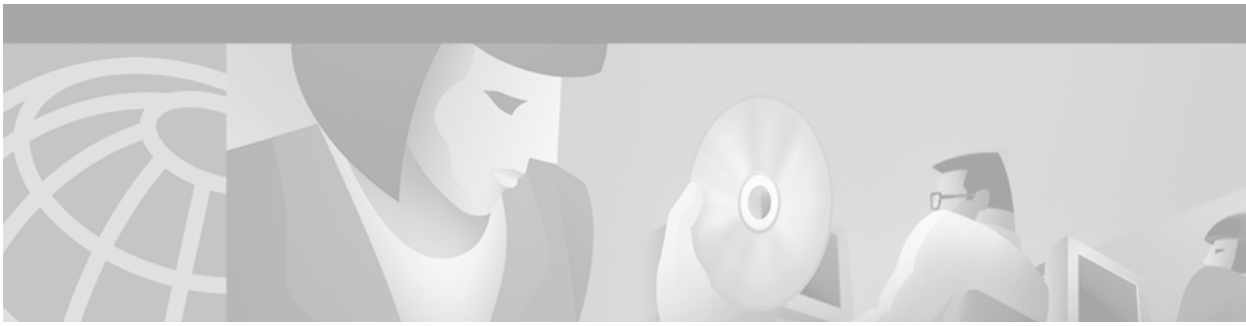

Frame Relay-ATM Interworking Commands

Use the commands described in this chapter to configure FRF.5 Frame Relay-ATM Network Interworking and FRF.8 Frame Relay-ATM Service Interworking.

For Frame Relay-ATM configuration information and examples, refer to the "Configuring Frame Relay-ATM Interworking" chapter in the *Cisco IOS Wide-Area Networking Configuration Guide*.

clp-bit

To set the ATM cell loss priority (CLP) field in the ATM cell header, use the **clp-bit** connect submode command. To disable ATM CLP bit mapping, use the **no** form of this command.

clp-bit {**0** | **1** | **map-de**}

no clp-bit {**0** | **1** | **map-de**}

Syntax Description

0	The CLP field in the ATM cell header is always set to 0.
1	The CLP field in the ATM cell header is always set to 1.
map-de	The discard eligible (DE) field in the Frame Relay header is mapped to the CLP field in the ATM cell header.

Defaults

The default is set to **map-de**.

Command Modes

FRF.5 connect submode

FRF.8 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command maps from Frame Relay to ATM.

Examples

FRF.5 Example

The following example sets the CLP field in the ATM header to 1 for FRF.5:

```
Router(config)# connect network-1 vc-group network-1 ATM3/0 1/35
Router(config-frf5)# clp-bit 1
```

FRF.8 Example

The following example sets the CLP field in the ATM header to 1 for FRF.8:

```
C3640(config)# connect service-1 Serial1/0 16 ATM3/0 1/32 service-interworking
C3640(config-frf8)# clp-bit 1
```

Related Commands

Command	Description
connect (FRF.5)	Connects a Frame Relay DLCI or VC group to an ATM PVC.
de-bit map-clp	Sets the Frame Relay DE bit field in the Frame Relay cell header.

connect (FRF.5)

To configure an FRF.5 one-to-one connection between two Frame Relay end users over an intermediate ATM network, or an FRF.5 many-to-one connection between two Frame Relay end users over an intermediate ATM network, use the **connect** global configuration command. To remove a connection, use the **no** form of this command.

connect *connection-name* {**vc-group** *group-name* | *FR-interface FR-DLCI*} *ATM-interface ATM-VPI/VCI* **network-interworking**

no connect *connection-name* {**vc-group** *group-name* | *FR-interface FR-DLCI*} *ATM-interface ATM-VPI/VCI* **network-interworking**

