



Release Notes for Cisco Aironet Client Utilities, Version 2.0.x for Linux

Contents

This document contains the following sections:

- [System Requirements, page 2](#)
- [New and Changed Information, page 2](#)
- [Installing ACU Release 2.0.x, page 2](#)
- [Installing the Driver or Utilities Only, page 10](#)
- [Caveats, page 12](#)
- [Related Documentation, page 12](#)
- [Obtaining Documentation, page 13](#)
- [Obtaining Technical Assistance, page 14](#)

Introduction

This document describes system requirements, upgrade procedures, and caveats for the following release of Cisco Aironet client adapter software:

- Version 2.0.x of the Cisco Aironet client utilities for Linux

Release 2.0.x supports Cisco Aironet 350 Series mini PCI 100 mW radios and message integrity check (MIC) capabilities. A new installation shell script for PCI and PCMCIA with kernel PCMCIA enabled is included, including options for installing only the driver or utilities. Uninstall routines for both PCMCIA and PCI client adapters have also been added.



Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Copyright © 2002. Cisco Systems, Inc. All rights reserved.

System Requirements

This release can be used with only Cisco Aironet 4500, 4800, 340, and 350 Series Wireless LAN Client Adapters (PC cards, LM cards, mini PCI cards, and PCI client adapters).

This release must be installed on a computer running a Linux operating system.

New and Changed Information

ACU release 2.0 contains the following new and changed information.

- Incorporated message integrity check (MIC) capability
- Supports 100 mW mini-PCI 350 series radios
- Added an install script for PCI client adapters
- Added install scripts for drivers and utilities
- Added new uninstall routines

**Note**

Detailed information about new and changed information may be found in the *readme.txt* file, which is included in the *Linux-ACU-Driver-v2.0.tar.gz* file

Installing ACU Release 2.0.x

You can install the driver and client utilities from the Cisco Aironet Wireless LAN Client Adapters Drivers and Utilities CD or at Cisco.com.

**Note**

This procedure can be performed only by root users (those with administrative rights).

**Note**

Cisco's Linux driver supports version 2.2.xx and 2.4.xx of the Linux kernel. To determine your kernel version, type **uname -a** and press **Enter**. The name of your computer and the Linux kernel version are displayed. For example, in *Linux montecito 2.2.16-22#1 Wed Aug 8 164906 EDDT 2001 i686 unknown*, *montecito* represents your computer's name, and *2.2.16-22* is the kernel version.

**Caution**

If you are using a PCMCIA client adapter, **do not insert it into the computer's PCMCIA slot until the driver has been loaded**; otherwise, the computer could hang. The procedure indicates when the client adapter should be inserted.

**Note**

If you are using a PCI client adapter, you can install it before you load the drivers.

**Note**

These instructions are the same regardless of whether you are doing an initial install or upgrading from a previous version. If you are upgrading, your previous driver and client utilities are overwritten by the new ones.

Installation Shell Script Overview

The installation shell scripts are available for PCI and kernel PCMCIA configurations (such as Red Hat 7.2, which ships with kernel PCMCIA enabled). For these systems, execute **sh kpciinstall** as root. This program builds and installs the drivers and utilities for these configurations. If you have a PCI card only, the driver is properly installed and configured, eliminating the need to download card and socket services.

To remove the drivers and utilities installed by **kpciinstall**, execute **sh kpciinstall -R**. After you have answered yes to the question asked, the drivers and the utilities are removed from your system. Other options are provided for installing the utilities or drivers only. Executing **sh kpciinstall -id** installs and builds the drivers, and **sh kpciinstall -iu** installs the utilities.

