



# **ADTRAN Operating System (AOS) Configuring MAC Swap Loopback**

Configuration Guide

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## Revision History

Rev B	June 2020	Updated document format and made minor corrections.
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## 1. Overview

This configuration guide describes the function and configuration of the ADTRAN Operating System (AOS) media access control (MAC) swap loopback feature. This feature can be used to prove circuit connectivity, isolate faults, and analyze characteristics of the Ethernet data flow. This guide contains an overview of the MAC swap loopback feature, and describes how to configure a facility MAC swap loopback test, conduct a facility MAC swap loopback test, and view and analyze the loopback results.

## 2. MAC Swap Loopback Introduction

In a loopback test, a signal is transmitted to a remote device, where it is looped back to the transmitting device. The transmitted and received signals can then be compared to prove circuit connectivity, isolate faults, and analyze characteristics of the data flow. Ethernet MAC swap loopback tests are analogous to traditional loopback tests employed in time division multiplexing (TDM) networks. However, in MAC swap loopbacks, the source MAC address and destination MAC addresses in the frame are swapped when the data is looped back so that the incoming source and destination addresses become the outgoing destination and source addresses, respectively (see [Figure 1](#) below). This address swap is necessary because Ethernet address rules do not allow frames containing the same source MAC address to arrive from different ports on a device.

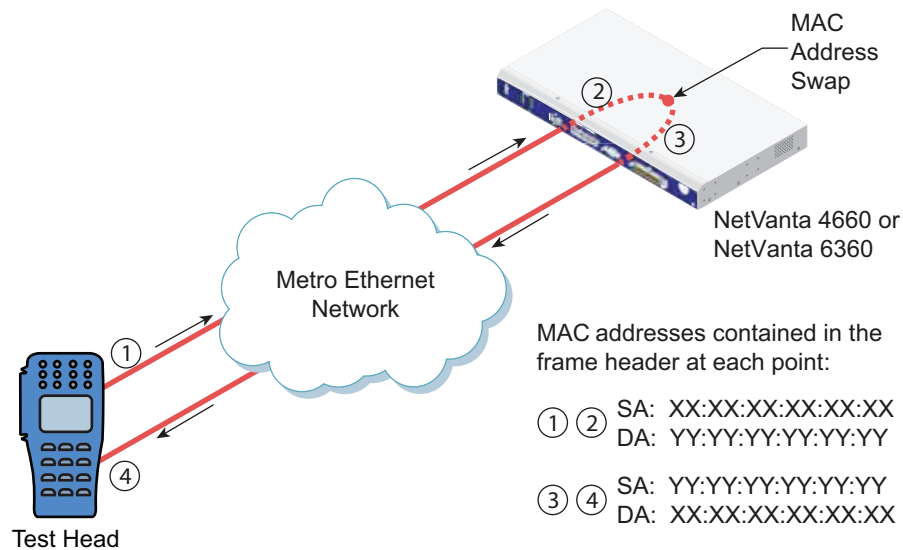


Figure 1. MAC Swap Loopback

### Facility Loopback

In a facility loopback (see [Figure 2](#) below), traffic is looped back upon ingressing the device. A flow ingressing the Metro Ethernet network (MEN) port is turned back toward that interface immediately upon entering the switch fabric. This loopback incorporates only the conditioning associated with the device's MEN port

interface (shaping). Facility loopbacks are commonly used to validate round-trip data flow between a test head and a remote device's interface to the Ethernet backhaul.

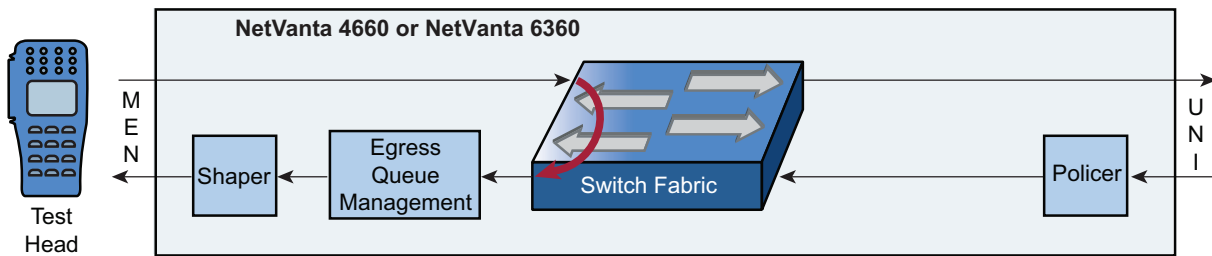


Figure 2. Facility Loopback

## Loopback Filters

Loopback filters allow you to specify that only Ethernet frames with a certain destination MAC address are looped back during a loopback test.

