



The BreezeNET PRO.11 Configuration Utility

The BreezeNET PRO.11 Configuration utility can be used to manage BreezeNET PRO.11 APs, SAs and WBs. It is an SNMP-based (Simple Network Management Protocol) application that provides a consistent view of the wireless network. The system administrator can use the Configuration utility to control a large number of units from a single location.

Among the supported features:

- Program units with a specified IP address
- Set the SNMP Read/Write Community strings
- Verify the status of all units in the network and obtain unit information
- Configuration of parameters
- View rate and traffic counters
- Set the antenna diversity

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1. Configuration Utility Operating Conventions

1.1 Configuration Utility Main Window

The Configuration utility main window consists of two main areas, as shown in Figure 1-1.

- **The IP Address and Community Selection area** - In this area, you can perform the following:

- ⇒ Select the IP address of the unit you wish to manage
- ⇒ Assign unit IP addresses
- ⇒ Set the Configuration utility access rights
- ⇒ Set the SNMP Community string

If there are many units in the managed network, you can enlarge the list box by clicking on the horizontal line above the list; click again to toggle back the default display state. The list box also displays the Location of each unit, as set in the Station Status dialog box (see Section 3.1).

- **The Tabs area** - This area consists of several tabs, each corresponding to a dialog box containing parameters required for the management of the selected unit; the number of tabs displayed varies between the type of managed unit. The different tabs are described in the following sections. When you switch between the tabs, the IP Selection area with the selected unit address remains displayed.

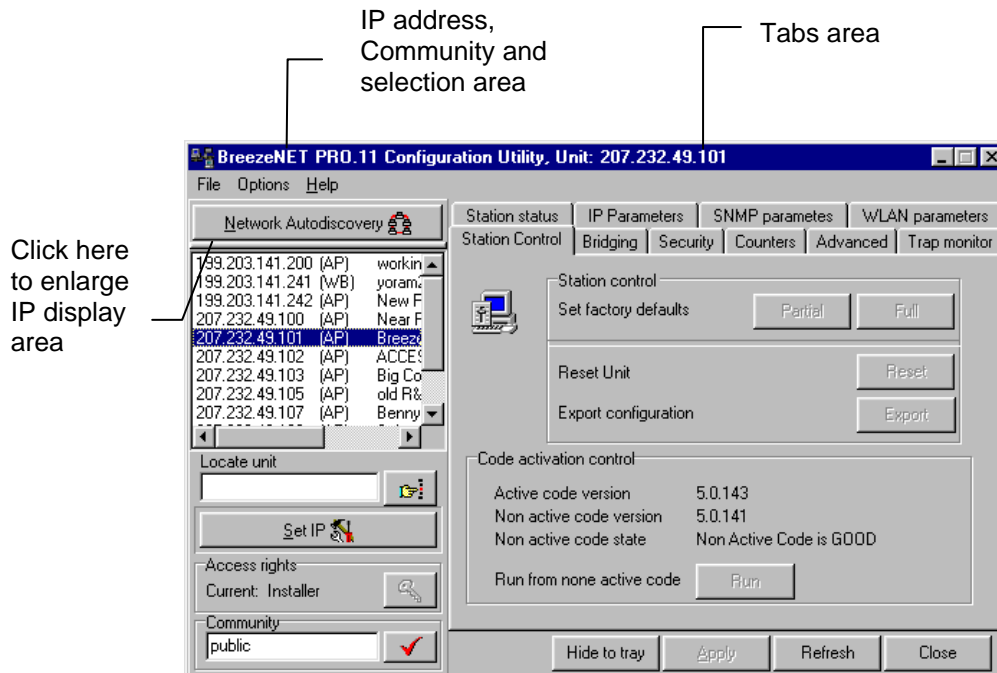



Figure 1-1. Configuration Utility Window (Station Control Tab)

1.1.1 Selecting Units

You can select a unit to manage in one of the following ways:

1. Click the **Network Autodiscovery** button. All the current units IP addresses (under the selected community) are displayed in the list box underneath the button. Click on an address to select the corresponding unit for viewing and configuration.
2. For stations, which are located behind a router, type the unit's address in the *Locate Unit* field and click .

1.1.2 Setting the Access Rights

The Configuration utility has three access levels, each intended for a different type of user. The access level determines the parameters, which can be set by the operator. The access levels are *Technician* (highest level), *Installer* and *User* (lowest level, at which parameters can only viewed and not set). This User's Guide describes operation at the Installer level.

The access level to which the Configuration Utility is currently set is displayed in a read only field.

To change the access level, click the  button. The following dialog box is displayed.



Figure 1-2. Access Rights

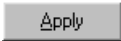
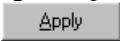

Select the access level, enter the password and click . Table 1-1 lists default passwords. You can change the password for each access level by entering the New Password and clicking .

Table 1-1. Default Passwords

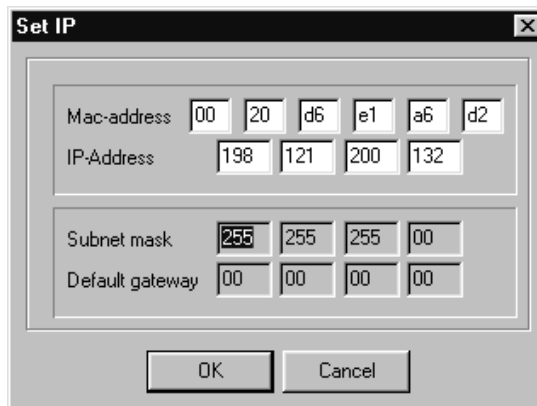
Access Rights	Password
User	No password needed
Installer	user

1.1.3 Setting the SNMP Community Information

Type the known Read/Write Community string in the **Community** field (the default string is Public for read and Private for read/write) and click the  button to confirm.

1.1.4 Assigning and Editing IP Addresses Manually

1. Click the  button. The Set IP dialog box is displayed.





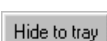


*Figure 1-3. The Set IP Dialog Box*

2. Type the parameters in the appropriate fields and click **OK**; the MAC address is written underneath the unit. A message box is displayed notifying you when the changes are to take affect. This feature can be used only if the Manager is on the same Ethernet segment as the unit and not behind the router.

