show ethernet cfm maintenance-points local through weight

show ethernet cfm maintenance-points local

To display information about local Connectivity Fault Management (CFM) maintenance points that are configured on a device, use the **show ethernet cfm maintenance-points local** command in privileged EXEC mode.

show ethernet cfm maintenance-points local [**detail**] [**mep** | **mip**] [**domain** *domain-name* | **interface** *type number* | **level** *level-id* | **evc** *evc-name*]{**static** | **dynamic**}

Syntax Description

detail	(Optional) Displays detailed output.
mep	(Optional) Indicates that a maintenance endpoint (MEP) is specified.
mip	(Optional) Indicates that a maintenance intermediate point (MIP) is specified.
domain	(Optional) Indicates that a maintenance domain is specified.
domain-name	(Optional) String of a maximum length of 154 characters.
interface	(Optional) Indicates that an interface is specified.
type number	(Optional) Type and number of the interface.
level	(Optional) Indicates that a maintenance level is specified.
level-id	(Optional) Integer from 0 to 7 that identifies the maintenance level.
evc	(Optional) Indicates that an Ethernet virtual circuit (EVC) is specified. • The **evc** keyword is not supported in Cisco IOS Release 12.2(54)SE and Cisco IOS Release12.2(50)SY.
evc-name	(Optional) Identifier foe an EVC. • The *evc-name* argument is not supported in Cisco IOS Release 12.2(54)SE and Cisco IOS Release12.2(50)SY.
static	(Optional) Indicates configuration through the CLI.

dynamic	(Optional) Indicates configuration through a dynamic session or an accounting, authentication, and authorization (AAA) server.

Command Default

When none of the optional keywords and arguments is specified, information about all the maintenance points on the device is shown.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SRD	The **detail** and **evc** keywords and the *evc-name* argument were added.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2. • Support was removed for the **evc** keyword and *evc-name* argument in this release.
15.0(1)XA	This command was modified. Support was removed for the **evc** keyword and *evc-name* argument in this release.
12.2(54)SE	This command was integrated into Cisco IOS Release 12.2(54)SE.
15.1(2)S	This command was modified. The **static** and **dynamic** keywords were added and the command was integrated into Cisco IOS Release 15.1(2)S.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY. Support was removed for the **evc** keyword, the *evc-name* argument, the **static** keyword and the **dynamic** keyword.
15.2(1)S	This command was modified. A heading called "Ofld" was added to the output, and the ITU Carrier Code (ICC)-based name was displayed, if applicable. Also, the output was modified to a single-column format when the optional **detail** keyword was used.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNH	This command was implemented on the Cisco ASR 901 Series Aggregation Services Routers.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

The **show ethernet cfm maintenance-points local** command allows you to filter the command output. You can display information about maintenance points, as follows:

- Independent of domain or interface
- On a particular interface independent of domain
- On a particular interface belonging to a given domain
- Belonging to a given domain independent of interface

The display may also be restricted to either MEPs or MIPs.

If a domain name is more than 43 characters in length, a warning message is displayed notifying that the maintenance domain ID (MDID) will be truncated to 43 characters in continuity check messages (CCMs) if "id <fmt> <MDID>" is not configured.

Examples

The following is sample output from the **show ethernet cfm maintenance-points local** command:

```
Device# show ethernet cfm maintenance-points local

Local MEPs:
--------------------------------------------------------------------------------
MPID Domain Name                                Lvl   MacAddress     Type  CC
Ofld Domain Id                                  Dir   Port           Id
     MA Name                                          SrvcInst       Source
     EVC name
--------------------------------------------------------------------------------
41   L4                                         4     aabb.cc01.9100 BD-V  Y
No   null                                       Down  Et0/0          10
     icc icc1234567890                          N/A                  Static
     evc1

Total Local MEPs: 1

Local MIPs: None
```

The following is sample output from the **show ethernet cfm maintenance-points local** command when local MEPs are configured for two MAs, MA1 and MA2, and MA2 is configured as an alias for MA1 using the **alias** command:

```
Device# show ethernet cfm maintenance-points local

Local MEPs:
--------------------------------------------------------------------------------
MPID Domain Name                                Lvl   MacAddress     Type  CC
Ofld Domain Id                                  Dir   Port           Id
     MA Name                                          SrvcInst       Source
     EVC name
--------------------------------------------------------------------------------
11   lvl3                                       3     aabb.cc00.2a02 BD-V  Y
No   lvl3                                       Up    Et2/0          10
     ma1                                              1              Static
     evc10
21   lvl3                                       3     aabb.cc00.2a03 BD-V  Y
No   lvl3                                       Up    Et3/0          20
     ma2 (ma1)                                        N/A            Static
     evc20

Total Local MEPs: 2
```

```
Local MIPs: None
```

The following is sample output from the **show ethernet cfm maintenance-points local detail** command. Depending on which features are enabled in your network, the output may vary slightly from what is shown.

```
Device# show ethernet cfm maintenance-points local detail

Local MEPs:
----------
MPID: 300
DomainName: OUT
MA Name: out300
Level: 7
Direction: Down
EVC: evc300
Bridge Domain: 300
Service Instance: 300
Interface: Et1/0
CC Offload: No
CC Offload sampling: 10
CC-Status: Enabled
CC Loss Threshold: 3
MAC: aabb.cc00.0301
LCK-Status: Enabled
LCK Period: 60000(ms)
LCK Expiry Threshold: 3.5
Level to transmit LCK: Default
Defect Condition: No Defect
presentRDI: FALSE
AIS-Status: Enabled
AIS Period: 60000(ms)
AIS Expiry Threshold: 3.5
Level to transmit AIS: Default
Suppress Alarm configuration: Enabled
Suppressing Alarms: No
Source: Static
```

The following is sample output from the **show ethernet cfm maintenance-points local dynamic** command. Note the “Source” field where the type of configuration is indicated.

```
Device# show ethernet cfm maintenance-points local dynamic

Local MEPs:
--------------------------------------------------------------------------------
MPID Domain Name                                Lvl   MacAddress     Type  CC
Ofld Domain Id                                  Dir   Port           Id
     MA Name                                          SrvcInst       Source
     EVC name
--------------------------------------------------------------------------------
77   XCTEST                                     5     aabb.cc00.d399 XCON  Y
No   XCTEST                                     Up    Et0/0          N/A
     XCSVC                                            3              Dynamic
     XCEVC

Total Local MEPs: 1

Local MIPs:
* = MIP Manually Configured
--------------------------------------------------------------------------------
 Level Port          MacAddress     SrvcInst   Type    Id      Source
--------------------------------------------------------------------------------
 7     Et0/0         aabb.cc00.d399 3          XCON    N/A     Dynamic

Total Local MIPs: 1
```

The table below describes the significant fields shown in the display.

Table 1: show ethernet cfm maintenance-points local Field Descriptions

Field	Description
MPID Domain Name	Identifier of the maintenance point domain name.
Lvl	Maintenance level where the maintenance point is configured.
MacAddress	MAC address of the maintenance point.
Type	Type of MEP.
CC	Continuity check operational status.
Ofld	Indicates whether the MEP is offloaded to the hardware.
Domain Id	Identifier of the offload domain.
Dir	Direction in which the maintenance point is facing.
Port	Port MEP.
Id	Identifier of the VLAN.
MA Name	Name of the maintenance association.
SrvcInst	MAC address of the MEP.
Source	Static or Dynamic.
EVC name	Name of the EVC.
icc	ITU-T Y.1731 ITU Carrier Code (ICC) identifier. Also displays the unique maintenance entity group (MEG) code (UMC).

Related Commands

Command	Description
alias	Configures a CFM MA as an alias for another MA in the same domain.
show ethernet cfm maintenance-points remote	Displays information about RMEPs configured statically in the MEP list and their status in the CCDB.
show ethernet cfm maintenance-points remote crosscheck	Displays information about remote maintenance points configured statically in a cross-check list.
show ethernet cfm maintenance-points remote detail	Displays information about a remote maintenance point in the CCDB.

show ethernet cfm maintenance-points remote

To display information about remote Connectivity Fault Management (CFM) maintenance endpoints (RMEPs) that are configured statically in the MEP list and their status in the continuity check database (CCDB), use the **show ethernet cfm maintenance-points remote** command in privileged EXEC mode.

Cisco Prestandard Ethernet Connectivity Fault Management Draft 1 (CFM D1)

show ethernet cfm maintenance-points remote [**domain** *domain-name* | **level** *level-id*]

CFM IEEE 802.1ag Standard (CFM IEEE)

show ethernet cfm maintenance-points remote [**domain** *domain-name* | [[**crosscheck | static**] [**domain** *domain-name* | **mpid** *mpid* [**domain** *domain-name*]] [**port** | **vlan** *vlan-id*]]]

Cisco ASR 901 Series Aggregation Services Router and Cisco ASR 1000 Series Aggregation Services Router

show ethernet cfm maintenance-points remote static mpid *mpid* **domain** [**service** {*short-ma-name* | **icc** *icc-code meg-id* | **number** *ma-number* | **vlan-id** *vlan-id* | **vpn-id** *vpn-id*}]

Syntax Description

domain *domain-name*	(Optional) Displays a specific maintenance domain. String of a maximum of 154 characters in length.
level *level-id*	(Optional) Displays a specific maintenance level. Specifies an integer from 0 to 7 that identifies the maintenance level.
crosscheck	(Optional) Displays the Mep-Up status from the D1 cross-check function.
static	(Optional) Displays the Mep-Up status from the continuity-check static RMEP function.
mpid *mpid*	Displays a remote maintenance point. Specifies an integer from 0 to 8191 that identifies the maintenance point.
service	(Optional) Specifies the maintenance association (MA) within the domain.
short-ma-name	The short-name identifier for the MA service.
icc *icc-code meg-id*	ITU Carrier Code (ICC) (maximum: 6 characters) and unique maintenance entity group (MEG) ID Code (UMC) (maximum: 12 characters).
number *ma-number*	Specifies the MA number. Range: 0 to 65535.

vlan-id *vlan-id*	Specifies the primary VLAN ID. Range: 1 to 4094.
vpn-id *vpn-id*	Specifies the VPN ID. Range: 1 to 32767.

Command Default

When no domain or a maintenance level (CFM D1 only) is specified, all CCDB MEP entries are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SRB	This command was modified. The output was enhanced to include the port state values of REMOTE_EE, LOCAL_EE, and TEST.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2.
15.2(1)S	This command was integrated into Cisco IOS Release 15.2(1)S.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
Cisco IOS XE Release 3.6S	This command was modified to include information about the local maintenance endpoint (MEP) when the **static** keyword is used.
Cisco IOS XE Release 3.7S	This command was modified. The **port**, **vlan**, and **evc** keywords were deprecated. You must specify the MA service via the *ma-fmt short-ma-name* identifier.
15.1(2)SNH	This command was implemented on the Cisco ASR 901 Series Aggregation Services Routers.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

If a domain name is longer than 43 characters, a warning message is displayed notifying that the maintenance domain ID (MDID) will be truncated to 43 characters in continuity check messages (CCMs) if “id <fmt> <MDID>” is not configured.

When no maintenance domain is specified, all entries are displayed; otherwise, only entries belonging to the specified domain or level (CFM D1 only) are shown.

Examples

The following is sample output from the **show ethernet cfm maintenance-points remote** command:

```
Device# show ethernet cfm maintenance-points remote

-------------------------------------------------------------------------------
MPID  Domain Name                                MacAddress          IfSt  PtSt
 Lvl  Domain ID                                  Ingress
 RDI  MA Name                                    Type Id             SrvcInst
      ---------------------------------------------------------------------------
42    L4                                         aabb.cc01.9310      Up    Up
 4    null                                       Et0/0.10
 -    icc icc1234567890                          BD-V 10             N/A
     Total Remote MEPs: 1
```

The following is the sample output from the **show ethernet cfm maintenance-points remote** command when remote MEPs are configured for two MAs, MA1 and MA2, and MA2 is configured as an alias for MA1 using the **alias** command:

```
Device# show ethernet cfm maintenance-points remote domain lvl3 service ma1
-------------------------------------------------------------------------------
MPID  Domain Name                                MacAddress          IfSt  PtSt
 Lvl  Domain ID                                  Ingress
 RDI  MA Name                                    Type Id             SrvcInst
      EVC Name                                                       Age
      Local MEP Info
-------------------------------------------------------------------------------
21    lvl3                                       aabb.cc00.2a03      Up    Up
 3    lvl3                                       Et0/0
 -    ma1                                        BD-V 10             1
      evc10                                                          0s
      MPID: 11 Domain: lvl3 MA: ma1
1     lvl3                                       aabb.cc00.2b02      Up    Up
 3    lvl3                                       Et0/0
 -    ma1                                        BD-V 10             1
      evc10                                                          0s
      MPID: 11 Domain: lvl3 MA: ma1
11    lvl3                                       aabb.cc00.2a02      Up    Up
 3    lvl3                                       Et1/0
 -    ma2 (ma1)                                  BD-V 20             1
      evc20                                                          0s
      MPID: 21 Domain: lvl3 MA: ma2 (ma1)
1     lvl3                                       aabb.cc00.2b02      Up    Up
 3    lvl3                                       Et1/0
 -    ma2 (ma1)                                  BD-V 20             1
      evc20                                                          0s
      MPID: 21 Domain: lvl3 MA: ma2 (ma1)

Total Remote MEPs: 4
```

The table below describes the significant fields shown in the display.

Table 2: show ethernet cfm maintenance-points remote Field Descriptions

Field	Description
MPID	Identifier of the MEP.
Lvl	Maintenance level.
RDI	Remote defect indication (RDI) messages on the maintenance point.

Field	Description
Domain Name	Name of the domain.
Domain ID	MAC address of the MEP.
MA Name	Name of the MA.
Mac Address	MAC address of the MEP.
Ingress	Port on which the packet is received.
Type Id	Type of service.
IfSt	Operational state of the interface.
PtSt	Operational state of the port MEP. Values are: • Up—Operational. • DOWN—Not operational. • ADMINDOWN—Administratively down. • REMOTE_EE—Encountered excessive number of remote errors. • LOCAL_EE—Encountered excessive number of local errors. • TEST—Test state.
SrvcInst	MAC address of the MEP.
Age	Amount of time, in seconds, the entry has been in the database.

The following is sample output from the **show ethernet cfm maintenance-points remote static** command:

```
Device# show ethernet cfm maintenance-points remote static

-------------------------------------------------------------------------------
MPID Domain Name                                Lvl Type Id       Mep-Up
     MA Name
     Local MEP Info
-------------------------------------------------------------------------------
   2 abc                                         7 BD-V 10           No
     lvl3
```

The table below describes the significant fields shown in the display.

Table 3: show ethernet cfm maintenance-points remote static Field Descriptions

Field	Description
MPID	Identifier of the maintenance point.
Domain Name	Name of the domain.
Lvl	Maintenance level where the maintenance point is configured.
Type Id	Type of service.
Mep-Up	Operational status of the MEP.
MA Name	Name of the MA.
Local MEP Identifier	Identifier of the local maintenance endpoint.

Related Commands

Command	Description
alias	Configures an MA alias within a domain.
show ethernet cfm maintenance-points local	Displays information about maintenance points configured on a device.
show ethernet cfm maintenance-points remote crosscheck	Displays information about remote maintenance points configured statically in a cross-check list.
show ethernet cfm maintenance-points remote detail	Displays information about a remote maintenance point in the continuity check database.

show ethernet cfm maintenance-points remote crosscheck

To display information about remote Connectivity Fault Management (CFM) maintenance points configured that are statically in a cross-check list, use the **show ethernet cfm maintenance-points remote crosscheck** command in privileged EXEC mode.

Cisco Prestandard Connectivity Fault Management Draft 1 (CFM D1)

show ethernet cfm maintenance-points remote crosscheck [**mpid** *id* | **mac** *mac-address*] [**domain** *domain-name* | **level** *level-id*] [**evc** *evc-name* | **vlan** *vlan-id*]

CFM IEEE 802.1ag Standard (CFM IEEE)

show ethernet cfm maintenance-points remote crosscheck[**domain** *domain-name* | **mpid** *id* [**domain** *domain-name*]][**evc** *evc-name* **| port** | **vlan** *vlan-id*]

Cisco ME 3400, ME 3400E, and Catalyst 3750 Metro Switches

show ethernet cfm maintenance-points remote crosscheck mpid *mpid* {**domain** *domain-name* {**service** {*ma-name* | **number** *ma-number* | **vlan-id** *vlan-id* | **vpn-id** *vpn-id* | **evc** *evc-name* | **port** | **vlan** *vlan-id*} **evc** *evc-name* **| port | vlan** | *vlan-id*}}

Cisco ASR 901 Series Aggregation Services Router and Cisco ASR 1000 Series Aggregation Services Router

show ethernet cfm maintenance-points remote crosscheck [**mpid** *mpid*] **domain** *domain-name* [**service** {*short-ma-name* | **icc** *icc-code meg-id* | **number** *ma-number* | **vlan-id** *vlan-id* | **vpn-id** *vpn-id*}]

Syntax Description

mpid *mpid*	Specifies a MEP identifier (MPID) and value. Range: 1 to 8191.
mac *mac-address*	(Optional) Specifies the MAC address of the remote maintenance point, in the format abcd.abcd.abcd.
domain *domain-name*	(Optional) Specifies the domain where the destination MEP resides. Maximum: 154 characters.
level *level-id*	(Optional) Indicates that a maintenance level is specified. Integer from 0 to 7.
evc *evc-name*	(Optional) String that associates an Ethernet virtual connection (EVC) to the service instance. Maximum: 100 bytes.
vlan *vlan-id*	(Optional) Specifies a VLAN for cross-checking. Integer from 1 to 4094 that identifies the VLAN.

port	(Optional) Specifies a DOWN service direction with no VLAN associations (untagged).
service	(Optional) Specifies the maintenance association (MA) within the domain.
short-ma-name	(Optional) The short-name identifier for the MA service. The domain name and short MA name combined cannot exceed 48 bytes.
icc *icc-code meg-id*	(Optional) ITU Carrier Code (ICC) (maximum: 6 characters) and unique maintenance entity group (MEG) ID Code (UMC) (maximum: 12 characters).
number *ma-number*	(Optional) The MA number. Range: 0 to 65535.
vlan-id *vlan-id*	(Optional) The primary VLAN ID. Range: 1 to 4094.
vpn-id *vpn-id*	(Optional) The VPN ID. Range: 1 to 32767.

Command Default

When no options are specified, maintenance point IDs (MPIDs), MAC addresses, domains, levels, and VLANs for all maintenance points on the list are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SRD	The **evc** *evc-name* keyword-argument pair was added on the Cisco 7600 series Route Switch Processor 720 (RSP 720) and the Cisco 7600 series Supervisor Engine 720.
12.2(33)SRE	This command was modified. Support for the **port** keyword was added.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY. The support for the **evc** *evc-name* keyword-argument pair was removed.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
Cisco IOS XE Release 3.6S	This command was modified to include information about the local maintenance endpoint (MEP).

Release	Modification
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.
Cisco IOS XE Release 3.7S	This command was modified. The **port**, **vlan**, and **evc** keywords were deprecated and options to specify the MA service via the **service** keyword were introduced.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Examples

The following is sample output from the **show ethernet cfm maintenance-points remote crosscheck** command:

```
Device# show ethernet cfm maintenance-points remote crosscheck

-------------------------------------------------------------------------------
MPID Domain Name                                Lvl Type Id       Mep-Up
     MA Name
     Local MEP Info
-------------------------------------------------------------------------------
   2 abc                                         7 BD-V 10           No
     lvl3
```

The following is sample output from the **show ethernet cfm maintenance-points remote crosscheck** command when remote MEPs are configured for two MAs, MA1 and MA2, and MA2 is configured as an alias for MA1 using the **alias** command:

```
Device# show ethernet cfm maintenance-points remote crosscheck

-------------------------------------------------------------------------------
MPID Domain Name                                  Lvl Type Id       Mep-Up
     MA Name
     Local MEP Info
-------------------------------------------------------------------------------
   1 lvl3                                           3 BD-V 20          n/a
     ma2 (ma1)
     N/A
  11 lvl3                                           3 BD-V 20          n/a
     ma2 (ma1)
     N/A
  10 lvl3                                           3 BD-V 20          n/a
     ma2 (ma1)
     N/A
```

The table below describes the significant fields shown in the display.

Table 4: show ethernet cfm maintenance-points remote crosscheck Field Descriptions

Field	Description
MPID	Identifier of the maintenance point.
Domain Name	Name of the domain.

Field	Description
Lvl	Maintenance level where the maintenance point is configured.
Type Id	Type of service.
Mep-Up	Operational status of the MEP.
MA Name	Name of the MA.
Local MEP Identifier	Identifier of the local maintenance endpoint.

The following is sample output from the **show ethernet cfm maintenance-points remote crosscheck** command for maintenance points at maintenance level 4:

```
Device# show ethernet cfm maintenance-points remote crosscheck

-------------------------------------------------------------------------------
MPID Domain Name                                Lvl Type Id       Mep-Up
     MA Name
     Local MEP Info
-------------------------------------------------------------------------------
  12 lvl3                                         3 BD-V 20          Yes
     ma2
     N/A
  11 lvl3                                         3 BD-V 20           No
     ma2
     N/A
```

Related Commands

Command	Description
alias	Configures an MA alias within a domain.
show ethernet cfm maintenance-points local	Displays information about maintenance points configured on a device.
show ethernet cfm maintenance-points remote	Displays information about remote maintenance points in the continuity check database.
show ethernet cfm maintenance-points remote detail	Displays information about a remote maintenance point in the continuity check database.

show ethernet cfm maintenance-points remote detail

To display information about a remote maintenance point in the continuity check database, use the **show ethernet cfm maintenance-points remote detail** command in privileged EXEC mode.

