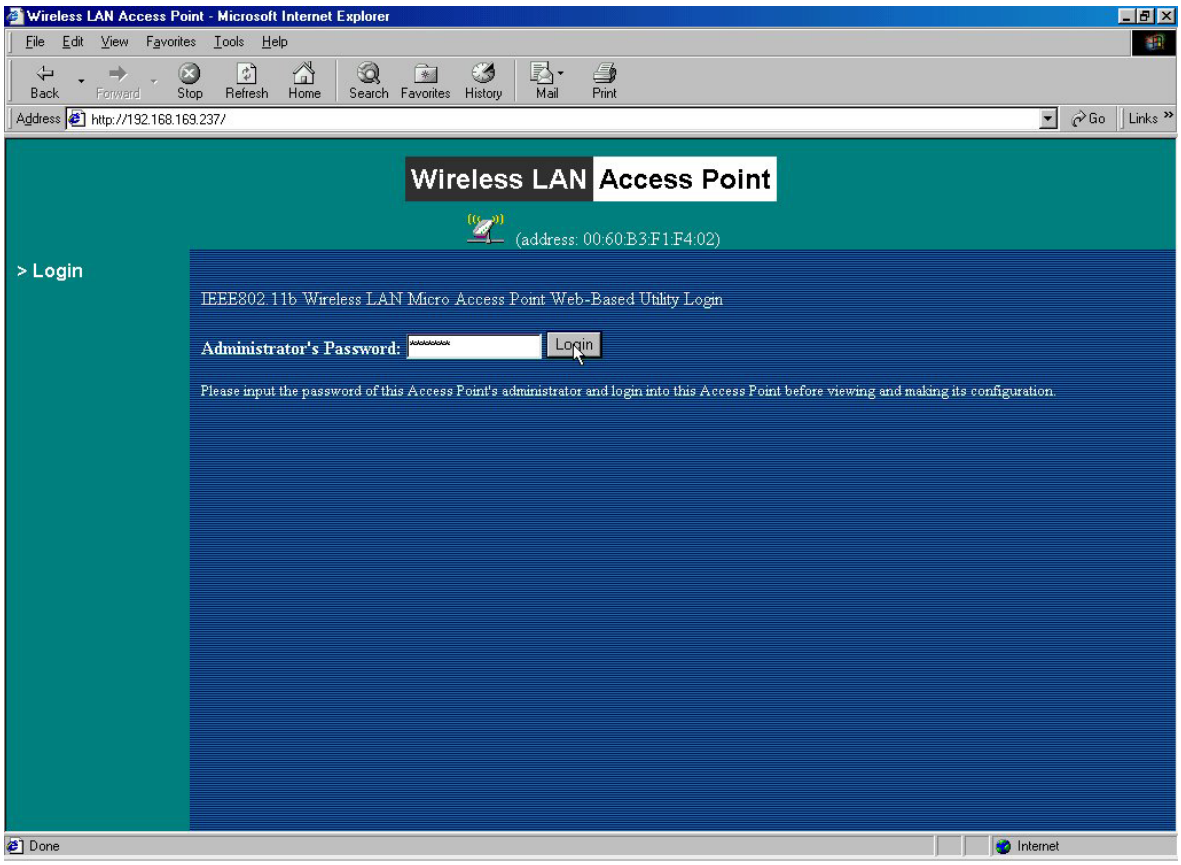
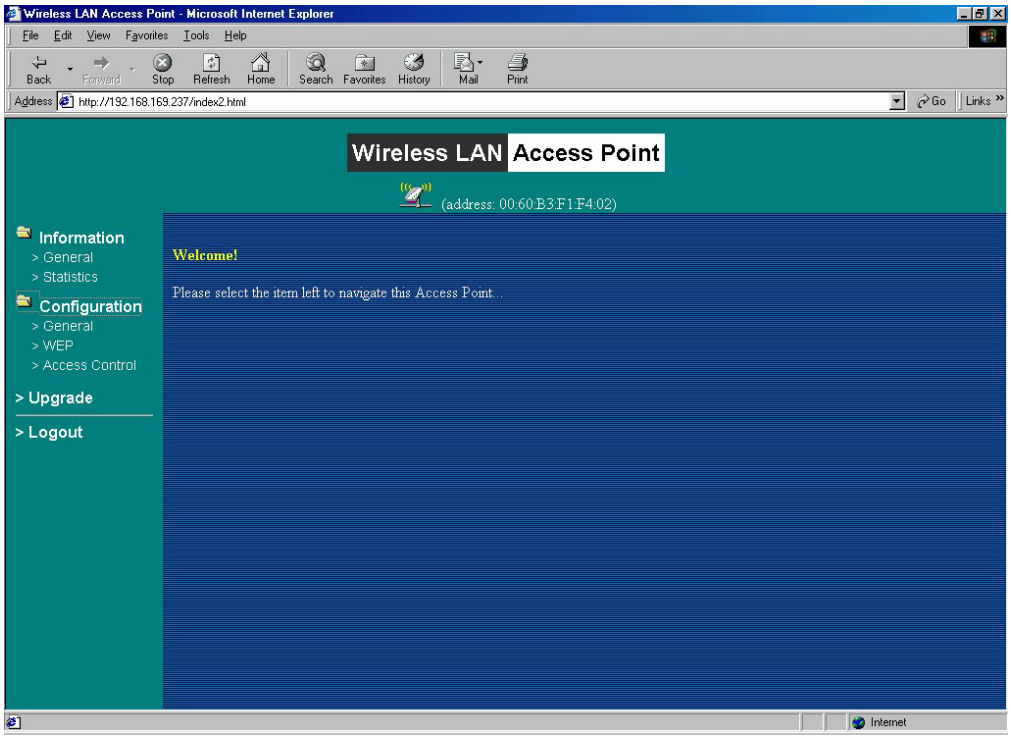
3-2 Using the Web Management

The built-in Web Management provides you with a user-friendly graphical user interface (web pages) to manage your FastLinc 810Es. An AP with an assigned IP address (***the default address is 192.168.1.1***) will allow you via web browser (e.g., Netscape Navigator 3.0 ~ 4.5 or MS Internet Explorer 4.0) to monitor and configure the FastLinc 810E.

1. Open your web browser.
2. Enter the IP address of your FastLinc 810E in the Address field (***the default address is 192.168.1.1***). You will have access to the **FastLinc 810E Web Pages** of the FastLinc 810E Modem.



3. Enter the password to login to the FastLinc 810E. The default password is **default**. The main page will show up.

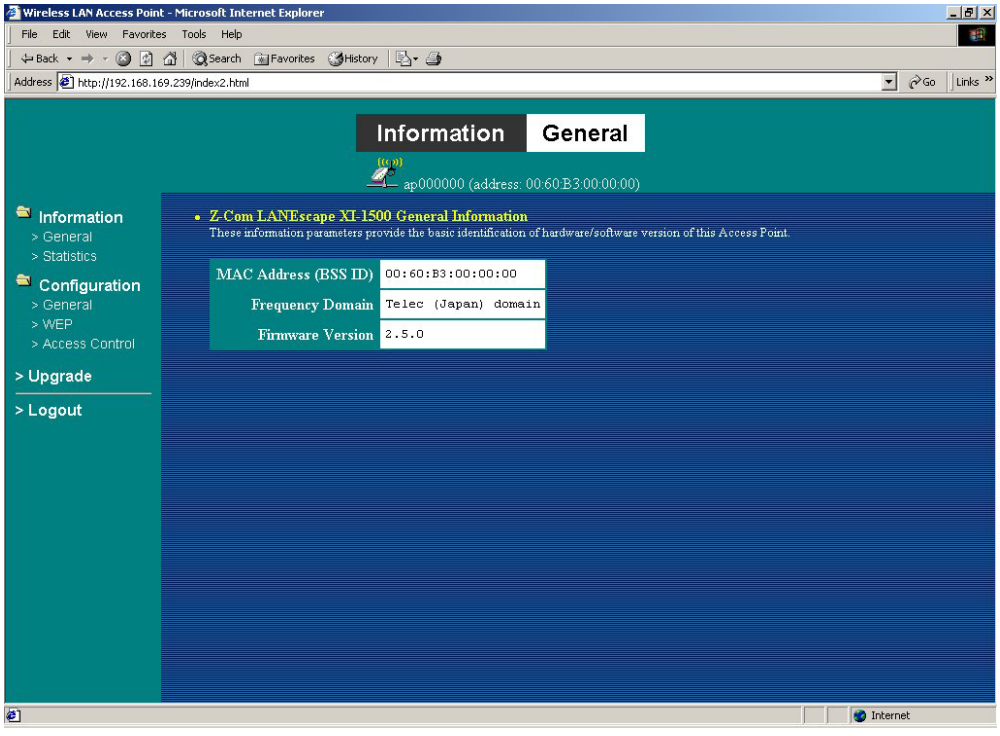


The FastLinc 810E main page contains two items for you to manage your FastLinc 810E Modem.