Note: *In order to see the unit after assigning the IP address, the PC with the Configuration utility should be on the same IP subnet as the assigned IP address.*

1.1.5 Main Window Control Buttons

All Configuration utility windows contain the following buttons. Additional buttons, specific to certain windows, are explained when relevant.

-  – Implements any changes you made and closes the window.
-  – Closes the window without implementing any changes you made.
-  – Implements any changes you made but leaves the window open.
-  – Refreshes the window with the most recent data from the unit.
-  – Minimizes the application into the  icon, placed in the Windows task bar (at the bottom of the Windows desktop). To restore the application, double click the  icon.

2. Configuration Utility Options

There are several options you can choose that determine the Configuration utility operation mode; these options are chosen via the Options menu in the configuration utility main window (shown below). The selected option(s) is indicated by a check mark next to the option in the menu.



- Unit Configuration - this is the default mode; used for setting parameters as detailed in this manual.
- Firmware Upgrade - allows upgrading the embedded software in managed units; refer to Section 2.1.1 for instructions on using this feature.
- Multiple Configuration - allows downloading configuration parameters to multiple units simultaneously; refer to Section 2.1.2 for instructions on using this feature.
- Trap Quick View - when set to this mode, the PC station (if set as the trap host as described in Section 3.3) switches automatically to the Trap Monitor tab (described in Section 3.9) when the Configuration utility is active.
- Reset Progress Bar - when this option is enabled, a progress bar is displayed whenever an Apply operation is made; while the progress bar is displayed, no configuration operations can be made. remove this option to allow additional operations while operations are in progress.

2.1.1 Firmware Upgrade

This option allows upgrading the embedded software in managed units. When you select this option from the Options menu, the following dialog box is displayed.

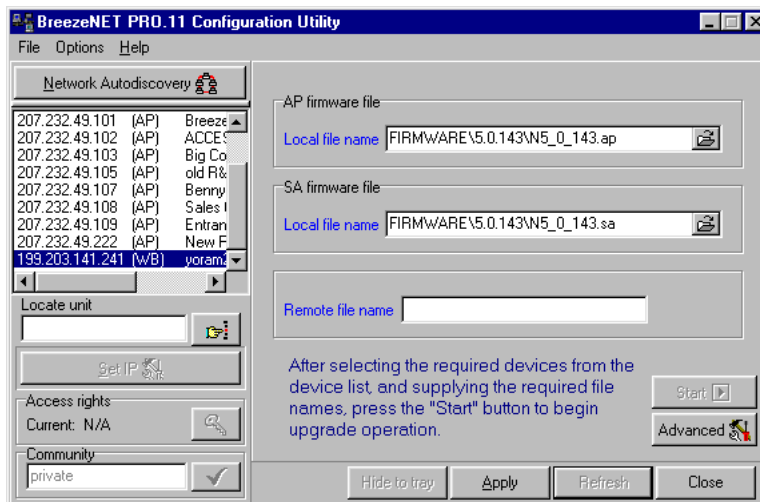



Figure 2-1. Firmware Upgrade

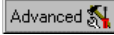
The list box on the left-hand side of the dialog box displays the managed units; its is sorted sequentially by APs and SA/WB units.

Select the units which you wish to upgrade from the list box. Use Shift-click and/or Ctrl-click to select multiple units, or select multiple units by dragging with the mouse.

Specify the firmware file you wish to use in the *Local file name* fields; there are separate fields for the AP and SA/WB files. The field text is displayed in blue when corresponding unit types are selected in the list box.

In the Remote File Name field, enter the community string for reading/writing to/from the unit(s).


Click  to initiate the firmware upgrade; a progress bar is displayed indicating the progress of the operation. If SA/WB and AP units are selected, the program upgrades SA/WB units first.

Click  to change the settings of the TFTP session used in the upgrade download.

2.1.2 Multiple Unit Configuration

This feature allows downloading configuration parameters to multiple unit simultaneously. When you select this option in the Options menu, all configuration windows become write-only (with some of the parameters grayed out if not relevant).

Select the units which you wish to upgrade from the list box on the left-hand side of all dialog box tabs. Use Shift-click and/or Ctrl-click to select multiple units.

Enter the configuration parameter values and click . The following dialog box is displayed.

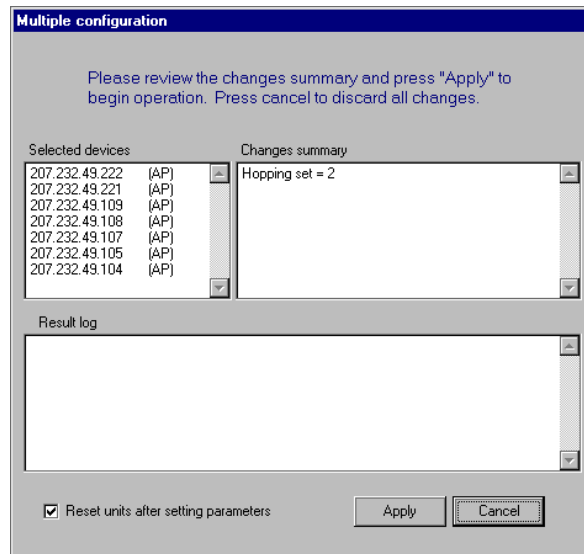



Figure 2-2. Multiple Configuration

This dialog box displays the selected units and displays a list of the requested configuration changes to be made in the multiple configuration session. Check the  box to reset all affected units.

A log of the multiple configuration session is displayed during and after the operation.

3. Utility Configuration Windows

3.1 Station Status Tab

The Station Status tab displays general information regarding the unit's firmware and hardware versions, and general unit address information.

