

# Contents

CFD commands.....	1
cfd ais enable.....	1
cfd ais level.....	1
cfd ais period.....	2
cfd ais-track link-status global.....	3
cfd ais-track link-status level.....	3
cfd ais-track link-status period.....	4
cfd ais-track link-status vlan.....	5
cfd cc enable.....	6
cfd cc interval.....	7
cfd dm one-way.....	8
cfd dm two-way.....	8
cfd enable.....	10
cfd linktrace.....	10
cfd linktrace auto-detection.....	11
cfd loopback.....	12
cfd md.....	13
cfd mep.....	14
cfd meplist.....	15
cfd mip-rule.....	16
cfd service-instance.....	17
cfd slm.....	18
cfd tst.....	19
display cfd ais.....	20
display cfd ais-track link-status.....	22
display cfd dm one-way history.....	23
display cfd linktrace-reply.....	25
display cfd linktrace-reply auto-detection.....	26
display cfd md.....	27
display cfd mep.....	28
display cfd meplist.....	31
display cfd mp.....	31
display cfd remote-mep.....	32
display cfd service-instance.....	33
display cfd status.....	35
display cfd tst.....	35
reset cfd dm one-way history.....	36
reset cfd tst.....	37

# CFD commands

## cfid ais enable

Use `cfid ais enable` to enable AIS.

Use `undo cfid ais enable` to disable AIS.

### Syntax

```
cfid ais enable
undo cfid ais enable
```

### Default

AIS is disabled.

### Views

System view

### Predefined user roles

network-admin

### Examples

```
# Enable AIS.
<Sysname> system-view
[Sysname] cfid ais enable
```

### Related commands

```
cfid ais level
cfid ais period
```

## cfid ais level

Use `cfid ais level` to configure the AIS frame transmission level.

Use `undo cfid ais level` to remove the AIS frame transmission level.

### Syntax

```
cfid ais level level-value service-instance instance-id
undo cfid ais level level-value service-instance instance-id
```

### Default

The AIS frame transmission level is not configured.

### Views

System view

### Predefined user roles

network-admin

### Parameters

**level** *level-value*: Specifies the AIS frame transmission level in the range of 1 to 7.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

## Usage guidelines

If no AIS frame transmission level is configured for a service instance, the MEPs in the service instance cannot send AIS frames.

The AIS frame transmission level must be higher than the MD level of the service instance.

## Examples

```
# Configure the AIS frame transmission level as 3 in service instance 1.  
<Sysname> system-view  
[Sysname] cfd ais level 3 service-instance 1
```

## Related commands

```
cfd ais enable  
cfd ais period
```

# cfd ais period

Use **cfd ais period** to configure the AIS frame transmission period.

Use **undo cfd ais period** to remove the AIS frame transmission period.

## Syntax

```
cfd ais period period-value service-instance instance-id  
undo cfd ais period period-value service-instance instance-id
```

## Default

The AIS frame transmission period is 1 second.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**period** *period-value*: Specifies the AIS frame transmission period in the range of 1 to 60 seconds.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

## Examples

```
# Configure the AIS frame transmission period as 60 seconds in service instance 1.  
<Sysname> system-view  
[Sysname] cfd ais period 60 service-instance 1
```

## Related commands

```
cfd ais enable  
cfd ais level
```

## cfid ais-track link-status global

Use `cfid ais-track link-status global` to enable port status-AIS collaboration.

Use `undo cfid ais-track link-status global` to disable port status-AIS collaboration.

### Syntax

```
cfid ais-track link-status global
undo cfid ais-track link-status global
```

### Default

Port status-AIS collaboration is disabled.

### Views

System view

### Predefined user roles

network-admin

### Examples

```
# Enable port status-AIS collaboration.
<Sysname> system-view
[Sysname] cfid ais-track link-status global
```

### Related commands

```
cfid ais-track link-status level
cfid ais-track link-status period
cfid ais-track link-status vlan
```

## cfid ais-track link-status level

Use `cfid ais-track link-status level` to configure the EAIS frame transmission level.

Use `undo cfid ais-track link-status level` to restore the default.

### Syntax

```
cfid ais-track link-status level level-value
undo cfid ais-track link-status level
```

### Default

The EAIS frame transmission level is not configured.

### Views

Layer 2 Ethernet interface view  
Layer 2 aggregate interface view

### Predefined user roles

network-admin

### Parameters

**level** *level-value*: Specifies the EAIS frame transmission level in the range of 0 to 7.

## Usage guidelines

If no EAIS frame transmission level is configured on a port, the port cannot send EAIS frames.

Follow these guidelines when you use the command:

- Configurations in Ethernet interface view take effect only on the current interface.
- Configurations in aggregate interface view take effect only on the current aggregate interface.
- Configurations on a member port take effect only when the member port leaves the aggregation group.

## Examples

```
# Configure the EAIS frame transmission level as 3 on Ten-GigabitEthernet 1/0/1.
```

```
<Sysname> system-view
```

```
[Sysname] interface ten-gigabitethernet 1/0/1
```

```
[Sysname-Ten-GigabitEthernet1/0/1] cfd ais-track link-status level 3
```

## Related commands

```
cfd ais-track link-status global
```

```
cfd ais-track link-status period
```

```
cfd ais-track link-status vlan
```

# cfd ais-track link-status period

Use `cfd ais-track link-status period` to configure the EAIS frame transmission period.

Use `undo cfd ais-track link-status period` to restore the default.

## Syntax

```
cfd ais-track link-status period period-value
```

```
undo cfd ais-track link-status period
```

## Default

The EAIS frame transmission period is not configured.

## Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

## Predefined user roles

network-admin

## Parameters

**period** *period-value*: Specifies the EAIS frame transmission period in the range of 1 to 60 seconds.

## Usage guidelines

If no EAIS frame transmission period is configured on a port, the port cannot send EAIS frames.

Follow these guidelines when you use the command:

- Configurations in Ethernet interface view take effect only on the current interface.
- Configurations in aggregate interface view take effect only on the current aggregate interface.
- Configurations on a member port take effect only when the member port leaves the aggregation group.

## Examples

```
# Configure the EAIS frame transmission period as 60 seconds on Ten-GigabitEthernet 1/0/1.
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] cfd ais-track link-status period 60
```

## Related commands

```
cfd ais-track link-status global
cfd ais-track link-status level
cfd ais-track link-status vlan
```

## cfd ais-track link-status vlan

Use `cfd ais-track link-status vlan` to specify the VLANs where the EAIS frames can be transmitted.

Use `undo cfd ais-track link-status vlan` to remove the VLANs where the EAIS frames can be transmitted.

## Syntax

```
cfd ais-track link-status vlan vlan-list
undo cfd ais-track link-status vlan vlan-list
```

## Default

The EAIS frames can be transmitted only within the default VLAN of the port.

## Views

Layer 2 Ethernet interface view  
Layer 2 aggregate interface view

## Predefined user roles

network-admin

## Parameters

**vlan** *vlan-list*: Specifies the VLANs where the EAIS frames can be transmitted. The *vlan-list* argument specifies a space-separated list of up to 10 VLAN items. Each item specifies a VLAN ID or a range of VLAN IDs in the form of *vlan-id* [ **to** *vlan-id* ]. The value range for VLAN IDs is 1 to 4094.

## Usage guidelines

The EAIS frames are transmitted within the intersection of the VLANs specified with this command and the existing VLANs on the device.

If the command is executed multiple times, the combination of the VLANs specified in each command takes effect.

Follow these guidelines when you use the command:

- Configurations in Ethernet interface view take effect only on the current interface.
- Configurations in aggregate interface view take effect only on the current aggregate interface.
- Configurations on a member port take effect only when the member port leaves the aggregation group.