Syntax Description

connection-name	Specifies a connection name. Enter as a 15-character maximum string.
vc-group *group-name*	Specifies a VC group name for a many-to-one FRF.5 connection. Enter as an 11- character maximum string.
FR-interface	Specifies the Frame Relay interface type and number, for example, **serial1/0**.
FR-DLCI	Specifies the Frame Relay data-link connection identifier (DLCI) in the range from 16 to 1007.
ATM-interface	Specifies the ATM interface type and number, for example, **atm1/0**.
ATM-VPI/VCI	Specifies the ATM virtual path identifier/virtual channel identifier (VPI/VCI). If a VPI is not specified, the default VPI is 0.
network-interworking	Specifies FRF.5 network interworking. Not a valid keyword if the **vc-group** keyword is specified.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

Use the **connect** command to connect a group of Frame Relay DLCIs to an ATM PVC.

To disconnect the FRF.5 interworking connection, use the **shutdown** connect subcommand.

Examples

The following example shows how to create an FRF.5 one-to-one connection:

```
router(config)# interface serial0
router(config-if)# frame-relay interface-dlci 100 switched
router(config-if)# interface atm3/0
router(config-if)# pvc 0/32
```

```
router(config-if-atm-vc)# encapsulation aal5mux frame-relay
router(config)# connect serial0 100 atm3/0 0/32 network-interworking
router(config-frf5)# clp-bit 1
router(config-frf5)# de-bit map-clp
```

The following example shows how to create an FRF.5 many-to-one connection:

```
router(config)# interface serial0
router(config-if)# frame-relay interface-dlci 100 switched
router(config)# vc-group friends
router(config-vc-group)# serial0 16 16
router(config-vc-group)# serial0 17 17
router(config-vc-group)# serial0 18 18
router(config-vc-group)# serial0 19 19
router(config)# interface atm3/0
router(config-if)# pvc 0/32
router(config-if-atm-vc)# encapsulation aal5mux frame-relay
router(config)# connect vc-group friends atm3/0 0/32
router(config-frf5)# de-bit map-clp
```

Related Commands

Command	Description
encapsulation aal5	Configures the AAL and encapsulation type for an ATM PVC, SVC, or VC class.
pvc	Creates an ATM PVC on a main interface or subinterface; enters interface-ATM-VC configuration mode.
vc-group	Assigns multiple Frame Relay DLCIs to a VC group.

connect (FRF.8)

To configure an FRF.8 one-to-one mapping between a Frame Relay data-link connection identifier (DLCI) and an ATM permanent virtual circuit (PVC), use the **connect** global configuration command. To remove a connection, use the **no** form of this command.

connect *connection-name FR-interface FR-DLCI ATM-interface ATM-VPI/VCI* **service-interworking**

no connect *connection-name FR-interface FR-DLCI ATM-interface ATM-VPI/VCI* **service-interworking**

Syntax Description

connection-name	Specifies a connection name. Enter as a 15-character maximum string.
FR-interface	Specifies the Frame Relay interface type and number, for example, **serial1/0**.
FR-DLCI	Specifies the Frame Relay data-link connection identifier (DLCI) in the range 16 to 1007.
ATM-interface	Specifies the ATM interface type and number, for example **atm1/0**.
ATM-VPI/VCI	Specifies the ATM virtual path identifier/virtual channel identifier (VPI/VCI). If a VPI is not specified, the default VPI is 0.
service-interworking	Specifies FRF.8 service interworking.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

Use the **connect** command to connect a Frame Relay DLCI to an ATM PVC.

To disconnect the FRF.8 interworking connection, use the **shutdown** connect subcommand.