Cisco Prestandard Connectivity Fault Management Draft 1 (CFM D1)

show ethernet cfm maintenance-points remote detail {**mac** *mac-address*| **mpid** *mpid*} [**domain** *domain-name*| **level** *level-id*] [**evc** *evc-name*| **srv-instance** *service-name*| **vlan** *vlan-id*]

CFM IEEE 802.1ag (CFM IEEE)

show ethernet cfm maintenance-points remote detail {**mac** *mac-address*| **mpid** *mpid*} [**domain** *domain-name*| **evc** *evc-name*| **port**| **vlan** *vlan-id*]

Cisco ME 3400, ME 3400E, and Catalyst 3750 Metro Switches

show ethernet cfm maintenance-points remote detail mpid *mpid* {**domain** *domain-name* {**service** {*ma-name*| **number** *ma-num*| **vlan-id** *vlan-id*| **vpn-id** *vpn-id*}| **evc** *evc-name*| **port**| **vlan** *vlan-id*}| **evc** *evc-name*| **port**| **vlan** *vlan-id*}

Cisco IOS XE Release 3.7S for Cisco Series ASR 1000 Routers

show ethernet cfm maintenance-points remote detail {**mac** *mac-address*| **mpid** *mpid*} [**domain** *domain-name* [**service** {*short-ma-name*| **icc** *icc-code meg-id*| **number** *ma-number*| **vlan-id** *vlan-id*| **vpn-id** *vpn-id*}]]

Syntax Description

mac *mac-address*	Displays a remote MAC address. MAC address of the remote maintenance point, in the format abcd.abcd.abcd.
mpid *mpid*	Displays a remote maintenance point. Specifies an integer from 0 to 8191 that identifies the maintenance point.
domain *domain-name*	(Optional) Displays a specific maintenance domain. String of a maximum of 154 characters in length.
level *level-id*	(Optional) Displays a specific maintenance level. Specifies an integer from 0 to 7 that identifies the maintenance level.
evc *evc-name*	(Optional) String that associates an Ethernet virtual connection (EVC) to the service instance. Maximum: 100 bytes.

srv-instance *service-name*	(Optional) Displays a customer service instance. Specifies a string that identifies the service instance.
vlan *vlan-id*	(Optional) Indicates a VLAN for cross-checking. Integer from 1 to 4094 that identifies the VLAN.
port	(Optional) Specifies a DOWN service direction with no VLAN associations (untagged).
service	Specifies the maintenance association (MA) within the domain.
short-ma-name	The short-name identifier for the MA service. The domain name and short MA name combined cannot exceed 48 bytes.
icc *icc-code meg-id*	ITU Carrier Code (ICC) (maximum: 6 characters) and unique maintenance entity group (MEG) ID Code (UMC) (maximum: 12 characters).
number *ma-number*	The MA number. Range: 0 to 65535.
vlan-id *vlan-id*	The primary VLAN ID. Range: 1 to 4094.
vpn-id *vpn-id*	The VPN ID. Range: 1 to 32767.

Command Default

When no options are specified, all remote MEPs matching the specified MAC address or maintenance point ID (MPID) are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SRD	The command output was modified to display detailed information about receive remote defect indication (RDI) and EVCs. The **evc** keyword was introduced.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2.
15.0(1)XA	This command was modified. Support for the **evc** keyword was added.

Release	Modification
12.2(54)SE	This command was modified. Support for the **number**, **service**, **vlan-id**, and **vpn-id** keywords and the *ma-name*, *ma-num*, and *vpn-id* arguments was added.
12.2(50)SY	This command was integrated. The **number**, **service**, **vlan-id**, and **vpn-id** keywords and the *ma-name*, *ma-num*, and *vpn-id* arguments were not supported in this release.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
Cisco IOS XE Release 3.7S	This command was modified. The **port**, **vlan**, and **evc** keywords were deprecated and options to specify the MA service via the **service** keyword were introduced.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

Use this command to obtain information about a specific maintenance point by specifying its MPID or to obtain information about all maintenance points that have a particular MAC address.

When a maintenance domain is not specified, all matching maintenance points, independent of their levels (CFM D1 only), are displayed; otherwise, only maintenance points at the specified maintenance domain are shown.

Examples

The following is sample output from the **show ethernet cfm maintenance-points remote detail** command using the **mpid** option:

```
Device# show ethernet cfm maintenance-points remote detail mpid 401

Version: IEEE-CFM
MAC Address: aabb.cc03.bb99
Domain Name: Domain_L5
MA Name: cust_500_15
Level: 5
VLAN: 9
MPID: 401
Sender Chassis ID: Device3-cfm
Incoming Port(s): Ethernet0/0.9
CC Lifetime(sec): 35
Age of Last CC Message(sec): 10
CC Packet Statistics: 91/0 (Received/Error)
MEP interface status: Up
MEP port status: Up
Receive RDI: FALSE
Device#
```

The table below describes the significant fields shown in the display.

Table 5: show ethernet cfm maintenance-points remote detail Field Descriptions

Field	Description
Version	Version of the CFM that is running.

Field	Description
MAC Address	MAC address of the remote MEP.
Domain Name	Name of the domain.
MA Name	Name of the MA.
Level	Maintenance domain level.
VLAN	Configured VLAN.
MPID	Identifier of the maintenance point.
Sender Chassis ID	Name of the other switch or device when the sender ID is configured on that device.
Incoming Port(s)	Identifier of the port that receives the message.
CC Lifetime(sec)	Amount of time, in seconds, that the message should remain in the database before being purged.
Age of Last CC Message(sec)	Amount of time, in seconds, the previous continuity check message (CCM) has been in the database.
CC Packet Statistics	Number of packets received and number of packets with errors.
MEP interface status	Operational state of the MEP interface.
MEP port status	Operational state of the MEP port.
Receive RDI	Receive status of remote defect indication (RDI) messages on the maintenance point.

Related Commands

Command	Description
show ethernet cfm maintenance-points local	Displays information about maintenance points configured on a device.
show ethernet cfm maintenance-points remote	Displays information about remote maintenance points in the continuity check database.
show ethernet cfm maintenance-points remote crosscheck	Displays information about remote maintenance points configured statically in a cross-check list.

show ethernet cfm mpdb

To display the contents of a maintenance intermediate point (MIP) continuity check database (CCDB), use the **show ethernet cfm mpdb** command in privileged EXEC mode.

show ethernet cfm mpdb [**domain-id** {*mac-address domain-number* | **dns** *dns-name* | **null**} [**service** {**icc** *icc-code meg-code* | *ma-name* | **number** *ma-num* | **vlan-id** *vlan-id* | **vpn-id** *vpn-id*}]]

Syntax Description

domain-id	(Optional) Displays by domain ID.
mac-address	MAC address of the maintenance domain.
domain-number	Domain number. The range is from 0 to 65535.
domain-name	String of a maximum of 43 characters that identifies the domain.
dns	Specifies a domain name service (DNS).
dns-name	String of a maximum of 43 characters that identifies the DNS.
null	Indicates there is not a domain name.
service	(Optional) Specifies a maintenance association within the domain.
icc	Displays the CCDB contents on the basis of the ITU-T Y.1731 Carrier Code (ICC)-based maintenance entity group (MEG) identifier.
icc-code	String that identifies the ICC. String of a maximum of six characters.
meg-code	String that identifies the unique MEG code. String of a maximum of 12 characters.
ma-name	String that identifies a maintenance association.
number	Specifies a maintenance association by a numerical ID.
ma-num	Integer from 0 to 65535 that identifies the maintenance association.
vlan-id	Specifies a VLAN.

vlan-id	Integer from 1 to 4094 that identifies the VLAN.
vpn-id	Specifies a virtual private network (VPN).
vpn-id	Integer from 1 to 32767 that identifies the VPN.

Command Default When no maintenance domain is specified, all entries are displayed.

Command Modes Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SXI2	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
15.1(1)T	This command was integrated into Cisco IOS Release 15.1(1)T.
12.2(54)SE	This command was integrated into Cisco IOS Release 12.2(54)SE.
15.2(1)S	This command was integrated into Cisco IOS Release 15.2(1)S. The **icc** keyword was added to provide support for the ICC-based MEG identifier.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNH	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines Use this command to display cataloged information received from MEPs.

Examples The following example is sample output from the **show ethernet cfm mpdb** command.

```
Device# show ethernet cfm mpdb

* = Can Ping/Traceroute to MEP
--------------------------------------------------------------------------------
MPID  Domain Name                                MacAddress          Version
Lvl   Domain ID                                  Ingress
Expd  MA Name                                    Type Id             SrvcInst
      EVC Name                                                      Age
--------------------------------------------------------------------------------
220 * Domain_L5                                  aabb.cc03.b999      IEEE-CFM
5     Domain_L5                                  Et0/0.1
EXPD  cust_500_l5                                Vlan 9              N/A
      N/A                                                           87s
101 * Domain_L7                                  aabb.cc03.b999      IEEE-CFM
7     Domain_L7                                  Et0/0.11
-     cust_700_l7                                Vlan 11             N/A
```

```
      N/A                                                                1s
Total Remote MEPs: 2
```

The following example is sample output from the **show ethernet cfm mpdb** command when MEPs are configured for two Maintenance Associations (MA), MA1 and MA2, and MA2 is configured as an alias to MA1 using the **alias** command:

```
Device# show ethernet cfm mpdb

* = Can Ping/Traceroute to MEP
--------------------------------------------------------------------------------
MPID  Domain Name                                MacAddress          Version
Lvl   Domain ID                                  Ingress
Expd  MA Name                                    Type Id             SrvcInst
      EVC Name                                                      Age
--------------------------------------------------------------------------------
21  * lvl3                                       aabb.cc00.2a03      IEEE-CFM
3     lvl3                                       Et0/0
-     ma1                                        BD-V 10             1
      evc10                                                          0s
1   * lvl3                                       aabb.cc00.2b02     IEEE-CFM
3     lvl3                                       Et0/0
-     ma1                                        BD-V 10             1
      evc10                                                          0s
11  * lvl3                                       aabb.cc00.2a02      IEEE-CFM
3     lvl3                                       Et1/0
-     ma2 (ma1)                                  BD-V 20             1
      evc20                                                          0s
1   * lvl3                                       aabb.cc00.2b02      IEEE-CFM
3     lvl3                                       Et1/0
-     ma2 (ma1)                                  BD-V 20             1
      evc20                                                          0s

Total Remote MEPs: 4
```

Note For MPDB output, if the service is configured that matches the Continuity Check Message (CCM) MA Identifier (MAID), the output for MA Name field is “ma2 (ma1)”. However, if this is a device that only has MIPs and no services are configured matching CCM MAID, the output for MA Name field is from the CCM MAID info, that is, “ma1”.

The table below describes the significant fields shown in the display.

Table 6: show ethernet cfm mpdb Field Descriptions

Field	Description
MPID	Maintenance endpoint ID.
Domain Name	Maintenance domain name.
MacAddress	MAC address of the remote MEP.
Version	Version of the CFM protocol that is running.
Lvl	Maintenance domain level.
Domain ID	Maintenance domain identifier.

Field	Description
Ingress	Interface receiving connectivity fault management traffic.
Expd	Lifetime timer has expired.
MA Name	Name of the maintenance association.
Type Id	Identifies a port MEP, VLAN, or Bridge Domain (BD). “None” indicates an untagged port MEP and a number indicates a VLAN or BD.
SrvcInst	Service instance.
EVC Name	Identifier of the Ethernet virtual circuit (EVC).
Age	Age of the message in the MIP CCDB.

Related Commands

Command	Description
alias	Configures an MA alias within a domain.
show ethernet cfm maintenance-points local	Displays information about maintenance points configured on a device.
show ethernet cfm maintenance-points remote crosscheck	Displays information about remote maintenance points configured statically in a cross-check list.
show ethernet cfm maintenance-points remote detail	Displays information about a remote maintenance point in the continuity check database.

show ethernet cfm pm

To display detailed information about Ethernet connectivity fault management (CFM) performance monitoring, use the **showethernetcfmpm** command in privileged EXEC mode.

show ethernet cfm pm [**session** {*session-id*| **active**| **detail** {*session-id*| **all**}| **inactive**| **summary**}]

Syntax Description

session	(Optional) Displays a performance monitoring session.
session-id	(Optional) Integer that identifies the session. Range is from 0 to 8000.
active	(Optional) Displays all active sessions.
detail	(Optional) Displays detailed information about the session.
all	(Optional) Displays detailed information about all sessions.
inactive	(Optional) Displays all inactive sessions.
summary	(Optional) Displays a summary of the current sessions.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.1(2)S	This command was introduced.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.

Usage Guidelines

Use this command to view the CFM performance monitoring activities in your network.

Examples

Following is sample output from the **showethernetcfmpm**command:

```
Device# show ethernet cfm pm
-------------------------------------------------------------------------------
EPM-ID   SLA-ID    Lvl/Type/ID/Cos/Dir Src-Mac-address Dst-Mac-address
```

```
--------------------------------------------------------------------------------
 0         3          4/BD-V/10/1/Down     2db.4980.0400   02db.4980.0200
```

Following is sample output from the **showethernetcfmpm**command using the **session** and **summary** keywords:

```
Device# show
 ethernet cfm pm session summary
Number of Configured Session : 2
Number of Active Session: 1
Number of Inactive Session: 1
```

show ethernet cfm pm, on page 27 describes the significant fields shown in each display.

Table 7: show ethernet cfm pm Field Descriptions

Field	Description
EPM-ID	Internal ID of the Ethernet performance monitoring session.
SLA-ID	IP SLA instance ID.
Lvl	Maintenance domain level (0 to 7).
Type	Name of the domain.
Cos	Class of service.
Dir	Direction of the MEP, either down or up.
Src-Mac-address	MAC address of the source device.
Dst-Mac-address	MAC address of the destination device.
Number of Configured Session	Number of configured performance monitoring sessions.
Number of Active Session	Number of performance monitoring sessions in the active state.
Number of Inactive Session	Number of performance monitoring sessions in the inactive state.

show ethernet cfm smep

To display the Ethernet connectivity fault management (CFM) system maintenance endpoint (SMEP) settings on a device, use the **show ethernet cfm smep** command in privileged EXEC mode.

Ethernet Connectivity Fault Management (CFM) Cisco Proprietary Draft 1 (CFM D1)

show ethernet cfm smep [**interface gigabitethernet** *number*]

show ethernet cfm smep [**interface** {**gigabitethernet** *number*| **port-channel** *number*}]

Syntax Description

interface	(Optional) Displays information about an interface.
gigabitethernet *number*	(Optional) Displays information about a Gigabit Ethernet interface. Specifies an • Integer from 1 to 6 that identifies a Gigabit Ethernet interface. • Integer from 1 to 564 that identifies a port channel.
port-channel *number*	(Optional) Displays information about a configured port channel.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
15.0(1)XA	This command was modified. Support was added for the **port-channel** keyword.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY. The **port-channel** keyword was not supported.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

This command allows filtering on a per-interface basis.

Alarm Indication Signal (AIS) messages are sent by default at the configured maintenance intermediate point (MIP) level if an AIS level is not configured.

Examples

The following example is sample output from the **show ethernet cfm smep** command:

```
Device# show ethernet cfm smep

SMEP Settings:
--------------
Interface: GigabitEthernet1/1
LCK-Status: CFM Disabled
LCK Period: 60000 (ms)
Level to transmit LCK: Default
AIS-Status: CFM Disabled
AIS Period: 60000 (ms)
Level to transmit AIS: Default
Defect Condition: No Defect
```

The following table describes the significant fields shown in the display.

Table 8: show ethernet cfm smep Field Descriptions

Field	Description
Interface	Specifies the interface type.
LCK-Status	Locked Signal function (LCK) sending status of the interface.
LCK Period	LCK transmission period on the interface.
Level to transmit LCK	Displays the level at which LCK frames are transmitted.
AIS-Status	AIS sending status of the interface.
AIS Period	AIS transmission period on the interface.
Level to transmit AIS	Displays the level at which AIS frames are transmitted.
Defect Condition	Displays the defect condition detected on the interface.

show ethernet cfm statistics

To display Ethernet connectivity fault management (CFM) information, use the **show ethernet cfm statistics** command in privileged EXEC mode.

show ethernet cfm statistics [**domain** [*domain-name* [**service** {*service-instance -identifier*| **icc** *icc-code meg-code*| **number** *maintenance-association-number*| **vlan-id** *vlan-id*| **vpn-id** *vpn-id*}]]| **mpid** *mpid*]

Syntax Description

domain	(Optional) Maintenance domain.
domain-name	(Optional) String of a maximum length of 154 characters.
service	(Optional) Maintenance association within the domain.
service-instance-identifier	String that identifies the service instance.
icc	Displays CFM information on the basis of the ITU-T Y.1731 Carrier Code (ICC)-based maintenance entity group (MEG) identifier.
icc-code	String that identifies the ICC. String of a maximum of six characters.
meg-code	String that identifies the unique MEG code. String of a maximum of 12 characters.
number *maintenance-association-number*	Integer from 0 to 65535 that identifies the maintenance association.
vlan-id	Configures a VLAN.
vlan-id	Integer from 1 to 4094 that identifies the VLAN.
vpn-id	Configures a virtual private network (VPN).
vpn-id	Integer from 1 to 32767 that identifies the VPN.
mpid	(Optional) Configures a maintenance point identifier.
mpid	Integer from 1 to 8191 that identifies the maintenance point.

Command Default

All domains are displayed when none of the keywords or arguments is selected.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SXI2	This command was introduced.
12.2(33)SRE	This command was integrated into Cisco IOS Release 12.2(33)SRE.
15.2(1)S	This command was integrated into Cisco IOS Release 15.2(1)S. The **icc** keyword was added to provide support for the ICC-based MEG identifier.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.

Usage Guidelines

Use the **show ethernet cfm statistics** command to display an overview of transmitted and received messages.

If a domain name is more than 43 characters in length, a warning message is displayed notifying that the maintenance domain ID (MDID) will be truncated to 43 characters in continuity check messages (CCMs) if “id <fmt> <MDID>” is not configured.

Examples

The following is sample output from the **show ethernet cfm statistics** command.

```
Router# show ethernet cfm statistics

BRAIN MAC: aabb.cc03.b999

DomainName: Domain_L7
MA Name: icc icc1234567890
MPID: 101
  Last clearing of counters:  never
  CCMs:
    Transmitted:                242   Rcvd Seq Errors:        0
  LTRs:
    Unexpected Rcvd:              0
  LBRs:
    Transmitted:                  0   Rcvd Seq Errors:        0
    Rcvd in order:                0   Rcvd Bad MSDU:          0
```

The table below describes the significant fields shown in the display.

Table 9: show ethernet cfm statistics Field Descriptions

Field	Description
BRAIN MAC	Bridge brain MAC address.
DomainName	Domain name.
MA Name	Maintenance association name.
MPID	Maintenance point identifier.

Field	Description
CCMs	Continuity check messages transmitted.
LTRs	Linktrace responses.
LBRs	Loopback responses.

show ethernet cfm traceroute-cache

To display the contents of the traceroute cache, use the **show ethernet cfm trace-route cache** command in privileged EXEC mode.

show ethernet cfm traceroute-cache [*mac-address*| **mpid** *mpid*] **[detail] domain** *domain-name* **service** {*short-ma-name*| **icc** *icc-code meg-id*| **number** *ma-number*| **vlan-id** *vlan-id*| **vpn-id** *vpn-id*}

Syntax Description

mac-address	MAC address of the destination MEP in the format abcd.abcd.abcd.
mpid *mpid*	Displays a remote maintenance point. Specifies an integer from 0 to 8191 that identifies the maintenance point.
detail	(Optional) Displays detailed information about the traceroute cache.
domain *domain-name*	Displays a specific maintenance domain. String of a maximum of 154 characters in length.
service	Specifies the maintenance association (MA) within the domain.
short-ma-name	The short-name identifier for the MA service. The domain name and short MA name combined cannot exceed 48 bytes.
icc *icc-code meg-id*	ITU Carrier Code (ICC) (maximum: 6 characters) and unique maintenance entity group (MEG) ID Code (UMC) (maximum: 12 characters).
number *ma-number*	The MA number. Range: 0 to 65535.
vlan-id *vlan-id*	The primary VLAN ID. Range: 1 to 4094.
vpn-id *vpn-id*	The VPN ID. Range: 1 to 32767.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.

Release	Modification
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
Cisco IOS XE Release 3.7S	This command was modified. The **port**, **vlan**, and **evc** keywords are deprecated. You must specify the MA service via the *ma-fmt short-ma-name* identifier.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

Use the **show ethernet cfm traceroute-cache** command to display the contents of the traceroute cache; for example, to see the maintenance intermediate points (MIPs) and maintenance endpoints (MEPs) of a domain as they were discovered. The data is historic. The traceroute cache stores entries from previous traceroute operations.

Examples

The following is sample output from the **show ethernet cfm traceroute-cache** command:

```
Device# show ethernet cfm traceroute-cache

Traceroute to aabb.cc00.0399 on Domain DOMAIN_PROVIDER_L5_1, Level 5, vlan 2
issued at *22:11:52.645 PST Tue Jun 21 2011
B = Intermediary Bridge
! = Target Destination
* = Per hop Timeout
-------------------------------------------------------------------------------
                             MAC      Ingress      Ingr Action  Relay Action
  Hops   Host             Forwarded   Egress       Egr Action   Previous Hop
-------------------------------------------------------------------------------
! 1                   aabb.cc03.b999                           RlyHit:MEP
                     Not Forwarded                            aabb.cc03.bb99
```

The table below describes the significant fields shown in the display.

Table 10: show ethernet cfm traceroute-cache Field Descriptions

Field	Description
Hops	Number of hops of the traceroute.
Host	Name of the device.
MAC	Bridge Brain MAC address of the device.
Ingress	Receiving port.
Ingr Action	Action on the ingress port: IngOk, IngFilter, IngBlocked.

Field	Description
Relay Action	Type of relay action performed: RlyNone, RlyUnknown, RlyFDB, RlyCCDB, RlyFiltered.
Forwarded	Traceroute forwarded or not forwarded.
Egress	Sending port.
Egr Action	Action on the egress port: EgrNone, EgrTTL, EgrDown, EgrBlocked, EgrOk, EgrGVRP, EgrDomainBoundary, EgrFiltered.
Previous Hop	MAC address of the neighboring device.

Related Commands

Command	Description
clear ethernet cfm traceroute-cache	Removes the contents of the traceroute cache.
ethernet cfm traceroute-cache	Enables caching of Ethernet CFM data learned through traceroute messages.
traceroute ethernet	Sends Ethernet CFM traceroute messages to a destination MAC address.

show ethernet event microwave statistics

To display Ethernet microwave event statistics counters for one or more interfaces, use the **show ethernet event microwave statistics** command in privileged EXEC mode.

show ethernet event microwave statistics [**interface** *type number*]

Syntax Description

interface *type number*	(Optional) Specifies the interface type and number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

Usage Guidelines

If the interface is not specified, statistical counters for all interfaces are displayed.

