC address is from the available pool of addresses for the chassis. • [unknown MAC source 0]—No MAC address could be assigned to the bundle. (You might see this display if you have not completed your bundle configuration.)

Field	Description
Minimum active links / bandwidth:	<p>Displays the following information in the format x/y kbps, with the following values:</p> <ul style="list-style-type: none"> • x—Minimum number of active links (from 1 to the maximum number of links supported on the bundle) that are required for the bundle to be operative. • y—Minimum total bandwidth on active links (in kbps) that is required for the bundle to be operative. • (partner)—Shows that the peer system's value is in use.
Maximum active links:	Maximum number of links (from 1 to the maximum supported on a bundle) that can be active on the bundle.
Wait-while timer:	Amount of time (in milliseconds) that the system allows for the Link Aggregation Control Protocol (LACP) to negotiate on a “working” link, before moving a “protect” or backup link to Standby state.
Load balancing:	The default load balancing method for the system is used on the bundle.
LACP:	<p>Displays whether or not Link Aggregation Control Protocol (LACP) is active on the bundle, with the following possible values:</p> <ul style="list-style-type: none"> • Operational—All required configuration has been committed and LACP is in use on active members. • Not operational—LACP is not working because some mandatory configuration is missing on the bundle or on the active members of the bundle. • Not configured—None of the mandatory configuration for LACP has been committed on the bundle, and the LACP sub-fields are not displayed.

Field	Description
Flap suppression timer:	<p>Displays the status of the flap suppression timer, with the following possible values:</p> <ul style="list-style-type: none"> • Off—The flap suppression timer is not configured using the lACP switchover suppress-flaps command. • <i>x</i> ms—Amount of time allowed (in milliseconds) for standby links to activate after a working link fails, before putting the link in Down state.
Cisco extensions:	<p>Displays whether or not the Cisco-specific TLVs for LACP are enabled. The possible values are "Enabled" and "Disabled".</p>
Non-revertive:	<p>Displays whether non-revertive behavior for the bundle interface is enabled or not. The possible values are "Enabled" and "Disabled".</p>
mLACP:	<p>mLACP is not supported on the platform.</p>
IPv4 BFD:	<p>Displays whether or not IPv4-based bidirectional forwarding (BFD) is operating on the bundle interface, with the following possible values:</p> <ul style="list-style-type: none"> • Operational—All required configuration has been committed for IPv4 BFD, and it is in use on the bundle. • Not operational—IPv4 BFD is not working because some mandatory configuration is missing on the bundle or on the active members of the bundle. • Not configured—None of the mandatory configuration for IPv4 BFD has been committed on the bundle, and the BFD sub-fields are not displayed.

Field	Description
State:	<p>When BFD is enabled, displays the state of BFD sessions on the bundle from the sessions running on bundle members that is communicated to interested protocols, with the following possible values:</p> <ul style="list-style-type: none"> • Down—The configured minimum threshold for active links or bandwidth for BFD bundle members is not available so BFD sessions are down. • Off—BFD is not configured on bundle members. • Up—BFD sessions on bundle members are up because the minimum threshold for the number of active links or bandwidth is met.
Fast detect:	<p>Displays whether or not BFD fast detection is configured on the bundle, with the following possible values:</p> <ul style="list-style-type: none"> • Enabled—The bfd fast-detect command is configured on the bundle. • Disabled—The bfd fast-detect command is not configured on the bundle.
Start timer:	<p>Displays status of the BFD start timer that is configured using the bfd address-family ipv4 timers start command, with the following possible values:</p> <ul style="list-style-type: none"> • <i>x</i> s—Number of seconds (from 60 to 3600) after startup of a BFD member link session to wait for the expected notification from the BFD peer to be received, so that the session can be declared up. If the SCN is not received after that period of time, the BFD session is declared down. • Off—The start timer is not configured, and a BFD session is only declared Down upon notification from the BFD server.

Field	Description
Neighbor-unconfigured timer:	<p>Displays status of the BFD start timer that is configured using the bfd address-family ipv4 timers nbr-unconfig command, with the following possible values:</p> <ul style="list-style-type: none"> • <i>x s</i>—Number of seconds (from 60 to 3600) to wait after receipt of notification that the BFD configuration has been removed by a BFD neighbor, so that any configuration inconsistency between the BFD peers can be fixed. If the BFD configuration issue is not resolved before the specified timer is reached, the BFD session is declared down. • Off—The neighbor-unconfigured timer is not configured, and a BFD session is only declared Down upon notification from the BFD server.
Preferred min interval:	Number of milliseconds (in the format <i>x ms</i>) as the minimum control packet interval for BFD sessions. The range is 15 to 30000.
Preferred multiple:	Value of the multiplier (from 2 to 50) that is used for echo failure detection, which specifies the maximum number of echo packets that can be missed before a BFD session is declared Down.
Destination address:	Destination IP address for BFD sessions on bundle member links that is configured using the bfd address-family ipv4 destination command. “Not configured” is displayed when no destination IP address is configured.
Port	Name of the local interface port that is configured to be a bundle member. The possible values are the shortened interface name or a text string.
Device	<p>Label Distribution Protocol (LDP) address of the device where the interface port is located, with the following possible values:</p> <ul style="list-style-type: none"> • <i>address</i>—IP address of the device. • Local—Interface port is on the local device.

