Frame Relay to ATM Network Interworking (FRF.5)

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Contents

Introduction

The Frame Relay to ATM network interworking function allows Frame Relay traffic to be transported through an ATM network. Based on the Frame Relay Forum (FRF.5) ⤤ implementation agreement, it enables two Frame Relay end stations to communicate with each other through an ATM network.

This document presents a sample configuration of Frame Relay to ATM network interworking using FRF.5 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$^{®}$ Software 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.
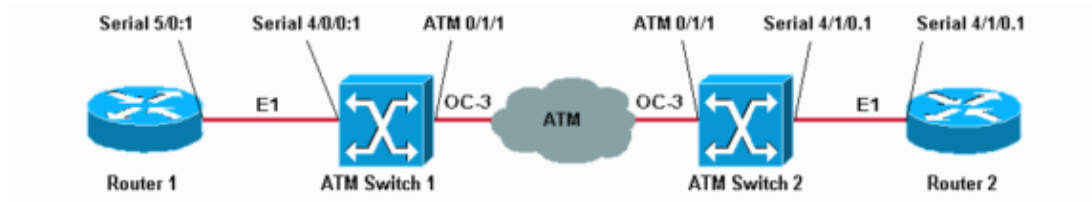
Configure

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 Frame Relay traffic shaping parameters used in this sample configuration are:

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

Configurations

This document uses these configurations:

- Router 1
- ATM Switch 1
- ATM Switch 2
- Router 2

Note: The following configurations contain only relevant information.

Router 1
| ```
controller E1 5/0
 channel-group 1 timeslots 1-15
!
interface Serial5/0:1
 ip address 13.13.13.2 255.255.255.0
 no ip directed-broadcast
 encapsulation frame-relay
 no fair-queue
 frame-relay traffic-shaping
 frame-relay class test-iwf
 frame-relay map ip 13.13.13.1 124
!
map-class frame-relay test-iwf
 no frame-relay adaptive-shaping
 frame-relay cir 64000
 frame-relay bc 8000
 frame-relay be 8000
``` |

ATM Switch 1
| ```
!
controller E1 4/0/0
 clock source free-running
 channel-group 1 timeslots 1-15
!
interface Serial4/0/0:1
 no ip address
 no ip directed-broadcast
 encapsulation frame-relay IETF
``` |

```
 no arp frame-relay
 frame-relay intf-type dce
 frame-relay pvc 124 rx-cttr 124 tx-cttr 124 network interface ATM0/1/1 0 124
```

ATM Switch 2
| ```
frame-relay connection-traffic-table-row index 124 64000 8000 128000 8000 abr 124
!
controller E1 4/1/0
 channel-group 1  timeslots 1-15
!
interface Serial4/1/0:1
 no ip address
 no ip directed-broadcast
 encapsulation frame-relay IETF
 no arp frame-relay
 frame-relay intf-type dce
 frame-relay pvc 124 rx-cttr 124 tx-cttr 124 network interface ATM0/1/1 0 124
``` |

Router 2
| ```
controller E1 4/0
 channel-group 1 timeslots 1-15
!
interface Serial4/0:1
 ip address 13.13.13.1 255.255.255.0
 no ip directed-broadcast
 encapsulation frame-relay IETF
 ip mroute-cache
 frame-relay traffic-shaping
 frame-relay class test-iwf
 frame-relay map ip 13.13.13.2 124
!
map-class frame-relay test-iwf
 frame-relay cir 64000
 frame-relay bc 8000
 frame-relay be 8000
 no frame-relay adaptive-shaping
``` |

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 connection–traffic–table–row**
- **show atm connection–traffic–table**
- **show atm vc interface atm 0/1/1**
- **show frame–relay interface resource serial 4/0/0:1 all–information**

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

Note: The term **ATM−PX/Y/Z** means pseudo interface.

```
ATMswitch1# show frame-relay connection-traffic-table-row
Row         cir        bc       be      pir     fr-atm Service-category    ATM Row
124         64000      8000     8000    128000             abr                124
```

```
ATMswitch1# show atm connection-traffic-table
Row       Service-category    pcr         scr/mcr       mbs         cdvt
124       abr                 173         90                        none


ATMswitch1# show atm vc interface atm 0/1/1
Interface          VPI   VCI   Type   X-Interface     X-VPI X-VCI Encap  Status
ATM0/1/1           0     5     PVC    ATM2/0/0          0    48    QSAAL  UP
ATM0/1/1           0     16    PVC    ATM2/0/0          0    40    ILMI   UP
ATM0/1/1           0     18    PVC    ATM2/0/0          0    74    PNNI   UP
ATM0/1/1           0     34    PVC    ATM2/0/0          0    73    NCDP   UP
ATM0/1/1           0     124   PVC    ATM-P4/0/0        1    156          UP


ATMswitch1# show frame-relay interface resource serial 4/0/0:1 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
    Overbooking: disabled
Resource Management state:
  Available bit rates (in bps):
     896000 vbr-nrt RX, 896000 vbr-nrt TX
     896000 abr RX, 896000 abr TX
     896000 ubr RX, 896000 ubr TX
  Allocated bit rates (in bps):
     0 vbr-nrt RX, 0 vbr-nrt TX
     64000 abr RX, 64000 abr TX
     0 ubr RX, 0 ubr TX
  Actual allocated bit rates (in bps):
     0 vbr-nrt RX, 0 vbr-nrt TX
     64000 abr RX, 64000 abr TX
     0 ubr RX, 0 ubr TX
```

Troubleshoot

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

Related Information

- **Frame Relay Forum (FRF.5)** 🗗
- **ATM to Frame Relay Interworking Technology Support**
- **ATM Technology Support**
- **Technical Support & Documentation – Cisco Systems**