National Institutes of Health

Apple AirPort Wireless LAN Client Setup Procedures

March 11, 2004
Version 1.0

Center for Information Technology
Division of Network Systems and Telecommunications
Network & Engineering Branch

CONTENTS

FIGURES

Document Change History

This section identifies all changes that have been incorporated into the *Apple AirPort Wireless LAN Client Setup Procedures* since the original version.

Date	Version Number	Change Description
March 11, 2004	1.0	Original Version

1 Introduction

The National Institutes of Health (NIH) provides wireless access to NIH local area networks (LANs) at the Bethesda campus and certain off-campus locations. A wireless LAN is a flexible data communications system implemented as an extension to, or as an alternative for, a wired LAN. Using radio frequency (RF) technology, wireless LANs transmit and receive data over the air, minimizing the need for wired connections.

The NIH wireless LAN allows a multi-vendor environment. It is configured to use client adapters and access points from multiple vendors, so that any user's client adapter card can communicate with any vendor's access point, providing a seamless wireless network. The wireless LAN uses NIH-wide standard encryption standards as recommended by the National Institute of Standards and Technology (NIST). This ensures privacy of data, as required by the Health Insurance Portability and Accountability Act (HIPAA) of 1996.

1.1 Purpose

This document contains the standard operating procedures for setting up wireless LAN client access for NIH staff using Apple AirPort technology for Macintosh OS 10.x.

1.2 Scope

This document explains how to do the following tasks:

- Configure profiles to access the NIH users' wireless LAN
- Configure profiles to access the wireless LAN in guest/patient areas
- Test wireless access

1.3 Audience

These procedures are intended for LAN Administrators.

1.4 Materials Needed

To set up wireless access for Apple AirPort wireless adapters you will need the following:

- Integrated AirPort Wireless Client Adapter
- Mac OS 10.x
- NIH standard SSIDs for NIH users and guest/patient areas, and NIH standard WEP encryption key (available to authorized users at the CIT iSDP Wireless LAN site http://sdp.cit.nih.gov/downloads/wireless_lan.asp under "Standard SSIDs and WEP key for NIH Wireless Network")

1.5 Wireless Authentication Overview

In the NIH wireless LAN environment the various vendors' client adapters, client utilities, and access points are configured to communicate using the NIH standard secure access method. Two means are employed to secure data: 128-bit Wired Equivalent Privacy (WEP) encryption is used when the link is established between the wireless client and the access point. Virtual Private Networking (VPN) with Advanced Encryption Standard (AES) 256 bit or Triple Data Encryption Standard (3DES) 168 bit (depending on the client adapter used) is employed to encrypt user data.

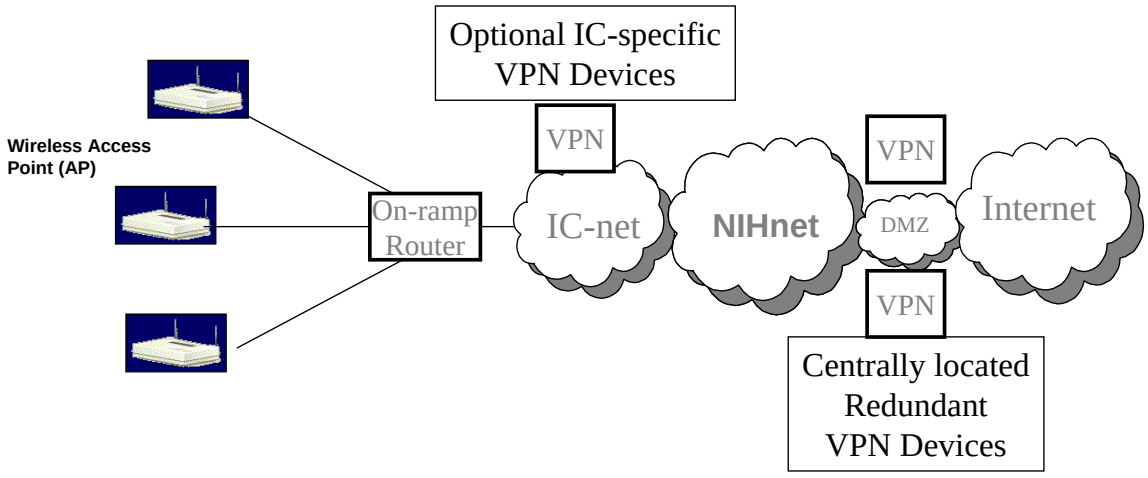
When the user turns on the computer, the wireless adapter tries to associate with the AP via WEP key and Service Set Identifier (SSID), and sends a Dynamic Host Configuration Protocol (DHCP) request to obtain an IP address from the DHCP server. The VPN client then connects to the VPN concentrator and the user signs on using the NT domain (Active Directory) credentials.