Field	Description
State	<p>Status of the port, with one of the following possible values</p> <ul style="list-style-type: none"> • Active—Link can send and receive traffic. • BFD Running—Link is inactive because BFD is down or has not been fully negotiated. • Configured—Link is not operational or remains down due to a configuration mismatch. The link is not available for switchover from failure of an active link. • Hot Standby—Link is ready to take over if an active link fails and can immediately transition to Active state without further exchange of LACP protocol data units (PDUs). • Negotiating—Link is in the process of LACP negotiation and is being held in a lower LACP state by the peer (for example, because the link is Standby on the peer.) • Standby—Link is not sending or receiving traffic, but is available for switchover from failure of an active link.
Port ID	<p>ID of the interface port in the format x/y, with the following values:</p> <ul style="list-style-type: none"> • x—Port priority as a 2-byte hexadecimal value. • y—Link ID as a 2-byte hexadecimal value.
B/W, kbps	Bandwidth of the interface port in kilobits per second.
State reason	Text string that is displayed beneath the bundle member listing explaining why a link has not reached Active state.

Table 3: State Reasons

Reason	Description
BFD session is unconfigured on the remote end	The link is in BFD Running state because LACP is negotiated but the BFD session from the remote device has been unconfigured.
BFD state of this link is Down	The link is in BFD Running state because LACP is negotiated but the BFD session between the local system and the remote device is Down.

Reason	Description
Bundle has been shut down	The link is in Configured state because the bundle it is configured as a member of is administratively down.
Bundle interface is not present in configuration	The link is in Configured state because the bundle it is configured as a member of has not itself been configured.
Bundle is in the process of being created	The link is in Configured state because the bundle it is configured as a member of is still being created.
Bundle is in the process of being deleted	The link is in Configured state because the bundle it is configured as a member of is being deleted.
Bundle is in the process of being replicated to this location	The link is in Configured state because the bundle it is configured as a member of is still being replicated to the linecard where the link is located.
Forced switchover to the mLACP peer	The link is in Configured state because it has been brought down as part of a forced switchover to the mLACP peer PoA. This happens only when brute force switchovers are configured.
ICCP group is isolated from the core network	The link is in Configured state because there is no connectivity through the network core for the ICCP group that the link and its bundle are part of. Therefore, the link has been brought down to prevent any traffic being sent by the LACP partner device.
Incompatible with other links in the bundle (bandwidth out of range)	The link is in Configured state because its bandwidth is incompatible with other links configured to be in the same bundle. The bandwidth may be too high or too low.
LACP shutdown is configured for the bundle	The link is in Standby state because the bundle is configured with LACP shutdown.
Incompatible with other links in the bundle (LACP vs non-LACP)	The link is in Configured state because its use of LACP is incompatible with other links configured in the same bundle. Some links might be running LACP while others are not.
Link is Attached and has not gone Collecting (reason unknown)	The link is in Negotiating state because the mLACP peer PoA has not indicated that the link has gone Collecting in the Mux machine. This could be because of an issue between the mLACP peer and its LACP partner or because this state has not been communicated to the local system.

Reason	Description
Link is Collecting and has not gone Distributing (reason unknown)	The link is in Negotiating state because the mLACP peer PoA has not indicated that the link has gone Distributing in the Mux machine. This could be because of an issue between the mLACP peer and its LACP partner or because this state has not been communicated to the local system.
Link is being removed from the bundle	The link is being removed from the bundle and remains in Configured state while this happens.
Link is Defaulted; LACPDU are not being received from the partner	The link is in Configured state because no LACPDUs are being received from the LACP partner device. Either the partner is not transmitting or the packets are getting lost.
Link is down	The link is in Configured state because it is operationally or administratively down.
Link is Expired; LACPDUs are not being received from the partner	The link is in Negotiating state because no LACPDUs have been received from the LACP Partner device in the Current-While period and the link is now marked as Expired in the Receive machine.
Link is in the process of being created	The link is in Configured state because the member configuration is still being processed.
Link is marked as Standby by mLACP peer	The link is in Standby state because this has been indicated by the mLACP peer PoA.
Link is Not Aggregatable (reason unknown)	The link is in Configured state because it is marked as an Individual link by the mLACP peer PoA.
Link is not operational as a result of mLACP negotiations	mLACP negotiations with the peer have led to this link being kept in Configured state. This is likely to indicate a misconfiguration between the two peer devices.
Link is Standby; bundle has more links than are supported	The link is in Standby state because the number of links in Selected state has already reached the hard platform limit on the number of active links.
Link is Standby due to maximum-active links configuration	The link is in Standby state because the number of links in Selected state has already reached the configured maximum active links threshold.
Link is waiting for BFD session to start	The link is in BFD Running state because LACP is negotiated but the BFD session has not started from the remote device.