Information

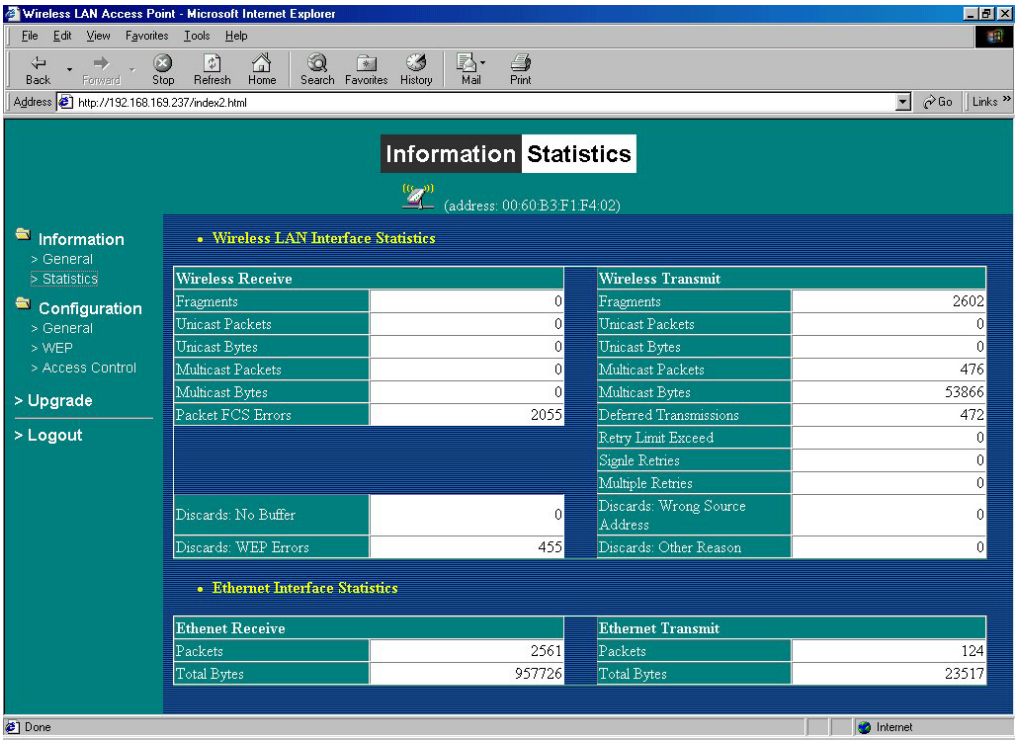
General

This item displays the general information of the FastLinc 810E such as the MAC address, Frequency Domain, and Firmware Version.



Statistics

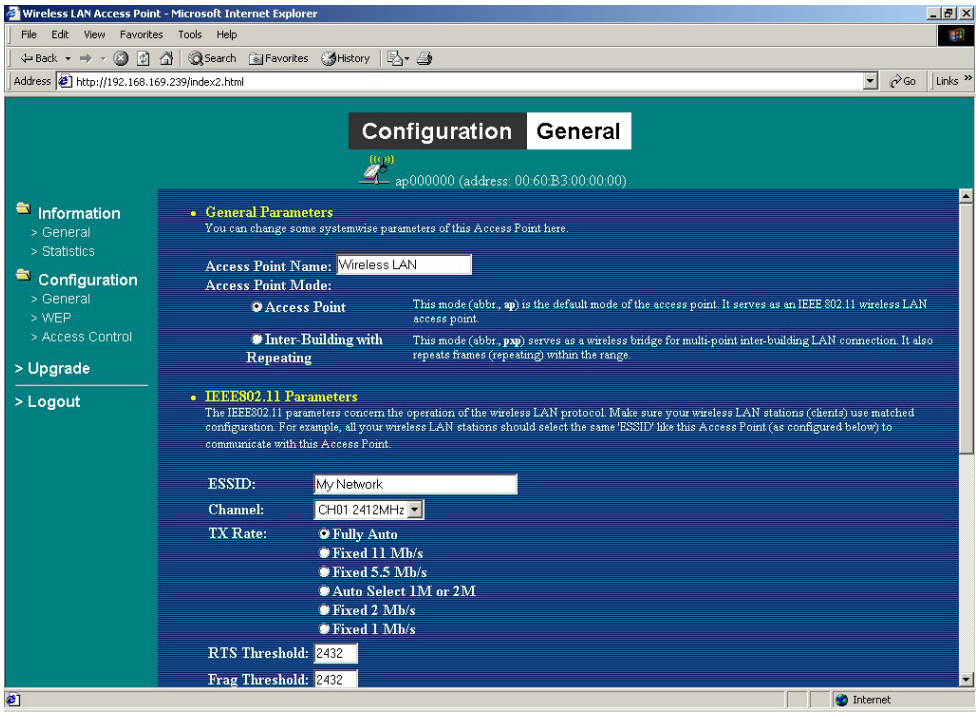
This item displays the Ethernet and wireless network traffic.



Configuration

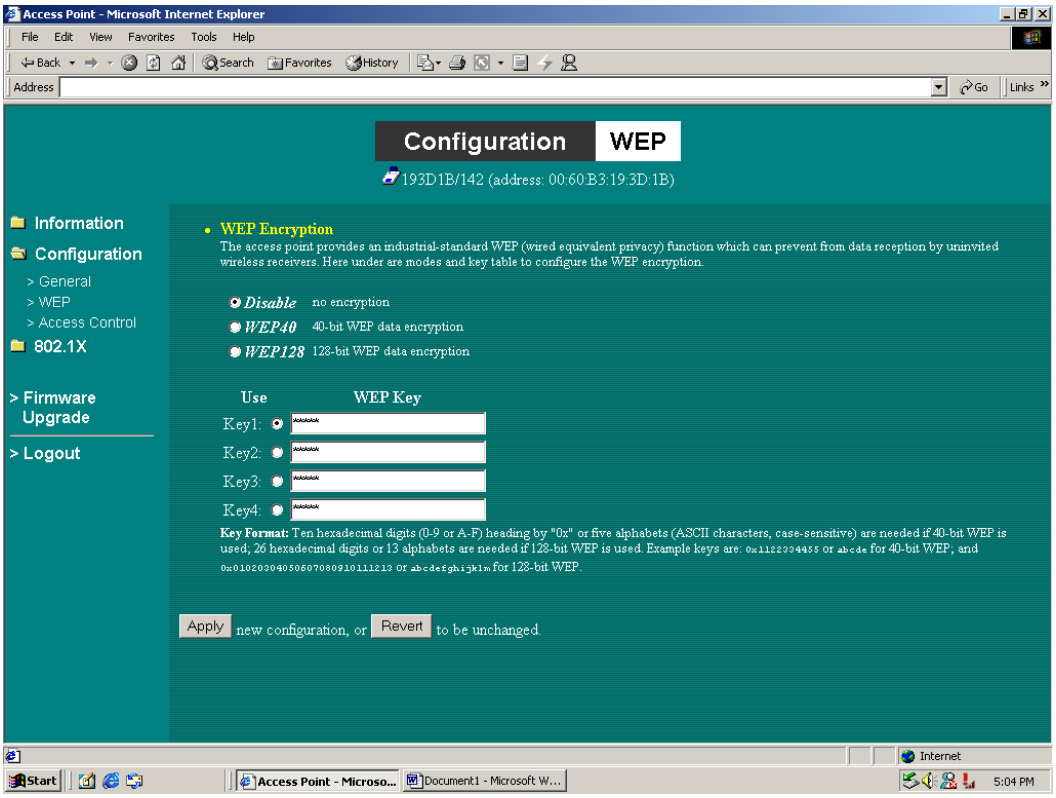
General

You may make the settings on the FastLinc 810E such as AP mode, ESSID, channel, RTS threshold, fragment threshold and password.