The options **-ru** and **-rd** remove the drivers or utilities respectively. For Red Hat 7.2 this is the kernel source **rpm** named **kernel-source-2.4.7-10.i386.rpm**. You can find this on CD 2 of the Red Hat 7.2 distribution in the directory Redhat/RPMS. Copy the file to a local directory or install it from the CD by entering **rpm -iv kernel-source-2.4.7-10.i386.rpm**. You must have the kernel source installed, and you can verify the installation by executing **ls /usr/src**. If the source is installed, you should see the message “linux-2.4 linux-2.4.7-10.” If you do not see this message, the sources are not installed. If the **kpciinstall** script cannot locate the kernel source it prompts you to enter it. The prompt can appear if you compile the kernel sources. The installation of sources using Red Hat 7.2 places a link to the source in the **/usr/src/Linux-2.4** directory. If the sources are installed, entering this directory in answer to the prompt causes the operation to proceed.

Installation Procedures

Installing or upgrading to version 2.0 is relatively simple. Bash shell scripts **cwinstall** for PCMCIA clients and **kpciinstall** for PCI clients are included in the download file to help install the driver and ACU. The script can accommodate a new installation or an upgrade. In the case of an upgrade, it is no longer necessary to remove any files from the previous version, **cwinstall** and **kpciinstall** accomplish that as part of the installation process.

If you are running a Red Hat system, you have three installation options, which are described in this section.

**Note**

Because system-level changes are made, **cwinstall** and **kpciinstall** run properly only if executed as root.

Follow these steps to download and install the driver and ACU.

- Step 1** Use your browser to go to <http://www.cisco.com>.
- Step 2** In the Service & Support section, click **Software Center**. The Technical Assistance page appears.
- Step 3** In the Software Products & Downloads section, click **Wireless Software**. The Wireless Software page appears.

- Step 4** Click **Linux**. The Software Download page for Linux appears, and contains a table of downloadable files.
- Step 5** From the table, select the filename of the driver you want to download. The Software License Agreement page appears.
- Step 6** Scroll to the bottom of the license agreement and click **Accept** to download the file. A page describing the driver appears.
- Step 7** Click on the driver filename to start the download process.
- Step 8** Save the file to a location on your hard drive.
- Step 9** Use the **tar zxvf** command to unpack the driver file to a writable location on your hard drive, such as /tmp.



Note Do not unpack the driver files to the root directory.

- Step 10** Install the driver and utilities. See the section appropriate for the client adapter or Linux distribution you are using.
-

Downloading the Driver and Utilities from the CD-ROM

If you are installing from the the Cisco Aironet Wireless LAN Client Adapters Drivers and Utilities CD, perform these steps:

-
- Step 1** Insert the CD into your computer's CD-ROM drive.
- Step 2** Change to the Linux directory.
- Step 3** Copy the file to a location on your hard drive.
- Step 4** Use the **tar zxvf** command to unpack the file to a writable location on your hard drive, such as /tmp.



Note Do not unpack the file in the root directory.



Note If you downloaded an updated version of pcmcia-cs, unpack it and make a note of its location. You can obtain an updated version of pcmcia-cs from <http://pcmcia-cs.sourceforge.net>.

PCMCIA Installation

Follow these steps to install the driver and Aironet Client Utilities for PCMCIA client adapters.

Step 1 Log in as root.

Step 2 Type **sh cwininstall** and press **Enter**.



Note The installation routine creates the folder `/opt/cisco/bin` when it installs the driver.

Step 3 Press **Enter** to continue the installation. Information appears showing files that will be installed and their locations. For example, the client utilities will be installed in the `/opt/cisco/bin` directory.

Step 4 When prompted, type the path to and name of your browser (such as `/user/bin/netscape`) and press **Enter**.

Step 5 When you are asked if you are using a Red Hat 7.1 system with an unmodified kernel, perform one of the following:

- If you are not using a Red Hat 7.1 system and your distribution does not enable PCMCIA support in the kernel by default, type **n**, press **Enter**, and go to Step 6.
- If you are not using a Red Hat 7.1 system but your distribution enables PCMCIA support in the kernel by default, follow the instructions in the “[Option 3 for Red Hat Systems](#)” section on page 9.
- If you are using a Red Hat 7.1 system, type **y** (lowercase), press **Enter**, and go to the “[Installation Instructions for Red Hat Systems](#)” section on page 7.