Users who are NIH employees authenticate through a VPN concentrator. NIH guests or patients authenticate through Wireless Gateway servers using assigned user names and passwords. Wireless Gateway-authenticated users have very limited Internet access, while VPN users have the same network access as wired users. **Note:** At the "Demilitarized Zone" (DMZ), security checks are applied to all traffic. If users do not authenticate through VPN or Wireless Gateway, their packets will be dropped at the wireless DMZ.

Authentication for NIH users connecting through the wireless LAN is the same as for users connecting via the wired network. The wireless VPN servers and Wireless Gateway participate in the single sign-on process, so that the same password is used to log on to both the wireless and wired networks.

The NIH wireless LAN is illustrated in Figure 1.

Figure 1. NIH Wireless LAN Overview



2 Configuring Profiles to Access the Wireless LAN for NIH Users and in Guest/Patient Areas

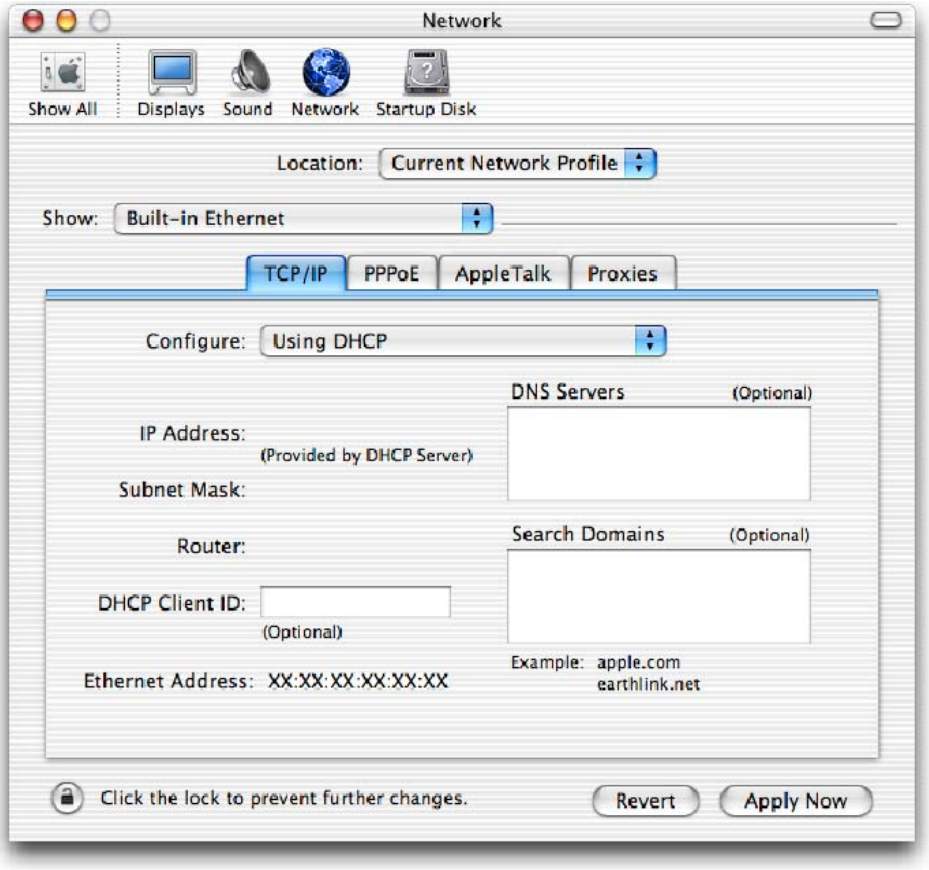
In the following procedures the profile naming convention is as follows:

- The profile named *NIH wireless* is used to access the wireless LAN that is designated to NIH users.
- The profile named *NIH wireless LAN for guest* is used to access the wireless LAN that is designated to NIH guest/patient areas.