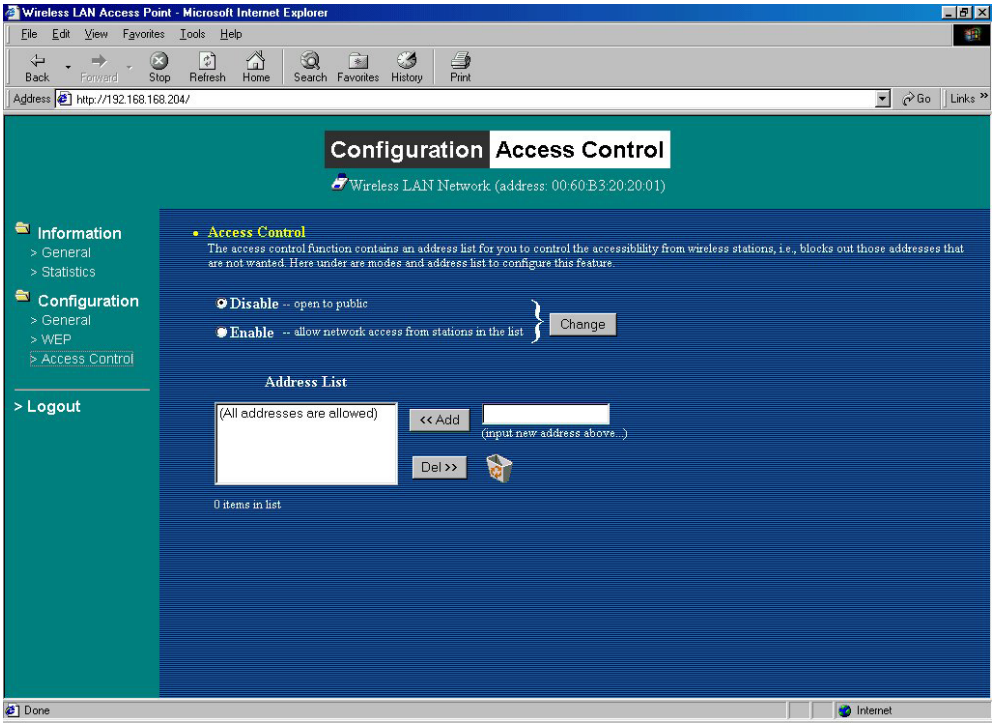
WEP

To prevent unauthorized wireless stations from accessing data transmitted over the network, the FastLinc 810E Modem offers WEP (Wired Equivalency Privacy). You can set up 4 encryption keys but choose one key to encrypt your data.



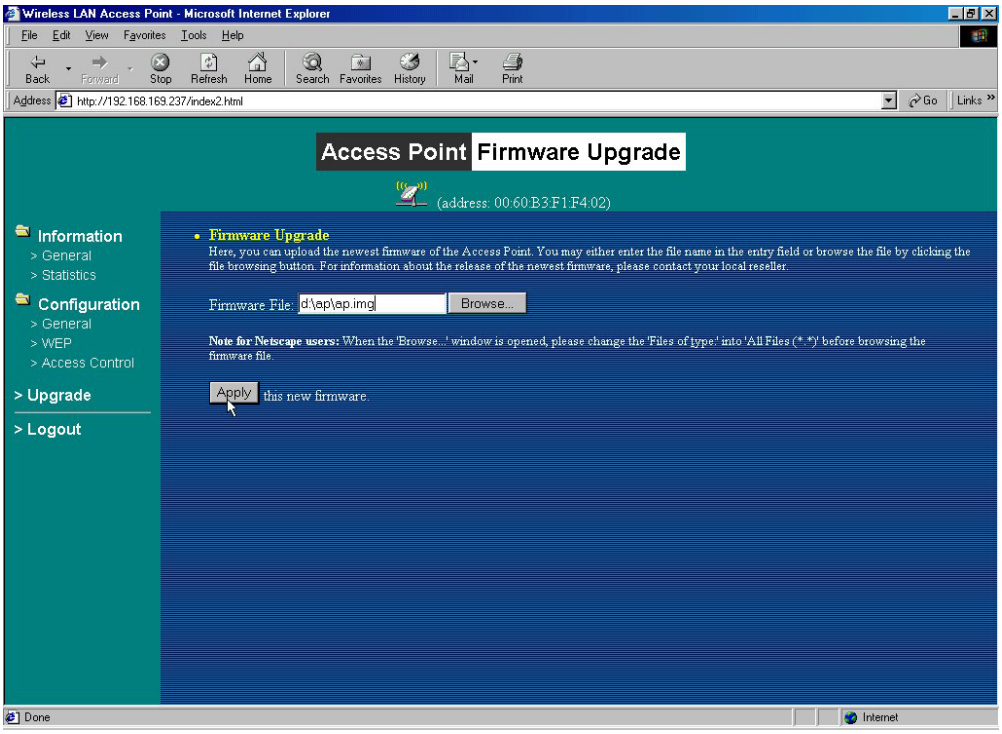
Access Control

The Access Control Table enables you to restrict wireless stations accessing the FastLinc 810Es by identifying the MAC address of the wireless devices.



Upgrade

Here, you can upload the newest firmware of the FastLinc 810E. You may either enter the file name in the entry field or browse the file by clicking the **Browse** button.

