BEFORE YOU BEGIN

Thank you and congratulations on your purchase of the ESTeem Model 195Ep Wireless Ethernet Radio Modem! This manual was written to help both the first time and advanced user of the 195Ep configure the radio modem for your application. If this your first time configuring the 195Ep and you would like to get going as soon as possible, we recommend using the *195Ep Quick Start Guide* provided with the modem. A copy of the guide is listed in the appendix of this manual for your reference.

The ESTeem 195Ep is a very versatile wireless Ethernet networking device. To keep the manual usably short, many of the application descriptions and programming details assume the user has a good working knowledge of the following network concepts:

- General Ethernet networking and the configuration of LAN topologies
- Common Ethernet terminology and acronyms
- TCP/IP network protocol structure and how to configure TCP/IP networks and subnets
- How to identify and set the TCP/IP address on your computer
- Have administrator privileges to the computer and network you are configuring
- If using routing protocols, you must be able to identify and configure the network routers, gateways and firewalls
- You must be familiar with using web browser software such as Internet Explorer, Netscape or Mozilla

If you are unfamiliar with any of the above networking concepts, you may need to contact your network administrator for assistance.

MODEL 195Ep OVERVIEW

The ESTeem Model 195Ep is a wireless LAN transceiver that can be used to build a Wireless Local Area Network (WLAN) for line-of-sight distances to 13 miles for fixed base and 5 miles for mobile applications at RF data rates up to 11 Mbps. The Model 195Ep is a very sophisticated networking device that can be configured for multiple modes of operation depending upon the needs of the wireless and wired LAN system. The following configuration modes are provided as an overview of the basic network types, as all possible network configurations can not be listed. or further help in selecting the correct network type, please contact Customer Support at 509-735-9092.
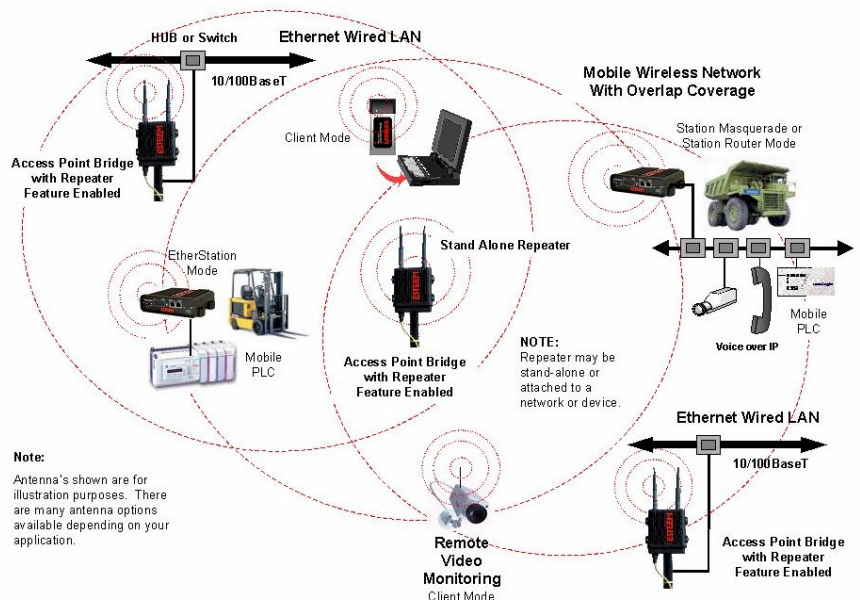

Figure 1- Access Point Bridge Diagram

MODEL 195Ep CONFIGURATION MODES

The Model 195Ep can be configured for multiple modes of operation without any changes to the hardware:

Access Point Modes

1. **Access Point Bridge Mode**. When the Model 195Ep is configured as an Access Point it will provide a wireless bridge between hardwired Local Area Network (LAN) networks or individual devices and simultaneously create a wireless canopy for the Model 195Ep modems in client mode. Multiple Access Point Bridge modems can be physically connected to the same network (LAN) or through a radio link using the Access Point Repeater mode to provide overlapping, seamless Ethernet communication for mobile devices. The ESTeem Model 195Ep in Access Point Bridge mode will pass all network traffic between connected devices including global network broadcasts. See Figure 1.
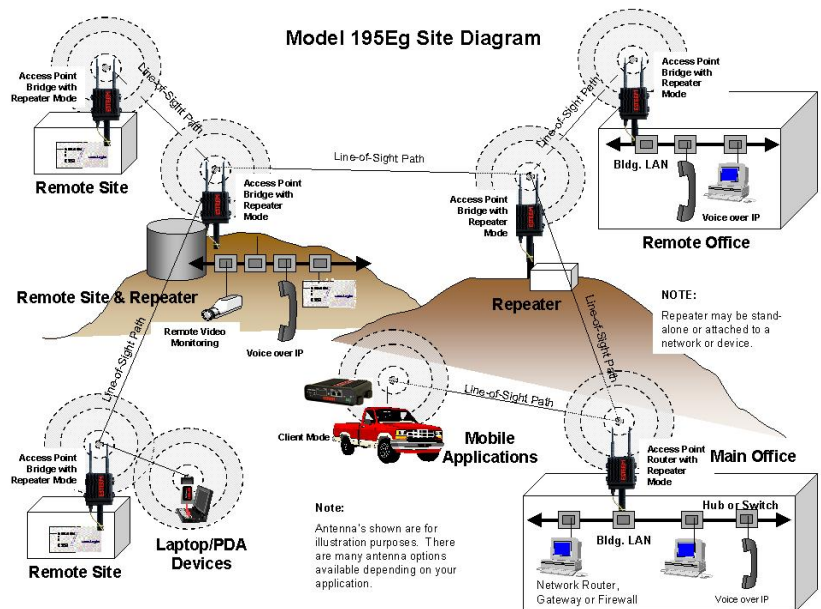
Figure 2 – Repeater Mode Diagram