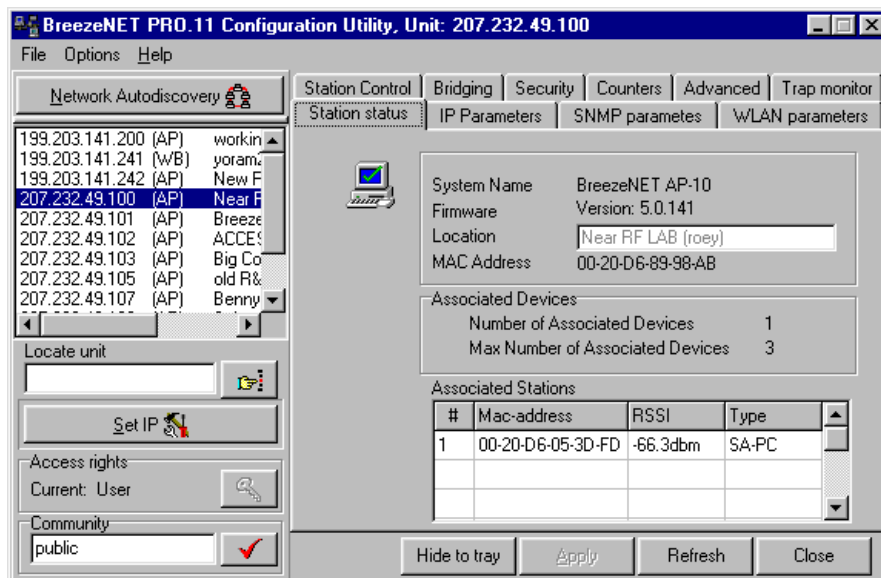


Figure 3-1. Station Status Tab

- **System Name** - The name of the selected unit.
- **Firmware** - The current firmware version.
- **Location** - Location of the selected unit.
- **MAC Address** - MAC address of the selected unit.
- **BSS Address** (displayed for SA and WB units only)- This defines the BSS address, which is the AP that the unit is associated with.
- **Station Status** (displayed for SA and WB units only)- Displays the association status of the unit, which can be *Associated* or *Scanning*.

- **Number of Associated Devices** (displayed for AP units only) - Displays the number of SA/WB units that were associated with the AP since last reset.
- **Max Number of Associated Devices** (displayed for AP units only) - Displays the maximum number of SA/WB units that were associated with the AP since last reset. This value can differ from the previous parameter (Number of Associated Devices); for example, if there are several APs configured in load sharing mode, or if stations are roaming to another AP, this parameter will be greater than the previous one.
- **Associated Stations** - This list displays a list of the stations currently associated with this AP, together with the following information for each of the associated stations: the MAC address, the Received Signal Strength Indicator (RSSI) level and the station type (model, e.g., SA-40).

3.2 IP Parameters Tab

The IP parameters tab allows you to define or edit the IP parameters of units.

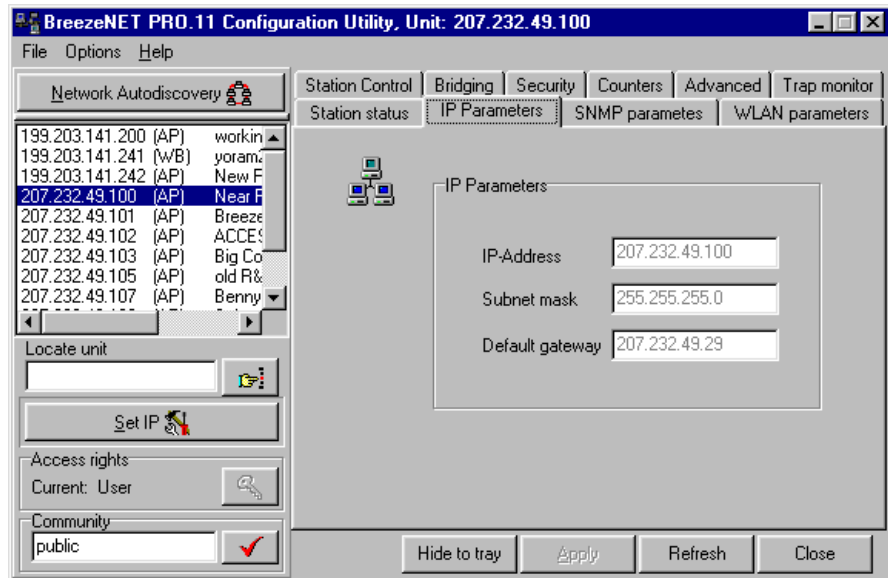


Figure 3-2. IP Tab

- **IP Address** - The IP address of the selected unit.
- **Subnet mask** - The Subnet mask of the selected unit.
- **Default gateway** - The default gateway of the selected unit.

3.3 SNMP Parameters Tab

The SNMP parameters tab allows you to define or edit the SNMP community strings and the SNMP-related parameters.

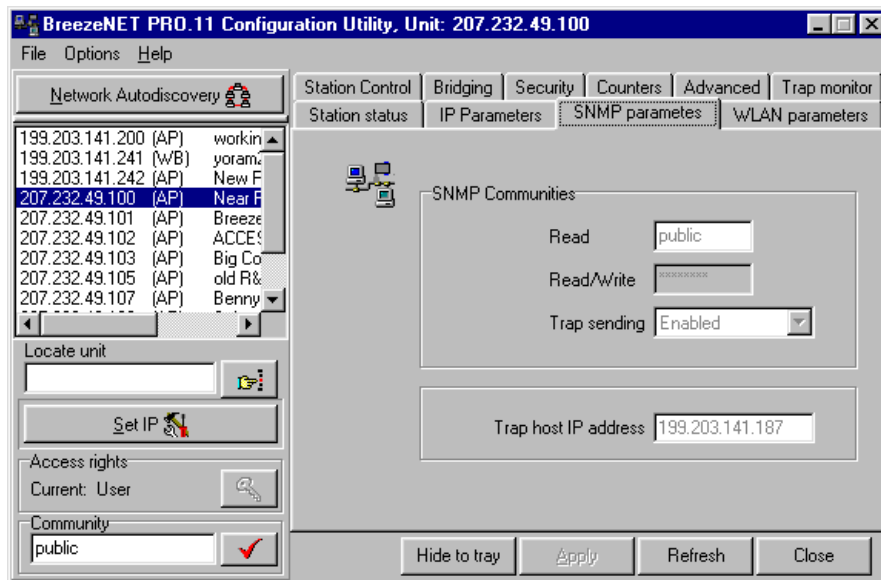


Figure 3-3. SNMP Parameters Tab

- **Read** - The read only community string of the unit.
- **Read/Write** - The read/write community string of the unit.
- **Trap Sending** - Set this field to Enabled if you wish the selected unit to send SNMP traps.
- **Trap host IP address** - If the previous field is set to Enabled, enter the IP address of the host PC to which the traps are to be sent.

