

Frame Relay Commands

This chapter describes the Frame Relay commands and command syntax that are unique to the Cisco MC3810. Frame Relay commands that do not differ from standard Cisco IOS software are not documented here. For information about standard Frame Relay commands from Cisco IOS software, refer to the *Wide-Area Networking Command Reference*.

For Frame Relay configuration information and examples, refer to the *Wide-Area Networking Configuration Guide*.

The following Frame Relay commands include command syntax unique to the Cisco MC3810:

- **frame-relay interface-dlci**
- **frame-relay route**
- **frame-relay traffic-shaping**

frame-relay interface-dlci

To assign a data link connection identifier (DLCI) to a specified Frame Relay subinterface on the router or access server, use the **frame-relay interface-dlci** interface configuration command. Use the **no** form of this command to remove this assignment.

frame-relay interface-dlci *dlci* [**ietf** | **cisco**] [**voice-encap** *size*] [**voice-cir** *CIR*]
no frame-relay interface-dlci *dlci* [**ietf** | **cisco**] [**voice-encap** *size*] [**voice-cir** *CIR*]

Syntax Description

<i>dlci</i>	DLCI number to be used on the specified subinterface.
ietf cisco	(Optional) Encapsulation type: Internet Engineering Task Force (IETF) Frame Relay encapsulation or Cisco Frame Relay encapsulation.
protocol ip <i>ip-address</i>	(Optional) Indicates the IP address of the main interface of a new router or access server onto which a router configuration file is to be automatically installed over a Frame Relay network. Use this option only when this device will act as the BOOTP server for automatic installation over Frame Relay.
voice-encap <i>size</i>	(Supported on the Cisco MC3810 only) (Optional) Specifies that data segmentation will be used to support Voice over Frame Relay. The voice encapsulation size denotes the data segmentation size. The valid range is from 80 to 1600 bytes. For a list of recommended data segmentation sizes, see the “Usage Guidelines” section.
voice-cir <i>CIR</i>	(Supported on the Cisco MC3810 only) (Optional) Specifies the voice CIR for the DLCI for Voice over Frame Relay. The default is the CIR configured for the Frame Relay map class. For more information, see the “Usage Guidelines” section.

Default

No DLCI is assigned.

Command Mode

Interface configuration

Command History

Release	Modification
10.0	This command was first introduced.
11.3(1) MA	The voice-encap option was added.
12.0(2) T	The voice-cir option was added.

Usage Guidelines

This command is typically used for subinterfaces; however, it can also be used on main interfaces. Using the **frame-relay interface-dlci** command on main interfaces enables the use of routing protocols on interfaces that use Inverse ARP. The **frame-relay interface-dlci** command on a main interface is also valuable for assigning a specific class to a single PVC where special characteristics are desired. Subinterfaces are logical interfaces associated with a physical interface. You must specify the interface and subinterface before you can use this command to assign any DLCIs and any encapsulation or broadcast options. See the “Example” section for the sequence of commands.

This command is required for all point-to-point subinterfaces; it is also required for multipoint subinterfaces for which dynamic address resolution is enabled. It is not required for multipoint subinterfaces configured with static address mappings.

Use the **protocol ip** *ip-address* option only when this router or access server will act as the BOOTP server for autoinstallation over Frame Relay.

When configuring the **voice-encap** option on the Cisco MC3810 to configure Voice over Frame Relay, set the data segmentation size based on the port access rate. Table 7 lists recommended data segmentation sizes for different port access rates. Also, when the **voice-encap** option is configured on the Cisco MC3810, all priority queuing, custom queuing, and weighted fair queuing is disabled on the interface.

When configuring the **voice-cir** option on the Cisco MC3810 for Voice over Frame Relay, do not configure this option to be higher than the physical link speed. If Frame Relay traffic shaping is enabled for a PVC sharing voice and data, do not configure the **voice-cir** option to be higher than the value set with the **frame-relay mincir** command.

Table 7 Recommended Data Segmentation Sizes

Port Access Rate	Recommended Data Segmentation Size ¹
64 kbps	80 bytes
128 kbps	160 bytes
256 kbps	320 bytes
512 kbps	640 bytes
1536 kbps (full T1)	1600 bytes
2048 kbps (full E1)	1600 bytes

1. The data segmentation size is for back-to-back Frame Relay. If sending traffic through an IGX with standard Frame Relay, subtract 6 bytes from the recommended data segmentation size.

For more information about automatically installing router configuration files over a Frame Relay network, see the “Loading System Images and Microcode” chapter in the *Configuration Fundamentals Configuration Guide*.

