

# Configure VoATM on Cisco MC3810

Document ID: 14038

---

## Introduction

### Prerequisites

- Requirements
- Components Used
- Conventions

### Configure

- Network Diagram
- Configure MC3810 Analog 1 ATM Port
- Configure ATM Data PVC
- Configure Voice PVC
- Configure Dial Peers
- Configure ATM CES for Video on MC3810
- Configure Cisco MC3810 with Analog 2 FXS

### Verify and Troubleshoot

### NetPro Discussion Forums – Featured Conversations

### Related Information

---

## Introduction

For the sample network shown here, the configuration examples in this document help you to establish these:

- Data connectivity over Asynchronous Transfer Mode (ATM).
- Place Foreign Exchange Station (FXS) to FXS voice calls over ATM.

The configuration examples in this document show you the commands needed for Cisco MC3810 Analog 1 in the sample network diagram. Configure Cisco MC3810 Analog 2 with the same commands for the network to operate properly. See the entire configuration for each router.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

The information in this document is based on these software and hardware versions:

- Two Cisco MC3810 routers
- Cisco IOS® Software Release 12.0

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.

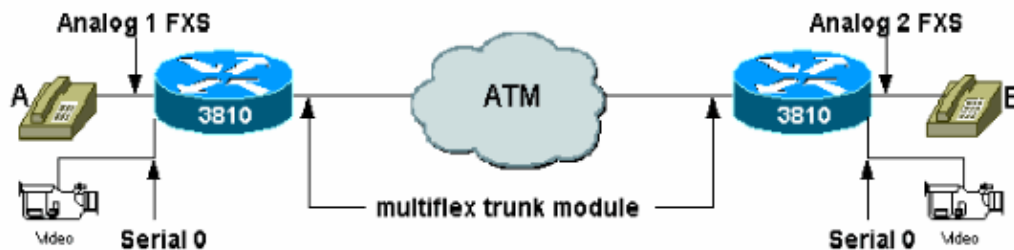
**Note:** To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only).

This document uses the configurations shown here.

- MC3810 Analog 1 ATM Port
- ATM Data PVC
- Voice PVC
- Dial Peers
- ATM CES for Video on MC3810
- Cisco MC3810 with Analog 2 FXS

## Network Diagram

This document uses the network setup shown in this diagram:



## Configure MC3810 Analog 1 ATM Port

When you configure a network such as the one shown in the Network Diagram, first configure the ATM port on the MC3810 Analog 1 router.

```
3800-analog-1#configure time
Enter configuration commands, one per line. End with CNTL/Z.
3800-analog-1(config)#control t1 0
3800-analog-1(config-control)#framing esf
3800-analog-1(config-control)#linecode b8zs
3800-analog-1(config-control)#mode atm
3800-analog-1(config-control)#
*Mar 6 233311.136 TDMB channel # 99 Timeslots ( X 48K, . 56K,* 64K, -
skipped)

0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
- * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*Mar 6 233311.140

*Mar 6 233312.124 %LINEPROTO-5-UPDOWN Line protocol on Interface ATM0, chan
```

```
ged state to down
*Mar  6 233313.153 %LINK-5-CHANGED Interface ATM0, changed state to reset
3800-analog-1(config-control)#
```

## Configure ATM Data PVC

Interface ATM 0 appears in the configuration. Configure ATM for a data permanent virtual connection (PVC).

```
3800-analog-1(config)#interface ATM 0
3800-analog-1(config-if)#interface ATM 0.1 point-to-point
3800-analog-1(config-subif)#pvc 1/100
3800-analog-1(config-if-atm-)#encapsulation aal5snap
3800-analog-1(config-if-atm-)#
```

## Verify Data PVC Creation

After the data PVC is created, enter the **show ATM vc** command to verify its existence. This is an example.

```
3800-analog-1#show ATM vc
          VCD /
Interface Name      VPI  VCI  Type  Encaps  SC   Peak  Avg/Min  Burst  Sts
0.1         1         1   100  PVC   SNAP   UBR    0        UP
3800-analog-1#
```

## Configure Voice PVC

When a data connection is established, configure a voice PVC for four G.729 calls (16 K per call).

```
3800-analog-1(config)#interface ATM 0.2 point-to-point
3800-analog-1(config-subif)#PVC 1/101
3800-analog-1(config-if-atm-)#encapsulation aal5mux voice
3800-analog-1(config-if-atm-)#vbr-rt 128 64 16
3800-analog-1(config-if-atm-)#
```

