Installing Linux Drivers and Utilities for the Cisco Aironet 340/350 Series Client Adapters

Document ID: 8127

You need a valid Cisco.com account in order to download Cisco Aironet drivers, firmware, and utilities. If you do not have a Cisco.com account, register for free at the Cisco.com Registration page.

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Introduction

This document provides an expanded guide to the installation of the Linux drivers and utilities for the Cisco Aironet 340 and 350 Series Client Adapters.

Prerequisites

Requirements

You need these items in order to complete this installation:

- A Cisco Aironet 340 or 350 series client adapter card
- The Linux drivers and utilities, which can be found on the Cisco Aironet Series Wireless LAN Adapters CD−ROM or download the driver from the Wireless Downloads Page at **Wireless > Cisco Aironet 350 Wireless LAN Client Adapter > Aironet Client Bundle (Firmware, Driver, Utility) > Linux** .
- If you use a PCMCIA client adapter, Cisco recommends that you use card and socket services **pcmcia−cs−3.1.26** or later, available from SourceForge .

Components Used

The information in this document is based on these software and hardware versions:

- Toshiba Tecra8000 laptop computer running Red Hat Linux version 7.0, kernel version 2.2.16−22
- Cisco Aironet Client Adapter AIR−PCM342 loaded with firmware version 4.23
- Driver version 1.5.000

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Install the Hardware

Note: If you download the Cisco Linux driver and/or pcmcia−cs, save the files to a directory such as /tmp and make note of their location.

Install a PC Card

Before you begin, examine the PC card. One end has a dual−row, 68−pin PC card connector. The card is keyed so it can be inserted only one way into the PC card slot.

Hold the PC card with the Cisco logo facing up and insert it into the PC card slot. Apply just enough pressure to make sure it is fully seated.

Caution: Do not force the PC card into the PC card slot of your computer. This can damage both the card and the slot. If the PC card does not insert easily, remove the card and reinsert it.

Install a PCI Client Adapter

Complete these steps to install a PCI client adapter:

1. Turn off the PC and all its components.
2. Remove the computer cover.
3. Remove the screw from the top of the CPU back panel above an empty PCI expansion slot. This screw holds the metal bracket on the back panel.

   Note: On most Pentium PCs, PCI expansion slots are white. Refer to your PC documentation for slot identification.
4. Examine the client adapter.

   When the adapter is installed, the antenna connector and the LEDs face out of your computer and are visible when you replace the cover. The bottom edge of the adapter is the connector you insert into an empty expansion slot in your computer.

   Caution: Static electricity can damage your client adapter. Before you remove the adapter from the antistatic packaging, discharge static by touching a metal part of a grounded PC.

5. Tilt the adapter to allow the antenna connector and LEDs to slip through the opening in the CPU back panel. Press the client adapter into the empty slot until the connector is firmly seated.

   
   Caution: Do not force the adapter into the expansion slot. This can damage both the adapter and the slot. If the adapter does not insert easily, remove the adapter and reinsert it.
6. Reinstall the screw on the back panel of the CPU and replace the computer cover.
7. Attach the 2−dBi antenna to the antenna connector of the adapter until it is finger−tight. Do not overtighten. For optimal reception, position the antenna so it is straight up.
8. Boot up the computer.

Install the Drivers and Utilities

Installation Notes

- You must be logged in as root or otherwise have superuser rights in order to perform the installation.
- Version 1.5.000 of Cisco's Linux driver currently supports versions 2.2.x and 2.4.x of the Linux kernel. Type **uname −a** and press **Enter** to determine your kernel version. The name of your computer and the Linux kernel version are displayed.

  ♦ **Example**: *Linux montecito 2.2.16−22 #1 Tue Aug 22 164906 EDT 2000 i686 unknown*

