wavelink
STUDIO
COM

Server

Version 3.7 Users Guide

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Wavelink Studio Users Manual

Revision 5/28/03

Table of Contents

Chapter 1: Introduction

Wavelink Studio COM is a comprehensive, software-based solution that lets you easily create and run wireless applications directly from your Windows 95/98 or Windows NT/2000 host.

About This Document

Wavelink Corporation strives to provide clear and thorough documentation for Wavelink Studio COM. If you have any comments or suggestions to improve this manual, please direct them to:

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Document Assumptions

To use this manual effectively, it is recommended that you understand the following:

- Basic operations of Windows operating systems, which includes how to configure and navigate Windows operating system

- Basic configurations of servers on your organization's network

- Basic operations of your organization's wireless network components

If you plan on using one or more of the companion documents to this manual, such as the Wavelink Development Library, it is recommended that you understand the following:

- Basic concepts and terminology associated with the OLE/COM programming model

- Working knowledge of your chosen development language

Document Conventions

This document uses the following typographical conventions:

- **Courier New**. Any time you interact with a Wavelink Studio COM option, such as a button, or type specific information into an text box, such as a file pathname, that option appears in the `Courier New` text style. This text style is also used for keyboard commands that you press.

  Examples:

  Click `Next` to continue.

  Press `CTRL+ALT+DELETE`.

- **Bold**. Any time this document refers to an option, such as descriptions of the choices in a dialog box, that option appears in the **Bold** text style.

  Examples:

  Click `Open` from the **File** menu.

  Click `Download` from the **HexFiles** menu.

- **Italics**. Any time this document refers to another section within the manual, that section appears in the *Italic* text style.

  Example:

  See the *Troubleshooting* section for possible causes of this problem.

- **Angle Brackets**. Any time this document uses a placeholder, representing an actual value such as a directory or class name, that section is enclosed by angle brackets.

  Example:

  <*classname*>.<*methodname*>(TOKEN)

- **Square Brackets**. Any time this document references an optional element, that section is enclosed by square brackets.

About Wavelink Studio COM

Wavelink Studio COM includes the following components:

- Wavelink Development Library

- Wavelink Widget Extension

- Wavelink Server

- Wavelink Administrator

- Wavelink Startup Utility

- Wavelink Log Reader

- Wavelink Studio Client

- Wavelink Virtual Client

The following sections describe these components in more detail.

Wavelink Development Library

The Wavelink Development Library is a COM-based Dynamic Link Library (DLL). With this library, you can develop powerful and efficient wireless applications.

The Wavelink Development Library consists of 8 objects and over 150 methods designed specifically for wireless application development. Some examples of what you can accomplish with the Wavelink Development Library include:

- Building applications that filter barcode inputs based on type and length

- Saving commonly-used application methods directly to a mobile device to create true client/server network efficiency

- Using multi-toned audio indicators to enhance existing wireless applications

The Wavelink Development Library is designed to be easy to use, regardless of which programming environment you prefer. Just include the Wavelink Development Library DLL within your OLE-compliant programming language—such as Visual C++ or Visual Basic. With that one step, the Wavelink Development Library expands the power of your programming language, giving you the methods and functions you need to create wireless applications.

Wavelink Studio COM also includes a version of the development library specifically for C development in non-OLE compliant development environments. This version's functionality mirrors the OLE counterpart.

Wavelink Widget Extension

The Wavelink Widget Extension is a plug-in for the Wavelink Development Library that contains all COM widget components of the API.

Wavelink Server

The Wavelink Server is a system service/command-line application that lets you run your Studio-built applications in real-time, without a controller or wireless network.

When you start the Wavelink Server, wireless network users can immediately use your applications on their mobile devices.

Wavelink Administrator

The Wavelink Administrator is a Windows-based application that includes three utilities to help you manage Wavelink Servers on both a local and remote basis:

- **Wavelink Program Manager**. This application lets you manage your wireless applications and user accounts. With the Wavelink Program Manager, you can add user IDs and passwords for network security, configure mobile device start-up menus, and limit application access by creating application groups available only to specific accounts.

- **Wavelink Authorization Utility**. This utility allows you to quickly upgrade the user limit for a Wavelink Server.

- **Mobile Device Client install utility**. This utility allows you to download the Wavelink Studio Client to both local and remote mobile devices once they connect to their configuration cradles.

Wavelink Startup Utility

The Wavelink Startup Utility is a system service/command-line application that allows you to manage a Wavelink Server from a remote host.

Wavelink Log Reader

The Wavelink Log Reader is a Windows-based utility you use to view log files that a Wavelink Server and API generates. With this utility, you can quickly

filter log files, allowing you to find the statistical or debugging information you need immediately.

Wavelink Client

The Wavelink Studio Client is the terminal resident software that unleashes the full computing power of a mobile device. With the Wavelink Studio Client installed, wireless applications perform with client-server efficiency while taking full advantage of all device features.

Wavelink Virtual Client

The Wavelink Virtual Client is a testing application that simulates a mobile device on your desktop. With the Virtual Client, you can accurately run wireless applications without the actual presence of a wireless network. The Virtual Client allows you to test wireless applications under different conditions before you install the application on a wireless network.

Wavelink Network Architecture

The basic architecture of a typical wireless network using Wavelink Studio COM is displayed in the following diagram.

Figure 1-1. *Wavelink Studio COM Architecture Diagram*

Each mobile device contains the Wavelink Client, which manages both mobile device features and basic front-end application functions, such as user input. This use of the Wavelink Client improves network-to-device performance without compromising direct access to the features of the mobile device.

Each time a mobile device connects to the wireless network and requests access to an application, a Wavelink Server creates an application instance for that mobile device. Using individual Port or Serial Monitors, the Wavelink Server then manages the interaction between the mobile device user and the requested application.

Features of Wavelink Studio COM

Wavelink Studio COM offers several features that help you implement wireless network applications.

- **Client-server architecture.** Wavelink Studio COM uses an event-driven, client-server architecture for efficient network communications. This architecture allows Wavelink Studio COM to maximize individual wireless network packets while minimizing network traffic. With Wavelink Studio COM's architecture, you can take full advantage of a mobile device's features to create feature-rich applications.

- **Host-driven applications.** With Wavelink Studio COM, you develop and run applications directly from your host computer. You can make any revisions to a wireless application from one central location, saving you from updating mobile devices individually and allowing you to immediately implement application changes.

- **Limited learning curve.** With Wavelink Studio COM, developing wireless applications has never been easier. The Wavelink Development Library lets you create custom wireless applications using the programming language of your choice—without learning any additional interface languages.

- **Real-time performance.** Wavelink Studio COM provides real-time connection between wireless applications and all mobile devices for total information accuracy. With Wavelink Studio COM, you have access to the most current data about wireless applications.

- **One-to-one application relationship.** Most wireless application solutions require all users to share a single application instance. This type of solution forces you to design applications that can accommodate multiple users, which can complicate your application's code and slow its performance. Wavelink Studio COM, however, is multi-processed, providing users their own application instance. This one-to-one

relationship between user and application simplifies programming and improves application performance.

- **AutoDiscovery technology.** With Wavelink Studio COM's AutoDiscovery technology, you can implement your applications immediately without first configuring any mobile device. When users activate their mobile devices, the Wavelink Client automatically discovers a list of available Port Monitors. The user can then select the Port Monitor that opens the desired application.

- **Remote administration.** The Wavelink Administrator lets you simultaneously manage multiple Wavelink Servers on both local and remote hosts. Type the host's computer name or IP address and click `Connect` to fully manage a Wavelink Server regardless of its location on the network.

- **Hardware support.** Wavelink Studio COM is compatible with a wide range of wireless hardware by Symbol Technologies. Wavelink Studio COM functions with Spectrum One and Spectrum24 networks, software- and hardware-based network controllers (both TCP/IP- and serial-based), and a variety of mobile devices.

Chapter 2: Installation

This section contains information on the following topics:

- Hardware requirements for the Studio COM components

- Installation procedure for Wavelink Studio COM

Requirements

Before you install Wavelink Studio COM, please ensure that your network meets the following hardware and software components.

Full Installation Requirements

If you install the entire Wavelink Studio COM package, your host computer must meet the following requirements:

- 486DX2 processor or better

- 12MB hard disk space

- 16MB RAM

- Windows 95 or better (including Windows 98, Windows NT 3.51, Windows NT 4.0, and Windows 2000/XP)

Component Requirements

If you decide to do a custom installation of Wavelink Studio COM, use the following table to determine the appropriate hardware requirements for a host.

NOTE The amount of RAM a host requires depends on the memory requirements of your custom applications.

Software Component	Hardware Requirements
Wavelink Development Library DLLs (OLE and C versions)	200K
Sample program and application template files	300K

Table 2-1: *Hard Disk Requirements*

Software Component	Hardware Requirements
Wavelink Server	200K
Wavelink Studio COM Administrator	1.5MB
Wavelink Studio COM Client	700K
Wavelink Virtual Client	200K

Table 2-1: *Hard Disk Requirements*

Installing Wavelink Studio COM

This section describes the installation procedure for Wavelink Studio COM.

To install Studio COM:

1 Locate and run the Studio COM installation file, named
`StudioCOM.exe`.

The *Install Shield Wizard* dialog box appears.

2 Click `Next`.

The license agreement appears.

3 After reading the license agreement and agreeing to its terms, click `Yes`.

The setup program prompts you to select an installation directory.

4 To accept the default installation folder, `C:\Program Files\Wavelink`, click `Next`.

To navigate to a different installation folder, click `Browse`, and navigate to select a desired directory. Once you select a folder, click `Next`.

The setup program prompts you to select a setup type.

5 If you want to perform a typical installation (recommended), enable the **Typical** checkbox.

If you want to install a compact version of Studio COM, enable the **Compact** checkbox.

If you want to select specific components to install, enable the **Custom** checkbox, then deselect any components that you do not want to install.

6 Click `Next`.

7 Select the program folder for Wavelink applications.

To use the default program folder, Wavelink Studio, click `Next`.

To use a different program folder, type a name or select one from the list, then click `Next`.

The setup program installs Wavelink Studio COM on your system.

8 After the installation is complete, click `Finish`.

To run the Administrator:

If you used the default program folder, select `Wavelink Studio > Wavelink Studio Administrator` from the **Start** menu.

Authorizing Wavelink Studio COM

By default, Wavelink Studio COM is authorized for only 2 concurrent users for a 30-day trial period. You can use the Wavelink Authorization Utility to add new users to Wavelink Studio COM, as well as increase the amount of time Wavelink Studio COM will operate on your network.

To change the authorization settings in Wavelink Studio COM:

1 Open the Administrator.

2 Select `Authorization` from the **Utilities** menu.

The Authorization dialog box appears.
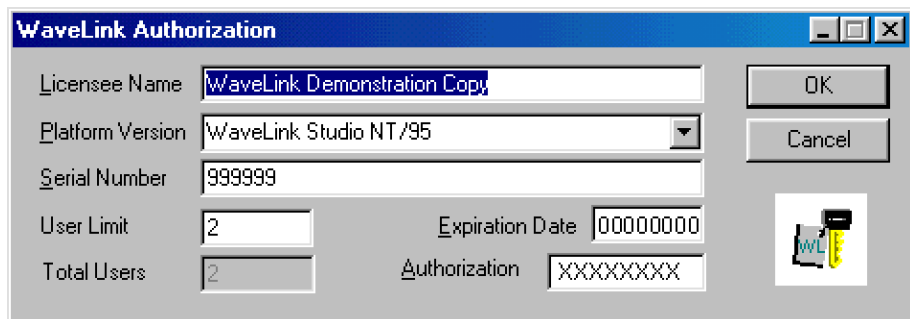
Figure 2-1. *The Authorization Dialog Box*

3   Make sure the name in the **Licensee Name** field contains the name of the organization licensing Wavelink Studio COM.

If this name is incorrect, type the new name in the field.

4   Select an authorization version from the **Platform Version** list.

There are three authorization versions available:

- **Wavelink Studio NT/95**. Select this version if you are installing Wavelink Studio for the first time.

- **Wavelink Studio User Pack**. Select this version if you are adding to your current Wavelink Studio user base.

- **Wavelink Studio Roaming 10-day User Pack**. Select this version if you are only temporarily adding to your current Wavelink Studio COM user base.

5   Type the serial number for your copy of Wavelink Studio COM in the **Serial Number** field.

6   Type the total number of authorized Wavelink Studio COM users in the **User Limit** field.

7   Type the authorization code in the **Authorization** field.

8   Type the expiration date for the authorization code in the **Expiration Date** field.

9   Click OK.

NOTE Once you click OK, the Total Users field displays the total number of concurrent Wavelink Studio COM users your system supports.

Wavelink Studio COM Components

After you finish installing Wavelink Studio COM, the following applications appear under the Wavelink Studio program folder in the **Start** menu:

- **Wavelink Administrator**. Starts the Windows-based Wavelink Administrator application that manages Wavelink Servers.

- **Wavelink Log Reader**. Starts the Wavelink Log Reader application used to view and filter Wavelink Server log files.

- **Wavelink Server**. Starts the Wavelink Server.

- **Wavelink Startup Utility**. Starts the Wavelink Startup Utility, which allows remote initialization of the local Wavelink Server on Windows NT/2000 (as a system service) and on Windows 95/98 (as a hidden desktop application).

- **Wavelink Suite Web site**. An Internet hyperlink to www.wavelink.com, the official Web site of Wavelink Studio (requires an existing Internet account and browser).

- **Wavelink Virtual Client**. Starts the Wavelink Studio Virtual Client program for testing and demonstrating wireless applications.

The following sub directories and their contents also reside in the Wavelink Studio COM installation directory:

- **/Bin**. This directory contains the component applications for Wavelink Studio COM, such as the Wavelink Administrator. This directory also includes the hex image files of the Wavelink Studio Client for Spectrum One and Spectrum24.

- **/Development/Include**. This directory contains the header files for the non-OLE and OLE versions of the Wavelink Development Library.

- **/Development/Lib**. This directory contains the non-OLE Wavelink Development Library compile-time link file and the type library for both the OLE version of the Wavelink Development Library and the Program Manager Administrator.

- **/Help**. This directory contains the online help and content files for both Wavelink Studio COM and the Wavelink Development Library.

- **/LogFiles**. This directory contains any log files the Wavelink Server generates.

- **/Samples**. This directory contains the compiled code and source code for a variety of sample Wavelink applications.

- **/Templates**. This directory contains application template wizards for both the non-OLE and OLE based Wavelink Development Libraries.

- **/VirtualClient**. This directory contains the necessary application files for the Wavelink Virtual Client.

Chapter 3: Wavelink Studio COM Tutorial

Wavelink Studio COM is designed to help you manage wireless applications efficiently and effectively. This tutorial provides individuals new to Wavelink Studio COM an opportunity to become familiar with the Wavelink Studio COM environment.