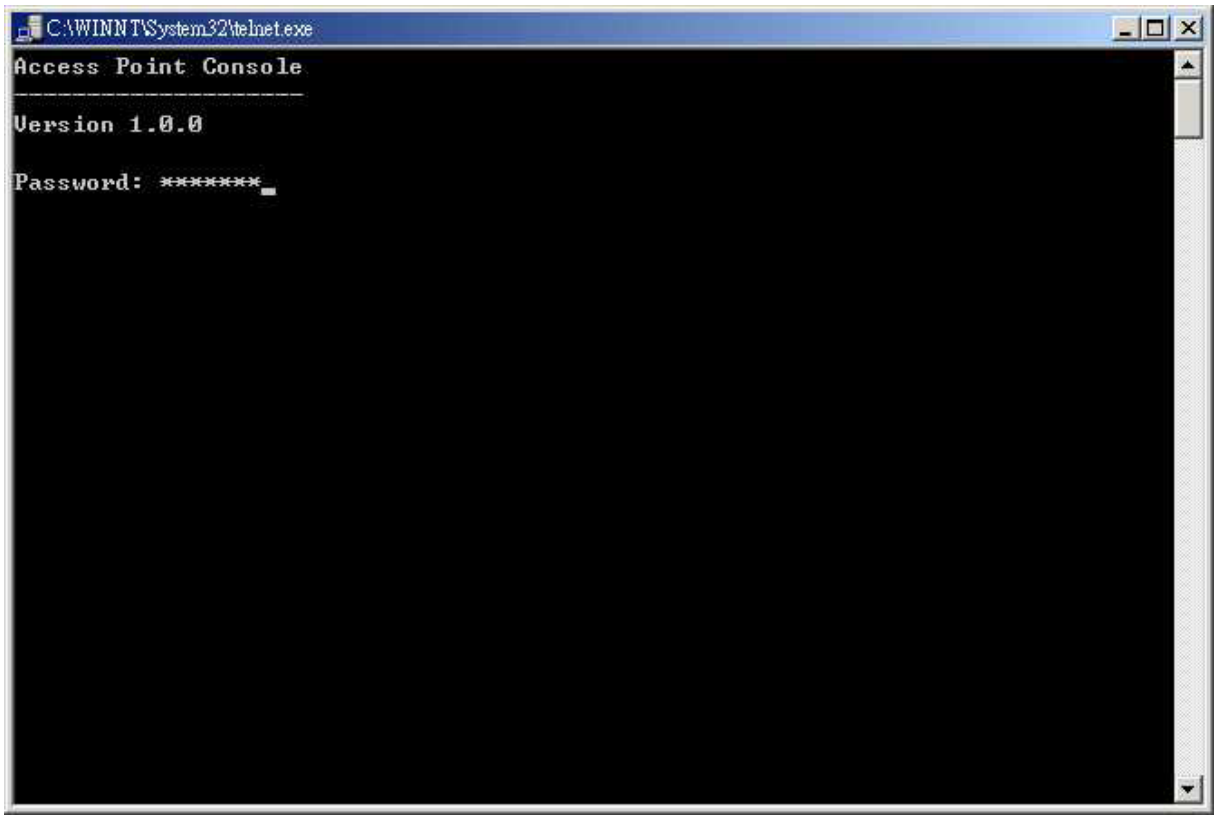


3-3 Using the Telnet

The FastLinc 810E can be configured via the command prompt console with TCP/IP:

Telnet (TCP/IP) Connection: Assign an IP address to your FastLinc 810E through the Modem Utility or use the default IP address. Telnet to the FastLinc 810E to get access to the FastLinc 810E console using standard Telnet commands.

1. Telnet to your FastLinc 810E. A window will show up.
2. Enter the password. The default password is "**default**".



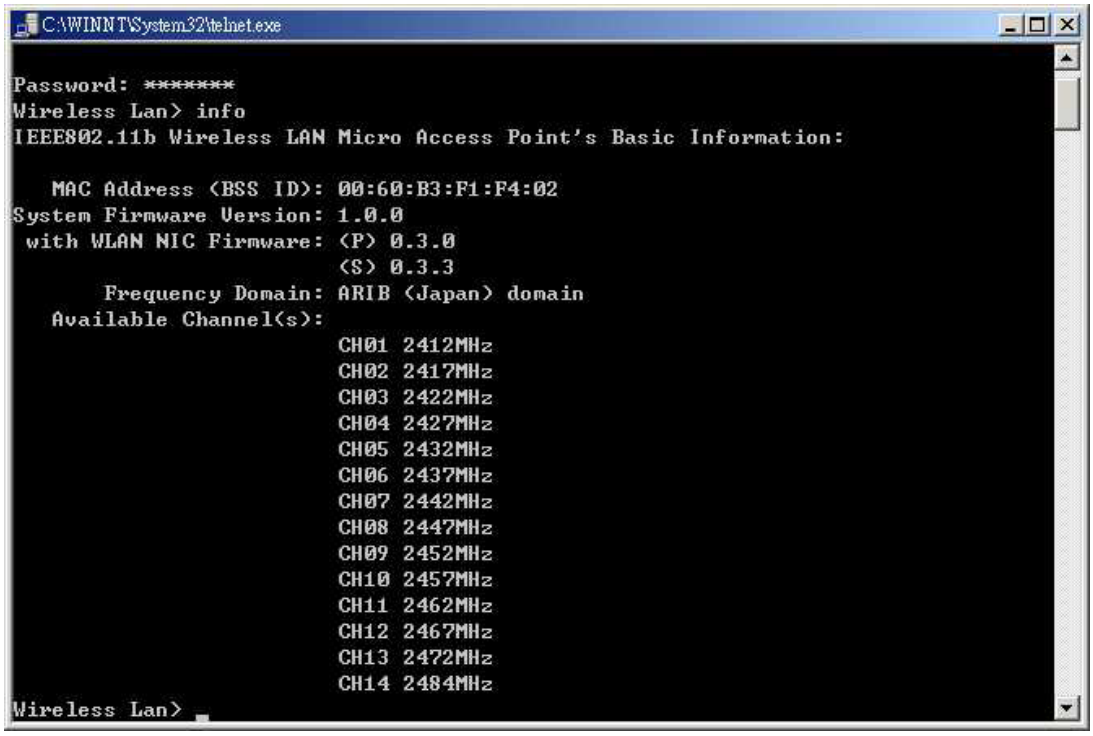
3-2-1 Basic Commands

The following are the commands provided for configuring the FastLinc 810E. In loader mode, i.e., no valid firmware in the FastLinc 810E, only the commands with an asterisk (*) are provided.

NOTE: [xxx] stands for optional arguments.

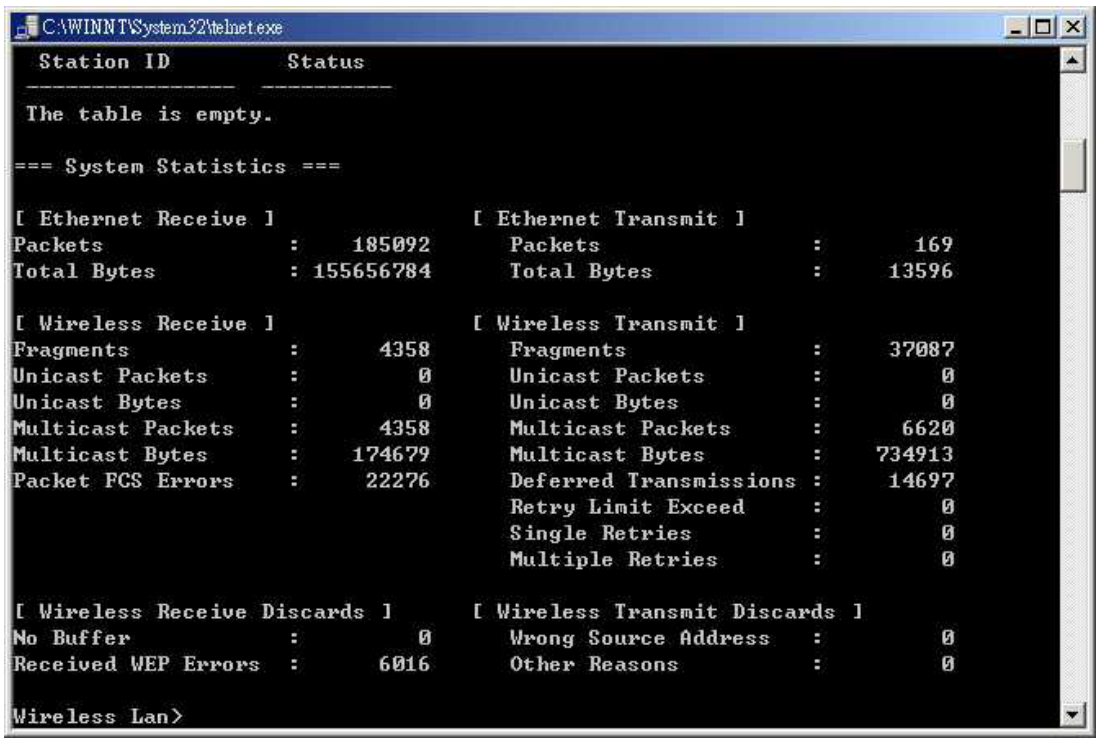
info[*]

Display some basic information of the FastLinc 810E, for example, firmware version, frequency domain, etc.



