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Introduction

This document provides a sample configuration of ATM-style per-VC queueing features on the multi-flex trunk (MFT) module of Cisco MC3810 access concentrators.

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Prerequisites

There are no specific prerequisites for this document.

Components Used

The MFT on the MC3810 supports per-VC queueing in the software versions below.

- Cisco IOS® Software Version 12.1.2aXH
- Cisco IOS® Software Version 12.1.3aXI
- Cisco IOS® Software Version 12.2.1
- Cisco IOS® Software Version 12.2.2T

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

Understanding the MFT

The MFT provides one software-configurable T1 or E1 port with a built-in CSU/DSU. When configured to use ATM encapsulation, the MFT supports video in ATM Adaptation Layer 1 (AAL1) format or data and compressed voice in AAL5 format.

Use the following steps to configure ATM on the MFT:

1. Select the T1 or E1 controller 0. ATM is supported only on controller0.

```
router(config)# controller {t1 | e1} 0
```

2. Specify that the controller will support ATM encapsulation, and to create logical ATM interface 0, which is used to create the ATM PVCs. The ATM encapsulation is for standard ATM; ATM-DXI is not supported.

```
router(config-controller)# mode atm
```

When the controller is set to ATM mode, the following takes place:

- Controller framing is automatically set to Extended SuperFrame (ESF) on T1 and to CRC4 on E1. The linecode is automatically set to B8ZS on T1 and to HDB3 on E1.
- Channel groups, CAS groups, Common Channel Signaling (CCS) groups or clear channels are not allowed on the trunk because ATM traffic occupies all the DS0s

Configuring ATM on the MFT requires a Voice over ATM (VoATM) IOS® image and feature set, which is indicated by an "a" in the image name, such as mc3810-a2i5s-mz, for IP Plus VoATM no ISDN.

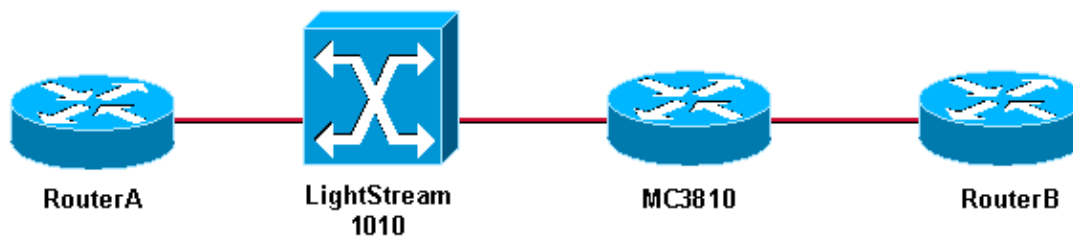
Configure

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 the network setup shown in the diagram below.



Configurations

This document uses the configurations shown below.

MC3810

```
class-map match-all serial
  match input-interface Serial0
class-map match-all mc3810
  match access-group 100
!
policy-map mypol
  class mc3810
    bandwidth 100
    queue-limit 100
  class serial
    priority 200
  class class-default
    fair-queue
    queue-limit 100
!
interface ATM0.1 point-to-point
  ip address 200.10.11.1 255.255.255.252
  pvc 10/34
    vbr-nrt 1536 1536
    service-policy out mypol
!
access-list 102 permit ip host 10.0.0.1 host 11.0.0.1
```

Configuration Notes

The following are some general configuration notes:

- Use a class map to classify and assign weights to traffic. This sample configuration assigns all traffic from serial 0 (to router A) to a class called serial and assigns all traffic between the loopbacks (defined on the MC3810 and Router B) to a class called mc3810.
- After specifying the class maps, create a policy map and apply traffic parameters to these classified flows. In this sample configuration, traffic matching the class named serial is guaranteed 200 kbps of bandwidth during periods of congestion. (During periods of non-congestion, a class configured for low latency queueing (LLQ) with the **priority** statement can go above its configured kbps value.) Traffic matching the class named mc3810 is guaranteed a minimum bandwidth of 100 kbps during congestion and a queue depth of 100 packets.
- The queue depth defines the number of packets that can be stored for a particular class before drops occur. The default value is 64.
- After the traffic parameters have been defined for each of the classes, apply your service policy in VC configuration mode using the **service-policy out mypol** command.
- Traffic not matching one of the defined class maps is assigned to the default class, which IOS automatically configures for you. In this sample configuration, we apply flow-based weighted fair queueing (WFQ) with the **fair-queue** command.
- CBWFQ and LLQ can be configured on ATM VCs of the available bit rate (ABR) and variable bit rate (VBR) service categories. They cannot be configured on unspecified bit rate (UBR) VCs since UBR VCs do not guarantee any minimum bandwidth.

Weighted-Fair Queuing Configuration

ATM interfaces do not support native flow-based WFQ configured directly on an interface with the **fair-queue** command. However, Cisco IOS release versions that support per-VC service policies also support flow-based WFQ within the default class, as shown below:

```
policy-map test
```

```

class class-default
  fair-queue
!
interface ATM0.x point-to-point
  ip address a.b.c.d M.M.M.M
  pvc A/B
  service-policy output test

```

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 policy-map interface atm x/y[.z]** – Displays statistics per queue, such as the amount of drops.

```

MC3810# show policy-map interface atm0.1
  ATM0.1: VC 10/34 -
    Service-policy output: mypol
  Class-map: mc3810 (match-all)
    15451 packets, 1730512 bytes
    ! -- Number of packets matching the criteria of the class.
    5 minute offered rate 16000 bps, drop rate 0 bps
    Match: access-group 100
    Weighted Fair Queueing
    Output Queue: Conversation 73
    Bandwidth 100 (kbps) Max Threshold 100 (packets)
    (pkts matched/bytes matched) 15451/1730512
    ! -- Number of packets matching during times of congestion.
    (depth/total drops/no-buffer drops) 0/0/0
  Class-map: serial (match-all)
    0 packets, 0 bytes
    5 minute offered rate 0 bps, drop rate 0 bps
    Match: input-interface Serial0
    Weighted Fair Queueing
    Strict Priority
    Output Queue: Conversation 72
    Bandwidth 200 (kbps) Burst 5000 (Bytes)
    (pkts matched/bytes matched) 0/0
    (total drops/bytes drops) 0/0
  Class-map: class-default (match-any)
    2 packets, 64 bytes
    5 minute offered rate 0 bps, drop rate 0 bps
    Match: any
    Weighted Fair Queueing
    Flow Based Fair Queueing
    Maximum Number of Hashed Queues 64
    (total queued/total drops/no-buffer drops) 0/0/0

```

Troubleshoot

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

Related Information

- [ATM Traffic Shaping on Cisco 3810 Routers](#)
 - [Understanding Class Based Weighted Fair Queuing on ATM](#)
 - [Technical Support – Cisco Systems](#)
 - [More ATM Information](#)
 - [Tools and Utilities – Cisco Systems](#)
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