Examples

The following example assigns DLCI 100 to serial subinterface 5.17:

```
! Enter interface configuration and begin assignments on interface serial 5
interface serial 5
! Enter subinterface configuration by assigning subinterface 17
interface serial 5.17
! Now assign a DLCI number to subinterface 5.17
frame-relay interface-dlci 100
```

Related Commands

Command	Description
frame-relay class	Associates a map class with an interface or subinterface.
frame-relay mincir	Specifies the minimum acceptable incoming or outgoing committed information rate (CIR) for a Frame Relay virtual circuit.
frame-relay route	Specifies the static route for PVC switching.

frame-relay route

Use the **frame-relay route** interface configuration command to specify the static route for PVC switching. Use the **no** form of this command to remove a static route.

```
frame-relay route in-dlci interface interface-number out-dlci [voice-encap size] [voice-cir size]  
no frame-relay route in-dlci interface interface-number out-dlci [voice-encap size] [voice-cir size]
```

Syntax Description

<i>in-dlci</i>	DLCI on which the packet is received on the interface.
<i>interface-number</i>	Out-interface that the router or access server uses to transmit the packet. Valid entries are: <ul style="list-style-type: none"> • serial 1 • serial 0 • serial 0:x (Logical serial interface created by the channel-group command) • fr-atm x (Dynamic interface created by the interface fr-atm command)
<i>out-dlci</i>	DLCI that the router or access server uses to transmit the packet over the specified <i>out-interface</i> .
voice-encap <i>size</i>	(Supported on the Cisco MC3810 only.) Specifies the size in bytes of data segmentation used to support Voice over Frame Relay. Voice encapsulation applies only to the input DLCI side. The valid range is 8 to 1600.
voice-cir <i>size</i>	(Supported on the Cisco MC3810 only.) Call admission control (CAC) function. Specifies the maximum bandwidth in bits per second to use for voice traffic on that DLCI. The valid range is 0 to 2048000.

Default

No static route is specified.

Command Mode

Interface configuration

Command History

Release	Modification
10.0	This command was first introduced.
11.3(1) MA	Support for voice encapsulation on the Cisco MC3810 was added.
12.0(2) T	The voice-cir command for Cisco MC3810 was added.

Usage Guidelines

When used with voice, the **frame-relay route** command is applied on both interfaces. If the voice-encap option is specified on one interface, then the incoming frames on that interface are defragmented before being routed to the other interface. The outgoing frames on that interface are then fragmented after being routed from the other interface, and before transmission out the interface.

Before the **frame-relay route** command can be entered, you must enable frame relay switching with the **frame-relay switching** command.

For the **frame-relay route** command to take effect, the frame-relay interface type must be either DCE or NNI; configure the frame-relay interface type with the **frame-relay intf-type** command.

Examples

The following example configures a static route that allows packets in DLCI 100 and transmits packets out over DLCI 200 on interface serial1:

```
frame-relay route 100 interface Serial1 200
```

The following example illustrates the commands you enter for a complete configuration that includes two static routes for PVC switching between interface serial 0 and interface serial 1:

```
interface Serial1
no ip address
encapsulation frame-relay
keepalive 15
frame-relay lmi-type ansi
frame-relay intf-type dce
frame-relay route 100 interface Serial0 200
frame-relay route 101 interface Serial1 201
clockrate 2000000
```

Related Commands

Command	Description
frame-relay interface-dlci	Assigns a data link connection identifier (DLCI) to a specified Frame Relay subinterface on the router or access server.
frame-relay intf-type	Configures a Frame Relay switch type.
frame-relay switching	Enables PVC switching on a Frame Relay interface of type DCE, NNI, or DTE.

frame-relay traffic-shaping

To enable both traffic shaping and per-virtual-circuit queuing for all PVCs on a Frame Relay interface, use the **frame-relay traffic-shaping** interface configuration command. To disable traffic shaping and per-virtual-circuit queuing, use the **no** form of this command.

frame-relay traffic-shaping
no frame-relay traffic-shaping

Syntax Description

This command has no keywords and arguments.

Default

Disabled.

Command Mode

Interface configuration

Command History

Release	Modification
11.2	This command was first introduced.

Usage Guidelines

For virtual circuits for which no specific traffic shaping or queuing parameters are specified, a set of default values are used. The default queuing is performed on a first-come-first-served basis.

Note The standard Cisco IOS form of this command also supports Frame Relay SVCs. The Cisco ZMC3810 does not support Frame Relay SVCs.

Examples

The following example enables both traffic shaping and per-virtual-circuit queuing:

```
frame-relay traffic-shaping
```

Related Commands

Command	Description
frame-relay class	Associates a map class with an interface or subinterface.