Configure the profiles as follows:

1. On the desktop, click the **Apple** icon at the top left corner of the main menu bar. Select **Location → Network Preferences**. The **Network** window is displayed (Figure 2).

Figure 2. Network Window



2. In the **Location** box on the **Network** window, click the down arrow and select **New Location**. The **Name Your New Location** window is displayed.
3. Enter the name of the wireless LAN that you would like to access in the **Name your new location** box (Figure 3). Then click **OK**.

   Example: `NIH Wireless`

Figure 3. Name Your New Location Window

The **Network** window is displayed again.

4. In the **Show** box on the **Network** window, click the down arrow and select **AirPort**.
5. On the **Network** window click the **AirPort** tab. The **AirPort** window is displayed as shown in Figure 4 for OS 10.1 and 10.2, and in Figure 5 for OS 10.3.

Figure 4. AirPort Window for OS 10.1 and 10.2

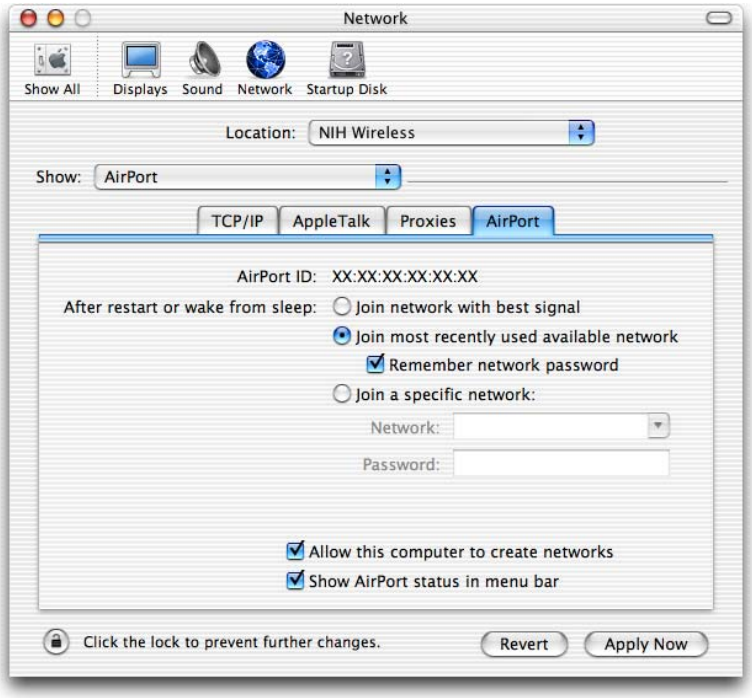


Figure 5. AirPort Window for OS 10.3

6. On the **AirPort** window, configure the following as shown in Figure 6 for OS 10.1 and 10.2 and Figure 7 for OS 10.3.
   a. Uncheck the **Allow this computer to create networks** box.
   b. For OS versions 10.1 and 10.2, select **Join a specific network** (Figure 6). For OS version 10.3, in the **By default, join** box select **A Specific network** (Figure 7).
   c. After **Join a specific network** is selected, the **Network** and **Password** boxes are activated.
   d. Enter the *<NIH standard SSID for NIH users>* in the **Network** box.
   e. Enter the 26-digit hexadecimal *<NIH standard WEP encryption key>* in the **Password** box.