## Examples

# On port Ten-GigabitEthernet 1/0/1, specify VLANs 100 through 200 as the VLANs where the EAIS frames can be transmitted.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] cfd ais-track link-status vlan 100 to 200
```

## Related commands

```
cfd ais-track link-status global
cfd ais-track link-status level
cfd ais-track link-status period
```

## cfd cc enable

Use `cfd cc enable` to enable CCM sending on a specified MEP.

Use `undo cfd cc enable` to disable CCM sending on a specified MEP.

## Syntax

```
cfd cc service-instance instance-id mep mep-id enable
undo cfd cc service-instance instance-id mep mep-id enable
```

## Default

The CCM sending feature is disabled.

## Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191.

## Usage guidelines

Follow these guidelines when you use the command:

- Configurations in Ethernet interface view take effect only on the current interface.
- Configurations in aggregate interface view take effect only on the current aggregate interface.
- If the MEP belongs to an MA that does not carry the VLAN attribute, configurations on a member port of an aggregation group view take effect only on the current member port.
- If the MEP belongs to an MA that carries the VLAN attribute, configurations on a member port of an aggregation group take effect only when the member port leaves the aggregation group.

## Examples

# On port Ten-GigabitEthernet 1/0/1, enable CCM sending on MEP 3 in service instance 5.

```
<Sysname> system-view
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] cfd cc service-instance 5 mep 3 enable
```

## Related commands

`cfld cc interval`

# cfld cc interval

Use `cfld cc interval` to set the value of the interval field in the CCM messages.

Use `undo cfld cc interval` to remove the value of the interval field in the CCM messages.

## Syntax

```
cfld cc interval interval-value service-instance instance-id  
undo cfld cc interval [ interval-value ] service-instance instance-id
```

## Default

The value of this field is 4 for all CCM messages sent.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**interval** *interval-value*: Specifies the value of the interval field in CCM messages. The value range for the interval field is 1 to 7. If you set the value to 1 or 2, the continuity check might work incorrectly due to hardware restrictions.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

## Usage guidelines

When setting the CCM interval, use the settings described in [Table 1](#).

**Table 1 CCM interval field encoding**

CCM interval field	Transmission interval	Maximum CCM lifetime
1	10/3 milliseconds	35/3 milliseconds
2	10 milliseconds	35 milliseconds
3	100 milliseconds	350 milliseconds
4	1 second	3.5 seconds
5	10 seconds	35 seconds
6	60 seconds	210 seconds
7	600 seconds	2100 seconds

## Examples

# Set the value of the interval field to 3 in CCM messages sent by MEPs in service instance 2.

```
<Sysname> system-view
```

```
[Sysname] cfld cc interval 3 service-instance 2
```

## Related commands

`cfld cc enable`

## cfid dm one-way

Use `cfid dm one-way` to enable one-way delay measurement (DM).

### Syntax

```
cfid dm one-way service-instance instance-id mep mep-id { target-mac mac-address | target-mep target-mep-id } [ number number ]
```

### Views

Any view

### Predefined user roles

network-admin

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the target MEP by its MAC address in the format of H-H-H.

**target-mep** *target-mep-id*: Specifies the target MEP by its ID in the range of 1 to 8191.

**number** *number*: Specifies the number of 1DM frames sent. The value range for the *number* argument is 2 to 10, and the default is 5.

### Usage guidelines

The one-way DM function measures the one-way frame delay between the source and target MEPs by using 1DM frames.

To view the one-way delay test result, use the `display cfid dm one-way history` command on the target MEP.

### Examples

```
# Enable the one-way DM function to test the one-way frame delay from source MEP 1101 to target MEP 1003 in service instance 1.
```

```
<Sysname> cfid dm one-way service-instance 1 mep 1101 target-mep 1003  
5 1DMs have been sent. Please check the result on the remote device.
```

### Related commands

```
display cfid dm one-way history
```

```
reset cfid dm one-way history
```

## cfid dm two-way

Use `cfid dm two-way` to enable two-way DM.

### Syntax

```
cfid dm two-way service-instance instance-id mep mep-id { target-mac mac-address | target-mep target-mep-id } [ dot1p dot1p-value ] [ number number ] [ interval interval ]
```

### Views

Any view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the target MEP by its MAC address, which is in the format of H-H-H.

**target-mep** *target-mep-id*: Specifies the target MEP by its ID in the range of 1 to 8191.

**dot1p** *dot1p-value*: Specifies an 802.1p priority for DMM frames. The value range for the *dot1p-value* argument is 0 to 7. The default value is 7.

**number** *number*: Specifies the number of DMM frames to be sent. The value range for the *number* argument is 2 to 10, and the default is 5.

**interval** *interval*: Specifies the DMM frame sending interval, in seconds. The value takes 1 or 10. The default value is 1.

## Usage guidelines

The two-way DM function measures the two-way frame delay between the source and target MEPs by using DMM frames and DMR frames.

## Examples

```
# Enable the two-way DM function to test the two-way frame delay between source MEP 1101 and target MEP 2001 in service instance 1.
```

```
<Sysname> cfd dm two-way service-instance 1 mep 1101 target-mep 2001
```

```
Frame delay:
```

```
Reply from 0010-fc00-6512: 2406us
```

```
Reply from 0010-fc00-6512: 2215us
```

```
Reply from 0010-fc00-6512: 2112us
```

```
Reply from 0010-fc00-6512: 1812us
```

```
Reply from 0010-fc00-6512: 2249us
```

```
Average: 2158us
```

```
Sent DMMs: 5          Received: 5          Lost: 0
```

```
Frame delay variation: 191us 103us 300us 437us
```

```
Average: 257us
```

**Table 2 Command output**

Field	Description
Reply from 0010-fc00-6512	Delay of the DMR frames returned from the MEP with MAC address 0010-FC00-6512.
Average	Average frame delay or average frame delay variation.
Sent DMMs	Number of sent DMM frames .
Received	Number of received DMR frames.
Lost	Number of lost DMM frames.

## cfid enable

Use `cfid enable` to enable CFD.

Use `undo cfid enable` to disable CFD.

### Syntax

```
cfid enable
undo cfid enable
```

### Default

CFD is disabled.

### Views

System view

### Predefined user roles

network-admin

### Examples

```
# Enable CFD.
<Sysname> system-view
[Sysname] cfid enable
```

## cfid linktrace

Use `cfid linktrace` to identify the path between the source MEP and target MP.

### Syntax

```
cfid linktrace service-instance instance-id mep mep-id { target-mac
mac-address | target-mep target-mep-id } [ ttl ttl-value ] [ hw-only ]
```

### Views

Any view

### Predefined user roles

network-admin

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the destination MAC address, in the format of H-H-H.

**target-map** *target-mep-id*: Specifies the destination MEP by its ID in the range of 1 to 8191.

**ttl** *ttl-value*: Specifies the TTL value in the range of 1 to 255. The default value is 64.

**hw-only**: Sets the hw-only bits of the LTMs sent. If you specify this keyword, the MIP does not flood LTMs that have an unknown destination MAC address.

### Usage guidelines

This command identifies the path between the source MEP and target MP by using LTMs and LTRs.

## Examples

# Identify the path between source MEP 1101 and target MEP 2001 in service instance 1.

