ftpAxe manual

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1. About This Manual

This User's Manual describes how to install, configure and use the ftpAxe package on a 32-bit IBM PC or compatible personal computer running one of the following operating system: MS Windows 95/98/2000 or MS Windows NT. A small volume of the manual reflects simplicity of using this software tool created nevertheless on the basis of up-to-date information technologies.

The following items will be covered:

Purpose and composition of ftpAxe
Hardware & Software requirements of ftpAxe
Installation procedure for ftpAxe
ftpAxe database composition
Configuring ftpAxe
ftpAxe working sessions.

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2. Introducing to ftpAxe

ftpAxe is a complicated product for integrating the Microsoft Windows and TCP/IP network environments. ftpAxe is an inexpensive but effective way to transform a standard PC running under MS Windows 95/98/2000 or MS Windows NT into a multi-function terminal. Being based on the TCP/IP open standards, the package integrates a PC into an interoperable computer network. The network of dissimilar computers and operating systems becomes perfectly transparent to you. ftpAxe enables on your PC's screen to work at once with several applications executed simultaneously on various network nodes. As a result, a heterogeneous network appears to you as a unified large computer system arranged directly on your desktop.

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What is in nfsAxe

nfsAxe is an integrated and powerful 32-bit software tool consisting of the following functional parts:

Telnet virtual terminal emulator

Telnet is a communications and terminal emulation program. It allows you to connect to and communicate with hosts that support the Telnet protocol, to initiate and control a remote login session. While you are using Telnet, you can:

- set some options for particular implementations of Telnet
- change fonts of text displayed in the Telnet window
- select a terminal emulation mode in the Telnet session.

The Telnet program can emulate XTERM, AT386, ANSI, VT52, VT100, VT125, VT220 and VT240 terminals for character-mode applications. Advanced users can edit the terminal capabilities description file to suit to the special environment.

By using the Keyboard Mapping option (i.e., keymap editor invoking), you can load, change (re-define keys and create a new keyboard layout), and save any keyboard definition file.

ARPANET standard File Transfer Protocol (FTP) user interface

FTP program is a client implementation of the File Transfer Protocol. It allows you to transfer both text and binary files between your PC and a remote computer running the server implementation of FTP. By using the FTP program, you can:

- set up parameters and modes for operations
- make/change a directory on your PC (local) or FTP server
- remove local/remote directory
- view file lists in a remote directory
- transfer (copy/rename/delete) selected local/remote files
- append files to the remote machine.

While you are connected, you can perform a number of tasks (commands) on the FTP server, using various server's options.

DARPA standard Trivial File Transfer Protocol (TFTP) user interface

TFTP program allows you to transfer both text and binary files between your PC and a remote computer running the server implementation of TFTP.

LPR remote printing program

LPR is a network printing program that allows access to printers attached to remote computers on your network. The computers must support the Berkeley Line Printer protocol. You can enter data required to get access to a remote printer (choose a target printer), specify job options (number of copies, titles and banner pages, file type) and print one or several files residing on your PC, view print jobs in the queue, remove jobs from the queue.

LPD - Network Print Server

LPD is a Network Print Server (daemon) that allows access to printers (accessible at your computer) across TCP/IP network. The remote computers must have the LPR program that supports the Berkeley Line Printer protocol.

While using LPD, you can:

- change the Printer list and printer parameters (add/remove a network printer, change settings of network printers)
- enable or disable printing of files from remote hosts
- specify the list of users which can print files on your networked printers.

The Ping program

You can test that the TCP/IP transport is installed and configured correctly by using the Ping utility. While running, Ping sends a sequence of data packets to the host with the time interval specified. When the connection between your PC and the host exists, PC will receive a response after every packet sent. If Ping finds the host or IP address, it will return the appropriate message.

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3. The ftpAxe Requirements

Your computer system must meet the following hardware, software, host and network requirements for you to install and use ftpAxe.

PC Hardware & Software Requirements

A standard 32-bit (i386, i486 or Pentium) IBM PC or 100% compatible
8 Mbytes RAM (MS Windows 95/98/2000/NT)
Color graphics controller supporting SVGA video modes
Mouse Unit compatible with Microsoft Windows
Optional math coprocessor
8 Mbytes free hard disk space.

Note that this disk requirement does not account for the disk cluster size. The larger the cluster size the greater the disk requirement.

In addition to the above requirements, you need one of the following operating systems:

MS Windows 95/98/2000, MS Windows NT version 3.51 or higher TCP/IP facility with Windows Sockets Interface.

Host Requirements

TCP/IP protocols over Ethernet or Serial port connection Optional server implementations of FTP and TFTP
Virtual terminal protocol Telnet
Optional server implementation of Berkeley Line Printer protocol
Login account on the host machine.

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4. Installing ftpAxe

This chapter describes how to install the ftpAxe software. The chapter assumes that you have Microsoft Windows 95/98/2000 or Windows NT operating system installed as described in the corresponding user's guide for the product.

This chapter and the rest of the ftpAxe manual refer to the two directories whose names can be changed by the user at the installation stage:

- the home directory,
- the configuration files directory.

If you install ftpAxe in a directory different from the default, simply supply your directory name when appropriate directories are requested.

The installation of ftpAxe on PC is carried out by running the Setup program.

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Running INSTALL

To run the Setup program:

1) insert the first ftpAxe installation diskette in a floppy disk drive
2) click the Start button on the taskbar, and then point to Run
3) enter the following command:

x:\setup

where 'x' indicates your floppy disk drive.

As soon as you start the installation process, you will see a number of dialog boxes with instructions for each installation step. These boxes have three buttons. The Cancel button quits the installation process. The Back button returns you to the previous step. When you press the Next button, the Setup program proceeds to the next installation step.

For the first installation, the steps are as follows (with the dialog's names):

Welcome

It is strongly recommended that you exit all Windows programs before running the Setup program.

Click Cancel to exit Setup and then close any programs you have running. Click Next to continue with the Setup program.

Registration

Here you have to enter the Company name and the Person name.

Choose Destination Location

Here you can specify or choose the directory (folder) where the package will be installed in.

To install to the specified directory, click Next.

To install to a different directory, click Browse and select another directory (folder).

You can choose not to install the package by clicking Cancel to exit Setup.

If the directory (folder) specified for installation does not exist, the Setup program will create it.

Setup Type

You can choose what components of the package Setup will install.

Typical Program will be installed with the most common options .

Compact Program will be installed with minimum required options.

Custom You can choose the options as you wish.

