

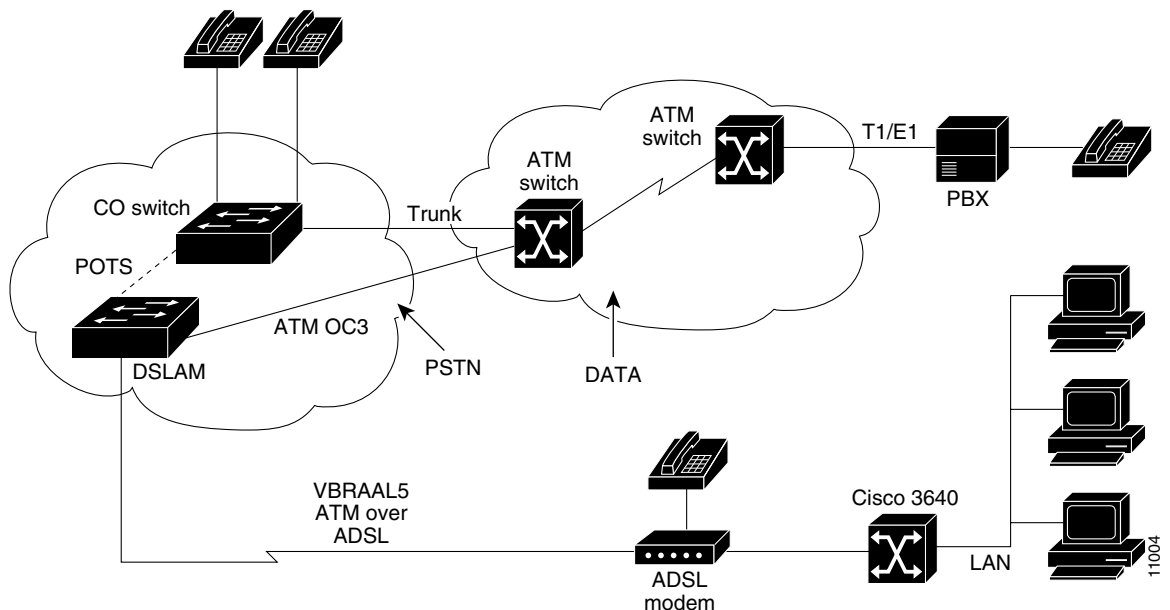
1-Port ATM-25 Network Module for the Cisco 3600 Series

Feature Summary

The 1-port asynchronous transfer mode (ATM-25) network module provides full 25.6 Mbps connectivity to an external asynchronous digital subscriber line (ADSL) modem or ATM switch for Cisco Series 3600 routers. This network module provides ATM traffic shaping for use with ADSL uplink speeds and protocol support for both permanent virtual circuit (PVC) and switched virtual circuits (SVC) environments. This network module provides full support for multiprotocol encapsulation over ATM Adaptive Layer 5 (RFC 1483), classic IP over ATM encapsulation (RFC 1577), and ATM User Network interface signaling.

Figure 1 shows the 1-port ATM-25 network module in a typical ADSL application environment. In this example, the network module and the associated Cisco3640 router provide ATM connectivity to the ADSL modem and provide traffic shaping and protocol encapsulation for the downstream LAN clients.

Figure 1 1-Port ATM-25 Network Module in a Typical ADSL Application Environment



General Description of the 1-Port ATM-25 Network Module

The 1-port ATM-25 network module has a single RJ-45 connector with signals compliant with the ATM Forum recommendation for the 25.6 Mbps ATM physical layer. This network module uses a highly-integrated ATM Segmentation and Reassembly (SAR)/PCI bridge with local SRAM to provide basic ATM hardware functionality. Transmission (TX) and Receiving (RX) descriptors are stored on the card and data buffers are kept in host memory and transferred via direct memory access across the PCI bus. Software drivers provide protocol support for PVCs and SVCs for direct connection to ATM switches or ADSL modems.