Examples

The following is sample output from the **show ethernet event microwave statistics** command where GigabitEthernet interface 0/0/2 has been specified:

```
Device# show ethernet event microwave statistics interface GigabitEthernet 0/0/2

Microwave Bandwidth Statistics for GigabitEthernet0/0/2
 Total VSM Receive Count : 145
 Total VSM Drop Count : 0
 Number of transitions into Degraded state : 2
```

The table below describes the significant fields shown in the output.

Table 11: show ethernet event microwave statistics Field Descriptions

Field	Description
Total VSM Receive Count	Total of the bandwidth-related Vendor-Specific Messages (VSMs) received.
Total VSM Drop Count	Total of the bandwidth-related VSM dropped by the microwave transceiver.
Number of transitions into Degraded State	Number of signal degradation occurrences.

show ethernet event microwave status

To display Ethernet microwave event status information for one or more interfaces, use the **show ethernet event microwave status** command in privileged EXEC mode.

show ethernet event microwave status [**interface** *type number*]

Syntax Description

interface *type number*	(Optional) Specifies the interface type and number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

Usage Guidelines

If the interface is not specified, status information for all interfaces is displayed.

Examples

The following is sample output from the **show ethernet event microwave status** command where GigabitEthernet interface 0/0/2 has been specified:

```
Device# show ethernet event microwave status interface GigabitEthernet 0/0/2

Microwave Bandwidth Status for GigabitEthernet0/0/2
 State : Degraded
 Elapsed time in this state : 1:25:33
 Nominal Bandwidth : 512Mbps
 Current Bandwidth : 256Mbps
 Lowest Bandwidth Since Entering Degraded : 64Mbps
 Last VSM Received : Oct 27 14:06:19.983
 Sender Transmit Period : 1 second
 Sender Address : 01AB.CC00.1881
 Hold Timer : Not Running
 Restore Timer : Not Running
 Periodic Timer : 2333 msec
 Hold Time : 0 seconds
 Restore Time : 10 seconds
 Loss-Threshold: 3
```

The table below describes the significant fields shown in the output.

Table 12: show ethernet event microwave status Field Descriptions

Field	Description
State	State of the link.
Elapsed time in this state	Amount of time in the reported state

Field	Description
Nominal Bandwidth	Maximum microwave link capacity in an idle condition, in MB/s.
Current Bandwidth	Current microwave link bandwidth as reported in last Vendor-Specific message received
Lowest Bandwidth Since Entering Degraded	Lowest amount of bandwidth since the link experienced a signal degradation occurrence
Last VSM Received	Time and date of the last VSM message received
Sender Address	MAC address of the sender microwave device
Hold Timer	Indicates the state of the hold timer
Restore Timer	Indicates the state of the restore timer
Periodic Timer	Setting of the periodic timer
Hold Time	Wait-to-restore (WTR) time. Used in conjunction with the Restore Timer and Loss-Threshold fields to configure values for the hold timer, the WTR timer, and the loss threshold on the given interface.

show ethernet lmi

To display Ethernet local management interface (LMI) Ethernet virtual connections (EVCs) configured on a device, use the **showethernetlmi** command in privileged EXEC mode.

show ethernet lmi {**evc** [**detail** *evc-id* [**interface** *type number*]| **map interface** *type number*]| {**parameters**| **statistics**} **interface** *type number*| **uni map** [**interface** *type number*]}

Syntax Description

evc	Displays information about an EVC.
detail	(Optional) Displays detailed information about a specified EVC.
evc-id	(Optional) String of a maximum of 100 characters that identifies an EVC.
interface	Indicates that an interface is specified. This keyword is optional except with the **parameters** and **statistics** keywords.
type	String that identifies the type of interface. Valid options are the following: • **ethernet** --Ethernet IEEE 802.3 interface • **fastethernet** --Fast Ethernet IEEE 802.3 interface • **gigabitethernet** --Gigabit Ethernet IEEE 802.3z interface
number	Integer that identifies the interface.
map	(Optional) Indicates a VLAN map.
parameters	Displays Ethernet LMI parameters.
statistics	Displays Ethernet LMI statistics.
uni map	Displays information about the user-network interface (UNI).

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(9)T	This command was introduced.
12.2(33)SRB	Support for this command on the Cisco 7600 router was integrated into Cisco IOS Release 12.2(33)SRB.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use this command to check the operational statuses of EVCs.

Examples

The following examples show output from a **showethernetlmi**command for interface Ethernet 0/0 using different keywords and arguments.

The following sample output is generated from the **showethernetlmi**command using the **evc**keyword:

```
Device# show ethernet lmi evc

St  EVC Id                                                          Port
--- ------------------------------------------------------------ --------------
 A  EVC_MP2MP_101                                                  Gi0/1
 A  EVC_P2P_110                                                    Gi0/1
Key: St=Status, A=Active, P=Partially Active, I=Inactive, ?=Link Down
```

The following sample output is generated from the **showethernetlmi**command using the **evc**andoptional**detail**keywords:

```
Device# show ethernet lmi evc detail EVC_MP2MP_101

EVC Id: EVC_MP2MP_101
interface Ethernet0/0
  Time since Last Full Report: 00:25:25
  Ether LMI Link Status: Up
  UNI Status: Up
  UNI Id: router3-e0/0+router-e0/0
  CE-VLAN/EVC Map Type: Bundling
  VLAN: 101
  EVC Status: Active
  EVC Type: Multipoint-to-Multipoint
  Remote UNI Count: Configured = 2, Active = 2
  UNI Id                                  UNI Status    Port
  ------                                  ----------    ----
  router4-e0/0+router1-e0/0               Up            Remote
  router5-e0/0+router6-e0/0               Up            Remote
```

The table below describes the significant fields shown in output of the **showethernetlmi** command using the **evc** and **detail** keywords.

Table 13: show ethernet lmi evc detail Field Descriptions

Field	Description
EVC Id	Identifier of the EVC.
Time since Last Full Report	Number of hours, minutes, seconds since the CE requested a detailed report.
Ether LMI Link Status	Operational state of the LMI link.
UNI Status	Operational state of the UNI.
UNI Id	Identifier of the UNI between the CE and PE devices.
CE-VLAN/EVC Map Type	EVC map type: bundling, multiplex, or all-to-one
VLAN	Identifier of the VLAN.
EVC Status	Operational state of the EVC.
EVC Type	Type of connection (point-to-point or multipoint-to-multipoint).
Remote UNI Count	Number of remote UNIs that are configured and the number that are operational.
Port	Type of port, either local or remote, on which the EVC is configured. If the port is local, the interface ID is specified.

The following sample output is generated from the **showethernetlmi**command using the **mapinterface** keyword:

```
Device# show ethernet lmi evc map interface Ethernet0/0

UNI Id: router3-e0/0+router-e0/0
St  Evc Id                                  CE-VLAN
--- --------------------------------------- ----------------------------------
  A EVC_MP2MP_101                           101
  A EVC_P2P_110                             110
Key: St=Status, A=Active, P=Partially Active, I=Inactive, *=Default EVC,
      ?=Link Down
```

The table below describes the significant fields shown in output of the **showethernetlmi** command using the **evc** and **map** keywords.

Table 14: show ethernet lmi evc map Field Descriptions

Field	Description
UNI Id	Identifier of the UNI between the CE and PE devices.

Field	Description
St	Operational state of the EVC.
Evc Id	Identifier of the EVC.
CE-VLAN	Identifier of the VLAN used by the CE.

The following sample output is generated from the **showethernetlmi**command using the **parameters** and **interface**keywords:

```
Device# show ethernet lmi parameters interface Ethernet0/0

E-LMI Parameters for interface Ethernet0/0
 Version : MEF.16-0106
    Mode : CE
    T391 : 10
    T392 : NA
    N391 : 360
    N393 : 4
```

The table below describes the significant fields shown in output of the **showethernetlmi** command using the **parameters** keyword.

Table 15: show ethernet lmi parameters Field Descriptions

Field	Description
Version	Version number of the specification that E-LMI implementation is based on.
Mode	Customer equipment or the Metro Ethernet network.
T391	Polling timer.
T392	Polling verification timer.
N391	Polling counter.
N393	Event counter.

The following sample output is generated from the **showethernetlmi**command using the **statistics** and **interface**keywords:

```
Device# show ethernet lmi statistics interface Ethernet0/0

E-LMI Statistics for interface Ethernet0/0
  Ether LMI Link Status: Up
  UNI Status: Up
  UNI Id: router3-e0/0+router-e0/0
  Reliability Errors:
    Status Timeouts                  0  Invalid Sequence Number          0
    Invalid Status Response          0  Unsolicited Status Received      0
  Protocol Errors:
    Invalid Protocol Version         0  Invalid EVC Reference Id         0
```

```
   Invalid Message Type               0  Out of Sequence IE                0
   Duplicated IE                      0  Mandatory IE Missing              0
   Invalid Mandatory IE               0  Invalid non-Mandatory IE          0
   Unrecognized IE                    0  Unexpected IE                     0
   Short Message                      0
 Last Full Status Enq Sent     00:50:35  Last Full Status Rcvd      00:50:35
 Last Status Check Sent        00:00:06  Last Status Check Rcvd     00:00:06
 Last clearing of counters     00:09:57
```

Note The UNI Id field displays only when it is available from the provider edge device.

The table below describes the significant fields shown in output of the **showethernetlmi** command using the **statistics** keyword.

Table 16: show ethernet lmi statistics Field Descriptions

Field	Description
E-LMI Statistics for interface <interface-id>	
Ether LMI Link Status	Operational state of Ethernet LMI connectivity.
UNI Status	Operational state of the UNI.
UNI Id	Identifer of the UNI.
Reliability Errors	
Status Timeouts	Number of times that a status request has been sent but not received.
Invalid Sequence Number	Number of times the sequence numbers of Ethernet LMI packets do not match the sequence numbers expected.
Invalid Status Response	Number of times a status response received was invalid and discarded.
Unsolicited Status Received	Number of times status was received that had not been requested.
Protocol Errors	
Invalid Protocol Version	Number of times the protocol version in Ethernet LMI packets does not match what is supported.
Invalid EVC Reference Id	Number of times EVC reference IDs are invalid in Ethernet LMI packets.
Invalid Message Type	Number of message types that are not valid for LMI.

Field	Description
Out of Sequence IE	Number of information elements (IEs) that are not in the correct sequence.
Duplicated IE	Number of duplicated IEs.
Mandatory IE Missing	Number of mandatory IEs that are missing.
Invalid Mandatory IE	Number of mandatory IEs that are invalid.
Invalid non-Mandatory IE	Number of non-mandatory IEs that are invalid.
Unrecognized IE	Number of IEs that are not recognized.
Unexpected IE	Number of IEs that are unexpected.
Short Message	Number of times the Ethernet LMI message received is shorter than supported packets.
Last Full Status Enq Sent	Time in hours, minutes, and seconds when the CE sent the last full LMI status request.
Last Full Status Rcvd	Time in hours, minutes, and seconds when the CE received the last full LMI status report.
Last Status Check Sent	Time in hours, minutes, and seconds when the CE sent the last LMI status request.
Last Status Check Rcvd	Time in hours, minutes, and seconds when the CE received the last LMI status report.
Last clearing of counters	Time in hours, minutes, and seconds when the clear **ethernetlmistatistics** command was issued for the interface.

The following sample output is generated from the **showethernetlmi**command using the **unimap** keyword:

```
Device# show ethernet lmi uni map

UNI Id                           EVC Id                           Port
-------------------------------- -------------------------------- ------------
uni_sandiego                     EVC_MP2MP_101                    Gi0/1
uni_sandiego                     EVC_P2P_110                      Gi0/1
Device#
```

The following sample output is generated from the **showethernetlmi**command using the **unimap**and optional **interface**keywords:

```
Device# show ethernet lmi uni map interface gigabitethernet 0/1
UNI Id                           EVC Id                           Port
-------------------------------- -------------------------------- ------------
uni_sandiego                     EVC_MP2MP_101                    Gi0/1
```

```
uni_sandiego                    EVC_P2P_110                     Gi0/1
Device#
```

The table below describes the significant fields shown in output of the **showethernetlmi** command using the **unimap**keywordand **unimap**and**interface**keyword pair.

Table 17: show ethernet lmi uni map and uni map interface Field Descriptions

Field	Description
UNI Id	Identifier of the UNI.
EVC Id	Identifier of the EVC.
Port	Interface on the CE device.

show ethernet loopback

To display information about the Ethernet data-plane loopback sessions on the device, use the **show ethernet loopback** command in privileged EXEC mode.

show ethernet loopback
{**active [brief]** | **permitted**}
[**interface Ethernet** *interface-number*]
[**service instance** *service-instance-id*]

Syntax Description

active	Displays detailed information about the active Ethernet data-plane loopback sessions.
brief	(Optional) Displays brief details about the active Ethernet data-plane loopback sessions.
permitted	Displays the allowed service for Ethernet data-plane loopback sessions.
interface Ethernet *interface-number*	(Optional) Specifies the Ethernet interface on which to show the Ethernet loopback session. Valid entries range from 0 to 15.
service instance *service-instance-id*	(Optional) Configures the Ethernet service instance. Valid entries range from 1 to 4000.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.8S	This command was introduced.

Usage Guidelines

Use this command to view the data-plane loopback sessions in your network.

Examples

The following example displays an active Loopback session. The fields are self-explanatory.

```
Device# show ethernet loopback active

Loopback Session ID     : 1
Interface               : Ethernet1/0
Service Instance        : N/A
Direction               : Facility
Time out(sec)           : 300
```

```
Status                  : on
Start time              : *15:04:29.038 PST Wed Feb 29 2012
Time left               : 00:04:09
Dot1q/Dot1ad(s)         : 2
Second-dot1q(s)         : Any
Source Mac Address      : Any
Destination Mac Address : Any
Ether Type              : Any
Class of service        : Any
Llc-oui                 : Any
```

The following example displays a permitted loopback session. The fields are self-explanatory.

```
Device# show ethernet loopback permitted

--------------------------------------------------------------------------------
Interface           SrvcInst    Direction
Dot1q(s)/Dot1ad                 Second-Dot1q(s)
--------------------------------------------------------------------------------
Ethernet1/0          N/A        Terminal
3-5
Ethernet1/0          N/A        Facility
5-7,9-11,35-37,39,42
Ethernet2/0          2          Facility
1-3
Ethernet2/0          N/A        Terminal
7-10
Ethernet3/0          N/A        Terminal
13-15,17-19,100-230,400-500,10\
 01-1034
Ethernet4/0          N/A        Facility
3-5
```

Related Commands

Command	Description
ethernet loopback permit	Configures an Ethernet data-plane loopback session on the interface.
ethernet loopback local interface	Starts and stops the Ethernet data-plane loopback session on the interface.

show ethernet mac-tunnel engine slot

To display Ethernet MAC-in-MAC information, use the **showethernetmac-tunnelengineslot**command in privileged EXEC mode.

show ethernet mac-tunnel engine slot *slot-num*

Syntax Description

slot-num	Integer from 1 to 4294967295 that identifies a MAC tunnel engine slot.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

This command is used to find the B-component source address (B-SA) used in MAC-in-MAC encapsulations.

Examples

The following is sample output from the **showethernetmac-tunnelengineslot**command:

```
Router# show ethernet mac-tunnel engine slot 3
Tunnel-engine       B-MAC Address
0        001d.e5e8.2274
1       001d.e5e8.2275
```

The table below describes the significant fields shown in the display.

Table 18: show ethernet mac-tunnel engine slot Field Descriptions

Field	Description
Tunnel-engine	MAC tunnel identifier.
B-MAC Address	B-SA MAC address.

show ethernet oam debug link-monitor

To display the Ethernet Operations, Administration, and Maintenance (OAM) debug link monitoring information on an interface, use the **showethernetoamdebuglink-monitor** command in privileged EXEC mode.

show ethernet oam debug link-monitor [**interface** *type number*]

Syntax Description

interface	(Optional) Displays the link monitoring information on an interface.
type	(Optional) Displays the interface type.
number	(Optional) Displays the interface number.

Command Modes

Privileged EXEC (#)

Command History

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

Usage Guidelines

Use the **showethernetoamdebuglink-monitor**command to display Ethernet OAM debug link monitoring information on an interface.

Examples

The following is sample output from the **showethernetoamdebuglink-monitor**command:

```
Router# show ethernet oam debug link-monitor interface gigabitEthernet 0/1

Interface Gi0/1:
first_poll = 1
symprd_tlv_sent = 0
frmprd_tlv_sent = 0
frm_poll_cnt = 1
frmsec_poll_cnt = 10
rxcrc_poll_cnt = 1
txcrc_poll_cnt = 1
symbol_period_start = never
prev_rx_error_frames = 0
total_rx_error_frames = 0
error_frame_period_start = 0
total_frame_period_start = 0
prev_error_frame_seconds = 0
total_error_frame_seconds = 0
prev_rx_crc_error_frames = 0
prev_tx_crc_error_frames = 0
total_frm_tlvs = 0
total_frmsec_tlvs = 0
```

```
total_symprd_tlvs = 0
total_frmprd_tlvs = 0
```

The table below describes the significant fields shown in the display.

Table 19: ethernet oam debug link-monitor Field Descriptions

Field	Description
Interface	Specifies the interface type.
first_poll	Specifies the number of counters copied in the first poll.
frmprd_tlv_sent	Specifies the number of error frame period events that are sent.
frm_poll_cnt	Specifies number of frames polled.
rxcrc_poll_cnt	Specifies the Received (RX) cyclic redundancy checks (CRCs) poll count.
txcrc_poll_cnt	Specifies the Transmitter (TX) CRCs poll count.
symbol_period_start	Specifies the symbol period start.
prev_rx_error_frames	Specifies the previous error symbol period.
total_frm_tlvs	Specifies the total number of error frames received.
total_frmsec_tlvs	Specifies the total number of frames received (in seconds) and the type length values (TLVs) for each frame.
total_symprd_tlvs	Specifies the total symbol period and the TLVs received for each frame.
total_frmprd_tlvs	Specifies the total frame period and the TLVs received for each frame.

show ethernet oam discovery

To display discovery information for all Ethernet operations, maintenance, and administration (OAM) interfaces or for a specific interface, use the **show ethernet oam discovery** command in privileged EXEC mode.

show ethernet oam discovery [**interface** *type number*]

Syntax Description

interface	(Optional) Specifies an interface.
type	(Optional) Type of Ethernet interface. Valid values are: FastEthernet, GigabitEthernet, TenGigabitEthernet.
number	(Optional) Integer from 1 to 9 that is the number of the Ethernet interface.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

This command displays the following information pertaining to Ethernet OAM discovery:

- Remote device which is directly connected to this device
- Local and remote OAM configuration and capability
- Local and remote OAM mode
- Remote platform identity
- State of the local discovery state machine

If an interface is specified, only data pertaining to the OAM peer on that interface is displayed; otherwise, data for all OAM peers (on all interfaces) is displayed.

Examples

The following example shows output from a **showethernetoamdiscovery** command for interface GigabitEthernet 6/11:

```
Device# show ethernet oam discovery interface gigabitethernet6/11

GigabitEthernet6/11
Local client
------------
  Administrative configurations:
    Mode:               active
    Unidirection:       not supported
    Link monitor:       supported (on)
    Remote loopback:    supported
    MIB retrieval:      not supported
    Mtu size:           1500
Operational status:
    Port status:        operational
    Loopback status:    no loopback
    PDU revision:       1
Remote client
-------------
  MAC address: 0030.96fd.6bfa
  Vendor(oui): 0x00 0x00 0x0C (cisco)
  Administrative configurations:
    Mode:               active
    Unidirection:       not supported
    Link monitor:       supported
    Remote loopback:    supported
    MIB retrieval:      not supported
    Mtu size:           1500
```

The table below describes the significant fields shown in the display.

Table 20: show ethernet oam discovery Field Descriptions

Field	Description
Administrative configurations	
Mode	Active or passive mode of the interface
Unidirection	Operational mode
Link monitor	Status of link monitor support
Remote loopback	Status of remote loopback support
MIB retrieval	Capability of requesting MIB objects.
Mtu size	Size of the maximum transmission unit
Operational status	
Port status	Operational state of the port
Loopback status	Operational status of the loopback interface

Field	Description
PDU revision	Revision of the OAM configuration. A new revision results from each change to the configuration.
Remote client	
MAC address	MAC address of the remote client
Vendor (oui)	Vendor number in hexidecimal

Related Commands

Command	Description
show ethernet oam statistics	Displays detailed information about Ethernet OAM packets.
show ethernet oam status	Displays Ethernet OAM configurations for all interfaces or for a specific interface.
show ethernet oam summary	Displays active Ethernet OAM sessions.

show ethernet oam runtime

To display Ethernet Operations, Maintenance, and Administration (OAM) runtime configurations for all interfaces or for a specific interface, use the **showethernetoamruntime**command in either user EXEC or privileged EXEC mode.

show ethernet oam runtime interface *type number*

Syntax Description

interface	Specifies an interface.
type number	Interface type and number.

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.4(24)T	This command was introduced in a release earlier than Cisco IOS Release 12.4(24)T.
12.2(33)SRC	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SRC.
12.2(33)SXH	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SXH.

Usage Guidelines

Use this command to display the runtime settings of link-monitoring and general OAM operations for all interfaces or for a specific interface.

OAM must be operational on the interface or interfaces before you issue this command.

Examples

The following is sample output from the **showethernetoamruntime** command for Fast Ethernet interface 3/1:

```
Router# show ethernet oam runtime interface fastethernet 3/1
Runtime Settings:
-----------------
local_pdu: info
local_mux: fwd
local_par: fwd
local_link_status: OK
local_satisfied: No
local_stable: No
enter_loopback: No
pdu_cnt: 10
pdu_timer: Running
```

```
lost_link_timer: stopped
loopback_timer: stopped(timeout=2)
remote_state_valid: No
remote_stable: No
remote_evaluating: 0
peer version: 3
State Machine:
--------------
sm(ether_oam_port Fa0/0), running yes, state ACTIVE_SEND_LOCAL
```

The table below describes the significant fields shown in the display.