```
<Sysname> cfd linktrace service-instance 1 mep 1101 target-mep 2001
```

Linktrace to MEP 2001 with the sequence number 1101-43361:

MAC address	TTL	Last MAC	Relay action
0010-fc00-6512	63	0010-fc00-6500	Hit

**Table 3 Command output**

Field	Description
Linktrace to MEP 2001 with the sequence number 1101-43361	Linktrace to target MEP 2001 with the sequence number 1101-43361.
MAC address	Source MAC address in the LTRs.
TTL	TTL of the LTM when it passes the device.
Last MAC	MAC address of the last-hop device the LTM passes.
Relay action	Indicates whether the forwarding device found the destination MAC address in its MAC address table. When the standard version (IEEE 802.1ag) of CFD is used: <ul style="list-style-type: none"><li>• <b>Hit</b>—The current device is the destination device.</li><li>• <b>FDB</b>—The forwarding device found the destination MAC address.</li><li>• <b>MPDB</b>—The destination MAC address is not found, or the destination MAC address is found in the MEP or MIP database.</li></ul>

## Related commands

```
cfd linktrace auto-detection
```

```
display cfd linktrace-reply
```

## cfd linktrace auto-detection

Use `cfd linktrace auto-detection` to enable automatic sending of LTMs.

Use `undo cfd linktrace auto-detection` to disable automatic sending of LTMs.

## Syntax

```
cfd linktrace auto-detection [ size size-value ]
```

```
undo cfd linktrace auto-detection
```

## Default

Automatic sending of LTMs is disabled.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**size size-value**: Specifies the size of the buffer used to store the auto-detection result, in the range of 1 to 100 (in terms of auto-detection times). The default value is 5, which means the buffer stores the results of the recent five auto-detections.

## Usage guidelines

This command enables the source MEP to send LTMs when it fails to receive CCMs from the target MEP within 3.5 times the sending interval. The destination of the LTMs is the target MEP, and the TTL field value is 255. Based on the returned LTRs, the fault source can be located on the faulty link.

If you disable automatic LTM sending, the content stored in the buffer will be removed.

## Examples

```
# Enable automatic LTM sending, and set the size of the buffer used to store the auto-detection result to 100 (in terms of auto-detection times).
```

```
<Sysname> system-view
[Sysname] cfd linktrace auto-detection size 100
```

## Related commands

```
cfd linktrace
display cfd linktrace-reply auto-detection
```

## cfd loopback

Use **cfd loopback** to enable loopback (LB).

## Syntax

```
cfd loopback service-instance instance-id mep mep-id { target-mac mac-address | target-mep target-mep-id } [ number number ]
```

## Views

Any view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the destination MAC address of the MP, in the format of H-H-H.

**target-mep** *target-mep-id*: Specifies the target MEP by its ID in the range of 1 to 8191.

**number** *number*: Specifies the number of the sent LBMs packets. The value is in the range of 1 to 10. The default value is 5.

## Usage guidelines

The LB function verifies link connectivity between the source MEP and the target MP by using LBMs and LBRs.

## Examples

```
# Enable LB for the link between MEP 1101 and MEP 2001 in service instance 1 (assume that the link status is normal).
```

```
<Sysname> cfd loopback service-instance 1 mep 1101 target-mep 2001
Loopback to MEP 2001 with the sequence number start from 1101-43404:
Reply from 0010-fc00-6512: sequence number=1101-43404 Time=5ms
Reply from 0010-fc00-6512: sequence number=1101-43405 Time=5ms
```

```

Reply from 0010-fc00-6512: sequence number=1101-43406 Time=5ms
Reply from 0010-fc00-6512: sequence number=1101-43407 Time=5ms
Reply from 0010-fc00-6512: sequence number=1101-43408 Time=5ms
Sent: 5          Received: 5          Lost: 0

```

# Enable LB for the link between MEP 1101 and MEP 2001 in service instance 1 (assume that the link status is abnormal).

```

<Sysname> cfd loopback service-instance 1 mep 1101 target-mep 2001
Loopback to MEP 2001 with the sequence number start from 1101-43404:
Sent: 5          Received: 0          Lost: 5

```

**Table 4 Command output**

Field	Description
Loopback to MEP 2001 with the sequence number start from 1101-43404	Sends LBMs to remote MEP 2001 with the sequence number starting with 1101-43404.
Reply from 0010-fc00-6512	Reply from the MP with the MAC address 0010-FC00-6512.
sequence number	Sequence number in the LBR messages.
Time=5ms	The interval between the sending of LBMs and receiving of LBRs is 5 milliseconds.
Sent	Number of sent LBMs.
Received	Number of received LBRs.
Lost	Number of lost LBRs.

## cfd md

Use **cfd md** to create an MD.

Use **undo cfd md** to delete an MD.

### Syntax

```

cfd md md-name [ index index-value ] level level-value [ md-id { dns dns-name
| mac mac-address subnumber | none } ]

```

```

undo cfd md md-name

```

### Default

No MDs exist.

### Views

System view

### Predefined user roles

network-admin

### Parameters

**md** *md-name*: Specifies the name of an MD, which is a string of 1 to 43 characters that can contain letters, numbers, and special characters such as grave accent (`), tilde (~), exclamation mark (!), at sign (@), number sign (#), dollar sign (\$), percent (%), caret (^), ampersand (&), asterisk (\*), brackets ({ }, ( ), [ ], < >), hyphen (-), underscore (\_), plus (+), equal sign (=), vertical bar (|), colon (:), semicolon (;), quotation mark ('), comma (,), period (.), and slash (/).

**index** *index-value*: Specifies an MD index in the range of 1 to 4294967295. If you do not specify this option, the system automatically assigns the smallest index number that is not in use. As a best practice, use the index automatically assigned by the system.

**level** *level-value*: Specifies an MD level in the range of 0 to 7.

**md-id**: Specifies the MD name carried by packets sent by the MEP. If you do not provide this keyword, the MD name is represented by *md-name*.

**dns** *dns-name*: Specifies an MD name in the format of DNS name, where *dns-name* represents the DNS name.

**mac** *mac-address subnumber*: Specifies an MD name containing the MAC address and an integer. The *mac-address* argument represents the MAC address of the MD, and the *subnumber* argument is in the range of 0 to 65535.

**none**: Specifies that no MD name is carried in the packets sent by the MEP.

## Usage guidelines

An MD name must be in compliant with the specifications in IEEE802.1ag-2007.

You can create only one MD with a specific level. MD cannot be created if you enter an invalid MD name or an existing MD name or the MD index is in use.

When deleting an MD, you will also delete the configurations related to that MD.

## Examples

```
# Create an MD named test_md1, with its level being 3.
```

```
<Sysname> system-view  
[Sysname] cfd md test_md1 level 3
```

```
# Create an MD named test_md2, and the MD name carried in the packet sent by the MEP  
comprises the MAC address 1-1-1 and integer 1.
```

```
<Sysname> system-view  
[Sysname] cfd md test_md2 level 5 md-id mac 1-1-1 1
```

## cfd mep

Use **cfd mep** to create a MEP.

Use **undo cfd mep** to delete a MEP.

### Syntax

```
cfd mep mep-id service-instance instance-id { inbound | outbound }  
undo cfd mep mep-id service-instance instance-id
```

### Default

No MEPs exist.

### Views

Layer 2 Ethernet interface view

Layer 2 aggregate interface view

### Predefined user roles

network-admin

### Parameters

**mep** *mep-id*: Specifies the MEP ID, in the range of 1 to 8191.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**inbound**: Creates an inward-facing MEP.

**outbound**: Creates an outward-facing MEP.

## Usage guidelines

In creating a MEP, the service instance you specified defines the MD and MA to which the MEP belongs.

You cannot create a MEP if the MEP ID is not included in the MEP list of the relevant service instance.

Follow these guidelines when you use the command:

- Configurations in Ethernet interface view take effect only on the current interface.
- Configurations in aggregate interface view take effect only on the current aggregate interface.
- If the MEP belongs to an MA that does not carry the VLAN attribute, configurations on a member port of an aggregation group take effect only on the current member port.
- If the MEP belongs to an MA that carries the VLAN attribute, configurations on a member port of an aggregation group take effect only when the member port leaves the aggregation group.

## Examples

# Configure a MEP list in service instance 5, and create inward-facing MEP 3 in service instance 5 on Ten-GigabitEthernet 1/0/1.