Reason	Description
Loopback: Actor and Partner have the same System ID and Key	The link is in Configured state because a loopback condition has been detected on the link—two links configured to be members of the bundle are actually connected to each other.
Not enough links available to meet minimum-active threshold	The link is in Standby state because there are not enough selectable links (i.e. links which meet the criteria to be marked Selected within the bundle) to meet the minimum active links/bandwidth threshold.
Partner has marked the link as Not Aggregatable	The link is in Configured state because it is marked as an Individual link by the LACP partner device.
Partner has not advertised that it is Collecting	The link is in Negotiating state because the LACP partner device has not advertised that the link is in Collecting state in its LACPDUs.
Partner has not echoed the correct parameters for this link	The link is in Negotiating state because the LACP partner device has not correctly echoed the local system's port information in the LACPDUs it is sending.
Partner is not Synchronized (Waiting, not Selected, or out-of-date)	The link is in Negotiating state because the mLACP peer PoA has not indicated that its LACP partner device is Synchronized. This could be because the devices are genuinely not Synchronized or because this state has not been communicated to the local system.
Partner is not Synchronized (Waiting, Standby, or LAG ID mismatch)	The link is in Negotiating state because the LACP partner device has not indicated that it is Synchronized in the LACPDUs it is sending. On the partner device the link could still be waiting for the Wait-While timer to expire, it could be held in Standby state, or there could be a misconfiguration leading to a LAG ID mismatch between links configured to be within the same bundle.
Partner System ID/Key do not match that of the Selected links	The link is in Configured state because the System ID or Operational Key specified by the LACP partner device does not match that seen on other Selected links within the same bundle. This probably indicates a misconfiguration.

Reason	Description
Wait-while timer is running	The link is in Configured state because the Wait-While timer is still running and the new state has not yet been determined.

Related Commands

Command	Description
interface (bundle), on page 24	Specifies or creates a new bundle and enters interface configuration mode for that bundle.

show bundle brief

To display summary information about all configured bundles, use the **show bundle brief** command in EXEC mode.

show bundle brief

Syntax Description	This command has no keywords or arguments.
Command Default	Information for all configured bundles is displayed.
Command Modes	EXEC mode

Command History	Release	Modification
	Release 4.0.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task	Operation
	bundle	read

These examples shows the status of two bundles, BE16 and BE100, that are configured on the router. Both are Ethernet bundles and only bundle 16 is Up:

```
RP/0/RP0/CPU0:router# show bundle brief
Thu Mar  3 14:40:35.167 PST

Name | IG | State | LACP | BFD | Links | Local b/w, |
-----|-----|-----|-----|-----|-----|-----|
act/stby/cfgd | kbps |
-----|-----|-----|-----|-----|-----|-----|
BE16 | | - Up | On | Off | 1 / 1 / 2 | 1000000 |
BE100 | | - Down | Off | Off | 0 / 0 / 0 | 0 |
```

Table 4: [show bundle brief Field Descriptions](#), on page 55 describes the fields shown in the display.

Table 4: show bundle brief Field Descriptions

Field	Description
Name	Abbreviated name of the bundle interface, with the following possible formats: <ul style="list-style-type: none"> • BEx—Ethernet bundle with ID number <i>x</i>. • BPy—POS bundle with ID number <i>y</i>.
IG	Interchassis group ID (if configured) of which the bundle is a member.

Field	Description
State	<p>State of the bundle on the local device, with the following possible values:</p> <ul style="list-style-type: none"> • Admin down—The bundle has been configured to be shut down. • Bundle shut—The bundle is holding all links in Standby state and will not support any traffic. • Down—The bundle is operationally down. It has no Active members on the local device. • • • Nak—The local and peer devices cannot resolve a configuration error. • Partner down—The partner system indicates that the bundle is unable to forward traffic at its end. • PE isolated—The bundle is isolated from the core. • Up—The bundle has Active members on this device.
LACP	<p>Status of the Link Aggregation Control Protocol (LACP) on the bundle, with the following possible values:</p> <ul style="list-style-type: none"> • On—LACP is in use on the bundle. • Off—LACP is not active.
BFD	<p>When BFD is enabled, displays the state of BFD sessions on the bundle from the sessions running on bundle members that is communicated to interested protocols, with the following possible values:</p> <ul style="list-style-type: none"> • Down—The configured minimum threshold for active links or bandwidth for BFD bundle members is not available so BFD sessions are down. • Off—BFD is not configured on bundle members. • Up—BFD sessions on bundle members are up because the minimum threshold for the number of active links or bandwidth is met.

Field	Description
Links act/stby/cfgd	<p>Number of links on the bundle with a particular status in the format $x/y/z$, with the following values:</p> <ul style="list-style-type: none"> • x—Number of links in Active state on the bundle for the local device (from 1 to the maximum number of links supported on the bundle). • y—Number of links in Standby state on the bundle for the local device (from 1 to the maximum number of links supported on the bundle). • z—Total number of links configured on the bundle for the local device (from 1 to the maximum number of links supported on the bundle).
Local b/w, kbps	Current bandwidth of the bundle on the local device (this effective bandwidth might be limited by configuration).