For the Custom type of installation, the Select Components dialog box will appear on your display. Select components that you wish to install. If the check box is unchecked, that component will not be installed. Click Next to continue installation. The components you can choose are as follows:

- Application Program Files
- Miscellaneous Data Files
- On-line Help Files
- Program Folder and Icons

Folder Selection

Setup will add program icons to the Program Folder specified. You can type a new folder name, or select one from the Existing Folders list. Click Next to continue.

Setup

Setup shows how files of the components are copied into the destination directory (folder). When you see the Setup Needs the Next Disk dialog box, insert the required disk. If the files on this disk can be found in another location, for example, in another drive, enter its full path or click the Browse button to select its path.

Information

Setup completed. You may run the installed programs by clicking program's icons from the Program Folder.

Exit Setup

If you wish to break the installation process and press the Cancel button, the Exit Setup dialog box appears. If you quit the Setup program, the package will not be installed. You can run the Setup program at a later time to complete installation. To continue installing the package, click Resume. To quit the Setup program, click Exit Setup.

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Running UNINSTALL

You can uninstall the package by choosing the Uninstall item from the Program Folder. The program will prompt you to confirm removing the package from your computer.

When Uninstall completed, some elements might not be removed. You should manually remove items related to the application.

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Upgrading ftpAxe

If you specified the ftpAxe home directory where ftpAxe program files already exist, the Setup program will detect it and offer you to upgrade or configure it.

If you choose YES, i.e. to upgrade the installed package, the Setup program displays the Upgrade Type window where you can choose Typical, Compact, or Custom installation mode (like the step #4 of the installation sequence). This allows you to reconfigure ftpAxe without reinstalling binary programs.

If you choose NO, the Setup program displays the Registration window (i.e., returns you to the step #2 of the installation sequence).

When you choose the Reinstall mode in the Choose Installation Type window, the Setup program displays the Setup Type window (the step #4 of the installation sequence). This allows you to reinstall the ftpAxe package completely.

Most of the files on the ftpAxe diskettes are stored in a compressed format. Setup decompresses the appropriate ftpAxe files and places them in the destination directories you specified. You will be prompted to insert additional ftpAxe diskettes as they are required.

Finally, the Setup program creates and shows the ftpAxe folder with Shortcuts for ftpAxe programs. It also inserts the ftpAxe item on the Programs menu.

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Multi-user Installation

Multi-user installation is intended for installing a single copy of ftpAxe on a disk that will be shared by multiple users. ftpAxe must be configured for each PC it will be used on. Corresponding files that define the local ftpAxe configuration will be created in a specified directory (Configuration Path).

Multi-user installation is carried out as follows:

1) By running the Setup program, install ftpAxe on a disk that will be used for storing the shared copy (ftpAxe home directory).

The next step must be done by every user of the shared copy.

2) Run the Setup program. In the installation dialogs, you must specify the ftpAxe home directory of the shared copy, and a local directory where files defining a particular package configuration will be resident (Configuration Path).

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5. The ftpAxe Database

The package database is represented by two ASCII files

terminfo.ini
lpr.inf

and also by 30 keyboard definition files with the file name extension .KMF.

The terminfo.ini file contains information for terminal emulation and is described in Appendix B.

The lpr.inf file is described in Chapter LPR - Remote Printing.

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Keyboard Definition Files

ftpAxe has 30 keyboard definition files allowing you to use one of the 30 international PC keyboards. Each of them corresponds to the country your keyboard was designed for.

Your Keyboard Definition file has the .KMF extension. It resides in the ftpAxe's configuration files directory (in the location you specified when installing ftpAxe).

The basic purpose of a keyboard file is to assign PC keys to generate specific keysyms. A keysym is a key code that corresponds to a specific symbol supported by the X protocol.

A Keyboard Definition file is an ASCII source file that defines what key sequence is sent to a client when you press a given key on your PC's keyboard (i.e., keyboard mapping).

You can customize a keyboard by one of two ways:

- by modifying a selected (on installation) keyboard file;
- by choosing the userkbd.kmf keyboard file and then editing it.

The Keyboard Mapping option of ftpAxe's Telnet allows you to modify keyboard definition files.

These are some of the things you can do:

- Make any key on your keyboard send any supported X keysym to the host.
- Make use of extra keys on non-standard keyboards to send special keysyms to the host or to a client.

The Keyboard Mapping File format is described in Appendix A.

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6. Configuring ftpAxe

This chapter describes how to configure the ftpAxe package with the configuration utility. The utility allows you to set up ftpAxe for your preferences, your host system and your PC.

ftpAxe supplies the configuration utility, ComSetup, that allows you to make communication settings relating to the networking aspects of ftpAxe that operate with the TCP/IP transport interface.

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ComSetup Utility

You can start the ComSetup by double-clicking on the ComSetup icon in the ftpAxe Programs' folder:

The Communication Setup / Windows Sockets dialog box will appear on your display:

The following input fields are available:

Hosts File

This field is used to specify a location of the hosts file. This file contains a list of hosts in the standard format. You may choose the one that is used by Windows Sockets Interface or enter another name of the file for your own needs.

WinSock DLL

This field is used to locate the DLL executable which provides Windows Sockets

Interface to existing TCP/IP stack. By default, wsock32.dll of the Microsoft Windows' TCP/IP will be used. You can specify to use any other TCP/IP stack by entering its 32-bit Windows Sockets Interface DLL.

The If non-single IP address Box

If your PC has more than one IP address (i.e., 'multi-home' PC with non-single TCP/IP stack, e.g. for Ethernet + modem), then you should specify a mode for choosing one of them. The Always Use the First IP address and Always Use the Last IP address modes allow ftpAxe's programs to automatically choose the local IP address. You can set up the Ask to Choose mode to specify that you will choose the address in the dialog box brought up by the programs. The default mode is Ask to Choose.

The TCP/IP Info Box

When you click on the Refresh button, the ComSetup will search for available TCP/IP information and, if found, display in the info field the IP address and name of your PC according to mode settings. If the Create 'sp_ghbn.out' Info file check box is enabled, then all information found will be stored in the file. This allows you to check accessibility and obtain description of the TCP/IP stack used.

The Transport button lets you choose the network transport.

The Default button sets up the default values for all these parameters.

To close the Communication Setup dialog box, click OK if you wish to save new settings, otherwise click on the Cancel button.

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Running ComSetup with Command Line Parameters

You can launch ComSetup with the command line parameter:

PATH\comsetup.exe -xini <IniFilePath>

where <IniFilePath> specifies a full path to a specific ini-file and PATH indicates your ftpAxe home directory.