1-Port ATM-25 Network Module Features

The 1-port ATM-25 network module offers the following features:

- Up to two network modules can be installed in the same Cisco 3600 series router
- Line rate (22 Mbps accounting for ATM overhead) operation on the Cisco 3640
- PCI interface to the host
- ID serial eeprom
- Standard Cisco 3600 Series enable LED
- Hardware SAR function based on the IDT 77211 chip
- Hardware and software support for ATM Adaptation Layer 5
- Hardware and software support for per channel traffic shaping
- Hardware support for variable bit rate and unspecified bit rate for ATM traffic
- Hardware support for operation and maintenance for ATM F4 and F5 cell types
- Software support for unspecified bit rate for ATM traffic and operation and maintenance for ATM F5 cell type
- Full support for PVC connections
- Support for 1024 virtual channels on the network module itself
- Support for ATM Forum User Network Interface (UNI) 3.1 and 4.0 for SVC
- Interim Local Management Interface address registration
- RFC 1483 and RFC 1577 encapsulation
- Support for Cisco PPP over ATM
- MIB support for the ATOM MIB, ILMI MIB, Chassis MIB, and Interface MIB

Benefits

The 1-Port ATM-25 Network Module for the Cisco 3600 Series provides the following benefits:

- Full 25.6 Mbps connectivity to an external ADSL modem or ATM switch.
- Can be used for ADSL applications as well as desktop applications for connection to ATM backbones

List of Terms

Asymmetrical Digital Subscriber Line (ADSL)—One-way digital transmission link using existing single twisted-pair wiring.

Asynchronous Transfer Mode (ATM)—High bandwidth, low-delay, packet-like switching and multiplexing technique. Usable capacity is segmented into 53-byte fixed-size cells, consisting of header and information fields, allocated to services on demand.

ATM-25—25 Mbps ATM developed by IBM.

Interim Local Management Interface (ILMI)—Specification developed by the ATM Forum for incorporating network-management capabilities into the ATM UNI.

Operations, Administration, and Management (OAM)—ATM Forum specification for cells used to monitor virtual circuits. OAM cells provide a virtual circuit-level loopback in which a router responds to the cells, demonstrating that the circuit is up, and the router is operational.

Quality of Service (QoS)—Measure of performance for a transmission system that reflects its transmission quality and service availability.

Segmentation and Reassembly (SAR)—A layer of the ATM protocol stack responsible for the data segmentation into standard ATM fixed-length cells for transmission over an ATM network and for data reconstruction at the receiving end.

Unspecified Bit Rate (UBR)—QoS class defined by the ATM Forum for ATM networks. UBR allows any amount of data up to a specified maximum to be sent across the network, but there are no guarantees in terms of cell loss rate and delay.

Virtual circuit (VC)—Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a VPI/VCI pair, and can be either permanent (a PVC) or switched (an SVC). In ATM, a virtual circuit is also called a virtual channel.

Platforms

This feature is supported on the Cisco 3600 series routers.

Prerequisites

Before you can configure an ATM interface, complete the following prerequisite tasks:

- Install a T1 network module and another module (such as Ethernet) to provide connectivity to the LAN. For information on how to correctly install a T1 network module, refer to the *1-Port and 2-Port ISDN-PRI Network Module Configuration Note*. For information on how to install an Ethernet module, refer to the *1-Port Ethernet Network Module Configuration Note* or the *4-Port Ethernet Network Module Configuration Note*. For other modules, refer to the specific configuration notes pertaining to them.
- Install the 1-Port ATM-25 Network Module in a chassis slot. For information on how to correctly install this network module, refer to the “Installing a 1-Port ATM-25 Network Module in a Chassis Slot” section in the *1-Port ATM-25 Network Module Configuration Note*.
- Complete basic device configuration, including host name, username, protocol, and security configuration. For more information about basic device configuration, refer to the *Cisco 3620 Installation and Configuration Guide* or the *Cisco 3640 Installation and Configuration Guide*.

