SMALL-MEDIUM BUSINESS

NP6800/11 MBPS IEEE 802.11b ACCESS POINT

Wireless LAN Access Point

CREATE A WIRELESS LAN IN YOUR OFFICE OR HOME – & SET YOUR DESKTOPS, NOTEBOOKS & PDAS FREE!

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Quick Start Guide

Contents

Introduction

The NetComm NP6800 - Wireless LAN Access Point is a Direct-Sequence Spread Spectrum (DSSS) product. DSSS is a spread spectrum network operating between 2.4 and 2.5 GHz. This provides a high-capacity network within either large or small environments using multiple access points.

Based on IEEE 802.11b, Wireless LAN (WLAN) products can perform at speeds of up to 11 Mbps. This technology works by using multiple frequencies in the 2.4 GHz range utilizing Direct Sequence Spread Spectrum (DSSS) technology.

Designed to cover distances of up to 100 metres indoors and 300 metres outdoors, WLAN technology lets you access your network from anywhere within this radius. The range of WLAN is limited by the number of walls, ceilings, floors, or other objects the wireless signals must pass through. Typical ranges vary depending upon the types of materials and background radio-frequency in the WLAN area.

WLAN products offer the following network features:

- WLAN bridging architecture allows communication between wired network devices and mobile devices.
- WLAN products support the IEEE 802.11b and WiFi specifications. This open architecture allows WLAN devices to communicate with wireless devices from other manufacturers that conform to the same specifications.
- WLAN products allow mobile devices to roam throughout large facilities while remaining connected to the network.
- WLAN products allow establishment of ad-hoc wireless workgroup networks.
- WLAN products are protocol-independent, allowing mobile devices to communicate with a wide range of servers, hosts and systems.

About the NetComm NP6800 - Wireless LAN Access Point

The NetComm NP6800 - Wireless LAN Access Point allows USB equipped host systems to configure, connect to and link a wireless network.

Features Include:

- IEEE 802.11b compatibility providing wireless Ethernet connectivity at speeds of up to 11 Mbps.
- Dynamic scaling of the connection speed between 11, 5.5, 2, and 1 Mbps to match the wireless network conditions.
- Wireless security with 64-bit and 128-bit WEP data encryption.
- Support for Microsoft Windows 98, Millennium (ME) 2000, and Windows XP.
- C-Tick compliance.
- Multiple operating mode options for access point (infrastructure), peer-to-peer (ad-hoc) or bridging associations.
- LED indicators provide power and network link status.

NetComm NP6800 - Wireless LAN Access Point LED Descriptions

The NetComm NP6800 - Wireless LAN Access Point has two LED's.

- The PWR LED illuminates during connection
- The LAN LED indicates that the access point is functioning and is connected to the LAN.
- The WLAN LED flashes when activity is detected on the wireless link.

Wireless LAN Basics

In order to set up and use your NetComm NP6800 - Wireless LAN Access Point you should have some basic understanding of both wired and wireless network technology and the various functions of the device.

WLAN devices use electromagnetic waves within a broad, unlicensed range of the radio spectrum to transmit and receive Frequency Modulation (FM) radio signals. WLAN devices generate a carrier wave and modulate this signal using various techniques. In this way, digital data can then be superimposed onto the carrier signal. The radio signal carries data to wireless-capable devices within its range. The antennas of wireless-equipped devices transmit and receive the signal. The transmission method used by WLAN devices is called Direct Sequence Spread Spectrum (DSSS) and they operate in a range of the radio spectrum between 2.4 and 2.5 GHz.

Wireless LANs support the same network applications that are used on wired Ethernet LANs. The NetComm NP6800 - Wireless LAN Access Point may be used on laptop and desktop computer systems and support the same protocols as Ethernet adaptors. For most users, there is no noticeable functional difference between a desktop workstation hard-wired to an Ethernet network and a WLAN workstation other than the added benefit of being able to roam within the WLAN.

Your NetComm NP6800 - Wireless LAN Access Point providea a link between the WLAN and a wired Ethernet network and its resources.

Ad-Hoc (IBSS) Mode

Connecting to other network devices, without access points, to form a peer-to-peer network is called Ad-Hoc (IBSS) mode. Use Ad-Hoc to create simple wireless networks where the number of wireless computers (also referred to as network nodes) are small. In this configuration, the first wireless LAN card to start transmitting a beacon will determine the channel and data rate used for the other Adaptors in the IBSS network. Ad-Hoc networks are very easy to set up and require minimal involvement by network administrators or IT personnel.

Infrastructure (ESS or 802.11-Station) Mode

In Infrastructure (ESS or 802.11-Station) mode, the NetComm NP6800 - Wireless LAN Access Point connects to an access point (AP). In ESS mode, the WLAN workstation can roam freely between other access point cells in the network or transmit and receive across subnets. ESS is the default mode for the NetComm NP6800- Wireless LAN Access Point.

A Windows based utility is supplied to select the operational mode and to generally monitor and configure, the NetComm NP6800 - Wireless LAN Access Point.

11 Mbps Operation

The NetComm NP6800 - Wireless LAN Access Point supports a maximum 11 Mbps data transfer rate. When the adaptors transmit (TX) rate is set to Auto, the adaptor automatically shifts to a 5.5, 2 or 1 Mbps data rate when unable to maintain a high quality connection at 11 Mbps. When the adaptor detects improved signal strength, it shifts to an increased data rate, up to the maximum 11 Mbps.

The following factors can dynamically alter the data rate:

■ signal strength between the access point and adaptor,

■ the ratio of good transmitted packets to attempted transmitted packets that fall below a threshold, or -

■ the adaptor finds a higher transmit rate with another AP or it encounters an unspecified data rate.

Physical obstructions and numerous devices operating in close proximity to one another negatively impact the ability to maintain an 11 Mbps access point association.

Signal Range

WLAN devices are designed to operate over a radius of 100 meters indoors and 300 metres outdoors. Obstructions such as walls, ceilings, floors, office equipment, and furniture can reduce this range. The following example or just some factors that affect the signal range of your Wireless network.

■ **Obstructions.** The Wireless LAN radio signal can penetrate through ceilings and walls. However, each wall or ceiling the signal must pass through to reach other WLAN devices will reduce the effective range your Wireless LAN.

You should also keep the depth of the obstructions to a minimum. Take an example of a wall that is half a metre thick. For a radio signal going through the wall, at a forty degree angle, it must pass through almost one metre of material. At a two degree angle, this increases to over 14 metres! Position adaptors and access points so that the signal will travel straight through a wall or ceiling for better reception.

Position your adaptors and access points above desk height so as to minimise the number and depth of obstructions and always position your adaptors and access points so that the signal passes through drywalls or open doorways and not through metallic materials.

■ **Antenna Position:** Where possible, keep your adaptors and access points at least 1 or 2 metres away from devices that generate strong radio-frequency or electromagnetic signals, such as microwaves, computer monitors, cellular telephones and electric motors. Use the utilities included with your product to measure the best reception (signal quality/strength) achieved when repositioning the antenna.

Should the signal be inadequate in an area where you wish to use your wireless network, consider adding Access Points to increase the signal strength in that area.
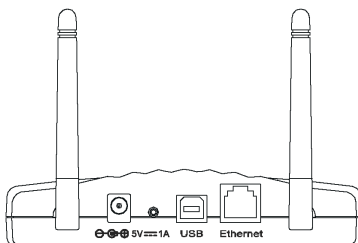
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Installation

Before beginning the installation, verify the hardware package contains the NetComm NP6800 - Wireless LAN Access Point and ensure that you have the requirements listed below. Keep the serial number in a safe place. The Support Centre uses this information to reference warranty and service contract information.