3.4 WLAN Parameters Tab

The WLAN parameters tab allows you to define or edit parameters related to the Wireless LAN environment in which the selected unit is operating.

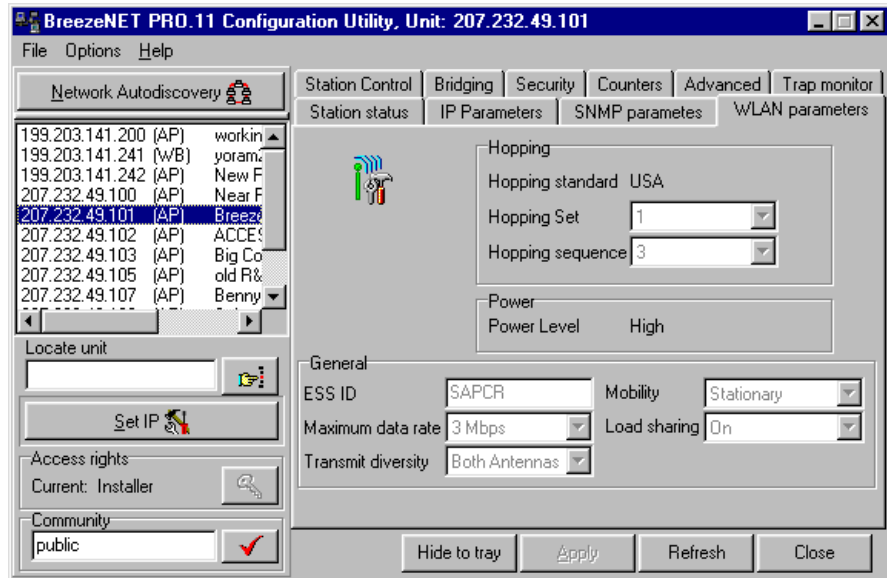


Figure 3-4. WLAN Parameters Tab

- **Hopping Set** - Select a value between 1 and 3. Hopping sequences are grouped in several hopping sets. Always use the same hopping set per site.

The number of hopping sequences per set is different for each hopping standard according to Table 3-2.

Table 3-2. Hopping Sequences

Hopping Standard	Number of Sequences per Hopping Set
Netherlands	5
Europe ETSI	26
France	11
US FCC	26
Japan	4
Australia	20
Israel	11
Canada	10
Europe ETSI (DE Model)	10
Korea	4
Spain	9

- **Hopping Sequence** - Hopping sequence of the unit. A hopping sequence is a pre-defined series of channels (frequencies) that are used in a specific, pseudo-random order as defined in the sequence. The unit “hops” from frequency to frequency according to the selected sequence. When more than one AP is co-located in the same area (even if they are not part of the same network) it is recommended to assign a different hopping sequence to each AP.

Hopping sequences are grouped in three hopping sets (see the following parameter). When setting up multiple APs in the same site, always choose hopping sequences from the same hopping set. This reduces the possibility of collisions on the WLAN.

Both the Hopping Set and Hopping Sequence parameters are set only for the BreezeNET PRO.11 Access Point. It is not accessible from any other BreezeNET PRO.11 unit. During the association process, all other stations learn the hopping sequence from the Access Point. Different co-located WLAN segments should use different hopping sequences.

- **Power level** – A read only field which displays the output power level at which the unit is transmitting. There are two possibilities, Low or High at the antenna connector.

- **ESS ID** - An ASCII string of up to 32 characters used to identify a WLAN that prevents the unintentional merging of two co-located WLANs. A station can only associate with an AP that has the same ESSID. The ESSID field is case-sensitive.
- **Maximum data rate** - Maximum data rate of the unit. BreezeNET PRO.11 units operate at 1 Mbps, 2 Mbps or 3 Mbps. The unit adaptively selects the highest possible rate for transmission. Under certain conditions (compatibility reasons or for range/speed trade-off) you may decide to limit the use of higher rates.
- **Transmit Diversity** - Which antennas are used for transmission. During reception, a BreezeNET PRO.11 unit dynamically selects the antenna where reception is optimal. In contrast, the unit selects the antenna from which it will transmit before transmission. It usually uses the antenna last used for successful transmission. In models with external antennas, sometimes only a single antenna is used. In this case, Transmit Antenna should be configured to transmit only from that single antenna. Similarly, models using a booster or an LNA use only a single antenna for transmission. There are three possibilities for configuration:
 - * Use Two Antennas
 - * Use Antenna No. 1 only
 - * Use Antenna No. 2. only
- **Mobility** - BreezeNET PRO.11 stations optimize their roaming algorithms according to the mobility mode parameter. For example, a stationary station is more tolerant of bad propagation conditions. It assumes that this is a temporary situation and is not caused by the station changing position. Initiating a roaming procedure in such a case would be counter-productive.

In general, wireless stations can be used in one of three mobility modes:

- * **High (Mobility)** – Type **2** for stations that may move at speeds of over 30 km per hour.
- * **Medium (Mobility)** – Type **1** for stations that may move at speeds of over 10 km per hour, but not over 30 km per hour.
- * **Low (Mobility)** -Type **0** for stations that will not move at speeds of over 10 km per hour. Stationary is the default value, and in almost all cases this is the best choice.