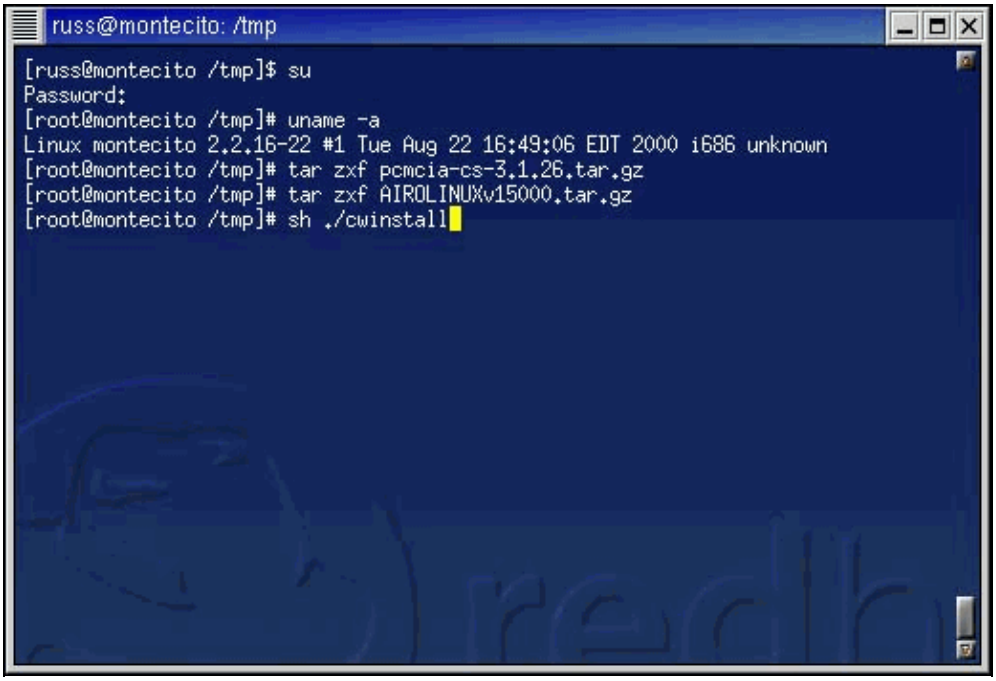
  In this example, *montecito* is the computer name, and *2.2.16−22* is the kernel version.

Install the Basic Drivers and Utilities

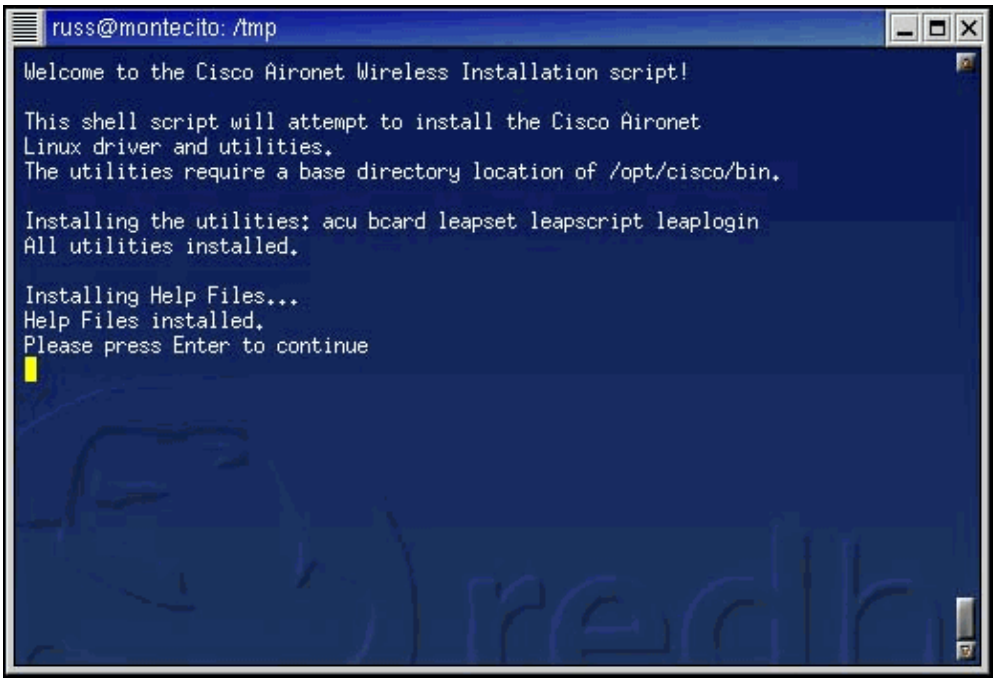
Complete these steps to install the Linux drivers.