```
<Sysname> system-view
[Sysname] cfd md test_md level 3
[Sysname] cfd service-instance 5 ma-id vlan-based md test_md vlan 100
[Sysname] cfd meplist 3 service-instance 5
[Sysname] interface ten-gigabitethernet 1/0/1
[Sysname-Ten-GigabitEthernet1/0/1] cfd mep 3 service-instance 5 outbound
```

## Related commands

**cfd meplist**

## cfd meplist

Use **cfd meplist** to create a MEP list.

Use **undo cfd meplist** to delete a MEP list.

## Syntax

```
cfd meplist mep-list service-instance instance-id
undo cfd meplist mep-list service-instance instance-id
```

## Default

No MEP list is created.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**mep-list** *mep-list*: Specifies a space-separated list of up to 10 MEP items. Each item specifies a MEP ID or a range of MEP IDs in the form of *mep-id 1 to mep-id 2*. The value range for the MEP ID is 1 to 8191. The *mep-id 2* must be equal to or greater than *mep-id 1*.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

## Usage guidelines

A MEP list is a collection of local MEPs allowed to be configured and the remote MEPs to be monitored in the same MA.

Before creating a MEP list, create the relevant MD and service instance.

After you delete a MEP list, all local MEP configurations based on this list are deleted.

## Examples

```
# Create a MEP list that includes MEP 9 through MEP 15 in service instance 5.
```

```
<Sysname> system-view
[Sysname] cfd md test_md level 3
[Sysname] cfd service-instance 5 ma-id vlan-based md test_md vlan 100
[Sysname] cfd mep-list 9 to 15 service-instance 5
```

## Related commands

```
cfd md
cfd service-instance
```

## cfd mip-rule

Use **cfd mip-rule** to configure the rules for generating MIPs.

Use **undo cfd mip-rule** to remove the rules for generating MIPs and the MIPs created in a service instance.

## Syntax

```
cfd mip-rule { default | explicit } service-instance instance-id
undo cfd mip-rule [ default | explicit ] service-instance instance-id
```

## Default

No rules for generating MIPs are configured and the system does not automatically generate any MIPs.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**default**: Specifies the default rule. If no lower-level MIP exists on an interface, a MIP is created on the current level. A MIP can be created even if no MEP is configured on the interface.

**explicit**: Specifies the explicit rule. If no lower-level MIP exists and a lower-level MEP exists on an interface, a MIP is created at the current level. A MIP can be created only when a lower-level MEP is created on the interface.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

## Usage guidelines

The system automatically generates MIPs on each port according to the rules configured.

## Examples

# Configure the MIP generation rule as default in service instance 5.

```
<Sysname> system-view
[Sysname] cfd mip-rule default service-instance 5
```

## cfd service-instance

Use **cfd service-instance** to create a service instance.

Use **undo cfd service-instance** to remove a service instance.

## Syntax

```
cfd service-instance instance-id ma-id { icc-based ma-name | integer
ma-num | string ma-name | vlan-based [ vlan-id ] } [ ma-index index-value ] md
md-name vlan vlan-id

undo cfd service-instance instance-id
```

## Default

No service instances exist.

## Views

System view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies the service instance ID in the range of 1 to 32767.

**ma-id**: Creates an MA.

**icc-based** *ma-name*: Specifies that an MA is identified by an ICC. The *ma-name* argument is a string of 1 to 13 characters.

**integer** *ma-num*: Specifies that an MA is identified by an integer, where the *ma-num* argument is in the range of 0 to 65535.

**string** *ma-name*: Specifies that an MA is identified by a string, where the *ma-name* argument is string of 1 to 45 characters that can contain letters, numbers, and special characters such as grave accent (`), tilde (~), exclamation mark (!), at sign (@), number sign (#), dollar sign (\$), percent (%), caret (^), ampersand (&), asterisk (\*), brackets ({ }, ( ), [ ], < >), hyphen (-), underscore (\_), plus (+), equal sign (=), vertical bar (|), colon (:), semicolon (;), quotation mark ('), comma (,), period (.), and slash (/).

**vlan-based** [ *vlan-id* ]: Specifies that an MA is identified by a VLAN ID, where the *vlan-id* argument is in the range of 1 to 4094. If you do not provide the *vlan-id* argument, the VLAN ID specified by **vlan** *vlan-id* is used. If the **vlan** *vlan-id* option is not provided, you must specify the *vlan-id* argument for the **vlan-based** [ *vlan-id* ] option.

**ma-index** *index-value*: Specifies an MA index in the range of 1 to 4294967295. If you do not specify this option, the system automatically assigns the smallest index number that is not in use. As a best practice, use the index automatically assigned by the system.

**md** *md-name*: Specifies the name of an MD. The *md-name* argument is a string of 1 to 43 characters that can contain letters, numbers, and special characters such as grave accent (`), tilde (~), exclamation mark (!), at sign (@), number sign (#), dollar sign (\$), percent (%), caret (^), ampersand (&), asterisk (\*), brackets ({ }, ( ), [ ], < >), hyphen (-), underscore (\_), plus (+), equal sign (=), vertical bar (|), colon (:), semicolon (;), quotation mark ('), comma (,), period (.), and slash (/).

**vlan** *vlan-id*: Specifies the VLAN that the MA serves. The value range for the *vlan-id* argument is 1 to 4094.

## Usage guidelines

A service instance is indicated by an integer to represent an MA in an MD. An MA index uniquely identifies a specific MA in an MD. An MA index can be used in different MDs.

An MD name must be in compliant with the specifications in IEEE802.1ag-2007.

With the **vlan-based** [ *vlan-id* ] or **vlan** *vlan-id* option, the command creates an MA carrying the VLAN attribute. If you do not specify the option, the command creates an MA carrying no VLAN attribute.

You must create the relevant MD before creating a service instance with the MD name.

Deleting a service instance also deletes the configurations related to that service instance.

Deleting a service instance not only removes the connection between the service instance and the relevant MA, but also deletes the MA.

## Examples

# Create a level-3 MD named **test\_md** and create service instance 5, in which the MA is identified by a VLAN and serves VLAN 100.

```
<Sysname> system-view
[Sysname] cfd md test_md level 3
[Sysname] cfd service-instance 5 ma-id vlan-based md test_md vlan 100
```

## Related commands

**cfd md**

## cfd slm

Use **cfd slm** to enable loss measurement (LM).

## Syntax

```
cfd slm service-instance instance-id mep mep-id { target-mac mac-address
| target-mep target-mep-id } [ dot1p dot1p-value ] [ number number ]
[ interval interval ]
```

## Views

Any view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the target MEP by its MAC address, which is in the format of H-H-H.

**target-mep** *target-mep-id*: Specifies the target MEP by its ID in the range of 1 to 8191.

**dot1p** *dot1p-value*: Specifies an 802.1p priority for LMM frames. The value range for the *dot1p-value* argument is 0 to 7. The default value is 7.

**number** *number*: Specifies the number of LMM frames to be sent. The value range for the *number* argument is 2 to 10, and the default is 5.

**interval** *interval*: Specifies the LMM frame sending interval, in seconds. The value takes 1 or 10. The default value is 1.

## Usage guidelines

The LM function measures the frame loss between the source and target MEPs by using LMM frames and LMR frames.

## Examples

# Enable the LM function to measure the frame loss between source MEP 1101 and target MEP 2001 in service instance 1.