Related Commands

Command	Description
show bundle, on page 43	Displays information about configured bundles.

show bundle replication bundle-ether

To display the replication status of a link bundle interface, use the **show bundle replication bundle-ether** command in EXEC mode.

```
show bundle replication bundle-ether bundle_id [all] [in-progress] [pending]
```

Syntax Description	
all	Shows replication status for all nodes.
in-progress	Shows only nodes with replication in progress.
pending	Shows only nodes pending replication.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	bundle	read

Examples

```
RP/0/RP0/CPU0:router# show bundle replication bundle-ether 1 all
```

show iccp group

To display information for the ICCP parameters, use the **show iccp** command in EXEC mode.

show iccp group *group-id* | **location** *node-id*

Syntax Description	<i>group-id</i> ICCP group ID.
	location Specifies the location.
	<i>node-id</i> Node ID. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
Command Default	None
Command Modes	EXEC mode
Command History	Release Modification
	Release 4.3.2 This command was introduced.
Usage Guidelines	No specific guidelines impact the use of this command.
Task ID	Task ID Operations
	mpls-ldp read

Examples

The following example shows the output of the **show iccp group** command:

```
RP/0/RP0/CPU0:router#show iccp group

Redundancy Group 1
  member ip:2.2.2.2 (router2), up (connected)
  monitor: route-watch (up)
  backbone interface Gi0/2/0/3: up
  enabled applications: mLACP
  isolation recovery delay timer: 180 s, not running
Redundancy Group 2
  member ip:2.2.2.2 (router2), up (disconnected)
  monitor: route-watch (up)
  backbone interface Gi0/2/0/3: up
  enabled applications: mLACP
  isolation recovery delay timer: 180 s, not running

RP/0/RP0/CPU0:router#show iccp group 1
Redundancy Group 1
  member ip:2.2.2.2 (router2), up (connected)
  monitor: route-watch (up)
  backbone interface Gi0/2/0/3: up
```

```
show iccp group
```

```
enabled applications: mLACP  
isolation recovery delay timer: 180 s, not running
```

show lacp bundle

To display detailed information about Link Aggregation Control Protocol (LACP) ports and their peers, enter the **show lacp bundle** command in EXEC mode.

show lacp bundle **Bundle-Ether** | **bundle-POS** *bundle-id*

Syntax Description	Bundle-Ether <i>bundle-id</i> (Optional) Specifies the number of the Ethernet bundle whose information you want to display. Range is 1 through 65535.
	Bundle-POS <i>bundle-id</i> (Optional) Specifies the number of the POS bundle whose information you want to display. Range is 1 through 65535.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release Modification
	Release 3.2 This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task Operations
	bundle read

Examples The following example shows how to display LACP information for a specific Ethernet Bundle:

```
RP/0/RP0/CPU0:router# show lacp bundle Bundle-Ether 1

Flags: A - Device is in Active mode. P - Device is in Passive mode.
       S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
       D - Port is using default values for partner information
       E - Information about partner has expired
State: 0 - Port is Not Aggregatable. 1 - Port is Out Of Sync with peer.
       2 - Port is In Sync with peer. 3 - Port is Collecting.
       4 - Port is Collecting and Distributing.

Bundle-Ether1

      B/W (Kbps)   MAC address           Minimum active   Maximum active
      -----   -
      0           0800.453a.651d         1               620000         32

Port           State  Flags  Port ID           Key           System-ID
-----
Gi0/0/2/0     1     ASDE   0x8000, 0x0001   0x0001        0x8000, 08-00-45-3a-65-01
PEER          0     PSD    0xffff, 0x0000   0x0000        0xffff, 00-00-00-00-00-00
```

Table 5: show lacp bundle Field Descriptions

Field	Description
Flags	Describes the possible flags that may apply to a device or port, under the “Flags” field.
State	Describes the possible flags that may apply the port state, under the “State” field.
Port	Port identifier, in the <i>rack/slot/module/port</i> notation.
State	Provides information about the state of the specified port. Possible flags are: <ul style="list-style-type: none"> • 0—Port is not aggregatable. • 1—Port is out of sync with peer. • 2—Port is in sync with peer. • 3—Port is collecting. • 4—Port is collecting and distributing.
Flags	Provides information about the state of the specified device or port. Possible flags are: <ul style="list-style-type: none"> • A—Device is in Active mode. • P—Device is in Passive mode. • S—Device requests peer to send PDUs at a slow rate. • F—Device requests peer to send PDUs at a fast rate. • D—Port is using default values for partner information. • E—Information about partner has expired.
Port ID	Port identifier, expressed in the format <i>Nxnmnn</i> . <i>N</i> is the port priority, and <i>nmnn</i> is the port number assigned by the sending router.
Key	Two-byte number associated with the specified link and aggregator. Each port is assigned an operational key. The ability of one port to aggregate with another is summarized by this key. Ports which have the same key select the same bundled interface. The system ID, port ID and key combine to uniquely define a port within a LACP system.
System-ID	System identifier. The system ID is a LACP property of the system which is transmitted within each LACP packet together with the details of the link.

Related Commands

Command	Description
bundle id, on page 11	Adds a port to an aggregated interface or bundle.
show bundle, on page 43	Displays information about configured bundles.

show lacp counters

To display Link Aggregation Control Protocol (LACP) statistics, enter the **show lacp counters** command in EXEC mode.

show lacp counters **Bundle-Ether** | **bundle-POS** *bundle-id*

Syntax Description

Bundle-Ether *bundle-id* Specifies the Ethernet bundle whose counters you want to display. Replace *bundle-id* with a bundle identifier. Range is from 1 through 65535.