## Verify Voice PVC Creation

After the voice PVC is created, enter the **show ATM vc** command to verify its existence. This is an example.

```
3800-analog-1#show ATM vc
          VCD /
Interface Name      VPI  VCI  Type  Encaps  SC   Peak  Avg/Min  Burst  Sts
0.1         1         1   100  PVC   SNAP   UBR    0        UP
0.2         2         1   101  PVC   VOICE  VBR   128     64    16    UP
(      64)
```

## Configure Dial Peers

When the PVCs for both data and voice are configured, configure a dial peer for phone A (1111) and dial peer ATM to reach phone B (2222).

```
3800-analog-1(config)#dial-peer voice 1111 pots
3800-analog-1(config-dial-pe)#destination-pattern 1111
3800-analog-1(config-dial-pe)#port 1/1
3800-analog-1(config)#dial-peer voice 2222 voatm
3800-analog-1(config-dial-pe)#destination-pattern 2222
3800-analog-1(config-dial-pe)#session target ATM 0 PVC 1/101
```

## Configure ATM CES for Video on MC3810

The configuration samples above allow voice calls to be established across the ATM cloud between the two Cisco MC3810s in the sample network. In order to allow video to be passed between the Cisco MC3810s, configure the ATM circuit emulation service (CES) serial interfaces that connect to the video device that sends and receives signals. These sample configurations are needed for this to occur:

```
3800-analog-1(config)#network-clock base-rate 64k
3800-analog-1(config)#interface serial 0
3800-analog-1(config-if)#encapsulation atm-ces
3800-analog-1(config-if)#clock rate network 128000
3800-analog-1(config-if)#ces connect ATM 0 PVC 1/102
```

After above the commands are configured, these configurations are needed for the ATM PVC for video.

```
3800-analog-1(config)#interface ATM 0.3 point-to-point
3800-analog-1(config-subif)#PVC 1/102
3800-analog-1(config-if-atm-)#encapsulation aal1
3800-analog-1(config-if-atm-)#cbr 146
```

Constant bit rate (CBR) for the PVC shaping for video is used here. CBR is a quality of service (QoS) class defined by the ATM Forum for ATM networks. CES helps to pass the T1 frame timeslots from the serial 0 interface to the ATM interface in ATM adaptation layer (AAL)1 frames. With AAL1, the overhead in each cell is 5 bytes header + 1 byte AAL1 header = 6 bytes. Therefore, the output CBR PVC needs to have a peak cell rate (PCR)  $\geq (53/47) * (\text{clockrate on the serial 0})$ .

For two T1 timeslots, the clockrate is  $(64000) * (2) = 128000$ , and  $53/47 = 1.13$ . Always use 1.14 to be on the safer side. Hence  $(128000) * (1.14) = 146000$  (approximately). With this PCR rate, equivalent user bandwidth is provided to the T1 timeslots on the ATM side.

## Configure Cisco MC3810 with Analog 2 FXS

In order to complete the network for proper operation, Cisco MC3810 with Analog 2 FXS needs to be configured with the same commands as Cisco MC3810 with Analog 2 FXS. See the entire configuration for specifics.

### Cisco MC3810 with Analog 1 FXS

```
3810-ana-1#show run
Building configuration...

Current configuration
!
version 12.0
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname 3800-analog-1
!
enable password cisco
!
!
!
!
network-clock base-rate 64k
```

```

ip subnet-zero
no ip domain-lookup
!
!
!
controller T1 0
 framing esf
 linecode b8zs
 mode ATM
!
!
process-max-time 200
!
interface Ethernet0
 ip address 172.16.173.37 255.255.255.192
 no ip directed-broadcast
!
interface Serial0
 no ip address
 no ip directed-broadcast
 encapsulation atm-ces
 no ip mroute-cache
 no keepalive
 serial restart-delay 0
 clockrate network 128000
 ces connect ATM0 PVC 1/102
 hold-queue 1024 out
!
interface Serial1
 no ip address
 no ip directed-broadcast
 shutdown
!
interface ATM0
 no ip address
 no ip directed-broadcast
 no ATM ilmi-keepalive
!
interface ATM0.1 point-to-point
 ip address 10.10.10.1 255.255.255.0
 no ip directed-broadcast
 PVC 1/100
 encapsulation aal5snap
!
!
interface ATM0.2 point-to-point
 no ip directed-broadcast
 PVC 1/101
 vbr-rt 128 64 16
 encapsulation aal5mux voice
!
!
interface ATM0.3 point-to-point
 no ip directed-broadcast
 PVC 1/102
 cbr 146
 encapsulation aal1
!
!
interface Async1
 no ip address
 no ip directed-broadcast
 async mode dedicated
!