1. If you have a Cisco Aironet Series Wireless LAN Adapters CD−ROM containing the drivers and utilities, insert it into the CD−ROM drive of your computer and go to the Linux directory on the CD−ROM.

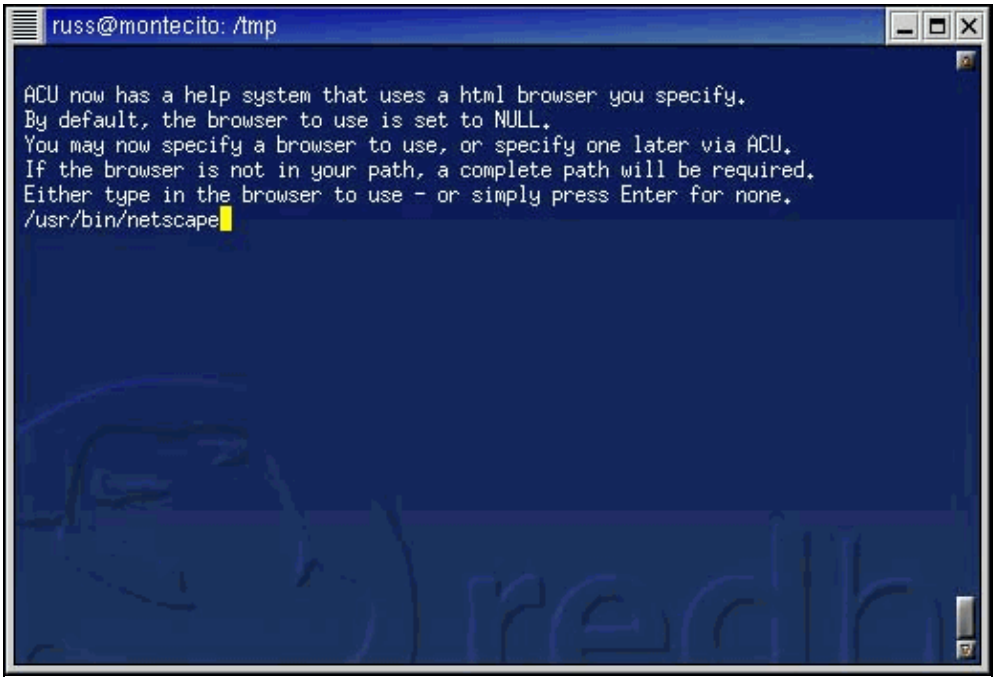
   If you are working with the driver downloaded from the Cisco Downloads, go to the directory to which you saved the file. Unpack the archive by using the **tar** command. If you downloaded an updated version of pcmcia−cs, unpack it also.
2. In a terminal window, type **sh ./cwinstall** and press **Enter**.



3. Previous versions of the Linux drivers allowed you to specify the directory to which the client utilities would be installed, but in version 1.5.000, the utilities acu, bcard, leapset, leapscript, and leaplogin are automatically installed to /opt/cisco/bin. The help files are also installed to this directory. When the script has finished installing the files, press **Enter** to continue.