This feature allows you to run several ComSetup sessions each with its own ini-file (i.e., settings).

In order to do so, you can create a new ComSetup shortcut (e.g., in the ftpAxe Programs' folder) and fill in the Target field in Properties of it with the command. By default, the field contains a call of ComSetup with no arguments, and the xwp.ini file will be used in this case.

To create your specific ini-file, you can copy the xwp.ini file and then change parameters with the ComSetup utility as you need by starting it with the command line parameter.

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7. Telnet

This chapter describes how to start and use the Telnet program supplied with ftpAxe.

Telnet is a communications and terminal emulation program. It allows you to connect to and communicate with hosts that support the Telnet protocol and runs a Telnet service.

To provide terminal emulation from a MS Windows computer, the remote host must be configured with the TCP/IP program, the Telnet server program or daemon, and a user account for the computer running MS Windows.

Once you have established a connection, you can use the Telnet program to start X clients and perform other operations outside the X Window System environment.

While you are using Telnet, your PC emulates one of the following terminal types: XTERM, ANSI, AT386; DEC VT52, VT100, VT125, VT220 or VT240, using connection-based services of TCP. You can specify the terminal emulation settings for the current connection by making the appropriate settings on the Settings option.

By using the Keyboard Mapping Option (i.e., keymap editor invoking), you can load, change (re-define keys and create a new keyboard layout), and save any keyboard definition file.

You can start more than one Telnet session, and use Telnet to open multiple Telnet windows on a single host or different hosts at the same time.

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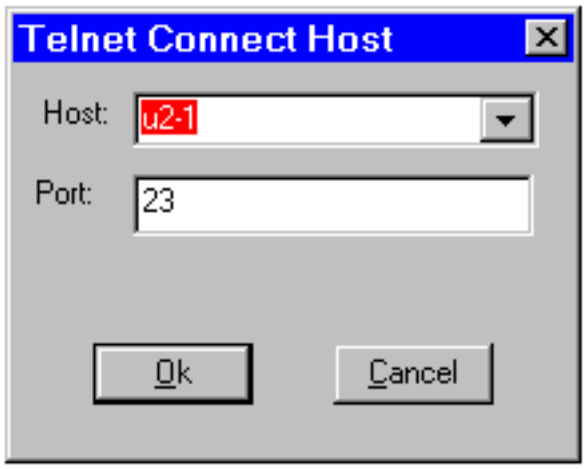
Starting and Terminating Telnet

You can start Telnet by double-clicking on the Telnet icon in the ftpAxe Programs' folder:

The Telnet Connect Host dialog box will appear on your display:



A session is a set of settings that are assigned to a connection to a remote machine. These settings are saved in an ini-file and allow you to have different preferences for different hosts (using different ini-files).

All Telnet session settings are stored in the [TELNET] section of the XWP.ini file.

The first thing you should do to initiate a session is to establish a connection to a remote machine. In the dialog, you can specify the hostname or IP address, and the port number of the service.

Host

This field specifies a hostname or IP address (network node specification) of the remote machine you want to connect to (and which provides the Telnet service).

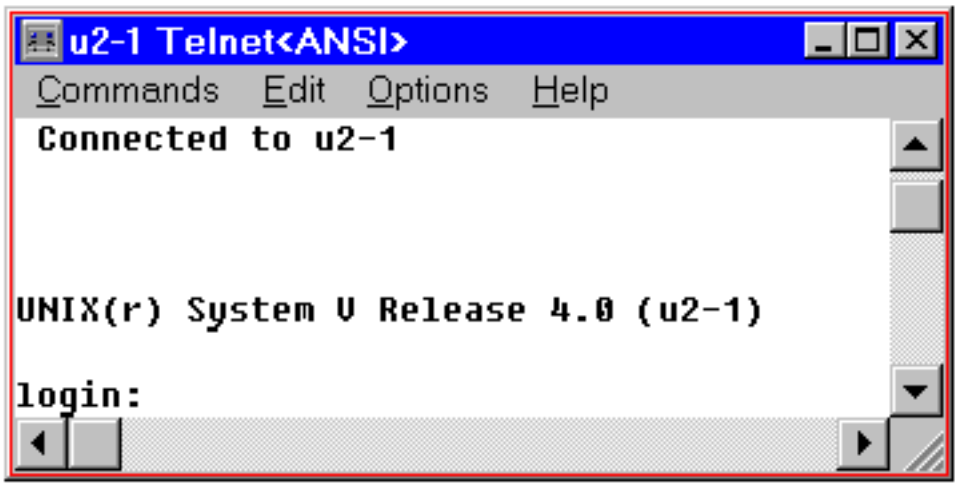
When you click on the scroll arrow beside the Host box, a drop-down box will display host definitions located in your hosts file. To select a host, click on an appropriate definition.

Port

This field specifies the port number of the Telnet service on the remote machine you want to connect to. The default port number of the Telnet service is decimal 23.

To establish Telnet connection, enter the network name or IP address of the host you want to connect to, then change the default Telnet port number if required, and press OK. Telnet connects and logs into the specified hostname.

Once you have connected to the host, the host name or IP address you specified appears at the top of the Telnet window (with the terminal emulation mode), and the host login prompt appears in the window:



You must prove your identity to the remote machine using some authentication method (e.g., password authentication). Specify the login information required for your host system. You can then interact with the host by choosing commands from displayed menus, or by typing commands in the window and starting remote applications.

You can customise your Telnet session with the Settings and/or Keyboard Mapping items in the Options menu (described below).

The following sequence of commands can be used as an example of working in the Telnet session:

login: arsexam
$ DISPLAY= xtp2:0; export DISPLAY
$ xterm&
$ mwm&

To capture the screen output of Telnet commands to a file, Telnet writes the log to the telnet.out file in the home directory (in case of fatal errors or due to the 'trace' command line parameter).

You can terminate a Telnet session by choosing the Close command on the Control Menu box, or by selecting Exit on the Telnet Commands menu.

If you select Exit while a connection to a remote system is still active, Telnet disconnects you from the remote system automatically (properly closing all applications used).

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Telnet Menu Options

The Telnet menu bar displays four menus: Commands, Edit, Options, and Help. They are described below.