Bundle-POS *bundle-id* Specifies the POS bundle whose counters you want to display. Replace *bundle-id* with a bundle identifier. Range is from 1 through 65535.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
bundle read	

Examples

The following example shows how to display LACP counters on an Ethernet bundle:

```
RP/0/RP0/CPU0:router# show lacp counters bundle-ether 1

Bundle-Ether1
Port          Sent          Received      Marker
-----
Gi0/0/2/0    12            0            Received  Resp. Sent  Last Cleared
-----
Gi0/0/2/0    0            0            0          0          never

Port          Excess          Excess          Pkt Errors
-----
Gi0/0/2/0    0            0            0          0
```

Table 6: show lacp counters Field Descriptions

Field	Description
LACPDU	<p>Provides the following statistics for Link Aggregation Control Protocol data units (LACPDU):</p> <ul style="list-style-type: none"> • Port • Sent • Received • Last Cleared • Excess • Pkt Errors
Marker	<p>Provides the following statistics for marker packets:</p> <ul style="list-style-type: none"> • Received • Resp. Sent • Last Cleared • Excess • Pkt Errors <p>Note The Marker Protocol is used by IEEE 802.3ad bundles to ensure that data no longer is transmitted on a link when a flow is redistributed away from that link.</p>

Related Commands

Command	Description
clear lacp counters, on page 22	Clears LACP counters for all members of all bundles, all members of a specific bundle, or for a specific port.

show lacp io

To display the Link Aggregation Control Protocol (LACP) transmission information that used by the transmitting device for sending packets on an interface, use the **show lacp io** command in EXEC mode.

show lacp io **Bundle-Ether** | **bundle-POS** *bundle-id* **GigabitEthernet** | **POS** | **TenGigE** *interface-path-id*

Syntax Description	
Bundle-Ether <i>bundle-id</i>	(Optional) Displays information for the Ethernet bundle interface with the specified <i>bundle-id</i> . The range is 1 through 65535.
Bundle-POS <i>bundle-id</i>	(Optional) Displays information for the POS bundle interface with the specified <i>bundle-id</i> . The range is 1 through 65535.
GigabitEthernet	(Optional) Displays information for the Gigabit Ethernet interface with the specified <i>interface-path-id</i> .
TenGigE	(Optional) Displays information for the Ten Gigabit Ethernet interface with the specified <i>interface-path-id</i> .
POS	(Optional) Displays information for the POS interface with the specified <i>interface-path-id</i> .
<i>interface-path-id</i>	Physical interface or virtual interface.
	Note Use the show interfaces command to see a list of all interfaces currently configured on the router.
	For more information about the syntax for the router, use the question mark (?) online help function.

Command Default The default takes no parameters and displays information for all actively transmitting interfaces.

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.9.0	This command was introduced.

Usage Guidelines This command displays information only for interfaces that are actively transmitting packets.

Task ID	Task ID	Operations
	bundle	read

Examples The following example shows how to display Link Aggregation Control Protocol (LACP) information for the Ethernet bundle interface with bundle ID 28.

```

RP/0/RP0/CPU0:router# show lacp io bundle-ether 28

Thu Jun 18 16:28:54.068 PST

Bundle-Ether28

Interface GigabitEthernet0/1/5/6
=====
Interface handle:      0x01180100
Interface media type:  Ethernet
Fast periodic interval: 1000ms
Source MAC address:   0015.63c0.b3b8
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:            0x001c
Actor port:           0x8000, 0x0001
Actor state:          Act (T/o) Agg Sync Coll Dist (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x001c
Partner port:         0x0001, 0x0003
Partner state:        Act (T/o) Agg Sync Coll Dist (Def) (Exp)

Interface GigabitEthernet0/1/5/7
=====
Interface handle:      0x01180120
Interface media type:  Ethernet
Fast periodic interval: 1000ms
Source MAC address:   0015.63c0.b3b9
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:            0x001c
Actor port:           0x8000, 0x0002
Actor state:          Act (T/o) Agg Sync (Coll) (Dist) (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x001c
Partner port:         0x0002, 0x0004
Partner state:        Act (T/o) Agg (Sync) (Coll) (Dist) (Def) (Exp)

```

The following example shows how to display Link Aggregation Control Protocol (LACP) information for all actively transmitting interfaces:

```

RP/0/RP0/CPU0:router# show lacp io

Thu Jun 18 16:33:57.330 PST

Bundle-Ether28

Interface GigabitEthernet0/1/5/6
=====
Interface handle:      0x01180100
Interface media type:  Ethernet
Fast periodic interval: 1000ms
Source MAC address:   0015.63c0.b3b8
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:            0x001c
Actor port:           0x8000, 0x0001
Actor state:          Act (T/o) Agg Sync Coll Dist (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x001c
Partner port:         0x0001, 0x0003
Partner state:        Act (T/o) Agg Sync Coll Dist (Def) (Exp)

Interface GigabitEthernet0/1/5/7

```

```

=====
Interface handle:      0x01180120
Interface media type:  Ethernet
Fast periodic interval: 1000ms
Source MAC address:   0015.63c0.b3b9
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:             0x001c
Actor port:           0x8000, 0x0002
Actor state:          Act (T/o) Agg Sync (Coll) (Dist) (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x001c
Partner port:         0x0002, 0x0004
Partner state:        Act (T/o) Agg (Sync) (Coll) (Dist) (Def) (Exp)

```

Bundle-POS24

```

Interface POS0/1/4/0
=====
Interface handle:      0x011804c0
Interface media type:  POS
Fast periodic interval: 1000ms
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:             0x0018
Actor port:           0x8000, 0x0003
Actor state:          Act (T/o) Agg Sync Coll Dist (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x0018
Partner port:         0x8000, 0x0001
Partner state:        Act (T/o) Agg Sync Coll Dist (Def) (Exp)

