



# 1-Port ADSL WAN Interface for the Cisco IAD2420 Series

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This feature module describes the 1-port Asymmetric Digital Subscriber Line Wide Area Network (ADSL WAN) Interface for the Cisco IAD2420 Series. It describes the benefits of the new feature, supported platforms, configuration, related documents, and provides command reference information.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Restrictions for 1-Port ADSL WAN Interface

The ADSL WAN interface 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.

## Information About 1-Port ADSL WAN Interface

### ADSL WAN Interface

The ADSL 1-port WAN interface 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 WAN interface is compatible with the Alcatel Digital Subscriber Line 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 (AAL5 and AAL2) and various classes of Quality of Service (QoS) for both voice and data service.

**Note**

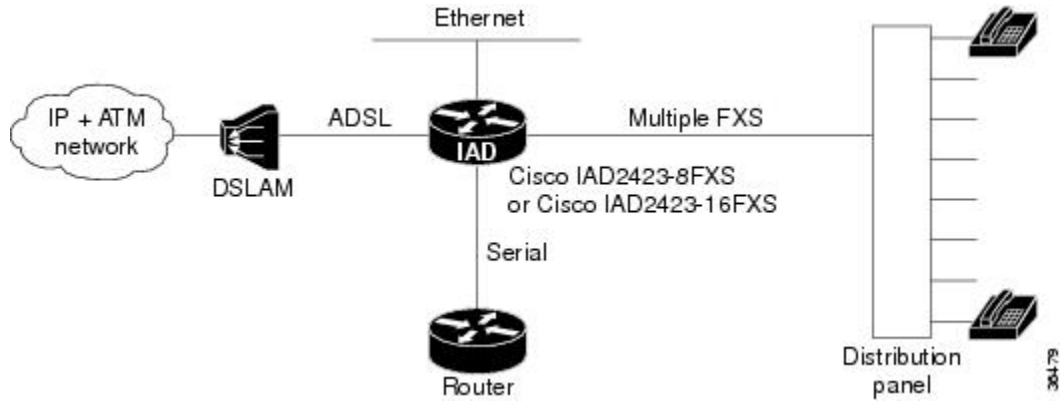
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ADSL is a last-mile access technology, which has an asymmetrical data rate running over a single copper wire pair.

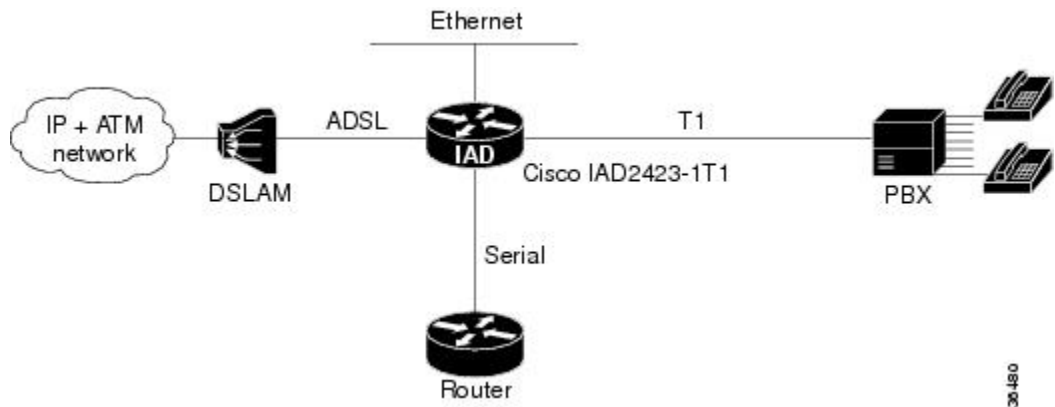
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The diagrams below show examples of typical deployment scenarios for the Cisco IAD2423.