## Counters

AOS devices employ static interface and dynamic counters to track information that can help you analyze loopback flows. You can use these counters to validate end-to-end connectivity and identify configuration problems. You can also use counters to troubleshoot in-service network congestion issues.

Two interface counters (Rx Frames and Tx Frames) and two dynamic (user-configured) counters (shown here as Rx Counts and Tx Counts) can be useful when analyzing results of facility loopbacks. [Figure 3](#) below shows at what point in the loopback the frames are counted.

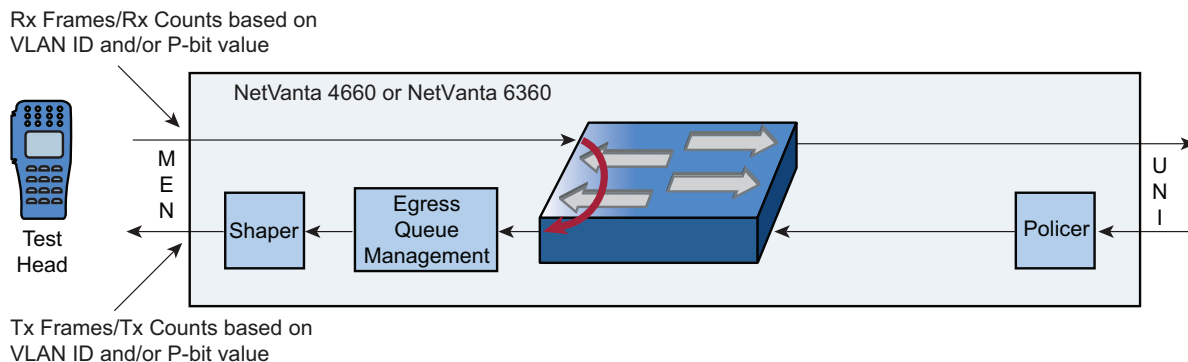


Figure 3. Counters in a Facility Loopback

## Rx Frames

The Rx Frames counter increments each time a valid Ethernet frame ingresses from the MEN port interface on the AOS device. If all ingressing frames consist of loopback test frames, then the value of the Rx Frames counter should track the test head's egress counter, provided the path from test head to the AOS device is operating correctly. It is expected that the Rx Frames counter and the test head's egress counter will update at different intervals. To simplify analysis, wait for counters to stabilize after the test head has transmitted a large fixed burst of loopback test frames.

### Rx Counts Based on VLAN ID or Priority Bit Value

Frames ingressing from the MEN port interface may include not only loopback test frames, but also data link layer operations, administration, and management (OAM) frames. In this situation, a dynamic counter may be useful. If the loopback test frame can be identified strictly by a specific virtual local area network (VLAN) ID or priority bit value, then you can configure a dynamic counter to register all loopback test frames or all non-loopback test frames. Unexpected results may indicate a problem in the path from the test head to the AOS device.

### Tx Frames

The Tx Frames counter increments each time an Ethernet frame egresses the MEN port interface. If all egressing frames consist of loopback test frames, then the value of the Tx Frames counter should track the test head's ingress counter. Additionally, if the facility loopback and shaper are configured properly, the value of the Tx Frames counter should track the Rx Frames counter. It is expected that the Tx Frames and Rx Frames counters and the test head's ingress and egress counters will update at different intervals. To simplify analysis, wait for counters to stabilize after the test head has transmitted a large fixed burst of loopback test frames. If the Tx Frames counter registers only some of the loopback test frames, then the shaper may be provisioned to a rate that is too slow. If the Tx Frames counter fails to increment, then the facility loopback may have been configured incorrectly.

