

# Configuring ATM Access over a Serial Interface

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This chapter describes how to configure routers that use a serial interface for ATM access through an ATM data service unit (ADSU). The configuration tasks include the steps necessary to enable Asynchronous Transfer Mode-Data Exchange Interface (ATM-DXI) encapsulation, select a multiprotocol encapsulation method using ATM-DXI, and set up a permanent virtual circuit (PVC) for the selected encapsulation.

For a complete description of the ATM commands in this chapter, refer to the “ATM Commands” chapter of the *Wide-Area Networking Command Reference*. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

## ATM Access over a Serial Interface

In routers with a serial interface, an ADSU is required to provide the ATM interface to the network, convert outgoing packets into ATM cells, and reassemble incoming ATM cells into packets.

Any serial interface can be configured for multiprotocol encapsulation over ATM-DXI, as specified by RFC 1483. At the ADSU, the DXI header is stripped off, and the protocol data is segmented into cells for transport over the ATM network.

RFC 1483 describes two methods of transporting multiprotocol connectionless network interconnect traffic over an ATM network. One method allows multiplexing of multiple protocols over a single PVC. The other method uses different virtual circuits to carry different protocols. Our implementation of RFC 1483 supports both methods and supports transport of Apollo Domain, AppleTalk, Banyan VINES, DECnet, IP, Novell IPX, ISO CLNS, and XNS traffic.

## ATM Serial Access Configuration Task List

To configure ATM access over a serial interface, complete the tasks in the following sections. The first four tasks are required.

- Enable the Serial Interface
- Enable ATM-DXI Encapsulation
- Set Up the ATM-DXI PVC
- Map Protocol Addresses to the ATM-DXI PVC
- Monitor and Maintain the ATM-DXI Serial Interface (optional)

For an example of configuring ATM access over a serial interface, see the section “ATM Access over a Serial Interface Example” at the end of this chapter.

## Enable the Serial Interface

To begin configuring the serial interface for ATM access, enable the serial interface by performing the following steps beginning in global configuration mode:

Task	Command
Enable the serial interface.	<b>interface serial</b> <i>number</i>
For each protocol to be carried, assign a protocol address to the interface. (The commands shown are a partial list for the supported protocols.)	<b>appletalk address</b> <i>network.node</i> <b>ip address</b> <i>address mask</i> <b>ipx network</b> <i>number</i>

The supported protocols are Apollo Domain, AppleTalk, Banyan VINES, DECnet, IP, Novell IPX, ISO CLNS, and XNS.

For information about the addressing requirements of a protocol, see the relevant protocol configuration chapter in the *Network Protocols Configuration Guide, Part 1*, the *Network Protocols Configuration Guide, Part 2*, or the *Network Protocols Configuration Guide, Part 3*.

## Enable ATM-DXI Encapsulation

To enable ATM-DXI encapsulation on a serial or High-Speed Serial Interface (HSSI), perform the following task in interface configuration mode:

Task	Command
Enable ATM-DXI encapsulation.	<b>encapsulation atm-dxi</b>

## Set Up the ATM-DXI PVC

An ATM-DXI PVC can be defined to carry one or more protocols as described by RFC 1483, or multiple protocols as described by RFC 1490.

To set up the ATM-DXI PVC and select an encapsulation method, perform the following task in interface configuration mode:

Task	Command
Define the ATM-DXI PVC and the encapsulation method.	<b>dxi pvc</b> <i>vpi vci</i> [ <b>snap</b>   <b>nlpid</b>   <b>mux</b> ]

The MUX (multiplex) option defines the PVC to carry one protocol only; each protocol must be carried over a different PVC. The SNAP (Subnetwork Access Protocol) option is LLC/SNAP multiprotocol encapsulation, compatible with RFC 1483; SNAP is the current default option. The network layer protocol identification (NLPID) option is multiprotocol encapsulation, compatible with RFC 1490; this option is provided for backward compatibility with the default setting in earlier versions in the Cisco IOS software.

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**Note** The default encapsulation was NLPID in software earlier than Release 10.3. Starting with that release, the default encapsulation is SNAP. Select the **nlpid** keyword now if you had previously selected the default.

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## Map Protocol Addresses to the ATM-DXI PVC

This section describes how to map protocol addresses to the virtual channel identifier (VCI) and the virtual path identifier (VPI) of a PVC that can carry multiprotocol traffic. The protocol addresses belong to the host at the other end of the link. To map a protocol address to an ATM-DXI PVC, complete the following task in interface configuration mode:

Task	Command
Map a protocol address to the ATM-DXI PVC's VPI and VCI.	<b>dxl map</b> <i>protocol protocol-address vpi vci</i> <b>[broadcast]</b>

Repeat this task for each protocol to be carried on the PVC.

The supported protocols are Apollo Domain, AppleTalk, Banyan VINES, DECnet, IP, Novell IPX, ISO CLNS, and XNS.

For an example of configuring a serial interface for ATM, see the “ATM Access over a Serial Interface Example” section later in this chapter.

## Monitor and Maintain the ATM-DXI Serial Interface

After configuring the serial interface for ATM, you can display the status of the interface, the ATM-DXI PVC, or the ATM-DXI map. To display interface, PVC, or map information, complete the following tasks in EXEC mode:

Task	Command
Display the serial ATM interface status.	<b>show interfaces atm</b> [ <i>slot/port</i> ]
Display the ATM-DXI PVC information.	<b>show dxi pvc</b>
Display the ATM-DXI map information.	<b>show dxi map</b>

## ATM Access over a Serial Interface Example

The example in this section illustrates how to configure a serial interface for ATM access.

In the following example, serial interface 0 is configured for ATM-DXI with MUX encapsulation. Because MUX encapsulation is used, only one protocol is carried on the PVC. This protocol is explicitly identified by a **dxl map** command, which also identifies the protocol address of the remote node. This PVC can carry IP broadcast traffic.

```
interface serial 0
 ip address 172.21.178.48
 encapsulation atm-dxi
 dxi pvc 10 10 mux
 dxi map ip 172.21.178.4 10 10 broadcast
```