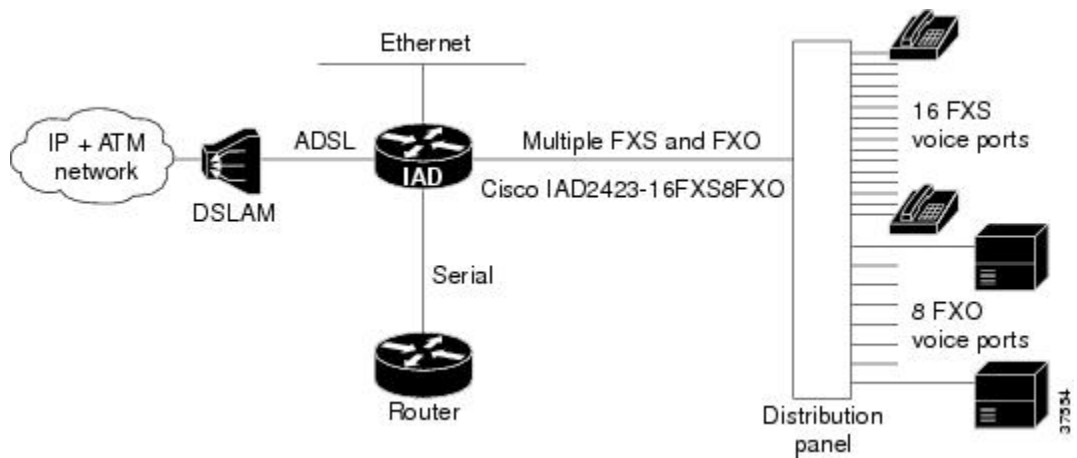
**Figure 1: ADSL WAN Interface with Analog FXS User Interface**



**Figure 2: ADSL WAN Interface with T1 Interface to a PBX**



**Figure 3: ADSL WAN Interface with FXS or FXO Interface**



## Benefits

- Enables business class broadband service with voice integration, scalable performance, flexibility, and security.
- Aggregates both ADSL and other transport options onto a single platform.
- 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 and AAL2 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]).
- Provides ATM traffic management and Quality of Service (QoS) features to enable service providers to manage their core ATM network infrastructures.

## How to Configure the 1-Port ADSL WAN Interface

See the following sections for configuration tasks for the ADSL WAN interface feature. Each task in the list is identified as either required or optional.

### Configuring the ADSL ATM Interface

If your Cisco IAD has an ADSL port, a default ATM configuration is automatically in effect when the Cisco IAD is first powered on. If your Cisco IAD has a T1-WAN port, a default ATM configuration takes effect when you enter the mode `atm controller` command. The default ATM configuration has the following operating parameters:

- ADSL port only.
  - Operating mode is `auto`--The ADSL interface operates in the mode specified by the remote DSL access multiplexer (DSLAM).
- T1-WAN port and ADSL port.
  - Maximum VPIs per VCI (`atm vc-per-vc`)--1024.
  - No IP address.
  - ATM UNI Version 4.0 is assigned.
  - ATM ILMI keepalive is disabled.
  - No ATM PVCs are configured

To configure the ADSL ATM interface, follow these steps:

## SUMMARY STEPS

1. **enable**
2. **config terminal**
3. **controller t1 0**
4. **mode atm**
5. **exit**
6. **interface atm 0**
7. **ip address** *ip-address*
8. **atm uni-version** *version-number*
9. **atm ilmi-keepalive** *seconds*
10. **pvc** [*name*] *vpi/vci*
11. **protocol ip** *IP-address*
12. **vbr-rt** *peak-rate average-rate burst*
13. **encapsulation** {*aal1* | *aal2* | *aal5cisco* | *aal5mux* | *aal5snap*}
14. **exit**
15. Repeat steps 9 through 13 for each ATM PVC to be configured.
16. **dsl operating-mode** {*ansi-dmt* | *auto* | *itu-dmt* | *splitterless*}
17. Router(config-if)# **no shutdown**
18. **exit**
19. **exit**
20. **show interface atm 0**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enters privileged EXEC mode. Enter your password if prompted.
<b>Step 2</b>	<b>config terminal</b>  <b>Example:</b> Router# config terminal	Enters global configuration mode.
<b>Step 3</b>	<b>controller t1 0</b>	Enter controller configuration mode and enter the controller number. The controller number for the T1-WAN port is 0.  <b>Note</b> This step is only necessary if you have a T1 interface.  Router(config)# controller t1
<b>Step 4</b>	<b>mode atm</b>	Enable ATM encapsulation and create logical ATM interface 0. Controller framing is automatically set to Extended SuperFrame (ESF). The linecode is automatically set to B8ZS.