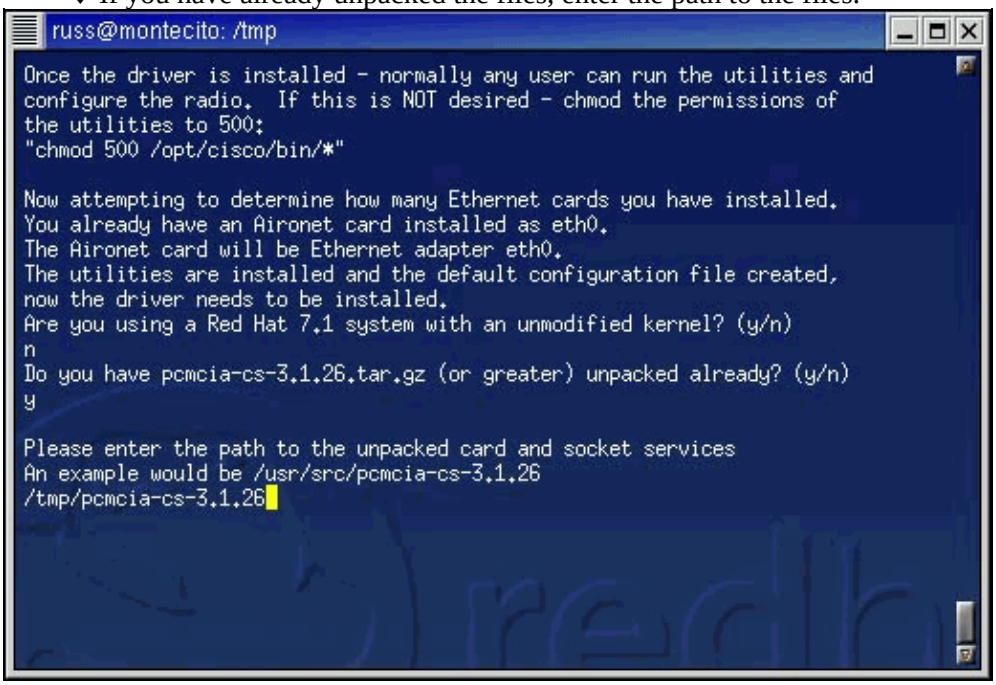


4. The install script prompts you for the name of the web browser to use to display help files. You can specify this now or set it later using the Aironet Client Utility (ACU).



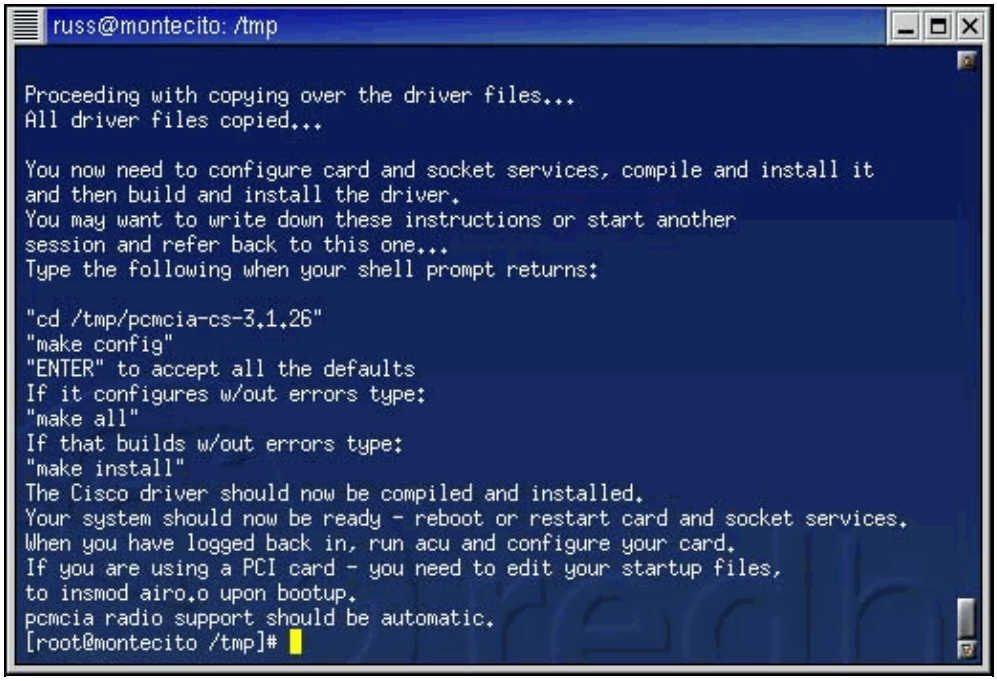
5. You are asked if you use a Red Hat Linux system with an unmodified kernel. If so, see the Install on Red Hat 7.1 section of this document. If not, proceed to the next step.
6. The installation script verifies that you have already unpacked version 3.1.26 (or later) of pcmcia−cs.

    - If you have not already unpacked the files, the script gives instructions for downloading and unpacking the card and socket services. Once this is accomplished, rerun the installation script.
    - If you have already unpacked the files, enter the path to the files.



Note: If you want to use a different version of card and socket services, you can break away from this installation to obtain a different version from the Internet (from sites like SourceForge) and then continue the installation.

7. The driver files are copied and you are presented with a list of commands to perform in order to install the card and socket services.