```

```

Interface POS0/1/4/1
=====
Interface handle:      0x011804e0
Interface media type:  POS
Fast periodic interval: 1000ms
Actor system:         0x8000, 00-15-63-c0-b0-04
Actor key:             0x0018
Actor port:           0x8000, 0x0004
Actor state:          Act (T/o) Agg Sync Coll Dist (Def) (Exp)
Partner system:       0x8000, 00-15-63-58-b9-04
Partner key:          0x0018
Partner port:         0x8000, 0x0002
Partner state:        Act (T/o) Agg Sync Coll Dist (Def) (Exp)

```

Related Commands	Command	Description
	show lacp packet-capture, on page 68	Displays the contents of LACP packets that are sent and received on an interface.
	lacp period short, on page 31	Enables a short period time interval for the transmission and reception of LACP packets.
	lacp packet-capture, on page 28	Captures LACP packets so that their information can be displayed.

show lacp packet-capture

To display the contents of Link Aggregation Control Protocol (LACP) packets that are sent and received on an interface, use the **show lacp packet-capture** command in EXEC mode.

show lacp packet-capture [**decoded**] [**in** | **out**] **GigabitEthernet** | **POS** | **TenGigE** *interface-path-id*

Syntax Description

decoded (Optional) Displays packet information in decoded form for the specified interface.

in (Optional) Displays packet information for ingress packets only.

out (Optional) Displays packet information for egress packets only.

GigabitEthernet Displays packet information for the Gigabit Ethernet interface specified by *interface-path-id*.

POS Displays packet information for the POS interface specified by *interface-path-id*.

TenGigE Displays packet information for the Ten Gigabit Ethernet interface specified by *interface-path-id*.

interface-path-id Physical interface or virtual interface.

Note Use the **show interfaces** command to see a list of all interfaces currently configured on the router.

For more information about the syntax for the router, use the question mark (?) online help function.

Command Default

The default displays both in and out information.

Command Modes

EXEC mode

Command History

Release	Modification
Release 3.9.0	This command was introduced.

Usage Guidelines



Note The **lacp packet-capture** command captures transmit and receive packets on a single interface. The contents of these packets can then be displayed by the **show lacp packet-capture** command. If the **lacp packet-capture** command is not issued, the **show lacp packet-capture** command does not display any information.

Task ID

Task ID	Operations
bundle	read

Examples

The following example shows how to display the contents of an LACP packet, in hexadecimal, for a Gigabit Ethernet interface:



Note In the following example, after you issue the **lacp packet-capture** command, you must wait for a reasonable amount of time for the system to capture packets that are sent and received on the interface before you issue the **show lacp packet-capture** command. Otherwise, there is no information to display.

```
RP/0/RP0/CPU0:router# lacp packet-capture gigabitethernet 0/1/0/0 100
RP/0/RP0/CPU0:router# show lacp packet-capture gigabitethernet 0/1/0/0
```

```
Wed Apr 29 16:27:40.996 GMT
OUT Apr 29 17:05:50.123
=====
01 01 01 14 80 00 02 a7 4c 81 95 04 00 01 80 00 00 01 45 00
00 00 02 14 ff ff 00 00 00 00 00 00 00 00 ff ff 00 00 40 00
00 00 03 10 ff ff 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00
```

```
OUT Apr 29 17:35:50.124
```

```
=====
```

```
...
```

The following example shows how to display the LACP parameters, decoded from individual packets, transmitted and received on a Gigabit Ethernet interface:



Note In the following example, after you issue the **lacp packet-capture** command, you must wait for a reasonable amount of time for the system to capture packets that are sent and received on the interface before you issue the **show lacp packet-capture** command. Otherwise, there is no information to display.

```
RP/0/RP0/CPU0:router# lacp packet-capture gigabitethernet 0/1/0/0 100
RP/0/RP0/CPU0:router# show lacp packet-capture decoded gigabitethernet 0/1/0/0
```

```
Wed Apr 29 16:27:54.748 GMT
OUT Apr 29 17:06:03.008
=====
Subtype: 0x01 - LACP      Version: 1

TLV: 0x01 - Actor Information      Length: 20
System: Priority: 32768, ID: 02-a7-4c-81-95-04
Key: 0x0001, Port priority: 32768, Port ID: 1
State: Act (T/o) Agg (Sync) (Coll) (Dist) Def (Exp)

TLV: 0x02 - Partner Information    Length: 20
System: Priority: 65535, ID: 00-00-00-00-00-00
Key: 0x0000, Port priority: 65535, Port ID: 0
State: (Act) (T/o) (Agg) (Sync) (Coll) (Dist) Def (Exp)

TLV: 0x03 - Collector Information  Length: 16
```

show lacp packet-capture

Max delay: 65535

TLV: 0x00 - Terminator

Length: 0

Related Commands

Command	Description
show lacp io, on page 65	Displays the LACP transmission information that used by the transmitting device for sending packets on an interface.
lacp period short, on page 31	Enables a short period time interval for the transmission and reception of LACP packets.
lacp packet-capture, on page 28	Captures LACP packets so that their information can be displayed.

show lacp port

To display detailed information about Link Aggregation Control Protocol (LACP) ports, enter the **show lacp port** command in EXEC mode.

```
show lacp port [[GigabitEthernet | POS | TenGigE] interface_instance]
```