	Command or Action	Purpose
		<p><b>Note</b> This step is only necessary if you have a T1 interface.</p> <pre>Router(config-ctrl)# mode atm</pre>
<b>Step 5</b>	<p><b>exit</b></p> <p><b>Example:</b></p> <pre>Router(config-ctrl)# exit</pre>	Return to global configuration mode.
<b>Step 6</b>	<p><b>interface atm 0</b></p> <p><b>Example:</b></p> <pre>Router(config)# interface atm 0</pre>	Enters interface configuration mode for ATM 0.
<b>Step 7</b>	<p><b>ip address <i>ip-address</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if)# ip address 10.2.0.1</pre>	(Optional) Assigns an IP address to the ADSL ATM interface.
<b>Step 8</b>	<p><b>atm uni-version <i>version-number</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if)# atm uni-version 2</pre>	(Optional) Assign an ATM user network interface (UNI) version number.
<b>Step 9</b>	<p><b>atm ilmi-keepalive <i>seconds</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if)# atm ilmi-keepalive</pre>	<p>(Optional) Enable Integrated Local Management Interface (ILMI) keepalives.</p> <p><b>Note</b> The default value is 3 seconds.</p>
<b>Step 10</b>	<p><b>pvc [<i>name</i>] <i>vpi/vci</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if)# pvc vc1 25/35</pre>	<p>Enters atm-virtual-circuit configuration mode, and configures a new permanent virtual circuit (PVC). Assigning a name is optional.</p> <p><b>Note</b> The default traffic shaping is UBR and the default encapsulation is AAL5+LLC/SNAP.</p>
<b>Step 11</b>	<p><b>protocol ip <i>IP-address</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if-vc)# protocol ip 10.2.0.2</pre>	(Optional) Enable IP and create a point-to-point IP address for the virtual circuit (VC).
<b>Step 12</b>	<p><b>vbr-rt <i>peak-rate average-rate burst</i></b></p> <p><b>Example:</b></p> <pre>Router(config-if-vc)# vbr-rt 672 672 512</pre>	<p>(Optional) Configure the PVC for real-time variable bit rate (VBR) traffic shaping.</p> <ul style="list-style-type: none"> <li>• Peak rate--peak information rate (PIR)</li> <li>• Average rate--average information rate (AIR)</li> <li>• Burst--burst size in cells</li> </ul>
<b>Step 13</b>	<p><b>encapsulation {aal1   aal2   aal5ciscoppp   aal5mux   aal5snap}</b></p>	(Optional) Configure the ATM adaptation layer (AAL) and encapsulation type.

	Command or Action	Purpose
	<p><b>Example:</b>  Router(config-if-vc)# encapsulation aal5snap</p>	<ul style="list-style-type: none"> <li>• <b>aal1</b> for AAL1</li> <li>• <b>aal2</b> for AAL2</li> <li>• <b>aal5ciscoPPP</b> for Cisco PPP over AAL5</li> <li>• <b>aal5mux</b> for AAL5+MUX</li> <li>• <b>aal5nlpid</b> for AAL5+NLPID</li> <li>• <b>aal5snap</b> for AAL5+LLC/SNAP (default)</li> </ul>
<b>Step 14</b>	<p><b>exit</b></p> <p><b>Example:</b>  Router(config-if-vc)# exit</p>	Exit for interface-ATM-VC configuration mode.
<b>Step 15</b>	Repeat steps 9 through 13 for each ATM PVC to be configured.	
<b>Step 16</b>	<p><b>dsl operating-mode {ansi-dmt   auto   itu-dmt   splitterless}</b></p> <p><b>Example:</b>  Router(config-if)# dsl operating-mode itu-dmt</p>	<p>Configure the ADSL interface mode.</p> <ul style="list-style-type: none"> <li>• <b>ansi-dmt</b> --ANSI full rate mode per T1.413 (ITU G dmt Issue 1)</li> <li>• <b>auto</b> --Automatic detection mode (default)</li> <li>• <b>itu-dmt</b> --ITU full rate mode (ITU G dmt Issue 1)</li> <li>• <b>splitterless</b> --G.lite mode per ITU G.992.2</li> </ul>
<b>Step 17</b>	<p>Router(config-if)# <b>no shutdown</b></p> <p><b>Example:</b>  Router(config-if)# no shutdown</p>	Activate the ATM interface.
<b>Step 18</b>	<p><b>exit</b></p> <p><b>Example:</b>  Router(config-if)# exit</p>	Exit from the ATM interface configuration mode.
<b>Step 19</b>	<p><b>exit</b></p> <p><b>Example:</b>  Router(config)# exit</p>	Exit from the global configuration mode.
<b>Step 20</b>	<p><b>show interface atm 0</b></p> <p><b>Example:</b>  Router&gt; show interface atm 0</p>	Verify the ATM interface configuration.