Note: The MAC Address of the Access Point is indicated on the bottom of the case.

The NetComm NP6800 - Wireless LAN Access Point installation requires:

- ■ a computer with an available USB port.

- ■ a CD-ROM drive or Internet access.

- ■ Microsoft Windows 98, Millennium (ME), Windows 2000 or Windows XP
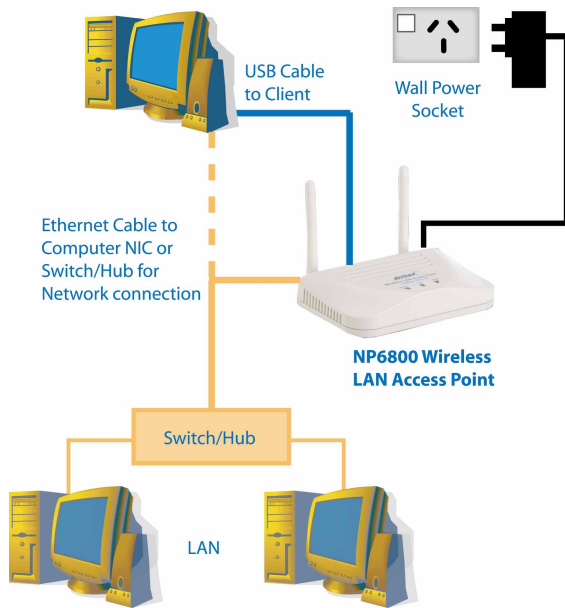
- ■ an ethernet cable to connect to your LAN.

> *Avoid exposing the NetComm NP6800 - Wireless LAN Access Point to liquids or abrasive materials.*

1. Place the NetComm NP6800 - Wireless LAN Access Point in an optimum position so that the minimum number of obstructions such as walls, floors, ceilings, and office equipment are between it and the nearest connecting access point or wireless device.

2. Fix the direction of the antenna. Try to place it in a position which can best cover your wireless network. Normally, the higher you place the antenna, the better the performance will be. The position of the antennas will enhance the receiving sensitivity.

3. Connect a standard UTP ethernet cable to the Wireless Network Access Point.

USB Cable to Client

Wall Power Socket

Ethernet Cable to Computer NIC or Switch/Hub for Network connection

NP6800 Wireless LAN Access Point

Switch/Hub

LAN

Then, connect the other end of the Ethernet cable to a switch or hub or computer with a Network Interface Card installed. The Wireless Network Access Point will then be connected to your 10/100 Network.

4. Connect the AC Power Adapter supplied to the Access Point's power socket.

5. Connect the appropriate end of the USB Cable to the Wireless Network Access Point's Configuration Port. Connect the other end to the USB port on your PC. Your system will immediately recognize the Access Point and attempt to install drivers for it. Refer to the appropriate operating system section for instructions on how to install the drivers.

Note: *Once your Access Point is installed and configured, the USB cable may be removed.*

Driver Installation & Configuration

The NetComm NP6800 - Wireless LAN Access Point is supplied with a Windows driver and a USB and Ethernet Access Point Utility. The utility should be installed at the same time as the Windows USB driver and is used to view and edit NetComm NP6800 - Wireless LAN Access Point settings.

After following the driver installation instructions for your operating system, refer to the section on Access Point Utility for installation instructions.

Before installing the Wireless Access Point Windows driver:

■ Connect the NetComm NP6800 - Wireless LAN Access Point to the USB port of your computer.

■ Have the NetComm Driver CD ready for insertion.

Installing the WLAN Driver in Windows 98/ME/2000

To install the Wireless LAN Access Point driver in Windows 98, Windows Millennium (ME) or Windows 2000, you must login as Administrator or a member of the Administrator Group (see Windows Help for more information on this.)

1. After inserting the Access Point's USB cable into an available USB port on the computer, Windows recognises the Adaptor and the **Add New Hardware Wizard** dialog box appears.

2. Insert the NetComm Driver CD.

3. Select the **Specify the location of the driver** checkbox. Click **Next**.

4. Type in the location of the driver or browse for **D:\Drivers*operating system***, where D:\ is the letter of your CD ROM drive. Type or select the correct ***operating system*** directory (**Win98**, **WinMe** or **Win2000**) for your computer and click **Next** to continue.

5. Click **Next** when the **Add New Hardware Wizard** displays the location of the driver files.

Note: The Microsoft Digital 'Signature Not Found' dialog box could appear at this point in the installation. A Microsoft digital signature is not required for the driver installation. Click Yes to continue.

The **Add New Hardware Wizard** dialog box displays stating the required software has been installed.

6. Click **Finish** to complete the installation and refer to the section on installing the **Access Point Utility.**

Installing the Driver in Windows XP

To install the Wireless LAN driver in Windows XP:

1. After inserting the Access Point into an available USB port on the computer, Windows XP recognizes the adaptor and the **Add New Hardware Wizard** dialog box appears.

2. Insert the NetComm Driver CD.

3. Select the **Install the software automatically (recommended)** checkbox. Click **Next**.

4. The drivers will be found on the CD ROM in the location of **D:\Drivers\WinXP**, where D:\ is the letter of your CD ROM drive. Select a driver and click **Next** to continue.

Note: The Microsoft Windows Logo testing screen will appear advising that the driver has not been tested. Click Continue anyway to proceed.

5. Click **Finish** to complete the installation and refer to the section on installing the **Access Point Utility.**

Installing the Access Point Utility

The Access Point Utility is used to configure and monitor the NetComm NP6800 - Wireless LAN Access Point for all Windows operating systems.

The procedure described in this section can be used in order to install the Access Point Utility under Microsoft® Windows®.

■ In this section it is assumed that you have a basic working knowledge of Microsoft Windows and networking principles.

■ During the installation, you may be prompted to load operating system files from the Windows installation disk. Please keep this disk handy.

■ You will need the CD provided with your Access Point.

To install the Access Point Utility:

1. Insert the provided CD into your CD-ROM drive and select **Start -> Run** and type in the location of the software or browse for **D:\AP Utility\Setup.exe**, where D:\ is the letter of your CD ROM drive.

2. The InstallShield Wizard will install Access Point Utility on your computer. To continue, click Next.

3. Select the Program Folder for the Utility. The default folder will be 802.11 Wireless LAN. Click Next to continue.

4. When the InstallShield Wizard has completed installation, click on the Finish button. Refer to the section on Configuring the Access Point to set up your device.

Uninstallation Procedure

To uninstall the application from Windows, follow the procedure described bellow:

1. Open the Add/Remove Programs icon under the Control Panel.

2. Select the **Acess Point Utility** option and click the **Change/Remove…** button under the **Control Panel** to begin the uninstallation procedure.

3. Click **OK** in order to finish the removal of the Access Point Utility.

Configuring the Access Point

The Access Point Utility consists of two programs, an **AP Utility** and an **SNMP Manager**, which are used for the configuration of the NetComm NP6800 - Wireless LAN Access Point. We recommend using the AP Utility for initial setup and configuration, with further customisation available within the SNMP Manager to fine tune your Access Point settings.

Configuring the Access Point via USB

The AP Utility uses the USB connection to the Access Point and gives a one-screen listing of all the settings of the Access Point.