Note If you do not enter a lowercase **y**, your response is treated as negative.

Step 6 When you are asked if you already have `pcmcia-cs-3.1.26.tar.gz` (the source for Card and Socket Services) or greater unpacked, perform one of the following:

- If you do not already have Card and Socket Services unpacked, follow these steps:
 - a. Type **n** and press **Enter**.
 - b. Follow the instructions on the screen to obtain the source for Card and Socket Services; then follow the instructions to unpack it.



Note You can obtain the file at <http://pcmcia-cs.sourceforge.net>.

- c. Retype **sh cwininstall** and press **Enter** to return to the installation process. You are returned to the part of the installation that asks if you are using a Red Hat 7.1 system.
- d. Follow the instructions to answer the Red Hat question. If you type **n**, you are again asked if you already have `pcmcia-cs-3.1.31.tar.gz` or greater unpacked. This time type **y** and press **Enter**.
- e. Go to Step 7. If you already have Card and Socket Services unpacked, type **y**, press **Enter**, and go to Step 7.

Step 7 When prompted, type in the path to Card and Socket Services and press **Enter**. The driver is copied, and instructions appear for building and installing the driver.



Note You might want to open another terminal session so you can refer to the instructions on the screen.

- Step 8** Change to the directory in which the source of Card and Socket Services was unpacked. The exact path, which was determined by the information you provided earlier, is included in the on-screen instructions. Type in the **cd** command exactly as it appears.
- Step 9** Type **make config**. The Make Config screen appears.
- Step 10** Press **Enter** to accept all defaults or select the non-default options that are appropriate for your system.
- Step 11** If the **make config** command runs without errors, type **make all**. The Make All screen appears.
- Step 12** If the **make all** command runs without errors, type **make install**. The Make All screen appears. The driver is now compiled and installed.
- Step 13** Insert your client adapter into the computer and reboot (recommended) or restart Card and Socket Services. The driver loads automatically.
- Step 14** Configure your client adapter. See the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide for Linux*.
-

PCI Client Adapters

The installation shell script described in this section is for systems using a PCI client adapter and kernel PCMCIA. Red Hat version 7.2 ships with kernel PCMCIA enabled. The installation program builds and installs the drivers and utilities. The PCI installation program eliminates the need to download and run Card and Socket Services. Follow these steps to install the driver, ACU and other Linux utilities.

-
- Step 1** Open a console screen and log in as root.
- Step 2** Type **sh kpciinstall** and press **Enter**. The installation process begins and the following message appears:
- ```
Compiling driver module using source in /usr/src/linux-2.4.7-10

Installing the utilities: acu bcard leapset leapscript leaplogin

Installing Help Files ...
Help Files Installed.
```
- Step 3** Type **insmod airo** to start the driver.
- Step 4** Start the ACU.
- Step 5** Configure your client adapter. See the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide for Linux*.
-

## Installation Instructions for Red Hat Systems

If you are using a Red Hat 7.1 or higher system, you have three installation options:

1. Use supplied driver binaries (recommended).
2. Using supplied patch and driver source, create your own modules; no kernel compilation is required.
3. Disable kernel PCMCIA support and install pcmcia-cs for PCMCIA support.

Option 1 is highly recommended. Options 2 and 3 require kernel sources and compilation tools. Follow the instructions in one of the following subsections for the option you choose.

### Option 1 for Red Hat Systems

Option 1 is the easiest installation method; it needs no compilation. We recommend this method for systems installed with the workstation configuration.