The Help Menu

The Help menu contains the following menu commands:

Contents

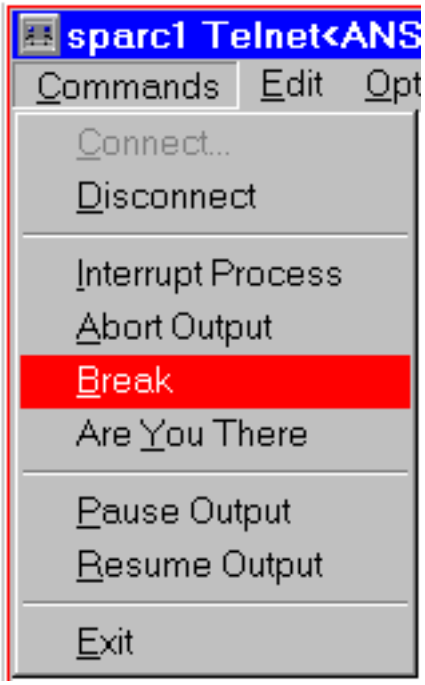
Displays the Telnet help file.

About

Displays copyright, version and program information about Telnet.

The Commands Menu

The Commands menu contains the following menu commands:



Connect

The Connect item displays the Telnet Connect Host dialog box so you can specify the remote system you want to communicate with. You can also connect to a port or service to use other than the standard Telnet port. This is useful when the Telnet client is being used to access something other than a Telnet daemon.

This command is not available when you are already connected to a remote system.

Once you connect to the remote system, the title bar in the Telnet window shows the remote system name.

Disconnect

The Disconnect item ends the connection to a remote system so you can connect to another system or end your session. This command is not available when you are not connected to a remote system.

Interrupt Process

This command sends the Telnet Interrupt Process command (IP control function) to the remote host. This command (which suspends, interrupts, aborts, or terminates the operation of a user process) tells the host to stop the current process to which the terminal is connected. This function is frequently used when a user believes his process is in an unending loop, or when an unwanted process has been inadvertently activated.

Abort Output

This command sends the Telnet Abort Output command (AO control function) to the remote host. This command tells the host to run to completion the current process, which is generating output, but without sending the output to the user's terminal from the host. Further, this function typically clears any output already produced but not yet actually sent to the user's terminal.

Break

This command sends the Telnet Break command (BREAK control function) to the remote host. This command (intended to indicate that the Break Key or the Attention Key was hit) tells the host to stop what it is doing.

Are You There

This command sends the Telnet Are You There command (AYT control function) to the remote host. This command determines if the connection with the host is still up and the system is running. This command tells the host to send back to the user's terminal some visible evidence that the command was received. This function may be invoked by the user when the system is unexpectedly 'silent' for a long time, because of the unanticipated (by the user) length of a computation, an unusually heavy system load, etc.

Pause Output

This command pauses output (it sends Ctrl+S to the host). The Resume Output item then becomes active and can be selected.

Resume Output

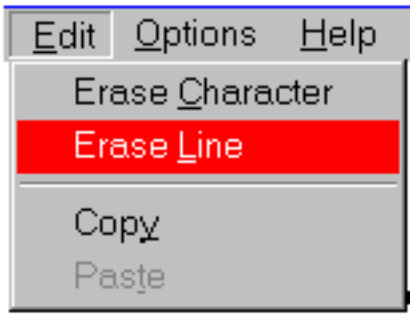
This command resumes output (it sends Ctrl+Q to the host) after output has been paused.

Exit

The Exit item terminates the Telnet session.

The Edit Menu

The Edit menu displays two commands that allow you to edit the lines you type in a Telnet window: Erase Character and Erase Line. Also there are two standard commands, Copy and Paste, for text operations with the Microsoft Windows' clipboard.



Erase Character

The host should delete the last preceding undeleted character or print position from the data stream being supplied by the user. A print position may contain several characters which are the result of overstrikes, or of sequences such as BS ...

Erase Line

The host should delete all the data in the current line of input, i.e., characters from the data stream back to, but not including, the last CR LF sequence sent over the TELNET connection.

Copy

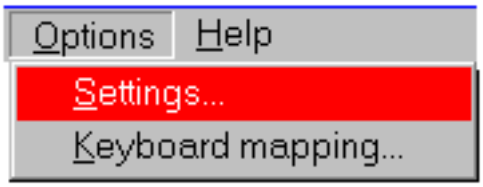
To copy text onto the clipboard, leaving the original text intact and replacing the previous clipboard contents, select the text you want to copy, and choose Copy. This command is unavailable until you have selected text.

Paste

When there is text in the clipboard, you can use Paste to insert a copy of the clipboard contents at the insertion point to the Telnet window, or to another Microsoft Windows application. This command is not available if the clipboard is empty.

The Options Menu

The Options menu displays two items: Settings and Keyboard mapping. You can choose them to specify particular (or nonstandard) implementations of Telnet. Normally they do not have to be changed.