Syntax Description	
GigabitEthernet	(Optional) Gigabit Ethernet interface. Use the <i>interface-path-id</i> argument to specify the Gigabit Ethernet interface whose LACP counters you want to display.
TenGigE	(Optional) Ten Gigabit Ethernet interface. Use the <i>interface-path-id</i> argument to specify the Ten Gigabit Ethernet interface whose LACP counters you want to display.
POS	(Optional) Packet-over-SONET/SDH (POS) interface. Use the <i>interface-path-id</i> argument to specify the POS interface whose LACP counters you want to display.
<i>interface-path-id</i>	Physical interface or virtual interface.
Note	Use the show interfaces command to see a list of all interfaces currently configured on the router.
	For more information about the syntax for the router, use the question mark (?) online help function.

Command Default No default behavior or values.

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines For the *interface-path-id* argument, if specifying a physical interface, the naming notation is *rack/slot/module/port*. The slash between values is required as part of the notation. An explanation of each component of the naming notation is as follows:

- *rack*: Chassis number of the rack.
- *slot*: Physical slot number of the line card.
- *module*: Module number. A physical layer interface module (PLIM) is always 0.
- *port*: Physical port number of the interface.

Task ID	Task ID	Operations
	bundle read	

Examples The following example shows how to display LACP port information for all link bundles on a router:

show lacp port

```
RP/0/RP0/CPU0:router# show lacp port
```

```
Flags: A - Device is in Active mode. P - Device is in Passive mode.
       S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
       D - Port is using default values for partner information
       E - Information about partner has expired
State: 0 - Port is Not Aggregatable. 1 - Port is Out Of Sync with peer.
       2 - Port is In Sync with peer. 3 - Port is Collecting.
       4 - Port is Collecting and Distributing.
```

```
Bundle-Ether1
```

B/W (Kbps)	MAC address	Minimum active Links	B/W (Kbps)	Maximum active Links
0	0800.453a.651d	1	620000	32

Port	State	Flags	Port ID	Key	System-ID
Gi0/0/2/0	1	ASDE	0x8000, 0x0001	0x0001	0x8000, 08-00-45-3a-65-01
PEER	0	PSD	0xffff, 0x0000	0x0000	0xffff, 00-00-00-00-00-00

Table 7: show lacp port Field Descriptions

Field	Description
Port	Identifies the LACP port whose information is displayed. The port number is expressed in the <i>rack/slot/module/port</i> notation.
State	Provides information about the state of the specified device or port. Possible flags are: <ul style="list-style-type: none"> • 0—Port is not aggregatable. • 1—Port is out of sync with peer. • 2—Port is in sync with peer. • 3—Port is collecting. • 4—Port is collecting and distributing.
Flags	Provides information about the state of the specified port. Possible flags are: <ul style="list-style-type: none"> • A—Device is in Active mode. • P—Device is in Passive mode. • S—Device requests peer to send PDUs at a slow rate. • F—Device requests peer to send PDUs at a fast rate. • D—Port is using default values for partner information. • E—Information about partner has expired.
Port ID	Port identifier, expressed in the following format: <i>Nxnnnn</i> . <i>N</i> is the port priority, and <i>nnnn</i> is the port number assigned by the sending router.
Key	Two-byte number associated with the specified link and aggregator. Each port is assigned an operational key. The ability of one port to aggregate with another is summarized by this key. Ports which have the same key select the same bundled interface. The system ID, port ID and key combine to uniquely define a port within a LACP system.

Field	Description
System-ID	System identifier. The System ID is an LACP property of the system which is transmitted within each LACP packet together with the details of the link.

Related Commands

Command	Description
bundle id, on page 11	Adds a port to an aggregated interface or bundle.
show bundle, on page 43	Displays information about configured bundles.
show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.

show lacp system-id

To display the local system ID used by the Link Aggregation Control Protocol (LACP), enter the **show lacp system-id** command in EXEC mode.

show lacp system-id

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes EXEC mode

Command History	Release	Modification
	Release 3.2	This command was introduced.

Usage Guidelines The System ID and details about the specific link are transmitted within each LACP packet.

Task ID	Task	Operations
	bundle	read

Examples The following example shows how to display the system ID used by the LACP:

```
RP/0/RP0/CPU0:router# show lacp system-id

Priority  MAC Address
-----  -
0x8000   08-00-45-3a-65-01
```

Table 8: show lacp system-id Field Descriptions

Field	Description
Priority	Priority for this system. A lower value is higher priority.
MAC Address	MAC address associated with the LACP system ID.

Related Commands	Command	Description
	bundle id, on page 11	Adds a port to an aggregated interface or bundle.
	show bundle, on page 43	Displays information about configured bundles.

Command	Description
show lacp bundle, on page 61	Displays detailed information about LACP ports and their peers.
show lacp port, on page 71	

show mlacp

To display the MC-LAG information configured locally and for any connected mLACP peer devices, use the **show mlacp** command in the EXEC mode.

show mlacp [**Bundle-Ether** *interface-path-id* | **iccp-group** *group-id*] [**brief** | **verbose**]

Syntax Description	
Bundle-Ether <i>interface-path-id</i>	Displays the information for the ICCP group of the bundle and only the specified bundle.
iccp-group <i>group-id</i>	Displays information related to the ICCP group.
brief	Displays only the ICCP group information without any bundle information.
verbose	Displays the ICCP group, the bundle and member information.