### Tx Counts Based on VLAN ID or Priority Bit Value

Frames egressing the MEN port interface may include not only loopback test frames, but also data link layer OAM frames. In this situation, a dynamic counter may be useful. If the loopback test frame can be identified strictly by a specific VLAN ID or priority bit value, then you can configure a dynamic counter to register all loopback test frames or all non-loopback test frames. If this counter registers only some of the frames of interest, then the shaper may be provisioned to a rate that is too slow. If the shaper is already provisioned at the fastest allowable rate or is simply non-existent, then the loopback test frames together with other data may be exceeding throughput capacity. A failure of the dynamic counter to increment could mean the facility loopback has been configured incorrectly. If the value of this counter tends not to match that of the test head's ingress counter, then the path from the AOS device to the test head may be operating incorrectly.

## 3. Hardware and Software Requirements and Limitations

The MAC swap loopback feature is available on NetVanta 4660 and NetVanta 6360 products running AOS version R11.1.0 and later.

## 4. Configuring a Facility MAC Swap Loopback Test

This section explains how to provision a facility MAC swap loopback tests on an AOS device. In a facility loopback, the flow is turned back toward the MEN port interface upon ingress.

- [Step 1: Accessing the CLI on page 7](#)
- [Step 2: Optional. Configure a System Loopback MAC Address on page 8](#)
- [Step 3: Create and Configure a Facility Loopback Object on page 9](#)

### Step 1: Accessing the CLI

To access the command line interface (CLI) on the ADTRAN device, follow these steps:

1. Boot up the unit.
2. Telnet to the unit (**telnet** <ip address>), for example:

```
telnet 10.10.10.1
```



NOTE

*If during the unit's setup process you have changed the default Internet Protocol (IP) address (10.10.10.1), use the configured IP address.*

3. Enter your user name and password at the prompt.



NOTE

*The AOS default user name is **admin** and the default password is **password**. If your product no longer has the default user name and password, contact your system administrator for the appropriate user name and password.*

4. Enter Enable mode by entering **enable** at the prompt as follows:

>**enable**

5. Enter your Enable mode password at the prompt.



NOTE

*The default Enable mode password is **password**. If your product no longer has the default Enable password, contact your system administrator for the appropriate password.*

6. Enter the unit's Global Configuration mode as follows:

```
#configure terminal
(config)#
```

Step 2: Optional. Configure a System Loopback MAC Address

To facilitate loopback testing, you can configure a system loopback MAC address and use it for multiple loopbacks. This eliminates the need to repeatedly enter the same destination MAC address in certain CLI commands (the keyword **system** is used instead).



NOTE

*A system loopback MAC address cannot be the same address assigned to any management, logical, or physical interface on the unit.*

To assign a system loopback MAC address, enter the following command from the Global Configuration mode:

```
(config)#ethernet loopback system mac address [<mac address> | none]
```

Syntax	Description
<mac address>	Specifies a valid 48-bit MAC address. MAC addresses should be expressed in the following format: xx:xx:xx:xx:xx:xx (for example, <b>00:A0:C8:00:00:01</b> ).



Syntax	Description
none	Specifies that the system loopback MAC address is not assigned.

The following example configures a system loopback MAC address:

```
(config)#ethernet loopback system mac address 00:A0:C8:00:00:01
```

### Step 3: Create and Configure a Facility Loopback Object

Facility loopback objects define the MEN port interface that will loop back ingressing traffic during the facility MAC swap loopback test and the match criteria for the types of ingressing traffic that will be looped back.

To create and configure a facility loopback object, follow these steps:

1. From the Global Configuration mode, use the following command to create a facility loopback object:

```
(config)#ethernet loopback facility <name> <slot>
```

Syntax	Description
<b>&lt;name&gt;</b>	Specifies the name of the facility loopback object.
<b>&lt;slot&gt;</b>	Specifies a slot identifier for the facility loopback object.