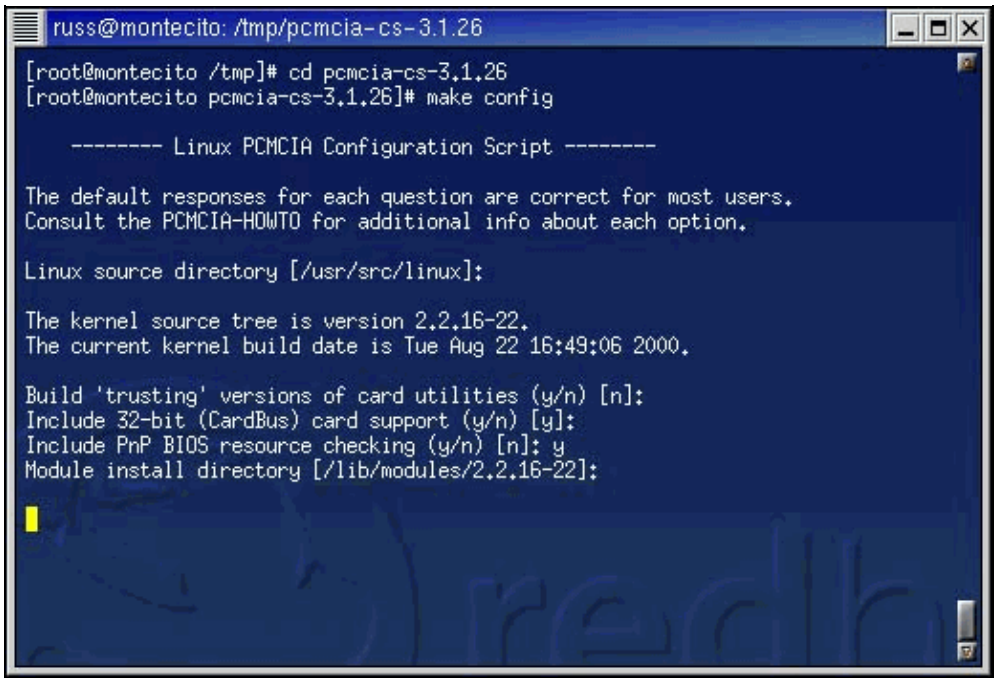


Complete the appropriate procedure that remain in this document in order to finish the installation based on the type of drivers you are installing.