```
<Sysname> cfd slm service-instance 1 mep 1101 target-mep 2001
```

```
Reply from 0010-fc00-6512
```

```
Far-end frame loss: 10    Near-end frame loss: 20
```

```
Reply from 0010-fc00-6512
```

```
Far-end frame loss: 40    Near-end frame loss: 40
```

```
Reply from 0010-fc00-6512
```

```
Far-end frame loss: 0     Near-end frame loss: 10
```

```
Reply from 0010-fc00-6512
```

```
Far-end frame loss: 30    Near-end frame loss: 30
```

```
Average
```

```
Far-end frame loss: 20    Near-end frame loss: 25
```

```
Far-end frame loss rate: 25.00%    Near-end frame loss rate: 32.00%
```

```
Sent LMMs: 5    Received: 5    Lost: 0
```

**Table 5 Command output**

Field	Description
Reply from 0010-fc00-6512	LMR frames returned from the target MEP with MAC address 0010-FC00-6512.
Far-end frame loss	Number of lost frames on the target MEP.
Near-end frame loss	Number of lost frames on the source MEP.
Far-end frame loss rate	Frame loss ratio on the target MEP.
Near-end frame loss rate	Frame loss ratio on the source MEP.
Average	Average number of lost frames.
Sent LMMs	Number of sent LMM frames.
Received	Number of received LMR frames.
Lost	Number of lost LMR frames.

## cfd tst

Use `cfd tst` to enable test (TST).

## Syntax

```
cfid tst service-instance instance-id mep mep-id { target-mac mac-address
| target-mep target-mep-id } [ number number ] [ length-of-test length ]
[ pattern-of-test { all-zero | prbs } [ with-crc ] ]
```

## Views

Any view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies the source MEP by its ID in the range of 1 to 8191.

**target-mac** *mac-address*: Specifies the target MEP by its MAC address, which is in the format of H-H-H.

**target-mep** *target-mep-id*: Specifies the target MEP by its ID in the range of 1 to 8191.

**number** *number*: Specifies the number of sent TST frames. The value range for the *number* argument is 1 to 10, and the default is 5.

**length-of-test** *length*: Specifies the length of the Test TLV (Type/Length/Value) in the TST frame. The value range for the *length* argument is 4 to 1400, in bytes. The default value is 64.

**pattern-of-test** { **all-zero** | **prbs** } [ **with-crc** ]: Specifies the pattern of the Test TLV in the TST frame:

- **all-zero** (all-zero value without CRC-32), which is the default pattern.
- **prbs** (pseudo random bit sequence without CRC-32).
- **all-zero with-crc** (all-zero value with CRC-32).
- **prbs with-crc** (pseudo random bit sequence with CRC-32).

## Usage guidelines

The TST function detects bit errors between the source and target MEPs by using TST frames.

To view the TST test result, use the **display cfd tst** command on the target MEP.

## Examples

```
# Enable the TST function to test the bit errors between source MEP 1101 and target MEP 1003 in
service instance 1.
```

```
<Sysname> cfd tst service-instance 1 mep 1101 target-mep 1003
```

```
5 TSTs have been sent. Please check the result on the remote device.
```

## Related commands

```
display cfd tst
```

```
reset cfd tst
```

## display cfd ais

Use **display cfd ais** to display the AIS configuration and information on the specified MEP or all MEPs.

## Syntax

```
display cfd ais [ service-instance instance-id [ mep mep-id ] ]
```

## Views

Any view

## Predefined user roles

network-admin  
network-operator

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command displays the AIS configuration and information for all service instances.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191. If you do not specify this option, the command displays the AIS configuration and information for all MEPs.

## Examples

# Display the AIS configuration and information for all the MEPs in all service instances.

```
<Sysname> display cfd ais
Service instance: 5
AIS level: 4    AIS period: 1s
MEP ID: 1
AIS condition: yes    Time to enter the condition: 2013/01/22 10:43:57
AIS state machine: Previous state: NO_RECEIVE
                  Current state: RECEIVE

MEP ID: 2
AIS condition: yes    Time to enter the condition: 2013/01/22 10:43:57
AIS state machine: Previous state: NO_RECEIVE
                  Current state: RECEIVE

Service instance: 20
AIS level: 3    AIS period: 60s
MEP ID: 10
AIS condition: yes    Time to enter the condition: 2013/01/22 10:43:57
AIS state machine: Previous state: NO_RECEIVE
                  Current state: RECEIVE

Service instance: 100
AIS level: 6    AIS period: 1s
MEP ID: 20
AIS condition: no    Time to enter the condition: 2013/01/22 11:40:01
AIS state machine: Previous state: IDLE
                  Current state: NO_RECEIVE

MEP ID: 50
AIS condition: no    Time to enter the condition: -
AIS state machine: Previous state: IDLE
                  Current state: NO_RECEIVE
```

**Table 6 Command output**

Field	Description
Service instance	Service instance of the MEP.
AIS level	AIS frame transmission level.
AIS period	AIS frame transmission period.
AIS condition	AIS status: <ul style="list-style-type: none"> <li>• <b>yes</b>—AIS is running.</li> <li>• <b>no</b>—AIS is not running.</li> </ul>
Time to enter the condition	Time when the AIS status began. (- means AIS is enabled but the MEP does not receive any AIS frame.)
AIS state machine	AIS frame receiving state machine.
Previous state	Previous state: <ul style="list-style-type: none"> <li>• <b>IDLE</b>—Not activated.</li> <li>• <b>NO_RECEIVE</b>—Activated.</li> <li>• <b>RECEIVE</b>—AIS frames are received.</li> </ul>
Current state	Current state: <ul style="list-style-type: none"> <li>• <b>IDLE</b>—Not activated.</li> <li>• <b>NO_RECEIVE</b>—Activated.</li> <li>• <b>RECEIVE</b>—AIS frames are received.</li> </ul>

## display cfd ais-track link-status

Use **display cfd ais-track link-status** to display the configuration and information of the AIS associated with the port status.

### Syntax

```
display cfd ais-track link-status [ interface interface-type
interface-number ]
```

### Views

Any view

### Predefined user roles

network-admin  
network-operator

### Parameters

**interface** *interface-type interface-number*: Specifies a port by its type and number. If you do not specify this option, the command displays the configuration and information of the AIS associated with the status of all ports.

### Examples

# Display the configuration and information of the AIS associated with the status of all ports.

```
<Sysname> display cfd ais-track link-status
AIS tracking link-status is enabled.
```

```
Interface Ten-GigabitEthernet1/0/1:
AIS level: 5           AIS period: 1s
```

```
Configured VLANs: 1, 10-100, 103
Send VLANs: 1, 10-100, 103
AIS condition: yes      Time to enter the condition: 2013/02/26 10:43:57
```

```
Interface Ten-GigabitEthernet1/0/2:
AIS level: 5           AIS period: 1s
Configured VLANs: 1-4094
Send VLANs: 1-2000
AIS condition: yes      Time to enter the condition: 2013/02/26 10:44:57
```

**Table 7 Command output**

Field	Description
AIS tracking link-status is enabled	Port status-AIS collaboration is enabled.
AIS tracking link-status is disabled	Port status-AIS collaboration is disabled.
Interface	Port that collaborates with AIS.
AIS level	EAIS frame transmission level on the port.
AIS period	EAIS frame transmission period on the port.
Configured VLANs	VLANs where the EAIS frames can be transmitted.
Send VLANs	Actual VLANs where the EAIS frames can be transmitted.
AIS condition	EAIS frame sending status: <ul style="list-style-type: none"> <li><b>yes</b>—EAIS frames are being sent.</li> <li><b>no</b>—No EAIS frame is being sent.</li> </ul>
Time to enter the condition	Time when the EAIS frame sending started.

## display cfd dm one-way history

Use `display cfd dm one-way history` to display the one-way DM result.

### Syntax

```
display cfd dm one-way history [ service-instance instance-id [ mep
mep-id ] ]
```

### Views

Any view

### Predefined user roles

network-admin  
network-operator

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command displays the one-way DM results for all service instances.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191. If you do not specify this option, the command displays the one-way DM results for all MEPs.

### Usage guidelines

The one-way DM results for all inward-facing MEPs in a service instance are the same.

## Examples

# Display the one-way DM results for all the MEPs in all service instances.

