

# Frame Relay to ATM Service Interworking (FRF.8 – Translation Mode)

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## Introduction

The Frame Relay (FR) to ATM service interworking function allows communication between an FR end user and an ATM end user. It is based on the Frame Relay Forum (FRF.8) implementation agreement, which specifies that an FR end station may communicate with an ATM end station provided that there is a router performing the specifications given in FRF.8 in the software between the two end stations.

This document presents a sample configuration of FR to ATM service interworking using FRF.8 (translation mode) on the LightStream 1010. This configuration also works on the Catalyst 8510 MSR or 8540 MSR.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on Cisco IOS® Release 12.0(3c)W5(9).

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### Conventions

For more information on document conventions, refer to Cisco Technical Tips Conventions.

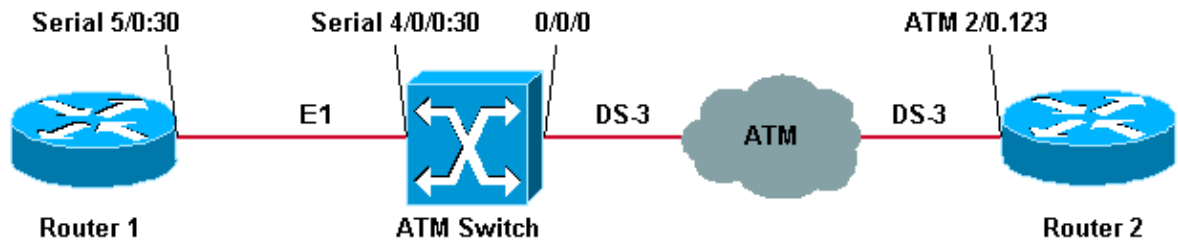
# Configure

In this section, you are presented with the information to configure the features described in this document.

**Note:** To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

## Network Diagram

This document uses this network setup:



The FR traffic shaping parameters used in this sample configuration in Router 1 are:

- Committed information rate (CIR) = 64 kbps
- Committed burst (Bc) = 8000
- Excess burst (Be) = 8000

**Note:** For a detailed explanation on how to troubleshoot Frame Relay Traffic shaping connections, refer to show Commands for Frame Relay Traffic Shaping.

## Configurations

This document uses these configurations:

- Router 1
- ATM Switch
- Router 2

**Note:** These configurations contain information relevant only for Frame Relay to ATM Service Interworking.

Router 1
<pre>controller E1 5/0  channel-group 30 timeslots 1-31  !  interface Serial5/0:30   ip address 12.12.12.2 255.255.255.0   no ip directed-broadcast   encapsulation frame-relay IETF  !--- The FR encapsulation used is IETF. It should match the switch.   no fair-queue  frame-relay traffic-shaping  !--- Enabling FR traffic shaping on this interface.   frame-relay class test-iwf</pre>

```

frame-relay map ip 12.12.12.1 123 broadcast
!
map-class frame-relay test-iwf
no frame-relay adaptive-shaping

!--- Traffic shaping parameters configured.

frame-relay cir 64000
frame-relay bc 8000
frame-relay be 8000

```

### ATM Switch

```

frame-relay connection-traffic-table-row index 123 64000
8000 128000 8000 vbr-nrt 123
!
controller E1 4/0/0
clock source free-running
channel-group 30 timeslots 1-31
!
interface Serial4/0/0:30
no ip address
no ip directed-broadcast
encapsulation frame-relay IETF

!--- The FR encapsulation used is IETF.

no arp frame-relay
frame-relay intf-type dce

!--- Interface type is dce, because it is providing clocking.

frame-relay pvc 123 rx-cttr 123 tx-cttr 123 service translation
interface ATM0/0/0 0 123

!--- This command makes the translation from
!--- Frame Relay to ATM PVC 123.

```

### Router 2

```

interface ATM2/0.123 point-to-point
ip address 12.12.12.1 255.255.255.0
no ip directed-broadcast
pvc 0/123

!--- Configured ATM PVC 0/123 with traffic shaping and
!--- oam-pvc management enabled.

vbr-nrt 163 81 49
broadcast
oam-pvc manage
encapsulation aal5snap

```

The traffic shaping parameters on Router 2 can be obtained from the Frame Relay connection traffic table on the ATM Switch (see the section).

## Verify

This section provides information you can use to confirm your configuration is working properly.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

- **show frame-relay lmi**
- **show frame-relay map**
- **show frame-relay pvc**
- **show atm vc interface atm 0/0/0**
- **show frame-relay connection-traffic-table-row**
- **show atm connection-traffic-table**
- **show frame-relay interface resource serial 4/0/0:30 all-information**

The output shown below is a result of entering the above commands on the devices shown in the network diagram. This output shows that the network is operating properly.