Note: The AP Utility can only be used when the Access Point is connected via a USB cable to your computer. If the USB cable is not connected, you will receive an error message.

1. Open **Start->Programs->802.11 Wireless LAN->Acess Point Utility** and click on **AP Utility**. The AP Utility screen will appear.
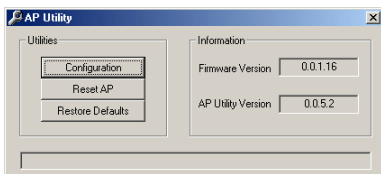
From this utility, the Access point can be reset or the settings may be altered or returned to the default values. To Restore Defaults to your Access Point, click on the **Restore Defaults** button. The factory default settings of your Access Point will be restored immediately.
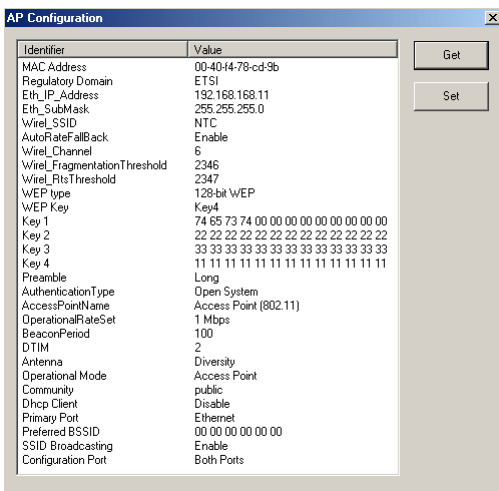
2. Click on the Configuration button to display the values stored within the Access Point. It is important to configure the following settings before continuing:

   ■ IP Address and Subnet Mask
   ■ Community (Password)
   ■ WEP

*Note: Refer to the table on Page 40 and write down the changes you make to your Access Point configuration for future reference.*

Other settings may also be changed at this point, however, the following settings are covered in detail to make the necessary changes to install your Access Point.

IP Address

You may wish to change this IP setting from the default of "192.168.168.10". A table is provided on page 40 for you to record the amended setting.

1. Double-click on the **Eth_IP_Address** to display the following window:
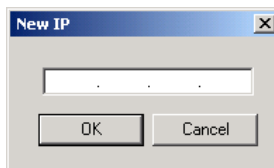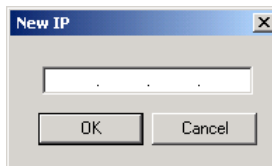

2. Type in the new IP Address and click the **OK** button.

3. Click on the **Set** button to configure the Access Point.

Subnet Mask

You may wish to change this IP setting from the default of "255.255.255.0". A table is provided on page 40 for you to record the amended setting.

1. Double-click on the **Eth_SubMask** to display the following window:
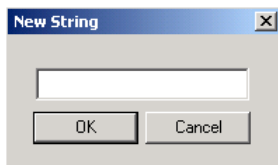

2. Type in the new SubNet Mask and click the **OK** button.

3. Click on the **Set** button to configure the Access Point.

Community (password)

The AP Utility and the SNMP Manager use a **Community** setting to password protect the Access Point. We recommend that you change this setting from the default of "public". A table is provided on page 40 for you to record the amended setting.

1. Double-click on the **Community** to display the following window:

2. Type in the new password string and click the **OK** button.

3. Click on the **Set** button to configure the Access Point.

WEP

Wireless Equivalent Privacy (WEP) is an authentication algorithm which protects authorised Wireless LAN users against eavesdropping. WEP is recommended to ensure that your Wireless Network is secure.
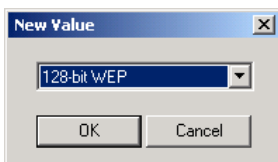
Note: You must use the same WEP key identification number and encryption key in the Access Point that you will be using in all accessing wireless stations, i.e. other Access Points, PCMCIA cards or USB adaptors.

The following WEP types are available:

- ■ **64bit WEP** allows four 5 Hex digit encryption keys

- ■ **128bit WEP** allows four 13 Hex digit encryption keys

- ■ **Disable** will disable WEP and allow any wireless station within the radius of the Access Point to access your Network.
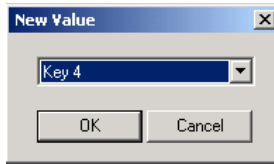
Note: It is highly recommended that you use WEP to secure your wireless network.

1. Double-click on **WEP Type** and select the WEP option you wish to use in order to activate WEP encryption for transmissions between the stations and the AP.

2. Double-click on **WEP Key** and select the identification number of the WEP key you wish to use.

3. Double-click on the Key you will be using and enter the encryption key that you will be using.
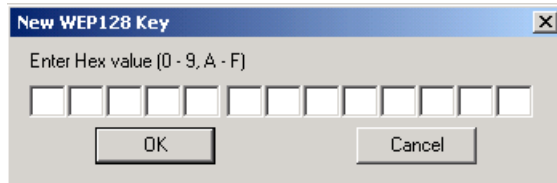
Note: *You must use the same WEP key identification number and encryption key in the Access Point that you will be using in all accessing wireless stations, i.e. other Access Points, PCMCIA cards or USB adaptors.*

4. Click the **Set** button to complete the changes.

Configuring the Access Point via Ethernet

The SNMP Manager provides a GUI custsomisation tool which can be accessed by your ethernet or wireless connection. Before using the SNMP Manager you will need to assign a temporary IP address.

Assigning a Temporary IPAddress

If you wish to use the SNMP Manager utility to configure the Access Point, you must assign a temporary IP address to your computer.

1. Click on **Start->Settings->Control Panel**, and then double-click on the **Network** icon.

2. Select the network adapter associated with the TCP/IP and click **Properties**.

3. Write down your current settings in order to restore your TCP/IP configuration.

4. Select **Specify an IP address** and enter the following values:

    IP Address: 192.168.168.50

    Subnet Mask: 255.255.255.0

5. Click **OK** and click **OK** again in the Network window.

6. Restart your computer and continue .

Once you have completed the Access Point configuration, you can set the computer back to its previous settings. For example, to "Obtain an IP Address automatically."

Connecting to the Access Point using the SNMP Manager

1. Open **Start->Programs->802.11 Wireless LAN->Acess Point Utility** and click on **SNMP Manager**. There are two ways to connect to the NetComm NP6800 - Wireless LAN Access Point with the AP Utility:

   ■ Select File -> Connect to Access Point option and enter the IP and the Community.
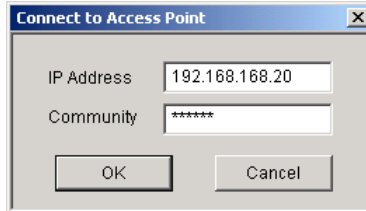
   ■ Select File -> Find Access Point option. After a while a window will display any Access Point devices that the Utilty has found.

Note: *If the Access Point is found and displayed but you can not connect to it, you will need to temporarily change your computer's IP address. Refer to the section on Assigning a temporary IP Address for further information.*
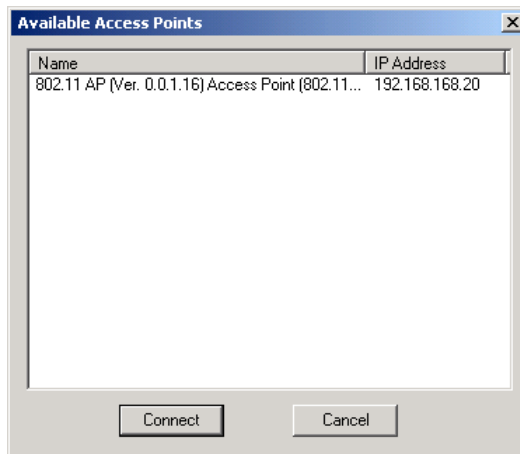
2. From that window you can select the Access Point that you want to configure and click the connect button. The Connect to Access Point window will appear with the correct IP address displayed. Enter the Community in order to get access to the functionality of the NetComm NP6800 - Wireless LAN Access Point.