- **Load Sharing** - Set this feature ON or OFF. When installing a Wireless LAN network in a high-traffic environment, you can increase the aggregate throughput by installing multiple APs to create co-located cells. Load Sharing allows the wireless stations to distribute themselves evenly among the APs to best divide the load between the APs.

Note: When working in Load Sharing mode, both the APs and the units should be configured to Load Sharing Enabled.

- **Preferred AP** (SA and WB units only) - You can configure a station to prefer a specific AP unit. When the station powers up, it will associate with the preferred AP even if the signal from that AP is lower than the signal from other APs. The station will roam to another AP only if it stops receiving beacons from the preferred AP.

3.5 Station Control Tab

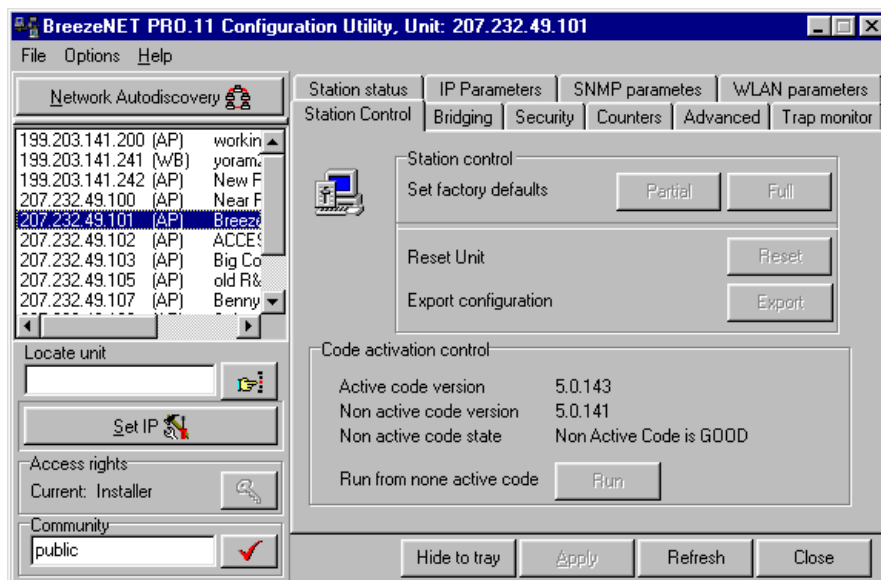





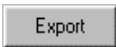
Figure 3-5. The Station Control Tab

Set Factory Defaults- These options revert system parameters back to original factory default settings. There are two options:

Click the  button for all parameters to revert to defaults, except for Japan Call Sign (if applicable), IP Address, Subnet Mask, Default Gateway, Hopping Sequence, Hopping Set, ESSID, Transmit Diversity, Long Range, Preferred AP, IP Filtering, Hopping Standard, Power Level, Auto Calibration, Encapsulation, WEP Attributes, Authentication Algorithm, Pre-authentication, WEP Default Keys, Ethernet Disable, Trap Host Addresses.

Click the  button for all parameters to revert to defaults except for Japan Call Sign (if applicable) and Hopping Standard..

Reset Unit - Click the  button to reset the BreezeNET PRO.11 unit and apply any changes made to the system parameters.

Export - Click the  button to export the current basic configuration of this unit to a file. A popup window is displayed prompting you to specify the name of the file.

Code Activation Control - The BreezeNET firmware includes a two-code mechanism which allows the user to revert back and forth between the currently installed versions of the unit. One version is assigned as Active code, the second version is assigned as Non-Active code. The first three read only fields display information about the firmware versions and the status of the Non-active code.

Click  to run the firmware from the Non-active code.

3.6 Security Tab

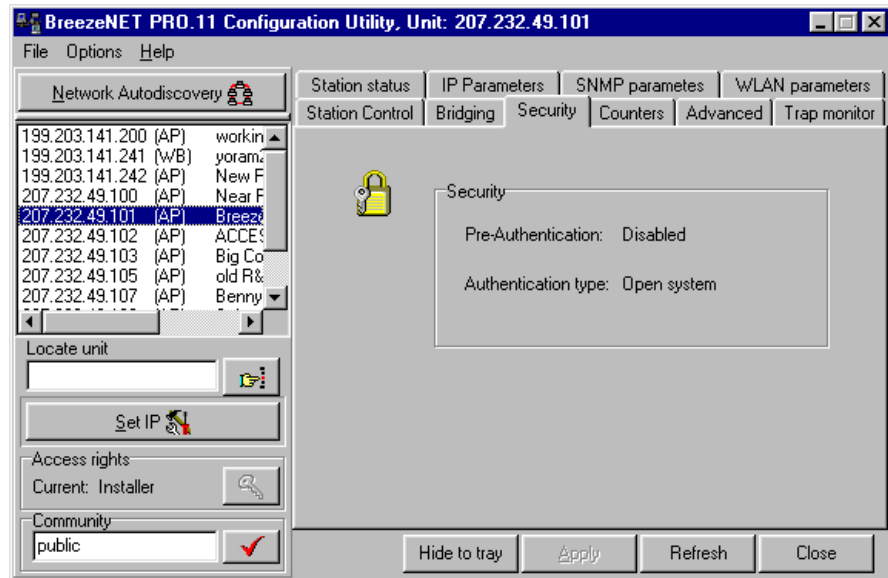


Figure 3-6. Security Tab

This window displays the following read only information, regarding the security configuration of the unit. Wired Equivalent Privacy (WEP) is an authentication algorithm which protects authorized Wireless LAN users against eavesdropping, and is implemented in BreezeNET PRO.11 units. The definition of WEP is defined in the 802.11 standard.

- **Pre-authentication** –This parameter is usually Enabled when there is a great deal of roaming between the AP's.
- **Authentication Type** – BreezeNET PRO.11 units operate in two modes: Open System (default) which is equivalent to no authentication or Shared Key authentication (for systems that have the privacy option implemented).

3.7 Advanced Tab

The Advanced tab, which varies depending on the type of selected unit, provides additional performance information.