2. **Access Point Router Mode**. In this mode the ESTeem Model 195Ep will function as a router between the wired Ethernet network (connect to the 195Ep's Ethernet port) and the wireless network 195Ep's in repeater peer mode. As in all standard router configurations, the wireless and wired Ethernet networks will need to be on separate subnets. To communicate from the wired Ethernet network to devices on the wireless network, a separate router (in addition to the Model 195Ep) is required. The 195Ep in Access Point Router mode will pass network traffic for connected devices but will block global network broadcasts from the wired network. This mode of operation should be used instead of the Access Point Bridge mode when a separation between networks is required or the ESTeem is connected to larger LAN Networks that will continuously send global network broadcasts (Figure 2).

3. **Access Point Masquerade Mode**. The Access Point Masquerade mode is a special use of the Access Point mode where the Model 195Ep will connect clients into a single static IP address on a wired network. Data requests from the wireless network will be processed through the Access Point Masquerade 195Ep, but any request from the wired Ethernet network to devices on the wireless network will be rejected similar to the operation of a "firewall". The 195Ep will hide all the IP addresses connected on the wireless link. You should use this mode of
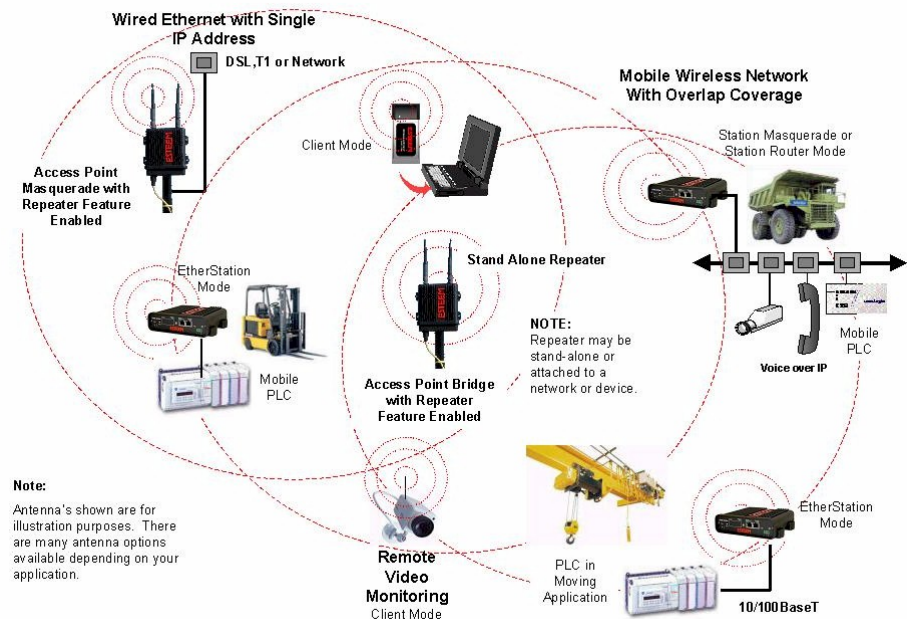
Figure 3- Access Point Masquerade Diagram

operation if Model 195Ep is connected directly to the Internet with a static IP address (DSL, T1, etc.) and you want the wireless clients to access the information through the Model 195Ep (Figure 3). This mode should also be used for attaching the Model 195Ep to a network where few IP addresses are available or a firewall for the wireless clients is required.

4. **Access Point Repeater**. The Access Point Repeater is a unique enhancement of the 802.11g Access Point mode only available the ESTeem Model 195Ep. The Access Point Repeater can be used with any of the above Access Point modes. With this repeater feature enabled, the Model 195Ep Access Points do not have to be hardwired together on the same physical LAN to provide seamless Ethernet communication for roaming 195Eg clients. In addition to greatly extending the Access Point canopy range, the Model 195Ep will also bridge any Ethernet device or Ethernet network connected to the unit over this same wireless Ethernet network. This mode gives the user the features of a point to multi-point bridge network but also allows Model 195Ep in the Client mode to simultaneously roam under the network canopy.