3. If the IP address and Community are correct the following window will be displayed.
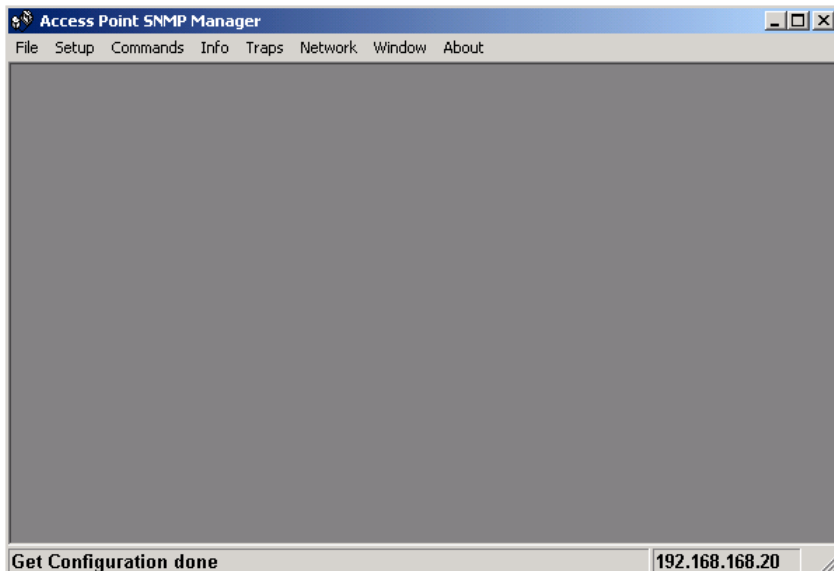
The SNMP Manager will display the following menus, which can be used to configure the Access Point.

■ File menu

■ Setup Menu

■ Commands Menu

■ Info Menu

■ Traps Menu

■ Network Menu

■ Window Menu

■ About Menu

Refer to the following sections for more information on the above menus.

File Menu

Under this menu you can find the following options:

■ Connect to Access Point - Using this option you can directly connect with the AP.

First, type its IP Address in the panel which appears (Figure 4-2). Then, type the appropriate password in the Community field (The default password is "public").

■ Find Access Point - This option allows you to find and connect with an AP without the necessity of knowing its IP Address. Choose this option in order to find the Aps available for connection . Select one of the available APs and press "Connect". Then, the IP of the selected AP is passed to the IP field of the panel to write the appropriate password at the community field.

■ Close Connection AP - Terminates the connection with the AP.

■ Exit - Terminates the connection with the AP and exits the application.

Setup Menu
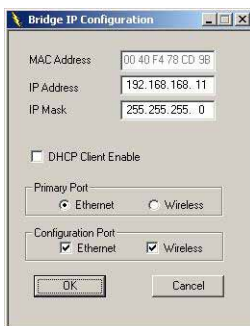
As soon as the connection has been established, you are able to start viewing or setting the AP parameters.

Bridge

Under the "Bridge" submenu, there are two options:

■ IP Configuration

■ Filtering

IP Configuration

Under this window you see and change the followings:

■ The Mac Address, IP Address, and IP Mask of the AP.

Note: The Mac Address can not be altered. This is a unique number that is assigned by the manufacturer to an Ethernet network device to allow easy identification. The Mac Address is also printed on a label on the base of the Access Point unit.

■ The option to enable the DHCP client function of the AP.

■ Additionally you have to select the Primary Port, which is the interface that determines the DHCP server. Also you can select which port (Ethernet and/or Wirless) will be used for the AP configuration.

Wireless LAN

Under this submenu the following Operational Settings are available:

Operational Settings
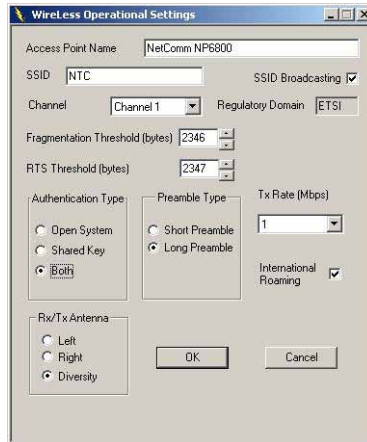
Using this option you can either view or modify the following parameters of the Wireless LAN AP:

Access Point Name -   The name of the AP.

SSID -   It is an ASCII string, up to 32 characters, used to identify a WLAN that prevents the unintentional merging of two co-located WLANs. The ESSID value must be the same in all stations and AP in the extended WLAN.

SSID Broadcasting -   When checked the Access Point broadcasts the SSID to the stations, if not checked then the stations must know the Access Point SSID in advance.

Channel -   Select the channel to be used. Depending on the Regulatory Domain of the AP the number of available channels can be 1 - 14.

Fragmentation Threshold -   The size at which packets will be fragmented. Choose a setting within a range of 256 to 2346 bytes.

RTS Threshold -   Minimum packet size to require an RTS (Request To Send). For packets smaller than this threshold, an RTS is not sent and the packet is transmitted directly to the WLAN. This is the option for the RTS Threshold activation.

Authentication Type -	Select Open System, Shared Key, or Both:
Open System:	With this setting any station in the WLAN can associate with an AP and receive and transmit data (null authentication).
Shared Key:	With this setting only stations using a shared key encryption identified by the AP are allowed to associate with it.
Both:	With this setting stations communicate with the AP either with or without data encryption.
Preamble Type (Short/Long) -	Preamble is the first subfield of PPDU, which is the appropriate frame format for transmission to PHY (Physical layer). There are two options, Short Preamble and Long Preamble. The Short Preamble option improves throughput performance.
Rate -	By default the unit adaptively selects the highest possible rate for transmission.
	Select the basic & supported rates to be used among the following options 1 - 2 - 5.5 - 11 (Mbps).
Auto Rate Fall Back -	When this is enabled the transmission rate is the optimum rate. In case of obstacles or interference, the system will automatically fall back.
Regulatory Domain -	The value of this field is already set and can not be modified.
Rx/Tx Antenna -	Here you can decide how the AP will use each Antenna.
International Roaming -	The Access Point can support the International Roaming (IEEE 802.11d) function if this option is enabled.

Authorized MAC Address (MAC Address Filter)
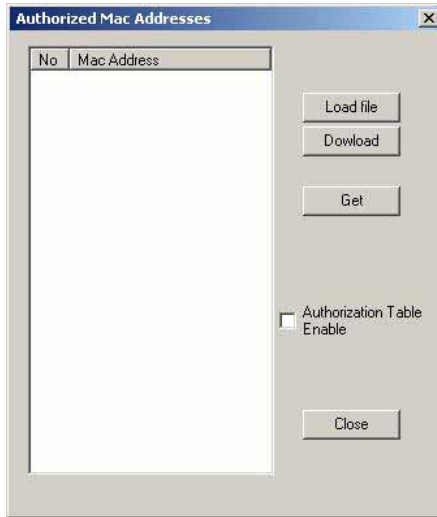
For security reasons the AP can use the Authorization Table option. The AP allows only authorized stations to get associated to it . Under the Authorized MAC Address option you may press the following buttons:

Load file:	Use this button in order to load a txt file with the MAC Addresses that can be associated with the AP (Authorized MAC Addresses).
	The txt file must have one MAC address at a line and with the following format:
	000425000146 not 00-04-25-00-01-46 or 00 04 25 00 01 46.
Download:	Use this button button in order to download the Authorized MAC Address to the AP.
Get:	Use this button button in order to get from the AP the Authorized MAC Addresses.
Authorization Table Enable:	If this option is enabled, the AP allows anly authorized stations to get associated to it.