In this tutorial, you will accomplish the following tasks:

• Become familiar with the Wavelink Administrator

• Connect to a Wavelink Server

• Create a TCP/IP Port Monitor

• Start a server-based application from a mobile device

Before You Begin

Before you begin this tutorial, you must complete the following three steps:

• Complete a full installation of Wavelink Studio COM.

  See *Chapter 2: Installation* on page 9 for more information.

• Install a Wavelink Client on a mobile device.

  Different mobile devices require different Wavelink Clients. See the appropriate Wavelink Client documentation for more information.

• Configure the Wavelink Client with demo as the Discovery Token mask.

  See the appropriate Wavelink Client documentation for more information.

Starting the Wavelink Administrator

Once you complete a full installation of Wavelink Studio COM, start the Wavelink Administrator.

To start the Administrator on Windows NT/2000 host:

1 Open the \Bin directory where you installed Wavelink Studio COM.

2 Launch the `WLStartup.exe` executable.

This launches the Wavelink Startup Utility, which allows you to start Wavelink Servers that reside on local and remote hosts.

See *Chapter 5: Wavelink Startup Utility* on page 29 for more information.

3 Launch the Administrator by selecting `Wavelink Studio >` `Wavelink Studio Administrator` from the **Start** menu.

To start the Administrator on a Windows 95/98 host:

**1** Open the `\Bin` directory where you installed Wavelink Studio COM.

2 Launch the `WLStartup.exe` executable.

This launches the Wavelink Startup Utility, which allows you to start Wavelink Servers that reside on local and remote hosts.

See the *Chapter 5: Wavelink Startup Utility* on page 29 for more information.

3 Launch the Administrator by selecting `Wavelink Studio >` `Wavelink Studio Administrator` from the **Start** menu.

After you double-click the Administrator icon from your host, the following screen appears:
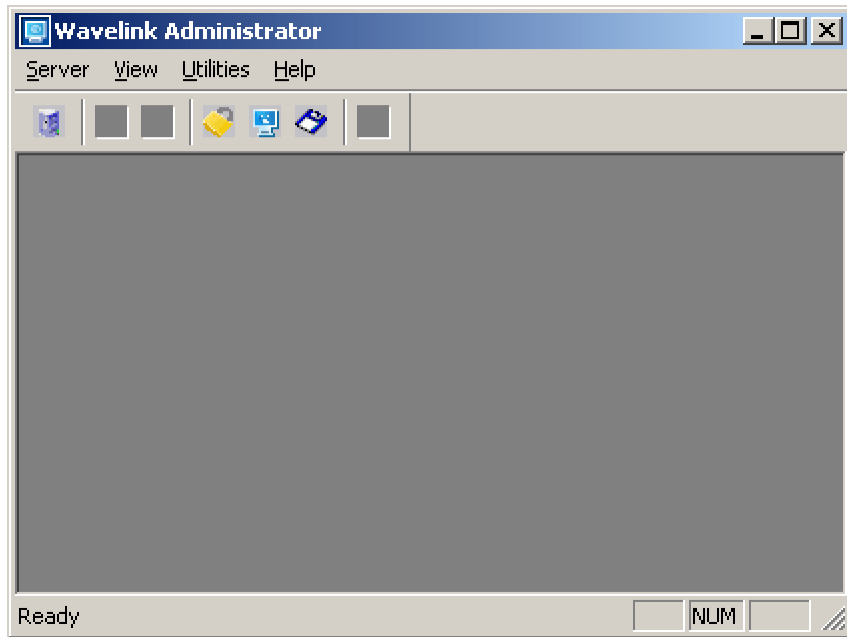
Figure 3-1. *The Wavelink Administrator*

The Administrator consists of three components:

- A menu bar, with different menus available depending on which Wavelink features are currently in use

- A toolbar, containing button shortcuts to several Wavelink features

- A workspace, where data about wireless applications is displayed

See *Chapter 6: Wavelink Administrator* on page 33 for more information.

Connecting to a Wavelink Server

After you start the Administrator, the next step is to connect to a Wavelink Server. In this tutorial, you will connect to the Wavelink Server that resides on your local host.

To connect to a Wavelink Server:

1 Click the **New Server Connection** icon from the Administrator toolbar.

A new dialog box appears, containing a list of available computers on your network that host Wavelink Servers.
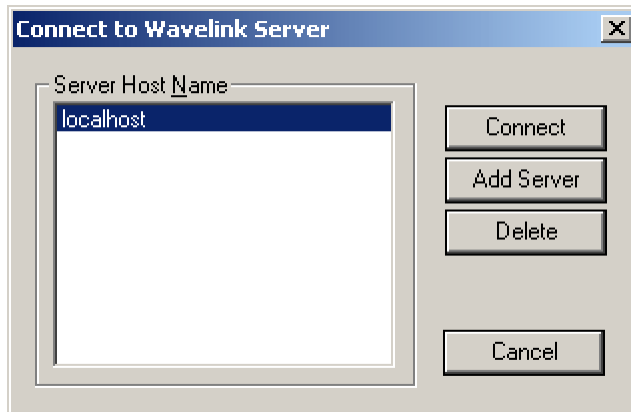
Figure 3-2. *The Connect to Wavelink Server Dialog Box*

2   Select localhost from the **Server Host Name** list.

3   Click Connect.

The Administrator will now connect to the Wavelink Server on your local host machine.

After you connect to the Wavelink Server, a Wavelink Server Explorer window will appear in the Administrator's workspace. This window displays the current Port Monitors and mobile device connections to the server in a tree format. You can expand or collapse each branch on this tree by clicking the plus (+) sign or minus (-) signs that appear next to each element of the tree.
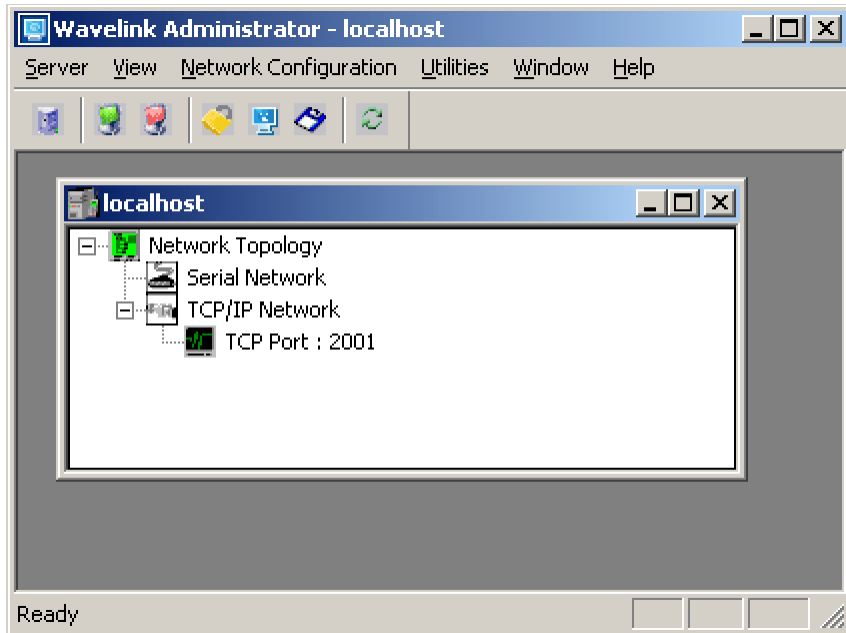
Figure 3-3. *The Wavelink Administrator with a Wavelink Explorer window open*

Creating a TCP/IP Port Monitor

Your next task is to create a TCP/IP Port Monitor that your mobile devices can use to connect to the wireless network. First, you must assign a port to the monitor.

To assign a port to the Port Monitor:

1   Make sure the Wavelink Server Explorer window of your local Wavelink Server is active.

**2**   Click the New Wavelink Monitor icon from the Administrator toolbar.

Your next task is to create a TCP/IP Port Monitor that your mobile devices can use to connect to the wireless network. First, you must assign a port to the monitor.

The following dialog box appears.
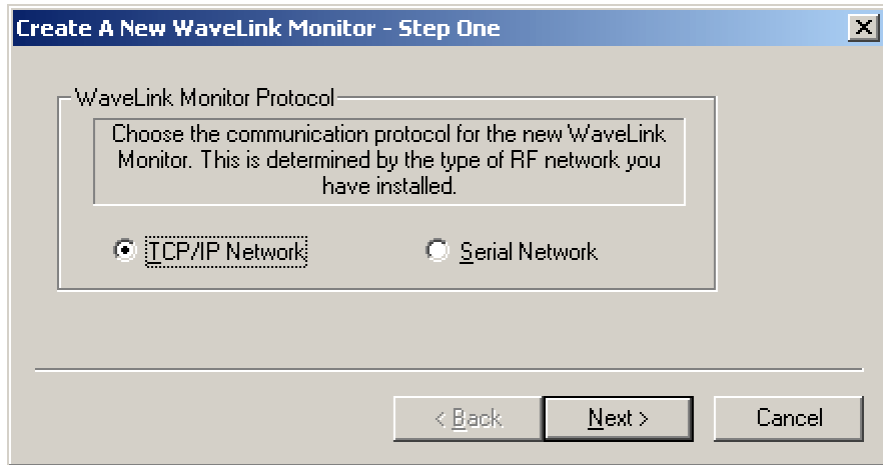
Figure 3-4. *The Create a New Wavelink Monitor-Step One Dialog Box*

3   Select the **TCP/IP Network** option.

4   Click Next>.

   The following dialog box appears.
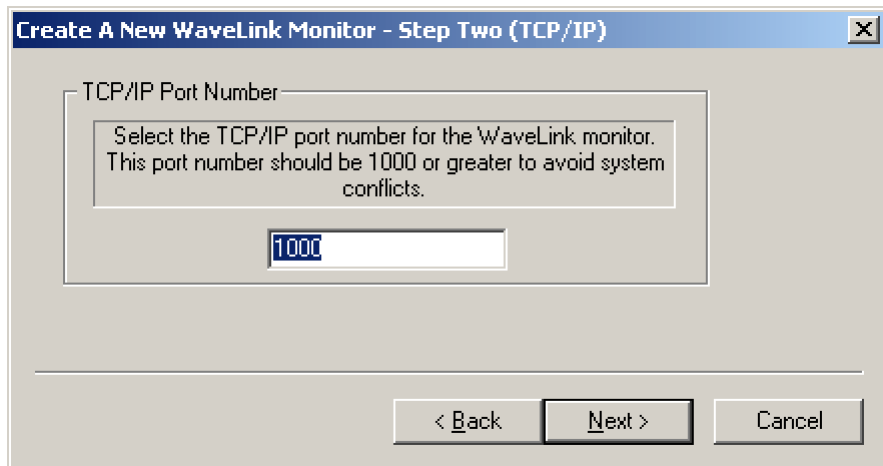
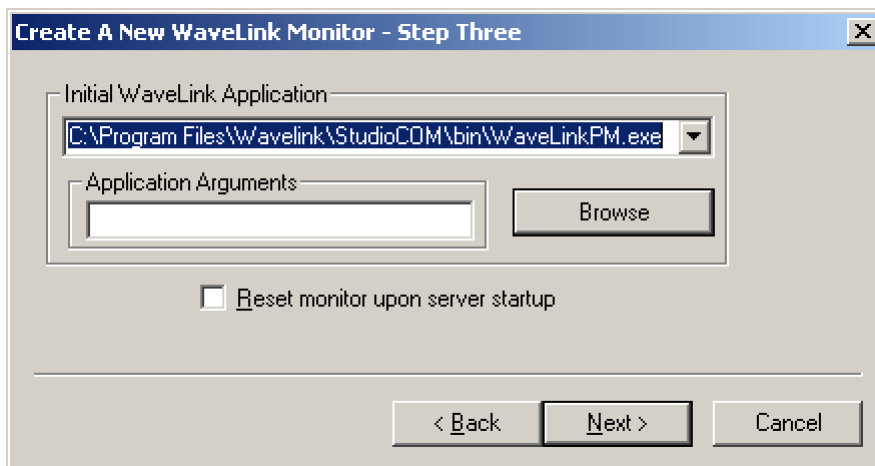**Figure 3-5.** *The Create a New Wavelink Monitor-Step Two (TCP/IP) Dialog Box*

5   Type 2050 in the TCP/IP Port Number field.

   This number will be the port assigned to this Port Monitor.

6 Click Next>.

The following dialog box appears.

Figure 3-6. *The Create a New Wavelink Monitor-Step Three Dialog Box*

To assign an application to the Port Monitor:

1 Select the WavelinkPM.exe program from the **Initial Wavelink Application** list.

This program starts the Wavelink Program Manager application. When users start the Program Manager, they receive a list of wireless applications available to them from the Wavelink Server. The contents of this list changes depending on how you assign wireless applications to your users.
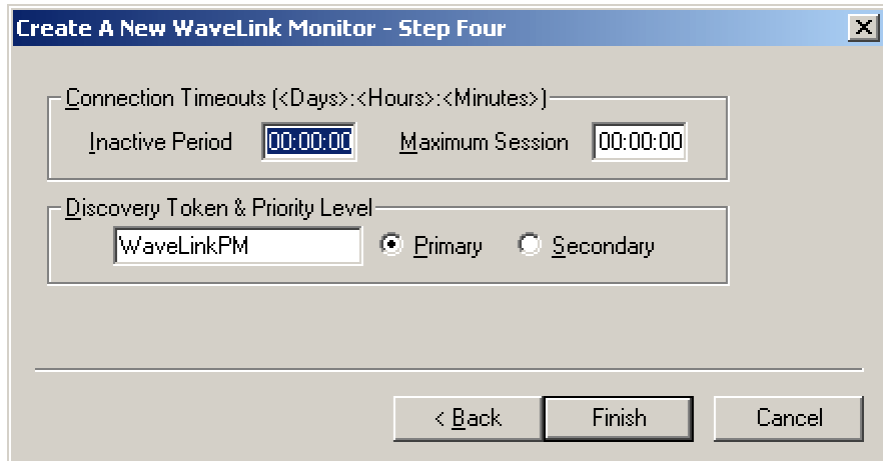
See *Chapter 7: Managing Applications* on page 59 for more information on the Wavelink Program Manager.

2 Check the **Reset monitor upon server startup** option.

When you enable this option, the Port Monitor will start automatically each time the Wavelink Server restarts.

3 Click Next>.

The following dialog box appears.

Figure 3-7. *The Create a New Wavelink Monitor-Step Four Dialog Box*

To configure the Port Monitor:

1   Type `00:00:10` in the **Inactive Period** field.

   This value sets the Port Monitor to disconnect any mobile device that has
   been inactive for 10 minutes.

2   Type `00:01:00` in the **Maximum Session** field.

   This value sets the Port Monitor to disconnect any mobile device that has
   been connected to the network for one hour.

3   Type `demo` in the **Discovery Token** field.

   Any mobile device that contains the Discovery Token mask, `demo`, will be
   able to communicate to the network through this Port Monitor.

   See *Port Monitors and AutoDiscovery* on page 42 for more information on
   Discovery Tokens.

4   Select the **Primary** option.

5   Click `Finish`.

You have now successfully created a Wavelink Port Monitor on your host.