Table 21: show ethernet oam runtime Field Descriptions

Field	Description
Runtime Settings	
local_pdu	Information about the number of protocol data units (PDUs) transmitted per second.
local_mux	Indicates the state of the multiplexer function of the OAM sublayer.
local_par	Indicates the state of the parser function of the OAM sublayer.
local_link_status	Status of link support.
local_satisfied	Indicates the result of comparing its local configuration and the remote configuration found in the received local information type length value (TLV) field.
local_stable	Indicates the OAM client state information in the discovery process.
pdu_cnt	Displays the count of PDUs.
pdu_timer	Time taken for PDU transmission.
lost_link_timer	Amount of time with inactivity before the link is dropped.
loopback_timer	Specified time taken by the loopback interface.
remote_state_valid	Indicates the OAM client has received remote state information.
remote_stable	Indicates remote OAM client acknowledgment of local OAM state information.
peer version	Version of the OAM peer.
State Machine	Displays information of the finite state machine.

Related Commands

Command	Description
show ethernet oam discovery	Displays discovery information for all Ethernet OAM interfaces or for a specific interface.
show ethernet oam statistics	Displays detailed information about Ethernet OAM packets.
show ethernet oam status	Displays Ethernet OAM configurations for all interfaces or for a specific interface.
show ethernet oam summary	Displays active Ethernet OAM sessions.

show ethernet oam statistics

To display detailed information about Ethernet operations, maintenance, and administration (OAM) packets, use the **show ethernet oam statistics** command in privileged EXEC mode.

show ethernet oam statistics [**interface** *type number*]

Syntax Description

interface	(Optional) Specifies an interface.
type	(Optional) Type of Ethernet interface. Valid values are: FastEthernet, GigabitEthernet, TenGigabitEthernet.
number	(Optional) Integer from 1 to 9 that is the number of the Ethernet interface.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Statistics that this command displays include the following:

- Rx/Tx OAM Protocol Data Unit (PDU) counters
- Link monitoring events, including event logs, if available
- Remote fault detection events
- Remote loopback events

Examples

The following example shows output from a **showethernetoamstatistics** command for interface GigabitEthernet 6/11:

```
Device# show ethernet oam statistics interface gigabitethernet 6/11

GigabitEthernet6/11
Counters:
---------
  Information OAMPDU Tx                  : 9723
  Information OAMPDU Rx                  : 9712
  Unique Event Notification OAMPDU Tx    : 0
  Unique Event Notification OAMPDU Rx    : 0
  Duplicate Event Notification OAMPDU TX  : 0
  Duplicate Event Notification OAMPDU RX  : 0
  Loopback Control OAMPDU Tx             : 0
  Loopback Control OAMPDU Rx             : 0
  Variable Request OAMPDU Tx             : 0
  Variable Request OAMPDU Rx             : 0
  Variable Response OAMPDU Tx            : 0
  Variable Response OAMPDU Rx            : 0
  Cisco OAMPDU Tx                        : 0
  Cisco OAMPDU Rx                        : 0
  Unsupported OAMPDU Tx                  : 0
  Unsupported OAMPDU Rx                  : 0
  Frames Lost due to OAM                 : 0
Local event logs:
-----------------
  0 Errored Symbol Period records
  0 Errored Frame records
  0 Errored Frame Period records
  0 Errored Frame Second records
Remote event logs:
------------------
  0 Errored Symbol Period records
  0 Errored Frame records
  0 Errored Frame Period records
  0 Errored Frame Second records
```

The table below describes the significant fields shown in the display.

Table 22: show ethernet oam statistics Field Descriptions

Field	Description
Counters	
Information OAMPDU Tx	Number of OAM PDUs transmitted
Information OAMPDU Rx	Number of OAM PDUs received
Unique Event Notification OAMPDU Tx	Number of unique event notification OAM PDUs transmitted
Unique Event Notification OAMPDU Rx	Number of unique event notification OAM PDUs received
Duplicate Event Notification OAMPDU Tx	Number of duplicate event notification OAM PDUs transmitted

Field	Description
Duplicate Event Notification OAMPDU Rx	Number of duplicate event notification OAM PDUs received
Loopback Control OAMPDU Tx	Number of loopback control OAM PDUs transmitted
Loopback Control OAMPDU Rx	Number of loopback control OAM PDUs received
Variable Request OAMPDU Tx	Number of OAM PDUs sent to request MIB objects on a remote device
Variable Request OAMPDU Rx	Number of OAM PDUs received and requesting MIB objects on a local device
Variable Response OAMPDU Tx	Number of OAM PDUs sent by the local device in response to a request from a remote device
Variable Response OAMPDU Rx	Number of OAM PDUs sent by the remote device in response to a request from a local device
Cisco OAMPDU Tx	Number of Cisco specific OAM PDUs sent
Cisco OAMPDU Rx	Number of Cisco specific OAM PDUs received
Unsupported OAMPDU Tx	Number of unsupported OAM PDUs sent
Unsupported OAMPDU Rx	Number of unsupported OAM PDUs received
Frames lost due to OAM	Number of frames discarded by the OAM client
Local event logs	Log of events on the local device
Remote event logs	Log of events on the remote device

Related Commands

Command	Description
show ethernet oam discovery	Displays discovery information for all Ethernet OAM interfaces or for a specific interface.
show ethernet oam status	Displays Ethernet OAM configurations for all interfaces or for a specific interface.
show ethernet oam summary	Displays active Ethernet OAM sessions.

show ethernet oam status

To display Ethernet operations, maintenance, and administration (OAM) configurations for an interface, use the **show ethernet oam status** command in privileged EXEC mode.

show ethernet oam status [**interface** *type slot*/[*subslot*/]*port* | **vlan** *vlan*]

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show ethernet oam status [**interface** *type number*]

Syntax Description

interface	(Optional) Specifies an interface.
type	(Optional) Type of Ethernet interface. Valid values are: FastEthernet, GigabitEthernet, and TenGigabitEthernet.
slot/[*subslot*/]*port*	(Optional) Chassis slot number and port number where the Ethernet interface is located. If the Ethernet interface is located on a shared port adapter (SPA), the subslot number may also be required. The subslot is the secondary slot number on the SPA Interface Processor (SIP) where the SPA is installed.
vlan *vlan*	(Optional) Limits the display to interfaces on the specified VLAN. The range is from 1 to 4094.
number	(Optional) Ethernet interface number. The range is from 1 to 9.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI	This command was changed to add the optional **vlan** *vlan* keyword and argument. The *subslot* argument was added to support Ethernet interfaces located on an SPA.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Routers.

Usage Guidelines

Use this command to display the runtime settings of link monitoring and general OAM operations for all interfaces or for a specific interface.

OAM must be operational on the interface or interfaces before you issue this command.

Cisco IOS Release 12.2(33)SXI and later releases allow you to limit the display of switch port information to the specified VLAN.

Examples

The following example shows output from the **show ethernet oam status** command for interface GigabitEthernet 0/0 when the link timeout value is specified in milliseconds (ms) using the **ethernet oam** command:

```
Device# show ethernet oam status interface gigabitethernet 0/0
GigabitEthernet0/0
General
-------
  Admin state:           enabled
  Mode:                  active
  PDU max rate:          10 packets per second
  PDU min rate:          1 packet per 2000 ms
  Link timeout:          2000 milliseconds
  High threshold action: no action
  Link fault action:     no action
  Dying gasp action:     no action
  Critical event action: no action
```

The following example shows output from the **show ethernet oam status** command for interface GigabitEthernet 6/11:

```
Device# show ethernet oam status interface gigabitethernet 6/11

GigabitEthernet6/11
General
-------
  Mode:                  active
  PDU max rate:          10 packets per second
  PDU min rate:          1 packet per 1 second
  Link timeout:          5 seconds
  High threshold action: no action
Link Monitoring
---------------
  Status: supported (on)
  Symbol Period Error
    Window:              1 million symbols
    Low threshold:       1 error symbol(s)
    High threshold:      none
  Frame Error
    Window:              10 x 100 milliseconds
    Low threshold:       1 error frame(s)
    High threshold:      none
  Frame Period Error
    Window:              1 x 100,000 frames
    Low threshold:       1 error frame(s)
```

```
  High threshold:      none
Frame Seconds Error
  Window:              600 x 100 milliseconds
  Low threshold:       1 error second(s)
  High threshold:      none
```

The table below describes the significant fields shown in the display.

Table 23: show ethernet oam status Field Descriptions

Field	Description
General	
Mode	Active or passive mode of the interface.
PDU max rate	Maximum number of protocol data units (PDUs) transmitted per second.
PDU min rate	Minimum number of PDUs transmitted per second.
Link timeout	Amount of time with inactivity before the link is dropped.
High threshold action	Action that occurs when the high threshold for an error is exceeded.
Link Monitoring	
Status	Operational state of the port.
Symbol Period Error	
Window	Specified number of error symbols.
Low threshold	Minimum number of error symbols.
High threshold	Maximum number of error symbols.
Frame Error	
Window	Specified amount of time, in milliseconds.
Low threshold	Minimum number of error frames.
High threshold	Maximum number of error frames.
Frame Period Error	
Window	Frequency at which the measurement is taken, in milliseconds.
Low threshold	Minimum number of error frames.

Field	Description
High threshold	Maximum number of error frames.
Frame Seconds Error	
Window	Frequency at which the measurement is taken, in milliseconds.
Low threshold	Lowest value at which an event will be triggered.
High threshold	Highest value at which an event will be triggered.

Related Commands

Command	Description
show ethernet oam discovery	Displays discovery information for all Ethernet OAM interfaces or for a specific interface.
show ethernet oam statistics	Displays detailed information about Ethernet OAM packets.
show ethernet oam summary	Displays active Ethernet OAM sessions.

show ethernet oam summary

To display active Ethernet operations, maintenance, and administration (OAM) sessions on a device, use the **show ethernet oam summary** command in privileged EXEC mode.

show ethernet oam summary

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Examples

The following example shows output from a **show ethernet oam summary** command:

```
Device# show ethernet oam summary

Symbols:          * - Master Loopback State,  # - Slave Loopback State
Capability codes: L - Link Monitor,  R - Remote Loopback
                  U - Unidirection,  V - Variable Retrieval
  Local                        Remote
Interface       MAC Address    Vendor Mode    Capability
  Fa3/1         0080.09ff.e4a0 00000C active   L R
  Gi6/11        0030.96fd.6bfa 00000C active   L R
```

The table below describes the significant fields shown in the display.

Table 24: show ethernet oam summary Field Descriptions

Field	Description
Local Interface	Type of local interface
MAC Address	MAC address of the local interface
Remote Vendor	The vendor for the remote device.

Field	Description
Mode	Operational state of the remote interface
Capability	Functions the local interface can perform

Related Commands

Command	Description
show ethernet oam discovery	Displays discovery information for all Ethernet OAM interfaces or for a specific interface.
show ethernet oam status	Displays Ethernet OAM configurations for all interfaces or for a specific interface.
show ethernet oam statistics	Displays detailed information about Ethernet OAM packets.

show ethernet ring g8032 brief

To display a brief description of the functional state of the Ethernet Ring Protection (ERP) instance, use the **show ethernet ring g8032 brief** command in privileged EXEC mode.

show ethernet ring g8032 brief [*ring-name* [**instance** *instance-id*]]

Syntax Description

ring-name	(Optional) Ethernet ring name.
instance *instance-id*	(Optional) Enter the **instance** keyword followed by the instance identifier. The instance identifier is either 1 or 2.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Usage Guidelines

This command can be used to display status information for all ERP instances in an ERP ring, for an ERP instance for a specified ERP ring, or for all ERP instances configured on the device.

The information displayed in the output includes the following:

- The Ethernet ring name
- The instance number
- The node type
- The node state
- Each of the interfaces (Port0 and Port1) and their respective states for handling data traffic (as shown in the legend of the output)

Examples

The following is sample output from the **show ethernet ring g8032 brief** command. The fields shown in the display are self-explanatory.

```
Device# show ethernet ring g8032 brief

  R: Interface is the RPL-link
  F: Interface is faulty
  B: Interface is blocked
```

```
 FS: Local forced switch
 MS: Local manual switch

RingName                        Inst NodeType  NodeState    Port0    Port1
-------------------------------------------------------------------------------
abc                                1 Normal    Pending      B
```

show ethernet ring g8032 configuration

To display the Ethernet Ring Protection (ERP) switching configuration, use the **show ethernet ring g8032 configuration** command in privileged EXEC mode.

show ethernet ring g8032 configuration [*ring-name* [**instance** *instance-id*]]

Syntax Description

ring-name	(Optional) Ethernet ring name.
instance *instance-id*	(Optional) Enter the **instance** keyword followed by the instance identifier. The instance identifier is either 1 or 2.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Usage Guidelines

This command displays the output of the Ethernet ring instance configuration manager. Refer to the output to verify whether the configuration is valid and to identify any incomplete or omitted parameters.

Examples

The following is sample output from the **show ethernet ring g8032 configuration** command.

```
Device# show ethernet ring g8032 configuration

ethernet ring ring0
 Port0: GigabitEthernet0/0/0 (Monitor: GigabitEthernet0/0/0)
 Port1: GigabitEthernet0/0/4 (Monitor: GigabitEthernet0/0/4)
 Exclusion-list VLAN IDs: 4001-4050
 Open-ring: no
 Instance 1
  Description:
  Profile:     opp
  RPL:
  Inclusion-list VLAN IDs: 2,10-500
  APS channel
   Level: 7
   Port0: Service Instance 1
   Port1: Service Instance 1
  State: configuration resolved
```

The table below describes the significant fields shown in the display.

Table 25: show ethernet ring g8032 configuration Field Descriptions

Field	Description
ethernet ring	Ethernet ring number
Exclusion-list VLAN IDs	List of unprotected VLANs
Open-ring	Identifies whether the Ethernet ring is configured as an open ring
Instance	Instance identifier
Inclusion-list VLAN IDS	List of protected VLANs
State	State of the ERP protection switching configuration

show ethernet ring g8032 port status

To display Ethernet ring port status information for the interface, use the **show ethernet ring g8032 port status** command in privileged EXEC mode.

show ethernet ring g8032 port status interface *type number*

Syntax Description

interface*type number*	Interface type and number. Enter the **interface** keyword followed by the interface type and interface number.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Usage Guidelines

The display includes the list of VLANs that are blocked or unblocked and the state of the instance on the port. An instance can also be blocked or unblocked.

Examples

The following is sample output from the **show ethernet ring g8032 port status** command. The fields shown in the display are self-explanatory.

```
Device# show ethernet ring g8032 port status interface gigabitethernet 0/0

Port: GigabitEthernet0/0
 Ring: ring0
         Block vlan list: 3,501-1000
         Unblock vlan list: 2,10-500
         REQ/ACK: 5/5
         Instance 1 is in Unblocked state

 Port: GigabitEthernet0/0
 Ring: ring0
         Block vlan list: 3,501-1000
         Unblock vlan list: 2,10-500
         REQ/ACK: 6/6
         Instance 1 is in Unblocked state
```

show ethernet ring g8032 profile

To display the settings for one or more Ethernet ring profiles, use the **show ethernet ring g8032 profile** command in privileged EXEC mode.

show ethernet ring g8032 profile [*profile-name*]

Syntax Description

profile-name	(Optional) Displays the settings for the specified profile. If the profile name is not specified, the settings for all profiles are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Examples

The following is sample output from the **show ethernet ring g8032 profile** command. The fields shown in the display are self-explanatory.

```
Device# show ethernet ring g8032 profile ERP-profile

Ethernet ring profile name: ERP-profile
    WTR interval: 1 minutes
    Guard interval: 500 milliseconds
    Hold-off interval: 0 seconds
    Non-revertive mode
```

show ethernet ring g8032 statistics

To display the number of events and Ring Automatic Protection Switching (R-APS) messages received for an Ethernet Ring Protocol (ERP) instance, use the **show ethernet ring g8032 statistics** command in privileged EXEC mode.

show ethernet ring g8032 statistics [*ring-name* [**instance** *instance-id*]]

Syntax Description

ring-name	(Optional) Ethernet ring name.
instance *instance-id*	(Optional) Enter the **instance** keyword followed by the instance identifier. The instance identifier is either 1 or 2.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Usage Guidelines

This command can be used to display the number of events and R-APS messages received for all ERP instances in an ERP ring, for an ERP instance for a specified ERP ring, or for all ERP instances configured on the router.

Examples

The following is sample output from the **show ethernet ring g8032 statistics** command.

```
Device# show ethernet ring g8032 statistics RingA instance 1

Statistics for Ethernet ring RingA instance 1
Local SF detected:
  Port0: 1
  Port1: 0
R-APS     Port0(Tx/Rx) Port1(Tx/Rx)
------------------------------------------------------------
  NR    : 1/1   1/1
  NR,RB : 0/1   0/1
  SF    : 1/0   1/0
  MS    : 0/0   0/0
  FS    : 0/0   0/0
```

The table below describes the significant fields shown in the display.

Table 26: show ethernet ring g8032 statistics Field Descriptions

Field	Description
NR	No request R-APS message.
RB	Route blocked R-APS message.
SF	Signal failure event.
MS	Manual switch event.
FS	Force switch event.

show ethernet ring g8032 status

To display a status summary for the Ethernet Ring Protection (ERP) instance, use the **show ethernet ring g8032 status** command in privileged EXEC mode.

show ethernet ring g8032 status [*ring-name* [**instance** *instance-id*]]

Syntax Description

ring-name	(Optional) Ethernet ring name.
instance *instance-id*	(Optional) Enter the **instance** keyword followed by the instance identifier. The instance identifier is either 1 or 2.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Usage Guidelines

This command can be used to display status information for all ERP instances in an ERP ring, for an ERP instance for a specified ERP ring, or for all ERP instances configured on the device.

The information displayed in the output includes the following:

- The G.8032 node type and state
- Each of the interfaces and whether any interface is the Ring Protection Link (RPL)
- Whether a fault has been detected on the interface
- Whether the interface has been blocked
- The configured profile for the instance

Examples

The following are examples of output from the **show ethernet ring g8032 status** command for Ethernet RingA (instances 1 and 2), and Ethernet Ring B, (instance 1). Note that for Ring B, instance 1, an ERP profile has not been configured. Therefore, the default ERP profile values are used.

```
Device# show ethernet ring g8032 status RingA instance 1

    Ethernet ring RingA instance 1 is Normal node in Protection state
      Port0: GigabitEthernet0/0/1 (Monitor: GigabitEthernet0/0/1)
             APS-Channel: Service Instance 1
```

```
            Status: NonRPL, faulty, blocked
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      Port1: GigabitEthernet1/1/1 (Monitor: GigabitEthernet1/1/1)
            APS-Channel: Service Instance 1
            Status: NonRPL
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      APS Level: 3
      Profile: ERP-profile
        WTR interval: 60s
        Guard interval: 100ms
        Hold-off interval: 1s
        Revertive mode

Device# show ethernet ring g8032 status RingA instance 2

    Ethernet ring RingA instance 2 is RPL Owner node in Idle state
      Port0: GigabitEthernet0/0/0
            Monitor: GigabitEthernet0/0/0
            APS-Channel: vlan 1
            Status: NonRPL
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      Port1: GigabitEthernet1/1/1
            Monitor: GigabitEthernet1/1/1
            APS-Channel: vlan 1
            Status: RPL, blocked
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      APS Level: 3
      Profile: ERP-profile
        WTR interval: 60s
        Guard interval: 100ms
        Hold-off interval: 1s
        Revertive mode

Device# show ethernet ring g8032 status RingB instance 1

    Ethernet ring RingB instance 1 is RPL Owner node in ForcedSwitch state
      Port0: GigabitEthernet0/0/2 (Monitor: GigabitEthernet0/0/2)
            APS-Channel: vlan 1
            Status: NonRPL, local fs, blocked
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      Port1: GigabitEthernet1/1/2
            Monitor: GigabitEthernet1/1/2
            APS-Channel: vlan 1
            Status: RPL
            Remote R-APS NodeId: 0022.bddd.ff99, BPR: 0
      APS Level: 3
      Open-ring topology
      Version 1 compatible
      Profile: (not configured)
        WTR interval: 300s
        Guard interval: 500ms
        Hold-off interval: 0s
        Revertive mode
```

The table below describes the significant fields shown in the display.

Table 27: show ethernet ring g8032 status Field Descriptions

Field	Description
Ethernet ring	Ethernet ring number.
Open-ring	Identifies whether the Ethernet ring is configured as an open ring.
Instance	Instance identifier.
State	State of the ERP protection switching configuration.

show ethernet ring g8032 summary

To display a summary of the number of Ethernet Ring Protocol (ERP) instances in each state of the ERP switching process, use the **show ethernet ring g8032 summary** command in privileged EXEC mode.

show ethernet ring g8032 summary

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Examples

The following is sample output from the **show ethernet ring g8032 summary** command.

```
Device# show ethernet ring g8032 summary

Chassis  NodeId: 88f0.7768.1a99
States
-------------------------------------
 Idle                    3
 Manual Switch           0
 Forced Switch           0
 Protection              8
 Pending                 0
 --------------------------
 Total                  11
```

The table below describes the significant fields shown in the display.

Table 28: show ethernet ring g8032 summary Field Descriptions

Field	Description
Idle	No failure or administrative condition exists.
Manual switch	Manual switch condition exists.
Forced switch	Force switch condition exists.
Protection	Protection state.
Pending	Pending state.

show ethernet ring g8032 trace

To display information about Ethernet Ring Protection (ERP) traces, use the **show ethernet ring g8032 trace** command in privileged EXEC mode.

show ethernet ring g8032 trace{**ctrl** [*ring-name* **instance** *instance-id*]| **sm**}

Syntax Description

ctrl	Displays Ethernet ring controller traces.
ring-name	(Optional) Ethernet ring name.
instance *instance-id*	(Optional) Enter the **instance** keyword followed by the Ethernet ring instance number.
sm	Displays Ethernet ring state machine traces.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Examples

The following example shows how to enable the **show ethernet ring g8032 trace** command. Output is generated only when ERP trace information is available.

```
Device# show ethernet ring g8032 trace sm
```

show ethernet service dynamic

To display information about Layer 2 context service instances, use the **show ethernet service dynamic** command in privileged EXEC mode.

show ethernet service dynamic [**id** *identifier* **interface** *type number* **[detail]**]

Syntax Description

id *identifier*	(Optional) Specifies the Layer 2 context service instance identifier.
interface	(Optional) Declares a specific interface selection for a specified Layer 2 context service instance.
type	(Optional) Type of interface
number	(Optional) Number of the interface.
detail	(Optional) Displays detailed information about Layer 2 context service instances or about a specific Layer 2 context service instance.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.1(2)S	This command was introduced.

Usage Guidelines

This command is useful for system monitoring and troubleshooting.