The following example creates a facility loopback object named **FACILITY** and enters the Facility MAC Swap Loopback Configuration mode:

```
(config)#ethernet loopback facility FACILITY 0  
Facility loopback "FACILITY" created  
(config-eth-lbk-fac FACILITY 0)#
```

2. From the Facility MAC Swap Loopback Configuration mode, use the **set interface** command to specify the MEN port interface that will loop back traffic. Traffic ingressing this interface will be looped back if it matches the match criteria specified in the facility loopback object. If no match criteria is specified, all traffic ingressing the interface will be looped back.

```
(config-eth-lbk-fac FACILITY 0)#set interface <interface>
```

Syntax	Description
<b>&lt;interface&gt;</b>	Specifies the MEN port interface that will loop back traffic. Interfaces are specified in the <b>&lt;interface type&gt; &lt;slot/port&gt;</b> format. For example, for a Gigabit Ethernet interface, use <b>gigabit-ethernet 0/1</b> ; for an EFM bonding group, use <b>efm-group 1/1</b> . Type <b>set interface &lt;interface&gt; ?</b> to display a list of valid interfaces.

The following example specifies Gigabit Ethernet 0/1 interface as the MEN port interface that will loop back traffic:

```
(config-eth-lbk-fac FACILITY 0)#set interface gigabit-ethernet 0/1
```

3. Optional. From the Facility MAC Swap Loopback Configuration mode, use the **match destination mac address** command to filter the traffic ingressing the MEN port interface based on the destination MAC address. Packets ingressing the MEN port interface specified will be looped back if the packet's destination MAC address matches the MAC address specified by the command. Use the **no** form of this command to disable this feature.

```
(config-eth-lbk-fac FACILITY 0)#match destination mac address [system | <mac address>]
```

Syntax	Description
system	Specifies the system loopback MAC address as the destination MAC address for filtering loopback traffic ingressing the MEN port interface. This keyword can only be used if a system loopback MAC address has been specified. For information on creating a system loopback MAC address, refer to <a href="#">Step 2: Optional. Configure a System Loopback MAC Address on page 8</a> .
<mac address>	Specifies a valid 48-bit MAC address as the destination MAC address for filtering loopback traffic ingressing the MEN port interface. MAC addresses should be expressed in the following format: xx:xx:xx:xx:xx:xx (for example, <b>00:A0:C8:00:00:01</b> ).

The following example specifies that traffic ingressing the MEN port interface should be filtered based on the destination MAC address **00:A0:C8:00:00:02**:

```
(config-eth-lbk-fac FACILITY 0)#match destination mac address
00:A0:C8:00:00:02
```

## 5. Starting a Facility MAC Swap Loopback Test

After provisioning the facility MAC swap loopback test, you can enable the facility loopback object to start the loopback test. From the Facility MAC Swap Loopback Configuration mode, use the **no shutdown** command to start the facility MAC swap loopback test with the specified settings. If the configuration is valid and there are no conflicts with other loopbacks or traffic flows, the loopback will enter the running state. All traffic ingressing on the specified MEN port interface and filtered by the configured matching criteria will be looped back with the source and destination MAC addresses swapped:

```
(config-eth-lbk-fac FACILITY 0)#no shutdown
```

## 6. Viewing the Status and Output of Loopback Tests

To view the status and output of all facility MAC swap loopback tests on the device, use the following command from the Enable Configuration mode:

```
#show ethernet loopback facility
```

To view the status and output of all facility loopback objects on a specified slot, use the following command from the Enable Configuration mode:

```
#show ethernet loopback facility slot <slot>
```

Syntax	Description
slot <slot>	Specifies the slot identifier of the facility loopback object.

To view the status and output of a single facility loopback object, use the following command from the Enable Configuration mode:

```
#show ethernet loopback facility <name> <slot>
```

Syntax	Description
<name>	Specifies the name of the facility loopback object.
<slot>	Specifies the slot identifier of the facility loopback object.

## Example Facility Mac Swap Loopback Test Output

The following example shows the status and output of the facility loopback object **FACILITY** on slot **0**:

```
#show ethernet loopback facility FACILITY 0
eth-lbk-fac "FACILITY" 0 is Enabled and Running
Matched S-tag : na
Matched P-bit : na
Matched MAC   : DA 00:A0:C8:00:00:01
System MAC    : false
Interface     : gigabit-ethernet 0/1
```

The following table shows the loopback status messages that can appear. Status messages appear on the first line of the loopback test status output and provide information about the operational status of the loopback object. If the loopback test is not operating as expected, status messages can help you determine the cause.