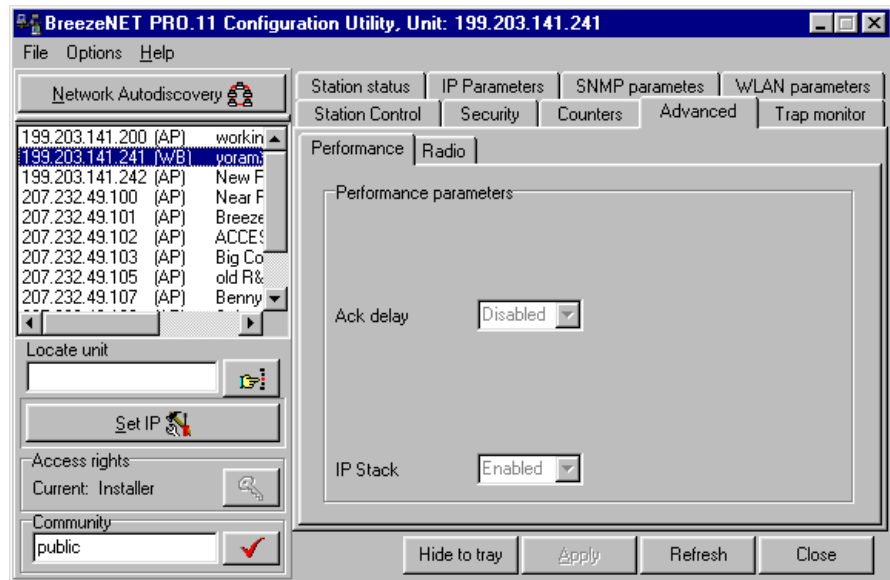


Figure 3-7. Advanced - Performance Tab (SA and WB Units)

- **Ack Delay** - Enlarges the range of system but can only be enabled for links above 20kms. It must be enabled on both sides.
- **IP Stack** – By default this parameter is enabled. If disabled it will improve performance but you will have NO access to the unit via the network. In order to re-enable you will need to connect with the monitor cable.

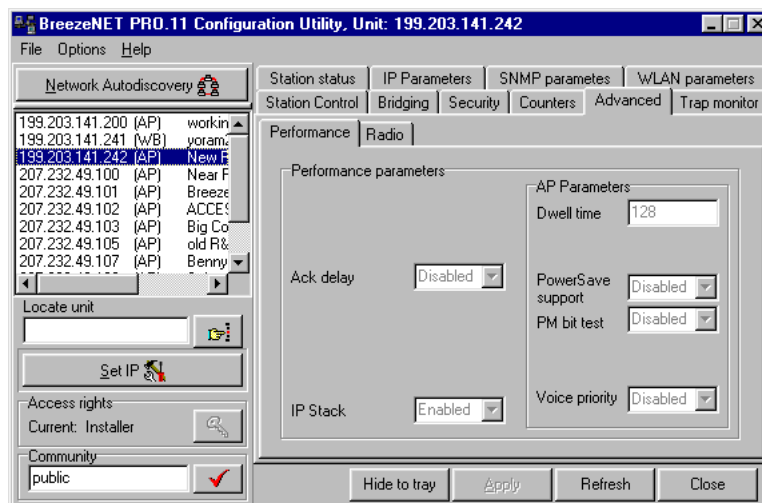


Figure 3-8. Advanced - Performance Tab (AP Units)

- **Ack Delay** - Enlarges the range of system but can only be enabled for links above 20kms. It must be enabled on both sides.
- **IP Stack** – By default this parameter is enabled. If disabled it will improve performance but you will have NO access to the unit via the network. In order to re-enable you will need to connect with the monitor cable.
- **Dwell Time** – The time spent on a radio channel before hopping to the next channel in the sequence.
- **Power Save Support** – If you enable Power Save Support on one of the WLAN stations (SA-PCR only), you must also configure the AP unit. Power Save Support is influenced by two parameters:
 - * **DTIM interval** on the AP side – Determines at which interval the AP will send its broadcast traffic (default 4 beacons).
 - * **Listen interval** on the SA-PCR side – Determines when the station will “wake up” to listen to Unicast packets which are destined to it (default value: 4 beacons).
- **PM bit test** – Specifies whether the AP supports the IEEE802.11 Power Save mode (when the parameter is enabled) or BreezeCOM's proprietary Power Save mode (when the parameter is disabled).
- **Voice Priority** – When enabled, the AP gives priority to SpectraLink voice packets.

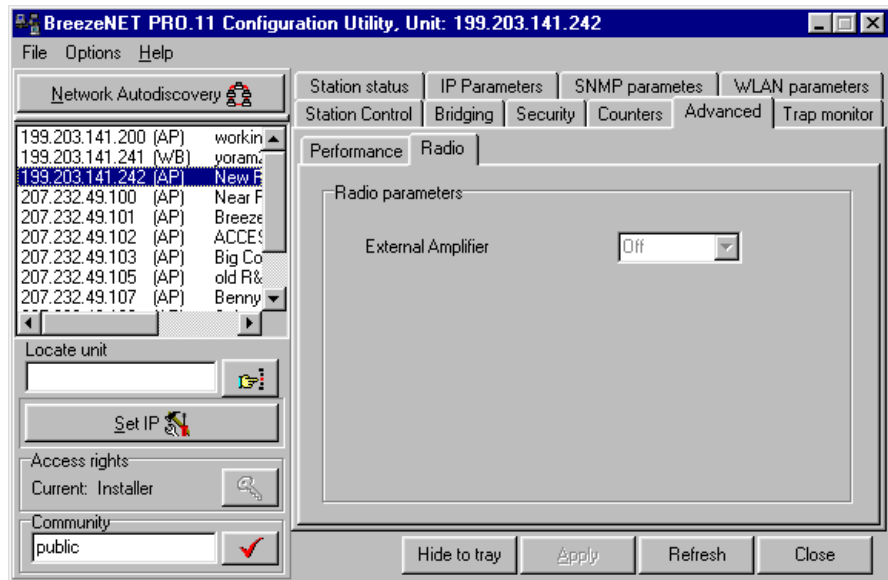


Figure 3-9. Advanced - Radio Tab

- **External Amplifier** – Set to on when using the unit is connected to an AMP2440 bi-directional amplifier or LNA-10 receiver amplifier.