Examples

The following is sample output from the **show ethernet service dynamic** command:

```
Router# show ethernet service dynamic
Identifier  Type      Interface               State     CE-Vlans
1          L2CXT      GigabitEthernet2/2       Down

L2Context 1 does not have any dynamically created service instance
1          L2CXT      GigabitEthernet2/15      Up

Total number of Dynamic Service Instances under L2context(1) = 1
1          Dynamic    GigabitEthernet2/15      Up
```

The table below describes the significant fields shown in the display.

Table 29: show ethernet service dynamic Field Descriptions

Field	Description
Identifier	Service instance identifier.
Type	Type of service instance.
Interface	Interface type and number with which the service instance is associated.
State	State of the interface.
CE-Vlans	Customer edge (CE) device VLAN ID.

The following example displays various types of service instances under an interface with a specific instance ID:

```
Router# show ethernet service dynamic 23 interface ethernet 0/0 detail
Service Instance ID: 1
Service instance type: L2Context
Initiators: unclassified vlan
Control policy: policy1
Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans:
Encapsulation: dot1q 200-300 vlan protocol type 0x8100
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0
```

The table that follows describes the significant fields shown in the display.

Table 30: show ethernet service dynamic Field Descriptions

Field	Description
Service Instance ID	Service instance identifier.
Service instance type	Service instance type
Initiators	Service initiators associated with the L2 context.
Control Policy	Control policy associated with the L2 context service instance.
Associated Interface	CE device VLAN ID.
Associated EVC	Ethernet virtual circuits (EVCs) associated with a device.

Field	Description
L2protocol drop	Number of Layer 2 protocol packet data units (PDUs) dropped.
CE-Vlans	VLANs associated with a device.
Encapsulation	Type of encapsulation used to enable session-level traffic classification.
Interface	Interface type and number with which the service instance is associated.
State	State of the interface.
EFP Statistics	Statistics of the Layer 2 service instances.

Related Commands

Command	Description
clear ethernet service instance	Clears Ethernet service instance attributes such as MAC addresses and statistics, and purges Ethernet service instance errors.
show ethernet service instance	Displays information about Ethernet service instances.
show ethernet service interface	Displays interface-only information about Ethernet customer service instances.

show ethernet service evc

To display information about Ethernet virtual connections (EVCs), use the **showethernetserviceevc**command in privileged EXEC mode.

show ethernet service evc[**detail**| **id** *evc-id* **[detail]**| **interface** *type number* **[detail]**]

Syntax Description

interface detail	(Optional) Displays detailed information about service instances or the specified service instance ID or interface.
id	(Optional) Displays EVC information for the specified service.
evc-id	(Optional) String from 1 to 100 characters that identifies the EVC.
interface	(Optional) Displays service instance information for the specified interface.
type	(Optional) Type of interface.
number	(Optional) Number of the interface.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)SEG	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.
15.1(2)SNG	This command was implemented on Cisco ASR 901 Series Aggregation Services Routers.

Usage Guidelines

This command is useful for system monitoring and troubleshooting.

Examples

Following is sample output from the **show ethernet service evc**command:

```
Device# show ethernet service evc

Identifier                      Type  Act-UNI-cnt Status
BLUE                            P-P       2       Active
PINK                            MP-MP     2       PartiallyActive
PURPLE                          P-P       2       Active
BROWN                           MP-MP     2       Active
GREEN                           P-P       3       Active
YELLOW                          MP-MP     2       PartiallyActive
BANANAS                         P-P       0       InActive
TEST2                           P-P       0       NotDefined
ORANGE                          P-P       2       Active
TEAL                            P-P       0       InActive
```

The table below describes the significant fields in the output.

Table 31: show ethernet service evc Field Descriptions

Field	Description
Identifier	EVC identifier.
Type	Type of connection, for example point-to-point (P-P) or multipoint-to-multipoint (MP-MP).
Act-UNI-cnt	Number of active user network interfaces (UNIs).
Status	Availability status of the EVC.

Related Commands

Command	Description
show ethernet instance	Displays information about Ethernet customer service instances.
show ethernet interface	Displays interface-only information about Ethernet customer service instances.

show ethernet service instance

To display information about Ethernet service instances, use the **show ethernet service instance** command in privileged EXEC mode.

show ethernet service instance [**detail**| **id** *id* {**interface** *type number* [**detail**| **mac** {**security** [**address**| **last violation**| **statistics**]| **static address**}| **load-balance**| **mac-tunnel [detail]**]}| **platform**| **stats**| **interface** *type number* [**detail**| **load-balance**| **platform**| **stats**| **summary**]| **mac security** [**address**| **last violation**| **statistics**]| **platform**| **policy-map**| **stats**| **summary**]

Cisco ASR 901 Series Aggregation Services Router

show ethernet service instance [**detail**| **id** *id* **interface** *type number* [**detail**| **mac security** [**address**| **last violation**| **statistics**]| **platform**| **stats**]| **interface** *type number* [**detail**| **platform**| **stats**| **summary**]| **mac security** [**address**| **last violation**| **statistics**]| **platform**| **policy-map**| **stats**| **summary**]

Syntax Description

detail	(Optional) Displays detailed information about service instances, a specific service instance, or about a MAC tunnel service instance.
id	(Optional) Displays a specific service instance on an interface that does not map to a VLAN.
id	(Optional) Integer from 1 to 4294967295 that identifies a service instance on an interface that does not map to a VLAN.
interface	(Optional) Declares a specific interface selection for a specified service instance.
type	(Optional) Type of interface.
number	(Optional) Number of the interface.
mac	(Optional) Displays MAC address data.
security	(Optional) Displays the MAC security status of a specified service instance.
address	(Optional) Displays the secure addresses on the specified service instance.
last violation	(Optional) Displays the last violation recorded on the specified service instance.
statistics	(Optional) Displays MAC security statistics for the specified service instance.

static	(Optional) Displays MAC static address information.
address	(Optional) Displays MAC static addresses in a bridge domain.
load-balance	(Optional) Displays EtherChannel load-balancing information.
mac-tunnel	(Optional) Displays the MAC tunnel Ethernet service instance identifier.
platform	(Optional) Displays platform information for a specified service instance.
stats	(Optional) Displays statistics for a specified service instance.
summary	(Optional) Displays summary information about service instances.
policy-map	(Optional) Displays the policy map for service instances.
mac security	(Optional) Displays the MAC security status of the specified service instance for Cisco ASR 901 Series Aggregation Services Routers.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)SEG	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SRD	This command was modified. The **address**, **detail**, **lastviolation**, **macsecurity**, **platform**, **statistics**, **stats**, and **summary** keywords were added.
12.2(33)SRE	This command was modified. The **address**, **mac-tunnel**, and **static** keywords were added.
15.0(1)S	This command was modified. The **load-balance** keyword was added.
15.1(2)S	This command was modified. The output was extended to include information about Layer 2 context service instances, service initiators associated with a Layer 2 context, and the control policy associated with a Layer 2 context service instance.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S to provide support for the Cisco ASR 903 Router. This command was modified to provide support for Ethernet Flow Points (EFPs) on trunk ports (interfaces). The output includes information about trunk ports, if applicable.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

This command is useful for system monitoring and troubleshooting.

Examples

The following is sample output from the **show ethernet service instance** command:

```
Device# show ethernet service instance

Identifier  Type      Interface             State     CE-Vlans
4           static    GigabitEthernet3/2    Down
```

The table that follows describes the significant fields shown in the display.

Table 32: show ethernet service instance Field Descriptions

Field	Description
Identifier	Service instance identifier.
Type	Service instance type, as applicable, such as Static, L2Context, Dynamic, or Trunk.
Interface	Interface type and number with which the service instance is associated.
State	Service instance operational status such as Up, Down, or AdminDown.
CE-Vlans	Customer edge (CE) device VLAN ID.

Following is sample output from the **show ethernet service instance detail** command. The output shows details of different service instances configured on a given platform.

```
Device# show ethernet service instance detail

Service Instance ID: 1
Service instance type: L2Context
Intiators: unclassified vlan
Control policy: ABC
Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans:
```

```
Encapsulation: dot1q 200-300 vlan protocol type 0x8100
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0

Service Instance ID: 2
Service instance type: Dynamic

Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans: 10-20
Encapsulation: dot1q 201 vlan protocol type 0x8100

Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0
```

Following is sample output from the **show ethernet service instance interface detail** command. The output shows details of service instances configured on a specific interface.

```
Device# show ethernet service instance interface ethernet 0/0 detail

Service Instance ID: 1
Service instance type: L2Context
Intiators: unclassified vlan
Control policy: ABC
Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans:
Encapsulation: dot1q 200-300 vlan protocol type 0x8100
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0

Service Instance ID: 2
Service instance type: Dynamic

Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans: 10-20
Encapsulation: dot1q 201 vlan protocol type 0x8100

Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0

Service Instance ID: 3
Service instance type: static
Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans: 10-20
Encapsulation: dot1q 201 vlan protocol type 0x8100

Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0
```

Following is sample output from the **show ethernet service instance id interface detail** command. The output shows details of a specific service instance configured on an interface.

```
Device# show ethernet service instance id 1 interface ethernet 0/0 detail

Service Instance ID: 1
Service instance type: L2Context
Intiators: unclassified vlan
Control policy: ABC
Associated Interface: Ethernet0/0
Associated EVC:
L2protocol drop
CE-Vlans:
Encapsulation: dot1q 200-300 vlan protocol type 0x8100
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
   Pkts In   Bytes In   Pkts Out  Bytes Out
         0          0          0          0
```

This is an example of output from the **show ethernet service instance detail** command on a Cisco ASR 901 Series Aggregation Services Router:

```
Device# show ethernet service instance id 1 interface gigabitEthernet 0/1 detail

Service Instance ID: 1
Associated Interface: GigabitEthernet0/13
Associated EVC: EVC_P2P_10
L2protocol drop
CE-Vlans:
Encapsulation: dot1q 10 vlan protocol type 0x8100
Interface Dot1q Tunnel Ethertype: 0x8100
State: Up
EFP Statistics:
Pkts In Bytes In Pkts Out Bytes Out
214 15408 97150 6994800
EFP Microblocks:
****************
Microblock type: Bridge-domain
Bridge-domain: 10
```

This is an example of output from the **show ethernet service instance stats** command on a Cisco ASR 901 Series Aggregation Services Router:

```
Device# show ethernet service instance id 1 interface gigabitEthernet 0/13 stats

Service Instance 1, Interface GigabitEthernet0/13
Pkts In Bytes In Pkts Out Bytes Out
214 15408 97150 6994800
```

Table 33: show ethernet service instance Field Descriptions

Field	Description
Service Instance ID	Service instance identifier.
Service instance type	Type of service instance.
Initiators	Service initiators associated with the service instance.
Control Policy	Control policy associated with the service instance.
Associated Interface	Interface on which the service instance is configured.

Field	Description
Associated EVC	Ethernet virtual circuit (EVC) associated with a device.
L2protocol drop	Number of Layer 2 protocol data units (PDUs) dropped.
CE-Vlans	VLANs associated with a device.
Encapsulation	Type of encapsulation used to enable session-level traffic classification.
Interface	Interface type and number with which the service instance is associated.
State	Up or Down.
EFP Statistics	Traffic on the service instance.

Related Commands

Command	Description
clear ethernet service instance	Clears Ethernet service instance attributes such as MAC addresses and statistics and purges Ethernet service instance errors.
show ethernet service interface	Displays interface-only information about Ethernet customer service instances.

show ethernet service interface

To display interface-only information about Ethernet customer service instances for all interfaces or for a specified interface, use the **show ethernet service interface** command in privileged EXEC mode.

show ethernet service interface [*type number*] **[detail]**

Syntax Description

type	(Optional) Type of interface.
number	(Optional) Number of the interface.
detail	(Optional) Displays detailed information about all interfaces or a specified service instance ID or interface.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(25)SEG	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S to provide support for the Cisco ASR 903 Device. This command was modified to provide support for Ethernet Flow Points (EFPs) on trunk ports (interfaces). The output includes information about trunk ports, if applicable.
Cisco IOS XE Release 3.6S	This command was modified. The output was modified to display the number of the bridge domains associated with the EFPs on an interface, if applicable.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Expressions are case sensitive. For example, if you enter **| exclude output**, the lines that contain *output* are not displayed, but the lines that contain “Output” are displayed.

Examples

The following is an example of output from the **show ethernet service interface** command when the **detail** keyword is specified:

```
Device# show ethernet service interface detail
```

```
Interface: FastEthernet0/1
ID:
CE-VLANS:
EVC Map Type: Bundling-Multiplexing
Interface: FastEthernet0/2
ID:
CE-VLANS:
EVC Map Type: Bundling-Multiplexing
Interface: FastEthernet0/3
ID:
CE-VLANS:
EVC Map Type: Bundling-Multiplexing
Bridge-Domains: 10,20,30
<output truncated>
Interface: GigabitEthernet0/1
ID: PE2-G101
CE-VLANS: 10,20,30
EVC Map Type: Bundling-Multiplexing
Associated EVCs:
EVC-ID CE-VLAN
WHITE 30
RED 20
BLUE 10
Associated Service Instances:
Service-Instance-ID CE-VLAN
10 10
20 20
30 30
```

The table below describes the significant fields in the output.

Table 34: show ethernet service interface Field Descriptions

Field	Description
Interface	Interface type and number.
Identifier	EVC identifier.
ID	EVC identifier.
CE-VLANS	VLANs associated with the customer edge (CE) device.
EVC Map Type	UNI service type; for example, Bundling, Multiplexing, All-to-one Bundling.
Bridge-Domains	Bridge domains associated with the EFPs on the interface.
Associated EVCs	EVCs associated with a device.
EVC-ID CE-VLAN	EVC identifier and associated VLAN.
Associated Service Instances	Service instances associated with a device.
Service-Instance-ID CE-VLAN	Service instance identifier and its associated CE VLAN.

Related Commands

Command	Description
service instance ethernet	Defines an Ethernet service instance and enters Ethernet service configuration mode.
show ethernet evc	Displays information about Ethernet customer service instances.
show ethernet interface	Displays interface-only information about Ethernet customer service instances.

show ethernet service mac-tunnel

To display information about MAC tunnels, use the **showethernetservicemac-tunnel**command in privileged EXEC mode.

show ethernet service mac-tunnel {*id* **[detail]| summary**}

Syntax Description

id	Integer from 1 to 2147483647 that identifies a MAC-in-MAC tunnel.
detail	Displays detailed information about a MAC-in-MAC tunnel.
summary	Displays summary information about a MAC-in-MAC tunnel.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

This command is useful for system monitoring and troubleshooting.

Examples

The following is sample output of the **showethernetservicemac-tunnel**command:

```
Router# show ethernet service mac-tunnel 1 detail tunnel id 1
State: Up
EFP Microblocks:
****************
Microblock type: Bridge-domain
Bridge-domain: 10
No. of Service Instances: 1
Service Instance ID: 1
Associated Tunnel Id: 1
Encapsulation: dot1ah 1 vlan-type 0x88E7
State: Up
Mac-flush: MIRP enabled/MIRP cos 7
EFP Microblocks:
****************
Microblock type: Bridge-domain
Bridge-domain: 1 c-mac
```

The table below describes the significant fields shown in the display.

Table 35: show ethernet service mac-tunnel detail Field Descriptions

Field	Description
State	Operational state of the MAC tunnel.
EFP Microblocks	Mechanism for external components to store information in the EFP structure.
Microblock type	Type of microblock. In this case, bridge domain is the microblock.
No. of Service Instances	Number of service instances configured under the MAC tunnel.
Service Instance ID	Service instance identifier.
Associated Tunnel Id	ID of the MAC tunnel under which the service instance is configured.
Encapsulation	Type of encapsulation used for the service instance.
Mac-flush	Type of remote MAC address flush mechanism that is currently supported. In this case, it is Multiple I-SID Registration Protocol (MIRP).
Bridge-domain: 1 c-mac	Type of bridge domain configured.

```
Router# show ethernet service mac-tunnel summary
            Total       Up  AdminDo     Down  ErrorDi  Unknown  Deleted  BdAdmDo
bdomain         1        1        0        0        0        0        0        0
other           0        0        0        0        0        0        0        0
Associated Tunnel Id: 1
            Total       Up  AdminDo     Down  ErrorDi  Unknown  Deleted  BdAdmDo
bdomain         1        1        0        0        0        0        0        0
other           0        0        0        0        0        0        0        0
```

The table below describes the significant fields shown in the display.

Table 36: show ethernet service mac-tunnel summary Field Descriptions

Field	Description
Total	Total number of bridge domains or other forwarding mechanisms configured.
Up	Number of bridge domains or other forwarding mechanisms that are operational.
AdminDo	Number of bridge domains or other forwarding mechanisms that are administratively shut down.

Field	Description
Down	Number of bridge domains or other forwarding mechanisms that are not operational.
ErrorDi	Number of bridge domains or other forwarding mechanisms that are disabled.
Unknown	Number of bridge domains or other forwarding mechanisms for which operational status is unknown.
Deleted	Number of configurations removed.
BdAdmDo	Indicates that the bridge domain was shut down.
bdomain	Bridge domain.
other	Any forwarding mechanism other than a bridge domain.
Associated Tunnel Id	ID of the MAC tunnel under which the service instance is configured.

show lacp

To display Link Aggregation Control Protocol (LACP) and multi-chassis LACP (mLACP) information, use the **show lacp** command in either user EXEC or privileged EXEC mode.

show lacp {*channel-group-number* {**counters**| **internal [detail]**| **neighbor [detail]**}| **multi-chassis [load-balance]** {**group** *number*| **port-channel** *number*}| **sys-id**}

Cisco ASR 901 Series Aggregation Services Router

show lacp {*channel-group-number* {**counters**| **internal [detail]**| **neighbor [detail]**| **sys-id**}}

Syntax Description

channel-group- number	(Optional) Number of the channel group. The following are valid values: • Cisco IOS 12.2 SB and Cisco IOS XE 2.4 Releases--from 1 to 64 • Cisco IOS 12.2 SR Releases--from 1 to 308 • Cisco IOS 12.2 SX Releases--from 1 to 496 • Cisco IOS 15.1S Releases—from 1 to 564 • Cisco ASR 901 Series Aggregation Services Router—from 1 to 8
counters	Displays information about the LACP traffic statistics.
internal	Displays LACP internal information.
neighbor	Displays information about the LACP neighbor.
detail	(Optional) Displays detailed internal information when used with the **internal** keyword and detailed LACP neighbor information when used with the **neighbor** keyword.
multi-chassis	Displays information about mLACP.
load-balance	Displays mLACP load balance information.
group	Displays mLACP redundancy group information,

number	Integer value used with the **group** and **port-channel** keywords. • Values from 1 to 4294967295 identify the redundancy group. • Values from 1 to 564 identify the port-channel interface.
port-channel	Displays mLACP port-channel information.
sys-id	Displays the LACP system identification. It is a combination of the port priority and the MAC address of the device

Command Modes

User EXEC (>) Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.2(33)SRB	Support for this command on the Cisco 7600 router was integrated into Cisco IOS Release 12.2(33)SRB.
Cisco IOS XE Release 2.4	This command was integrated into Cisco IOS XE Release 2.4.
12.2(33)SRE	This command was modified. The **multi-chassis**, **group**, and **port-channel**keywords and *number* argument were added.
15.1(3)S	This command was modified. The **load-balance** keyword was added.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use the **show lacp** command to troubleshoot problems related to LACP in a network.

If you do not specify a value for the argument *channel-group-number*, all channel groups are displayed. Values in the range of 257 to 282 are supported on the CSM and the FWSM only.

Examples

Examples

This example shows how to display the LACP system identification using the **show lacp sys-id**command:

```
Device> show lacp sys-id

8000,AC-12-34-56-78-90
```

The system identification is made up of the system priority and the system MAC address. The first two bytes are the system priority, and the last six bytes are the globally administered individual MAC address that is associated to the system.

Examples

This example shows how to display the LACP statistics for a specific channel group:

```
Device# show lacp 1 counters

              LACPDUs         Marker       LACPDUs
Port       Sent   Recv     Sent   Recv     Pkts Err
---------------------------------------------------
Channel group: 1
  Fa4/1    8      15       0      0         3    0
  Fa4/2    14     18       0      0         3    0
  Fa4/3    14     18       0      0         0
  Fa4/4    13     18       0      0         0
```

The output displays the following information:

- The LACPDUs Sent and Recv columns display the LACPDUs that are sent and received on each specific interface.
- The LACPDUs Pkts and Err columns display the marker-protocol packets.

The following example shows output from a **show lacp***channel-group-number***counters**command:

```
Device1# show lacp 5 counters

             LACPDUs         Marker      Marker Response    LACPDUs
Port       Sent   Recv     Sent   Recv     Sent   Recv      Pkts Err
---------------------------------------------------------------------
Channel group: 5
Gi5/0/0     21     18       0      0        0      0         0
```

The following table describes the significant fields shown in the display.

Table 37: show lacp channel-group-number counters Field Descriptions

Field	Description
LACPDUs Sent Recv	Number of LACP PDUs sent and received.
Marker Sent Recv	Attempts to avoid data loss when a member link is removed from an LACP bundle.
Marker Response Sent Recv	Cisco IOS response to the Marker protocol.
LACPDUs Pkts Err	Number of LACP PDU packets transmitted and the number of packet errors.

The following example shows output from a **show lacp internal**command:

```
Device1# show lacp 5 internal

Flags:  S - Device is requesting Slow LACPDUs
        F - Device is requesting Fast LACPDUs
        A - Device is in Active mode       P - Device is in Passive mode
Channel group 5
                            LACP port     Admin     Oper    Port        Port
Port      Flags   State     Priority      Key       Key     Number      State
Gi5/0/0   SA      bndl      32768         0x5       0x5     0x42        0x3D
```

The following table describes the significant fields shown in the display.

Table 38: show lacp internal Field Descriptions

Field	Description
Flags	Meanings of each flag value, which indicates a device activity.
Port	Port on which link bundling is configured.
Flags	Indicators of device activity.
State	Activity state of the port. States can be any of the following: • Bndl--Port is attached to an aggregator and bundled with other ports. • Susp--Port is in suspended state, so it is not attached to any aggregator. • Indep--Port is in independent state (not bundled but able to switch data traffic). This condition differs from the previous state because in this case LACP is not running on the partner port. • Hot-sby--Port is in hot standby state. • Down--Port is down.
LACP port Priority	Priority assigned to the port.
Admin Key	Defines the ability of a port to aggregate with other ports.
Oper Key	Determines the aggregation capability of the link.
Port Number	Number of the port.