```
<Sysname> display cfd dm one-way history
```

```
Service instance: 1
```

```
MEP ID: 1003
```

```
Sent 1DM total number: 0
```

```
Received 1DM total number: 5
```

```
Frame delay: 10ms 9ms 11ms 5ms 5ms
```

```
Delay average: 8ms
```

```
Frame delay variation: 5ms 4ms 6ms 0ms 0ms
```

```
Variation average: 3ms
```

```
MEP ID: 1004
```

```
Sent 1DM total number: 0
```

```
Received 1DM total number: 5
```

```
Frame delay: 10ms 9ms 11ms 5ms 5ms
```

```
Delay average: 8ms
```

```
Delay variation: 5ms 4ms 6ms 0ms 0ms
```

```
Variation average: 3ms
```

```
Service instance: 2
```

```
No MEP exists in the service instance.
```

```
Service instance: 3
```

```
MEP ID: 1023
```

```
Sent 1DM total number: 5
```

```
Received 1DM total number: 10
```

```
Frame delay: 20ms 9ms 8ms 7ms 1ms 5ms 13ms 17ms 9ms 10ms
```

```
Delay average: 9ms
```

```
Delay variation: 19ms 8ms 7ms 6ms 0ms 4ms 12ms 16ms 8ms 9ms
```

```
Variation average: 8ms
```

```
Service instance: 4
```

```
MEP ID: 1023
```

```
Sent 1DM total number: 77
```

```
Received 1DM total number: 0
```

**Table 8 Command output**

Field	Description
Service instance	Service instance of the MEP.
Sent 1DM total number	Number of sent 1DM frames.
Received 1DM total number	Number of received 1DM frames.
Delay average	Average frame delay.
Delay variation	Frame delay variation.
Variation average	Average frame delay variation.

## Related commands

```
cfld dm one-way
reset cfd dm one-way history
```

## display cfd linktrace-reply

Use `display cfd linktrace-reply` to display information about the LTRs received by a MEP.

### Syntax

```
display cfd linktrace-reply [ service-instance instance-id [ mep
mep-id ] ]
```

### Views

Any view

### Predefined user roles

```
network-admin
network-operator
```

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command displays the LTR information for all service instances.

**mep** *mep-id*: Specifies the ID of a MEP, in the range of 1 to 8191. If you do not specify this option, the command displays the LTR information for all MEPs.

### Usage guidelines

This command displays only information about LTRs received by execution of the `cfld linktrace` command.

### Examples

```
# Display the LTR information saved on all the MEPs in every service instance.
```

```
[Sysname] display cfd linktrace-reply
Service instance: 1      MEP ID: 1003
MAC address             TTL      Last MAC              Relay action
0000-fc00-6505         63      0000-fc00-6504       MPDB
000f-e269-a852         62      0000-fc00-6505       FDB
0000-fc00-6508         61      000f-e269-a852       Hit
Service instance: 2      MEP ID: 1023
MAC address             TTL      Last MAC              Relay action
0000-fc00-6508         61      000f-e269-a852       Hit
```

**Table 9 Command output**

Field	Description
Service instance	Service instance to which the MEPs that send LTMs belong.
MEP ID	ID of the MEP that sends LTMs.
MAC address	Source MAC address in the LTR.
TTL	TTL of the LTM when it passes the device.
Last MAC	MAC address of the last-hop device the LTM passes.

Field	Description
Relay action	<p>Indicates whether the forwarding device found the destination MAC address in its MAC address table.</p> <p>When the standard version (IEEE 802.1ag) of CFD is used:</p> <ul style="list-style-type: none"> <li>• <b>Hit</b>—The current device is the destination device.</li> <li>• <b>FDB</b>—The forwarding device found the destination MAC address.</li> <li>• <b>MPDB</b>—The destination MAC address is not found, or the destination MAC address is found in the MEP or MIP database.</li> </ul>

## Related commands

`cfid linktrace`

## display cfd linktrace-reply auto-detection

Use `display cfd linktrace-reply auto-detection` to display information about the LTRs received as responses to the automatically sent LTMs.

### Syntax

```
display cfd linktrace-reply auto-detection [ size size-value ]
```

### Views

Any view

### Predefined user roles

network-admin

network-operator

### Parameters

**size** *size-value*: Specifies the times of recent auto-detections, in the range of 1 to 100. If you do not specify this option, the command displays all information in the buffer.

### Usage guidelines

This command displays only information about LTRs received by execution of the `cfid linktrace auto-detection` command.

### Examples

# Display the contents of the LTRs received as responses to the LTMs automatically sent.

```
<Sysname> display cfd linktrace-reply auto-detection
Service instance: 1      MEP ID: 1003      Time: 2013/05/22 10:43:57
Target MEP ID: 2005     TTL: 64
MAC address             TTL      Last MAC          Relay action
0000-fc00-6505         63      0000-fc00-6504   MPDB
000f-e269-a852         62      0000-fc00-6505   FDB
0000-fc00-6508         61      000f-e269-a852   Hit
Service instance: 2      MEP ID: 1023     Time: 2013/05/22 10:44:06
Target MEP ID: 2025     TTL: 64
MAC address             TTL      Last MAC          Relay action
0000-fc00-6508         61      000f-e269-a852   Hit
```

**Table 10 Command output**

Field	Description
Service instance	Service instance to which the MEPs that sent LTMs belong.
MEP ID	ID of the MEP that sends LTMs.
Time	Time of the LTMs automatically sent.
Target MEP ID	ID of the target MEP.
TTL	Initial TTL of the automatically sent LTMs.
MAC address	Source MAC address in the LTRs.
TTL	TTL of the LTM when it passes the device.
Last MAC	MAC address of the last-hop device the LTM passes.
Relay action	<p>Indicates whether the forwarding device found the destination MAC address in its MAC address table.</p> <p>When the standard version (IEEE 802.1ag) of CFD is used:</p> <ul style="list-style-type: none"> <li>• <b>Hit</b>—The current device is the destination device.</li> <li>• <b>FDB</b>—The forwarding device found the destination MAC address.</li> <li>• <b>MPDB</b>—The destination MAC address is not found, or the destination MAC address is found in the MEP or MIP database.</li> </ul>

### Related commands

`cfld linktrace auto-detection`

## display cfd md

Use `display cfd md` to display the MD configuration information.

### Syntax

`display cfd md`

### Views

Any view

### Predefined user roles

network-admin

network-operator

### Examples

# Display the MD configuration information.

```
<Sysname> display cfd md
```

CFD is enabled.

Maintenance domains configured: 4 in total

Level	Index	Maintenance domain	MD format	MD ID
0	1	md_0	CHARSTRING	md_0
1	2	md_1	DNS	dns1
2	3	md_2	MAC	0001-00
		01-0001-1		
3	4	md_3	NONE	Without
		ID		

**Table 11 Command output**

Field	Description
Maintenance domains configured	Number of MDs configured.
Level	Level of MD.
Index	MD index.
Maintenance domain	Name of MD.
MD format	MD name format: <ul style="list-style-type: none"> <li>• <b>CHARSTRING</b>—Character string.</li> <li>• <b>DNS</b>—DNS name.</li> <li>• <b>MAC</b>—MAC address and an integer.</li> <li>• <b>NONE</b>—No MD name is carried.</li> </ul>
MD ID	MD ID value: <ul style="list-style-type: none"> <li>• A character string if the MD format is <b>CHARSTRING</b>.</li> <li>• A DNS name if the MD format is <b>DNS</b>.</li> <li>• A MAC address-subnumber if the MD format is <b>MAC</b>.</li> <li>• No ID if the MD format is <b>NONE</b>.</li> </ul>

## display cfd mep

Use **display cfd mep** to display the attribute and operating information for a MEP.

### Syntax

```
display cfd mep mep-id service-instance instance-id
```

### Views

Any view

### Predefined user roles

network-admin  
network-operator

### Parameters

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191.

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

### Examples

# Display the attribute and operating information for MEP 50 in service instance 1.