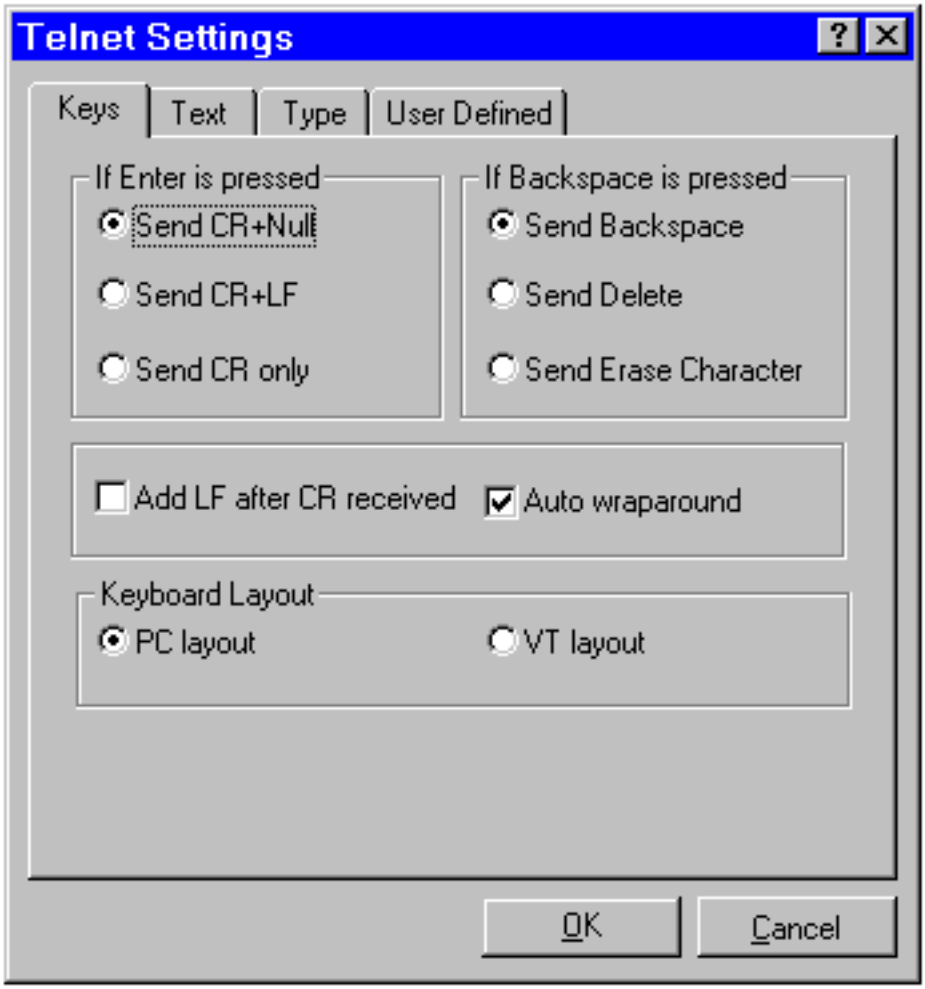


The Settings Option

You can specify the terminal emulation settings for the current connection by making the appropriate settings on the Settings Option menu.

The Telnet Settings presents you with a dialog of four tab windows that allow you to view and modify the current terminal emulation settings: Keys, Text, Type, and User Defined. They are described below.

The Keys Tab



If Enter is pressed

Options in this group box define the end-of-line sequence sent when you press the Return or Enter key.

If Backspace is pressed

Options in this group box specify whether the Backspace key will be interpreted as Erase Character, Backspace, or Delete.

Add LF after CR received

This option allows you to modify (or not) the CR code received over the network.

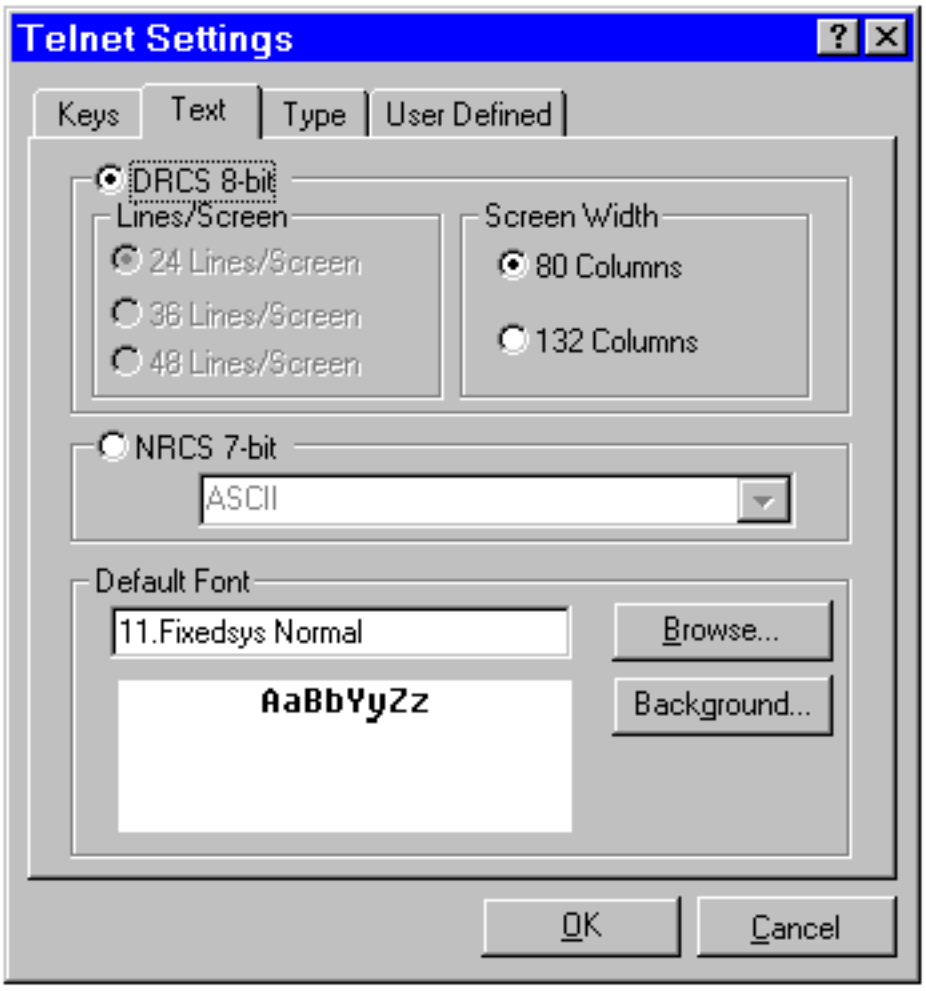
Auto wraparound

If this check box is enabled, input text will be automatically wrapped on the next line when your string is too long (i.e., any characters received when the cursor is at the right margin will be displayed on the next line). Otherwise, input is stopped so you cannot enter more characters (i.e., any characters received when the cursor is at the right margin will be displayed just to the left of the right margin, replacing the current character displayed there).

Keyboard Layout

Options in this group box specify which keyboard layout will be used: PC layout or VT layout.

The Text Tab



You can specify the lines of text that you want to be retained in memory so that you can scroll through it in the window. Options in this group box let you specify the number of lines (24/36/48) and columns (80/132) that will appear in the

Telnet window.

DRCS 8-bit

When this radio button is enabled, you define to work in the 8-bit environment and send the 8-bit control sequences and graphic characters (Multinational character transmission mode), including supplemental characters.

In this mode, you can download soft character sets from the host system into the terminal. The soft character set is also known as a dynamically redefinable character set (DRCS). This feature lets you design your own soft character sets for use with the terminal.

You can use the DECDLD control string command to down-line load one or more characters of a specified 94- or 96-character DRCS with a specified logical pixel pattern.

NRCS 7-bit

When this radio button is enabled, you choose to work in the 7-bit environment only. Select one of the 7-bit character sets from the National Replacement Character Sets (NRCS) pull-down list box to allow for country/region's replacement characters to be sent in the 7-bit escape/control sequences (National character transmission mode).

The following NRC sets are available:

ASCII
DEC Special Graphics
DEC Supplemental
British
Dutch
Finnish
Norwegian/Danish
Swedish
French
French Canadian
German
Italian
Spanish
Swiss

In VT100 mode, VT52 mode, or when 7-bit NRCS characters is selected (through Set-Up or the DECNRCM command), only ASCII, NRC sets, and DEC Special Graphic characters are available.