Command Default No default behavior or values

Command Modes Exec

Command History	Release	Modification
	Release 4.3.2	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	bundle	Read

Examples

These examples display the MC-LAG information:

```
RP/0/RP0/CPU0:router# show mlacp brief
```

```
ICCP Group 1
  Connect timer: Off
```

Node	LDP ID	State	System ID	Sync	Vers
1	5.4.3.1	Up	0x0001,00-0d-00-0e-00-0f	Done	1
2	Local	Up	0x0001,00-0d-00-0e-00-0f	Done	-

```
RP/0/RP0/CPU0:poa2#show mlacp
```

```
ICCP Group 1
  Connect timer: Off
```

Node	LDP ID	State	System ID	Sync	Vers
----	-----	-----	-----	-----	-----

```

1 5.4.3.1          Up          0x0001,00-0d-00-0e-00-0f Done 1
2 Local           Up          0x0001,00-0d-00-0e-00-0f Done -

```

Bundle-Ether1 (ROID: 0000.0001.0000.0000)

Node	Aggregator Name	State	Agg ID	MAC Address
1	BE1	Up	0x0001	0000.deaf.0000
2	Bundle-Ether1	Up	0x0001	0000.deaf.0000

RP/0/RP0/CPU0:router#show mlacp verbose

ICCP Group 1

Connect timer: Off

Node	LDAP ID	State	System ID	Sync	Vers
1	5.4.3.1	Up	0x0001,00-0d-00-0e-00-0f	Done	1
2	Local	Up	0x0001,00-0d-00-0e-00-0f	Done	-

Bundle-Ether1 (ROID: 0000.0001.0000.0000)

Node	Aggregator Name	State	Agg ID	MAC Address
1	BE1	Up	0x0001	0000.deaf.0000
2	Bundle-Ether1	Up	0x0001	0000.deaf.0000

Node	Port Name	State	Port	Priority Oper (Cfgd)
1	Gi0/1/0/3	Up	0x9001	0x03e8 (0x03e8)
2	Gi0/0/0/1	Up	0xa001	0x07d0 (0x07d0)

show mlacp counters

To display counters relating to mLACP information transferred to and from the local device, use the **show mlacp counters** command in the EXEC mode.

show mlacp counters [**bdl-info** | **ig-info** | **mbr-info** [**bundle interface** | **member interface** | **iccp-group group-id** | **mlacp-device device-id** | **mlacp-interface foreign-member-interface**]]

Syntax Description

Bundle-Ether	Displays the requested information associated with the bundle interface.
member interface	Displays the requested information associated with the member interface.
counters	Displays information on the mLACP counters.
bdl-info	Displays the bundles counters.
ig-info	Displays the ICCP group counters.
mbr-info	Displays the member counters.
mlacp-device	Displays the requested information associated with the mLACP device.
Note	The mlacp-device and mlacp-interface keywords are available only when mLACP devices and mLACP interfaces are configured.
mlacp-interface	Displays the requested information associated with the mLACP interface.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.3.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
bundle	Read

Examples

These examples display MC-LAG counter information:



Note The GigabitEthernet 0/0/0/1 is configured to Bundle-Ether 1 which is within ICCP Group1. Hence, the **show mlacp counters bdl-info GigabitEthernet 0/0/0/1** command displays the counters of the bundle that GigabitEthernet 0/0/0/1 is associated with (i.e. Bundle-Ether1). The **show mlacp counters mbr-info Bundle-Ether 1** displays the counters of the members that Bundle-Ether1 is associated with (locally: GigabitEthernet 0/0/0/1, and on the foreign device: GigabitEthernet 0/1/0/3).

```
RP/0/RP0/CPU0:router# show mlacp counters bdl-info GigabitEthernet 0/0/0/1
```

```
ICCP Group 1
```

Bundle	Config	TLVs Sent		NAKs	TLVs Received	
		State	Priority		Priority	
Local Device						
Bundle-Ether1	???????????????	4	0	0	0	
mLACP Peer 5.4.3.1						
Bundle-Ether1	???????????????	4	0	0	0	

Bundle	TLVs	Sync Requests		Last Cleared
		(config)	(state)	
Local Device				
Bundle-Ether1	???????????????	0	0	18m12s
mLACP Peer 5.4.3.1				
Bundle-Ether1	???????????????	0	0	17m57s

```
RP/0/0/CPU0:router#show mlacp counters mbr-info Bundle-Ether 1
```

```
Bundle-Ether1 (ICCP Group 1)
```

Port	Config	TLVs Sent		NAKs	TLVs Received	
		State	Priority		Priority	
Local Device						
Gi0/0/0/1	???????????????????	0	0	0	0	
mLACP Peer 5.4.3.1						
Gi0/1/0/3	???????????????????	5	3	0	0	

Port	TLVs	Sync Requests		Last Cleared
		(config)	(state)	
Local Device				
All ports	?????????????????????	0	0	19m3s
Gi0/0/0/1	?????????????????????	0	0	19m3s
mLACP Peer 5.4.3.1				
All ports	?????????????????????	1	1	18m49s
Gi0/1/0/3	?????????????????????	0	0	18m49s

show mlacp counters