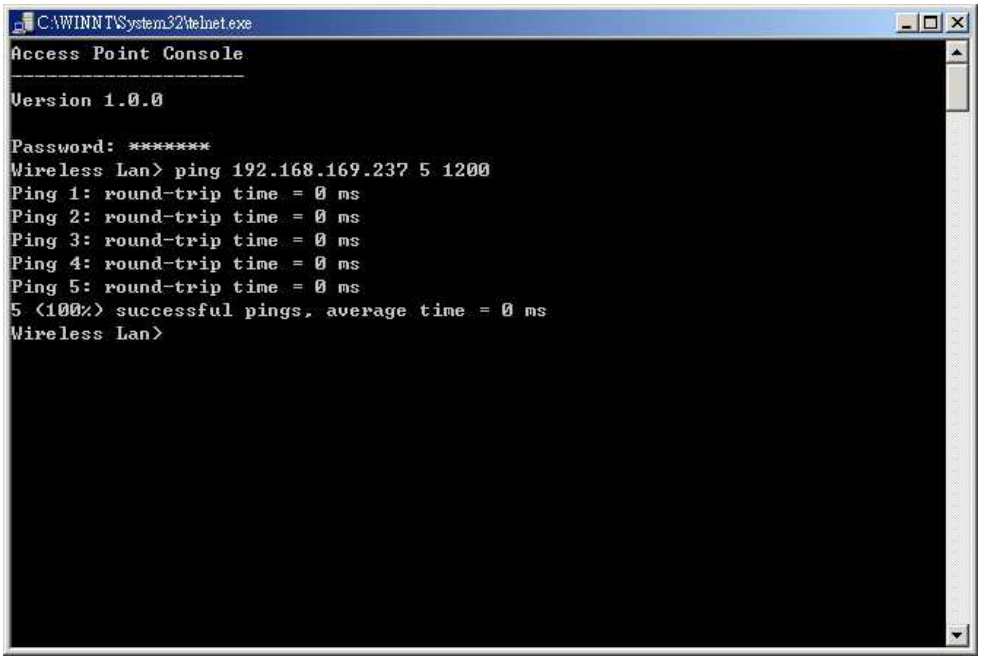
stat

Display the statistical values of the operation of the FastLinc 810E, for example, association status, LAN/WLAN interface load, etc.



ping ip_addr [num_pings] [data_size]

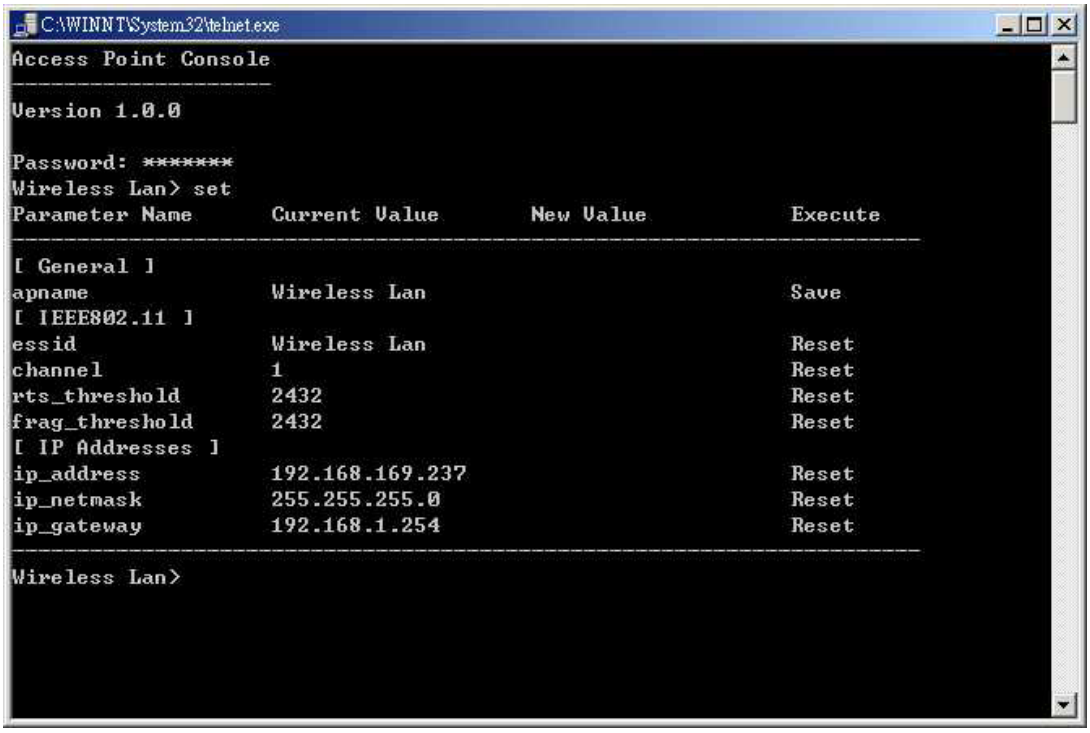
Ping (ICMP echo) to an *ip_addr* host with optional *num_pings* times with optional data size in a length of *data_size*.



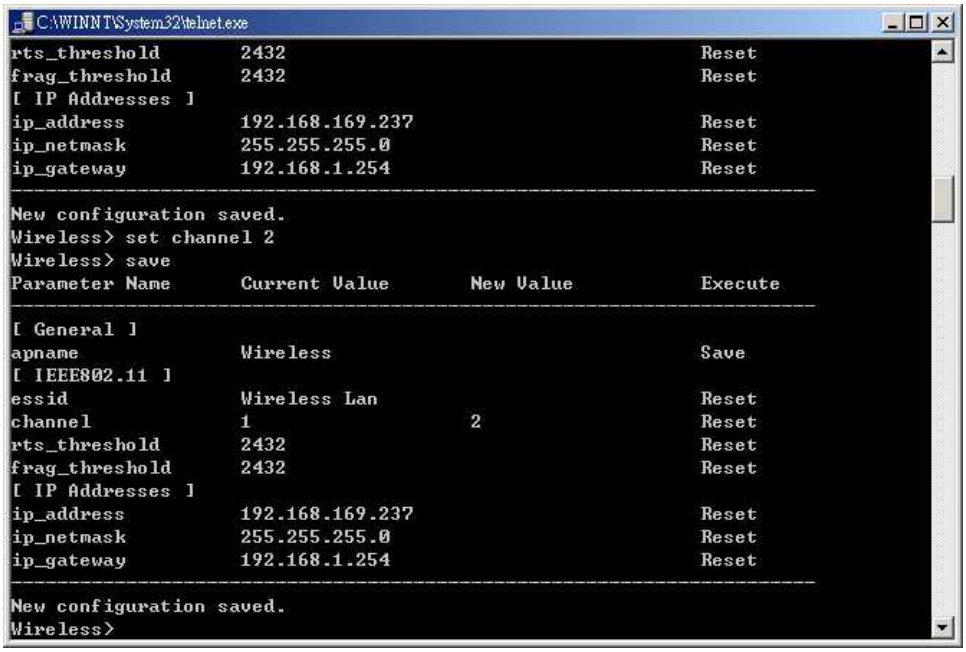
set

List the configuration information.

set apname | channel | essid | rts_threshold | frag_threshold | ip_address | ip_netmask | ip_gateway



To change factory default settings, type "set xxx (parameter) xxxx (value). For example, `set channel 7` command will set the channel to number 7; `set essid "Your Network"` command will set the ESSID as *Your Network*. Remember that, a 'save' command is required for changes to take effect. Always reset your AP with the "Reset" command.



The following is a list of parameters you can make changes on the FastLinc 810E.