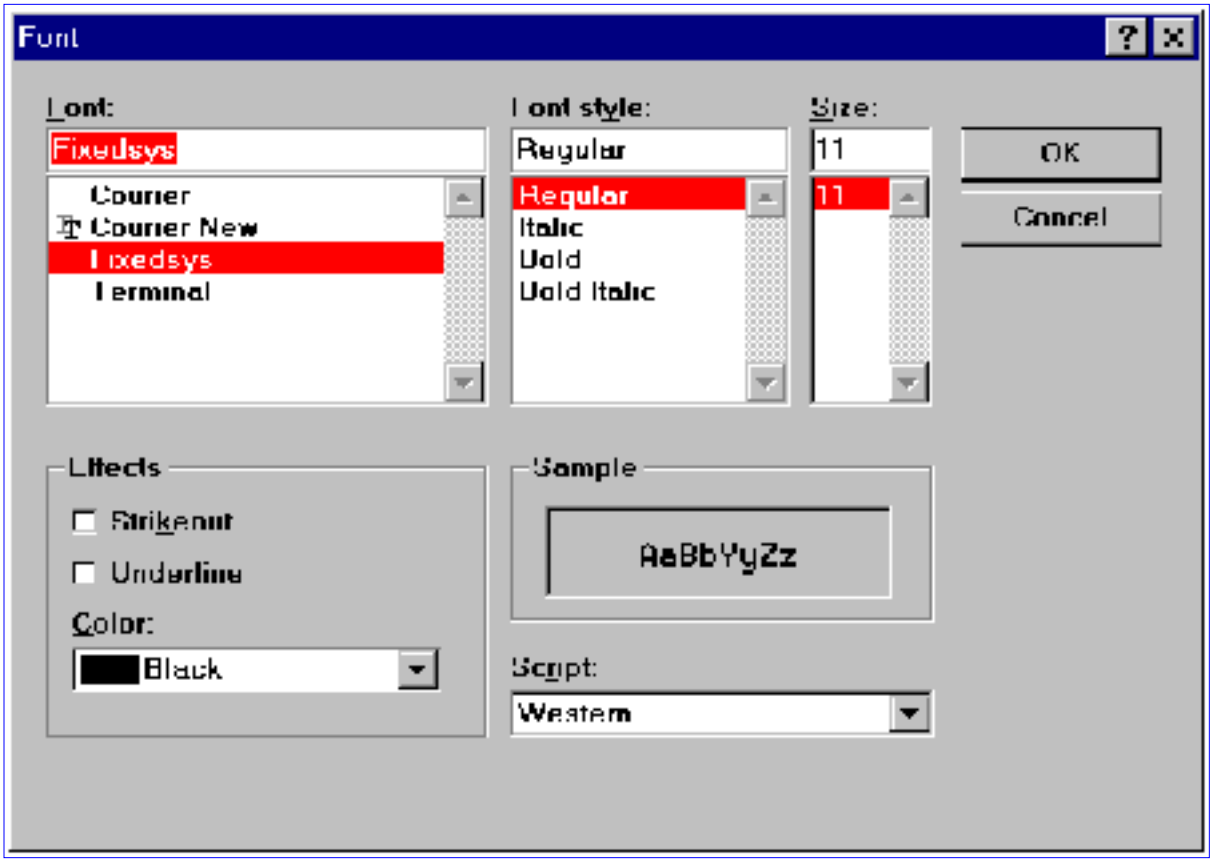
Default Font

Characters in the Telnet window appear in the specified font, size, and colors. Options in this group box allow you to change font parameters used to display

text in the Telnet window.

Browse...

When you press this button, the Font standard dialog box appears. This dialog box changes the font, style, and font size of text displayed in the Telnet window.



Font

Type or select a font name. Telnet lists the fonts available for the various emulation modes.

Font Style

Select a style. You can italicize and bold any of the fonts listed. To use the default type style for a given font, select Regular.

Size

Type or select a size. The sizes available depend on the selected font. If the size you type is not available, Telnet chooses the closest available size.

Script

In the Script list box, select a desired font script.

Effects

In the Effects group box, choose Strikeout to put a dash through every letter on the screen, or choose Underline to underline all the text.

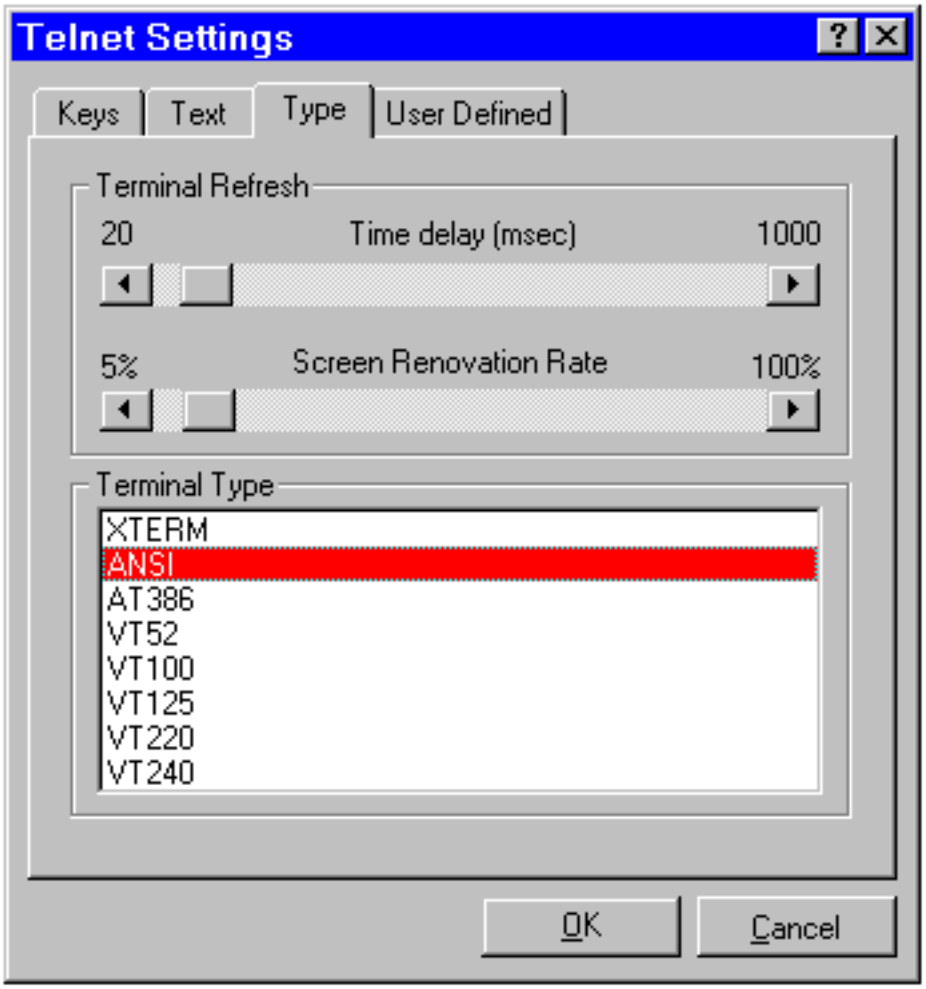
Color

In the Color list box, select a color for the text.