Field	Description
Port State	State variables for the port that are encoded as individual bits within a single octet with the following meaning: • bit0: LACP_Activity • bit1: LACP_Timeout • bit2: Aggregation • bit3: Synchronization • bit4: Collecting • bit5: Distributing • bit6: Defaulted • bit7: Expired

Examples

This example shows how to display internal information for the interfaces that belong to a specific channel:

```
Device# show lacp 1 internal

Flags:  S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
        A - Device is in Active mode.       P - Device is in Passive mode.
Channel group 1
                            LACPDUs     LACP Port    Admin   Oper    Port     Port
Port      Flags    State    Interval    Priority     Key     Key     Number   State
Fa4/1     saC      bndl     30s         32768        100     100     0xc1     0x75
Fa4/2     saC      bndl     30s         32768        100     100     0xc2     0x75
Fa4/3     saC      bndl     30s         32768        100     100     0xc3     0x75
Fa4/4     saC      bndl     30s         32768        100     100     0xc4     0x75
Device#
```

The following table describes the significant fields shown in the display.

Table 39: show lacp internal Field Descriptions

Field	Description
State	Current state of the port; allowed values are as follows: • bndl--Port is attached to an aggregator and bundled with other ports. • susp--Port is in a suspended state; it is not attached to any aggregator. • indep--Port is in an independent state (not bundled but able to switch data traffic. In this case, LACP is not running on the partner port). • hot-sby--Port is in a hot-standby state. • down--Port is down.
LACPDUs Interval	Interval setting.
LACP Port Priority	Port-priority setting.
Admin Key	Defines the ability of a port to aggregate with other ports.
Oper Key	Determines the aggregation capability of the link.
Port Number	Port number.
Port State	Activity state of the port. • See the Port State description in the show lacp internal Field Descriptions table for state variables.

Examples

This example shows how to display the information about the LACP neighbors for a specific port channel:

```
Device# show lacp 1 neighbors

Flags:  S - Device sends PDUs at slow rate. F - Device sends PDUs at fast rate.
        A - Device is in Active mode.       P - Device is in Passive mode.
Channel group 1 neighbors
          Partner                Partner
Port      System ID              Port Number     Age     Flags
Fa4/1     8000,00b0.c23e.d84e     0x81            29s     P
Fa4/2     8000,00b0.c23e.d84e     0x82            0s      P
Fa4/3     8000,00b0.c23e.d84e     0x83            0s      P
Fa4/4     8000,00b0.c23e.d84e     0x84            0s      P
          Port          Admin     Oper      Port
          Priority      Key       Key       State
Fa4/1     32768         200       200       0x81
```

```
Fa4/2      32768          200        200        0x81
Fa4/3      32768          200        200        0x81
Fa4/4      32768          200        200        0x81
Device#
```

The following table describes the significant fields shown in the display.

Table 40: show lacp neighbors Field Descriptions

Field	Description
Port	Port on which link bundling is configured.
Partner System ID	Peer's LACP system identification (sys-id). It is a combination of the system priority and the MAC address of the peer device.
Partner Port Number	Port number on the peer device
Age	Number of seconds since the last LACP PDU was received on the port.
Flags	Indicators of device activity.
Port Priority	Port priority setting.
Admin Key	Defines the ability of a port to aggregate with other ports.
Oper Key	Determines the aggregation capability of the link.
Port State	Activity state of the port. See the Port State description in the show lacp internal Field Descriptions table for state variables.

If no PDUs have been received, the default administrative information is displayed in braces.

Related Commands

Command	Description
clear lacp counters	Clears the statistics for all interfaces belonging to a specific channel group.
lacp port-priority	Sets the priority for the physical interfaces.
lacp system-priority	Sets the priority of the system.

show lldp

To display information about one or all neighboring devices discovered using Link Layer Discovery Protocol (LLDP), use the **show lldp**command in privileged EXEC mode.

show lldp [**entry** {*****| *word*}| **errors**| **interface** [**ethernet** *number*]| **neighbors** [**ethernet** *number*| **detail**]| **traffic**]

Syntax Description

entry	(Optional) Displays detailed information for a specific neighbor entry.
*****	(Optional) Displays detailed information about all the LLDP neighbors.
word	(Optional) Name of the neighbor about which information is requested.
errors	(Optional) Displays LLDP computational errors and overflows.
interface	(Optional) Displays status and configuration of an interface on which LLDP is enabled.
ethernet	(Optional) Displays an IEEE 802.3 interface on which LLDP is enabled.
number	(Optional) Integer that identifies the interface.
neighbors	(Optional) Displays neighbor entries. **Note** If the device ID has more than 20 characters, the ID will be truncated to 20 characters in command output because of display constraints.
detail	(Optional) Displays detailed information about a neighbor (or neighbors) including network address, enabled capabilities, hold time, and software version.
traffic	(Optional) Displays LLDP statistics.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SXH	This command was introduced.
12.2(50)SY	Modified **show lldp neighbors detail** output to parse and display management addresses OID in ASN.1 notation.
15.2(3)T	This command was integrated into Cisco IOS Release 15.2(3)T.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

Use this command to monitor LLDP activity in a network.

When you use the **neighbors** keyword, the device ID is truncated to 20 characters in the command output because of display constraints. The **show lldp neighbors** command functions correctly; only the device ID display is truncated. For detailed neighbor information, use the **show lldp neighbors detail** command.

Examples

The following is sample output from the **show lldp entry *** command. Information about all the LLDP neighbors is displayed, including device ID, capabilities, addresses, hold time, and version.

```
Device# show lldp entry *

Capability codes:
    (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
    (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
Chassis id: aabb.cc00.1f01
Port id: Et1/0
Port Description: Ethernet1/0
System Name: R1.example.com
System Description:
Cisco IOS Software, Solaris Software (UNIX-JS-M)
12.2(20070524:210936) [user1-sierra-0522 105]
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Fri 25-May-07 10:52 by user1
Time remaining: 136 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses - not advertised
Auto Negotiation - not supported
Physical media capabilities - not advertised
Media Attachment Unit type - not advertised
------------------------------------------
Total entries displayed: 1
```

The table below describes the significant fields in the output.

*Table 41: show lldp entry * Field Descriptions*

Field	Description
Capability Codes	Type of device that can be discovered. Possible values are as follows: R--Router B--Bridge T--Telephone C--DOCSIS Cable Device W--WLAN Access Point P--Repeater S--Station O--Other
Chassis id	Identifier assigned to the device.
Port id	Identifier of the interface.
Port Description	Description of the interface.
System Name	Name of the device within the network.
System Description	Description of the software operating on the device.
Time remaining	Time remaining before the information is aged out.
System Capabilities	Possible capabilities of the device.
Enabled Capabilities	Subset of possible capabilities that are enabled.
Management Addresses	Layer 3 addresses of the management interface.
Auto Negotiation	Supported and enabled status of all interface autonegotiation capabilities.
Physical media capabilities	Physical characteristics of the interface on which LLDP operates.
Media Attachment Unit type	Numeric value representing the type of the media attachment unit.
Total entries displayed	Number of neighbor devices for which information is displayed.

The following is sample output from the **show lldp neighbors** command showing information about neighboring devices discovered using LLDP.

```
Device# show lldp neighbors

Capability codes:
    (R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device
    (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other
Device ID           Local Intf     Hold-time  Capability      Port ID
R1                  Et1/0          150        R               Et1/0

Total entries displayed: 1
```

The table below describes the significant fields shown in the output.

Table 42: show lldp neighbors Field Descriptions

Field	Description
Capability Codes	See the show lldp entry * Field Descriptions table for details.
Device ID	Name of the neighbor device. **Note** If the device ID has more than 20 characters, the ID will be truncated to 20 characters in command output because of display constraints.
Local Intf	Local interface through which this neighbor is connected.
Hold-time	Amount of time (in seconds) the current device will hold the LLDP advertisement from a sending device before discarding it.
Capability	Type of device listed in the LLDP Neighbors table. Values correspond to the values of the capability codes.
Port ID	Interface and port number of the neighboring device.
Total entries displayed	Number of neighbor devices for which information is displayed.

The following is sample output from the **show lldp neighbors** command showing information about neighboring devices discovered using LLDP:

```
Device# show lldp neighbors detail

------------------------------------------------
Chassis id: aabb.cc00.6502
Port id: Et2/0
Port Description: Ethernet2/0
System Name: r101

System Description:
```

```
Cisco IOS Software, Solaris Software (UNIX-P-M), Experimental Version 12.2(20081021:182811)
 [yonhan-CSCsm33589-flo_dsgs7 105]
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Fri 31-Oct-08 11:20 by yonhan

Time remaining: 105 seconds
System Capabilities: B,R
Enabled Capabilities: R
Management Addresses:
    IP: 192.168.1.1
    OID:
        1.3.6.1.4.1.16361.1.69.2.2.
Auto
```

The table below describes the significant fields shown in the output.

Table 43: show lldp neighbors detail Field Descriptions

Field	Description
Chassis id	Identifier assigned to the device.
Port id	Identifier of the interface.
Port Description	Description of the interface.
System Name	Name of the device within the network.
System Description	Description of the software operating on the device.
Time remaining	Time remaining before the information is aged out.
System Capabilities	Possible capabilities of the device.
Enabled Capabilities	Subset of possible capabilities that are enabled.
Management Addresses	Layer 3 addresses of the management interface.
Auto	Supported and enabled status of all interface autonegotiation capabilities.

The following is sample output from the **show lldp interface** command for Ethernet interface 0/1:

```
Device# show lldp interface ethernet 0/1

Ethernet0/1:
    Tx: enabled
    Rx: enabled
    Tx state: IDLE
    Rx state: WAIT FOR FRAME
```

The table below describes the significant fields shown in the output.

Table 44: show lldp interface Field Descriptions

Field	Description
Tx	Ability of the interface to transmit advertisements.

Field	Description
Rx	Ability of the interface to receive advertisements.
Tx state	Current finite state machine state of the interface in transmit mode.
Rx state	Current finite state machine state of the interface in receive mode.

The following is sample output from the **show lldp errors** command:

```
Device# show lldp errors

LLDP errors/overflows:
    Total memory allocation failures: 0
    Total encapsulation failures: 0
    Total input queue overflows: 0
    Total table overflows: 0
```

The table below describes the significant fields shown in the output.

Table 45: show lldp errors Field Descriptions

Field	Description
Total memory allocation failures	Number of memory allocation failures.
Total encapsulation failures	Number of LLDP packet encapsulation failures.
Total input queue overflows	Number of times incoming advertisements exceeded the capacity of the LLDP input queue.
Total table overflows	Number of times the LLDP table rejected advertisements because it was full.

The following is sample output from the **show lldp traffic**command:

```
Device# show lldp traffic

LLDP traffic statistics:
    Total frames out: 277
    Total entries aged: 0
    Total frames in: 328
    Total frames received in error: 0
    Total frames discarded: 0
    Total TLVs unrecognized: 0
```

The table below describes the significant fields shown in the output.

Table 46: show lldp traffic Field Descriptions

Field	Definition
Total frames out	Number of advertisements sent from the device.

Field	Definition
Total entries aged	Number of neighbor device entries aged out.
Total frames in	Number of advertisements received by the device.
Total frames received in error	Number of times the LLDP advertisements contained errors of any type.
Total frames discarded	Number of times the LLDP process discarded an incoming advertisement.
Total TLVs unrecognized	Number of TLVs that could not be processed because the content of the TLV was not recognized by the device or the content fields were incorrectly specified.

show nmsp

To display the Network Mobility Services Protocol (NMSP) information, use the **shownmsp**command in privileged EXEC mode.

show nmsp {**attachment suppress interface**| **capability**| **notification interval**| **statistics** {**connection**| **summary**}| **status**| **subscription** {**detail**| **summary**}}

Syntax Description

attachment suppress interface	Displays attachment suppress interfaces.
capability	Displays switch capabilities including the supported services and subservices.
notification interval	Displays the notification intervals of the supported services.
statistics	Displays the NMSP statistics information. • **connection** --Displays the message counters on each connection. • **summary** --Displays the global counters.
status	Displays information about the NMSP connections.
subscription	Displays the subscription information on each NMSP connection. • **detail** --Displays all services and subservices subscribed on each connection. • **summary** --Displays all services subscribed on each connection.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(40)SE	This command was introduced.
12.2(55)SE	This command was modified. The output was enhanced to display all the interfaces that have been suppressed after the CDP Server TLV exchange takes place.
15.1(1)SY	This command was integrated into Cisco IOS Release 15.1(1)SY.

Usage Guidelines

You can use the Cisco IOS software output modifiers to filter the output of the **shownmsp**command, to display only those lines you are interested in.

The output modifier feature is invoked by using the pipe symbol (|). To use this feature, enter the **shownmsp** command with a space and the pipe symbol at the end of the command line, followed by one of the keywords shown in the table below.

Table 47: Using Output Modifiers

Command	Purpose
append *regular-expression*	Appends redirected output to URL (only to the URLs supporting the append operation).
begin *regular-expression*	Displays the first line that matches the regular expression, and then all other lines that follow that line.
include *regular-expression*	Displays all lines that match the regular expression.
exclude *regular-expression*	Displays all lines except those that match the regular expression.
format *regular-expression*	Formats the output using the specification file.
redirect *regular-expression*	Redirects the output to the URL.
section *regular-expression*	Filters a section of the output.
tee *regular-expression*	Copies output to the URL.

Examples

The following is sample output from the **shownmspattachmentsuppressinterface**command:

```
Device# show nmsp attachment suppress interface
NMSP Attachment Suppression Interfaces
---------------------------------------
 GigabitEthernet1/0/10    CLI Suppressed
 GigabitEthernet1/0/11    Internal Suppressed
```

The following is sample output from the **shownmspcapability** command:

```
Device# show nmsp capability
NMSP Switch Capability
------------------------------
Service          Subservice
-----------       --------------
Attachment    Wired Station
Location        Subscription
```

The following is sample output from the **shownmspnotificationinterval**command:

```
Device# show nmsp notification interval
```

```
NMSP Notification Intervals
---------------------------------
Attachment notify interval: 30 sec (default)
Location notify interval: 30 sec (default)
```

The following is sample output from the **shownmspstatisticsconnectionandshownmspstatisticssummary**commands:

```
Device# show nmsp statistics connection
NMSP Connection Counters
---------------------------------
Connection 1:
   Connection status: UP
   Freed connection: 0
   Tx message count       Rx message count
   ----------------------     ------------------------
   Subscr Resp: 1            Subscr Req: 1
   Capa Notif: 1              Capa Notif: 1
   Atta Resp: 1                Atta Req: 1
   Atta Notif: 0
   Loc Resp: 1                 Loc Req: 1
   Loc Notif: 0
Unsupported msg: 0
Device# show nmsp statistics summary
NMSP Global Counters
----------------------------
  Send too big msg: 0
  Failed socket write: 0
  Partial socket write: 0
  Socket write would block: 0
  Failed socket read: 0
  Socket read would block: 0
  Transmit Q full: 0
  Max Location Notify Msg: 0
  Max Attachment Notify Msg: 0
Max Tx Q Size: 0
```

The following is sample output from the **shownmspstatus**command:

```
Device# show nmsp status
NMSP Status
----------------
NMSP: enabled
MSE IP Address    TxEchoResp RxEchoReq TxData RxData
172.19.35.109       5 5 4 4
```

The following is sample output from the **shownmspshowsubscriptiondetailandtheshownmspshowsubscriptionsummary**commands:

```
Device# show nmsp subscription detail
Mobility Services Subscribed by 172.19.35.109:
Services              Subservices
-----------------      -------------------
Attachment:          Wired Station
Location:               Subscription
Device# show nmsp subscription summary
Mobility Services Subscribed:
MSE IP Address     Services
--------------------     ---------------------
172.19.35.109        Attachment, Location
```

Related Commands

Command	Description
clear nmsp statistics	Clears the NMSP statistic counters.
nmsp	Enables NMSP on a switch.

show ptp clock dataset

To display a summary of the Precision Time Protocol clock status, use the show ptp clock dataset command in privileged EXEC mode.

show ptp clock dataset [**default**| **current**]

Cisco ASR 901 Series Aggregation Services Router

show ptp clock dataset {**default**| **current**}

Syntax Description

default	(Optional) Displays the default PTP clock dataset. **Note** **default** On the ASR 901 Series Aggregation Services Router, you must choose either the**default** keyword or the **current** keyword.
current	(Optional) Displays the current PTP clock dataset. **Note** On the ASR 901 Series Aggregation Services Router, you must choose either the**current** keyword or the **default** keyword.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

On the Cisco ASR 901 Series Aggregation Services Router, one of the keywords (**default** or **current**) must be used with the command.

Examples

The following examples show the output generated by this command:

```
Device# show ptp clock dataset default

CLOCK [Boundary Clock, domain 10]
  Two Step Flag: No
  Clock Identity: 0x2A:0:0:0:58:67:F3:4
```

```
  Number Of Ports: 1
  Priority1: 89
  Priority2: 90
  Domain Number: 10
  Slave Only: No
  Clock Quality:
    Class: 224
    Accuracy: Unknown
    Offset (log variance): 4252

Device# show ptp clock dataset current

CLOCK [Boundary Clock, domain 10]
  Steps Removed: 18522
  Offset From Master: 4661806827187470336
  Mean Path Delay: 314023819427708928
```

The table below describes significant fields shown in the display.

Table 48: show ptp clock dataset Field Descriptions

Field	Description
Two Step Flag	Indicates whether the clock is sending timestamp information using a FOLLOW_UP message (a 2-step handshake) or not (a 1-step handshake).
Clock Identity	Unique identifier for the clock.
Number of Ports	Number of ports assigned to the PTP clock.
Priority1	Priority1 preference value of the PTP clock; the priority1 clock is considered first during clock selection.
Priority2	Priority2 preference value of the PTP clock; the priority2 clock is considered after all other clock sources during clock selection.
Domain number	PTP clocking domain number.
Slave only	Specifies whether the PTP clock is a slave-only clock.
Clock quality	Summarizes the quality of the grandmaster clock.
Class	Displays the time and frequency traceability of the grandmaster clock
Accuracy	Field applies only when the Best Master Clock algorithm is in use; indicates the expected accuracy of the master clock were the grandmaster clock.
Offset (log variance)	Offset between the local clock and an ideal reference clock.
Steps removed	Number of hops from the local clock to the grandmaster clock.

Field	Description
Offset From Master	Time offset between the slave and master clocks.
Mean Path Delay	Mean propagation time between the master and slave clocks.

show ptp clock dataset parent

To display a description of the Precision Time Protocol parent clock, use the show ptp dataset parent command in privileged EXEC mode.

show ptp clock dataset parent

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

Examples

The following example shows the output generated by this command:

```
Device# show ptp clock dataset parent

CLOCK [Boundary Clock, domain 10]
  Parent Stats: No
  Observed Parent Offset (log variance): 0
  Observed Parent Clock Phase Change Rate: 58087144
  Grandmaster Clock:
    Identity: 0x3E:D3:D0:0:0:0:0:0
    Priority1: 42
    Priority2: 0
    Clock Quality:
      Class: 176
      Accuracy: Unknown
      Offset (log variance): 4252
```

The table below describes significant fields shown in the display.

Table 49: show ptp clock dataset parent Field Descriptions

Field	Description
Parent Stats	Indicates the availability of parent statistics.
Observed Parent Offset (log variance)	The offset between the parent clock and the local clock.

Field	Description
Observed Parent Clock Phase Change Rate	This value indicates the parent clock speed relative to the slave clock. A positive value indicates that the parent clock is faster than the slaveclock ; a negative value indicates that the parent clock is slower than the slave clock.
Grandmaster clock	Summarizes the Grandmaster clock configuration.
Identity	The hardware address of the Grandmaster clock.
Priority1	The priority1 preference value of the PTP clock; the priority1 clock is considered first during clock selection.
Priority2	The priority2 preference value of the PTP clock; the priority2 clock is considered after all other clock sources during clock selection.
Clock Quality	Summarizes the quality of the Grandmaster clock.
Class	Displays the time and frequency traceability of the grandmaster clock
Accuracy	This field applies only when the Best Master Clock algorithm is in use; indicates the expected accuracy of the master clock were the grandmaster clock.
Offset (log variance)	The offset between the Grandmaster clock and the parent clock.

show ptp clock dataset time-properties

To display a summary of time properties for a Precision Time Protocol clock, use the show ptp dataset time-properties command in privileged EXEC mode.

show ptp clock dataset time-properties

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

Examples

The following example shows the output generated by this command:

```
Device# show ptp clock dataset time-properties

CLOCK [Boundary Clock, domain 10]
  Current UTC Offset Valid: TRUE
  Current UTC Offset: 10752
  Leap 59: FALSE
  Leap 61: TRUE
  Time Traceable: TRUE
  Frequency Traceable: TRUE
  PTP Timescale: TRUE
  Time Source: Unknown
```

The table below describes significant fields shown in the display.

Table 50: show ptp clock dataset time-properties Field Descriptions

Field	Description
Current UTC Offset Valid	Indicates whether the current UTC offset is valid.
Current UTC Offset	Offset between the TAI and UTC in seconds.
Leap 59	Indicates whether the last minute of the current UTC day contains 59 seconds.

Field	Description
Leap 61	Indicates whether the last minute of the current UTC day contains 61 seconds.
Time Traceable	Indicates whether the value of the current UTC offset is traceable to a primary reference.
Frequency Traceable	Indicates whether the frequency used to determine the time scale is traceable to a primary reference.
PTP Timescale	Indicates whether the PTP grandmaster clock uses a PTP clock time scale.
Time Source	Time source used by the grandmaster clock.

show ptp clock running

To display a summary of the Precision Time Protocol clock status, use the show ptp clock running command in privileged EXEC mode.

show ptp clock running [domain]

Syntax Description

domain	Filters output by domain.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

Examples

The following example shows the output generated by this command:

```
Device# show ptp clock running

PTP Boundary Clock [Domain 1]
         State           Ports          Pkts sent      Pkts rcvd
         FREERUN         3              1090           1023
                                 PORT SUMMARY
Name                 Tx Mode      Role          Transport    State        Sessions
MASTER-1             unicast      master        Et0/0        -            5
MASTER-2             mcast        master        Et0/0        -            5
SLAVE                unicast      slave         Et0/0        -            5
                        PTP Ordinary Clock [Domain 2]
         State           Ports          Pkts sent      Pkts rcvd
         HOLDOVER        1              2090           2023
                                 PORT SUMMARY
Name                 Tx Mode      Role          Transport    State        Sessions
MASTER               unicast      master        Et0/0        -            5
```

The table below describes significant fields shown in the display.