## Configuring ATM for AAL2 Voice

This feature enables the Cisco IAD2423 to carry voice traffic (for example, telephone calls and faxes) over ATM networks using AAL2. AAL2 is the most bandwidth-efficient standards-based trunking method for transporting compressed voice, voice-band data, circuit-mode data, and frame-mode data over ATM infrastructures.

For configuration information, refer to the Cisco IOS Release 12.1(2)T feature module, Voice over ATM with AAL2 Trunking on Cisco MC3810 Series Concentrators, located on the World Wide Web at:

[http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121t/121t2/dt\\_aal2v.htm](http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121t/121t2/dt_aal2v.htm)

## Configuring RSVP over an ATM Network

The RSVP-ATM Quality of Service (QoS) Interworking feature provides support for Controlled Load Service using RSVP over an ATM core network. This feature requires the ability to signal for establishment of switched virtual circuits (SVCs) across the ATM cloud in response to RSVP reservation messages. To meet this requirement, RSVP over ATM supports mapping of RSVP sessions to ATM SVCs.

RSVP-ATM QoS Interworking allows you to:

- Configure an interface or subinterface to dynamically create SVCs in response to RSVP reservation requests. To ensure defined QoS, these SVCs are established having QoS profiles consistent with the mapped RSVP flow specifications (flowspecs).
- Attach Distributed Weighted Random Early Detection (DWRED) group definitions to the PA-A3 ATM PA interface to support per-VC DWRED drop policy. Use of per-VC DWRED ensures that if packets must be dropped, then best-effort packets are dropped first and not those that conform to the appropriate QoS determined by the RSVP's token bucket.
- Configure the IP Precedence and type of service (ToS) values to be used for packets that conform to or exceed QoS profiles. As part of its input processing, RSVP uses the values that you specify to set the ToS and IP Precedence bits on incoming packets. If per-VC DWRED is configured, it then uses the ToS and IP Precedence bit settings on the output interface of the same router in determining which packets to drop. Also, interfaces on downstream routers use these settings in processing packets.

For configuration information, refer to, Configuring RSVP-ATM QoS Interworking, located on the World Wide Web at:

[http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/qos\\_c/qcprt5/qcdrsatm.htm](http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/qos_c/qcprt5/qcdrsatm.htm)

## Verifying the ATM Interface Configuration

To display ATM-specific information about an ATM interface, use the **show interface atm** privileged EXEC command.

```
Router# show interface atm 0
ATM0 is up, line protocol is up
Hardware is PQUICC Atom1 (with Alcatel ADSL Module)
Internet address is 15.15.15.3/24
MTU 4470 bytes, sub MTU 4470, BW 832 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ATM, loopback not set
Keepalive not supported
```



```
Encapsulation(s):, PVC mode
512 maximum active VCs, 8 current VCCs
VC idle disconnect time: 300 seconds
Last input 3d23h, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: Per VC Queueing
30 second input rate 0 bits/sec, 0 packets/sec
30 second output rate 0 bits/sec, 0 packets/sec
343791 packets input, 209797720 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
5051487 packets output, 464110057 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 output buffer failures, 0 output buffers swapped out
```

To display DSL information about an ADSL interface, use the show dsl interface atm privileged EXEC command.

```
Router# show dsl interface atm 0
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
                Interleave                Fast    Interleave    Fast
Speed (kbps):   0                          8128    0                864
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 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
50: 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
70: 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
90: 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
B0: B B B B B B B B B B B A B A
C0: 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
E0: 9 9 9 9 9 9 9 9 9 9 9 8 8 8
F0: 8 8 8 8 8 8 7 7 7 6 6 5 5 4 4
```

## Troubleshooting Tips

To troubleshoot ADSL line problems, follow these steps:

### SUMMARY STEPS

1. Check the carrier detect LED on the card. It will be off when the ADSL carrier is not detected. If it is off, it is a physical problem probably due to a bad cable or the problem with ADSL line or WAN service.
2. Make sure the ATM0 interface is not administratively shut down and the cable is good.
3. If the **show interface atm 0** command shows the interface as down, it means the Cisco IAD2423 sees the ADSL carrier but cannot train up with the Digital Subscriber Line Access Multiplexer (DSLAM) at the central office (CO).