5. **Self-Healing Mesh Network**. If multiple Access Point Repeater routes are configured to the same destination ESTeem, the 195Ep will create a "self-healing" mesh network by automatically re-routing data through alternate paths to reach its destination if the primary path is inoperable. The routing and priority of alternate paths is completely user configurable. See Figure 4.
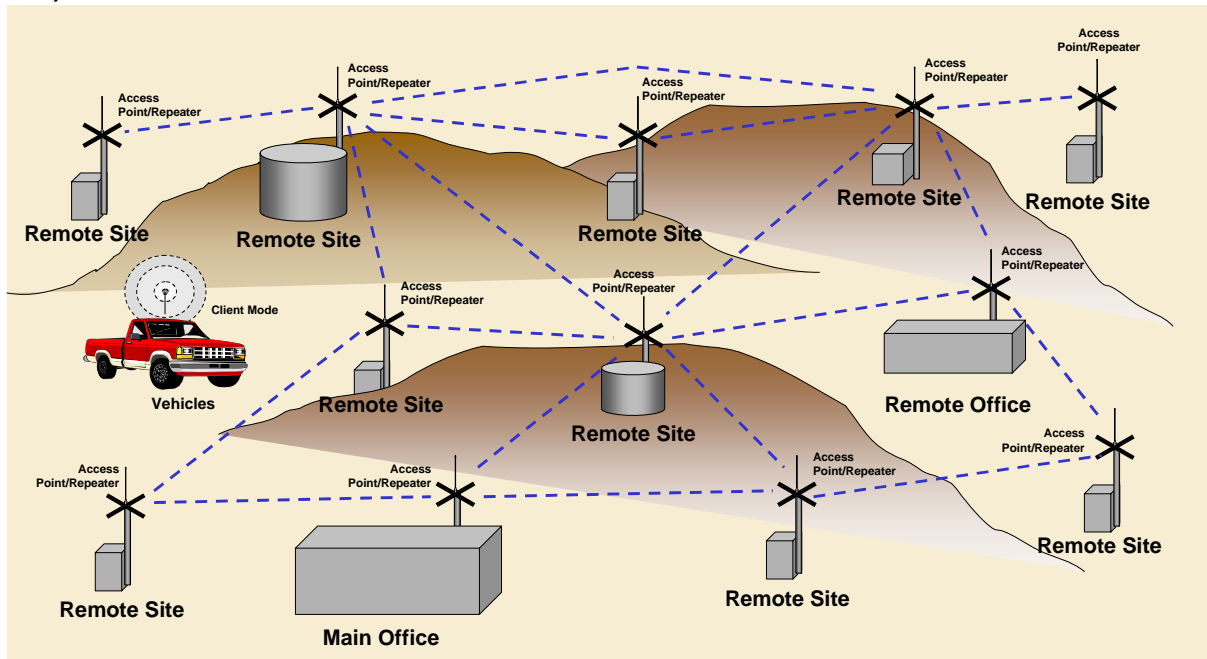
Station (Client) Modes

Figure 4 – Mesh Network Diagram

6. **EtherStation Mode**. When the 195Ep is configured in the EtherStation Mode and attached to a single Ethernet Device, the Model 195Ep seamless roam under the radio canopy of Access Point and can provide greatly increased range for mobile Ethernet devices such as vehicles, forklifts, cranes, etc (Figures 1-3).

7. **Station Router Mode**. The Station Router mode will also function as a mobile client, similar to EtherStation, but will allow multiple Ethernet devices to be connected to a single 195Ep (Figure 3). The 195Ep will function as a router between the wireless client mode and the wired Ethernet devices connected to the Ethernet port. Similar in configuration to the Access Point Router mode, the wireless and wired Ethernet networks will need to be on separate subnets. To communicate from wireless network to devices on the wired Station Router network, a separate router (connected to the Ethernet side of the Access Point) is required. This mode would be used where multiple Ethernet devices will be connected to a single Model

195Ep in a mobile client application and the connected Ethernet devices will need to be accessible from the Access Point's LAN network.

8. **Station Masquerade Mode**. The Station Masquerade Mode is another mode where multiple devices will be connected to a single ESTeem in a mobile or Client application, but unlike the Station Router mode, the Station Masquerate will consolidate all connected Ethernet devices to a single IP address on the network. The devices connected to the Station Masquerade 195Ep will be able to access information from both the wireless and wired LAN, but will be inaccessible the other way similar in application to a firewall. This mode would be used where multiple Ethernet devices will be connected to a single Model 195Ep in a mobile application and the IP addresses for each device will be hidden from the LAN connected to the Access Point. See Figure 3.

To begin setup of your wireless Ethernet network you must first configure the Model 195Ep for the mode desired. Chapter 2 will show several examples of the different modes of operation to help select the correct mode for your application.