3.8 Counters Tab

The Counters window has two tabs: Rate Counters and Traffic Counters.

3.8.1 Rate Counters

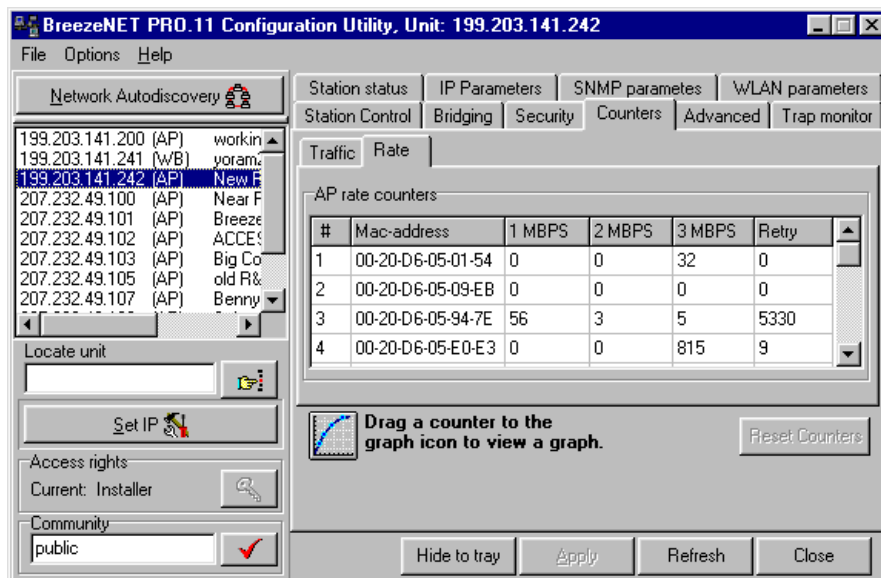


Figure 3-10. Counters - Rate Tab

The table at the center of the window displays the contents of packets at each rate. APs display counters per station. Rate counters display the number of frames transmitted in each data-rate since the last reset. As displayed, the rate counters show the number of frames transmitted at 1Mbps, 2Mbps, 3Mbps, and the number of Re-Transmitted frames (Ret). The counters display the rate of packets transmitted for the first time only (without retransmissions).

Note: Counters for APs are displayed for all associated stations, indicated by their MAC address. Rate counters for stations are displayed with no indication of MAC address.

Checking the rate counters is the best way to determine which data-rate is the optimal data-rate for the unit. It is recommended to restrict the **Maximum Data Rate** for each unit (set in the WLAN Parameters tab described in Section 3.4) according to the Rate counters.

3.8.2 Traffic Counters

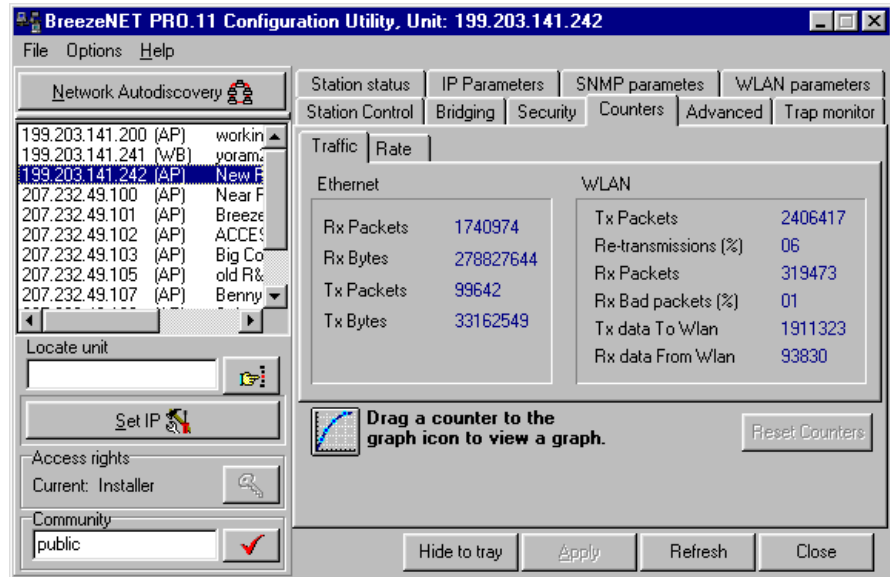


Figure 3-11. Counters - Traffic Tab

Select a counter and drag it to the  icon to view the graph. This window displays two types of counters: Ethernet counters and WLAN counters.

3.8.3 Ethernet Counters

Ethernet counters display statistics about the unit's Ethernet port activity.

The unit receives Ethernet frames from its UTP port and forwards them to its internal bridge, which decides whether or not to transmit them to the Wireless LAN. The units have a smart hardware filter mechanism which filters most of the frames on the LAN, and hardware filtered frames are not counted.

On the other side, frames which were received from the wireless LAN and some frames generated by the unit (answers to SNMP queries and pings which reached to the unit via the UTP port), will be transmitted to the UTP port.

Available counters:

- **Rx Packets**– Total number of packets received from the Ethernet port.
- **Rx Bytes** – Total number of bytes received from the Ethernet port.
- **Tx Packets** – The number of packets transmitted by the unit to the UTP port. i.e., frames that have been received from the Wireless side, and frames generated by the unit itself.
- **Tx Bytes** - The number of bytes transmitted by the unit to the UTP port.

3.8.4 Wireless LAN Counters

Wireless counters display statistics about the unit's Wireless LAN activity.

Transmission to the wireless media includes data frames received from the UTP ports, as well as self generated control and management frames. When a data frame is transmitted, the unit will wait for an acknowledge from the receiving side. If an acknowledge is not received, the unit will retransmit the frame until it gets an acknowledge (there are no retransmissions for control frames). If the unit has retransmitted a frame for the maximum number of retransmissions it will stop re-transmitting the frame and drop this frame.