### DETAILED STEPS

**Step 1** Check the carrier detect LED on the card. It will be off when the ADSL carrier is not detected. If it is off, it is a physical problem probably due to a bad cable or the problem with ADSL line or WAN service.

**Step 2** Make sure the ATM0 interface is not administratively shut down and the cable is good.

**Step 3** If the **show interface atm 0** command shows the interface as down, it means the Cisco IAD2423 sees the ADSL carrier but cannot train up with the Digital Subscriber Line Access Multiplexer (DSLAM) at the central office (CO). Turn on **debug atm events** (you need to turn on terminal monitor if you are in a telnet session to the router) and look at the output:

The ADSL activation stages are shown below:

STOP	in shutdown state
INIT	initialization
DLOAD_1	init and downloading first image
DLOAD_2	downloading second image
DO-OPEN	requesting activation with central office (CO)
SHOWTIME	activation succeeded

When in DO\_OPEN state, look for the modem state for the progress information:

Modem state = 0x0	modem down
Modem state = 0x8	modem waiting to hear from CO
Modem state = 0x10	modem heard from CO, now training
Modem state = 0x20	modem activation completed, link is up

The following is a sample debug output:

**Example:**

```
*Mar 1 00:08:21.771: DSL: SM: [DMTDSL_DO_OPEN -> DMTDSL_INIT]
*Mar 1 00:08:23.771: DSL: SM: [DMTDSL_INIT -> DMTDSL_DLOAD_1]
*Mar 1 00:08:23.771: DSL: Downloading asw_init_2_5_8.bin
*Mar 1 00:08:23.771: DSL: SM: [DMTDSL_DLOAD_1 -> DMTDSL_DLOAD_2]
*Mar 1 00:08:23.771: DSL: Downloaded 2 blocks... Finished!
*Mar 1 00:08:23.775: DSL: Sent command 0x14
*Mar 1 00:08:26.275: DSL: Received 1 timer events during wait
*Mar 1 00:08:27.711: DSL: Received response: 0x80
*Mar 1 00:08:27.715: DSL: SM: [DMTDSL_DLOAD_1 -> DMTDSL_DLOAD_2]
*Mar 1 00:08:27.715: DSL: Downloading asw_r2_5_8.bin
*Mar 1 00:08:27.791: DSL: Downloaded 100 blocks
*Mar 1 00:08:27.863: DSL: Downloaded 200 blocks
*Mar 1 00:08:27.935: DSL: Downloaded 300 blocks
*Mar 1 00:08:27.975: DSL: Downloaded 354 blocks... Finished!
*Mar 1 00:08:27.975: DSL: Sent command 0x14
*Mar 1 00:08:29.991: DSL: SM: [DMTDSL_DLOAD_2 -> DMTDSL_DO_OPEN]
*Mar 1 00:08:29.991: DSL: Send ADSL_OPEN command.
*Mar 1 00:08:29.991: DSL: Using subFunction 0x2
*Mar 1 00:08:29.991: DSL: Sent command 0x3
*Mar 1 00:08:32.491: DSL: 1: Modem state = 0x8
*Mar 1 00:08:34.991: DSL: 2: Modem state = 0x8
*Mar 1 00:08:37.491: DSL: 3: Modem state = 0x10
*Mar 1 00:08:39.991: DSL: 4: Modem state = 0x10
*Mar 1 00:08:42.491: DSL: 5: Modem state = 0x10
*Mar 1 00:08:44.991: DSL: 6: Modem state = 0x10
*Mar 1 00:08:46.003: DSL: Received response: 0x24
*Mar 1 00:08:46.003: DSL: Showtime!
*Mar 1 00:08:46.007: DSL: Sent command 0x11
*Mar 1 00:08:46.011: DSL: Received response: 0x61
*Mar 1 00:08:46.011: DSL: Read firmware revision 0x1A04
*Mar 1 00:08:46.011: DSL: SM: [DMTDSL_DO_OPEN -> DMTDSL_SHOWTIME]
```