Operation Mode

The NetComm NP6800 Wireless LAN Access Point can be configured to three different modes of operation:

■ Access Point,

■ Access Point Client

■ Wireless Bridge (Point to Point or Point to Multipoint).

For each mode you can either view or modify the Wireless LAN parameters of the Wireless Operational Settings window.

Access Point Mode
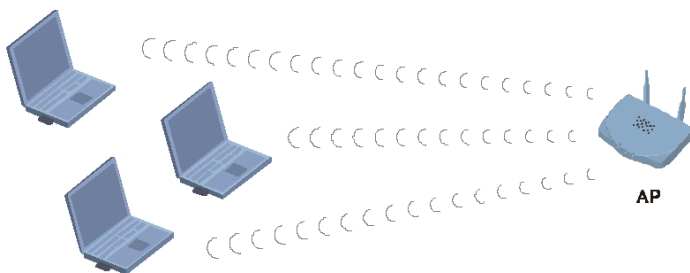
The NP6800 Wireless LAN Access Point is set to Access Point by default and will connect your wireless computer to a wired network (LAN). It is recommended that WEP be configured to block unwanted access to your network.
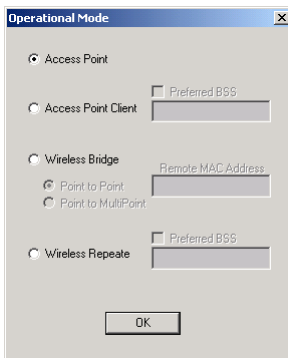
In most cases, no change is necessary, however the WEP key identification number and encryption used must be consistent to enable access.

When set to Access Point Client Mode, the NetComm NP6800 Wireless LAN Access Point is able to talk to one main Access Point and wireless clients within its range. This mode allows your Access Point to act as a client of a main Access Point. A LAN attached to your Access Point client can then be wirelessly bridged to the main Access Point.
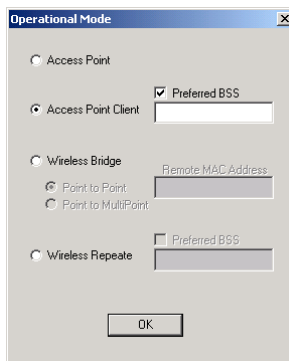
1. Select **Access Point Client** and check the **Preferred BSS** box. Enter the required MAC address of the main Access Point to create a direct connection.

2. Click the **OK** button to store the information.

Wireless Bridge Mode

If you are trying to make a wireless connection between two or more wired networks, select **Wireless Bridge**. There are two options: Point to Point and Point to MultiPoint.

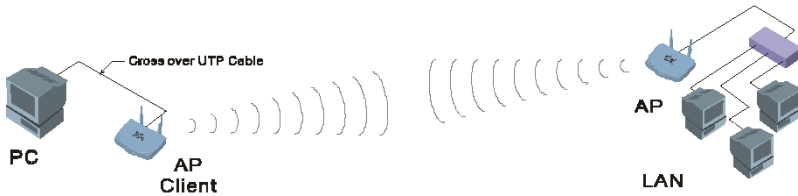*Note: In Wireless Bridge mode, the NetComm NP6800 Wireless LAN Access Point can ONLY be accessed by another wireless bridge. In order for your other wireless devices to access the NetComm NP6800 Wireless LAN Access Point, you must reset it to Access Point mode.Access Point*

This mode provides access from Wireless Stations to Wired LANs and from Wired LANs to Wireless Stations. Furthermore, Wireless Stations within the range of the AP device may communicate with each other via the AP.
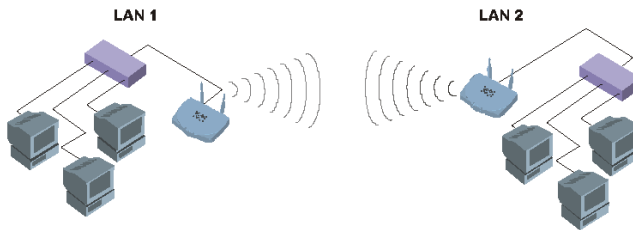
This mode connects two physically separated LAN segments using two Wireless Access Points. To configure a Point to Point bridged environment:

1. Click **Point to Point**.
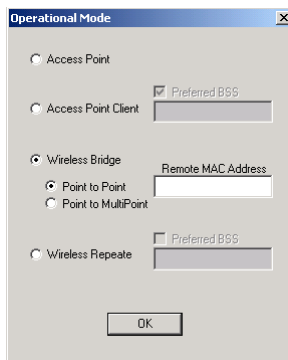
2. Set the **Remote MAC Address** of the Access Point in LAN 1 to look for the MAC Address of the Access Point in LAN 2.

3. The remote Access Point also needs to be set up as a Wireless Bridge.. In the Operational Mode of the remote Access Point, set the **Remote MAC address** of the Access Point in LAN 2 to look for the MAC Address of the Access Point in LAN 1.

Note: All devices on each LAN must be connected through a hub or switch.

4. Click the **OK** button to store the information.

Point to MultiPoint
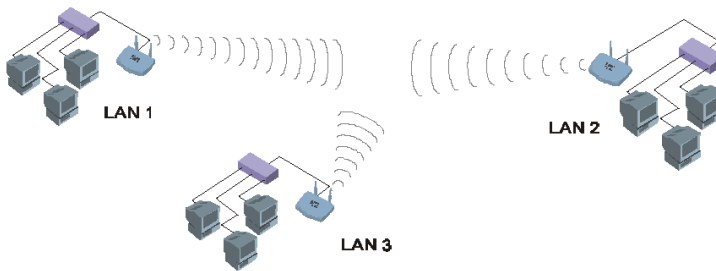
This mode allows you to construct a network that has multiple Wireless Access Point units bridging LANs.

To configure a Point to MultiPoint bridged environment:

1. Click Point to MultiPoint for the NetComm NP6800 Wireless LAN Access Point used in LAN 1. No MAC Address binding is needed.
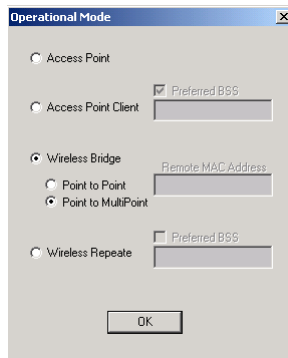
2. Set the Access Points in LAN 2 and LAN 3 to Point to Point, and have them look for the MAC Address of the Access Point in LAN 1.

Note: *Only one of the Access Points must be in Point to MultiPoint mode. For all other bridged Access Points, select the Point to Point option, and enter the Remote MAC Address of the Access Point set to Point to MultiPoint.*

3. Click the **OK** button to store the information.

Enable SNMP traps

Using this option you can either enable or disable SNMP traps, which are messages displayed in the right bottom corner of the main window indicating that an action related to the AP took place. Permitted messages are:

Trap Reassociation: This trap message is sent when a Station's reassociation request is received from the AP - Bridge.