**Table 1. Loopback Status Message**

Status	Definition
Disabled	The loopback administrative state is disabled.
Duplicate Loopback	Another loopback exists with the same configuration.
Enabled and Running	The loopback is running and looping back traffic as configured.
No Interface	The loopback does not have an interface assigned.
No System MAC Address	The loopback is configured to match on the system loopback MAC address, but no system MAC address has been configured.
Out of Resources	The device cannot support this loopback due to a resource limitation; the administrative state will be forced to "disabled".
Specified Interface Not a MEN	The interface specified isn't configured as a MEN port interface.

## 7. Stopping a MAC Swap Loopback Test

To stop a loopback test, use the **shutdown** command from the Facility MAC Swap Loopback Configuration mode. This command disables the loopback but does not delete the loopback object:

```
(config-eth-lbk-fac FACILITY 0)#shutdown
```

## 8. Deleting a MAC Swap Loopback Test Object

If a loopback object is no longer needed for tests, use the **no ethernet loopback facility** command from the Global Configuration mode to delete the facility loopback object:

```
(config)#no ethernet loopback facility <name> <slot>
```

Syntax	Description
<name>	Specifies the name of the facility loopback object.
<slot>	Specifies a slot identifier for the facility loopback object.

The following example deletes the facility loopback object named **FACILITY**:

```
(config)#no ethernet loopback facility FACILITY 0
```

## 9. Deleting a System MAC Address

If the configured system loopback MAC address is no longer needed, use the **no ethernet loopback system mac address** command from the Global Configuration mode to delete the facility loopback object:

```
(config)#no ethernet loopback system mac address
```

## 10. Conducting a Facility/Transport Test

In a facility network connection test, traffic ingresses the MEN port interface and is filtered by the configured match criteria. The source and destination addresses of the filtered frames are swapped before the traffic reaches the switch fabric. As the traffic travels back toward the MEN port interface it is shaped (if a shaper is configured), and then it egresses the MEN port interface.

The following is an example of a facility loopback on Gigabit Ethernet 0/1 to verify connectivity. The steps to conduct the example facility loopback are explained in the following steps. [Figure 4](#) shows what area of the network corresponds to each of the steps.

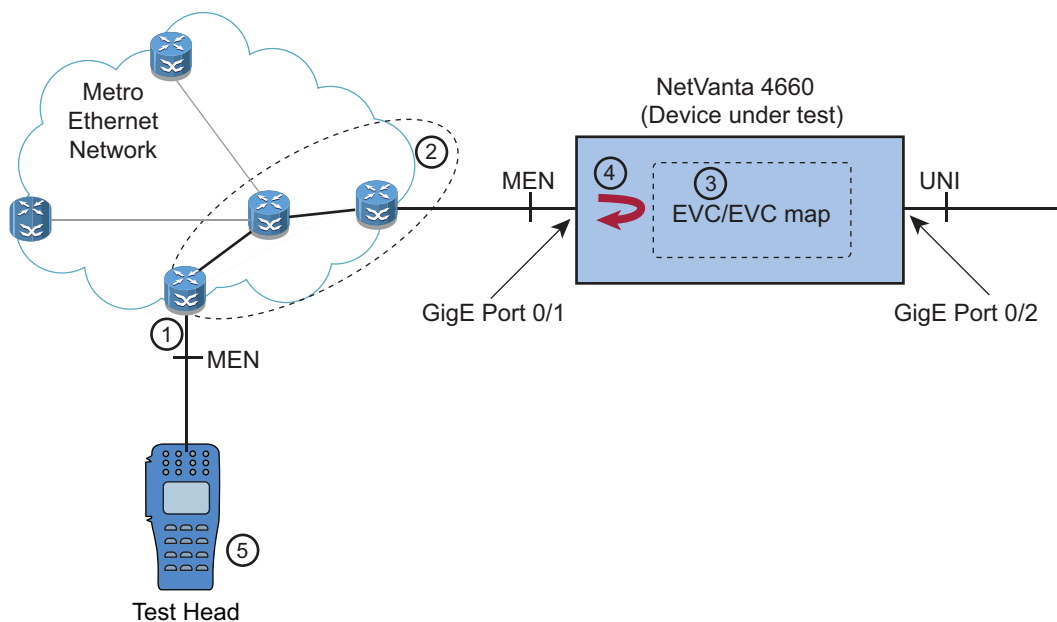


Figure 4. Facility/Transport Test

To conduct the example facility loopback follow these steps:

1. Configure the test head and the interface at which the test head will gain access to the network. Specific instructions for configuring the test head and interface vary, depending on the equipment used, but follow the guidelines below:
  - a. Configure the interface as a MEN port interface, allowing the test head direct access to the transport network.