## Configuration Examples for 1-Port ADSL WAN Interface

### Example Cisco IAD2423 Configuration

The following sample shows a Cisco IAD2423 configuration:

```
Building configuration...
Current configuration : 3187 bytes
!
version 12.1
no service single-slot-reload-enable
no service pad
service timestamps debug datetime msec
service timestamps log uptime
no service password-encryption
!
hostname Router
!
no logging buffered
logging rate-limit console 10 except errors
enable password mortify
```

```

!
network-clock base-rate 56k
network-clock-select 2 system(SCB)
ip subnet-zero
!
!
no ip finger
no ip domain-lookup
ip host newrouter 12.2.63.7
ip host motley 222.255.254.254
!
ip audit notify log
ip audit po max-events 100
frame-relay switching
!
voice-card 0
!
interface Ethernet0
 ip address 1.7.18.127 255.255.0.0
 ip helper-address 222.255.254.254
 no ip route-cache
 no ip mroute-cache
 load-interval 30
 no cdp enable
!
interface Serial0
 no ip address
 encapsulation frame-relay
 no ip route-cache
 no ip mroute-cache
 no keepalive
 shutdown
 no fair-queue
 no arp frame-relay
 frame-relay traffic-shaping
 frame-relay interface-dlci 200
  class fr801
 frame-relay ip rtp header-compression
!
interface ATM0
 ip address 15.15.15.3 255.255.255.0
 load-interval 30
 no atm ilmi-keepalive
 pvc 25/35
  encapsulation aal5snap
!
 pvc 110/110
  encapsulation aal2
!
 pvc 111/111
  protocol ip 15.15.15.2
  encapsulation aal5snap
!
 pvc 120/120
  encapsulation aal2
!
dsl operating-mode itu-dmt
!
no ip classless
ip route 0.0.0.0 0.0.0.0 1.3.0.1
ip route 163.69.0.0 255.255.0.0 163.22.124.1
ip route 222.255.254.254 255.255.255.255 Ethernet0
no ip http server
!
!
map-class frame-relay fr801
 no frame-relay adaptive-shaping
 frame-relay cir 100000
 frame-relay bc 1000
 frame-relay mincir 100000
 frame-relay fair-queue
!
map-class frame-relay fr38

```

```
frame-relay traffic-rate 1500000 1500000
no frame-relay adaptive-shaping
frame-relay cir 1500000
frame-relay mincir 1500000
!
map-class frame-relay voice
!
map-class frame-relay 801
logging trap debugging
no cdp run
call rsvp-sync
!
voice-port 1/1
!
voice-port 1/2
!
voice-port 1/3
!
voice-port 1/4
!
voice-port 1/5
  connection plar 702
!
voice-port 1/6
  connection plar 702
!
mgcp modem passthrough voip mode ca
no mgcp timer receive-rtcp
!
mgcp profile default
!
dial-peer cor custom
!
!
!
dial-peer voice 1001 pots
  destination-pattern 1001
  port 1/1
!
dial-peer voice 2001 voatm
  destination-pattern 2001
  session protocol aal2-trunk
  session target ATM0 pvc 110/110 101
  signal-type trans
  codec aal2-profile custom 110 g711ulaw
  no vad
!
dial-peer voice 701 pots
  destination-pattern 701
  port 1/1
!
dial-peer voice 702 pots
  destination-pattern 702
  port 1/2
!
dial-peer voice 703 pots
  destination-pattern 703
  port 1/3
!
dial-peer voice 704 pots
  destination-pattern 704
  port 1/4
!
dial-peer voice 705 pots
  destination-pattern 705
  port 1/5
!
dial-peer voice 706 pots
  destination-pattern 706
  port 1/6
!
dial-peer voice 9999 voip
  destination-pattern 2222
```

```

session target ipv4:12.12.12.2
signal-type ext-signal
!
dial-peer voice 9998 voip
destination-pattern 2223
session target ipv4:123.123.123.123
signal-type ext-signal
!
dial-peer voice 1000 voip
signal-type ext-signal
!
!
line con 0
exec-timeout 0 0
privilege level 15
transport input none
line aux 0
line 2 3
line vty 0 4
privilege level 15
no login
!
end