Trap Association: Indicates the reception of an association request packet.

Trap Disassociation: This trap message is sent when a disassociation notification packet is received from a station.

Trap Reset: This trap message is sent when the AP resets.

Trap Setting IP with Ping: This trap message is sent when the APBridge IP Address is set with the transmission of a ping message.

Trap Start Up: This trap message is sent when the AP starts up.

Authorization

Using this option the Administrator can change the passwords used in the community field of the **Connect to AP** window. A table is provided on page 40 to record the updated setting.

Commands Menu

Under this menu there are two options.

■ Reset Device - You can reset the AP.

■ Restore Defaults - You can restore the factory default values of the AP.

If you have lost the password to your Access Point, connect a USB cable and refer to the section on Configuring your Access Point via USB to restore your settings.

Info Menu

This menu lets you view Wireless and Ethernet statistics.

■ **Wireless statistics:** This option reports the statistics concerning the unit's Wireless activity.
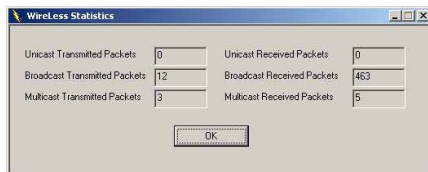
Field name	Description
Unicast Transmitted Packets	The number of Unicast packets successfully transmitted.
Broadcast Transmitted Packets	The number of broadcast packets transmitted.
Multicast Transmitted Packets	The number of multicast packets transmitted.
Unicast Received Packets	The number of unicast packets that were successfully received.
Broadcast Received	The number of broadcast packets that were successfully received.
Multicast Received	The number of multicast packets that were successfully received.

■ **Ethernet statistics:** This option reports the statistics concerning the unit's Ethernet port activity.
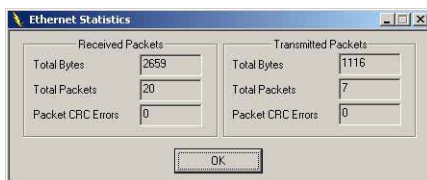
Field	Description
Received Packets:	
Total Bytes	The number of bytes in the frames that were received
Total Packets	Total number of received packets
Packet CRC Errors	The number of packets with CRC Errors
Transmitted Packets:	
Total Bytes	The number of bytes in the frames that were transmitted
Total Packets	Total number of transmitted packets
Packet CRC Errors	The number of packets with CRC Errors

Traps Menu

Provides information for trap messages

■ **View Record** displays additional information for every Trap Message.
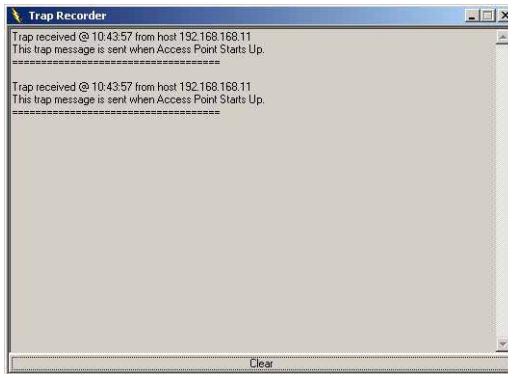
Network Menu

The Network menu provides information about the devices connected to your network.

■ **Associated stations** - Using this option you can view the MAC Addresses of the Associated stations with the AP.

■ **Known BSSs** - This option allows you to view all Wireless devices currently connected to the network, including the SSID, BSSID, RSSI, Channel, WEP, Type and Preamble of each device.
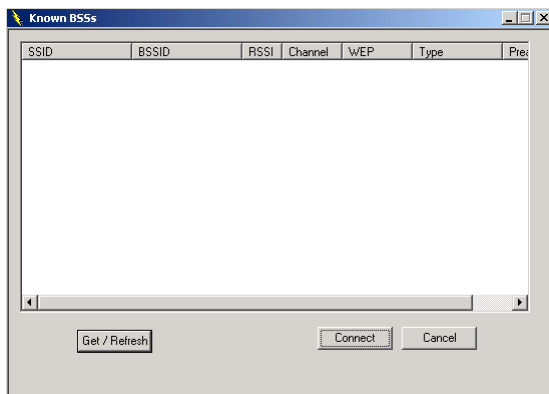
Click **Get/Refresh** to update the listing.

Window Menu

The **Window** menu there are the following options

■ Cascade - All opened windows are arranged on the desktop in a cascade fashion.

■ Tile - All open windows are visible on the desktop.

About Menu

The **About** menu rovides the version number of the application under the **About SNMP Manager** option.

Advanced Topics

Network Topology

The IEEE 802.11 standard supports three basic topologies for WLANs - the Independent Basic Service Set (IBSS), the Basic Service Set (BSS), and the Extended Service Set (ESS). WLAN components can be used to extend, enhance or entirely replace existing Ethernet infrastructure. The NetComm NP6800 - Wireless LAN Access Point can accommodate any of these WLAN topologies.

IBSS

An Independent Basic Service Set or Ad Hoc network consists of two or more wireless stations that communicate directly, peer-to-peer, without the services of a wireless access point. An example of an Ad Hoc or IBSS network would be a group of wireless-equipped laptop computers at a trade show set up to share information. In this arrangement, one of the WLAN units is elected to act as a controller or base station, similar to the function of a wireless access point except there is no connection to a wired Ethernet LAN.

BSS

In a Basic Service Set network, a wireless access point performs multiple tasks - it is a base station and a network access controller for the wireless stations in the WLAN. The access point can also provide a connection to a wired Ethernet LAN for the BSS member stations. An example of a BSS might be a business meeting conducted in a room with only a single Ethernet port available. Each participant has a wireless laptop computer and requires simultaneous access to a data server on the Ethernet LAN. A wireless access point provides the connection to the Ethernet LAN and acts as the network control station for the BSS network members.

In a BSS network, the wireless access point performs functions similar to an Ethernet switch. The access point controls network access and maintains a dynamically updated list of all the members of the BSS. Wireless stations in the BSS are identified by their MAC Addresses.

ESS

An Extended Service Set is a series of two or more basic service sets (BSSs) networked on an Ethernet LAN. Each access point provides connections to the Ethernet LAN for their respective BSS members. Each BSS member is identified by a unique number, the BSSID (actually the MAC address of the access point). Wireless stations (such as a laptop computer with a NetComm NP7032 - Wireless LAN PC Card installed) on an ESS network automatically select the access point or BSS that can serve them best (has the best signal). If no access point can be found, the device will scan for a usable access point.

An ESS network can be set up so that wireless stations can roam anywhere within the range of the access points and still maintain links to both the WLAN and the Ethernet LAN. In this case, each station shares a common ESS. The ESS network is identified by an ESSID that is known and used by all of the stations in the ESS network.

Wireless access points can also be used to segment a wireless network. Under such circumstances, more than one ESS might be used. Two or more separate ESS's can occupy the same physical space. Each station on a WLAN can use only one ESS - and thus only one ESSID.

How to Make Your Wireless Network More Secure

Wireless networks can be vulnerable to an outsider gaining access if the encryption settings are not set adequately. Some of the default security settings on some wireless hardware, and in Microsoft Windows, may allow access to your wireless network from other wireless devices.

The concepts that are presented here are offered only as a guide, and may help make your wireless network more difficult for an outsider to gain access. For more specific information about the implementation of these suggestions, you should consult a trusted security source.