Examples

The following example shows how to create an FRF.8 connection:

```
router(config)# interface serial0
router(config-if)# frame-relay interface-dlci 100 switched
router(config-if)# interface atm1/0
router(config-if)# pvc 0/32
router(config-if-atm-vc)# encapsulation aal5mux fr-atm-srv
router(config)# connect service-1 Serial0 100 ATM1/0 0/32 service-interworking
router(config-frf8)# efci-bit map-fecn
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
de-bit map-clp	Sets the EFCI bit field in the ATM cell header.
encapsulation aal5	Configures the AAL and encapsulation type for an ATM PVC, SVC, or VC class.
pvc	Creates an ATM PVC on a main interface or subinterface; enters interface-ATM-VC configuration mode.

de-bit

To set the Frame Relay discard eligible (DE) bit field in the Frame Relay cell header for FRF.8 service interworking, use the **de-bit** connect submode command. To disable or reset Frame Relay DE bit mapping, use the **no** form of this command.

de-bit {**0** | **1** | **map-clp**}

no de-bit {**0** | **1** | **map-clp**}

Syntax Description

0	The DE field in the Frame Relay header is always set to 0.
1	The DE field in the Frame Relay header is always set to 1.
map-clp	The DE field is set to 1 when one or more cells belonging to a frame has its cell loss priority (CLP) field set.

Defaults

The default is set to **map-clp**.

Command Modes

FRF.8 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command maps from ATM to Frame Relay.

Examples

The following example sets the DE bit field in the Frame Relay cell header to 1:

```
Router(config)# connect service-1 serial1/0 16 atm3/0 1/32 service-interworking
Router(config-frf8)# de-bit 1
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
connect (FRF.8)	Connects a Frame Relay DLCI to an ATM PVC.
de-bit map-clp	Sets the EFCI bit field in the ATM cell header.

de-bit map-clp

To set Frame Relay discard eligible (DE) bit mapping for FRF.5 network interworking, use the **de-bit map-clp** connect submode command. To disable or reset Frame Relay DE bit mapping, use the **no** form of this command.

de-bit map-clp

no de-bit map-clp

Syntax Description

This command has no arguments or keywords.

Defaults

No default behavior or values.

Command Modes

FRF.5 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

In the default state, the DE bit in the Frame Relay header is set to 1 when one or more ATM cells belonging to a frame has its cell loss priority (CLP) field set to 1, or when the DE field of the Frame Relay service specific convergence sublayer (FR-SSCS) protocol data unit (PDU) is set to 1.

When the **no de-bit map-clp** command is entered, the FR-SSCS PDU DE field is copied unchanged to the Q.922 core frame DE field, independent of CLP indications received at the ATM layer.

Examples

The following example creates a connection that connects the virtual circuit (VC) group named friends to ATM PVC 0/32 and configures FR DE field mapping to match the ATM CLP field:

```
router(config)# vc-group friends
router(config-vc-group)# serial0 16 16
router(config-vc-group)# serial0 17 17
router(config-vc-group)# serial0 18 18
router(config-vc-group)# serial0 19 19
router(config)# interface atm3/0
router(config-if)# pvc 0/32
router(config-if-atm-vc)# encapsulation aal5mux frame-relay
router(config)# connect vc-group friends atm3/0 0/32
router(config-frf5)# de-bit map-clp
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
connect (FRF.5)	Connects a Frame Relay DLCI or VC group to an ATM PVC.
vc-group	Assigns multiple Frame Relay DLCIs to a VC group.

efci-bit

To set the explicit forward congestion indication (EFCI) bit field in the ATM cell header for FRF.8 service interworking, use the **efci-bit** connect submode command. To disable or reset this bit, use the **no** form of this command.

efci-bit {**0** | **map-fecn**}

no efci-bit {**0** | **map-fecn**}

Syntax Description

0	The EFCI field in the ATM cell header is set to 0.
map-fecn	The EFCI field in the ATM cell header is set to 1 when the forward explicit congestion notification (FECN) field in the Frame Relay header is set.

Defaults

The default is **0**.

Command Modes

FRF.8 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command maps from Frame Relay to ATM.

Examples

The following example creates a connection that connects Frame Relay DLCI 100 to ATM PVC 0/32, and sets the EFCI field in the ATM cell header to 1 when the FECN field in the Frame Relay header is set:

```
router(config)# interface atm1/0
router(config-if)# pvc 0/32
router(config-if)# encapsulation aal5mux fr-atm-srv
router(config)# connect serial0 100 atm1/0 0/32 service-interworking
router(config-frf8)# efci-bit map-fecn
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
connect (FRF.8)	Connects a Frame Relay DLCI to an ATM PVC.
connect (FRF.5)	Sets the Frame Relay DE bit field in the Frame Relay cell header.
service translation	Allows mapping between encapsulated ATM PDUs and encapsulated Frame Relay PDUs.