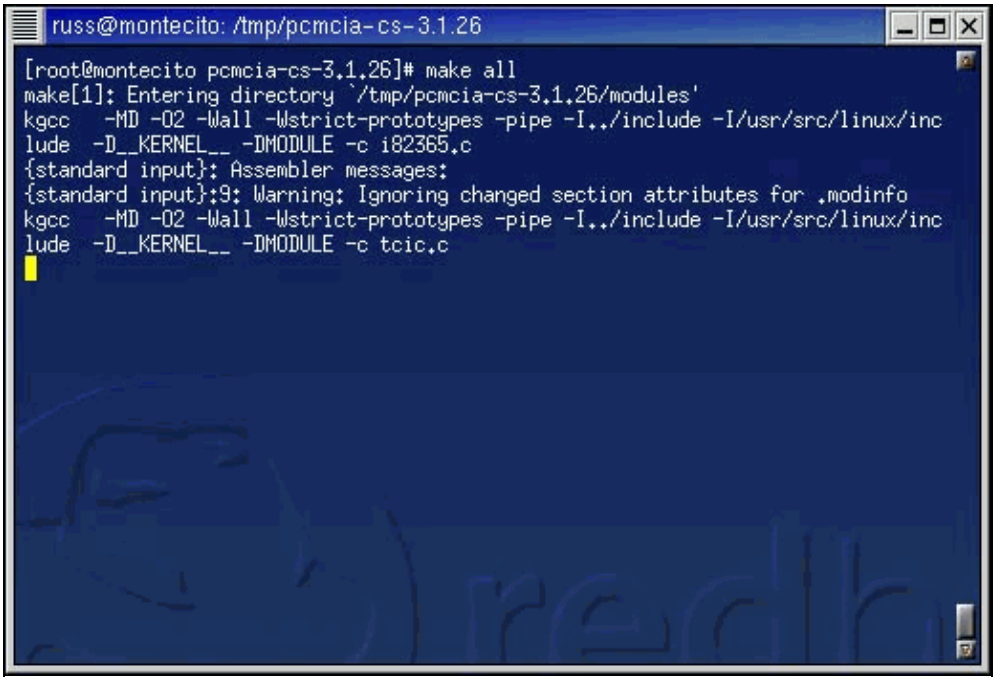
Install PCMCIA Drivers

Complete these steps to install PCMCIA drivers

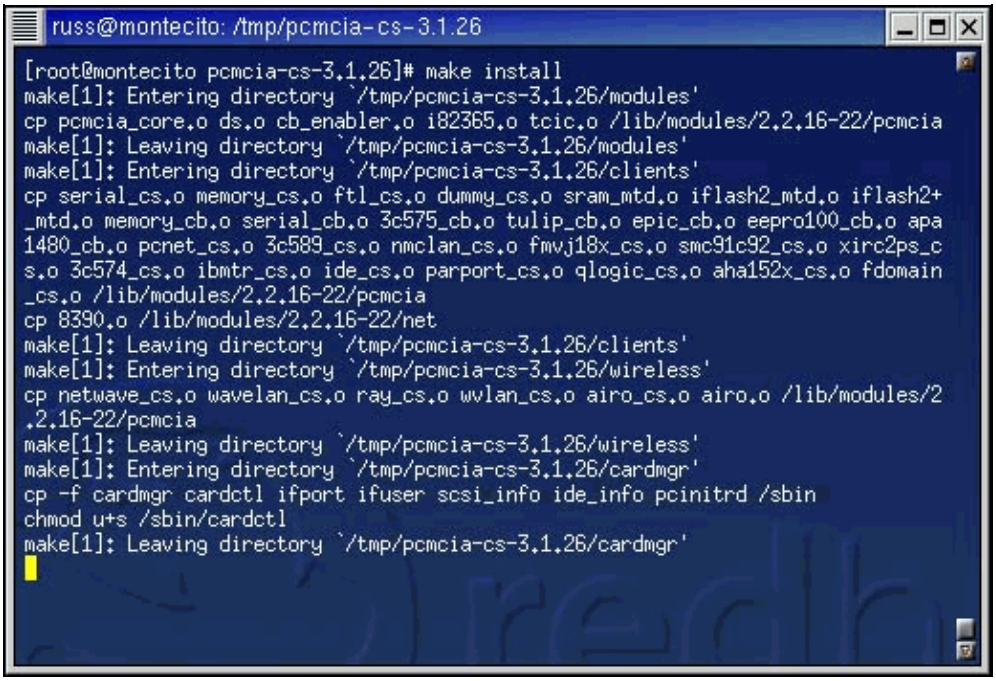
1. If you install PCMCIA drivers, change to the directory into which the driver files were unpacked, then type **make config**.
2. When you are prompted to respond to a series of questions, press **Enter** to accept the default value for each question, or select a different alternative as appropriate. Shown here is an installation that requires Plug−and−Play BIOS support.



3. Type **make all** and press **Enter** after you respond to each question.



4. When the **make all** command is finished executing, type **make install** and press **Enter**.



5. Add **/opt/cisco/bin/** to your path. See the **man** page for the shell you are using for the correct syntax.

The PCMCIA driver installation is now complete. Proceed to Set Utility Permissions.

Install PCI Drivers

If you use a PCI card rather than a PCMCIA card, some different steps apply.

Red Hat and other distributions that use **linuxconf** should use that utility to tell the operating system that the **airo.o** file is to be loaded for the PCI card. Users of other distributions should follow their distribution's recommendations on which startup files should load the driver.

Slackware distributions prior to 7.2 should add a line to the end of the **/etc/rc.d/rc.modules** file to load the driver. In the example below, we change the directory to **/etc/rc.d**, make a backup of the existing **rc.modules**

file, and append the command **/sbin/modprobe airo** to **rc.modules**.

```
# cd /etc/rc.d
# cp rc.modules rc.modules.bak
# echo /sbin/modprobe airo >> rc.modules
```

Slackware 7.2 users can add that same line to the **/etc/rc.d/rc.netdevice** file.

Install on Red Hat 7.1

Red Hat 7.1 includes PCMCIA support in the 2.4.2−2 kernel by default. Red Hat 7.1 systems have three installation choices, with Option 1 being the easiest and most recommended.