- b. Configure the outer tag (VLAN ID) on the test head to match the Ethernet virtual connection (EVC) s-tag to be configured on the AOS device (in Step 3), as well as the s-tag of the service to be tested. In this example, the s-tag VLAN ID is 1200 (see the example test head setup in [Figure 5](#)).
- c. Configure the s-tag tag protocol identifier (TPID) (often called the 2544 Ethertype by test equipment manufacturers) on the test head to match the s-tag TPID of the outer tag. For carrier Ethernet, this value is often 0x88a8.
- d. Configure the **Destination Address** on the test head (see [Figure 5](#) below) to match the addresses to be configured in the loopback object (in Step 4).

Termination	10/100/1G Electrical Eth.
Test Mode	Layer 2 Traffic
Auto Negotiation Settings	10 FDX Yes    10 HDX Yes 100 FDX Yes    100 HDX Yes 1000 FDX Yes    1000 HDX Yes
Framing	802.3
Encapsulation	VLAN
VLAN ID	1200
User Priority	0
Destination Address Type	UNICAST
Source Address	00:80:16:8A:AA:BD
Destination Address	00:80:16:28:2A:57

Figure 5. Example Test Head Setup

2. Ensure that a VLAN path exists between the test head and the AOS device so that packets from the test head can be received by the AOS device.
3. At a minimum, configure the AOS device with an EVC that matches the s-tag of the service and configure an associated EVC map as shown below. It is not necessary to have the service completely configured in order for the facility loopback to run.
  - a. Create an EVC (**EVC1**) with an s-tag matching the service (**1200**), and connect the EVC to the MEN port interface (**gigabit-ethernet 0/1**). Preserve the CE VLAN ID so that the c-tag will not be removed from the frame as it leaves the MEN:

```
>enable
#configure terminal
(config)#evc EVC1
EVC "EVC1" created
(config-evc EVC1)#s-tag 1200
(config-evc EVC1)#connect men-port gigabit-ethernet 0/1
(config-evc EVC1)#no shutdown
```

- b. Create a mapping between the MEN port interface (**gigabit-ethernet 0/1**) and the user network interface (UNI) (**gigabit-ethernet 0/2**) by creating an EVC map and connecting it to the UNI port and the EVC:

```
(config)#evc-map MAP1
EVC-map "MAP1" created
(config-evc-map MAP1)#connect uni gigabit-ethernet 0/2
(config-evc-map MAP1)#connect evc EVC1
(config-evc-map MAP1)#no shutdown
```

- c. Verify that the EVC and EVC map are configured correctly and that both have a status of **Running**. In this example, the configuration is correct, and both the EVC and EVC map are running. If the EVC and EVC map are not both running, it is possible that traffic will not flow through the loopback, so you must check the configuration and correct any conflicts with other loopbacks or traffic flows:

```
#show evc EVC1
All EVC Tags Available in MEN
EVC EVC1
s-tag                : 1200
Admin State          : Enabled
EVC Status           : Running
MEN-port             : gigabit-ethernet 0/1
CE-VLAN Preservation : Enabled

Connected EVC maps
Name      EVC-map Status      Connection
MAP1      Running             gigabit-ethernet 0/2

#show evc-map MAP1
EVC-map "MAP1"
Admin State      : Enabled
EVC-map Status   : Running
Connected EVC    : EVC1 (1200)
MEN-Pri          : Inherit
MEN-Queue        : Inherit
Policer          : None
Connected UNI     : gigabit-ethernet 0/2
MEN C-tag Pri    : Inherit
```

4. Configure a facility loopback object on the AOS device on the MEN port interface at which connectivity is to be verified.