Starting Applications from a Mobile Device

With Wavelink Studio COM installed on a local host, and a Wavelink Client installed on a mobile device, you are now ready to open and run server-based applications from a mobile device.

To start a server-based application on a mobile device:

1 Ensure the Wavelink Server is running on your local host.

2 Activate the mobile device and launch the Wavelink Client.

3 Follow the on-screen directions to connect the mobile device to the Wavelink Server.

The Wavelink Client will attempt to connect with the Wavelink Server. Once it connects, the Wavelink Program Manager will appear, with a list of demonstration applications you can use on your mobile device.

Taking the Next Step

You have now successfully completed the Wavelink Studio COM Tutorial. Now that you have learned more about how to configure Port Monitors and activate server-based applications from a mobile device, you are ready to begin to implement server-based solutions across your wireless network.

Please refer to the rest of this manual to learn more about how you can customize Wavelink Studio COM to maximize your wireless application solutions.

Chapter 4: The Wavelink Server

The Wavelink Server allows your mobile device users access to Wavelink applications residing on your host computer.

The Wavelink Server operates in two different ways, depending on the host operating system:

- On Windows NT/2000, the Wavelink Server operates as a system service.

  As a system service, the Wavelink Server does not appear on the host's taskbar, and automatically starts each time the host restarts. The Wavelink Server also runs regardless of whether a user is logged on to the host computer.

- On Windows 95/98, the Wavelink Server operates as a hidden desktop application.

  As a hidden desktop application, the Wavelink Server does not appear on a host's taskbar, and you must restart the Wavelink Server each time the host's restarts. Also, the Wavelink Server will not operate until a user logs on to the host computer.

Starting the Wavelink Server

You can start the Wavelink Server in three ways: from the Administrator, from the Wavelink directory, or from the Services control panel.

To start the Wavelink Server from the Administrator:

NOTE This method requires that you activate the Wavelink Startup Utility.

1 Launch the Administrator by selecting `Wavelink Studio > Wavelink Studio Administrator` from the **Start** menu.

2 Click `Server` from the Administrator toolbar.

Alternatively, you can select `Open` from the **Server** menu.

A new dialog box appears, containing a list of available computers on your network that host Wavelink Servers.

3 Select the desired Wavelink Server from the list.

4 Click `Connect`.

The Wavelink Server will start and connect to the Administrator.

To start the Wavelink Server from the Wavelink directory:

1 Open the Wavelink directory.

2 Double-click the **Wavelink Server** icon.

If you installed the Wavelink Server on a host using Windows NT/2000, you can also start the Wavelink Server using the Services control panel.

To start the Wavelink Server using the Services control panel:

1 Open the Services control panel.

2 Select the `Wavelink Server` application.

3 Click `Start`.

Once you have opened the Services control panel, you can also decide if you want the Wavelink Server to start automatically. See your Windows NT/2000 documentation for more information on the options available within the Services control panel.

Stopping the Wavelink Server

You can stop the Wavelink Server in three ways: from the Wavelink Administrator, from the Task Manager or Close Program List, or from the Services control panel.

To stop the Wavelink Server from the Administrator:

1 Launch the Administrator by selecting `Wavelink Studio > Wavelink Studio Administrator` from the **Start** menu.

2 Select `Terminate Current Server` from the **Server** menu.

NOTE It is recommended that you always stop the Wavelink Server from the Administrator whenever possible.

To stop the Wavelink Server without the Administrator:

1 If you use Windows NT/2000, open the Task Manager.

   If you use Windows 95/98, open the Close Program List.

2 Select `Wavelink Server` from the list.

3 Click `End Task`.

If you are using Windows NT/2000, you can also stop the Wavelink Server from the Services control panel:

To start the Wavelink Server using the Services control panel:

1 Open the Services control panel.

2 Select the `Wavelink Server` application.

3 Click `Stop`.

NOTE The Wavelink Server will automatically stop when Wavelink Studio COM is uninstalled.

Configuring Recordsets

If you run the Wavelink Server as a service on Windows NT/2000, and your application accesses a database, the host must have a place to store recordsets.

To create a location for a local Wavelink Server to store recordsets:

1 Open the System control panel.

2 Select the Environment tab.

3 Type the name of the folder where the recordsets will reside in the **Variable** field.

4 Type the path where you want the Temp folder to reside in the **Value** field.

5 Click `Set`.

Configuring ODBC DSNs

If you run the Wavelink Server as a service under Windows NT and use an ODBC DSN, you need to configure the DSN as a system DSN (instead of as a user DSN).

You can start the Wavelink Server as a user service by configuring options in `Services | Startup` in the Control Panel on Windows NT/2000.

NOTE A user service cannot interact with the desktop. Consequently, the Wavelink Server will not display message boxes and can crash if a message box occurs. For this reason, if you plan to configure your server in this way, you must thoroughly debug your applications.

Chapter 5:   Wavelink Startup Utility

With the Wavelink Startup Utility, you can use the Administrator to start the Wavelink Server on both local and remote hosts. Also, if an Administrator connects to a host that has a stopped Wavelink Server, the Wavelink Startup Utility will automatically re-start that Wavelink Server.

The Wavelink Startup Utility operates in two different ways, depending on the host operating system:

- On Windows NT/2000, the Wavelink Startup Utility operates as a system service.

  As a system service, the Wavelink Startup Utility does not appear on the host's taskbar, and automatically starts each time the host restarts. The Wavelink Startup Utility also runs regardless of whether a user is logged on to the host computer.

- On Windows 95/98, the Wavelink Startup Utility operates as a hidden desktop application.

  As a hidden desktop application, the Wavelink Startup Utility does not appear on the host's taskbar, and you must restart the Wavelink Startup Utility each time the host restarts. Also, the Wavelink Startup Utility will not operate until a user logs on to the host computer.

Starting the Wavelink Startup Utility

You can start the Wavelink Startup Utility in two ways: from the Wavelink directory, or from the Services control panel.

If you installed the Wavelink Startup Utility on a host using Windows NT/ 2000, you can also start the Wavelink Startup Utility using the Services control panel.

To start the Wavelink Startup Utility:

1 Open the `\Bin` directory where you installed Wavelink Studio COM.

2 Launch the `WLStartup.exe` executable.

To start the Wavelink Startup Utility using the Services control panel:

1 Open the Services control panel.

2 Select the `Wavelink Startup Utility` application.

3 Click `Start`.

Once you have opened the Services control panel, you can also decide if you want the Wavelink Startup Utility to start automatically. See your Windows NT/2000 documentation for more information on the options available within the Services control panel.

Stopping the Wavelink Startup Utility

You can stop the Wavelink Startup Utility in three ways: from the Wavelink Administrator, from the Task Manager or Close Program List, or from the Services control panel.

NOTE If you decide to disable the Wavelink Startup Utility, you can only start the Wavelink Server locally—you cannot start the Wavelink Server remotely.

See for more information on starting the Wavelink Server when the Wavelink Startup Utility is disabled.

To stop the Wavelink Startup Utility from the Administrator:

1 Start the Administrator by double-clicking on the **Administrator** icon located in the Wavelink program group.

2 Select `Terminate Remote Startup Utility` from the **Server** menu.

NOTE It is recommended that you always stop the Wavelink Startup Utility from the Administrator whenever possible.

To stop the Wavelink Startup Utility without the Administrator:

1 If you use Windows NT/2000, open the Task Manager.

   If you use Windows 95/98, open the Close Program List.

2 Select `Wavelink Startup Utility` from the list.

3 Click `End Task`.

If you are using Windows NT, you can stop the Wavelink Startup Utility from the Services control panel:

To start the Wavelink Startup Utility using the Services control panel:

1 Open the Services control panel.

2 Select the `Wavelink Startup Utility` application.

3 Click `Stop`.

Terminate Wavelink Startup Utility

When you enable the Wavelink Startup Utility, both local and remote Administrators can start a Wavelink Server. If you decide to disable the Wavelink Startup Utility, you must use the Terminate Wavelink Startup Utility.

To use the Terminate Wavelink Startup Utility, select `Terminate Wavelink Startup Utility` from the **Utilities** menu.

The Wavelink Startup Utility will immediately shut down.

NOTE When you disable the Wavelink Startup Utility, the only method to start the Wavelink Server on the local host is by manually clicking the Wavelink Server icon from the Wavelink program group. Even the local Wavelink Administrator will not be able to start the Wavelink Server.

See *Starting the Wavelink Server* on page 25 for more information.

Chapter 6:   Wavelink Administrator

The Wavelink Administrator is the central application you use to configure and manage Wavelink Servers and wireless applications.

Starting the Wavelink Administrator

To start the Wavelink Administrator:

Launch the Administrator by selecting `Wavelink Studio > Wavelink Studio Administrator` from the **Start** menu.
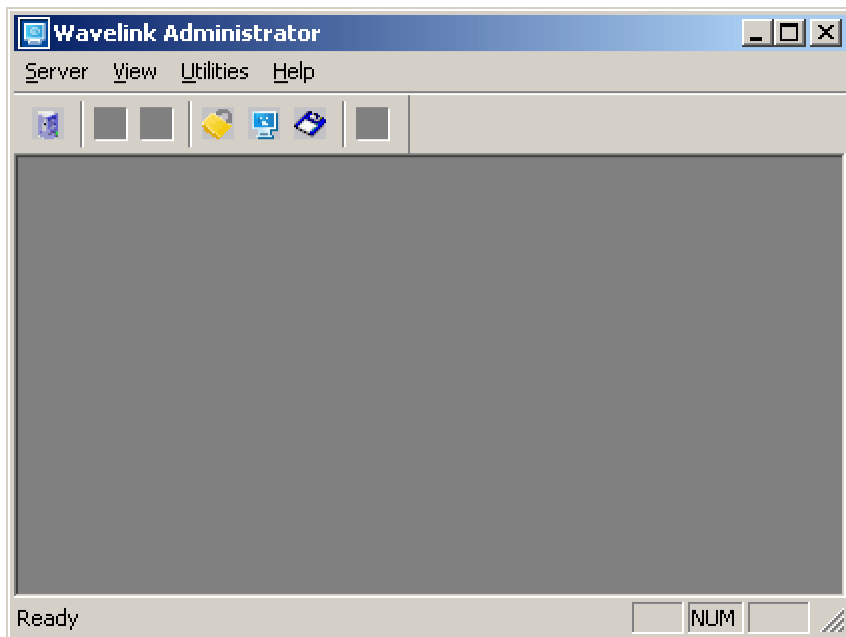
Figure 6-1. *The Wavelink Administrator*

The Wavelink Administrator is composed of three components:

• A menu bar, with different menus available depending on which Wavelink features are currently in use

• A toolbar, containing button shortcuts to several Wavelink features

• A workspace, where data about wireless applications are displayed

Managing Servers

You can use the Administrator to view and modify the Wavelink Servers on your network.

To connect to a Wavelink Server:

NOTE This method requires that you first activate the Wavelink Startup Utility.

1 Click the **New Server Connection** icon from the Administrator toolbar.

Alternatively, you can select Open from the **Server** menu.

A new dialog box appears, containing a list of available computers on your network that host Wavelink Servers.
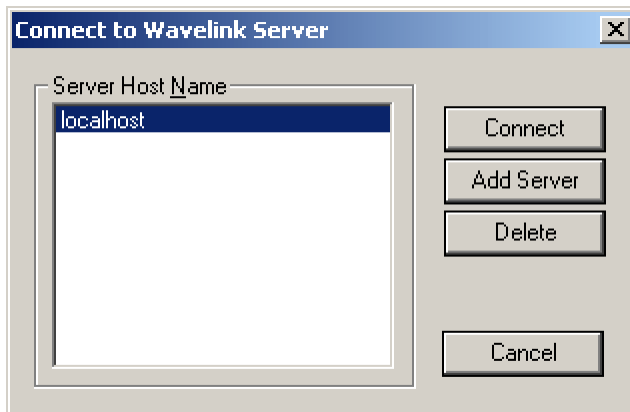
Figure 6-2. *The Connect to Wavelink Server Dialog Box*

2 Select the desired Wavelink Server from the list.

3 Click Connect.

The Administrator connects to the Wavelink Server.

If you connect to a computer that does not have the Wavelink Server running, the following dialog box appears.
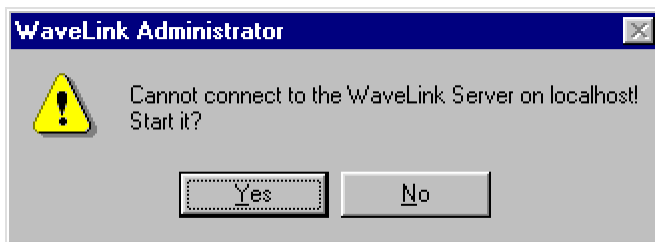
Figure 6-3. *The Cannot Connect to a Wavelink Server Dialog Box*

Click Yes to start the Wavelink Server on the host.

NOTE If you disable the Wavelink Start-Up Utility on a remote host, you can only start the Wavelink Server locally. See the *Starting the Wavelink Server* section for more information.

Adding Servers to the Administrator

You can add additional Wavelink Servers to the Administrator at any time.

To add additional servers to the Administrator:

1   Open the Connect to Wavelink Server dialog box by clicking Server from the Administrator toolbar.

2   Click Add.

The Add New Server to Connection List dialog box appears.

Figure 6-4. *Add A New Server to Connection List Dialog Box*

3   Type either the host file name or the IP address of the computer that hosts the Wavelink Server that you want to add.

4   Click `Add Server`.

To cancel without adding an additional server, click `Cancel`.

NOTE Add only hosts that have a Wavelink Server installed, otherwise the Wavelink Administrator cannot connect with the selected host.
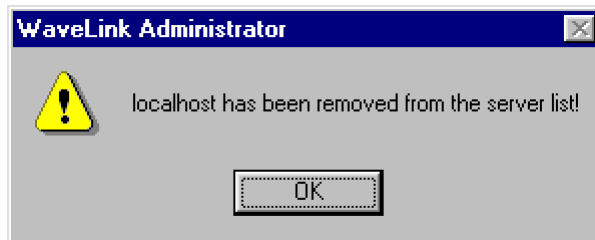

Removing Servers from the Administrator

To remove a Wavelink Server from the available servers list:

1   Open the Connect to Wavelink Server dialog box by clicking `Server` from the Administrator toolbar.

2   Select the computer that hosts the Wavelink Server that you want to remove.

3   Click `Delete`.

The following confirmation dialog box appears.

Figure 6-5. *The Remove Server Confirmation Dialog Box*

4   Click `OK`.

The computer will then be removed from the list of available servers.

