



# 1-Port ADSL WAN Interface Card

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## Feature History

Release	Modification
12.1(3)XJ	This feature was introduced on the Cisco 1700 series routers.
12.2(2)T	This feature was integrated into Cisco IOS Release 12.2(2)T.

This feature module describes the 1-port Asymmetric Digital Subscriber Line Wide Area Network (ADSL WAN) Interface Card feature for Cisco 1700 series routers. It describes the benefits of the new feature, supported platforms, configuration, related documents, and provides command reference information.

This document includes the following sections:

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## Feature Overview

The Cisco 1700 series routers, which include the Cisco 1720 and 1750 models, are modular access routers for small and medium businesses and small branch offices. Cisco 1700 routers deliver routing, firewall, and Virtual Private Network (VPN) functions for Internet data and voice applications.

The ADSL WAN interface card is a 1-port WAN interface card (WIC) for the Cisco 1700 series of modular access routers. The card provides asymmetric digital subscriber line (ADSL) high-speed digital data transfer between a single customer premises equipment (CPE) subscriber and the central office.

The ADSL WIC is compatible with the Alcatel Digital Subscriber Loop Access Multiplexer (DSLAM), the Cisco 6260 DSLAM with Flexi-line cards and the Cisco 6130 DSLAM with Flexi-line cards. It supports Asynchronous Transfer Mode (ATM) Adaptation Layer (AAL)5 (AAL5) and various classes of Quality of Service (QoS) for both voice and data service.

**Note**

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ADSL is a last-mile access technology, which has an asymmetrical data rate running over a single copper wire pair.

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## Benefits

- Enables business class broadband service with voice integration, scalable performance, flexibility, and security.
- Aggregates both ADSL and other transport options into a single box.
- Provides both POTS and ADSL high-speed digital data transmissions between the customer premise equipment (CPE) and the central office (CO).
- Supports ITU G.992.1 (or G.DMT, which specifies full-rate ADSL).
- Supports and complies with ANSI T1.413 issue 2, and ITU G.992.1 (G.DMT for full-rate ADSL).
- Supports ATM AAL5 services and applications, ATM class of service (constant bit rate [CBR], variable bit rate-nonreal time [VBR-NRT], variable bit rate-real time [VBR-rt], and unspecified bit rate [UBR]) and up to 24 virtual circuits on a WIC in Cisco 1700 routers.
- Provides ATM traffic management and Quality of Service (QoS) features to enable service providers to manage their core ATM network infrastructures.

## Restrictions

The ADSL WAN interface card does not support dual latency. When the ADSL link is intended to support both voice and data traffic simultaneously, the link should be configured for either all fast-path data or all interleave data with an interleave depth of zero to insure that latency is minimized. In addition, the total supported data rate must be reduced to adjust for the reduced coding gain, which is usually present with high-latency traffic.

## Related Documents

- *Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(2)T*
- *Caveats for Cisco IOS Release 12.2 T*

## Cisco 1720 Router

- *Installing Your Cisco 1720 (quick start guide)*
- *Cisco 1720 Router Hardware Installation Guide*
- *Cisco 1700 Router Software Configuration Guide*
- *Regulatory Compliance and Safety Information For Cisco 1600 and Cisco 1700 Routers*
- *Configuration Notes*
- *Release Notes for the Cisco 1720 Router*
- *WAN Interface Cards Hardware Installation Guide*

## Cisco 1750 Router

- *Cisco 1750 Router Hardware Installation Guide*
- *Voice-over-IP Quick Start Guide*
- *Cisco 1750 Router VoIP Quick Start Guide*
- *Cisco 1750 Software Configuration Guides*
- *Cisco WAN Interface Cards Hardware Installation Guide*
- *Installing and Removing Packet Voice DSP Modules Configuration Note*
- *Release Notes for the Cisco 1750 Router*
- *Safety Information for Cisco 1600 and 1700 Routers Regulatory Compliance and Safety document*
- *Installing the Virtual Private Network (VPN) Module in Cisco 1700 Series Routers*