- a. Create the facility loopback object:

```
(config)#ethernet loopback facility FACILITY 0
Facility loopback "FACILITY" created
```

- b. Create the loopback filters and configure them to match on the destination MAC address. The address specified must match those configured on the test head:

```
(config-eth-lbk-fac FACILITY 0)#match destination mac address
00:80:16:28:2a:57
```

- c. Set the interface (**MEN**) at which the loopback will take place and enable the facility loopback object:

```
(config-eth-lbk-fac FACILITY 0)#set interface gigabit-ethernet 0/1
(config-eth-lbk-fac FACILITY 0)#no shutdown
```

- d. Verify that the loopback is enabled and running. If it is not running, refer to [Table 1 on page 11](#) for an explanation of the status message displayed, and correct the configuration accordingly:

```
#show ethernet loopback facility FACILITY 0
eth-lbk-fac "FACILITY" 0 is Enabled and Running
Matched s-tag        : na
Matched P-BIT        : na
Matched MAC DA       : 00:80:16:28:21:57
Matched MAC SA       : na
```

```
System MAC          : false
Interface           : gigabit-ethernet 0/1
```

- Conduct the test according to the test head manufacturer's instructions. Run the test for the duration and steps for the desired configurations. You can use the counters described in [Using Counters to Analyze Loopback Results on page 15](#) to help you analyze the loopback results.

## 11. Using Counters to Analyze Loopback Results

This section provides examples showing how to display the value of static counters (Rx Frames and Tx Frames) and how to configure and display the value of dynamic counters. For more information about dynamic counters, refer to [Configuring Dynamic Counters](#), available online at <https://supportcommunity.adtran.com>.

### MEN Port Rx Frames and Tx Frames

Use the **show interfaces** command from the Enable Configuration mode to view current status and statistical counts, including Rx Frames (**input**) and Tx Frames (**output**). Rx Frames and Tx Frames are counted during facility loopbacks.

```
#show interfaces <interface> [performance-statistics [15-minute <interval> |
24-hour <interval>]]
```

Syntax	Description
<interface>	Specifies an interface for which to show the current status and statistical counts. Interfaces are specified in the <interface type> <slot/port> format. For example, for a Gigabit Ethernet interface, use <b>gigabit-ethernet 0/1</b> ; for an EFM bonding group, use <b>efm-group 1/1</b> . Type <b>show interface ?</b> to display a list of valid interfaces.
performance-statistics	Optional. Displays performance monitoring statistics for a specified historical interval.
15-minute <interval>	Displays performance monitoring statistics from the specified historical 15-minute interval. For example, <b>15-minute 1</b> displays performance monitoring statistics from the first of 96 historical 15-minute intervals. Valid range is <b>1</b> to <b>96</b> .
24-hour <interval>	Displays performance monitoring statistics from the specified historical 24-hour interval. For example, <b>24-hour 3</b> displays performance monitoring statistics from the third of 7 historical 24-hour intervals. Valid range is <b>1</b> to <b>7</b> .

The following example shows the current status and statistical counts for the **gigabit-ethernet 0/1** interface:

```
#show interfaces gigabit-ethernet 0/1
giga-eth 0/1 is UP, line protocol is UP
  Hardware address is 00:A0:C8:12:34:59
  BW is 1000000 Kbit
  RJ-45 Shielded
  Small Form-factor Pluggable FINISAR CORP. 1000BASE-LX
  Last clearing of "show interface" counters : never
  5 minute input rate 6200 bits/sec, 3 packets/sec
  5 minute output rate 5864 bits/sec, 3 packets/sec
    101622 packets input, 13235708 bytes
    28981 unicasts, 12780 broadcasts, 59861 multicasts input
```

```

0 unknown protocol, 0 discards
0 input errors, 0 runts, 0 giants
0 crc errors
34210 packets output, 7999251 bytes
30474 unicasts, 51 broadcasts, 3685 multicasts output
0 output errors, 0 deferred, 0 discards
0 single, 0 multiple, 0 late collisions
0 carrier sense errors