The Wavelink Server Explorer

Each Wavelink Server connected to the Administrator appears in its own Wavelink Server Explorer window.
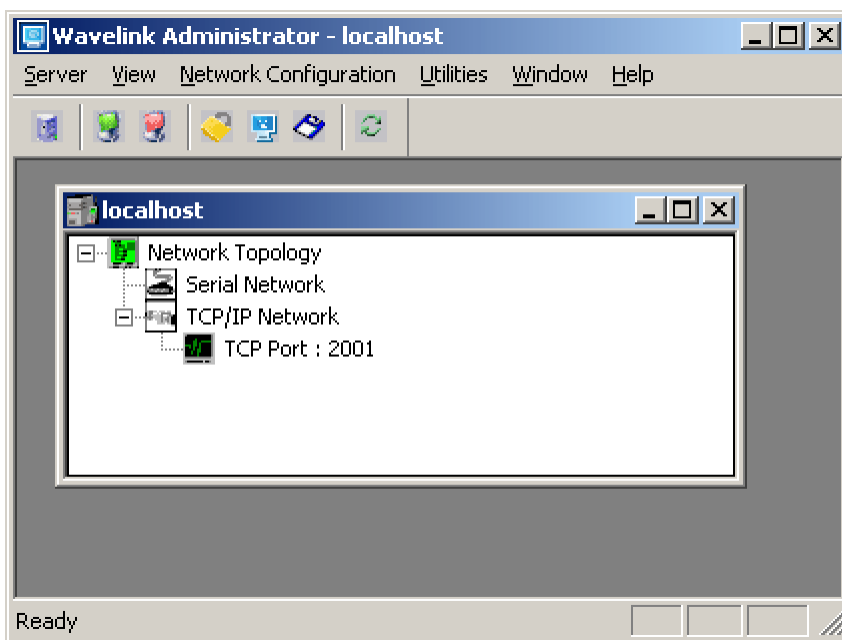
Figure 6-6. *The Wavelink Administrator with a Wavelink Server Explorer window open*

Each Wavelink Server Explorer window displays the current Port Monitors and mobile device connections to that server in a tree format. You can expand or collapse each branch on a tree by clicking the plus (+) sign or minus (-) signs that appear next to each element of the tree.

Refreshing Wavelink Server Explorer Windows

Wavelink Server Explorer windows display wireless network information in near real-time—consequently, each window automatically refreshes to display the most current information available. However, you can manually refresh a Wavelink Server Explorer window at any time.

You can manually refresh a Wavelink Server Explorer window in two ways:

• Select the desired Wavelink Server Explorer window, and then click `Refresh View` from the Administrator toolbar.

• Select the desired Wavelink Server Explorer window, and then select `Refresh` from the **View** menu.

Arranging Wavelink Server Explorer Windows

If you connect to more than one Wavelink Server, you will have several
Wavelink Server Explorer windows open at the same time. You can arrange
these windows either by moving each window individually or by using the
different options found under the **Window** menu.

Disconnecting a Wavelink Server

You can disconnect from a Wavelink Server at any time.

To disconnect from a Wavelink server, close the Wavelink Server Explorer
window for that server. You can also select the desired Wavelink Explorer
window and then select Close from the **Server** menu.

NOTE If you only disconnect from a Wavelink Server, that server will continue
to run on its host computer.

See *Stopping the Wavelink Server* on page 26 for information on how to
completely stop a Wavelink Server.

Managing Port Monitors

A Port Monitor is a software component that handles communication
between a mobile device and a Wavelink Server. As the name suggests, Port
Monitors focus on a specific TCP/IP or serial port, where they await requests
from mobile devices to start a specific application.

Port Monitors operate on a one-to-one ratio—one Port Monitor connects to
only one port and only one application.

NOTE If you do not specify an application, Wavelink assigns the Wavelink
Program Manager application to the Port Monitor.

Configuring Port Monitors

Port Monitor configuration is divided into three categories: general,
application, and AutoDiscovery.

To configure the general options of a Port Monitor:

1 Double-click the Port Monitor's icon from the appropriate Wavelink Server Explorer window.

The following Monitor Information dialog box appears.
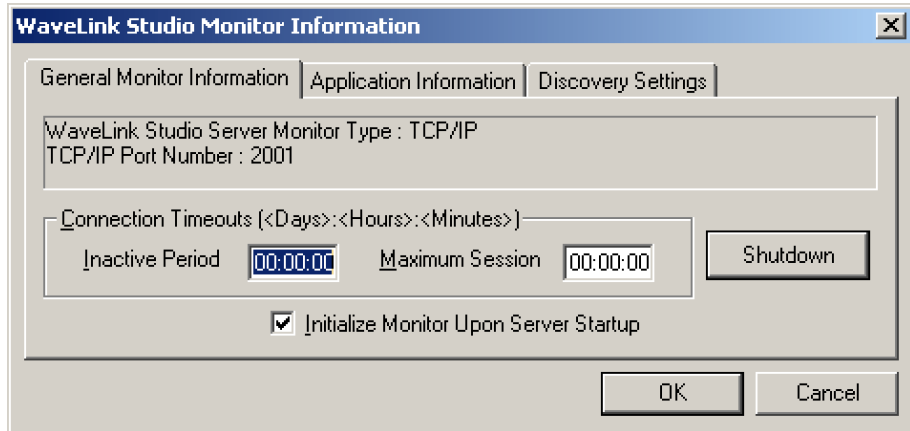
Figure 6-7. *The Monitor Information dialog*

This dialog box consists of three tabs: General Monitor Information, Application Information, and Discovery Settings.

2 Click the General Monitor Information tab.

The top section of this tab displays the current Port Monitor type (either TCP/IP or serial) and the specific port assigned to the Port Monitor.

The bottom section of this tab displays the timeout values for the port number.

3 Type the timeout value for mobile device inactivity in the **Inactive Period** field.

This value determines how long a mobile device can remain inactive before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

4 Type the timeout value for mobile device maximum connection time in the **Maximum Session** field.

This value determines how long a mobile device can remain connected to an application before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

5 Select the **Initialize Monitor Upon Server Startup** option to automatically start the Port Monitor each time the Wavelink Server starts.

6 Click OK.

7 To configure the application options of a Port Monitor:

8 Open the Port Monitor Information dialog box by double-clicking the Port Monitor's icon from the appropriate Wavelink Server Explorer window.

9 Click the Application Information tab.
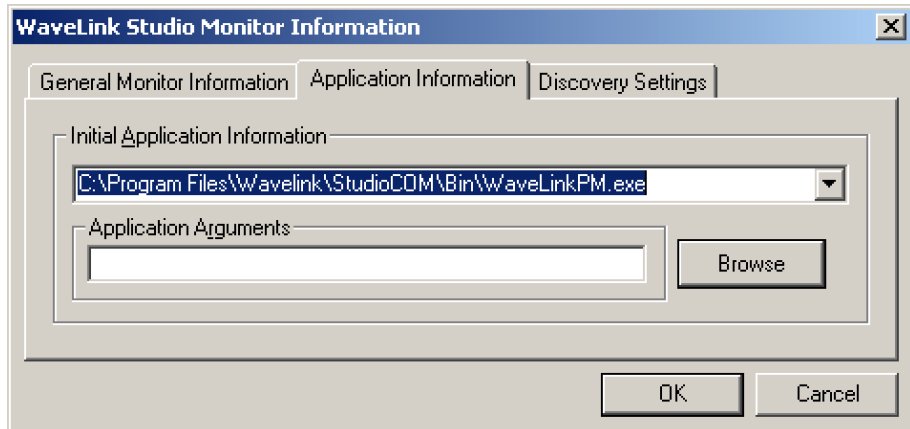
Figure 6-8. *The Application Information Tab*

10 Select an application for the Port Monitor from the **Initial Application Information** list.

This list contains all applications currently available to Port Monitors. You can also click Browse to manually select another application.

To add additional applications, see *Configuring Applications* on page 65.

11 Type any command-line arguments for the application in the **Application Arguments** field.

12 Click OK.

To configure the AutoDiscovery options of a Port Monitor:

**NOTE** These options are only available to Port Monitors using TCP/IP ports.

NOTE See *Port Monitors and AutoDiscovery* on page 42 for more information on Wavelink Studio COM's AutoDiscovery features.

1 Open the Port Monitor Information dialog box by double-clicking the Port Monitor's icon from the appropriate Wavelink Server Explorer window.

2 Click the Discovery Settings tab.
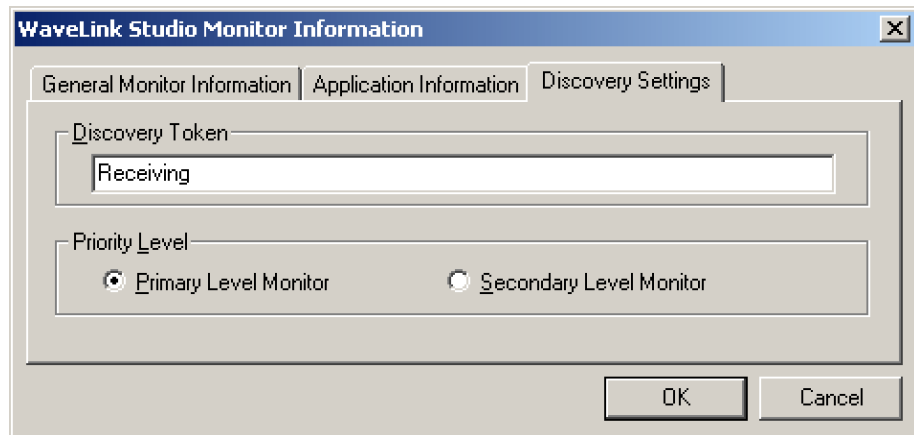
Figure 6-9. *The Discovery Settings Tab*

3 Type the discovery token for the Port Monitor in the **Discovery Token** field.

Ses *Port Monitors and AutoDiscovery* on page 42 for more information.

4 Select a priority level for the Port Monitor by selecting either the **Primary Level Monitor** or **Secondary Level Monitor** options.

5 Click OK.

Stopping Port Monitors

You can stop a Port Monitor at any time.

NOTE It is highly recommended that you disconnect all mobile devices using a Port Monitor before you shut down a Port Monitor.

To stop a Port Monitor:

1 Open the Port Monitor Information dialog box by double-clicking the Port Monitor's icon from the appropriate Wavelink Server Explorer window.

2 Click the General Monitor Information tab.

3 Click Shutdown.

4 Click OK.

Port Monitors and AutoDiscovery

This section discusses how you can use Wavelink's powerful AutoDiscovery technology to reduce the time it takes to configure mobile devices.

Discovery Tokens

Wavelink's AutoDiscovery feature uses Discovery Tokens to minimize mobile device configuration.

With traditional wireless networks, you must assign each mobile device a network address and a TCP/IP port that belongs to a specific computer on your network.

Wavelink's AutoDiscovery technology eliminates the need for this time-consuming configuration by allowing you to assign each Port Monitor a Discovery Token name, instead of a network address and a TCP/IP port. Then, you assign each mobile device a Discovery Token mask.

NOTE A Discovery Token can be any alphanumeric combination, up to 18 characters in length.

When a network user starts a mobile device, that mobile device broadcasts its Discovery Token mask to the wireless network. Any Port Monitor whose Discover Token name matches that mobile device's Discovery Token mask will respond and become available to the mobile device.

Port Monitor Priority Levels

In addition to assigning Port Monitors a Discovery Token name, you can also assign Port Monitors a priority level. There are two levels of priority available: primary and secondary.

A primary Port Monitor automatically connects with a mobile device with the correct Discovery Token mask.

NOTE If more than one primary Port Monitors have the correct Discovery Token mask and attempt to connect to a mobile device, that mobile device will connect to the first Port Monitor that attempts to connect.

If you assigned a Port Monitor a secondary status, any mobile device that connects to that Port Monitor will wait 10 seconds to see if a primary Port Monitor is available. If a primary Port Monitor is not available, the mobile device will connect with the secondary Port Monitor.

Discovery Token Wildcards

In addition to assigning specific Discovery Token names to Port Monitors, you can also assign Port Monitors the wildcard character, the asterisk (*). Instead of just connecting to a specific Port Monitor, mobile devices will display a list of Port Monitors that contain the wildcard character in their Discovery Token name. mobile devices users can then select the Port Monitor of their choice.

NOTE By default, each Wavelink client is initially configured with a wildcard Discovery Token mask.

Adding Port Monitors

You can add as many Port Monitors as you need to support the mobile device and applications on a wireless network. You can add one of two types of Port Monitors: TCP/IP and serial.

NOTE As you create new Port Monitors, you can return to a previous dialog box by clicking <Back.

You can also cancel the installation process at any time by clicking Cancel.

TCP/IP Port Monitors

To add a TCP/IP Port Monitor:

1 Select the desired Wavelink Server from the Administrator workspace.

2 Click New Wavelink Monitor from the Administrator toolbar.

Alternatively, you can select Start New Monitor from the **Network Configuration** menu.

The following dialog box appears.
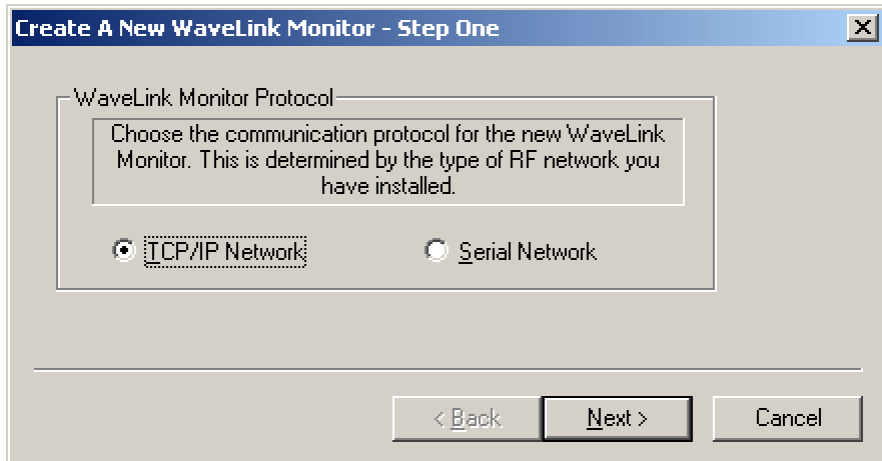
Figure 6-10. *The Create a New Wavelink Monitor –Step One Dialog Box*

3 Select the **TCP/IP Network** option.

4 Click Next>.

The following dialog box appears.
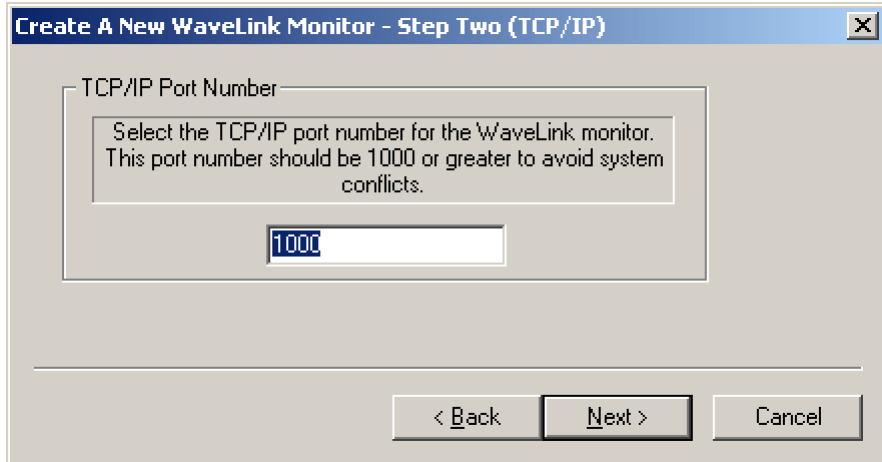
Figure 6-11. *The Create a New Wavelink Monitor –Step Two (TCP/IP) Dialog Box*

5 Type the specific TCP/IP port number in the **TCP/IP Port Number** field.

NOTE You can assign any port number to a Port Monitor. However, to avoid using well-known ports, it is recommended that you select port numbers that are greater than 1000.