- Enable Wired Equivalent Privacy (WEP) encryption

  The 802.11b standard, which your NetComm WLAN device is based on, permits Wired Equivalent Privacy (WEP) encryption. Depending on what other hardware you use your NetComm NP6800 - Wireless LAN Access Point with, there are two levels of WEP typically available: 64-bit encryption (based on a 40-bit encryption key), and 128-bit encryption (based on a 104-bit key). We strongly recommend that you enable WEP.

- Change the default Service Set Identifier (SSID) and passwords for your network devices.

  Do not change the SSID or password (Community) setting to reflect your name, address, or anything that would be easy to guess as this could make it easy for an outsider to gain access to your wireless network.

- Install Access Points away from windows

  If you are installing access points, think about locating them towards the centre of your home instead of near the windows. Plan your coverage to radiate out to the windows, but not beyond. If the access points are located near the windows, a stronger signal will be radiated outside your home making it easier for those outside the building to locate your network.

- Check the range of your network

  Take a notebook, or a PDA computer, that is equipped with a wireless network PC Card and go outside your home to survey what range you get when moving around your property or neighbourhood. You may be surprised how far the signal radiates. If you can connect from three or four houses away, so can someone else.

- Use a combination of the previous suggestions.

Glossary

A

Ad-Hoc Mode - A client setting that provides independent peer to peer connectivity in a wireless LAN. An alterative setup is where PCs communicate with each other through an access point.

B

Bandwidth - The transmission capacity of a given facility, in terms of how much data the facility can transmit in a fixed amount of time; expressed in bits per second (bps).

Bit - A binary digit. The value - 0 or 1-used in the binary numbering system. Also, the smallest form of data.

D

Default Gateway - The routing device used to forward all traffic that is not addressed to a station within the local subnet.

DHCP server and client - DHCP stands for Dynamic Host Configuration Protocol. This protocol is designed to automatically load parameters for the TCP/IP network, including the IP address, host name, domain name, netmask, default gateway, and name server address. The machine that provides this service is called the DHCP server, and its client computers are called DHCP clients. If client computers support DHCP, a TCP/IP configuration is not needed on each client computer.

Domain - A subnetwork comprised of a group of clients and servers under the control of one security database. Dividing LANs into domains improves performance and security.

Driver - A workstation or server software module that provides an interface between a network interface card and the upper-layer protocol software running in the computer; it is designed for a specific NIC, and is installed during the initial installation of a network-compatible client or server operating system.

DSSS (Direct-Sequencing Spread-Spectrum) - DSSS operate over the radio airwaves in the unlicensed ISM band (industrial, scientific, medical). DSSS uses a radio transmitter to spread data packets over a fixed range of frequency band.

E

Encryption - A security method that applies a specific algorithm to data in order to alter the data's appearance and prevent other devices from reading the information.

Ethernet - The most widely used LAN access method which is defined by the IEEE 802.3 standard. Ethernet is normally a shared media LAN meaning all devices on the network segment share total bandwidth. Ethernet networks operate at 10Mbp using CSMA/CD to run over 10Base T cables.

F

Fragmentation Threshold Value - Indicates how much of the network resources is devoted to recovering packet errors. The value should remain at its default setting of 2,432. If you experience high packet error rates, you can decrease this value but it will likely decrease overall network performance. Only minor modifications of this value are recommended.

Fragmentation - Breaking a packet into smaller units when transmitting over a network medium that cannot support the original size of the packet.

I

IP Address - An IP address is a 32-bit number that identifies each sender & receiver of information that is sent across the Internet. An IP address has two parts: the identifier of a particular network on the Internet and one identifier of a particular device (which can be a server or a workstation within that network).

L

LAN - A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

M

MAC Address - 12-digit hexadecimal number that identifies a networking product on the network.

Mbps (Megabits per second) - One million bits per second; unit of measurement for data transmission.

N

Network - A system that transmits any combination of voice, video and/or data between users.

Node - A network junction or connection point, typically a computer or work station.

O

Open System - Is when the sender and the recipient do not share a secret key. Each party generates its own key-pair and asks the receiver to accept the (usually randomly) generated key. Once accepted, this key is used for a short time only; then a new key is generated and agreed upon.

P

Packet - A unit of data routed between an origin and a destination in a network.

Plug and Play - The ability of a computer system to configure expansion boards and other devices automatically without requiring the user to turn off the system during installation.

R

RTS/CTS Threshold Value - Should remain at its default setting of 2,347. A preamble is a signal used to synchronize the transmission timing between two or more systems. A series of transmission pulses is sent before the data to indicate that "someone is about transmit data." This ensures that systems receiving the information correctly when the data transmission starts.

S

Shared Key - Is when both the sender and recipient share a secret key. Both units use this key for an extended length of time, sometimes indefinitely. Any eavesdropper that discovers the key may decipher all packets until the key is changed.

Signal Strength - The signal level indicates the strength of the signal as received at the wireless network interface.

SNMP (Simple Network Management Protocol) - A standard network protocol that can be used to manage networks locally, or worldwide via the Internet.

SSID (Service Set Identifier) - Is the unique name shared among all points in a wireless network. The SSID must be identical for all points in the network. It is case sensitive and must not exceed 32 characters.

Static IP Address - A permanent IP address that is assigned to a node in an IP or a TCP/IP network.

Subnet - A subnet is a logical sub-division of a Local Area Network that has been divided by means of routers or gateways. A subnet may include multiple LAN segments. Each subnet is identified by the Subnet Mask.

T

TCP/IP (Transmission Control Protocol/ Internet Protocol) - The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet). When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program just as every other computer that you may send messages to or get information from also has a copy of TCP/IP.

W

WEP (**W**ired **E**quivalent **P**rivacy) - The optional cryptographic confidentiality algorithm specified by IEEE 802.11 used to provide data confidentiality that is subjectively equivalent to the confidentiality of a wired LAN medium that does not employ cryptographic techniques to enhance privacy.

Windows workgroup - A Windows workgroup can consist of either wireless or wired network connections or a combination of the two. Usually a Windows workgroup consists of members who are related because of a shared function, e.g. members of the same department. For a Windows workgroup it is not relevant where the workgroup participants are located, since the members of a Windows workgroup are identified by their workgroup name only.

Troubleshooting

Windows Troubleshooting Tips

Many problems can easily be diagnosed using the tools provided by Microsoft Windows, such as the PING utility, Network Monitors, TELNET and FTP. Other more elaborate tools, such as LAN analysers, for example NETXRAY or Novell's LAN analyser, may also be used.

Some common problems exhibited when the Access Point has not been properly installed include:

- Windows 95/98 does not recognize the Access Point when installed.
  - Verify that Windows 95/98 Wireless LAN USB support is installed.
  - Verify the computer has a Plug and Play BIOS.
- The driver fails to load.
  - A resource conflict could exist. Use the Device Manager to resolve resource conflicts. Select the System applet from the Control Panel.
- The workstation cannot associate to the Wireless access point.
  - Verify the adaptor ESSID matches the ESSID of the Access Point.
  - Make sure that the WEP identification key and the WEP encryption are uniform for both workstation and Access Point.
- Degraded performance from the Wireless Access Point.
  - Verify a secure antenna connection on the adaptor.
- The Access Point is found in the SNMP utility, but fails to connect.
  - Refer to the section on Configuring a Temporary IP Address.