## Supported Platforms

- Cisco 1720
- Cisco 1750

### Platform Support Through Feature Navigator

Cisco IOS software is packaged in feature sets that support specific platforms. To get updated information regarding platform support for this feature, access Feature Navigator. Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, e-mail the Contact Database Administration group at [cdbadmin@cisco.com](mailto:cdbadmin@cisco.com). If you want to establish an account on Cisco.com, go to <http://www.cisco.com/register> and follow the directions to establish an account.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. As of May 2001, Feature Navigator supports M, T, E, S, and ST releases. You can access Feature Navigator at the following URL:

<http://www.cisco.com/go/fn>

## Prerequisites

Before you can enable ADSL WAN features, the ADSL WAN Interface Card must be installed and running one of the following Cisco IOS images:

- c1700-y7-mz
- c1700-sy7-mz
- c1700-sv3y7-mz
- c1700-sy756i-mz
- c1700-sv3y756i-mz

- c1700-o3sv3y7-mz
- c1700-o3sy756i-mz
- c1700-o3sv3y756i-mz
- c1700-no3sy7-mz
- c1700-no3sv3y7-mz
- c1700-k2sy7-mz
- c1700-k2sv3y7-mz
- c1700-k2o3sy7-mz
- c1700-k2o3sv3y7-mz
- c1700-bnr2sy7-mz
- c1700-bno3r2sy756i-mz
- c1700-bno3r2sv3y756i-mz
- c1700-bk2no3r2sy7-mz
- c1700-bk2no3r2sv3y7-mz

## Configuring the ADSL WAN Interface Card

Detailed instructions for configuring the ADSL WAN interface card are provided in the publication *Configuring an ADSL WAN Interface Card on Cisco 1700 Series Routers*. This document is available for the Cisco 1720 router on CCO and the Documentation CD-ROM:

- On CCO at:  
**Technical Documents: Documentation Home Page: Access Servers and Access Routers: Modular Access Routers: Cisco 1720 Router: Configuration Notes: Configuring an ADSL WAN Interface Card on Cisco 1700 Series Routers**
- On the Documentation CD-ROM at:  
**Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1720 Router: Configuration Notes: Configuring an ADSL WAN Interface Card on Cisco 1700 Series Routers**

## Configuration Example

The following sample shows a 1700 series router configured for bridging on the ATM interface with an ADSL card:

```
Current configuration:
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname meltrack
!
no ip routing
!
```

```
interface ATM0
no ip address
atm vc-per-vp 256
  pvc 8/35
  encapsulation aal5snap
!
dsl operating-mode auto
bridge-group 1
!
interface FastEthernet0
no ip address
speed auto
bridge-group 1
!
ip classless
no ip http server
!
bridge 1 protocol ieee
!
line con 0
transport input none
line aux 0
line vty 0 4
login
!
end
```

## Command Reference

This section documents the new or changed Cisco IOS commands for configuring the ADSL WAN Interface Card feature. All other commands used to configure the ADSL WAN Interface Card feature are documented in the following publications:

- *Configuring an ADSL WAN Interface Card on Cisco 1700 Series Routers*
- The “Configuring ATM” section of the *Cisco IOS Wide-Area Networking Configuration Guide*
- The “ATM Commands” section of the *Cisco IOS Wide-Area Networking Command Reference*

Reference information is provided below for configuring the following Cisco IOS on the Cisco 1700 series routers:

- **dsl operating-mode**
- **show dsl interface atm**
- **show diag wic-slot-num**

## dsl operating-mode



### Caution

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This command is for testing or lab environments only. Using a configuration other than the default configuration for the DSL operating mode can lead to unpredictable behavior on the ADSL line.

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To modify the operating mode of the digital subscriber line for an ATM interface, use the Exec mode **dsl operating-mode** command.

**dsl operating-mode { auto | ansi-dmt | itu-dmt }**

**no dsl operating-mode { auto | ansi-dmt | itu-dmt }**

Syntax Description	auto	Configure the ADSL line after auto-negotiating with the DSLAM located at the Central Office.
	<b>ansi-dmt</b>	Configure the ADSL line to train in the ANSI T1.413 Issue 2 mode.
	<b>itu-dmt</b>	Configure the ADSL line to train in the G.992.1 mode.

