



## End-of-Record Function for DCNs

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The Cisco Protocol Translator is designed to support Telnet-like applications that are stream-based, with no recognition or accommodation for logical records. For record-oriented applications, problems can occur because the record boundaries in X.25 data are lost when translation to TCP occurs. The End-of-Record Function for Data Communications Networks (DCNs) feature provides for the configuration of an End of Record (EOR) marker which allows the X.25 logical boundaries to be marked when translated to TCP. The benefit of this feature is that it allows the preservation of logical boundaries when translating X.25 data to TCP, enabling X.25-based networking solutions to adapt to and benefit from TCP/IP technologies.

### Feature History for the End-of-Record Function for DCNs Feature

Release	Modification
Cisco IOS XE Gibraltar 16.10.1	This feature was introduced.

### Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

## Contents

- [Prerequisites for End-of-Record Function for DCNs, page 2](#)
- [Restrictions for End-of-Record Function for DCNs, page 2](#)
- [Information About End-of-Record Function for DCNs, page 2](#)
- [How to Configure End-of-Record Function for DCNs, page 3](#)
- [Configuration Examples for End-of-Record Function for DCNs, page 5](#)
- [Additional References, page 6](#)
- [Command Reference, page 7](#)



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## Prerequisites for End-of-Record Function for DCNs

X.25 must be configured. For more information on configuring X.25, see the “Configuring X.25 and LAPB” chapter in the *Cisco IOS Wide-Area Networking Configuration Guide*.

## Restrictions for End-of-Record Function for DCNs

This feature is supported only for X25-to-TCP and TCP-to-X.25 protocol translation sessions.

This feature is not supported for any other types of protocol translation sessions.

## Information About End-of-Record Function for DCNs

To configure the End-of-Record Function for DCNs feature, you must understand the following concepts:

- [Data Types, page 2](#)
- [The EOR Marker, page 2](#)
- [Benefits of End-of-Record Function for DCNs, page 2](#)

## Data Types

### X.25 data

X.25 data is inherently record-oriented. The X.25 protocol defines a bit in the packet called the More-bit (M-bit), which indicates whether the packet should be considered to terminate a logical record.

### TCP data

TCP data is inherently stream-oriented. The TCP protocol attaches no significance to TCP segment stream boundaries, and the boundaries may change if the data is re-sent.

## The EOR Marker

Logical record boundaries indicated by the combination of the X.25 packet boundaries and the M-bit are not preserved when translation to TCP occurs. The End-of-Record Function for DCNs feature allows the X.25 logical record boundaries to be marked by inserting a configurable string into the TCP stream at each X.25 record boundary. Translation of X.25 packets without the M-bit will invoke the insertion of the EOR marker.

## Benefits of End-of-Record Function for DCNs

The benefit of the End-of-Record Function for DCNs feature is that it allows the preservation of logical boundaries when translating X.25 data to TCP, enabling X.25-based networking solutions to adapt to and benefit from TCP/IP technologies.

# How to Configure End-of-Record Function for DCNs

This section contains the following procedures:

- [Configuring the End-of-Record Function for a TCP-to-X.25 Protocol Translation Session, page 3](#)
- [Configuring the End-of-Record Function for an X.25-to-TCP Protocol Translation Session, page 4](#)
- [Monitoring and Maintaining the End-of-Record Function for DCNs, page 5](#)

## Configuring the End-of-Record Function for a TCP-to-X.25 Protocol Translation Session

Perform this task to enable the End-of-Record Function for DCNs feature for a TCP-to-X.25 protocol translation session.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **translate tcp** *incoming-address* [*incoming-options*] **x25** *outgoing-address* [*outgoing-options*] [*global-options*] **eor marker** [**insert**]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>translate tcp</b> <i>incoming-address</i> [ <i>incoming-options</i> ] <b>x25</b> <i>outgoing-address</i> [ <i>outgoing-options</i> ] [ <i>global-options</i> ] <b>eor marker</b> [ <b>insert</b> ]  <b>Example:</b> Router(config)# translate tcp 10.60.155.63 x25 12345678 pvc 3 dynamic eor 0x19 insert	Translates an incoming TCP connection request to an X.25 destination address or host name and enables EOR functionality. <ul style="list-style-type: none"> <li>• <b>eor marker</b>—Defines the EOR marker for the translation session. The <i>marker</i> argument may be any set characters from 1 to 4 in length. Nonprintable characters must be entered in hexadecimal format. Printable characters may be typed in.</li> <li>• <b>insert</b>—Allows the EOR marker to be inserted into the TCP stream after each received X.25 packet that does not contain the M-bit set.</li> </ul>