- 
- Step 1** To select option 1, type **1** and press **Enter**.
- Step 2** After an explanation appears, press **Enter** to continue.
- Step 3** Your kernel information line appears, followed by a choice of default kernel configuration options. Here is an example kernel information line:

```
Linux leftbox.aironet.com 2.4.2-2 #1 Sun Apr 8 20:41:30 EDT 2001 i686 unknown
```

In this example, *i686* means that this is a kernel for the i686 CPU family. Also note that the example does not contain *smp* or *enterprise*. From the list of available options displayed on the screen, the proper choice for this example would be h) kernel-2.4.2-i686.



#### Caution

Be careful when selecting your option. Some configuration options look similar, and the system does not ensure that you select the correct one.

- Type the letter of the configuration that matches your kernel and press **Enter**. The driver is now installed.
- Step 4** Insert your PC card or PCI client adapter into the computer.
- Step 5** Perform one of the following, depending on the type of client adapter you have:
- If you have a PC card, reboot your computer (recommended), or restart Card and Socket Services. The driver loads automatically.
  - If you have a PCI client adapter, perform one of the following:
    - If you have a distribution of Linux that uses linuxconf, such as Red Hat, use this utility to assign the driver to the PCI client adapter.
    - If your distribution does not use linuxconf, manually edit one startup file to insert **insmod airo.o** to load the driver.



#### Note

Follow the recommendations of your distribution regarding which startup file to modify and where to insert the command.

- Step 6** Configure your client adapter. See the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide for Linux*.

## Option 2 for Red Hat Systems

Option 2 requires the presence of compilation tools but does not require the complete compilation/replacement of the installed kernel.



**Caution**

You must use the kernel source in order to properly execute this procedure.

- Step 1** To select option 2, type **2** and press **Enter**.
- Step 2** After an explanation appears, press **Enter** to continue or **Ctrl+C** to exit.
- Step 3** After another explanation appears, press **Enter**.
- Step 4** Your kernel information line is displayed, followed by a choice of default kernel configuration options. Here is an example kernel information line:

```
Linux leftbox.aironet.com 2.4.2-2 #1 Sun Apr 8 20:41:30 EDT 2001 i686 unknown
```

In this example, *i686* means that this is a kernel for the i686 CPU family. Also note that the example does not contain *smp* or *enterprise*. From the list of available options displayed on the screen, the proper choice for this example would be h) kernel-2.4.2-i686.

Type the letter of the configuration that matches your kernel and press **Enter**.



**Caution**

Be careful when selecting your option. Some configuration options look similar, and the system does not ensure that you select the correct one.

- Step 5** After an explanation appears on patching the kernel source, press **Enter**. The driver is now in place to be compiled, and the kernel source is patched.



**Caution**


You should be using the kernel source as installed from Red Hat's CD-ROM. If the kernel is already in the patched state or has been modified, the patching process fails. If, however, the only change to the kernel is that it has used the Cisco Aironet patch previously, then you can successfully complete the procedure by pressing **Enter** twice at each series of prompts to skip the patch.



**Note**

You might want to open another session so you can refer to the instructions on the screen.

- Step 6** Type `cd /usr/src/linux-2.4.2` and press **Enter**.
- Step 7** Type `make menuconfig` and press **Enter**.
- Step 8** In the menuconfig window, scroll down to **Network device support** and press **Enter**.
- Step 9** Scroll down to **Wireless LAN (non-hamradio)** and press **Enter**.
- Step 10** Scroll down to **Cisco/Aironet 340/350** and type **M** (*M* indicates to make a module).
- Step 11** Type **E** to exit.

- Step 12** Scroll down to **PCMCIA network device support** and press **Enter**.
- Step 13** Scroll down to **Cisco/Aironet 340/350** and type **M**.
- Step 14** Continue to select **Exit** and press **Enter** until the following message appears: “Do you wish to save your new kernel configuration?”
- Step 15** Select **Yes** and press **Enter**.
- Step 16** Type **dep ; make modules ; make modules\_install**. The driver and client utilities are now installed.
- Step 17** Insert your PCMCIA card into the computer.
- Step 18** If you have a PCI client adapter, perform one of the following:
- If you have a distribution of Linux that uses linuxconf, such as Red Hat, use this utility to assign the driver to the PCI client adapter.
  - If your distribution does not use linuxconf, manually edit one startup file to insert **insmod airo.o** to load the driver.
-  **Note** Follow the recommendations of your distribution regarding which startup file to modify and where to insert the command.
- Step 19** Configure your client adapter. See the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide for Linux*.