**Defaults** The DSL operating mode is set to **auto**.

**Command Modes** EXEC

Command History	Release	Modification
	12.1(3)XJ	The command <b>dsl operating-mode</b> was introduced on the Cisco 1700 series routers.
	12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.

**Usage Guidelines** This configuration command applies to a specific ATM interface. The interface to which it applies must be specified before using the command.

### Examples



#### Caution

This command is for testing or lab environments only. Using a configuration other than the default configuration for the DSL operating mode can lead to unpredictable behavior on the ADSL line.

```
router# conf t
Enter configuration commands, one per line. End with CNTL/Z.
router(config)# int atm 0
router(config-if)# dsl operating-mode itu-dmt
router(config-if)# end
router#
```

### Related Commands

Command	Description
<b>show dsl interface atm</b>	Show all of the ADSL-specific information for a specified ATM interface.
<b>show diag wic-slot-num</b>	Specify detailed diagnostic options for displaying the memory on an ADSL-WIC and the ADSL line training log.

# show dsl interface atm

To show the ADSL-specific information for a specified ATM interface, use the Exec mode **show dsl interface atm** command.

**show dsl interface atm** *number*

## Syntax Description

Command Elements	Description
<i>number</i>	ATM interface 0 or 1.

## Command Modes

EXEC

## Command History

Release	Modification
12.1(3)XJ	The command was introduced on the Cisco 1700 series routers.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.

## Usage Guidelines

The output from this command appears the same as the output from the command **show controller atm 0 | b chipset** on the Cisco 1400 series routers.

## Examples

This command shows all of the ADSL specific information for the ATM interface requested.

```

router# show dsl int atm0
Alcatel 20150 chipset information
                ATU-R (DS)                ATU-C (US)
Modem Status:   Showtime (DMTDSL_SHOWTIME)
DSL Mode:       ITU G.992.1 (G.DMT)
ITU STD NUM:    0x01                        0x1
Vendor ID:      'ALCB'                      'ALCB'
Vendor Specific: 0x0000                    0x0000
Vendor Country: 0x00                        0x0F
Capacity Used:  85%                         98%
Noise Margin:   13.5 dB                      7.0 dB
Output Power:   9.5 dBm                      12.0 dBm
Attenuation:    1.5 dB                        3.5 dB
Defect Status:  None                         None
Last Fail Code: None
Selftest Result: 0x00
Subfunction:    0x15
Interrupts:     5940 (0 spurious)
PHY Access Err: 0
Activations:    1
SW Version:     3.670
FW Version:     0x1A04

Speed (kbps):   Interleave      Fast      Interleave      Fast
                0                8128     0                864

```

## show dsl interface atm

```

Reed-Solomon EC:          0          0          0          0
CRC Errors:              0          0          0          7
Header Errors:          0          0          0          2
Bit Errors:              0          0
BER Valid sec:          0          0
BER Invalid sec:        0          0

```

## DMT Bits Per Bin

```

00: 0 0 0 0 0 0 0 7 6 7 9 A B C C C
10: C C C C C C B B B B A 9 A 9 0 0
20: 0 0 0 0 0 0 2 2 3 4 4 5 6 6 7 7
30: 7 8 8 8 9 9 9 A A A A A B B B
40: B B B B B B B B B B A B B B B
50: B B B B B B B B B B B 2 B B B
60: B B B B B B B B B B B B B B B
70: B B B B B B B B B B B B B B B
80: B B B B B B B B B B B B B B B
90: B B B B B B B B B B B B B B B
A0: B B B B B B B B B B B B B B B
B0: B B B B B B B B B B B A B A A
C0: A A A A A A A A A A A A A A A
D0: A A A A A A A A A A 9 9 9 9 9
E0: 9 9 9 9 9 9 9 9 9 9 8 8 8 8
F0: 8 8 8 8 8 8 7 7 7 7 6 6 5 5 4 4

```

## Related Commands

Command	Description
<b>dsl operating-mode</b>	Modify the operating mode of the digital subscriber line for an ATM interface.
<b>show diag wic-slot-num</b>	Specify detailed diagnostic options for displaying the memory on an ADSL-WIC and the ADSL line training log.

