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:

![Network Diagram](image)

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:
  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:
  ip address 13.13.13.1 255.255.255.0
  no ip directed-broadcast
encapsulation frame-relay IETF
ip mrute-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