The Sample box changes to reflect your selection.

When you press the Background... button, the Color standard dialog box appears. You can define your color for your background. The Colors tab allows you to customize the color of your screen by emulating the color of the host's attributes. The colors you set in this tab are not altered by the colors settings you make in the Windows Control Panel.

The Type Tab



Terminal Refresh

This group box allows you to change values of parameters that control the screen

buffer output and modify the characteristics of your keyboard.

The Time delay (msec) parameter sets the time interval (20...1000) that defines when to display lines with character(s) received.

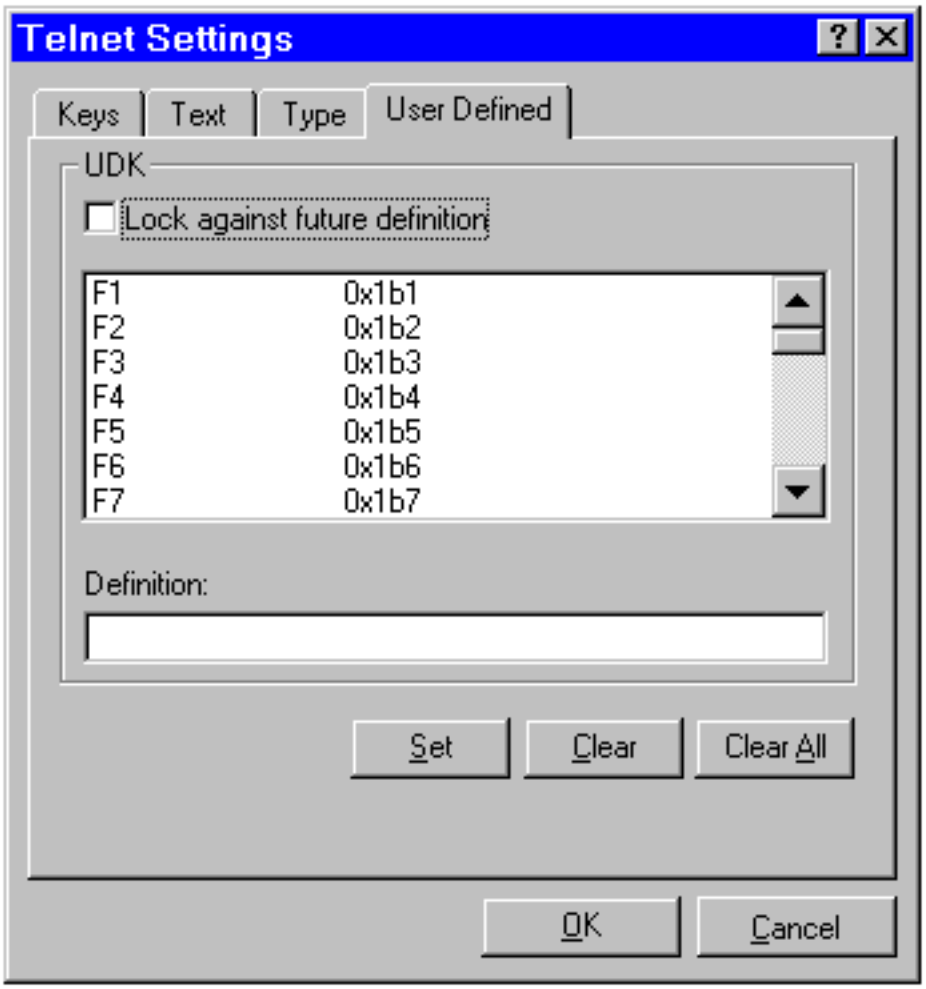
The Screen Renovation Rate parameter sets the ratio (5%...100%) of screen changes (e.g. characters entered or modified) to full screen that defines when the screen area modified will be re-displayed.

Terminal Type

This option allows you to change emulation modes for the Telnet session by selecting one of the available modes from the Terminal Type list. The mode must correspond to that assigned in the TERM() command when logging in. Telnet adjusts your system so that your computer, keyboard, and terminal perform just as the specified terminal does. The modes are popular control sets used in terminals originally manufactured by Digital Equipment Corporation (DEC). If you are not sure which terminal to select, select VT-100 (ANSI escape sequences).

The User Defined Tab

This tab allows any functional key to be programmed with a user-defined sequence. User-defined keys (UDKs) are a subset of functional keys.



The UDK group box contains a list box with currently defined keys for a current emulation mode. This box allows you to map key symbols to the Unshifted, Shifted, Mode Switched, and Shift-Mode Switched states of the key. You can select a key symbol and then clear (with the Clear button), define or re-define its function value (in the Definition edit field).

You can use UDKs like a macro defined for a functional key: whenever you want to forward a user-defined control string to a host you press the key combination to activate the value. (Also see the List Assigned Functions dialog box in the Keyboard Mapping option below for already defined functional keys.)

Note: Some function key combinations are reserved by MS Windows and cannot be redefined.

Upon terminating Telnet sessions or pressing OK, UDKs are stored in the terminfo.ini file (in the emulation mode section; see Appendix B for details), so they will be defaults for the next session when the file will be read in.

Lock against future definition

Use this check box to lock/unlock UDKs listed against future redefinition (from a

remote host).

Definition

This edit field is used to enter new control string codes for UDKs. The string can include any combination of escape sequences, control sequences, or text (without any separating character). The string should be in valid format for the terminal emulation mode. You can scroll the field left or right as needed to allow longer strings to be entered.

Set

This button assigns the value entered in the Definition field to the UDK currently selected in the list box (for the current terminal emulation mode). This key combination will activate the value whenever it is pressed.