Table 51: show ptp clock running Field Descriptions

Field	Description
State	State of the PTP clock.

Field	Description
Ports	Number of ports assigned to the PTP clock.
Pkts sent	Number of packets sent by the PTP clock.
Pkts rcvd	Number of packets received by the PTP clock.
Name	Name of the PTP clock port.
Tx Mode	Transmission mode of the PTP clock port (unicast or multicast).
Role	PTP role of the clock port (master or slave).
Transport	Physical port assigned to the clock port.
State	State of the clock port.
Sessions	Number of PTP sessions active on the clock port.

show ptp port dataset foreign-master

To display a summary of Precision Time Protocol foreign master records, use the **show ptp port dataset foreign-master-record** command in privileged EXEC mode.

show ptp port dataset foreign-master [domain]

Syntax Description

This command has no arguments or keywords.

domain	Filters output by domain.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

Examples

The following example shows the output generated by this command.

```
Device# show ptp dataset foreign-master

PTP FOREIGN MASTER RECORDS
Interface Vlan2
Number of foreign records 1, max foreign records 5
Best foreign record 0
RECORD #0
Foreign master port identity: clock id: 0x0:1E:4A:FF:FF:96:A2:A9
Foreign master port identity: port num: 1
Number of Announce messages: 8
Number of Current Announce messages: 6
Time stamps: 1233935406, 664274927
```

The table below describes significant fields shown in the display.

Table 52: show ptp port dataset foreign-master Field Descriptions

Field	Description
Interface	Currently foreign-master data is not displayed in the show command.
Number of foreign records	Number of foreign master records in device memory.
max foreign records	Maximum number of foreign records.

Field	Description
Best foreign record	Foreign record with the highest clock quality.
Foreign master port identity: clock id	Hardware address of the foreign master port.
Foreign master port identity: port number	Port number of the foreign master port.
Number of Announce messages	Number of Announce messages received from the foreign master clock.
Number of Current Announce messages	Number of current announcement messages.
Time stamps	Time stamps of current announcement messages.

show ptp port dataset port

To display a summary of Precision Time Protocol ports, use the **show ptp port dataset port** command in privileged EXEC mode.

show ptp dataset port

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.0(1)S	This command was introduced.

Usage Guidelines

Use this command to verify a PTP clocking configuration.

Examples

The following example shows the output generated by this command.

```
Device# show ptp port dataset port

PORT [MASTER]
  Clock Identity: 0x49:BD:D1:0:0:0:0:0
  Port Number: 0
  Port State: Unknown
  Min Delay Req Interval (log base 2): 42
  Peer Mean Path Delay: 648518346341351424
  Announce interval (log base 2): 0
  Announce Receipt Timeout: 2
  Sync Interval (log base 2): 0
  Delay Mechanism: End to End
  Peer Delay Request Interval (log base 2): 0
  PTP version: 2
```

The table below describes significant fields shown in the display.

Table 53: show ptp port dataset port Field Descriptions

Field	Description
Clock Identity	Unique identifier for the clock.
Port Number	Port number on the PTP node.
Port State	State of the PTP port.
Min Delay Req Interval (log base 2)	Time interval permitted between Delay_Req messages.

Field	Description
Peer Mean Path Delay	One way propagation delay on the local port.
Announce interval (log base 2)	Mean interval between PTP announcement messages.
Announce Receipt Timeout	Number of intervals before a PTP announcement times out.
Sync Interval (log base 2)	Mean interval between PTP sync messages.
Delay Mechanism	Mechanism used for measuring propagation delay.
Peer Delay Request Interval (log base 2)	Interval permitted between Peer Delay Request messages.
PTP version	PTP version in use.

shutdown (bridge-domain)

To change the administrative state of a bridge domain from in service to out of service, use the **shutdown** command in bridge-domain configuration mode. To change the administrative state of a bridge domain from out of service to in service, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Command Default

The bridge domain is in service.

Command Modes

Bridge-domain configuration (config-bdomain)

Command History

Release	Modification
Cisco IOS XE Release 3.2S	This command was introduced.

Usage Guidelines

Use the **shutdown** command to disable the Layer 2 multipoint bridging service associated with a bridge domain. When a bridge domain is shut down, the state of all service instances bound to it and the bridge domain's corresponding bridge domain interface (BDI) are also shut down.

Examples

The following example shows how to change the administrative state of bridge domain 5 from in service to out of service:

```
Router(config)# bridge-domain 5
Router(config-bdomain)# shutdown
```

snmp-server enable traps ethernet cfm alarm

To enable Ethernet connectivity fault management (CFM) fault alarms (traps), use the **snmp-server enable traps ethernet cfm alarm**command in global configuration mode. To disable fault alarms, use the **no** form of this command.

snmp-server enable traps ethernet cfm alarm

no snmp-server enable traps ethernet cfm alarm

Syntax Description

This command has no arguments or keywords.

Command Default

Alarms are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
12.2(54)SE	This command was integrated into Cisco IOS Release 12.2(54)SE.
15.1(1)S	This command was integrated into Cisco IOS Release 15.1(1)S.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

Use this command to turn on or turn off CFM fault alarms.

Examples

The following example shows how to enable CFM fault alarms:

```
Device(config)#
snmp-server enable traps ethernet cfm alarm
```

snmp-server enable traps ethernet cfm cc

To enable Simple Network Management Protocol (SNMP) trap generation for Ethernet connectivity fault management (CFM) continuity check events, use the **snmp-server enable traps ethernet cfm cc** command in global configuration mode. To disable SNMP trap generation for Ethernet CFM continuity check events, use the **no** form of this command.

snmp-server enable traps ethernet cfm cc [config] [cross-connect] [loop] [mep-down] [mep-up]

no snmp-server enable traps ethernet cfm cc [config] [cross-connect] [loop] [mep-down] [mep-up]

Syntax Description

config	(Optional) Generates a trap when a CFM misconfiguration exists in the network.
cross-connect	(Optional) Generates a trap when a cross-connected service exists in the network.
loop	(Optional) Generates a trap when a forwarding loop exists in the network.
mep-down	(Optional) Generates a trap when a device has lost connectivity with a remote MEP or when connectivity from a previously learned remote MEP is restored after interruption.
mep-up	(Optional) Generates a trap when a new remote maintenance endpoint (MEP) has been discovered and learned by the device or when a change occurs in the port state of a previously discovered remote MEP.

Command Default

When no options are configured, all continuity check traps are enabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2.

Release	Modification
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

The configuration error trap (cEtherCfmCcConfigError) is triggered when a device receives a CCM that has the same MPID as a locally configured MEP but a different source MAC Address than its own. The configuration error trap includes the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- The MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- MPID of local MEP that has the same ID as that received in the CCM.
- Name of the interface on which the MEP above is configured.
- MAC Address of the remote device sending the CCM.

The cross-connect service trap (cEtherCfmCcCrossconnect) is generated when a device receives a continuity check message (CCM) whose service ID is different from what is locally configured on the device for the given service VLAN (S-VLAN). This mismatch indicates that there could be a cross-connected service in the network. The trap includes the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- The MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- MPID of remote MEP causing the alarm to be raised.
- MAC address of remote MEP causing the alarm to be raised.
- Service ID reported by the remote MEP.

The loop trap (cEtherCfmCcLoop) is generated when a device receives a CCM that has the same source MAC Address and MPID as its own, thereby indicating that the device is receiving its own CCMs and that a forwarding loop exists in the network. The loop trap includes the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- The MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- MPID of the MEP originating the CCM.
- Name of the interface on which the MEP above is configured.

The mep-down trap (cEtherCfmCcMepDown) notifies the NMS that the device has lost connectivity with a remote MEP. This trap also serves as a clear for Loop, Config, Cross-Connect and Unknown-MEP events.

The mep-down trap is generated in the following cases:

- A valid CCM with a zero hold-time is received from a remote MEP, and the device either has a valid (non-expired) CCDB entry for that MEP or does not have any CCDB entry. In other words, the trap is not generated for an already expired CCDB entry. This trigger has the event code “lastGasp.”
- An entry for a remote MEP in the CCDB expires and is archived. This trigger has the event code “timeout.”
- A previous configuration error trap is cleared. This trigger has the event code “configClear.”
- A previous loop trap is cleared. This trigger has the event code “loopClear.”
- A previous Crossconnect trap is cleared. This trigger has the event code “xconnectClear.”
- A previous unknown trap is cleared. This trigger has the event code “unknownClear.”

The mep-down trap includes the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- The MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- A count of the local MEPs on the same domain and S-VLAN as the remote MEP that are affected by the event.
- A count of the different interfaces on which the local MEPs above are configured.
- MPID of the remote MEP that is being reported down.
- MAC address of the remote MEP that is being reported down.
- Event code indicating one of the following: lastGasp, timeout, configClear, loopClear, xconnectClear, unknownClear.

The mep-up trap (cEtherCfmCcMepUp) serves three functions. One function is to notify the network management system (NMS) that a new MEP has been discovered and learned by the device. The second function is that the trap notifies the NMS that there is a change in the port-state of a previously discovered remote MEP. The third is to notify the NMS when connectivity from a previously discovered MEP is restored after interruption.

Mep-up traps are suppressed while cross-check is operational because the cross-check traps more efficiently convey the status of the service.

The mep-up trap is generated in the following cases:

- A valid CCM with a non-zero hold-time is received from a remote MEP for the first time, and hence an entry is created for that MEP in the continuity check database (CCDB). This trigger has the event code “new.”
- A valid CCM with a non-zero hold-time is received from a remote MEP for which the device has an expired entry in the CCDB (that is, the device has an entry for that remote MEP in the archived DB). This trigger has the event code “returning.”
- A valid CCM with a non-zero hold-time is received from a remote MEP for which the device has a valid entry in the CCDB and the port-state indicated in the CCM is different from what is cached in the CCDB. This trigger has the event code “portState”

The mep-up trap includes the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- The MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- A count of the local MEPs on the same domain and S-VLAN as the remote MEP that are affected by the event.
- A count of the different interfaces on which the local MEPs above are configured.
- MPID of the remote MEP that is being reported up.
- MAC address of the remote MEP that is being reported up.
- Event code indicating one of the following: new MEP, returning MEP, or port-state change.
- Port state of remote MEP.

Examples

The following example shows how to enable SNMP trap generation for Ethernet CFM continuity checks when a new remote MEP is discovered and learned by the device:

```
Device(config)# snmp-server enable traps ethernet cfm cc mep-up
```

snmp-server enable traps ethernet cfm crosscheck

To enable Simple Network Management Protocol (SNMP) trap generation for Ethernet connectivity fault management (CFM) continuity check events, in relation to the cross-check operation between statically configured maintenance endpoints (MEPs) and those learned via continuity check messages (CCMs), use the **snmp-server enable traps ethernet cfm crosscheck** command in global configuration mode. To disable SNMP trap generation for these continuity check events, use the **no** form of this command.

snmp-server enable traps ethernet cfm crosscheck [mep-missing] [mep-unknown] [service-up]

no snmp-server enable traps ethernet cfm crosscheck [mep-missing] [mep-unknown] [service-up]

Syntax Description

mep-missing	(Optional) Generates a trap when the cross-check enable timer expires and no CCMs were received from an expected (configured) MEP. One trap is generated per remote MEP.
mep-unknown	(Optional) Generates a trap when an unexpected (unconfigured) MEP comes up. One trap is generated per remote MEP.
service-up	(Optional) Generates a trap when all remote MEPs belonging to a service instance come up.

Command Default

This command is disabled.

When no options are configured, all continuity check event traps are enabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SXI2	This command was integrated into Cisco IOS Release 12.2(33)SXI2.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

For this class of traps to function, cross-check must be enabled on the device. Otherwise, none of these traps will be generated, even if they are configured.

The MEP-missing trap (cEtherCfmXCheckMissing) notifies the network management system (NMS) that the device did not receive any CCMs from a remote MEP that it was expecting to be part of the service instance.

The MEP-missing trap is generated in the following case:

- After enabling cross-check (**ethernet cfm mep crosscheck enable**), the device waits for the cross-check-start timeout value specified (**ethernet cfm mep crosscheck enable-timeout**). When the timeout period has elapsed, the device will cross-check the list of remote MEPs it has learned via CCMs against the static list that has been configured (**mep crosscheck mpid vlan**). For each remote MEP that is configured in the static list and for which the device has not received a CCM, a mep-missing trap is generated. The MEP-missing trap has the following fields:
- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- MPID of the remote MEP that is being reported missing.
- MAC address of the remote MEP that is being reported missing.

The mep-unknown trap (cEtherCfmXCheckUnknown) notifies the NMS that the device received CCMs from a remote MEP that it was not expecting to be part of the service instance.

The mep-unknown trap is generated in the following case:

- After cross-check is in an operational state, the device dynamically examines the list of statically configured remote MEPs against what it learns from CCMs. This occurs after cross-check is enabled and the timer has expired. When the device receives a CCM with non-zero hold time from a remote MEP that does not exist in the static list, the device raises a mep-unknown trap.

The mep-unknown trap has the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.
- MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.
- MPID of the remote MEP that is being reported unknown.
- MAC address of the remote MEP that is being reported unknown.

The service-up trap (cEtherCfmXCheckServiceUp) notifies the NMS that the device received CCMs from all remote MEPs within a given service instance.

The service-up trap is generated in the following case:

- When the device receives CCMs from all remote statically configured MEPs before the expiration of the crosscheck enable-timeout period.

The service-up trap has the following fields:

- Service ID designating the customer service instance to which the event belongs, as configured on the device reporting the event.

- MAC address of the device reporting the event. This is typically the Bridge Brain MAC address.

Examples

The following example shows how to enable SNMP trap generation for Ethernet CFM continuity check events when an unexpected (unconfigured) MEP comes up:

```
Device (config)# snmp-server enable traps ethernet cfm crosscheck mep-unknown
```

Related Commands

Command	Description
ethernet cfm mep crosscheck enable	Enables cross checking between the list of configured remote MEPs of a domain and MEPs learned through CCMs.
mep crosscheck mpid vlan	Statically defines a remote MEP within a maintenance domain.

snmp-server enable traps ethernet evc

To enable Simple Network Management Protocol (SNMP) Ethernet virtual circuit (EVC) traps, use the **snmp-server enable traps ethernet evc**command in global configuration mode. To disable SNMP EVC traps, use the **no** form of this command.

snmp-server enable traps ethernet evc [create] [delete] [status]

no snmp-server enable traps ethernet evc

Syntax Description

create	(Optional) Enables SNMP EVC create traps.
delete	(Optional) Enables SNMP EVC delete traps.
status	(Optional) Enables SNMP EVC status traps.

Command Default

Trap notifications are not sent.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

Use this command to turn on or turn off SNMP EVC traps.

Examples

The following example shows how to enable SNMP Ethernet EVC traps to be created:

```
Device# configure terminal
Device(config)#
snmp-server enable traps ethernet evc create
```

Related Commands

snmp-server host traps eve	Enables EVC trap notifications to a specific SNMP host.

snmp-server enable traps ether-oam

To enable Ethernet Operations, Administration, and Maintenance (OAM) MIB traps, use the **snmp-server enable traps ether-oam**command in global configuration mode. To disable OAM MIB traps, use the **no** form of this command.

snmp-server enable traps ether-oam

no snmp-server enable traps ether-oam

Syntax Description

This command has no arguments or keywords.

Command Default

OAM traps are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

A trap will not be sent if a trap was sent within the last 1 second.

Examples

The following example shows how to enable OAM MIB traps:

```
Device# configure terminal
Device(config)# snmp-server enable traps ether-oam
```

snmp-server host traps evc

To enable Ethernet virtual circuit (EVC) trap notifications to a specific Simple Network Management Protocol (SNMP) host, use the **snmp-server host traps evc**command in global configuration mode. To disable EVC trap notifications to a specific host, use the **no** form of this command.

snmp-server host *ipaddr* **traps** *string* **evc**

no snmp-server host *ipaddr* **traps** *string*

Syntax Description

ipaddr	IPv4 or IPv6 address of the SNMP notification host.
string	SNMPv1 community string, SNMPv2c community string, or SNMPv3 username.

Command Default

EVC trap notifications are not sent to an SNMP host.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

Use this command to start or stop sending EVC traps to a specific SNMP host.

Examples

The following example shows how to enable EVC trap notifications to an SNMP host:

```
Device# configure terminal
Device(config)# snmp-server host 172.17.2.0 traps snmphost01 evc
```

Related Commands

snmp-server enable traps ethernet evc	Enables SNMP EVC traps.

source template (eoam)

To associate a template to an Ethernet operations, maintenance, and administration (OAM) interface, use the **source template (eoam)**command in interface configuration mode. To remove the source template association, use the **no** form of this command.

source template *template-name*

no source template *template-name*

Syntax Description

template-name	String that identifies the source template.

Command Default

No source template is configured.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.

Usage Guidelines

When this command is used, the interface inherits all the configurations in the template. A benefit of using a source template is that it helps reduce the overall configuration size by grouping repeating commands.

Examples

The following example shows how to create a source template named oam on OAM interface Ethernet 0/1:

```
Device(config)# interface ethernet 0/1
Device(config-if)# source
 template oam
```

Related Commands

template (eoam)	Configures a template for use on Ethernet OAM interfaces and places the device in configuration template mode.

status decoupled

To enable decoupled mode so that the state of the attachment circuits (ACs) on the user-facing provider edge (UPE) device is decoupled from the state of the pseudowire connections, use the **status decoupled** command in the appropriate configuration mode. To disable decoupled mode, use the **no** form of this command.

status decoupled

no status decoupled

Syntax Description

This command has no arguments or keywords.

Command Default

The default is coupled mode.

Command Modes

Interface configuration (config-if)

Pseudowire class configuration (config-pw-class)

Template configuration (config-template)

VFI configuration (config-vfi)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.
Cisco IOS XE Release 3.7S	The command was modified. This command was modified as part of the Multiprotocol Label Switching (MPLS)-based Layer 2 VPN (L2VPN) command modifications for cross-OS support. This command was made available in interface configuration and template configuration modes.
15.3(1)S	This command was integrated in Cisco IOS Release 15.3(1)S.

Usage Guidelines

Coupled and decoupled modes are defined as follows:

- Coupled Mode—When at least one AC in the virtual forwarding interface (VFI) changes state to Active, all pseudowires in the VFI advertise Active. When all ACs in the VFI change state to standby, all pseudowires in the VFI will advertise standby mode.
- Decoupled Mode—All the pseudowires in the VFI are always active, and the AC state is independent of the pseudowire state. The AC state can be enabled if the peer does not support pseudowire preferential forwarding (standby) circuit status. The lack of support for pseudowire preferential forwarding (standby) circuit status provides lower switchover time at the cost of extra flooding or multicast that affects the peer provider edge (PE) with standby ACs.

The multichassis Link Aggregation Control Protocol (mLACP) controls the state of the ACs.

Examples

The following example shows how to enable the decoupled mode in pseudowire class configuration mode:

```
Device(config)# pseudowire-class mpls-dhd
Device(config-pw-class)# encapsulation mpls
Device(config-pw-class)# status peer topology dual-homed
Device(config-pw-class)# status decoupled
```

The following example shows how to enable the decoupled mode in interface configuration mode:

```
Device(config)# interface pseudowire 100
Device(config-if)# encapsulation mpls
Device(config-if)# status peer topology dual-homed
Device(config-if)# status decoupled
```

The following example shows how to enable the decoupled mode in template configuration mode:

```
Device(config)# template type pseudowire template1
Device(config-template)# encapsulation mpls
Device(config-template)# status peer topology dual-homed
Device(config-template)# status decoupled
```

Related Commands

Command	Description
encapsulation (pseudowire)	Specifies an encapsulation type for tunneling Layer 2 traffic over a pseudowire.
l2 vfi manual	Enters VFI configuration mode and establishes a Layer 2 virtual forwarding interface between two separate networks.
pseudowire-class	Specifies the name of a Layer 2 pseudowire class and enters pseudowire class configuration mode.

status peer topology dual-homed

To enable the reflection of the attachment circuit status on both the primary and secondary pseudowire connections, use the **status peer topology dual-homed** command in the appropriate configuration mode. To disable the reflection status, use the **no** form of this command.

status peer topology dual-homed

no status peer topology dual-homed

Syntax Description

This command has no arguments or keywords.

Command Default

The reflection of the attachment circuit status on the primary and secondary pseudowire connections is disabled.

Command Modes

Interface configuration (config-if)

Pseudowire class configuration (config-pw-class)

Template configuration (config-template)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.
Cisco IOS XE Release 3.7S	This command was modified. This command was modified as part of the Multiprotocol Label Switching (MPLS)-based Layer 2 VPN (L2VPN) command modifications for cross-OS support. This command was made available in interface pseudowire configuration and template configuration modes.
15.3(1)S	This command was integrated in Cisco IOS Release 15.3(1)S.

Usage Guidelines

The **status peer topology dual-homed** command must be entered if the peer provider edge (PE) devices are connected to a dual-homed device.

Examples

The following example shows how to enter pseudowire class configuration mode and configure the status peer topology for dual-homed operation:

```
Device(config)# pseudowire-class mpls-dhd
Device(config-pw-class)# encapsulation mpls
Device(config-pw-class)# status peer topology dual-homed
```

The following example shows how to enter interface configuration mode and configure the status peer topology for dual-homed operation:

```
Device(config)# interface pseudowire 100
Device(config-if)# encapsulation mpls
Device(config-if)# status peer topology dual-homed
```

The following example shows how to enter template configuration mode and configure the status peer topology for dual-homed operation:

```
Device(config)# template type pseudowire template1
Device(config-template)# encapsulation mpls
Device(config-template)# status peer topology dual-homed
```

Related Commands

Command	Description
encapsulation (pseudowire)	Specifies an encapsulation type for tunneling Layer 2 traffic over a pseudowire.
pseudowire-class	Enters pseudowire-class configuration mode.

sync interval

To specify an interval for the device to exchange Precision Time Protocol synchronization messages, use the **sync interval** command in PTP port configuration mode. To disable a sync interval configuration, use the **no** form of this command.

sync interval *interval-value*

no sync interval *interval-value*

Syntax Description

interval-value	Value of the interval at which the device sends sync packets. The intervals are set using log base 2 values, as follows: • 4—1 packet every 16 seconds • 3—1 packet every 8 seconds • 2—1 packet every 4 seconds • 1—1 packet every 2 seconds • 0—1 packet every second • -1—1 packet every 1/2 second, or 2 packets per second • -2—1 packet every 1/4 second, or 4 packets per second • -3—1 packet every 1/8 second, or 8 packets per second • -4—1 packet every 1/16 seconds, or 16 packets per second • -5—1 packet every 1/32 seconds, or 32 packets per second • -6—1 packet every 1/64 seconds, or 64 packets per second The recommended value is -6.

