

# Troubleshooting Layer 1 on a Cisco SOHO77 Router

Document ID: 12919

---

## Introduction

### Prerequisites

Requirements

Components Used

Conventions

### Check the Cable Pinouts

### Troubleshoot the ADSL Interface Modem State

### Related Information

---

## Introduction

This document describes a procedure to troubleshoot Layer 1 (physical layer) issues on the Cisco SOHO77. It includes asymmetric digital subscriber line (ADSL) cable pinout and front panel status light emitting diode (LED) descriptions.

The physical layer defines the electrical, mechanical, procedural, and functional specifications to activate, maintain, and de-activate the physical link between communicating network systems. Physical layer specifications define characteristics such as voltage levels, timing of voltage changes, physical data rates, maximum transmission distances, and physical connectors.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

This document is not restricted to specific software and hardware versions.

### Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

## Check the Cable Pinouts

To troubleshoot Cisco SOHO77 Layer 1 issues, check the cable pinouts.

1. Make sure the cabling is correct and the Cisco SOHO77 front panel LEDs function properly.

The Cisco SOHO77 has an RJ-11 connector for the ADSL interface. It uses pins 3 and 4 to transfer data.

**Note:** For more information on cabling, interface pinouts, and status LED descriptions, refer to the

## DSL Modem/Router Interface Pinouts and Status LED Descriptions.

If the interface status shows down, the router does not see a carrier on the ADSL interface. This means that the pins used for the cable are wrong or that your ISP has not turned on DSL service for you. From the router prompt, issue the **show interface atm <interface number>** command.

```
Router#show interface atm 0
ATM0 is down, line protocol is down
<... snipped ...>
```

2. Make sure the ADSL Interface (ATM0) is not shut down and that the RJ-11 cable from the ADSL interface of the router is securely plugged in to the wall jack.

If the interface status shows administratively down, in the interface configuration mode under interface ATM 0, issue a **no shutdown** command.

```
Router#show interface atm 0
ATM0 is administratively down, line protocol is down
<... snipped ...>
```

```
!--- This shows that the ATM interface is administratively down
!--- and needs to be turned on.
```

```
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface atm 0
Router(config-if)#no shut
Router(config-if)#exit
Router(config)#exit
Router#
```

```
!--- The no shut command turns on the ATM interface.
```

## Troubleshoot the ADSL Interface Modem State

After you make sure that you have the right cable pinout and that your ISP has turned on the DSL service, you can further troubleshoot the DSL connection by watching the modem state of the ADSL interface as the line retrains.

To troubleshoot the modem state, follow these steps:

1. On the router, issue **terminal monitor** and **debug atm event** commands.

```
Router#terminal monitor
Router#debug atm event
ATM events debugging is on
```

```
!--- These commands enable you to see modem state messages on the screen.
```

2. Physically unplug the ADSL Cable (RJ-11) from the Cisco SOHO77 ADSL interface. Wait for a few seconds. Plug the cable back in to cause the ADSL line to retrain.

If you have access to the digital subscriber line access multiplexer (DSLAM), make the line retrain by shutting down the specific ADSL Terminating Unit – Central Office (ATU-C) interface where the subscriber terminates the DSL connection.

**Note:** If you issue the **shut** and **no shut** commands on the router, they do not retrain the ADSL line.

Even when you administratively shut down the ATM interface, the Carrier Detect (CD) light and the ATU-C port LED are still on. This means that it is still trained up. Unplug and plug back in the ADSL line to make the interface retrain.

3. Watch the debug messages on the screen.

If the modem state stays at "0x8" and says "Could not establish connection," it means that the Cisco SOHO77 has not heard from the central office (CO) . It does not see an incoming signal.

```
Router#
1d01h: DSL: 1: Modem state = 0x8
1d01h: DSL: 2: Modem state = 0x8
1d01h: DSL: 3: Modem state = 0x8
1d01h: DSL: 4: Modem state = 0x8
1d01h: DSL: 5: Modem state = 0x8
1d01h: DSL: Could not establish connection
<... snipped ...>
```

If the modem state changes from "0x8" to "SHOWTIME," it means that the Cisco SOHO77 has successfully trained with the DSLAM.

```
Router#
00:24:18: DSL: 2: Modem state = 0x8
00:24:21: DSL: 3: Modem state = 0x8
00:24:23: DSL: 4: Modem state = 0x8
00:24:26: DSL: 5: Modem state = 0x8
00:24:28: DSL: 6: Modem state = 0x10
00:24:31: DSL: 7: Modem state = 0x10
00:24:33: DSL: 8: Modem state = 0x10
00:24:36: DSL: 9: Modem state = 0x10
00:24:37: DSL: Received response: 0x24
00:24:37: DSL: Showtime!
<... snipped ...>
```

4. After viewing the debugs, if you do not want to see any more modem state messages, at the router prompt issue the **undebg all** command. All debugging is turned off.

```
Router#undebg all
```

---

## Related Information

- [DSL Technical Support](#)
- [DSL Product Technical Support](#)
- [Technical Support – Cisco Systems](#)

---

[Contacts & Feedback](#) | [Help](#) | [Site Map](#)

© 2009 – 2010 Cisco Systems, Inc. All rights reserved. [Terms & Conditions](#) | [Privacy Statement](#) | [Cookie Policy](#) | [Trademarks of Cisco Systems, Inc.](#)

---

Updated: Nov 23, 2007

Document ID: 12919

---