Registering your NetComm Product

To ensure that the conditions of your warranty are complied with, please go to the NetComm web site for quick and easy registration of your product at

www.netcomm.com.au

Alternatively, you can fill in the Warranty Registration Form and mail it to NetComm Limited, PO Box 1200, Lane Cove NSW 2066.

Contact Information

If you have any technical difficulties with your product, please do not hesitate to contact NetComm's Customer Support Department.

Email: support@netcomm.com.au

Fax: (02) 9424-2010

Web: www.netcomm.com.au

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Please note that the images used in this document may vary slightly from those of the actual product. Specifications are accurate at the time of the preparation of this document but are subject to change without notice.

Default Settings

IP Address: 192.168.168.10

Subnet Mask: 255.255.255.0

Community (password):   public

New Settings

IP Address: _____ . _____ . _____ . _____

Subnet Mask: _____ . _____ . _____ . _____

Community (password):   _____

Warranty Registration Form

Date of Purchase ……...…..…………..……………..….....................................

Name ……...…..……………………….……...…...................................

Company ……...…..……………………….……...…...................................

Address ……...…..……………………….……...…...................................

……………………...…..……............... Post Code ...….…..….…….……

Tel No (   ) ....…….....….……. Fax No (   )   ...….…..….…….……

E-mail ……...…..……………………….……...…...................................

The following information is vital for your warranty

Please make sure it's correct and complete.

Serial No ……...…..………………….......…….…...................................

Model ……...…..……………………….……...…...................................

Product Type:

☐ PC Card ☐ External

☐ Internal ☐ Other

! Make sure you fill this ■ section in!

I intend to use this modem at:

☐ Home ☐ School/College/University

☐ Business ☐ Government Office

Dealer's Name ……...…..……………….......…….…...................................

Dealer's Address ……...…..……………….......…….…...................................

……………………...…..……............... Post Code ...….…..….…….……

Tel No (   ) ....…….....……. Fax No (   )   ...….…..….…….……

How did you find out about our products?

……………………...…...…...…………

……………………...…...…...…………

Product Warranty

The warranty is granted on the following conditions:

1. This warranty extends to the original purchaser (you) and is not transferable;

2. This warranty shall not apply to software programs, batteries, power supplies, cables or other accessories supplied in or with the product;

3. The customer complies with all of the terms of any relevant agreement with NetComm and any other reasonable requirements of NetComm including producing such evidence of purchase as NetComm may require;

4. The cost of transporting product to and from NetComm's nominated premises is your responsibility; and,

5. NetComm does not have any liability or responsibility under this warranty where any cost, loss, injury or damage of any kind, whether direct, indirect, consequential, incidental or otherwise arises out of events beyond NetComm's reasonable control. This includes but is not limited to: acts of God, war, riot, embargoes, acts of civil or military authorities, fire, floods, electricity outages, lightning, power surges, or shortages of materials or labour.

6. The customer is responsible for the security of their computer and network at all times. Security features may be disabled within the factory default settings. NetComm recommends that you enable these features to enhance your security.

The warranty is automatically voided if:

1. You, or someone else, use the product, or attempts to use it, other than as specified by NetComm;

2. The fault or defect in your product is the result of a voltage surge subjected to the product either by the way of power supply or communication line, whether caused by thunderstorm activity or any other cause(s);

3. The fault is the result of accidental damage or damage in transit, including but not limited to liquid spillage;

4. Your product has been used for any purposes other than that for which it is sold, or in any way other than in strict accordance with the user manual supplied;

5. Your product has been repaired or modified or attempted to be repaired or modified, other than by a qualified person at a service centre authorised by NetComm; and,

6. The serial number has been defaced or altered in any way or if the serial number plate has been removed.

7. The Telephone Line Cord used with this unit must comply with the ACA Technical Standard TS008.

Limitations of Warranty

The Trade Practices Act 1974 and corresponding State and Territory Fair Trading Acts or legalisation of another Government ("the relevant acts") in certain circumstances imply mandatory conditions and warranties which cannot be excluded. This warranty is in addition to and not in replacement for such conditions and warranties.

To the extent permitted by the Relevant Acts, in relation to your product and any other materials provided with the product ("the Goods") the liability of NetComm under the Relevant Acts is limited to, at the option of NetComm to:

- Replacement of the Goods; or
- Repair of the Goods; or
- Payment of the cost of replacing the Goods; or
- Payment of the cost of having the Goods repaired.

All NetComm ACN 002 490 486 products have a standard 12 months warranty from date of purchase. However some products have an extended warranty option (refer to packaging). To be eligible for the extended warranty you must supply the requested warranty information to NetComm within 30 days of the original purchase by registering on-line via the NetComm web site at www.netcomm.com.au.

NetComm reserves the right to request proof of purchase upon any warranty claim.

AUSTRALIA CONNECTS WITH

NetComm ®

Wireless LAN Access Point

NP6800/11 MBPS IEEE 802.11b ACCESS POINT

SMALL-MEDIUM BUSINESS

SPEED, SECURITY AND FREEDOM!

Now you can create a Wireless LAN in your office or home, quickly and easily. NetComm's Wireless LAN Access Point allows you to break the chains that tie you to a desk and discover the world of secure, high-speed Wireless Networking.

Highly flexible and scaleable, the NP6800 Access Point is a key building block for a basic or sophisticated Wireless LAN that typically supports up to 35 wireless devices.*

With this NetComm Access Point base station connected to your Ethernet Network, you can maintain full LAN services to PCs, laptops or PDAs equipped with any of these wireless devices (all sold separately):

• NetComm's PCMCIA Wireless LAN Adaptor
• NetComm's USB Wireless LAN Adaptor
• NetComm's Wireless Router

To ensure its complete versatility, this NetComm Wireless LAN Access Point is compatible with any wireless LAN device adopting the International interface standard for Wireless Networking – 11Mbps IEEE802.11b.

To ensure your added security and privacy, NetComm has integrated the latest 128-bit WEP encryption technology to make sure your data is delivered intact to the user it was meant for

• Flexible Integration for Infrastructure, Client, Point & MultiPoint Bridge Modes.

• Security with the latest 128-bit WEP encryption.

• Compatibility utilising the IEEE ratified 802.11b Wireless and 802.3 Ethernet standards.

• Auto Fallback providing optimised reliability, throughput and transmission range.

* Performance will reduce as more wireless devices are connected.
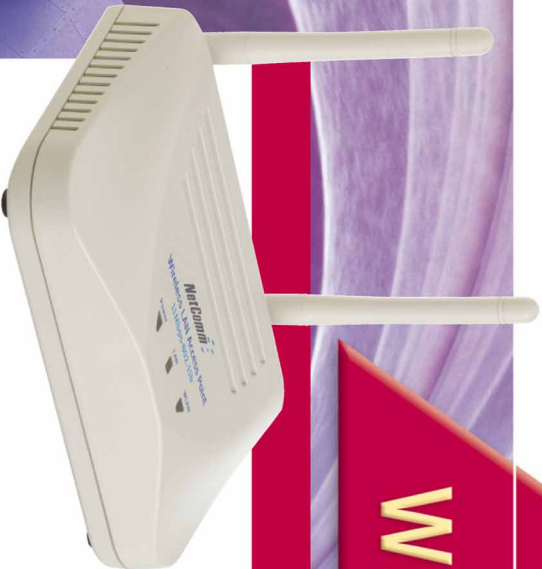
3 YEAR WARRANTY*

1 year warranty out of the box.
Extra 2 years **FREE** with online registration at www.netcomm.com.au

* Conditional upon registration online.

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