Parameter	Description	Default Value
apname	A textual name for the identification of the FastLinc 810E.	`apXXXXXX` *(where XXXXXX is the last six octets of FastLinc 810E's MAC address)*
mode	Operation mode of the Modem	`AP`
channel	The radio channel number.	`1`
essid	The ESS ID (a.k.a., SSID) of the FastLinc 810E.	`My Network`
rts_threshold	The threshold (number of bytes) for enabling RTS/CTS handshake. Data with its frame size larger than this value will perform the RTS/CTS handshake. Range of value: 0~2432.	`2432`
frag_threshold	The threshold (number of bytes) for the fragmentation boundary. Data will be transmitted in fragments which its size does not exceed this value. Range of value: 256~2432.	`2432`
ip_address	The IP address of the FastLinc 810E.	`192.168.1.1`
ip_netmask	The subnet mask address of the FastLinc 810E.	`255.255.255.0`
ip_gateway	The default gateway address of the FastLinc 810E.	`192.168.1.254`

save

Save your new configuration. Remember that the “save command” is required every time you make the new configuration.

set default

Return the factory default settings of the FastLinc 810E except for the IP addresses. A 'save' command is required for changes to take effect.

cls[*]

Clear the console screen.

exit[*]

Exit the console.

? [*] *or help*[*]

Print a help screen.

rz[*]

Receive a firmware file by the Zmodem protocol. The console will enter Zmodem receiving mode and then use the "file upload" function of your terminal emulation program to upload a new firmware file (`ap.img`) to the FastLinc 810E. Upon completion, always remember to type the 'reset' command for running the FastLinc 810E with the new firmware.

reset[*]

Issue a reset signal. The FastLinc 810E will be reset if user confirms.

3-2-2 Advanced Settings for Security

This section describes the commands to control the security for FastLinc 810E. To prevent unauthorized wireless stations from accessing data transmitted over the network, the FastLinc 810E Modem offers the following levels of security options.

- Access Control Table restricts wireless stations to access the FastLinc 810E.
- Data Encryption, known as WEP (Wired Equivalency Privacy), encrypts wireless data transmitted via wireless medium.

Access Control

auth mode | *add* | *del* | *list*| *clear*

The 'auth' command contains sub-commands that allow you to manage the access control (MAC address filter) of the FastLinc 810E. The access control table consists of a list for you to control the accessibility of any wireless stations or repeaters. The sub-commands are listed below:

mode open | *allow*: set the access control mode. The definition of each mode is specified

as follows:

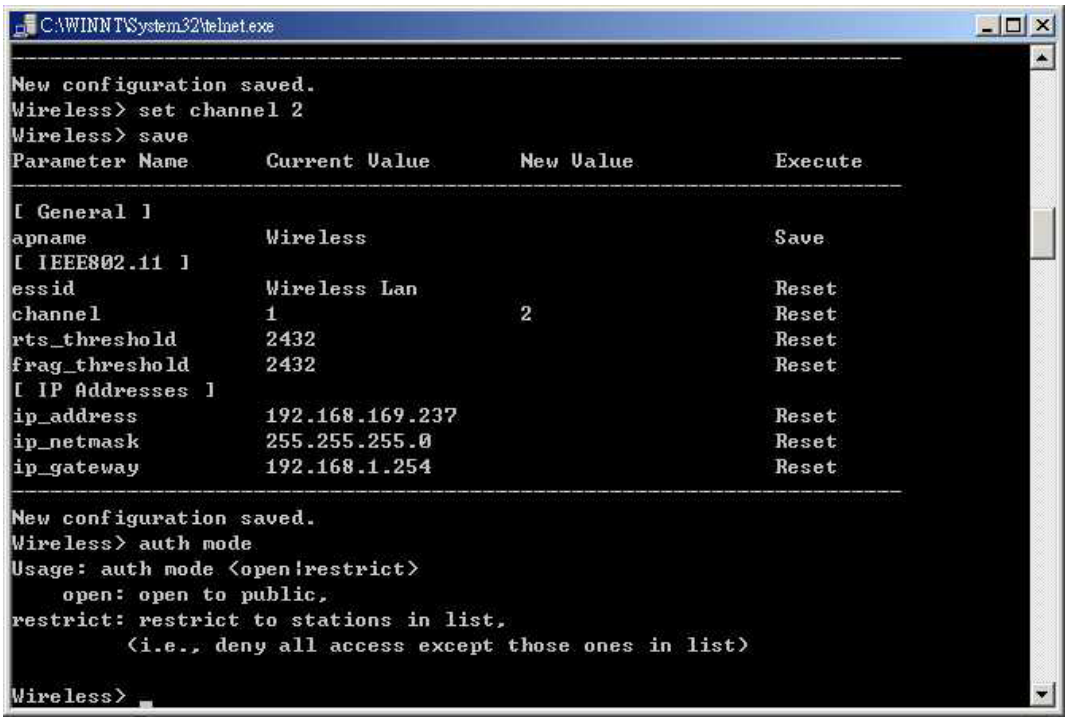
- *open*: open to public (default)
- restrict: only allow access of the authorized stations/repeaters in the table (no access is allowed if the list stays empty)

add mac_addr: add an address into the access control table

del mac_addr |*index*: delete a MAC address, or index an address from the access control table

list [start/end]: display the content of the access control mode and the address list. The optional arguments, start and end, can be affixed to select the range of items to be listed.

clear: clear all the addresses in the access control table.



WEP Keys

wep mode | *set* | *list*

The 'wep' command contains sub-commands that allow you to manage the data encryption (WEP, wired equivalent privacy) function provided with the FastLinc 810E. The sub-commands are listed as follows:

mode disable | *wep40*: set the access control mode. The following are the definition of each data encryption mode.

- *none*: no encryption (default)
- *wep40*: use 40-bit WEP data encryption

set key1 key_text: set WEP Key#1 as *key_text*. 10 hexadecimal digits (0-9 or A-F) heading by "0x" or five alphanumeric values (ASCII characters, case-sensitive) are required if 40-bit WEP is used.
Example: 0x1122334455, 0x0055AA55AA, abcde, or MyKey.

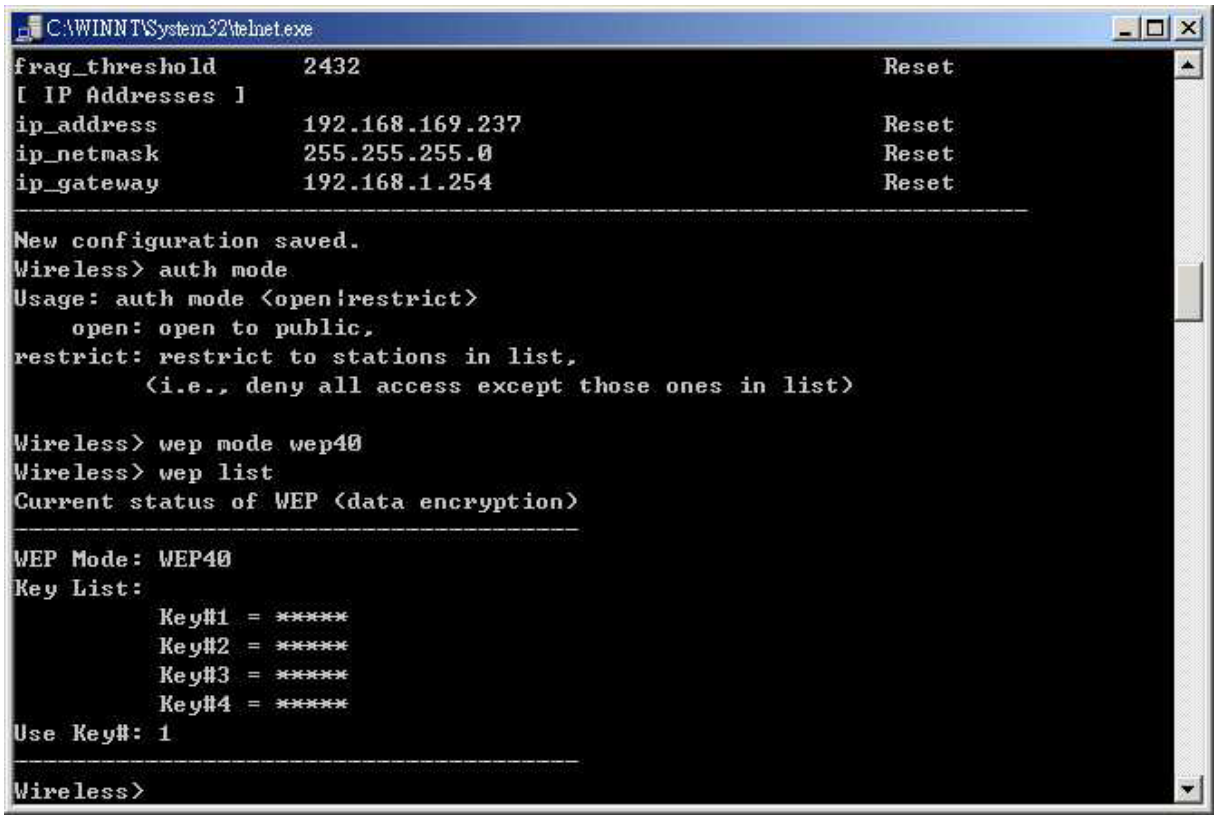
set key2 key_text: set WEP Key#2 as *key_text* with a same format as WEP Key#1.