- **Option 1 (Recommended)**− Replace the stock **/etc/pcmcia/config** file with the one supplied in the driver tarball and use the supplied binary versions of the driver. No compilation is needed. This is recommended for systems installed with the "workstation" configuration.
- **Option 2**− Patch the kernel source tree to allow the driver to be built as a module with kernel PCMCIA support. This requires the presence of compilation tools (such as **gcc**) but does not require the complete compilation/replacement of the installed kernel.
- **Option 3**− Reconfigure the kernel to not use built−in PCMCIA support, and install pcmcia−cs.3.1.26 as detailed above. This requires a complete kernel rebuild and installation. This is probably the most advanced installation method.

For non−Red Hat 7.1 systems or Red Hat 7.1 systems that will be disabling kernel−based PCMCIA support, the standard method of building with pcmcia−cs support should be used.

Set Utility Permissions

If you do not want to limit access to the client utilities to root users (those with administrative rights), no action is required.

If you want only root users to be able to run the client utilities and configure the client adapter, at a command prompt type chmod.

500 /opt/cisco/bin/*

and press ENTER.

Configure the Network Parameters

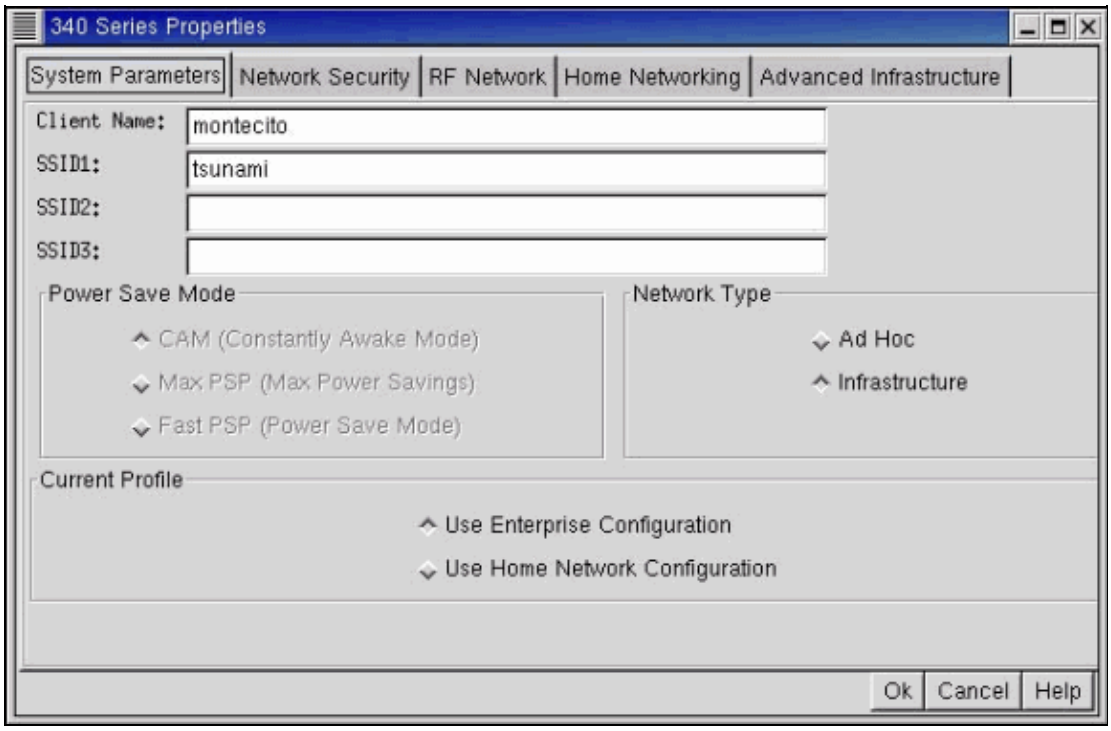
With the client adapter card and the drivers and utilities installed, you next need to configure the system so that you can establish radio communication and pass traffic across the IP network.