---

6 Click Next>.

The following dialog box appears.
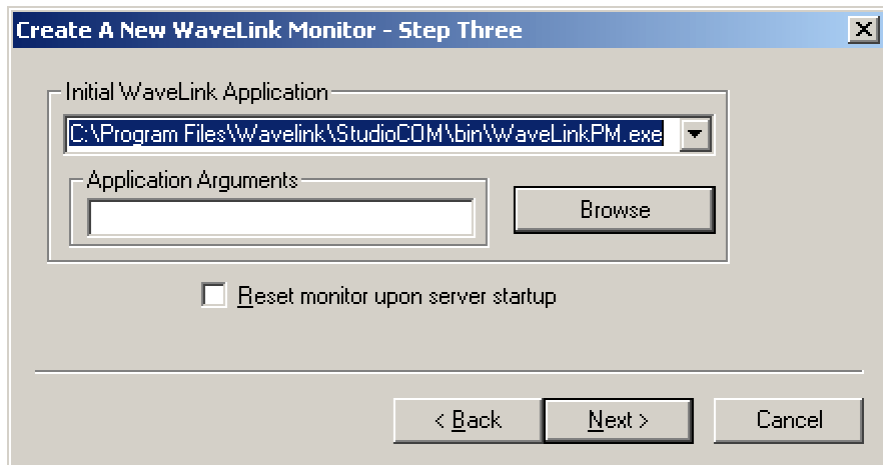
Figure 6-12. *The Create a New Wavelink Monitor –Step Three Dialog Box*

7 Select an application for this Port Monitor from the **Initial Wavelink Application** list.

   If you do not see the desired application in this list, you can click Browse to navigate to the specific application.

8 Type any application arguments for this application in the **Application Arguments** field.

9 Check the **Reset monitor upon server startup** check box if you want the Port Monitor to automatically start each time the Wavelink Server restarts.

   If you do not select this option, you must reconfigure the Port Monitor each time the Wavelink Server restarts.

10 Click Next>.

   The following dialog box appears.
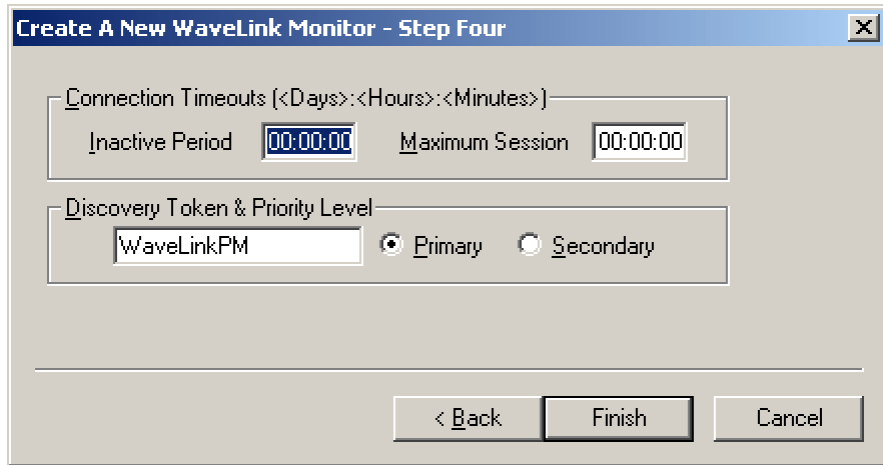
Figure 6-13. *The Create A New Wavelink Monitor –Step Four Dialog Box*

11 Type the timeout value for mobile device inactivity in the **Inactive Period** field.

This value determines how long a mobile device can remain inactive before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

12 Type the timeout value for mobile device maximum connection time in the **Maximum Session** field.

This value determines how long a mobile device can remain connected to an application before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

13 Type the discovery token for the Port Monitor in the **Discovery Token** field.

14 Select a priority level for the Port Monitor by selecting either the **Primary Level Monitor** or **Secondary Level Monitor** options.

15 Click Finish.

Serial Port Monitors

To add a serial Port Monitor:

1 Select the desired Wavelink Server from the Administrator workspace.

2 Click `New Wavelink Monitor` from the Administrator toolbar.

Alternatively, you can select `Start New Monitor` from the **Network Configuration** menu.
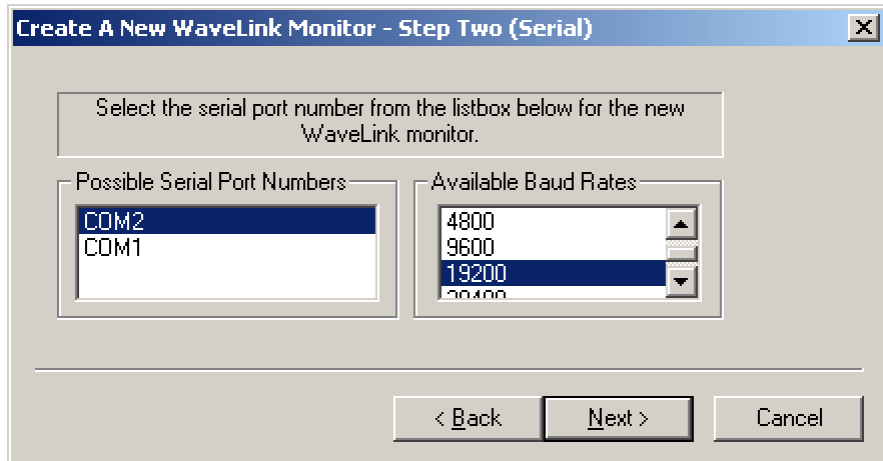
The following dialog box appears.
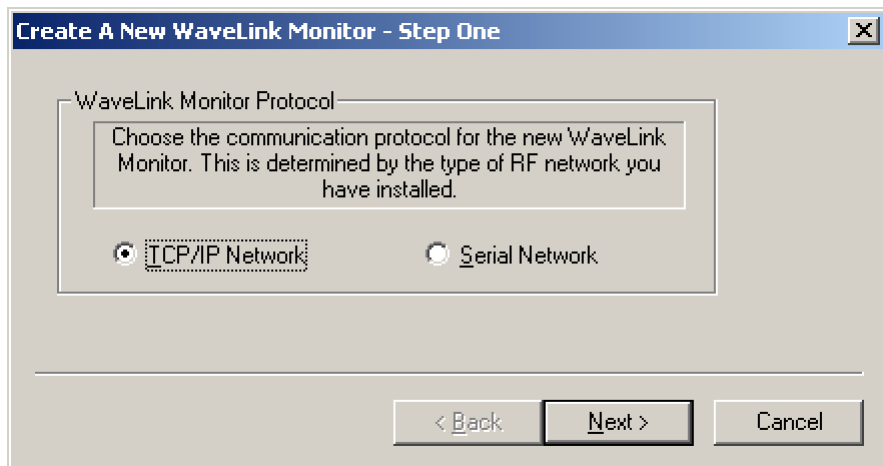
Figure 6-14. *The Creating a New Wavelink Monitor –Step One Dialog Box*

3 Select the **Serial Network** option to create a new TCP/IP Port Monitor.

The following dialog box appears.

Figure 6-15. *The Creating a New Wavelink Monitor –Step Two (Serial) Dialog Box*

4 Select a serial port for this Port Monitor from the **Possible Serial Port Numbers** list.

5 Select the baud rate for the serial port from the **Available Baud Rates** list.

NOTE The default selection in this list is 19200. Do not alter this rate unless you also change the connecting Serial Access Bridge to match the altered rate.

---

6 Click Next>.

The following dialog box appears.
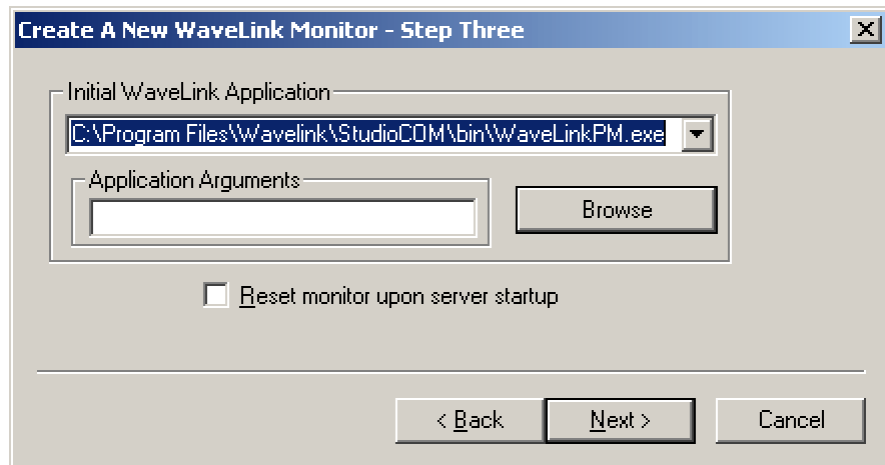
Figure 6-16. *The Creating a New Wavelink Monitor –Step Three Dialog Box*

7 Select an application for this Port Monitor from the **Initial Wavelink Application** list.

If you do not see the desired application in this list, you can click `Browse` to navigate to the specific application.

8 Type any application arguments for this application in the **Application Arguments** field.

9 Check the **Reset monitor upon server startup** check box if you want the Port Monitor to automatically start any time the Wavelink Server restarts.

If you do not select this option, you must reconfigure the Port Monitor each time the Wavelink Server restarts.

10 Click `Next>`.

The following dialog box appears.
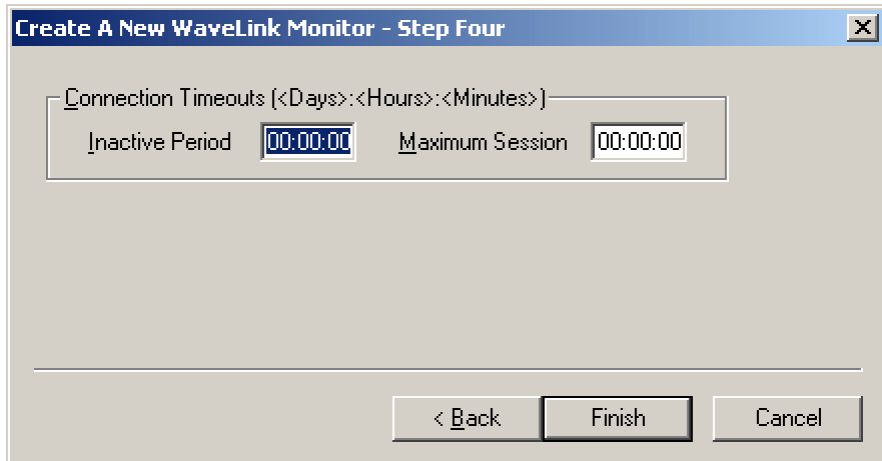
Figure 6-17. *The Create A New Wavelink Monitor – Step Four Dialog Box*

11 Type the timeout value for mobile device inactivity in the **Inactive Period** field.

This value determines how long a mobile device can remain inactive before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

12 Type the timeout value for mobile device maximum connection time in the **Maximum Session** field.

This value determines how long a mobile device can remain connected to an application before the Port Monitor terminates the connection.

This value consists of days, hours, and minutes, and must be entered in the following format: DD:HH:MM.

13 Click Finish.

Removing Port Monitors

You can remove Port Monitors from a Wavelink Server at any time.

NOTE It is recommended that you disconnect all mobile devices using a Port Monitor before you remove that Port Monitor.
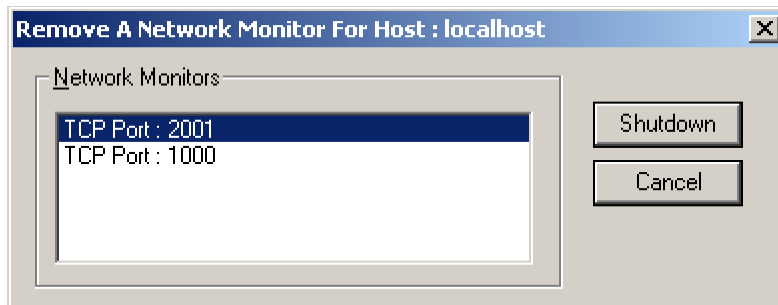
To remove a Port Monitor:

1   Select the Wavelink Server that contains the Port Monitor you want to remove.

2   Click `Terminate Monitor` from the Administrator toolbar.

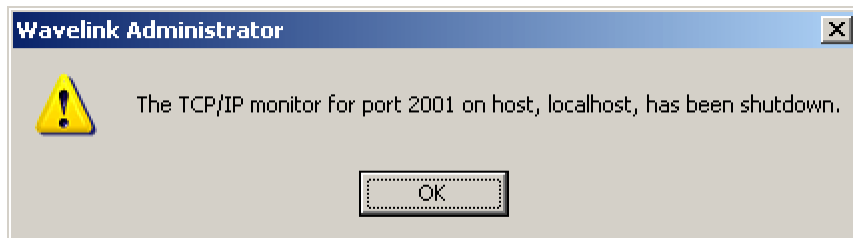Alternatively, you can select `Delete Monitor` from the **Network Configuration** menu.

The following dialog box appears.

Figure 6-18. *The Remove a Network Monitor For Host dialog*

3   Select the Port Monitor that you want to delete.

4   Click `Shutdown`.

The following dialog box appears.

Figure 6-19. *The Remove a Network Monitor Confirmation dialog*

5 Click OK.

Managing Mobile Device Connections

The Wavelink Administrator displays each mobile device connected to a Port Monitor in the appropriate Wavelink Server Explorer window. These mobile device appear as mobile device icons, with their unique device ID listed next to them.

You can view detailed information about a mobile device at any time.

To view information on a mobile device, double-click the mobile device's icon.