service translation

To enable upper layer user protocol encapsulation for Frame Relay-to-ATM Service Interworking (FRF.8) feature, which allows mapping between encapsulated ATM protocol data units (PDUs) and encapsulated Frame Relay PDUs, use the **service translation** command in FRF.8 connection mode. To disable upper layer user protocol encapsulation, use the **no** form of this command.

service translation

no service translation

Syntax Description

This command has no arguments or keywords.

Defaults

The default state is **service translation**.

Command Modes

FRF.8 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

The **no service translation** command disables mapping between encapsulated ATM PDUs and encapsulated Frame Relay PDUs.

Examples

The following example shows an FRF.8 configuration with service translation disabled:

```
Router# show running:configuration

Building configuration...

Current configuration:

connect service-1 Serial1/0 16 ATM3/0 1/32 service-interworking
 no service translation
 efci-bit map-fecn
```

The following example shows how to configure service translation on the connection named service-1:

```
Router(config)# connect service-1 serial1/0 16 ATM3/0 1/32 service-interworking
Router(config-frf8)# service translation
```

Related Commands

Command	Description
clp-bit	Sets the ATM CLP field in the ATM cell header.
connect (FRF.5)	Sets the Frame Relay DE bit field in the Frame Relay cell header.
de-bit map-clp	Sets the EFCI bit field in the ATM cell header.

show connect (FR-ATM)

To display statistics and other information about Frame-Relay-to-ATM Network Interworking (FRF.5) and Frame Relay-to-ATM Service Interworking (FRF.8) connections, use the **show connect** EXEC command.

show connect [**all** | *element* | **id** *ID* | *name* | **port** *port*]

Syntax Description

all	(Optional) Displays information about all Frame Relay-to-ATM connections.
element	(Optional) Displays information about the specified connection element.
id *ID*	(Optional) Displays information about the specified connection identifier.
name	(Optional) Displays information about the specified connection name.
port *port*	(Optional) Displays information about all connections on an interface.

Defaults

Default state is **show connect all**.

Command Modes

EXEC

Command History

Release	Modification
12.1(2)T	This command was introduced.

Examples

FRF.5 Examples

The following example displays information about all FRF.5 connections:

```
C3640# show connect all

ID   Name               Segment 1            Segment 2           State
========================================================================
5    network-1          VC-Group network-1   ATM3/0 1/34         UP
```

The following example displays information about the specified FRF.5 connection identifier:

```
C3640# show connect id 5

FR/ATM Network Interworking Connection: network-1
  Status    - UP
  Segment 1 - VC-Group network-1
  Segment 2 - ATM3/0 VPI 1 VCI 34
  Interworking Parameters -
    de-bit map-clp
    clp-bit map-de
```

FRF.8 Examples

The following example displays information about the specified FRF.8 connection identifier:

```
C3640# show connect id 10

FR/ATM Service Interworking Connection: service-1
  Status    - UP
  Segment 1 - Serial1/0 DLCI 16
  Segment 2 - ATM3/0 VPI 1 VCI 32
Interworking Parameters -
    service translation
    efci-bit 0
    de-bit map-clp
    clp-bit map-de
```

The following example displays information about the FRF.8 connection on an interface:

```
C3640# show connect port atm3/0

ID   Name               Segment 1            Segment 2           State
=====================================================================
10   service-1         Serial1/0 16         ATM3/0 1/32          UP
```

Table 38 describes the fields seen in these displays.

Table 38 show connect Field Descriptions

Display	Description
ID	Arbitrary connection identifier assigned by the operating system.
Name	Assigned connection name.
Segment 1 or 2	Frame Relay or ATM interworking segments.
State or Status	Status of the connection, UP, DOWN, or ADMIN DOWN.