## Option 3 for Red Hat Systems

Option 3 is the most advanced installation method because it requires a complete kernel rebuild and installation.



**Caution**

You must use the kernel source in order to properly execute this procedure.



**Note**

If you are not using a Red Hat 7.1 or higher system, but your distribution enables PCMCIA support in the kernel by default, you need to disable it by following the instructions in this section.

- Step 1** To select option 3, type **3** and press **Enter**.
- Step 2** Type **cd /usr/src/linux-2.4.2** and press **Enter**.
- Step 3** Type **make menuconfig** and press **Enter**.
- Step 4** In the menuconfig window, scroll down to **General setup** and press **Enter**.
- Step 5** Scroll down to **PCMCIA/Cardbus support** and press **Enter**.
- Step 6** Continue to press the **spacebar** until the selector in front of the option is blank (does not contain an *M* or an *\**).
- Step 7** Continue to select **Exit** and press **Enter** until the following message appears:  
 “Do you wish to save your new kernel configuration?”
- Step 8** Select **Yes** and press **Enter**.

- Step 9** Rebuild your kernel.
- Step 10** After the kernel is remade and reinstalled, reboot your computer.
- Step 11** Go to Step 3 of the main upgrade procedure on page 3. This time select **n** when asked in Step 11 if you are using a Red Hat system with an unmodified kernel.
- 

## Installing the Driver or Utilities Only

Version 2.0 contains an installation script for PCI and kernel PCMCIA systems (such as Red Hat 7.2). The **kpciinstall** command followed by the **-id** option installs and builds only the drivers. The **-iu** option installs and builds only the utilities.

## Verifying Installation

To verify that you have properly installed the appropriate driver and client utilities, type **/opt/cisco/bin/acu &** to open the ACU.



**Note** **/opt/cisco/bin/** is the path where the ACU was installed.

---

If the installation was successful, the ACU main screen appears. Depending on how your wireless network is configured, your client adapter might or might not associate to an access point. The fact that you were able to launch the ACU verifies proper installation because it has found your client adapter's radio. You must configure the client adapter to communicate on your wireless network. See the *Cisco Aironet Wireless LAN Client Adapter Installation and Configuration Guide for Linux* for instructions on how to initially configure your client adapter.

If the installation was not successful, the ACU main screen does not appear. Instead, the message, "radio not found," appears at the Linux command prompt. See the *Cisco Aironet Wireless LAN Client Adapter Installation and Configuration Guide* for troubleshooting tips.



**Note** Additional information about this release is contained in the *readme.txt* file, which is included in the *Linux-ACU-Driver-v2.0.tar.gz* file.

---

## Uninstalling the Driver and Client Utilities

If you experience difficulty while installing the driver, you might want to stop the installation procedure and start over. However, before you attempt to install the driver again, you must first remove any part of the driver that you might have already installed. You can remove the driver and client utilities manually, or by running an uninstall script.

## Uninstalling Manually

To uninstall the driver and client utilities manually, enter the following at the command line (excluding the comment (#) lines).

```
#remove the utilities:
rm /opt/cisco/bin/acu
rm /opt/cisco/bin/bcard
rm /opt/cisco/bin/leapset
rm /opt/cisco/bin/leapscript
rm /opt/cisco/bin/leaplogin
rm /opt/cisco/ACU.PRFS

remove the utility subdirectory:
rmdir /opt/cisco/bin

remove the help files:
rm /opt/cisco/helpml.tar.gz
rm /opt/cisco/helpml/*

remove the help files subdirectory:
rmdir /opt/cisco/helpml

remove the main cisco directory:
rmdir /opt/cisco

remove the drivers (note: the card should not be in the system
when removing the drivers, otherwise the files might be in use)
```

The location of the drivers can vary depending on the major kernel version in use (2.2 or 2.4) and whether or not the pcmcia-cs package was used. If your distribution supports the **locate** command (most do), the driver's locations can be determined by the output from **locate airo** and **locate airo\_cs.o**. Use the **rm** command to remove the drivers.