The following dialog box appears.
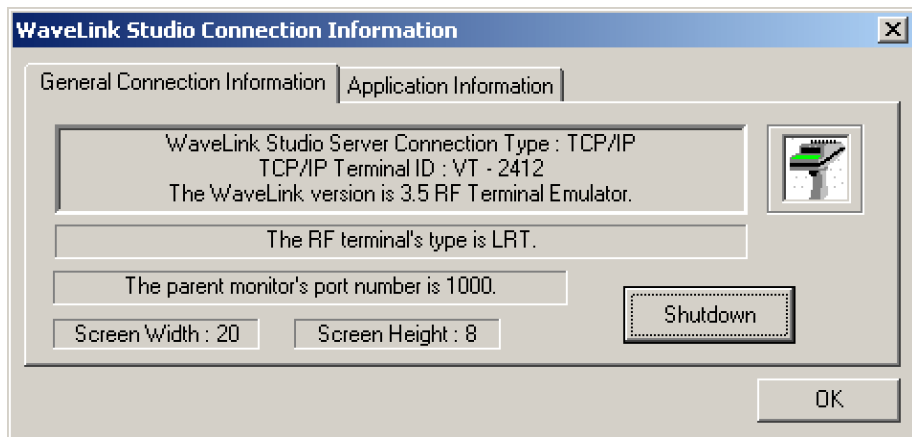
Figure 6-20. *The Wavelink Connection Information dialog*

This dialog box consists of two tabs: General Connection Information and Application Information.

The General Information tab displays the following information:

- Type of device

- TCP/IP Terminal ID

- Terminal Emulator version

- Terminal type

- Port Monitor's number

- Screen width and height

The Application Information tab displays the following information:

- The name of the application

- The host process ID of the application

NOTE You can use the host process ID to kill an application that is malfunctioning without disconnecting the connections on your network.

When you finish viewing the information for a device connection, click OK to return to the Wavelink Server Explorer window.

Disconnecting Mobile Devices

You can remotely disconnect a specific mobile device from the network directly from the Wavelink Administrator.

To disconnect a mobile device:

1 Double-click the mobile device icon to open the Wavelink Connection Information dialog box.

2 Click Shutdown.

The mobile device will be immediately disconnected from the network.

Bridge Access Routines

The Wavelink Administrator provides integrated support of BAR commands.

Defining BAR Commands

Many of Symbol Technologies' Serial Access Bridges (SABs), such as the SAB II, provide support for Bridge Access Routines (BARs). These BAR commands provide direct access to SAB features. For example, using BAR commands, you can remotely reset an SAB or alter its communication frequencies.

NOTE Symbol Technologies' SAB-Lite does NOT support BAR commands. The Wavelink Administrator's BAR commands will not function when using SAB-Lite.

Accessing BAR Commands

To access the BAR command options for a BAR-compliant SAB, right-click the SAB's serial Port Monitor and select `Bridge Access Routines` from the menu that appears.

A dialog box appears, containing four tabs: General, Statistics, Topology, and Frequency.
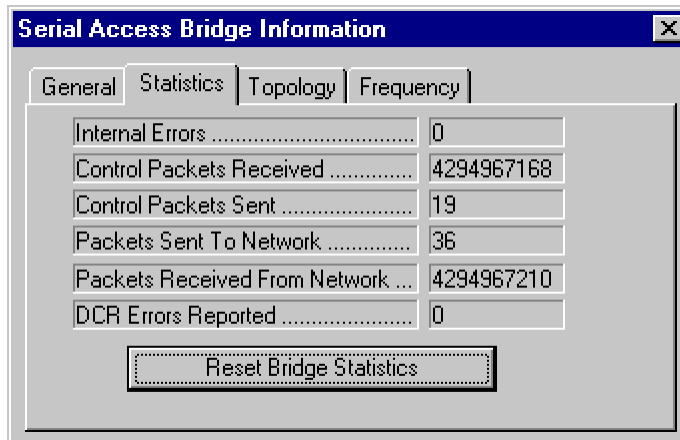
General Tab

The General tab displays the software version of the SAB and the serial port to which the SAB is connected. You can also reset the SAB from the General tab by clicking `Reset Bridge`.
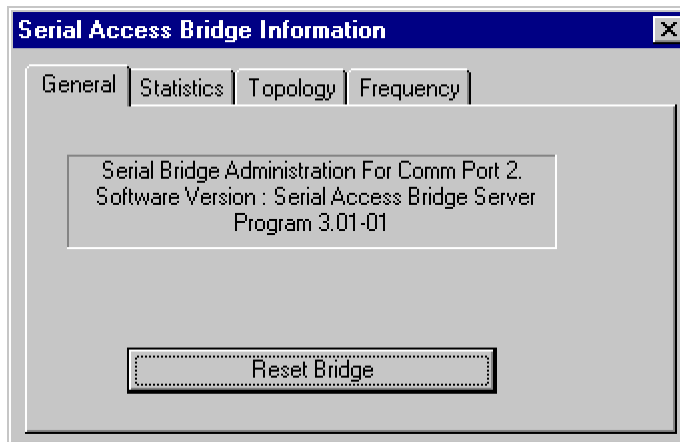
Figure 6-21. *The General Tab*

Statistics Tab

The *Statistics* tab displays a variety of statistical information captured by the SAB.

**Figure 6-22.** *The Statistics Tab*

NOTE See the documentation included with your SAB for more information
on the statistics displayed in this tab.

You can also reset statistics values from the Statistics tab by clicking `Reset
Bridge Statistics.`

Topology Tab

The Topology tab provides a real-time hierarchical map of the mobile device
connected to the SAB along with each device's Unit ID.
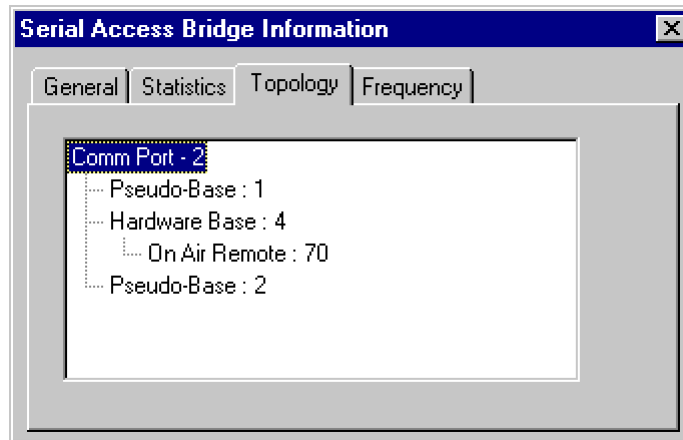
Figure 6-23. *The Topology Tab*

The types of wireless devices that appear in the Topology tab are as follows:

- **Pseudo-Base**. Either the current SAB itself or a configuration cradle.

- **Hardware Base**. An active transceiver unit.

- **Uninitialized Base**. An uninitialized transceiver unit. These units include tranceivers that are powered down, physically removed from the network, or restarting.

- **On Air Remote**. An active mobile device.

- **Uninitialized Remote**. An uninitialized mobile device. These terminals include devices that are powered down, physically removed from the network, restarting, or being reconfigured.

- **In Cradle Remote**. An mobile device that is placed within a configuration cradle but that is not currently being reconfigured.

To remove any devices from the Topology map, select the device you want to remove then press Delete on your keyboard.

NOTE The topology entries for both transceivers and mobile devices remain even after you remove devices from the network, or reconfigure them with a new unit ID. If you remove or reconfigure devices, be sure to manually remove the unit's old entry from the topology map.

Frequency Tab

The Frequency tab displays the current frequencies the SAB uses.
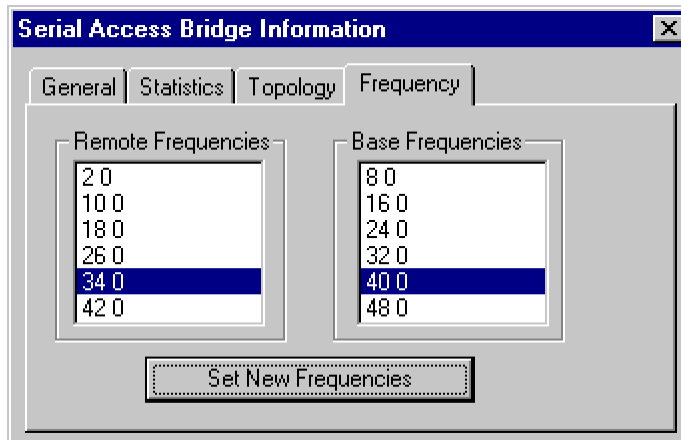
Figure 6-24. *The Frequency Tab*

The **Remote Frequencies** list displays the available frequencies in the local area that an SAB and a mobile device can use to communicate with each other. The frequency currently in use is highlighted.

The **Base Frequencies** list displays the available frequencies in the local area that a transceiver unit and SAB can use to communicate with each other. The frequency currently in use is highlighted.

To change either the remote or base frequencies, select the desired frequency from each list and click Set New Frequencies. The frequency change will take place immediately.

Chapter 7: Managing Applications

You can assign one and only one application to each Port Monitor on your network. The Port Monitor will start this application each time a mobile device connects to your network using that Port Monitor.

If you develop your own applications for your wireless network, please keep in mind the following:

• You must develop your applications with user sign-on features if you want user verification as part of your application security.

NOTE If you do not include user sign-on features, mobile device users can access any wireless applications on your network without any limitations.

• Your users will have access only to the application assigned to the Port Monitor, unless you specifically design that application to open other applications.

NOTE If your users can access only the application assigned to the Port Monitor, the only way they can switch applications is by logging off of the network, reconfiguring their port assignment, and then logging back on to the network.

Wavelink Program Manager

You can use the Wavelink Program Manager to simplify the management of your network users and your applications.

With the Wavelink Program Manager, you divide your wireless applications into specific application groups. Then, you assign each user a sign-on name and password that gives them access only to the application groups they need. When these users enter their sign-on name and password, their assigned application groups will appear in the startup menu of the Wavelink Program Manger.

NOTE mobile device users can connect only to applications that belong to an application group.

Wavelink Program Manager: A User Scenario

This section describes one possible way of using the Wavelink Program Manager to manage your wireless applications.

In this scenario, the XYZ Company is using Wavelink to manage its wireless applications for its main shipping warehouse. They have used Wavelink to design four applications: one for shipping, one for picking, one for receiving, and one for returns.

To ensure that workers at the warehouse access only the applications they need, they divide their wireless applications into two Application Groups: the Shipping group, which contains the shipping and picking applications, and the Returns group, which contains the receiving and returns applications. Workers who handle shipping are assigned to the Shipping group, while those that handle returns are assigned to the Returns group.

When workers who handle shipping need to ship an order, they log on to the network using an mobile device. The Wavelink Program Manager then verifies their assigned application group and displays the shipping and picking applications. The workers then select the appropriate application for the job at hand.

After one application is no longer needed, the workers close that application and return to the Wavelink Program Manager, where they can select the next application they need.

Wavelink Program Manager Administrator

You manage user profiles and application groups with the Wavelink Program Manager Administrator (PMA). The PMA can manage Wavelink Program Managers on both local and remote hosts.

NOTE The PMA requires remote registry access to control remote Wavelink Program Managers. Windows 95/98 does not support remote registry access unless you install the Microsoft Remote Registry Service. See *Appendix A: The Microsoft Remote Registry Service* on page 77 for more information.

The PMA contains two tabs:

- **Wavelink User Information**. The Wavelink User Information tab allows you to add, configure, and remove user accounts. This tab also allows you to set the host computer that the PMA manages.

- **Wavelink Application Information**. The Wavelink Application Information tab allows you to add, configure, and remove application groups.

To add user accounts:

1 Click Program Manager Administrator from the Administrator toolbar.

Alternatively, you can select Program Manager Administrator from the **Wavelink Utilities** menu.

The following dialog box appears.
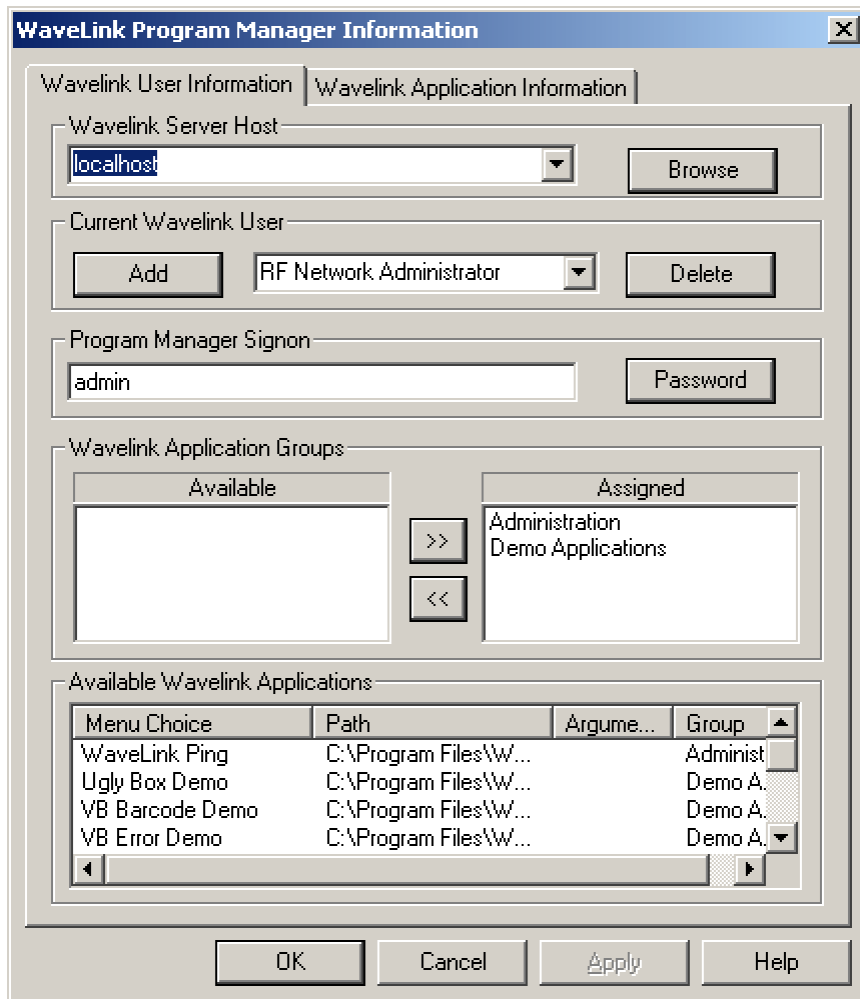
Figure 7-1. *The Wavelink Program Manager Administrator Dialog Box*

2   Select a host from the **Wavelink Server Host** list.

You can also click Browse to have the PMA display a list of available remote hosts.

NOTE In some cases, searching your network for available hosts can take several minutes to complete.

---

3 Type the name of the new user account in the **Current Wavelink User** field.

The **Current Wavelink User** field also contains a list of all available Wavelink users. You can access this list by clicking the down arrow located on the right-hand side of this field.

4 Click Add.

The new user account will appear in the **Current Wavelink User** field.

To set the password and select applications for this user account, see

To edit an existing user account:

1 Open the PMA by clicking Program Manager Administrator from the Administrator toolbar.

Alternatively, you can select Program Manager from the **Wavelink Utilities** menu.

2 Select the user account you want to edit from the **Current Wavelink User** field.

3 Edit the user account as necessary.

4 Click Apply.

To delete user accounts:

1 Open the PMA by clicking Program Manager Administrator from the Administrator toolbar.

Alternatively, you can select Program Manager Administrator from the **Wavelink Utilities** menu.