```
<Sysname> display cfd mep 50 service-instance 1
Interface: Ten-GigabitEthernet1/0/2
Maintenance domain: md_0
Maintenance domain index: 1
Maintenance association: ma_0
Maintenance association index: 1
Level: 0          VLAN: 1          Direction: Outbound
Current state: Active          CCM send: Enabled
FNG state: FNG_DEFECT_REPORTED
```

CCM:  
 Current state: CCI\_WAITING  
 Interval: 1s                      SendCCM: 12018

Loopback:  
 NextSeqNumber: 8877  
 SendLBR: 0                      ReceiveInOrderLBR: 0                      ReceiveOutOrderLBR: 0

Linktrace:  
 NextSeqNumber: 8877  
 SendLTR: 0                      ReceiveLTM: 0

No CCM received from some remote MEPs.

One or more streams of error CCMs is received. The last received CCM:  
 Maintenance domain: (Without ID)  
 Maintenance association: matest1  
 MEP ID: 5                      Sequence Number: 0x50A  
 MAC Address: 0011-2233-4402  
 Received Time: 2013/03/06 13:01:34

One or more streams of cross-connect CCMs is received. The last received CCM:  
 Maintenance domain: mdtest1  
 Maintenance association: matest1  
 MEP ID: 6                      Sequence Number: 0x63A  
 MAC Address: 0011-2233-4401  
 Received Time: 2013/03/06 13:01:34

Some other MEPs are transmitting the RDI bit.

**Table 12 Command output**

Field	Description
Interface	Interface on which the MEP is configured.
Maintenance domain	MD to which the MEP belongs. (If the MD does not have a name, this field is displayed as <b>Without ID</b> .)
Maintenance domain index	Index of the MD to which the MEP belongs.
Maintenance association	MA to which the MEP belongs.
Maintenance association index	Index of the MA to which the MEP belongs.
Level	Level of the MD.
VLAN	VLAN to which the MA belongs.
Direction	Direction of the MEPs.
Current state	State of MEP: <ul style="list-style-type: none"> <li>• <b>Active.</b></li> <li>• <b>Inactive.</b></li> </ul>
CCM send	Whether the MEP sends CCM.
FNG state	State of FNG (Fault Notification Generator):

Field	Description
	<ul style="list-style-type: none"> <li>• <b>FNG_RESET</b>—A fault has been cleared.</li> <li>• <b>FNG_DEFECT</b>—A fault has been detected.</li> <li>• <b>FNG_REPORT_DEFECT</b>—Report a fault.</li> <li>• <b>FNG_DEFECT_REPORTED</b>—A fault has been reported.</li> <li>• <b>FNG_DEFECT_CLEARING</b>—A fault is being cleared.</li> </ul> <p>If this field is not supported, a hyphen (-) is displayed.</p>
CCM	Information related to CCM.
Current state	<p>State of CCMs sent:</p> <ul style="list-style-type: none"> <li>• <b>CCI_IDLE</b>—Initial state.</li> <li>• <b>CCI_WAITING</b>—Sending state.</li> </ul> <p>If this field is not supported, a hyphen (-) is displayed.</p>
Interval	Interval to send CCM. <b>Not supported</b> means the MEP does not support CCM sending.
SendCCM	Number of CCMs that have been sent by the MEPs. If this field is not supported, a hyphen (-) is displayed.
Loopback	Information related to Loopback.
NextSeqNumber	Sequence number of the next LBM to be sent.
SendLBR	Number of LBRs that have been sent. If the MEP is inward-facing, the number of LBRs will not be counted.
ReceiveInOrderLBR	Number of LBRs received in correct sequence.
ReceiveOutOrderLBR	Number of LBRs received out of order.
Linktrace	Information related to linktrace.
NextSeqNumber	Sequence number of the next LTM to be sent.
SendLTR	Number of LTRs sent. If the MEP is inward-facing, the number of LTRs will not be counted.
ReceiveLTM	Number of LTMs received.
No CCM received from some remote MEPs.	Failure to receive CCMs from some remote MEPs. (This information is displayed only when some CCMs are lost.)
One or more streams of error CCMs is received. The last received CCM:	Display the content of the last error CCM when one or more error CCMs are received. (This information is displayed only when error CCMs are received.)
Maintenance domain	MD of the last error CCM. If this field is not supported, a hyphen (-) is displayed.
Maintenance association	MA of the last error CCM. If this field is not supported, a hyphen (-) is displayed.
MEP	ID of the MEP that sent the last error CCM. If this field is not supported, a hyphen (-) is displayed.
Sequence Number	Sequence number of the last error CCM. If this field is not supported, a hyphen (-) is displayed.
Received Time	Time when the last error CCM is received. If this field is not supported, a hyphen (-) is displayed.
One or more streams of cross-connect CCMs is received. The last received	Cross-connect CCMs are received, and the content of the last cross-connect CCM is displayed. (This information is displayed only when

Field	Description
CCM:	cross-connect CCMs are received.)
Some other MEPs are transmitting the RDI bit.	CCMs with the RDI flag bits set are received from other MEPs. (This information is displayed only when this type of CCMs are received.)

## display cfd meplist

Use `display cfd meplist` to display the MEP list in a service instance.

### Syntax

```
display cfd meplist [ service-instance instance-id ]
```

### Views

Any view

### Predefined user roles

network-admin  
network-operator

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command displays MEP lists in all service instances.

### Examples

```
# Display the MEP list in service instance 5.
<Sysname> display cfd meplist service-instance 5
Service instance: 5
MEP list: 1 to 20, 30, 50.
```

## display cfd mp

Use `display cfd mp` to display the MP information.

### Syntax

```
display cfd mp [ interface interface-type interface-number ]
```

### Views

Any view

### Predefined user roles

network-admin  
network-operator

### Parameters

**interface** *interface-type interface-number*: Specifies a port by its type and number. If you do not specify this option, the command displays MP information for all ports.

### Usage guidelines

The output is arranged by port name. On a port, the output shows MPs that serve VLANs, and then shows MPs that do not serve any VLANs. The MPs that serve VLANs are displayed in the ascending VLAN ID order. Within the same VLAN, the output is in the order of MIPs and MEPs (from high to low level). The MEPs that do not serve any VLANs are displayed by level (from high to low).

## Examples

# Display the MP information on all ports.

```
<Sysname> display cfd mp
Interface Ten-GigabitEthernet1/0/1   VLAN 100
MIP                               Level: 2   Service instance: 102
Maintenance domain: md_2
Maintenance domain index: 3
Maintenance association: ma_2
Maintenance association index: 3

MEP ID: 101           Level: 1   Service instance: 101   Direction: Inbound
Maintenance domain: md_1
Maintenance domain index: 2
Maintenance association: ma_1
Maintenance association index: 2

MEP ID: 100           Level: 0   Service instance: 100   Direction: Outbound
Maintenance domain: md_0
Maintenance domain index: 1
Maintenance association: ma_0
Maintenance association index: 1
```

**Table 13 Command output**

Field	Description
Interface Ten-GigabitEthernet1/0/1 VLAN 100	MP configuration of VLAN 100 on Ten-GigabitEthernet 1/0/1.
MIP	A MIP in the MP.
Level	MD level to which the MP belongs.
Service instance	Service instance to which the MP belongs.
Maintenance domain	MD to which the MP belongs.
Maintenance domain index	Index of the MD to which the MP belongs.
Maintenance association	MA to which the MP belongs.
Maintenance association index	Index of the MA to which the MP belongs.
Direction	Direction of the MEP, inbound or outbound.

## display cfd remote-mep

Use **display cfd remote-mep** to display information about a remote MEP.

### Syntax

```
display cfd remote-mep service-instance instance-id mep mep-id
```

### Views

Any view

### Predefined user roles

network-admin

network-operator

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191.

## Examples

# Display remote MEP information for MEP 10 in service instance 4.