Supported MIBs and RFCs

This feature supports the following MIBs:

- ATOM MIB
- ILM1 MIB
- Chassis MIB
- Interface MIB

For descriptions of supported MIBs and how to use MIBs, see Cisco's MIB website on CCO at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

This feature supports the following RFCs:

- RFC 1483
- RFC 1577

Configuration Tasks

Whenever you install a new interface, you must configure the interface. To configure the ATM-25 interface, you need to perform the following tasks:

- Configure the ATM-25 Interface
- Create a PVC
- Map a Protocol Address to a PVC

Configure the ATM-25 Interface

To configure the ATM-25 interface, perform the following tasks beginning in global configuration mode:

Task	Command
Select the ATM interface you want to configure and enter the interface configuration mode.	interface atm slot/unit
Configure the applicable routing protocols for this interface. In this procedure, IP routing is enabled as an example.	ip address ip-address mask
Enable the ATM interface.	no shutdown

For more information about configuring ATM interfaces, refer to the Cisco IOS Release 11.3 *Wide-Area Networking Configuration Guide*.

Create a PVC

A PVC requires the entire path from source to destination to be set manually, meaning that you must configure the PVC into both the router and any ATM switches in the path. PVCs remain active until the circuit is removed from either the router or the switch configuration.

To create a PVC on the ATM-25 network module, perform the following task in interface configuration mode

Task	Command
Set up the PVC.	atm pvc <i>vcd vpi vci aal-encap</i> <i>[[midlow midhigh]</i> <i>[peak average burst]</i> [oam seconds] [inarp minutes]

For more information about configuring ATM interfaces, refer to the Cisco IOS Release 11.3 *Wide-Area Networking Configuration Guide*.

Map a Protocol Address to a PVC

The ATM interface supports a static mapping scheme that identifies the ATM address of remote hosts or routers. This address is specified as a virtual circuit descriptor (VCD) for a PVC.

You enter mapping commands as groups. You first create a map list and then associate it with an interface. To map a protocol address to a PVC, perform the following tasks beginning in global configuration mode:

Task	Command
Create a map list by naming it and enter the map-list configuration mode.	map-list <i>name</i>
Create the mapping of protocol addresses to another PVC. In this procedure, IP routing is enabled as an example.	ip <i>ip-address atm-vc vcd</i> [broadcast]
Select the ATM interface and enter the interface configuration mode.	interface atm <i>slot/unit</i>
Assign the appropriate map list to the interface.	map-group <i>group-name</i>

For more information about configuring ATM interfaces, refer to the Cisco IOS Release 11.3 *Wide-Area Networking Configuration Guide*.

Configuration Examples

The following example shows how to configure a PVC connection between two Cisco 3600 series routers using the 1-port ATM-25 network module:

Configuration for Router A:

```
configure terminal
interface atm1/0
 ip addr 1.2.3.4 255.0.0.0
 atm pvc 1 0 32 aal5snap
 map-group ipa
 no shutdown
 exit
map-list ipa
 ip 1.2.3.3 atm-vc 1 broadcast
```

Configuration for Router B:

```
configure terminal
interface atm1/0
ip addr 1.2.3.3 255.0.0.0
atm pvc 1 0 32 aal5snap
map-group ipb
no shutdown
exit
map-list ipb
ip 1.2.3.4 atm-vc 1 broadcast
```

In this example:

- The **configure terminal** command opens the global configuration mode.
- The **interface atm** command specifies an ATM interface and opens the interface configuration mode.
- The **ip address** command assigns an IP address to this interface.
- The **atm pvc** command sets up the permanent virtual circuit.
- The **map-group** command assigns the defined map list to this interface.
- The **no shutdown** command enables this interface.
- The **map-list** command create a map list and opens the map-list configuration mode.
- The **atm-vc** command maps the IP address to the permanent virtual circuit.

In the previous example, if you want to configure traffic shaping at 10 Mbps, the **atm pvc** command would be configured as follows:

For Router A:

```
atm pvc 1 0 32 aal5snap 10000 10000 1
```

For Router B:

```
atm pvc 1 0 32 aal5snap 10000 10000 1
```

In the previous example, you would only be able to transmit at 10Mbps; the remaining 15 Mbps would no longer be available.

Command Reference

There are no new or edited commands introduced with the 1-Port ATM-25 Network Module. All other commands used with this device are documented in the Cisco IOS Release 11.3 command references.