set key3 key_text: set WEP Key#3 as *key_text* with a same format as WEP Key#1.

set key4 key_text: set WEP Key#2 as *key_text* with a same format as WEP Key#1.

set usekey 1|2|3|4: Select the WEP key to be used for encrypting data transmission. Only one key can be selected at a time.

list: Display current WEP settings.



Note: Your new WEP settings will take effect after resetting the FastLinc 810E.

Chapter 4 Troubleshooting

If you have trouble using the FastLinc 810E Modem, the starting point to troubleshoot the problem with your FastLinc 810E Modem is looking at the LED activity of the FastLinc 810E. The following is "LED Error Table" provided to assist you in diagnosing and solving operational problems.

PWR	AP Active	W-LAN	Data	LINK	Description/Action
Continuous Green	Continuous Green	Flash Green	Flash Green	Steady Green -	Normal operation where flickering indicates interface activity. ■ No action required.
	On	Off	Off	-	Normal operation that indicates there is no LAN activity. ■ No action required.
Off	Off	Off	Off	Off	Power failure. ■ Check the power cord. ■ Check the power supply.
Continuous Green	Off	Off	Off	Off	Invalid loader firmware or the FastLinc 810E-controller is dead. ■ Return the unit to the vendor for support.
	Blink Green	-	-	-	Invalid FastLinc 810E firmware. ■ Upgrade the firmware via the utility or console mode.
	Blink Green	Blink Green	-	-	Wireless LAN initialization failure ■ Check whether the wireless module has been properly installed.
	Blink Green	-	Blink Green	-	Ethernet initialization failure ■ Return the device to the vendor for support.

If you are still unable to solve the problem by checking the LED activity, the error may be caused from configuration mismatch, which prevents the FastLinc 810E from establishing a wireless connection with the network. You may check the following to ensure normal operation of the FastLinc 810E.

- *WEP keys:* If data encryption is activated, always remember to set WEP keys exactly the same on the FastLinc 810E as are on the wireless stations.
- Access Control: Make sure that the MAC address of your FastLinc 810E is not included in the Access Control table of other wireless devices.

Appendix A Network Configuration

The FastLinc Wireless LAN products support the same network configuration options of the legacy Ethernet LANs as defined by IEEE 802 standard committee.

The FastLinc Wireless LAN products can be configured as:

- Ad-Hoc for departmental or SOHO LANs
- Infrastructure for enterprise LANs
- LAN-Interconnection for point-to-point link as a campus backbone.

A-1 Network Topology

- **Ad-Hoc**

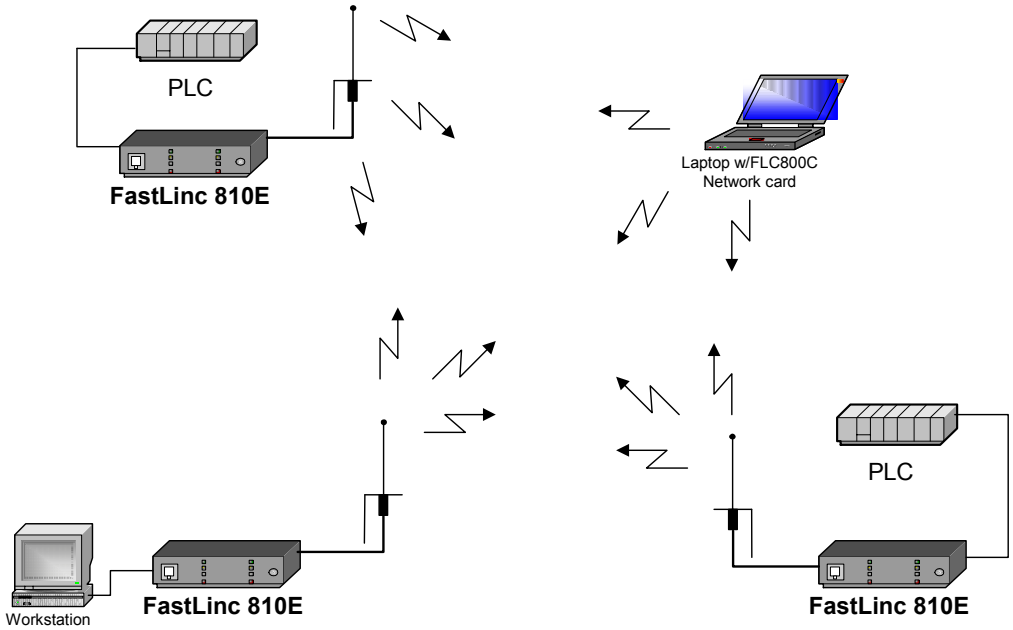


Fig An Example of Ad-Hoc Wireless LAN

An Ad-Hoc wireless LAN is a group of computers, each equipped with one wireless adapter, connected as an independent wireless LAN. Computers in a specific Ad-Hoc wireless LAN must be configured at the same radio channel.