Configure the Radio Link

For the Cisco Aironet Client Adapter to establish a radio link to an Access Point (AP), the client must be configured to use the same Service Set Identifier (SSID) as the AP. Complete these steps to configure the SSID on the client:

1. At a command prompt, type **acu** to start the Aironet Client Utility (ACU).
2. In the ACU Commands menu, select **Edit > Properties**.
3. On the System Parameters tab, enter the client name and the SSID. The values *montecito* and *tsunami* are shown here for demonstration purposes only. You may need to contact your network administrator

to determine the correct values to use.
4. Click **OK** when you are done.



Along with the SSID, the Wired Equivalent Privacy (WEP) settings on the client must match those in use by the Access Point. For information on configuring WEP, see Configuring Wired Equivalent Privacy (WEP).

Configure the IP Address

After you configure the radio−related aspects of the network, you need to configure the IP addressing. An IP address can be obtained dynamically via Dynamic Host Configuration Protocol (DHCP) or can be statically configured.

Configure for DHCP

If you want your computer's IP address to be assigned by DHCP and your network has a DHCP server, you must run a DHCP client utility. The two most popular client utilities are **dhcpcd** and **pump**. Most Linux distributions should have one or both of them. If you have neither, you must install one from your distribution CD−ROM or download one from the Internet. Refer to your distribution's home page for more information.

On Red Hat and other distributions that include the **linuxconf** utility, you should use this utility to configure DHCP on the computer. You must be logged in as root or have equivalent superuser privileges. Users of other distributions should follow their distribution's recommendations on configuring DHCP.

Complete these steps to configure DHCP with the **linuxconf** utility:

1. Type **linuxconf** and press **Enter** at a command prompt.
2. Under the Config tab, select **Networking > Client tasks > Basic host information**.
3. Select the appropriate adapter tab for your Cisco Aironet Client Adapter. Your client adapter's number is *Adaptor 1* if it is the only Ethernet adapter card installed.
4. Make certain that the box marked **Enabled** is checked.
5. For Config mode, select **Dhcp**.

6. Next to Net device, use the pull−down menu or type in the device name of the client adapter. Your client adapter's name and number are **eth0** if it is the only Ethernet adapter card installed.

   Note: If you are unsure about the device name and number, you can verify your device's information by running ACU and using the **Commands** menu to select **Status**. The *Device* field of the Status screen in the ACU indicates the name and number of the adapter being used.

Configure for a Static Address

If your computer does not get its IP address from a DHCP server, contact your network administrator to find out the correct IP address, subnet mask, and default gateway address of your computer.

On Red Hat and other distributions that include the **linuxconf** utility, you should use this utility to set the IP address of the computer. You must be logged in as root or have equivalent superuser privileges. Users of other distributions should follow their distribution's recommendations on configuring IP addressing.

Complete these steps to configure the IP address with the **linuxconf** utility:

1. At a command prompt, type **linuxconf** and press ENTER.
2. Under the Config tab, select **Networking > Client tasks > Basic host information**.
3. Select the appropriate adapter tab for your Cisco Aironet Client Adapter. Your client adapter's number is *Adaptor 1* if it is the only Ethernet adapter card installed.
4. Make certain that the box marked **Enabled** is checked.
5. For **Config mode**, select **Manual**.
6. Type the IP address and the netmask in the spaces provided for them. You may need to contact your network administrator to determine the correct values to use.
7. Next to **Net device**, use the pull−down menu or type in the device name of the client adapter. Your client adapter's name and number are **eth0** if it is the only Ethernet adapter card installed.

   Note: If you are unsure about the device name and number, you can verify your device's information by running ACU and using the **Commands** menu to select **Status**. The *Device* field of the Status screen in the ACU indicates the name and number of the adapter being used.
8. Under the **Config** tab, select **Routing and gateways > Set defaults**.
9. Type the IP address of the default gateway. You may need to contact your network administrator to determine the correct value to use.
10. Click **Accept**, then click **Act/Changes** and **Quit**.

Finish the Installation

Once the driver installation and utility configuration are complete, you can restart the network services or simply reboot.

The driver and client utility installation is complete. For instructions on how to use each utility, refer to the Cisco Aironet Wireless LAN Adapters Software Configuration Guide or **readme.txt** file that accompanied the drivers in the tarball.

Related Information

- **Cisco Downloads for Wireless Products**
- **Technical Support & Documentation− Cisco Systems**

Updated: Oct 19, 2009 Document ID: 8127