## Router 1

**Note:** When connecting a Cisco router to a third-party connection, it is preferable to use Internet Engineering Task Force (IETF) Local Management Interface (LMI). Notice that the LMI is Cisco and the Frame Relay is DTE as it is receiving clocking from the switch.

```
Router1# show frame-relay lmi

LMI Statistics for interface Serial5/0:30 (Frame Relay DTE) LMI TYPE = CISCO
  Invalid Unnumbered info 0          Invalid Prot Disc 0
  Invalid dummy Call Ref 0          Invalid Msg Type 0
  Invalid Status Message 0          Invalid Lock Shift 0
  Invalid Information ID 0          Invalid Report IE Len 0
  Invalid Report Request 0          Invalid Keep IE Len 0
  Num Status Enq. Sent 1222         Num Status msgs Rcvd 1222
  Num Update Status Rcvd 0          Num Status Timeouts 2
```

To verify that the dlci is up and mapped to the correspondent IP address, use the **show frame-relay map** command.

```
Router1# show frame-relay map

Serial5/0:30 (up): ip 12.12.12.1 dlci 123(0x7B,0x1CB0), static,
                  broadcast,
                  IETF, status defined, active
```

To check the status of the Frame Relay pvc, use the **show frame-relay pvc** command. In the output below we can see that It is active.

```
Router1# show frame-relay pvc

PVC Statistics for interface Serial5/0:30 (Frame Relay DTE)

          Active      Inactive      Deleted      Static
Local          1           0             0             0
Switched       0           0             0             0
Unused         0           0             0             0

DLCI = 123, DLCI USAGE = LOCAL, PVC STATUS = ACTIVE, INTERFACE = Serial5/0:30

input pkts 786          output pkts 549          in bytes 742312
out bytes 684503        dropped pkts 6           in FECN pkts 0
in BECN pkts 0         out FECN pkts 0         out BECN pkts 0
in DE pkts 0           out DE pkts 0           out DE pkts 0
out bcast pkts 1       out bcast bytes 608
pvc create time 03:25:16, last time pvc status changed 03:09:30
```

## ATM Switch

**Note:** The term **ATM-PX/Y/Z** refers to pseudo interface.

```
ATMswitch# show atm vc interface atm 0/0/0
Interface          VPI  VCI  Type  X-Interface      X-VPI X-VCI  Encap  Status
ATM0/0/0           0    5    PVC   ATM2/0/0         0     43    QSAAL  UP
ATM0/0/0           0    16   PVC   ATM2/0/0         0     35    ILMI   UP
ATM0/0/0           0    101  PVC   ATM0/1/0         0    101    UP     UP
ATM0/0/0           0    102  PVC   ATM0/1/0         0    102    UP     UP
ATM0/0/0           0    123  PVC   ATM-P4/0/0       30   155    UP     UP
```

To display the Frame Relay to ATM connections in the switch, use the **show frame-relay connection-traffic-table-row** command, as shown below:

```
ATMswitch# show frame-relay connection-traffic-table-row
Row          cir      bc      be      pir      fr-atm Service-category  ATM Row
100          64000   32768   32768   64000    vbr-nrt
123          64000   8000    8000    128000   vbr-nrt          123
```

```
ATMswitch# show atm connection-traffic-table
Row          Service-category  pcr      scr/mcr      mbs      cdvt
1            ubr                7113539   none
2            cbr                424
3            vbr-rt            424       424          50       none
4            vbr-nrt           424       424          50       none
5            abr                424       0
6            ubr                424       none
10           cbr                50000
11           cbr                1000
12           cbr                11700
100          vbr-nrt           81        81-0         50       none
123          vbr-nrt           163       81-0         49       none
<-- (*)

2147483645* ubr                0          none
2147483646* ubr                1          none
2147483647* ubr                7113539   none
```

(\*) When you create the **frame-relay connection-traffic-table-row**, you associate an ATM table row index where the ATM traffic shaping parameters are automatically calculated using the Broadband Inter-Carrier Interface (B-ICI) specification, V2.0 (See formulas).

```
ATMswitch# show frame-relay interface resource serial 4/0/0:30 all-information
Encapsulation: FRAME-RELAY
Resource Management configuration:
  Input queues (PAM to switch fabric):
    Discard threshold: 87% vbr-nrt, 87% abr, 87% ubr
    Marking threshold: 75% vbr-nrt, 75% abr, 75% ubr
  Output queues (PAM to line):
    Discard threshold: 87% vbr-nrt, 87% abr, 87% ubr
    Marking threshold: 75% vbr-nrt, 75% abr, 75% ubr
  Overflow servicing for VBR: enabled
  Available bit rates (in bps):
    1920000 vbr-nrt RX, 1920000 vbr-nrt TX
    1920000 abr RX,    1920000 abr TX
    1920000 ubr RX,   1920000 ubr TX
  Overbooking: disabled
Resource Management state: Allocated bit rates (in bps):
    64000 vbr-nrt RX, 64000 vbr-nrt TX
    0 abr RX,      0 abr TX
```

```
0 ubr RX,      0 ubr TX
Actual allocated bit rates (in bps):
64000 vbr-nrt RX, 64000 vbr-nrt TX
0 abr RX,      0 abr TX
0 ubr RX,      0 ubr TX
```

## Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

## Related Information

- [Configuring Frame Relay to ATM Interworking Port Adapter Interfaces](#)
  - [Frame Relay Forum \(FRF.5\)](#)
  - [ATM–Frame Relay Interworking Technology Support](#)
  - [ATM Technology Support](#)
  - [Technical Support – Cisco Systems](#)
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