Ad-Hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

◆ **Infrastructure**

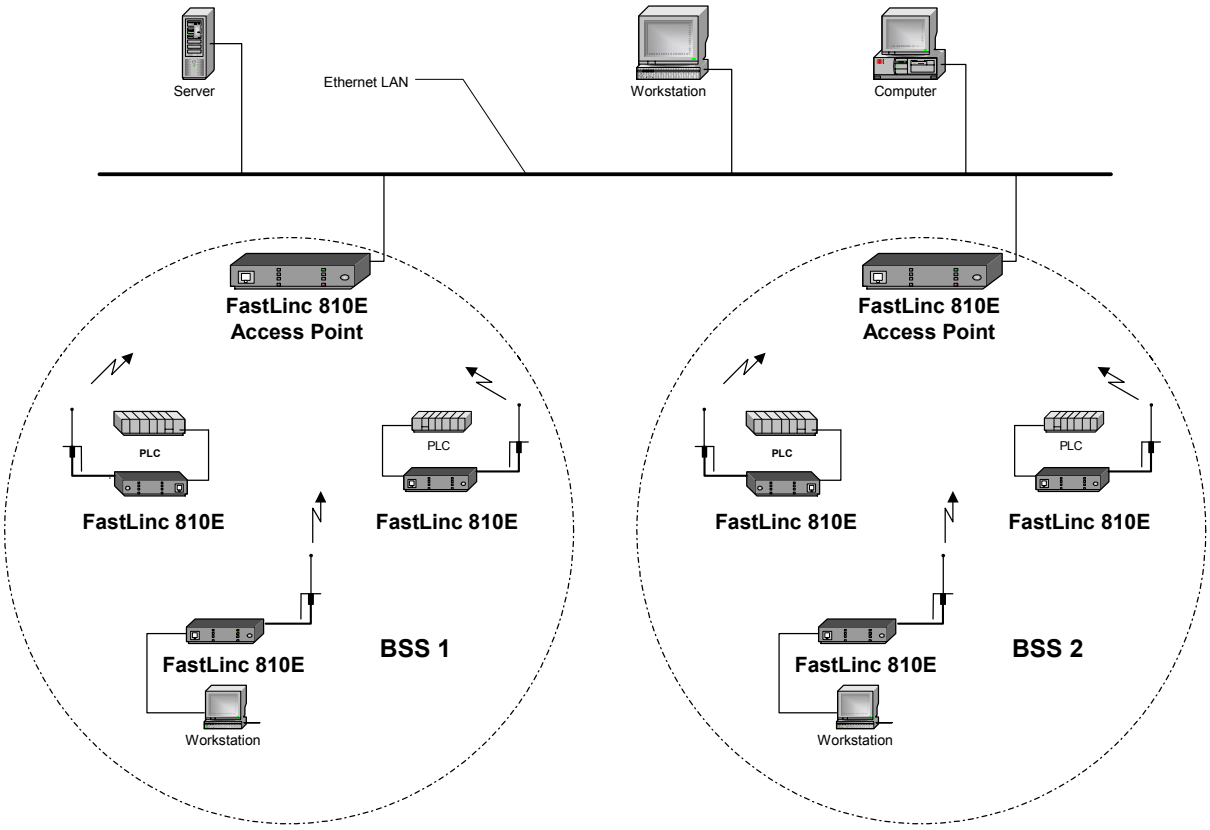


Fig An Example of Infrastructure Wireless LAN

The FastLinc Wireless LAN devices provide access to a wired LAN for wireless workstations. An integrated wireless and wired LAN is called an Infrastructure configuration. A group of wireless LAN PC users and a FastLinc 810E construct a Basic Service Set (BSS). Each wireless-equipped PC in this BSS can talk to any computer in the wired LAN infrastructure via the FastLinc 810E.

Infrastructure configuration will extend the accessibility of a wireless station to the wired LAN. Multiple FastLinc 810Es will allow roaming and it will increase the transmission range. The FastLinc 810E is also able to forward data within its BSS. The effective transmission range in an infrastructure LAN is **doubled**.

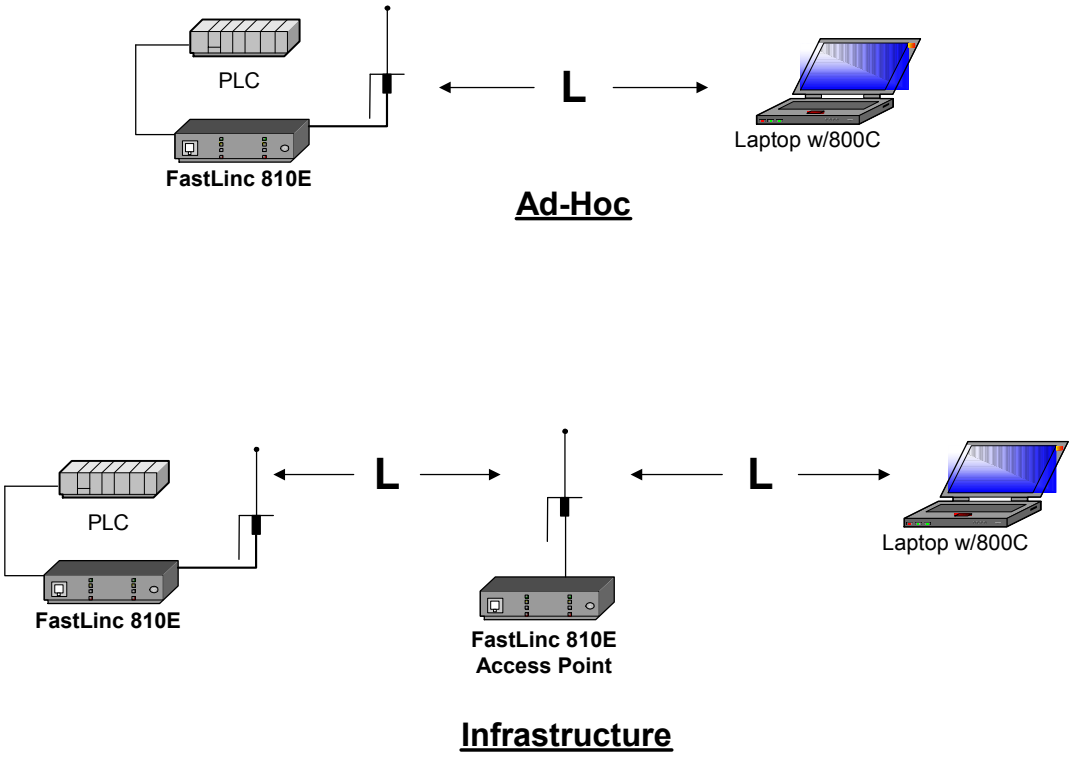


Fig Increase the effective Transmission Range

Appendix B Specifications

Product	11Mbps Wireless LAN FastLinc 810E
Wired Interface	10/100 base T (RJ-45)
Wireless Interface	11Mbps Wireless LAN
Modulation	DSSS (CCK, DQPSK, DBPSK)
Operation Frequency	N. America/FCC: 2412~2.462 GHz (11 channels)
Speed Options (over the air)	11M/5.5M/2M/1M, also support Auto Rate Selections
RF Technology	Direct Sequence Spread Spectrum
Power Supply	DC 12V (External power supply included)
RF Output Power	22 dBm
Sensitivity	-84dBm @ 11Mbps, PER < 8* 10-2

Appendix C Glossary

FastLinc 810E Modem - An internetworking device that seamlessly connects wired and wireless networks.

Ad-Hoc - An Ad-Hoc wireless LAN is a group of computers each with wireless adapters, connected as an independent wireless LAN.

Backbone - The core infrastructure of a network. The portion of the network that transports information from one central location to another central location where it is off-loaded onto a local system.

Base Station - In mobile telecommunications, a base station is the central radio transmitter/receiver that maintains communications with the mobile radio telephone sets within range. In cellular and personal communications applications, each cell or FastLinc 810Ecell has its own base station; each base station in turn is interconnected with other cells' base.

Bridge - An internetworking function that incorporates the lowest 2 layers of the OSI network protocol model.

BSS - Stands for "Basic Service Set," a FastLinc 810E and all the wireless clients that associated with it.

ESS - Stands for "Extended Service Set." More than one BSS can be configured as an Extended Service Set. Mobile users can roam between BSS in an ESS.

Ethernet - A popular local area data communications network, originally developed by Xerox Corp., which accepts transmission from computers and terminals. Ethernet operates on 10 Mbps baseband transmission over shielded coaxial cable or over shielded twisted pair telephone wire.

Infrastructure - An integrated wireless and wired LAN is called an Infrastructure configuration.

PCMCIA - Personal Computer Memory Card International Association, which develops standards for PC cards, formerly known as PCMCIA cards, are available in three "types" which are about the same length and width as credit cards, but range in thickness from 3.3 mm (Type I) to 5.0 mm (Type II) to 10.5 mm (Type III). These cards can be used for many functions, including memory storage, landline modems and wireless modems.

Roaming - A wireless clients around an ESS and get the continuous connection to the Infrastructure network.

RTS Threshold – Transmitters contending for the medium may not hear each other. RTS/CTS mechanism can solve this " Hidden Node Problem". If the packet size is smaller than the preset RTS Threshold size, the RTS/CTS mechanism will NOT be enabled.

Web Management - Network management by using web browser connecting to the target devices.