## Configuring the End-of-Record Function for an X.25-to-TCP Protocol Translation Session

Perform this task to enable the End-of-Record Function for DCNs feature for an X.25-to-TCP protocol translation session.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **translate x25** *incoming-address* [*incoming-options* [**pvc number** [*pvc-options*]]] **tcp** *outgoing-address* [*outgoing-options*] [*global-options*] **eor marker** [**insert**]

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
Step 3	<b>translate x25</b> <i>incoming-address</i> [ <i>incoming-options</i> [ <b>pvc number</b> [ <i>pvc-options</i> ]]] <b>tcp</b> <i>outgoing-address</i> [ <i>outgoing-options</i> ] [ <i>global-options</i> ] <b>eor marker</b> [ <b>insert</b> ]  <b>Example:</b> Router(config)# translate x25 12345678 pvc 3 tcp 10.60.155.63 eor AAA insert	Translates an incoming X.25 connection request to a TCP destination address or host name and enables EOR functionality. <ul style="list-style-type: none"> <li>• <b>eor marker</b>—Defines the EOR marker for the translation session. The <i>marker</i> argument may be any set of characters from 1 to 4 in length. Nonprintable characters must be entered in hexadecimal format. Printable characters may be typed in.</li> <li>• <b>insert</b>—Allows the EOR marker to be inserted into the TCP stream after each received X.25 packet that does not contain the M-bit set.</li> </ul>

### Troubleshooting Tips

In the event that the End-of-Record Function for DCNs feature is not operating correctly, use the following **debug** commands in privileged EXEC mode to determine the source of the problem:

- **debug translate**
- **debug x25 all**
- **debug pad**

Refer to the [Cisco IOS Debug Command Reference](#) publication for information about the **debug translate**, **debug x25 all**, and **debug pad** commands.

## Monitoring and Maintaining the End-of-Record Function for DCNs

This task results in the display of information about any protocol translation information configured with the **translate** command.

### SUMMARY STEPS

1. **enable**
2. **show translate**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
Step 2	<b>show translate</b>  <b>Example:</b> Router# show translate	Displays information about translation sessions that have been configured.

## Configuration Examples for End-of-Record Function for DCNs

This section contains the following configuration example:

- [Configuring the End-of-Record Function for DCNs for a TCP-to-X.25 Protocol Translation Session Example, page 5](#)
- [Configuring the End-of-Record Function for DCNs for an X.25-to-TCP Protocol Translation Session Example, page 6](#)

### Configuring the End-of-Record Function for DCNs for a TCP-to-X.25 Protocol Translation Session Example

The following example configures a TCP-to-X.25 protocol translation session to insert an EOR marker in a TCP packet after each received X.25 packet that does not contain the M-bit set. The EOR marker in this example consists of nonprintable characters and is entered in hexadecimal format.

```
translate tcp 10.60.155.63 x25 12345678 pvc 3 dynamic eor 0x19 insert
```

## Configuring the End-of-Record Function for DCNs for an X.25-to-TCP Protocol Translation Session Example

The following example configures an X.25-to-TCP protocol translation session to insert an EOR marker in a TCP packet after each received X.25 packet that does not contain the M-bit set. The EOR marker in this example consists of printable characters.

```
translate x25 12345678 pvc 3 tcp 10.60.155.63 eor AAA insert
```

## Additional References

The following sections provide additional information related to the End-of-Record Function for DCNs feature.

## Related Documents

Related Topic	Document Title
Additional information about configuring protocol translation	<i><a href="#">“Configuring Protocol Translation and Virtual Asynchronous Devices”</a></i>
Additional protocol translation commands: complete command syntax, command mode, defaults, usage guidelines and examples	<i><a href="#">Cisco IOS Terminal Services Command Reference</a></i>
Information on configuring X.25	<i><a href="#">Cisco IOS Wide-Area Networking Configuration Guide.</a></i>
Additional X.25 commands	<i><a href="#">Cisco IOS Wide-Area Networking Command Reference</a></i>

## Standards

Standards	Title
None	—

## MIBs

MIBs	MIBs Link
None	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:  <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

## RFCs

RFCs	Title
None	—

## Technical Assistance

Description	Link
Technical Assistance Center (TAC) home page, containing 30,000 pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	<a href="http://www.cisco.com/public/support/tac/home.shtml">http://www.cisco.com/public/support/tac/home.shtml</a>

## Command Reference

The following commands are introduced or modified in the feature or features documented in this module. For information about these commands, see the *Cisco IOS Terminal Services Command Reference* at [http://www.cisco.com/en/US/docs/ios/termserv/command/reference/tsv\\_book.html](http://www.cisco.com/en/US/docs/ios/termserv/command/reference/tsv_book.html). For information about all Cisco IOS commands, go to the Command Lookup Tool at <http://tools.cisco.com/Support/CLILookup> or to the *Cisco IOS Master Commands List*.

- **show translate**
- **translate tcp**
- **translate x25**

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

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