2 Select the user account you want to delete from the **Current Wavelink User** field.

3 Click Delete.

A confirmation dialog box will appear, asking you to confirm that you want to delete this user account.

4 Click Yes.

Configuring User Accounts

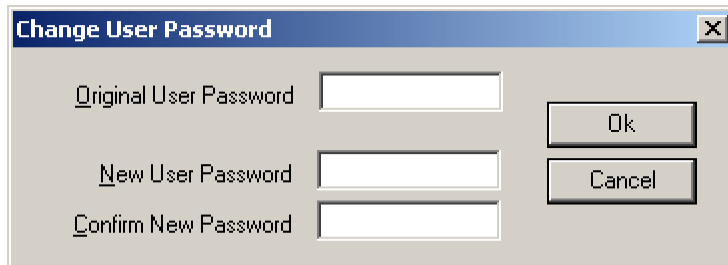Once you create a new user account, you can assign a password and application groups to that account.

To assign a password to an account:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Select the desired user account from the **Current Wavelink User** field.

3 Click `Password`.

The following dialog box appears.

Figure 7-2. *The Change User Password Dialog Box*

4 Type the current password for the account in the **Original User Password field**.

By default, the password for any account will be the same as the account name.

5 Type the new password for the account in the **New User Password** field.

6 Confirm the new password by re-typing it in the **Confirm New Password** field.

7 Click `OK`.

The new password will now be assigned to the user account.

To assign application groups to an account:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Select the desired user account from the **Current Wavelink User** field.

3 Select the application groups you want to assign to this user account from the **Available** list found in the **Wavelink Application Group** section of the PMA.

4 Click `[>]`.

The selected application groups now appear in the **Assigned** list.

NOTE To remove application groups from a user account, select the application group from the Assigned list and click `[<]`.

Configuring Applications

In addition to creating user accounts, you can also use the PMA to add, configure, and remove applications.

NOTE You must assign all applications used with Wavelink to at least one application group.

You configure applications from the Wavelink Application Information tab of the PMA.

To add an application to the PMA:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Click the Wavelink Application Information tab.

The following dialog box appears.

Figure 7-3. *The Wavelink Application Information Tab*

3   Type the name of the application's menu option in the **Menu Option** field.

   This name identifies the application in the Wavelink Program Manager startup menu.

4   Type the path to the application in the **Application Path** field.

Alternatively, you can click `Browse` to navigate to the application.

5 Type any additional command line arguments in the **Arguments** field.

6 Select an application group for the new application from the **Application Group** list.

NOTE You must assign each application to at least one application group.

---

7 Click `Add`.

To edit an application:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Click the Wavelink Application Information tab.

3 Select the application from the **Menu Option** field.

4 Edit the application as needed.

5 Click `Add`.

To delete an application:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Click the Wavelink Application Information tab.

3 Select the application from the **Menu Option** field.

4 Click `Delete`.

A dialog box appears, asking you to confirm that you want to delete this application.

5 Click `Yes`.

Configuring Application Groups

You can add or remove application groups from Wavelink at any time.

To add a new application group:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Click the Wavelink Application Information tab.

3 Type the name of the new application group in the **Wavelink Group Information** field.

4 Click `Add`.

To delete an application group:

1 Open the PMA by clicking `Program Manager Administrator` from the Administrator toolbar.

Alternatively, you can select `Program Manager Administrator` from the **Wavelink Utilities** menu.

2 Click the Wavelink Application Information tab.

3 Select the application group from the **Wavelink Group Information** list.

4 Click `Delete`.

A dialog box appears, asking you to confirm that you want to delete this application group.

5 Click `Yes`.

Chapter 8: Wavelink Log Reader

The Wavelink Server generates log files that help you view and troubleshoot the activity of your wireless applications. You view these logs with the Wavelink Log Reader.

The Wavelink Server creates these log files based on one of five different debug levels— from level Zero to level Four. The higher the debug level, the more data is logged.

Selecting a Debug Level

By default, Wavelink Servers on your network are set at debug level two. You can change the debug level at any time.

To change the debug level:

1 Select Run from the **Start** menu on your desktop taskbar.

2 Type the path to the Wavelink Server you want to start in the **Open** field.

The Wavelink Server is typically stored in the \bin directory of the WavelinkSuite folder.

For example, a typical path might read:

    C:\..\WavelinkSuite\bin\wlserver.exe

3 At the end of the path, type "–n –d" followed by the desired debug level.

For example, if you wanted to set the debug level to level three, the path would read:

    C:\..\WavelinkSuite\bin\server.exe -n –d3

4 Click OK.

Debug Level Descriptions

The four debug modes of the Wavelink and their descriptions are as follows:

• **Level Zero: No logging**. The Wavelink Server will not save events to either the system event log or the Server log file.

- **Level One: Application Status**. Only "application starting" and "application stopping" messages will be saved to both the system event log and the Server log file.

- **Level Two: Hard Errors**. All "hard" errors encountered, which prevent the Wavelink Server from executing, are saved to the Server log file. An example of a "hard" error is an invalid authorization code. The same information that is logged within the Level Two debug mode will also appear within the system application event log when using the Wavelink Server as a service in Windows NT/2000. Please see the Windows NT Online Help for more information on viewing the system event log.

- **Level Three: Warnings, Hard Errors**. In addition to logging "hard" errors, Level Three will log any system warnings encountered by the Wavelink Server. A system warning is classified as any resource error that does not prevent the Wavelink Server from initially starting. Possible errors that can be logged in this mode range from failed connections between a mobile device and a Port Monitor to system memory limitations. The same information that is logged within the Level Three debug mode will also appear within the system application event log when using the Wavelink Server as a service in Windows NT/2000. Please see the Windows NT/2000 online help for more information on viewing the system event log.

- **Level Four: Messages, Warnings, Hard Errors**. The most comprehensive of the four available debug modes, Level Four logs all of the information included within the previous three levels plus any general server status messages. For example, in this mode a successful mobile device connection or similar message will be logged to the Server log file. In addition to server messages, this debug mode will also log user application messages within individual wireless connection log files. Any startup application or spawned application messages, such as function executions for a single mobile device user, will appear within a connection log file.

Log File Naming Conventions

By default, Wavelink saves log files in the \LogFiles sub-directory of the WavelinkSuite folder. Each log file begins with the letters "WLSVR" followed by the year, month, date, and time the Wavelink Server generated the file. Server log files also contain the .WLS file extension.

Each wireless connection log file begins with the letters "WLAPI" followed by the unit ID (which will end with the letter "x"), hour, minute, and second the file was generated. Wireless connection log files contain the .API file extension.
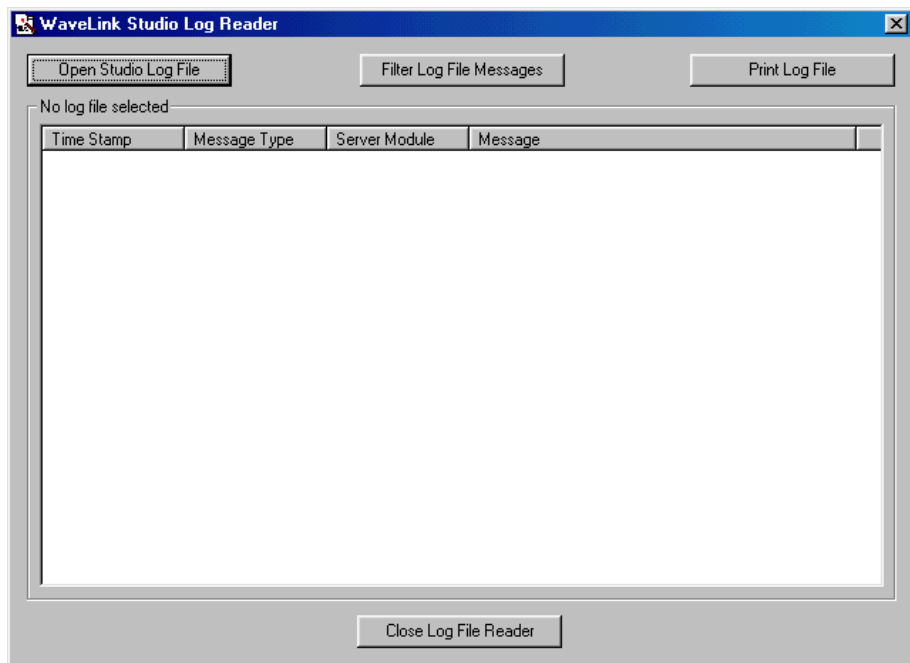
Viewing Log Files

With the Wavelink Log Reader, you can view either Wavelink Server or application-generated log files. The Wavelink Log Reader also lets you filter log file information by message type and debug level.

To view a log file:

1 Click `Wavelink Studio Log Reader` from the Administrator toolbar.

The following dialog box appears.

Figure 8-1. *The Wavelink Log Reader*

2 Click `Open Studio Log File`.

A dialog box containing the available log files appears.

3 Select the desired log file.

By default, only Wavelink Server log files with the .WLS extension are available. To select an API log file, select `Wavelink Library Log Files (.API)` from the **File of Type** list.

4 Click `OK`.

Once a file has been opened the information for the log file will appear within the Wavelink Log Reader. The information displayed within the Wavelink Log Reader window will depend upon the log file type.

See the *Wavelink Server Log Files* and *Wavelink API Log Files* sections for information about the data each log file contains.

Wavelink Server Log Files

When you open a Wavelink Server log file, the log reader displays the log file information.
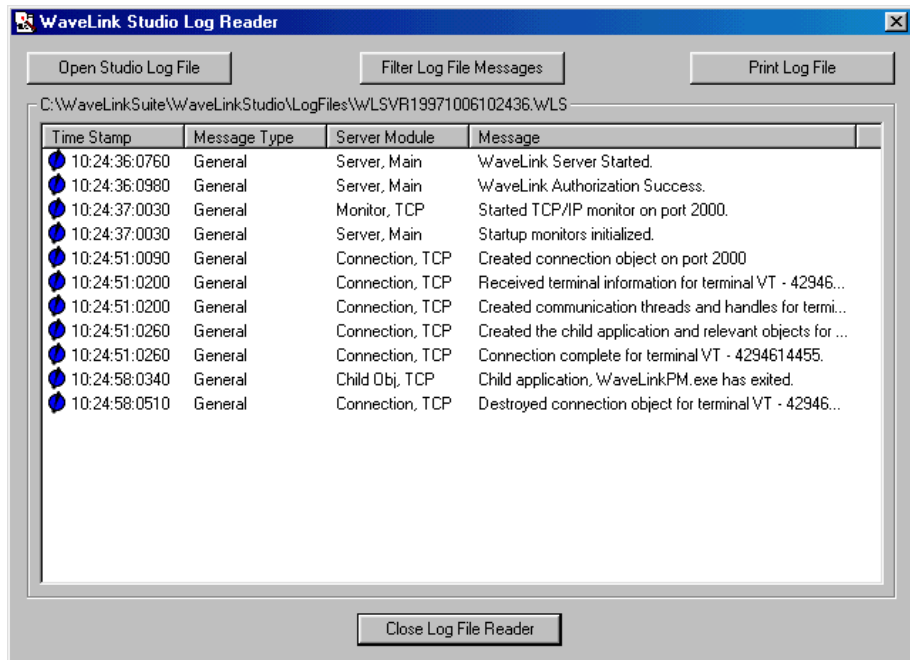
Figure 8-2. *A Wavelink Server Log*

The information contained in each Wavelink Server log file is as follows:

- **Time Stamp**. The exact time in hours, minutes, seconds, and milliseconds, when the entry occurred.

- **Message Type**. The entry message type classification. The available message types are General, Memory, and Resource. General messages relate to basic Wavelink Server status messages, such as connection and sub-process startup status. Memory messages relate to host memory status messages, such as memory allocation failure. Resource messages concern host resource access such as failure in creating file handles.

- **Server Module**. The particular sub-module of the Wavelink Server in which the entry corresponds. For example, an entry can relate to the main Wavelink Server, a TCP/IP monitor, or a spawned child application.

- **Message**. The message field provides detailed information concerning the status or action of the log entry.

Wavelink API Log Files

When you open a Wavelink API log file, the log reader changes to display the log file information.
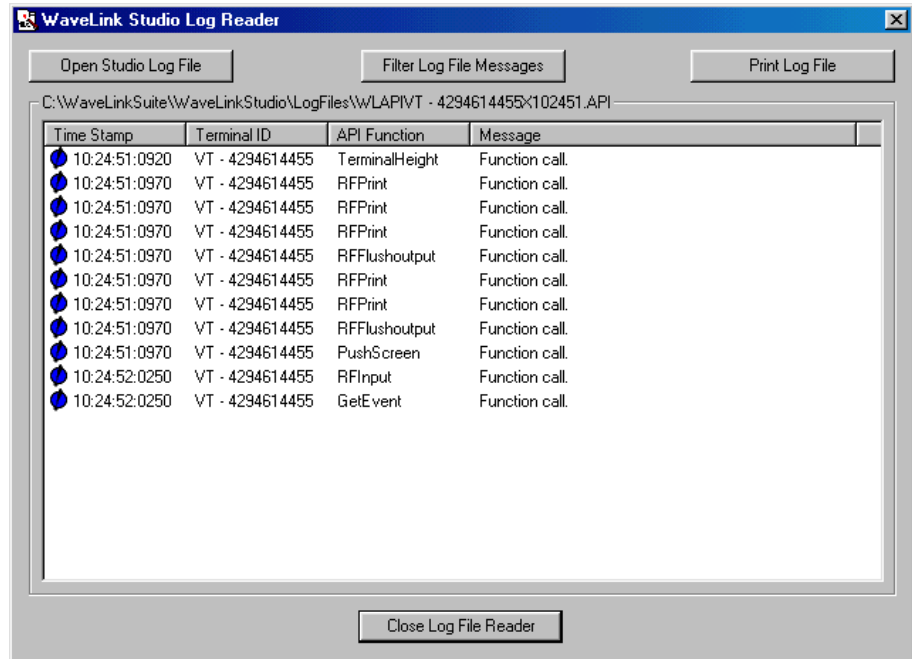
Figure 8-3. *A Wavelink API Log File*

The information contained in each Wavelink API log file is as follows:

- **Time Stamp**. The exact time, in hours, minutes, seconds, and milliseconds that the entry occurred.

- **Terminal ID**. The Terminal ID of the mobile device that is using the instance of the application being logged. A virtual client connection is displayed in the sample screen shot above.

- **API Function**. The name of the API function executed.

- **Message**. The status of the API function called.

Filtering Log Files

You can filter log files at any time to highlight specific information.