# Debug Commands

This section documents the new **debug** commands related to the ADSL WAN Interface Card on Cisco 1700 series routers.

## show diag wic-slot-num

To specify detailed diagnostic options for displaying the memory on an ADSL-WIC and the ADSL line training log, use the Exec mode **show diag wic-slot-num** command.

```
show diag wic-slot-num { mem start_address end_address | log }
```

### Syntax Description

Command Elements	Description
<i>wic-slot-num</i>	WIC slot number 0 or 1.
<i>mem start_address end_address</i>	Display the contents of ADSL-WIC memory.
<i>log</i>	Display the ADSL line training log.

### Command Modes

EXEC

### Command History

Release	Modification
12.1(3)XJ	The command was modified to support the ADSL-WIC on the Cisco 1700 series routers.
12.2(2)T	The modifications to this command in 12.1(3)XJ were integrated into Cisco IOS Release 12.2(2)T.

### Examples

The following examples show the use of the **show diag wic-slot-num** command on Cisco 1700 series routers.

```
router# show diag ?
  <0-1> Slot number
  |      Output modifiers
```

```
router# show diag
Slot 0:
  C1720 1FE Mainboard Port adapter, 2 ports
  Port adapter is analyzed
  Port adapter insertion time unknown
  EEPROM contents at hardware discovery:
  Hardware Revision       : 3.1
  PCB Serial Number      : JAD03369787
  Part Number            : 73-3201-03
  Board Revision         : D0
```

```
show diag wic-slot-num
```

```
Fab Version          : 04
EEPROM format version 4
EEPROM contents (hex):
 0x00: 04 FF 40 00 B2 41 03 01 C1 8B 4A 41 44 30 33 33
 0x10: 36 39 37 38 37 82 49 0C 81 03 42 44 30 02 04 FF
 0x20: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x30: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

```
WIC Slot 1:
Alcatel 20150 ADSL WIC WAN daughter card-Version 4 TLV Cookie Format
Hardware Revision      : 1.2
Board Revision        : 01
Processor type        : 02
Part Number           : 73-3933-01
```

```
1700_DSL#show diag 1 memory 0x11000 0x110ff
slot 1
00011000: 00018000 00000000 00001000 00000000
00011010: 00000000 FFFFFFFF 00000000 00000000
00011020: 00000000 00000000 00000000 00000000
00011030: 00000000 00000000 00000000 00000000
00011040: 00019010 00100000 084E03F3 00000000
00011050: 00000010 FFFFFFFF 08000030 001723C0
00011060: 00000264 00000212 00000000 00000000
00011070: 00000000 00000000 00000000 00000000
00011080: 0001A000 00000000 00001000 00000000
00011090: 00000000 FFFFFFFF 00000000 00000000
000110A0: 00000000 00000000 00000000 00000000
000110B0: 00000000 00000000 00000000 00000000
000110C0: 0001B000 00000000 00001000 00000000
000110D0: 00000000 FFFFFFFF 00000000 00000000
000110E0: 00000000 00000000 00000000 00000000
000110F0: 00000000 00000000 00000000 00000000
```

```
router# show diag 1 log
Log file of training sequence:
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
starttim 4, 0x4C28CAME: Cttones detection removed
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
AME: Cttones detection removed
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
AME: Cttones detection removed
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
AME: Cttones detection removed
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
AME: Cttones detection removed
Hs:doing power measurement on C-TONES
AME:HsDetector::startDetection
AME: Cttones detection removed
```

```
Hs:doing power measurement on C-TONES  
AME:HsDetector::startDetection  
AME: Ctones detection removed  
Hs:doing power measurement on C-TONES
```

### Related Commands

Command	Description
<b>dsl operating-mode</b>	Modify the operating mode of the digital subscriber line for an ATM interface.
<b>show dsl interface atm</b>	Show all of the ADSL-specific information for a specified ATM interface.

■ show diag wic-slot-num