```

## Additional References

### Related Documents

Related Topic	Document Title
Cisco IOS commands	<a href="#">Cisco IOS Master Commands List, All Releases</a>
Release notes	<ul style="list-style-type: none"> <li>• <a href="#">Release Notes for Cisco IAD2420 Series for Cisco IOS Release 12.1(5)XR</a></li> <li>• <a href="#">Cross-Platform Release Notes for Cisco IOS Release 12.2(4)T</a></li> </ul>
IAD2420 configuration	<ul style="list-style-type: none"> <li>• <a href="#">Cisco IAD2420 Series Software Configuration Guide</a></li> <li>• <a href="#">Cisco IAD2420 Series Hardware Installation Guide</a></li> <li>• <a href="#">Cisco IAD2420 Series Regulatory Compliance and Safety Information</a></li> </ul>
Multiservice Applications configuration	<ul style="list-style-type: none"> <li>• <i>Cisco IOS Multiservice Applications Configuration Guide</i> , Release 12.1</li> <li>• <i>Cisco IOS Multiservice Applications Command Reference</i> , Release 12.1</li> </ul>

Related Topic	Document Title
WAN configuration	<i>Cisco IOS Wide-Area Networking Configuration Guide</i> , Release 12.1

### Standards

Standard	Title
ITU G.992.1	<i>G.DMT</i>
ITU G.992.2	<i>G.Lite</i>
T1.413 Issue 2	<i>ANSI</i>
AAL5	<i>ATM Adaptation Layer 5</i>
AAL2	<i>ATM Adaptation Layer 2</i>
UNI3.1 PVC	<i>ST2+ over ATM Protocol Specification - UNI 3.1 Version</i>

### MIBs

MIB	MIBs Link
ATM Interface MIB	To locate and download MIBs for selected platforms, Cisco software releases, and feature sets, use Cisco MIB Locator found at the following URL: <a href="http://www.cisco.com/go/mibs">http://www.cisco.com/go/mibs</a>

### RFCs

RFC	Title
RFC 1483	<i>Multiprotocol over ATM</i>
RFC 2364	<i>PPP over ATM</i>

**Technical Assistance**

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for 1-Port ADSL WAN Interface

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [http://www.cisco.com/go/featurenavigator](#). An account on Cisco.com is not required.



**Table 1: Feature Information for 1-Port ADSL WAN Interface**

Feature Name	Releases	Feature Information
1-Port ADSL WAN Interface	12.1(5)XR1 12.2(4)T	<p>The ADSL 1-port WAN interface provides asymmetric digital subscriber line (ADSL) high-speed digital data transfer between a single customer premises equipment (CPE) subscriber and the central office.</p> <p>The ADSL WAN interface is compatible with the Alcatel Digital Subscriber Line 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 (AAL5 and AAL2) and various classes of Quality of Service (QoS) for both voice and data service.</p> <p>The following platforms are supported:</p> <p>Cisco IAD2423-8FXS , Cisco IAD2423-16FXS, Cisco IAD2423-1T1, Cisco IAD2423-16FXS8FXO.</p> <p>The following commands were introduced or modified: <b>dsl operating-mode, show dsl interface atm .</b></p>

## Glossary

**AAL** --ATM Adaptation Layer. ATM adaptation layer. Service-dependent sublayer of the data link layer. The AAL accepts data from different applications and presents it to the ATM layer in the form of 48-byte ATM payload segments.

**AAL2** --ATM adaptation layer 2. ATM adaptation layer 2. One of four AALs recommended by the ITU-T. AAL2 is used for connection-oriented services that support a variable bit rate, such as some isochronous video and voice traffic.

**AAL5** --ATM adaptation layer 5. ATM adaptation layer 5. One of four AALs recommended by the ITU-T. AAL5 supports connection-oriented, VBR services, and is used predominantly for the transfer of classical IP over ATM and LANE traffic.

ADSL--Asymmetric Digital Subscriber Line.