```

```

interface Switch0
  no ip address
  no ip directed-broadcast
  encapsulation frame-relay
  no fair-queue
!
interface FR-ATM20
  no ip address
  no ip directed-broadcast
  shutdown
!
no ip http server
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.173.1
!
!
line con 0
  transport input none
line aux 0
  modem InOut
  transport input all
  flowcontrol hardware
line 2 3
line vty 0 4
  password cisco
  login
!
!
voice-port 1/1
!
voice-port 1/2
!
voice-port 1/3
!
voice-port 1/6
!
!
dial-peer voice 1111 pots
  destination-pattern 1111
  port 1/1
!
dial-peer voice 2222 voatm
  destination-pattern 2222
  session target ATM0 PVC 1/101
!
!
end

```

### Cisco MC3810 with Analog 2 FXS

```

3800-analog-2#show run
Building configuration...

Current configuration
!
version 12.0
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname 3800-analog-2
!
!

```

```

!
!
!
!
network-clock base-rate 64k
ip subnet-zero
!
!
!
controller T1 0
 framing esf
 clock source internal
 linecode b8zs
 mode ATM
!
!
process-max-time 200
!
interface Ethernet0
 ip address 172.16.173.36 255.255.255.192
 no ip directed-broadcast
!
interface Serial0
 no ip address
 no ip directed-broadcast
 encapsulation atm-ces
 no ip mroute-cache
 no keepalive
 serial restart-delay 0
 clockrate network 128000
 ces connect ATM0 PVC 1/102
 hold-queue 1024 out
!
interface Serial1
 no ip address
 no ip directed-broadcast
 shutdown
!
interface ATM0
 no ip address
 no ip directed-broadcast
 no ATM ilmi-keepalive
!
interface ATM0.1 point-to-point
 ip address 10.10.10.2 255.255.255.0
 no ip directed-broadcast
 PVC 1/100
 encapsulation aal5snap
!
!
interface ATM0.2 point-to-point
 no ip directed-broadcast
 PVC 1/101
 vbr-rt 128 64 16
 encapsulation aal5mux voice
!
!
interface ATM0.3 point-to-point
 no ip directed-broadcast
 PVC 1/102
 cbr 146
 encapsulation aall
!
!

```

```

interface Switch0
  no ip address
  no ip directed-broadcast
  encapsulation frame-relay
  no fair-queue
!
interface FR-ATM20
  no ip address
  no ip directed-broadcast
  shutdown
!
no ip http server
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.173.1
!
!
line con 0
  transport input none
line aux 0
line 2 3
line vty 0 4
  login
!
!
voice-port 1/1
!
voice-port 1/2
!
voice-port 1/6
!
!
dial-peer voice 1111 voatm
  destination-pattern 1111
  session target ATM0 PVC 1/101
!
dial-peer voice 2222 pots
  destination-pattern 2222
  port 1/1
!
!
end

```

## Verify and Troubleshoot

This section provides information to confirm that the configuration works properly and to troubleshoot the configuration.

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

**Note:** Before you issue **debug** commands, refer to Important Information on Debug Commands.

- **show interface serial 0** Use output from this command to look for interface errors for ATM CES for video.
- **show controller ATM 0** Use output from this command to look for queue drops.
- **show interface ATM 0** Use output from this command to look for interface errors.
- **show controller t1 0** Use output from this command to look for T1 errors.
- **debug voice all**

# NetPro Discussion Forums – Featured Conversations

Networking Professionals Connection is a forum for networking professionals to share questions, suggestions, and information about networking solutions, products, and technologies. The featured links are some of the most recent conversations available in this technology.

<a href="#">NetPro Discussion Forums – Featured Conversations for Voice</a>
<a href="#">Service Providers: Voice over IP</a>
<a href="#">Voice &amp; Video: Voice over IP</a>
<a href="#">Voice &amp; Video: IP Telephony</a>
<a href="#">Voice &amp; Video: IP Phone Services for End Users</a>
<a href="#">Voice &amp; Video: Unified Communications</a>
<a href="#">Voice &amp; Video: IP Phone Services for Developers</a>
<a href="#">Voice &amp; Video: General</a>

## Related Information

- [Voice Technology Support](#)
- [Voice and Unified Communications Product Support](#)
- [Recommended Reading: Troubleshooting Cisco IP Telephony](#)
- [Technical Support – Cisco Systems](#)

---

All contents are Copyright © 1992–2006 Cisco Systems, Inc. All rights reserved. Important Notices and Privacy Statement.

---

Updated: Feb 20, 2007

Document ID: 14038

---