Related Commands

Command	Description
connect (FRF.8)	Connects a Frame Relay DLCI to an ATM PVC.
show atm pvc	Displays all ATM PVCs, SVCs, and traffic information.
show frame-relay pvc	Displays statistics about Frame Relay interfaces.

show vc-group

To display the names of all virtual circuit (VC) groups, use the **show vc-group** EXEC command.

show vc-group [*group-name*]

Syntax Description

group-name	(Optional) Name defined by the **vc-group** command. If this argument is not specified, the names of all VC groups in the system are displayed.

Defaults

The names of all VC groups in the system are displayed.

Command Modes

EXEC

Command History

Release	Modification
12.1(2)T	This command was introduced.

Examples

The following example shows the default display of the **show vc-group** EXEC command:

```
Router# show vc-group

Name of All VC Groups:
======================
network-1
```

Related Commands

Command	Description
show atm pvc	Displays all ATM PVCs, SVCs, and traffic information.
show frame-relay pvc	Displays statistics about Frame Relay interfaces.
vc-group	Assigns multiple Frame Relay DLCIs to a VC group.

shutdown (FR-ATM)

To shut down a Frame Relay-ATM Network Interworking (FRF.5) connection or a Frame Relay-ATM Service Interworking (FRF.8) connection, use the **shutdown** connect submode command. To disable disconnection, use the **no** form of this command.

shutdown

no shutdown

Syntax Description

This command has no arguments or keywords.

Defaults

No default behavior or values.

Command Modes

FRF.5 connect submode

FRF.8 connect submode

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

An FRF.5 or FRF.8 connection must be manually shut down once the interworking connection is created by use of the **shutdown** connect subcommand.

Examples

FRF.5 Shutdown Example

The following example shows how to shut down an FRF.5 connection:

```
Router(config)# connect network-2 interface serial0/1 16 atm3/0 0/32 network-interworking
. . .
Router(config-frf5)# shutdown
```

FRF.8 Shutdown Example

The following example shows how to shut down an FRF.8 connection:

```
Router(config)# connect serial0 100 atm3/0 1/35 service-interworking
. . .
Router(config-frf8)# shutdown
```

Related Commands

Command	Description
connect (FRF.5)	Connects a Frame Relay DLCI or VC group to an ATM PVC.

vc-group

To assign multiple Frame Relay data-link connection identifiers (DLCIs) to a virtual circuit (VC) group for Frame Relay-to-ATM Network Interworking (FRF.5), use the **vc-group** global configuration mode command. To disable the VC group assignments, use the **no** form of this command.

vc-group *group-name*

no vc-group *group-name*

The **vc-group** command requires the use of the following command in VC-group configuration mode to provide a map between Frame Relay DLCIs and Frame Relay-SSCS DLCIs:

FR-interface-name FR-DLCI [*FR-SSCS-DLCI*]

Syntax Description

group-name	A VC group name entered as an 11-character maximum string.

The following syntax description applies to the VC-group entries:

FR-interface-name	Frame Relay interface; for example, **serial0/0.**
FR-DLCI	Frame Relay DLCI number in the range 16 to 1007.
FR-SSCS-DLCI	(Optional) Frame Relay SSCS DLCI number in the range of 16 to 991. Default is 1022.

Defaults

No default behavior or values.

Command Modes

Global configuration

Command History

Release	Modification
12.1(2)T	This command was introduced.

Usage Guidelines

This command specifies the Frame Relay DLCIs in the VC group and maps them to the Frame Relay-SSCS DLCIs. If the optional FR-SSCS DLCI value is not specified, its value is the same as the Frame Relay DLCI.

Examples

The following example shows how to configure an FRF.5 many-to-one connection. The **vc-group** command maps Frame Relay DLCI 16, 17, 18, and 19 to a VC group named “friends”:

```
Router(config)# vc-group friends
Router(config-vc-group)# serial0 16 16
Router(config-vc-group)# serial0 17 17
Router(config-vc-group)# serial0 18 18
Router(config-vc-group)# serial0 19 19
```

Related Commands

Command	Description
show vc-group	Displays the names of all VC groups.