```
<Sysname> display cfd remote-mep service-instance 4 mep 10
```

MEP ID	MAC address	State	Time	MAC status
20	00e0-fc00-6565	OK	2013/03/06 02:36:38	UP
30	00e0-fc27-6502	OK	2013/03/06 02:36:38	DOWN
40	00e0-fc00-6510	FAILED	2013/03/06 02:36:39	DOWN
50	00e0-fc52-baa0	OK	2013/03/06 02:36:44	DOWN
60	0010-fc00-6502	OK	2013/03/06 02:36:42	DOWN

**Table 14 Command output**

Field	Description
MEP ID	ID of the remote MED.
MAC address	MAC address of the remote MEP device. If this field is not supported, a hyphen (-) is displayed.
State	Running state of the remote MEP: <ul style="list-style-type: none"><li>• <b>OK</b>.</li><li>• <b>FAILED</b>.</li></ul>
Time	Time when the remote MEP entered the <b>FAILED</b> or <b>OK</b> state for the last time. If this field is not supported, a hyphen (-) is displayed.
MAC status	State of the interface indicated by the last CCM received from the remote MEP: <ul style="list-style-type: none"><li>• <b>UP</b>—The interface is ready to pass packets.</li><li>• <b>DOWN</b>—The interface cannot pass packets.</li><li>• <b>TESTING</b>—The interface is in some test mode.</li><li>• <b>UNKNOWN</b>—The interface status cannot be determined.</li><li>• <b>DORMANT</b>—The interface is not in a state to pass packets. Instead, it is in a pending state, waiting for some external event.</li><li>• <b>NOT-PRESENT</b>—Some component of the interface is missing.</li><li>• <b>LLD</b>—The interface is down due to state of the lower layer interfaces.</li></ul> If this field is not supported, a hyphen (-) is displayed.

## display cfd service-instance

Use **display cfd service-instance** to display the configuration information of service instances.

### Syntax

```
display cfd service-instance [ instance-id ]
```

### Views

Any view

## Predefined user roles

network-admin  
network-operator

## Parameters

*instance-id*: Specifies a service instance ID in the range of 1 to 32767. If you do not specify this argument, the command displays configuration information for all service instances.

## Examples

# Display the configuration information of all service instances.

```
<Sysname> display cfd service-instance
Service instances configured (2 in total):
Service instance 5:
Maintenance domain: md_5
Maintenance domain index: 5
Maintenance association: ma_5
Maintenance association index: 5
Level: 5 VLAN: 5 MIP rule: NONE CCM interval: 1s Direction: Inbound
MEP ID: 730 Interface: Ten-GigabitEthernet1/0/1

Service instance 6:
Maintenance domain: (Without ID)
Maintenance domain index: 6
Maintenance association: ma_6
Maintenance association index: 6
Level: 6 VLAN: 6 MIP rule: NONE CCM interval: 1s Direction: Outbound
MEP ID: 731 Interface: Ten-GigabitEthernet1/0/2
```

**Table 15 Command output**

Field	Description
Service instances are configured.	Number of service instances configured.
Service instance	Service instance ID.
Maintenance domain	MD of the service instance. (If the MD does not have a name, this field displays <b>Without ID</b> .)
Maintenance domain index	Index of the MD to which the service instance belongs.
Maintenance association:	MA of the service instance.
Maintenance association index	Index of the MA to which the service instance belongs.
Level	MD level.
VLAN	VLAN to which the MA belongs.
MIP rule	MIP generation rules configured on the service instance.
CCM interval	Interval to send CCMs.
Direction	Direction of the MEPs configured on the service instance.
MEP ID	ID of MEPs configured on the service instance.
Interface	Interface of the MEP configured on the service instance.

# display cfd status

Use **display cfd status** to display the CFD and AIS status.

## Syntax

```
display cfd status
```

## Views

Any view

## Predefined user roles

network-admin

network-operator

## Examples

```
# Display the CFD and AIS status.
<Sysname> display cfd status
CFD is enabled.
AIS is disabled.
```

# display cfd tst

Use **display cfd tst** to display the TST result.

## Syntax

```
display cfd tst [ service-instance instance-id [ mep mep-id ] ]
```

## Views

Any view

## Predefined user roles

network-admin

network-operator

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command displays the TST results for all service instances.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191. If you do not specify this option, the command displays the TST results for all MEPs.

## Usage guidelines

The TST DM results for all inward-facing MEPs in a service instance are the same.

## Examples

```
# Display the TST results for all the MEPs in all service instances.
<Sysname> display cfd tst
Service instance: 1
MEP ID: 1003
Sent TST total number: 0
Received TST total number: 5
Received from 0010-fc00-6510, Bit True, sequence number 0
```

```

Received from 0010-fc00-6510, Bit True, sequence number 1
Received from 0010-fc00-6510, Bit True, sequence number 2
Received from 0010-fc00-6510, Bit True, sequence number 3
Received from 0010-fc00-6510, Bit True, sequence number 4
MEP ID: 1004
Sent TST total number: 5
Received TST total number: 0

```

```

Service instance: 2
No MEP exists in the service instance.

```

```

Service instance: 3
MEP ID: 1023
Sent TST total number: 5
Received TST total number: 0

```

**Table 16 Command output**

Field	Description
Service instance	Service instance of the MEP.
Sent TST total number	Number of sent TST frames.
Received TST total number	Number of received TST frames.
Received from 0010-fc00-6510, Bit True, sequence number 0	TST frame with sequence number 0 was received from the MEP with MAC address 0010-FC00-6510: <ul style="list-style-type: none"> <li>• <b>Bit True</b>—No bit error occurred.</li> <li>• <b>Bit False</b>—Bit errors occurred.</li> </ul>

## Related commands

```

cfd tst
reset cfd tst

```

## reset cfd dm one-way history

Use `reset cfd dm one-way history` to clear the one-way DM result.

### Syntax

```

reset cfd dm one-way history [ service-instance instance-id [ mep mep-id ] ]

```

### Views

User view

### Predefined user roles

network-admin

### Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command clears the one-way DM results for all service instances.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191. If you do not specify this option, the command clears the one-way DM results for all MEPs.

## Usage guidelines

Clearing the one-way DM result for an inward-facing MEP clears all one-way DM results for the service instance where the inward-facing MEP resides.

## Examples

```
# Clear the one-way DM results for all MEPs in all service instances.  
<Sysname> reset cfd dm one-way history
```

## Related commands

```
cfd dm one-way  
display cfd dm one-way history
```

## reset cfd tst

Use `reset cfd tst` to clear the TST result.

## Syntax

```
reset cfd tst [ service-instance instance-id [ mep mep-id ] ]
```

## Views

User view

## Predefined user roles

network-admin

## Parameters

**service-instance** *instance-id*: Specifies a service instance by its ID in the range of 1 to 32767. If you do not specify this option, the command clears the TST results for all service instances.

**mep** *mep-id*: Specifies a MEP by its ID in the range of 1 to 8191. If you do not specify this option, the command clears the TST results for all MEPs.

## Usage guidelines

Clearing the TST result for an inward-facing MEP clears all TST results for the service instance where the inward-facing MEP resides.

## Examples

```
# Clear the TST results for all MEPs in all service instances.  
<Sysname> reset cfd tst
```

## Related commands

```
cfd tst  
display cfd tst
```