Figure 6. AirPort Window for OS 10.1 and 10.2 with Changes

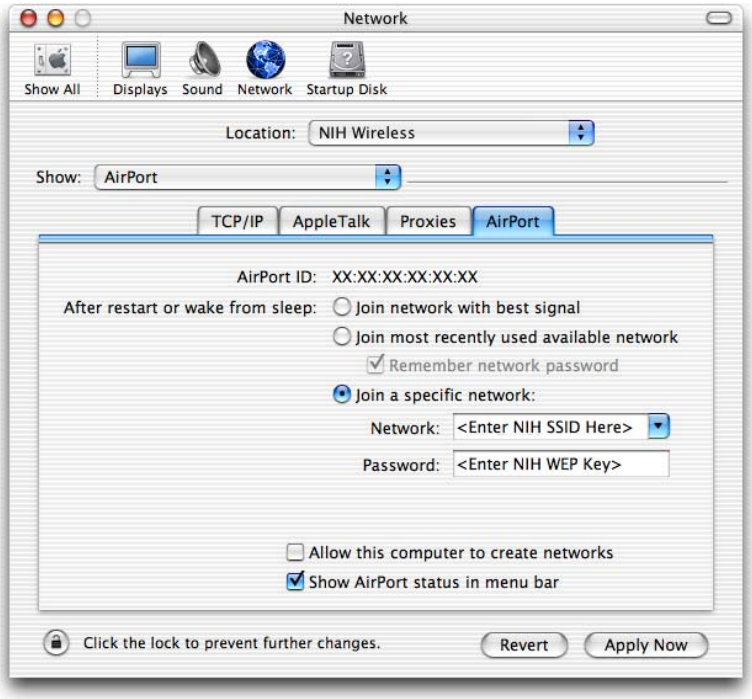


Figure 7. AirPort Window for OS 10.3 with Changes

7. Click **Apply Now** to save changes.

You have completed configuring the profile for accessing the NIH users' wireless LAN. Now you need to configure another profile for accessing the wireless LAN in guest/patient areas.

8. To configure a guest/patient access profile, repeat steps 2 through 7 with the following changes:

a. In step 3 enter a guest area profile name such as `NIH wireless LAN for guest`.

b. In step 6d enter the *<NIH standard SSID for guest/patient>*.

Congratulations! You have completed configuring profiles to access the wireless LAN for NIH users and guest/patient areas. Follow the steps in section 3 to test wireless LAN connectivity.

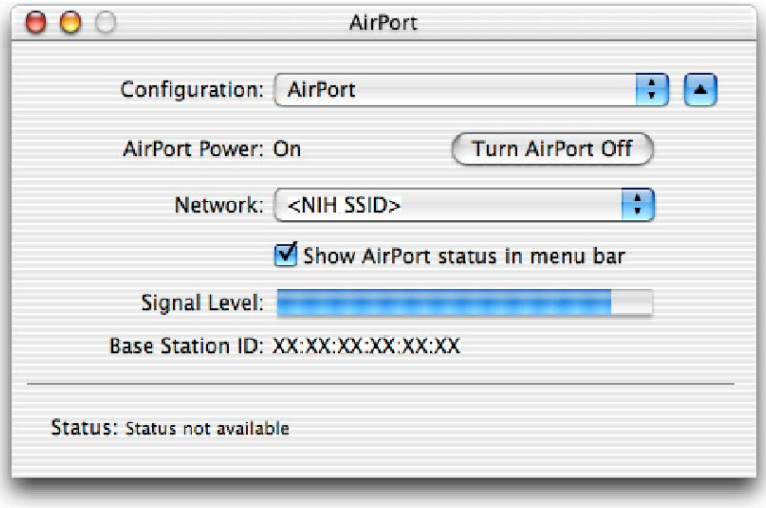
3 Testing Wireless LAN Connectivity

After you have completed configuring the wireless client profiles, you can test wireless LAN connectivity by selecting the appropriate profile based on which wireless LAN you would like to access (NIH users or guest/patient area).

The steps below will walk you through wireless LAN connectivity testing.