```

The following example displays performance monitoring statistics from the first historical 15-minute interval for the **gigabit-ethernet 0/1** interface:

```

#show interfaces gigabit-ethernet 0/1 performance-statistics 15-minute 1
giga-eth 0/1 15-Minute PM (1)
08:15
Tx Bytes           : 108818
Tx Frames          : 556
Tx Unicasts        : 521
Tx Multicasts      : 35
Tx Broadcasts      : 0
Tx Discards        : 0
Tx Errors          : 0
Rx Bytes           : 150841
Rx Frames          : 1161
Rx Good Bytes      : 150841
Rx Good Frames     : 1161
Rx Unicasts        : 448
Rx Multicasts      : 586
Rx Discards        : 0
Rx Errors          : 0
Rx FCS Errors      : 0
Rx Unknown Protos  : 0
Rx Giants          : 0
Rx Runts           : 0
Rx Invalid CE-VLAN ID Frames : 0
Collisions         : 0
Multiple Collision Frames : 0
CarrierSenseErrors : 0
Deferred Transmissions : 0

```

## MEN Port Rx Counts and Tx Counts Per VLAN ID/Priority Bit Value

The following example provisions a dynamic counter that counts packets ingressing the MEN port interface via Gigabit Ethernet **0/1** with a VLAN ID of **1200** and priority bit of **5**.

In the example, a counter profile is created using the **counter-profile** command from the Global Configuration mode. Using the **vlan** and **pbit** commands from the Counter Profile Configuration mode, the counter profile is configured to match on VLAN ID **1200** and priority bit **5**, respectively. The dynamic counter is created using the **dynamic-counter** command from the Global Configuration mode. Then, the **set interface <interface> rx** command is used from the Dynamic Counter Configuration mode to configure the dynamic counter to count the packets ingressing the Gigabit Ethernet **0/1** interface. The dynamic counter is configured



to count packets matching the counter profile using the **set counter-profile <slot/index> include** command. The dynamic counter is then enabled using the **no shutdown** command.

```
#configure terminal
(config)#counter-profile 0/1
(config-count-prof 0/1)#vlan 1200
(config-count-prof 0/1)#pbit 5
(config-count-prof 0/1)#exit
(config)#dynamic-counter 0/1
(config-dyn-count 0/1)#set interface gigabit-ethernet 0/1 rx
(config-dyn-count 0/1)#set counter-profile 0/1 include
(config-dyn-count 0/1)#no shutdown
(config-dyn-count 0/1)#exit
```

The following command displays status and statistical counts since the last counter reset.

```
#show dynamic-counter 0/1
```

Counter	Type	Port/Queue	Bytes	Packets	Avg Rate (kbps)	Status
0/1	RX	Gig Eth 1	0	0	0	ACTIVE

## 12. Understanding How Loopback Testing Affects EVC Status

When a loopback changes configuration or transitions to or from the running state, the applicable EVCs are evaluated to determine if any of their MEN port interfaces need to be inhibited. If the traffic specified on an EVC's MEN port interface is fully encompassed by a loopback, that interface will be inhibited from carrying EVC traffic.



### NOTE

*The system management EVC always takes precedence over the Ethernet loopback. If a loopback is created that specifies only an interface and that interface is being used by the system management EVC, the loopback will begin running. However, management traffic will continue to flow and will not be looped back. If a loopback is created that specifies the same s-tag being used by the system management EVC, the loopback will not enter the running state.*

In the following example, the EVC (**EVC1**) and EVC map (**MAP1**) configured below are evaluated against a facility loopback object to determine the loopback object's running state. The scope of this section is limited to the defined object shown below, but the loopback would affect any other applicable EVCs in the same way.

```
(config)#evc EVC1
(config-evc EVC1)#s-tag 100
(config-evc EVC1)#connect men-port efm-group 1/1
(config-evc EVC1)#no shutdown
(config)#evc-map MAP1
(config-evc-map MAP1)#connect evc EVC1
(config-evc-map MAP1)#connect uni gigabit-ethernet 0/2
(config-evc-map MAP1)#no shutdown
```

In the following example, the facility loopback object **LOOPBACK1** is looping back **efm-group 1/1** traffic. This inhibits the EFM group connection on this EVC since all traffic on the connected MEN port interface is being looped back.

```
(config)#ethernet loopback facility LOOPBACK1 0
(config-eth-lbk-fac LOOPBACK1 0)#set interface efm-group 1/1
(config-eth-lbk-fac LOOPBACK1 0)#no shutdown
```