Available counters:

- **Tx Packets**– The total number of frames transmitted successfully, not including retransmissions.

Note: *An AP continuously transmits a control frame called beacon in every frequency to which it hops, in order to publish its existence and keep its associated stations synchronized. Thus, the total transmitted frames counter will get high values even if the AP-10 is not connected to an active LAN.*

- **Re-transmissions (%)** – total number of frames retransmitted. Percentage of frames retransmitted from the total number of transmitted frames.
- **Rx Packets** – The number of frames received from the wireless media. The count includes data and control frames (including beacons received from AP's).
- **Rx Bad Packets (%)**– The percentage packets received from the WLAN with errors.
- **Tx data to WLAN** – The number of data frames sent to the wireless media.
- **Rx data from WLAN** – The number of data frames received from the wireless media.

3.9 Trap Monitor Tab

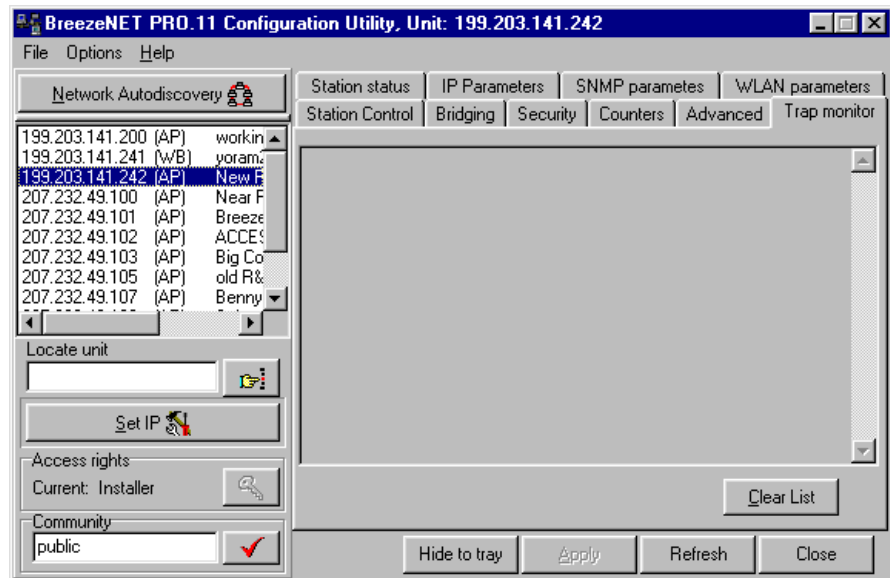


Figure 3-12. Trap Monitor Tab

When an event occurs, a trap is sent to the defined host address (the setting is made in the SNMP Parameters tab described in Section 3.3). This window displays the recorded traps.

Click the  button to clear the display area.

3.10 Bridge Tab

Note: This tab is only displayed for AP units; it is not displayed for SA and WB units.

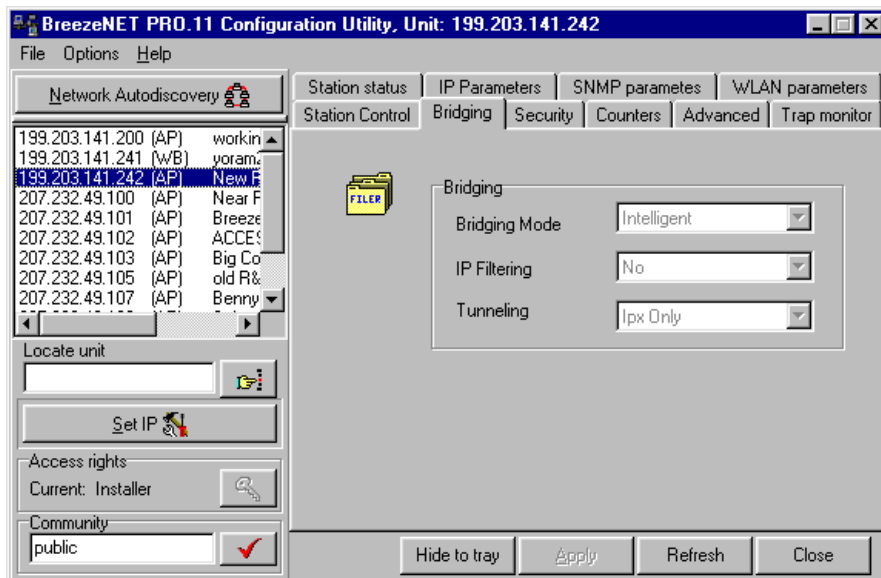


Figure 3-13. Bridge Tab

- **Bridging Mode**– The options are:

Note: When connecting very large networks, it is recommended to set this parameter to *Forward Unknown*.

- * **Reject Unknown** –Allows transmission of packets only to stations that the AP knows to exist in the Wireless LAN (behind the Wireless Bridge).
- * **Forward Unknown** –Allows transmission of all packets except those sent to stations that the AP recognizes as being on its wired Ethernet side.

- * **Intelligent Bridging Period** – Intelligent bridging enables smooth roaming of WB-10 units. When intelligent bridging is enabled, the AP goes into a special bridging mode for a fixed amount of time whenever a wireless bridge (WB) roams into its area. This mode causes the AP to forward packets destined for the stations behind the WB-10 even though they are unknown (except that no learning of the wired LAN will take place). Afterwards, the AP will switch back to Reject Unknown bridging mode. This procedure prevents packets destined for stations behind the bridge from getting lost. The value of this parameter is the length of time in seconds that the AP will remain in special mode.
- **IP Filtering** – Whether IP filtering is enabled for the unit. Enable IP Filtering to filter out any other protocol (such as IPX) if you want that only IP traffic will pass through the WLAN.
- **Tunneling** – Whether the unit performs tunneling. Enable AppleTalk tunneling if the network contains a mix of Ethertalk1 (ET1) and Ethertalk2 (ET2) stations to ensure smooth communications. Enable IPX tunneling if IPX protocol is running over your network. Be sure to set all units to the same tunneling setting.