To filter a log file:

1 Open the Wavelink Log Reader by clicking `Wavelink Studio Log Reader` from the Administrator toolbar.

2 Open a log file following the steps described in the *Viewing Log Files* section.

3 Click `Filter Log File Messages`.

The following dialog box appears.
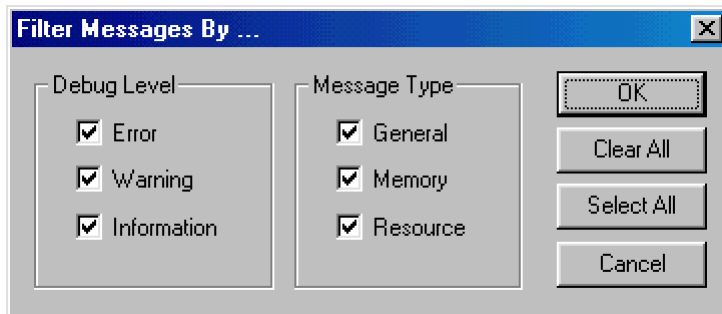
Figure 8-4. *Filter Message By… Dialog Box*

4 Select one or more options from the **Debug Level** section of the dialog box.

There are three options available: **Error**, **Warning**, and **Information**.

See the *Debug Levels Description* section for more information about these options.

5 Select one or more options from the Message Type section of the dialog box.

There are three options available: **General**, **Memory**, and **Resource**.

- General messages relate to basic Wavelink Server status messages, such as connection and sub-process startup status

- Memory messages relate to host memory status messages, such as memory allocation failure

- Resource messages concern host resource access such as failure in creating file handles

6 Click OK.

To turn on all log filters:

NOTE If you choose to filter all options, nothing will appear within the Wavelink Log Reader window.

---

1 Open the Wavelink Log Reader by clicking Wavelink Studio Log Reader from the Administrator toolbar.

2 Open a log file following the steps described in the *Viewing Log Files* section.

3 Click Filter Log File Messages.

4 Click Select All.

5 Click OK.

To turn off all log filters:

1 Open the Wavelink Log Reader by clicking Wavelink Studio Log Reader from the Administrator toolbar.

2 Open a log file following the steps described in the *Viewing Log Files* section.

3 Click Filter Log File Messages.

4 Click Clear All.

5 Click OK.

Printing Log Files

To print a log file:

1 Open the Wavelink Log Reader by clicking Wavelink Studio Log Reader from the Administrator toolbar.

2 Open a log file following the steps described in the *Viewing Log Files* section.

3 Click Print Log File.

Appendix A: The Microsoft Remote Registry Service

The Microsoft Remote Registry Service allows you to configure the server host system to allow for remote configuration.

NOTE The information in this section applies to systems running Windows 95.

To install the Microsoft Remote Registry service:

1 Open the Network control applet from within the main system control panel.

   A Network dialog box appears.
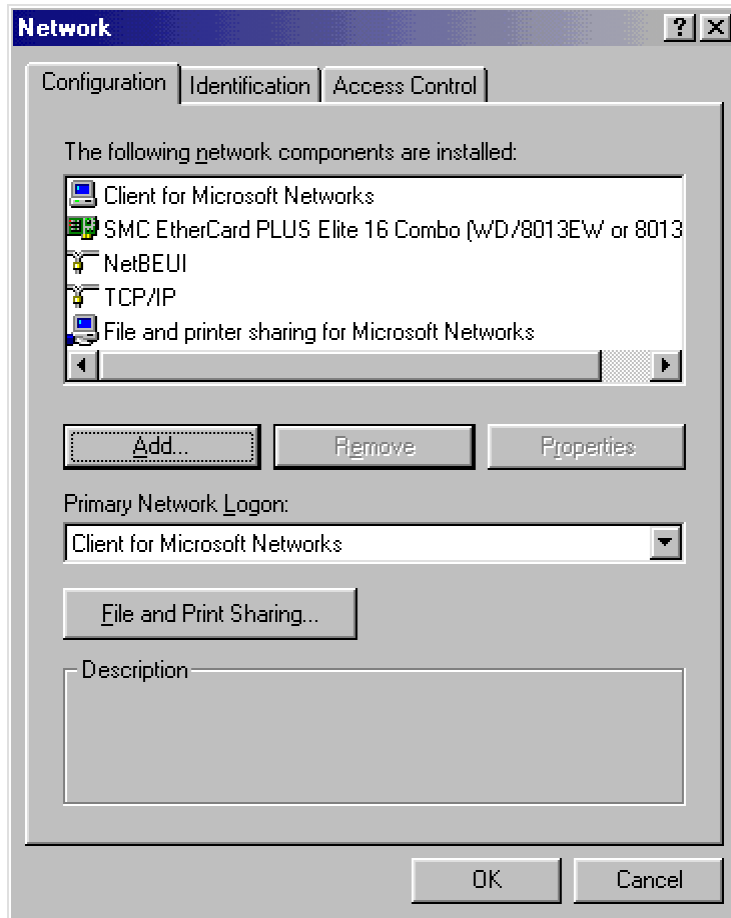
Figure A-1. *The Network Control Panel Dialog Box*

2 Click Add.

The Select Network Component dialog box appears.
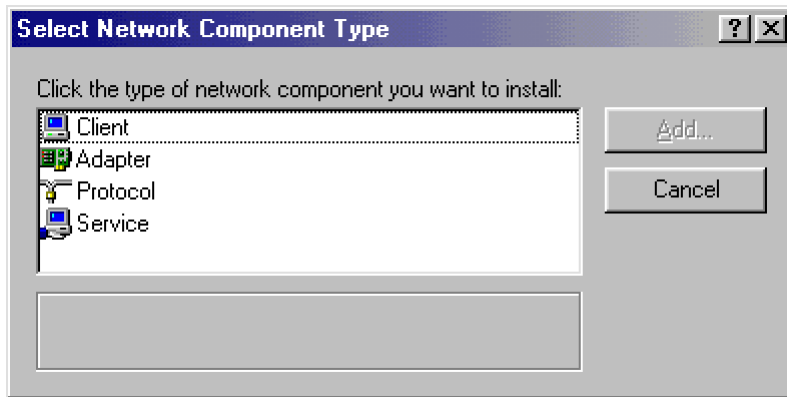
Figure A-2. *Select Network Component Type Dialog Box*

3 Select the **Service** option from the network components listed, then click
    Add.

    The Select Network Service dialog box appears.
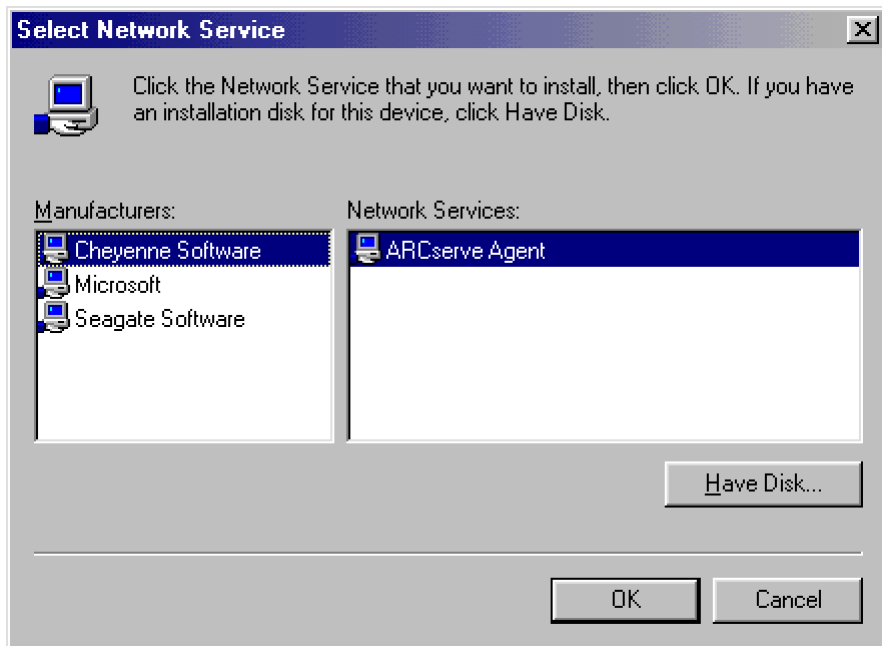
Figure A-3. *Select Network Service Dialog*

4 Click `Have Disk...`.

A standard Windows browse dialog box will appear (not shown).

Either manually type the complete path to the Microsoft Remote Registry service in the **Copy manufacturer's files from:** entry field, or click `Browse` and navigate to the path.

The exact path of the service will vary depending on your exact version of Windows. For most builds of Windows 95/98, the path to the Microsoft Remote Registry service will be `Admin\Nettools\Remotreg`, beginning from the root of the drive that contains your Windows 95/98 CD-ROM.

You can also locate the path to the service by searching for the term "REMOTREG" on your Windows 95/98 CD-ROM.

5 Click `OK`.

Another Select Network Service dialog box will appear with the Microsoft Remote Registry service selected.

6 Click `OK`.

The service then appears within the list of installed network components.

7 Restart your machine.

Once you restart your machine after installing the Microsoft Remote Registry service, you can use the Registry Management Station to open and edit the registries of remote Wavelink SNC hosts.

Allowing Remote Registry Configuration

If you want to allow remote hosts the same access to the local system's registry, you must first enable the proper access control and password settings.

The host must have user-level access control for the Microsoft Remote Registry service to function properly and allow remote users to open and edit the local registry.

To alter the access control level for the host:

1 Select the Access Control tab from the Network control panel.

2 Select the **User-level access control** option and type the name of your Windows NT/2000 domain in the **Domain** field.

3 Click OK.

4 Open the Password control panel and select the Remote Administration tab.

A dialog box appears.
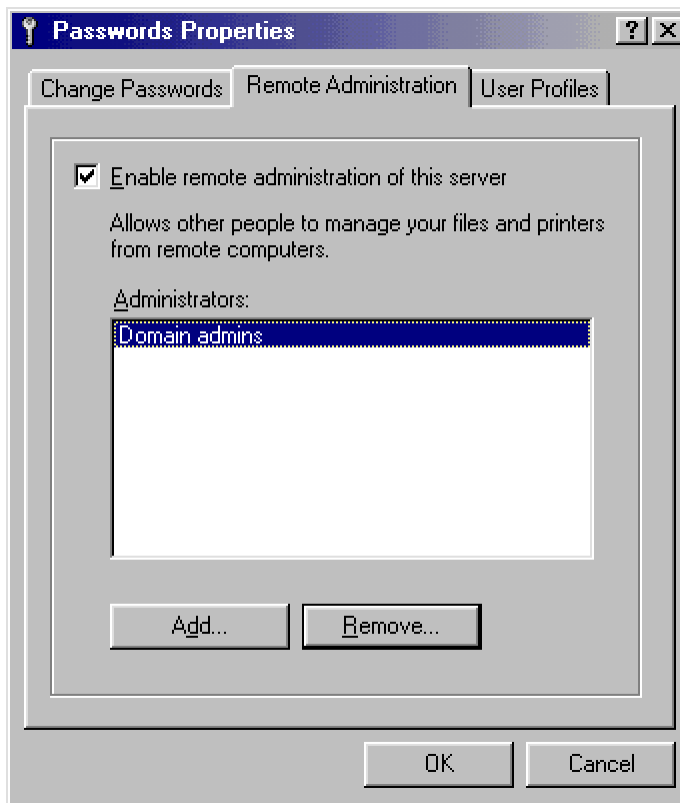
Figure A-4. *The Remote Administration Tab of the Passwords Control Panel*

5 Select the **Enable remote administration of this server** check box.

The **Management Stations:** window will contain a list of all users or groups who are authorized to edit the local system registry.

To add a user or group, click Add.

A selection dialog box will appear which will allow you to add users or groups to the Management Stations list from the domain specified within the Access Control Level tab of the Network control panel.

To remove a user, select the user from the Management Station's list and click `Remove`.

See the Windows online help for more information on setting remote administration.

Once you set both the access control level and appropriate administrator authorizations, the remote users can open and edit the local registry.

Appendix B: Wavelink Client Install Utility

The Wavelink Client Install Utility lets you easily download the Wavelink Client to any Symbol DOS mobile devices you use with Wavelink Studio COM.

When you use the Wavelink Client Install Utility, you install one of several Wavelink Client images on a mobile device. Each image corresponds to a specific network type.

For more information about the specific client files to download, visit http://www.wavelink.com/downloads/.

Preparing a Mobile Device for the Client Utility

To download the Wavelink Client to a mobile device, you must first connect a mobile device to a configuration cradle attached to a host computer. Once you connect the mobile device, set it to Command mode.

NOTE This information applies to Symbol DOS devices.

See the mobile device documentation for more information on setting up a configuration cradle or setting a mobile device to Command mode.

After you connect the mobile device, please refer to the Wavelink Client documentation to ensure that the mobile device is fully prepared for the Wavelink Client download.

Downloading a Wavelink Client

To download a Wavelink Client with the Wavelink Client Utility:

1 Click `Load Wavelink Client` from the Administrator toolbar.

Alternatively, you can select `Load Client` from the **Utilities** menu.

The following dialog box appears.
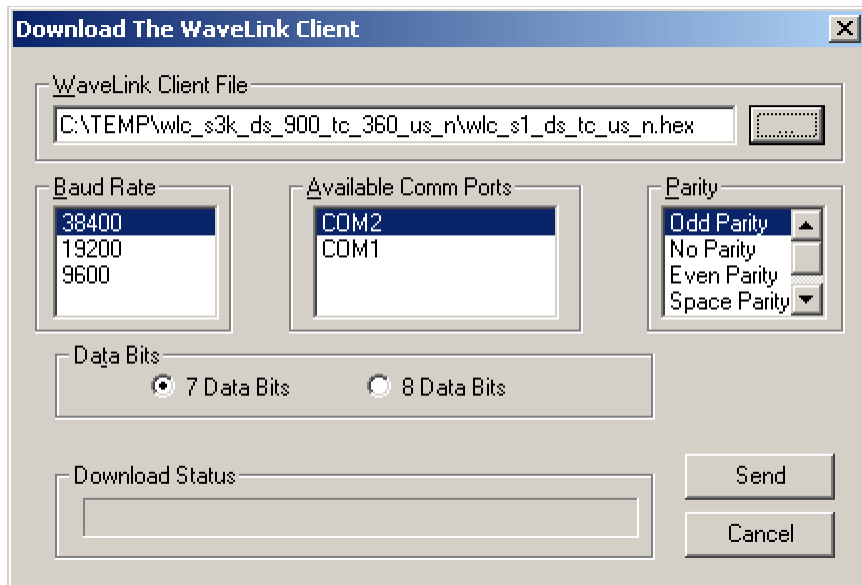
Figure 0-1. *The Wavelink Client Install Utility Dialog Box*

2   Type the path of a Wavelink Client in the **Wavelink Client File** field.

Alternatively, you can click [...] to navigate to where the Wavelink Client resides.

NOTE The Wavelink Client resides in the `\Bin` subdirectory by default.

---

3   Select the baud rate for the client-to-host connection from the **Baud Rate** list.

4   Select the Comm port the mobile device will use from the **Available Comm Ports** list.

5   Select the parity of the connection from the **Parity** list.

6   Select either the **7 Data Bits** or **8 Data Bits** option.

7   Click `Send`.

The download status bar will then indicate download progress. When the indicator reaches 100 percent, the installation is complete.

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