For example, if **locate airo.o** returns:

```
/lib/modules/2.2.16-25.uid32/pcmcia/airo.o
```

you would use:

```
rm /lib/modules/2.2.16-25.uid32/pcmcia/airo.o
```

to remove the driver file. Use the same procedure to remove **airo\_cs.o**.

If your system does not support the **locate** command, then you can use the **find** command as follows:

```
find/-name airo.o and find/-name airo_cs.o
```

Use the output from these commands as you would the output from the **locate** command discussed above. The driver and utilities are now removed from your system.

## Running PCI Install and Uninstall Scripts

Version 2.0.x contains the new uninstall scripts for PCI card installations as shown in Table 1 below:

**Table 1** *Uninstall Scripts for PCI Card Installations*

| Command                   | Results                                             |
|---------------------------|-----------------------------------------------------|
| <b>sh kpciinstall -R</b>  | Removes entire installation (drivers and utilities) |
| <b>sh kpciinstall -rd</b> | Removes drivers only                                |
| <b>sh kpciinstall -ru</b> | Removes utilities only                              |
| <b>sh kpciinstall</b>     | Installs drivers and utilities                      |
| <b>sh kpciinstall -id</b> | Installs drivers only                               |
| <b>sh kpciinstall -iu</b> | Installs utilities only                             |

## Caveats

This section describes caveats for ACU release 2.0.x.

## Getting Bug Information on Cisco.com

If you are a registered Cisco user, you can use the Cisco TAC Software Bug Toolkit, which consist of three tools (Bug Navigator, Bug Watcher, and Search by Bug ID Number) that help you identify existing bugs (or caveats) in Cisco software products. Access the TAC Software Bug Toolkit at <http://www.cisco.com/support/bugtools/>.

## Open Caveats

- CSCin09572**—System hangs occasionally when loading firmware or changing authentication type

This problem has occurred on an HP Omnibook XE3 running Red Hat version 7.0 with a mini-PCI card installed. When updating firmware, the system will sometimes hang regardless of security settings (None, Leap, or WEP). The problem has also occurred when changing authentication type from Leap to WEP.

The problem appears to occur only with the mini-PCI card. A PCM card performs properly in the same system.

Workaround—Reboot system if problem occurs.

## Related Documentation

For more information about Cisco Aironet client adapters, refer to the *Cisco Aironet Wireless LAN Client Adapters Installation and Configuration Guide for Linux*.

# Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

## World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

## Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

## Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](http://www.cisco.com/cgi-bin/order/order_root.pl)
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:  
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

## Documentation Feedback

If you are reading Cisco product documentation on Cisco.com, you can submit technical comments electronically. Click the **Fax** or **Email** option under the “Leave Feedback” at the bottom of the Cisco Documentation home page.

You can e-mail your comments to [bug-doc@cisco.com](mailto:bug-doc@cisco.com).

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Cisco Systems  
 Attn: Document Resource Connection  
 170 West Tasman Drive  
 San Jose, CA 95134-9883

We appreciate your comments.

## Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

### Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you to

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

<http://www.cisco.com>

### Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

## Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

<http://www.cisco.com/register/>

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered, you can open a case online by using the TAC Case Open tool at the following URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

## Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

This document is to be used in conjunction with the documents listed in the [“Related Documentation”](#) section.



Copyright © 2002, Cisco Systems, Inc.  
All rights reserved.