ATM--Asynchronous Transfer Mode. Asynchronous Transfer Mode - International standard for cell relay in which multiple service types (such as voice, video, or data) are conveyed in fixed-length (53-byte) cells. An internationally standardized implementation of cell relay technology, ATM represents the first worldwide standard to be embraced by the computer, communications, and entertainment industry. ATM is a high-bandwidth, low-delay, connection-oriented, packet-like switching and multiplexing technique for data transmission that communicates all types of information (traditionally data, burst data, voice, video, image, and cell) over a common backbone using fixed cell lengths. ATM uses a 53-byte cell format that includes a 5-byte header and 48 bytes of payload. Because of the architecture, ATM has the capability to run from 45 Mbps using a DS3 to 2.5 Gbps using an OC-48.

broadband--Transmission system that multiplexes multiple independent signals onto one cable. In telecommunications terminology, any channel having a bandwidth greater than a voice-grade channel (4 kHz).

CBR--constant bit rate. QOS class defined by the ATM Forum for ATM networks. CBR is used for connections that depend on precise clocking to ensure undistorted delivery.

CPE--customer premises equipment. Customer Premises Equipment. Devices that a subscriber is responsible for in order to make use of telecommunications. CPE includes PCs, telephones, TVs, scanners, and much more. These devices or terminating equipment--such as terminals, telephones, and modems--are generally supplied by the telephone company, installed at customer sites, and connected to the telephone company network.

CO--Central Office - Local telephone company office to which all local loops in a given area connect and in which circuit switching of subscriber lines occurs. CO refers to the physical facility that contains the telephone switching system, transmission equipment, and other support systems that provide telephone and other telecommunications services to local telephone subscribers. There are numerous types of telephone switching systems, such as 1ESS, 4ESS, 5ESS, DMS 10/100/250/500, EAX2, or GTD5 that can be housed in a central office. The central office is not to be confused with the point of presence (POP) of the interexchange carrier, even though both perform many similar functions.

DSLAM--Digital Subscriber Line Access Multiplexer. A device that concentrates traffic in DSL implementations through a process of time-division multiplexing (TDM) at the CO or remote line shelf. This device is usually located in the CO for termination of multiple customer DSL devices.

DWRED--Distributed Weighted Random Early Detection. Random Early Detection (RED) is a congestion avoidance mechanism that takes advantage of TCP's congestion control mechanism. By randomly dropping packets prior to periods of high congestion, RED tells the packet source to decrease its transmission rate. Assuming the packet source is using TCP, it will decrease its transmission rate until all the packets reach their destination, indicating that the congestion is cleared.

Weighted RED (WRED) generally drops packets selectively based on IP precedence. Packets with a higher IP precedence are less likely to be dropped than packets with a lower precedence. Thus, higher priority traffic is delivered with a higher probability than lower priority traffic. However, you can also configure WRED to ignore IP precedence when making drop decisions so that non-weighted RED behavior is achieved.

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

POTS--plain old telephone service. Basic analog telephone service, usually associated with residential or business subscribers.

PPP over ATM--Point-to-Point Protocol. A successor to SLIP, PPP provides router-to-router and host-to-network connections over synchronous and asynchronous circuits.

PVC--permanent virtual circuit. Virtual circuit that is permanently established. PVCs save bandwidth associated with circuit establishment and tear down in situations where certain virtual circuits must exist all the time.

**QoS**--quality of service. Measure of performance for a transmission system that reflects its transmission quality and service availability.

**RSVP**--Resource Reservation Protocol. The Resource Reservation Protocol is a network-control protocol that enables Internet applications to obtain special qualities of service (QoS) for their data flows.

**SVC**--switched virtual circuit. Virtual circuit that is dynamically established on demand and is torn down when transmission is complete. SVCs are used in situations where data transmission is sporadic. Called a switched virtual connection in ATM terminology.

**ToS**--type of service. See COS.

**UBR**--unspecified bit rate. 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.

**UNI**--User-Network Interface. ATM Forum specification that defines an interoperability standard for the interface between ATM-based products (a router or an ATM switch) located in a private network and the ATM switches located within the public carrier network.

**VBR**--variable bit rate. QoS class defined by the ATM Forum for ATM networks. VBR is subdivided into a real time (RT) class and non-real time (NRT) class.

**VC**--virtual circuit. Logical circuit created to ensure reliable communication between two network devices. A virtual circuit is defined by a virtual path identifier/virtual channel identifier (VPI/VCI) pair, and can be either a PVC or a SVC. Virtual circuits are used in Frame Relay and X.25. In ATM, a virtual circuit is called a virtual channel.