Command Default

The default value is 1.

Command Modes

PTP port configuration (config-ptp-port)

Command History

Release	Modification
15.0(1)S	This command was introduced.

Examples

The following example shows how to configure the PTP sync interval:

```
Device> enable
Device# configure terminal
Device(config)# ptp clock ordinary domain 0
Device(config-ptp-clk)# clock-port slave slaveport
Device(config-ptp-port)# sync interval -4
Device(config-ptp-port)# end
```

Related Commands

Command	Description
clock-port	Specifies the mode of a PTP clock port.

template (eoam)

To configure a template for use on Ethernet operations, maintenance, and administration (OAM) interfaces and enter configuration template mode, use the **template (eoam)**command in global configuration mode. To remove the template, use the **no** form of this command.

template *template-name*

no template *template-name*

Syntax Description

template-name	String that identifies the template.

Command Default

No templates are configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(15)T	This command was integrated into Cisco IOS Release 12.4(15)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.

Usage Guidelines

This command groups parameters that can be applied (bound) to one or more interfaces that share the same OAM characteristics. A benefit of using the **template (eoam)**command is that it helps reduce the overall configuration size by grouping repeating commands and streamlines Ethernet OAM interface configuration.

More than one template can be configured but only one template can be associated with a single Ethernet OAM interface. Commands defined in a template may be overridden by explicitly configuring those commands on the interface in interface configuration mode.

Examples

The following example shows how to create an OAM template named oam and enter configuration template mode:

```
Device(config)# template oam
Device(config-template)#
```

Related Commands

source template (eoam)	Associates a template to an Ethernet OAM interface.

timer (Ethernet ring)

To set the time interval for the guard, hold-off, and Wait-to-Restore (WTR) timers for an Ethernet ring profile, use the **timer** command in Ethernet ring protection profile configuration mode. To change the time intervals, use the **no** form of this command.

timer {**guard** *seconds*| **hold-off** *seconds*| **wtr** *minutes*}

no timer {**guard**| **hold-off**| **wtr**}

Syntax Description

guard *seconds*	Configures the guard interval. The time interval ranges from 10 to 2000 seconds.
hold-off *seconds*	Configures the hold-off interval. The time interval ranges from 0 to 10 seconds.
wtr *minutes*	Configures the WTR interval. The time interval ranges from 1 to 12 minutes.

Command Default

The time intervals are not set.

Command Modes

Ethernet ring profile configuration (config-erp-profile)

Command History

Release	Modification
Cisco IOS XE Release 3.6S	This command was introduced.
15.2(4)S	This command was integrated into Cisco IOS Release 15.2(4)S.

Examples

The following is an example of the **timer** command used in an Ethernet ring configuration.

```
Device# configure
Device(config)# ethernet ring g8032 profile profile1
Device(config-erp-profile)# timer hold-off 5
```

tod

To configure the time of day message format used by the 1PPS interface, use the **tod** command in PTP clock port configuration mode. To remove a time of day configuration, use the **no** form of this command.

tod *slot*/*bay* {**iso8601**| **ubx**| **nmea**| **cisco**| **ntp**} [**delay** *delay-amount*]

no tod *slot*/*bay* {**iso8601**| **ubx**| **nmea**| **cisco**| **ntp**} [**delay** *delay-amount*]

Syntax Description

slot	Slot of the 1PPS interface.
bay	Bay of the 1PPS interface.
iso8601	Specifies ISO 8601 time of day format.
ubx	Specifies UBX time of day format.
nmea	Specifies NMEA time of day format.
cisco	Specifies Cisco time of day format.
ntp	Specifies NTP time of day format.
delay	(Optional) Specifies a delay between the 1PPS message and the time of day message.
delay-amount	Amount of delay between the 1PPS message and the time of day message, in milliseconds. The range is from 1 to 999.

Command Default

The time of day message format is not configured.

Command Modes

PTP clock port configuration (config-ptp-clk)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

This command applies only to platforms that have 1PPS ports.

Examples

The following example shows how to configure a time of day value:

```
Device> enable
Device# configure terminal
Device(config)# ptp clock ordinary domain 0
Device(config-ptp-clk)# tod 3/0 ntp
Device(config-ptp-clk)# end
```

This example sows the configuration of the time of (ToD) message format for a 1588V2 Master on a Cisco ASR 901 Series Aggregation Services Router:

```
Device> enable
Device# configure terminal
Device(config)# ptp clock ordinary domain 0
Device(config-ptp-clk)# tod 3/0 cisco
Device(config-ptp-clk)# input 1pps 3/3
Device(config-ptp-clk))# clock-port MASTER master
Device(config-ptp-clk)# transport ipv4 unicast interface Gi3/3/1 negotiation
Device(config-ptp-clk)# end
```

Related Commands

Command	Description
input	Enables PTP input clocking using the 1.544 Mhz, 2.048 Mhz, or 10 Mhz timing interface or phase using the 1PPS or RS-422 interface.
output	Enables output of time of day messages using the 1PPS interface.

traceroute ethernet

To send Ethernet connectivity fault management (CFM) traceroute messages to a destination maintenance endpoint (MEP), use the **traceroute ethernet** command in privileged EXEC mode. This command does not have a **no** form.

traceroute ethernet {*mac-address*| **mpid** *mpid*} **domain** *domain-name* {**port**| **service**| *service-instance identifier*| **icc** *icc-code meg-code*| **number** *maintenance-association-number*} [**cos** *value*] [**fdb-only**| **source** *mpid*]

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traceroute ethernet {*mac-address*| **mpid** *mpid*} **domain** *domain-name* **service**{*short-ma-name*| **icc** *icc-code meg-id*| **number** *ma-number*| **vlan-id** *vlan-id*| **vpn-id** *vpn-id*} [**cos** *value*] [**fdb-only**| **source** *mpid*]

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traceroute ethernet *mac-address***domain** *domain-name*{**vlan** *vlan-id*| **level** *level-id*}

Syntax Description

mac-address	MAC address of a remote MEP in the format abcd.abcd.abcd.
mpid	Specifies a destination MEP.
mpid	Integer from 1 to 8191 that identifies the MEP.
domain *domain-name*	Specifies the domain where the destination MEP resides. Maximum: 154 characters.
service	Specifies the maintenance association (MA) within the domain.
short-ma-name	The short-name identifier for the MA service. The domain name and short MA name combined cannot exceed 48 bytes.
icc *icc-code meg-id*	ITU Carrier Code (ICC) (maximum: 6 characters) and unique maintenance entity group (MEG) ID Code (UMC) (maximum: 12 characters).
number *ma-number*	The MA number. Range: 0 to 65535.
vlan-id *vlan-id*	The primary VLAN ID. Range: 1 to 4094.
vpn-id *vpn-id*	The VPN ID. Range: 1 to 32767.
cos	(Optional) Specifies a class of service (CoS).

value	(Optional) Integer from 0 to 7 that identifies the CoS.
fdb-only	(Optional) Specifies the forwarding database (FDB) table.
source	(Optional) Specifies a source MEP.
vlan	Specifies a VLAN.
vlan-id	Integer from 1 to 4094 that identifies the VLAN.
level	Indicates a maintenance level is specified.
level-id	Integer from 0 to 7 that identifies the maintenance level.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SXI2	This command was introduced.
12.2(33)SRE	This command was modified. Support for the **evc** keyword was added in Cisco IOS Release 12.2(33)SRE.
15.2(1)S	This command was integrated into Cisco IOS Release 15.2(1)S. The **service icc** keywords were added to provide support for the ICC-based MEG identifier.
Cisco IOS XE Release3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
Cisco IOS XE Release3.7S	This command was modified. The **port** and **evc** keywords were deprecated and options to specify the MA service via the **service** keyword were introduced.
15.1(2)SNG	This command was implemented on the Cisco ASR 901 Series Aggregation Services Router.

Usage Guidelines

This command does not have a **no** form.

If a CoS is not configured, the default is the highest priority allowed for the egress interface.

FDB is another term for the Layer 2 forwarding table. When the **fdb-only** option is configured, only MAC addresses learned in a bridge's FDB (not information saved in the maintenance intermediate point [MIP] continuity check database [CCDB]) are used to determine the egress port.

The destination can be either a MEP or a MIP. If the destination is a MIP, the FDB must have a MAC address entry for that MIP; that is, the FDB has learned the MIP's MAC address via Linktrace responses.

For a bridge domain-VLAN service, the VLAN ID can be used to initiate traceroute.

On the Cisco Catalyst 6500 series switch, an FDB configuration works only if the origination MEP is a down MEP. Also, for a MEP to clear the Alarm Indication Signal (AIS) defect condition, there should be no corresponding entry in the error database. For example, if you change the remote MEP from an UP MEP to a DOWN MEP, the local entry times out and enters the AIS defect condition. The database starts receiving a new continuity check (CC) entry based on the newly configured DOWN MEP, but the local AIS defect is not yet cleared. It remains in the AIS state until either the archive hold time expires or you issue the **clear ethernet cfm errors** command.

Examples

The following is sample output from the **traceroute ethernet** command:

```
Device# traceroute ethernet mpid 401 domain Domain_L5 service zzz

Type escape sequence to abort. TTL 64. Linktrace Timeout is 5 seconds
Tracing the route to aabb.cc03.bb99 on Domain Domain_L5, Level 5, service zzz
Traceroute sent via Ethernet0/0.9, path found via MPDB
B = Intermediary Bridge
! = Target Destination
* = Per hop Timeout
-------------------------------------------------------------------------------
                            MAC      Ingress      Ingr Action  Relay Action
  Hops   Host             Forwarded   Egress       Egr Action   Previous Hop
-------------------------------------------------------------------------------
! 1                    aabb.cc03.bb99                          RlyHit:MEP
                      Not Forwarded                           aabb.cc03.b999
```

The following example shows the output of the **traceroute ethernet** command for a Cisco ASR 901 Series Aggregation Services Router:

```
Device# traceroute ethernet 10.10.10.10 domain Domain_L5 vlan 9

Type escape sequence to abort. TTL 64. Linktrace Timeout is 5 seconds
Tracing the route to aabb.cc03.bb99 on Domain Domain_L5, Level 5, vlan 9
Traceroute sent via Ethernet0/0.9, path found via MPDB
B = Intermediary Bridge
! = Target Destination
* = Per hop Timeout
-------------------------------------------------------------------------------
                            MAC      Ingress     Ingr Action  Relay Action
  Hops   Host             Forwarded   Egress      Egr Action   Previous Hop
-------------------------------------------------------------------------------
! 1                    aabb.cc03.bb99                          RlyHit:MEP
                      Not Forwarded                           aabb.cc03.b999
```

The following table describes the significant fields shown in the display.

Table 54: traceroute ethernet Field Descriptions

Field	Description
Hops	Number of hops of the traceroute
Host	Name of the device
MAC	Bridge Brain MAC address of the device
Ingress	Receiving port

Field	Description
Ingr Action	Action on the ingress port: IngOk, IngFilter, IngBlocked
Relay Action	Type of relay action performed: RlyNone, RlyUnknown, RlyFDB, RlyCCDB, RlyFiltered
Forwarded	Traceroute forwarded or not forwarded
Egress	Sending port
Egr Action	Action on the egress port: EgrNone, EgrTTL, EgrDown, EgrBlocked, EgrOk, EgrGVRP, EgrDomainBoundary, EgrFiltered
Previous Hop	MAC address of the neighboring device

Related Commands

Command	Description
clear ethernet cfm errors	Removes continuity check error conditions from the error database.
clear ethernet cfm traceroute-cache	Removes the contents of the traceroute cache.
ethernet cfm traceroute-cache	Enables caching of Ethernet CFM data learned through traceroute messages.
show ethernet traceroute-cache	Displays the contents of the traceroute cache.

traceroute ethernet evc

To send Ethernet connectivity fault management (CFM) traceroute messages to a destination MAC address, use the **traceroute ethernet evc**command in privileged EXEC mode.

traceroute ethernet *mac-address* {**domain** *domain-name*{**evc** *evc-name*{**cos| fdb-only| source**}**port | vlan**}}

Syntax Description

mac-address	MAC address of a remote maintenance endpoint (MEP) in the format abcd.abcd.abcd.
domain	Identifies the domain in which the destination MEP resides.
domain-name	String of a maximum of 154 characters that identifies the domain.
evc	Specifies the Ethernet virtual circuit (EVC) name.
evc-name	String that identifies the EVC name.
cos	Specifies the class-of-service (CoS).
fdb-only	Specifies the use of FDB table only.
source	Specifies the source maintenance point indentifier (MPI).
port	Specifies the Down service with no VLAN association .
vlan	Specifies the VLAN ID.

Command Default

Sends an Ethernet CFM traceroute message to a specified MAC address.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRD	This command was introduced.
12.2(50)SY	This command was integrated into Cisco IOS Release 12.2(50)SY.

Usage Guidelines

Traceroute messages can be issued only to MEPs. Before you issue the **traceroute ethernet evc** command, you should have an MEP configured for the same EVC and domain.

Examples

The following example shows how to send an Ethernet CFM traceroute message to MAC address aabb.cc00.1010 in maintenance level 4 on evc_100:

```
Router# traceroute ethernet aabb.cc00.1010 level 4 evc evc_100
Type escape sequence to abort. TTL 255. Per-Hop Timeout is 10 seconds
Tracing the route to aabb.cc00.1010 on Domain PROVIDER, Level 4, evc evc_100
Traceroute sent via Ethernet6/0
B = Intermediary Bridge
! = Target Destination
* = Per Hop Timeout
-------------------------------------------------------------------------------
                            MAC      Ingress      Ingress Action  Relay Action
  Hops   Host             Forwarded   Egress       Egress Action   Next Hop
-------------------------------------------------------------------------------
B 1   PE               aabb.cc00.1011 Et6/0        IngOk        RlyCCDB
                       Forwarded      Et1/0.100    EgrOK        CE1
! 2   CE1              aabb.cc00.1010 Et1/0.100    IngOk        RlyNone
                       Not Forwarded
```

Related Commands

Command	Description
clear ethernet cfm traceroute-cache	Removes the contents of the traceroute cache.
ethernet cfm traceroute-cache	Enables caching of Ethernet CFM data learned through traceroute messages.
show ethernet traceroute-cache	Displays the contents of the traceroute cache.
traceroute-ethernet vlan	Sends Ethernet CFM traceroute messages to a destination MAC address.

traceroute ethernet vlan

To send Ethernet connectivity fault management (CFM) traceroute messages to a destination MAC address, use the **traceroute ethernet vlan** command in privileged EXEC mode.

traceroute ethernet *mac-address* {**domain** *domain-name*| **level** *level-id*} **vlan** *vlan-id*

Syntax Description

mac-address	MAC address of a remote MEP in the format abcd.abcd.abcd.
domain	Identifies the domain in which the destination MEP resides.
domain-name	String of a maximum of 154 characters that identifies the domain.
level	Indicates the maintenance level where the device with the specified MAC address is located.
level-id	Integer from 0 to 7 that identifies the maintenance level.
vlan-id	Integer from 1 to 4094 that identifies the VLAN.

Command Default

Sends an Ethernet CFM traceroute message to a specified MAC address.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRA	This command was introduced.
12.4(11)T	This command was integrated into Cisco IOS Release 12.4(11)T.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 3.5S	This command was integrated into Cisco IOS XE Release 3.5S.
15.3(1)S	This command was integrated into Cisco IOS Release 15.3(1)S.

Usage Guidelines

Traceroute messages can be issued only to maintenance endpoints (MEPs). Before you issue the **traceroute ethernet vlan** command, you should have a MEP configured for the same VLAN and domain.

Examples

The following example shows how to send an Ethernet CFM traceroute message to MAC address bc12.cc12.dc12 in maintenance level 3, VLAN ID 2550:

```
Device# traceroute ethernet bc12.cc12.dc12 level 3 vlan 2550

Type escape sequence to abort. TTL 255. Per-Hop Timeout is 10 seconds
Tracing the route to aabb.cc00.0400 on Domain DOMAIN_OPERATOR_L5_1, Level 5, vlan 7
Traceroute sent via Ethernet1/0.6

------------------------------------------------------------------------------
                          MAC      Ingress Ingress Action    Relay Action
  Hops   Host           Forwarded   Egress  Egress Action     Next Hop
------------------------------------------------------------------------------
B 1   denver          aabb.cc00.0200                         RlyCCDB
                      Forwarded      Et0/0   EgrOK             columbus
! 2   boston          aabb.cc00.0400                         RlyNone
                      Not Forwarded
```

Related Commands

Command	Description
clear ethernet cfm traceroute-cache	Removes the contents of the traceroute cache.
ethernet cfm traceroute-cache	Enables caching of Ethernet CFM data learned through traceroute messages.
show ethernet traceroute-cache	Displays the contents of the traceroute cache.

transport ipv4 (PTP)

To specify the IP version, transmission mode, and interface that a Precision Time Protocol clock port uses to exchange timing packets, use the **transport ipv4** command in PTP clock port configuration mode. To remove a transport configuration, use the **no** form of this command.

transport ipv4 {**unicast**| **multicast**| **multicast-mix**} **interface** *interface-type interface-number* **[negotiation]**

no transport ipv4 {**unicast**| **multicast**| **multicast-mix**} **interface** *interface-type interface-number* **[negotiation]**

Syntax Description

unicast	Configures the clock port to exchange timing packets in unicast mode.
multicast	Configures the clock port to exchange timing packets in multicast mode.
multicast-mix	Configures the clock port to exchange timing packets in multicast-unicast communication mode. In multicast-unicast mode, the clock port sends initial Announce and Sync messages as multicast; if a slave device responds with a unicast message, the clock port sends the Delay-Resp message as unicast.
interface	Specifies an interface on the device.
interface-type	The type of the interface.
interface-number	The number of the interface.
negotiation	(Optional) Enables dynamic discovery of slave devices and their preferred format for sync interval and announce interval messages.

Command Default

The IP version, transmission mode, and interface are not specified for exchanging timing packets.

Command Modes

PTP clock port configuration (config-ptp-clk)

Command History

Release	Modification
15.0(1)S	This command was introduced.
15.1(2)SNG	This command was implemented on Cisco ASR 901 Series Aggregation Services Routers.

Usage Guidelines

You can configure different transport values for each PTP clock port.

Examples

The following example shows how to use the **transportipv4** command:

```
Device> enable
Device# configure terminal
Device(config)# ptp clock ordinary domain 0
Device(config-ptp-clk)# clock-port masterport master
Device(config-ptp-clk)# transport ipv4 unicast interface top5/2/2
Device(config-ptp-clk)# end
```

Related Commands

Command	Description
clock-port	Specifies the mode of a PTP clock port.

uni count

To set the user-network interface (UNI) count for an Ethernet virtual connection (EVC), use the **uni count** command inEVC configuration mode. To return to the default setting, use the **no** form of this command.

uni count *value* **[multipoint]**

no uni count

Syntax Description

value	Integer in the range of 2 to 1024 that is the number of UNIs in the EVC. The default is 2.
multipoint	(Optional) Indicates point-to-multipoint service. This option is available only with a uni count value of 2.

Command Default

The UNI count defaults to 2 and the service defaults to point-to-point service.

Command Modes

EVC configuration (config-evc)

Command History

Release	Modification
12.2(25)SEG	This command was introduced.
12.2(33)SRB	This command was implemented on the Cisco 7600 series routers.
Cisco IOS XE Release 3.8S	This command was integrated into Cisco IOS XE Release 3.8S.

Usage Guidelines

The UNI count determines the type of service in the EVC.

- A UNI count value of 1 or 2--The service defaults to point-to-point service.
- A UNI value of 2--You can leave the service at the default or you can configure point-to-multipoint service by entering the **multipoint** keyword.
- A UNI value of 3 or greater--The service is point-to-multipoint.

You should know the correct number of maintenance end points (MEPs) in the domain. If you enter a UNI count value greater than the number of endpoints, the UNI status shows as partially active even if all endpoints are up. If you enter a UNI count less than the number of endpoints, UNI status shows as active, even if all endpoints are not up.

Caution Configuring a UNI count does not prevent you from configuring more endpoints than the configured number of UNIs. For example, if you configure a UNI count of 5, but you create 10 MEPs, any 5 MEPs in the domain can go down without the status changing to partially active.

Examples

The following example shows how to set a UNI count of 2 with point-to-multipoint service:

```
Device(config)# ethernet evc test1
Device(config-evc)# uni count 2 multipoint
```

Related Commands

Command	Description
ethernet evc	Defines an EVC and enters EVC configuration mode.

weight (srvs instance)

To assign a weight to an Ethernet service instance, use the **weight**command in service instance configuration mode. To remove the weight assignment, use the **no** form of this command.

weight *weight*

no weight

Syntax Description

weight	Integer from 1 to 10000 that is the weight value. The default is 1.

Command Default

If a specific weight is not configured, the Ethernet service instance inherits the default weight of 1.

Command Modes

Service instance configuration (config-if-srv)

Command History

Release	Modification
15.0(1)S	This command was introduced.

Usage Guidelines

Performing this command more than once on the same Ethernet service instance overwrites the previously configured weight. To allow for out-of-order configuration, weights may be configured on Ethernet service instances before weighted load balancing is configured on the port channel.

The weight chosen for an Ethernet service instance should be based on the expected amount of traffic to egress the service instance relative to other Ethernet service instances. For example, an Ethernet service instance configured with a weight of 8 is expected to transmit twice the traffic of an Ethernet service instance configured with a weight of 4. The configured weights allow the load-balancing algorithm to more evenly distribute the service instances across the available member links. The **weight** command is optional and if it is not configured, the Ethernet service instance inherits the default weight.

Examples

The following example shows how to assign a weight of 250 to Ethernet service instance 100:

```
Router(config)# interface port-channel10
Router(config-if)# port-channel load-balance weighted link all
Router(config-if)# service instance 100 ethernet
Router(config-if-srv)# weight 250
```

Related Commands

Command	Description
port-channel load-balance (interface)	Configures a member link for load balancing, a default Ethernet service instance weight, or weighted load balancing on port-channel member links.