1. On the desktop, click the **Apple** icon at the top left corner of the main menu bar. Select **Location**, then select the appropriate wireless client profile. If you are testing connectivity for NIH users, select *NIH wireless*. To test connectivity in guest/patient areas, select *NIH wireless LAN for guest*.
2. From the main menu bar, click on the **AirPort** icon and select **Open Internet Connect**. The **AirPort** window is displayed (Figure 8). On the **AirPort** window, the **Signal Level** bar shows the level of signal between the AirPort client and the access point.

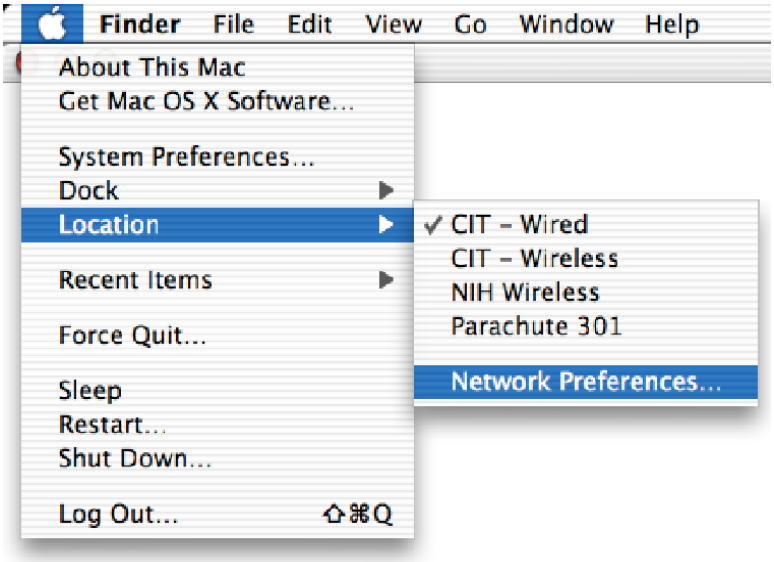
Figure 8. AirPort Window with Active Wireless LAN Connectivity



Note: This is an example window. The information in the **Network** and **Base Station ID** boxes on your system will be different.

3. On the desktop, click the **Apple** icon at the top left corner of the main menu bar. Select **Location → Network Preferences** (Figure 9).

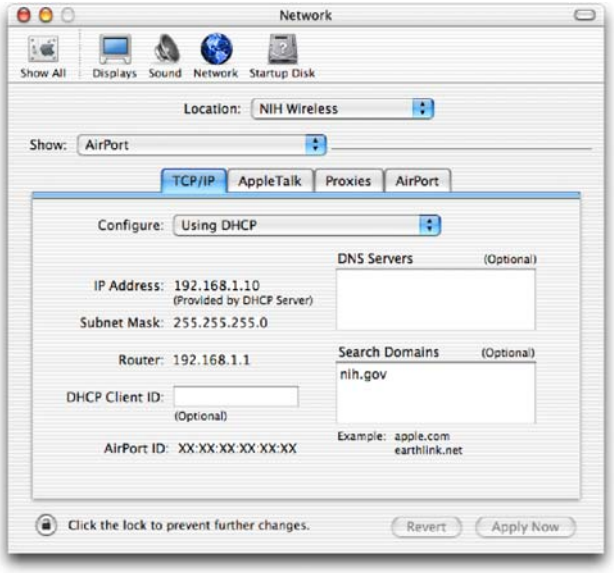
Figure 9. Selection Menu



The **Network** window is displayed (Figure 10).

4. On the **Network** window, the IP address that is assigned to your system is displayed in the **IP Address** box, and the IP address of the gateway is displayed in the **Router** box. For example, in Figure 10 the IP address 192.168.1.10 is assigned to the AirPort client and the gateway IP address is 192.168.1.1.

Figure 10. Network: TCP/IP Window with Wireless LAN Connectivity



Note: This is an example only. The IP address, subnet mask, router address, and AirPort ID information on your system will be different.

Congratulations! You have completed configuring the integrated AirPort wireless client profiles and verifying wireless LAN connectivity for Mac OS 10.x and later.