Clear

This button removes a value for a currently selected UDK.

Clear All

Click this button to delete the mapping for all UDKs listed.

OK

Pressing OK saves current UDK settings and quits the dialog box.

Cancel

You can cancel any changes you made to the dialog box by clicking on this button.

The Keyboard Mapping Option

By using the Keyboard Mapping Option (i.e., keymap editor invoking), you can load, change (re-define keys and create a new keyboard layout), and save any keyboard definition file.

Keyboard files are text files that define the X Protocol Key Symbols (Keysyms) which are mapped to keys on your keyboard. By default, they have the extension KMF, and are located in the home directory. You specify the KMF file to be used by all ftpAxe's programs in the XSettings utility's window.

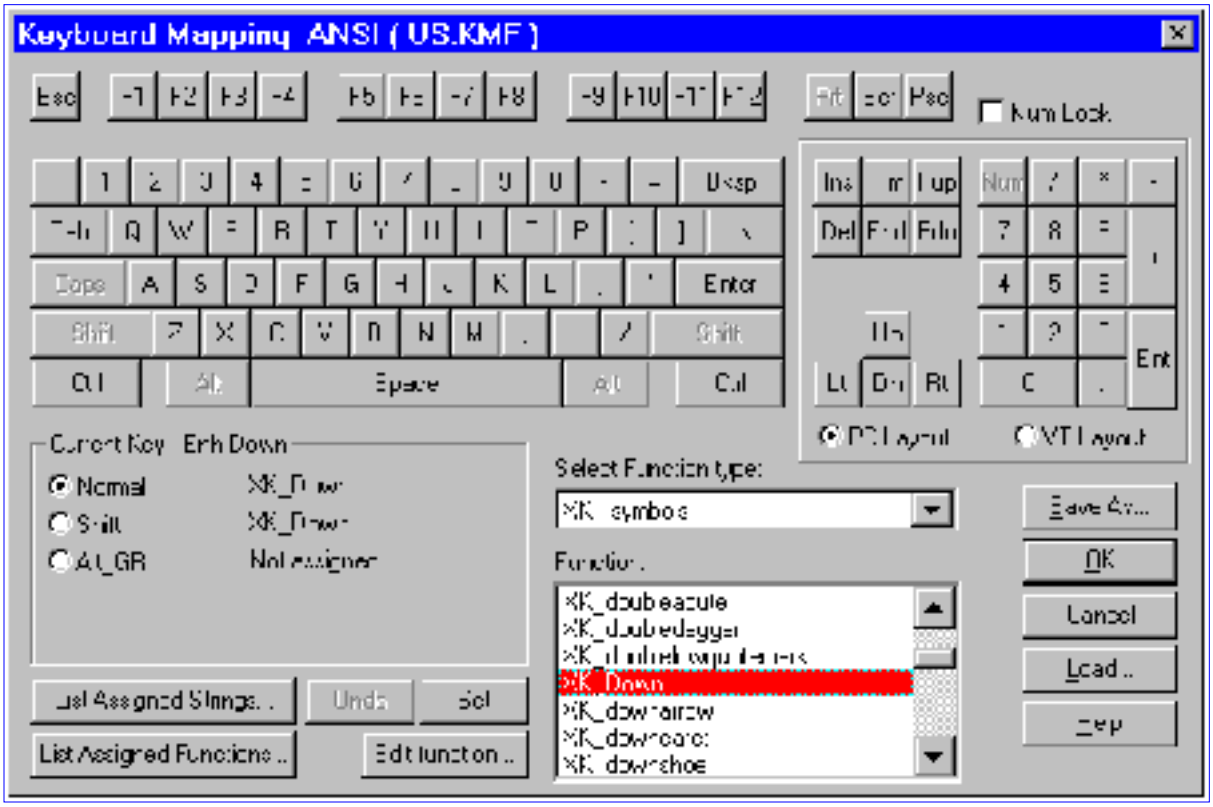
The keyboard mapping file format uses scancodes which allow the terminal to transmit make and break codes for each keystroke corresponding to the hardware scan codes used by PC keyboards (scan set 1). Make means when the key is pressed; break means when the key is released. The Keyboard Mapping File Format is described in Appendix A.

The Keyboard Mapping dialog box allows you to map Keysyms, Characters, or Compose Key Sequences to existing keys on your keyboard.

Keysyms is the encoding of a symbol to a key that exists on a physical keyboard.

Compose Key Sequences are key combinations to produce special Keysyms such as accented characters. These Keysyms are generated by typing two keystrokes. The first key is known as a composing key. Each Compose Sequence consists of two key combinations which generate a new pseudo key.

Modifiers are keys that modify the action of other keys. They are not to be confused with a Keysym. In X Keys they include Shift, Lock, Control, and Mod1 through Mod5. Mod1 through Mod5 are the logical keynames for modifier keys that vary from workstation to workstation. Caution should be used when assigning modifiers to latching keys (NumLock, ScrollLock, or CapsLock). Modifiers mapped to these keys should not be used to modify keys in compose sequences.



The upper portion of the Keyboard Mapping dialog box contains a standard keyboard layout. The currently loaded keyboard mapping file name and the terminal emulation mode are displayed at the top of the window.

On the KeyPad group box, the KeyPad layout is shown according to the PC Layout and VT Layout radio buttons states. You can toggle between them to change the KeyPad layout.

NumLock

If you enable the NumLock check box, the numeric keypad keys will work as they normally do on your PC (local latched mode). If this option is not checked, the behavior of NumLock is determined by the remote host.

Load

When you press this button, the Open standard dialog box to open files appears, allowing you to select and load a keyboard mapping file for viewing and modifying.

Save As

When you press this button, the Save As standard dialog box to save files appears, which allows you to save your current keyboard mapping under a new filename.

Select Function type:

On this list box, you can select one of the function types: XK_symbol, Character, or Composer to display all values available for it in the Function: list box.

Function:

On this list box, you can select a value for:

- assigning it to a key with the Set button
- modifying it with the Edit function... button.

If the Function type selected is XK_symbol, a list is displayed containing all of the XKeysyms available.

If the Function type selected is Character, a list is displayed containing all of the characters available (including accented characters) with its (decimal/hex) keycode pairs.

If the Function type selected is Composer, a list is displayed containing all of the Compose Key Sequences available.

Set

When you click a key on the keyboard layout, it appears in the Current Key group box with its current definitions:

- normal (unshifted/unmodified)
- shifted
- modified (with the Alt GR key).

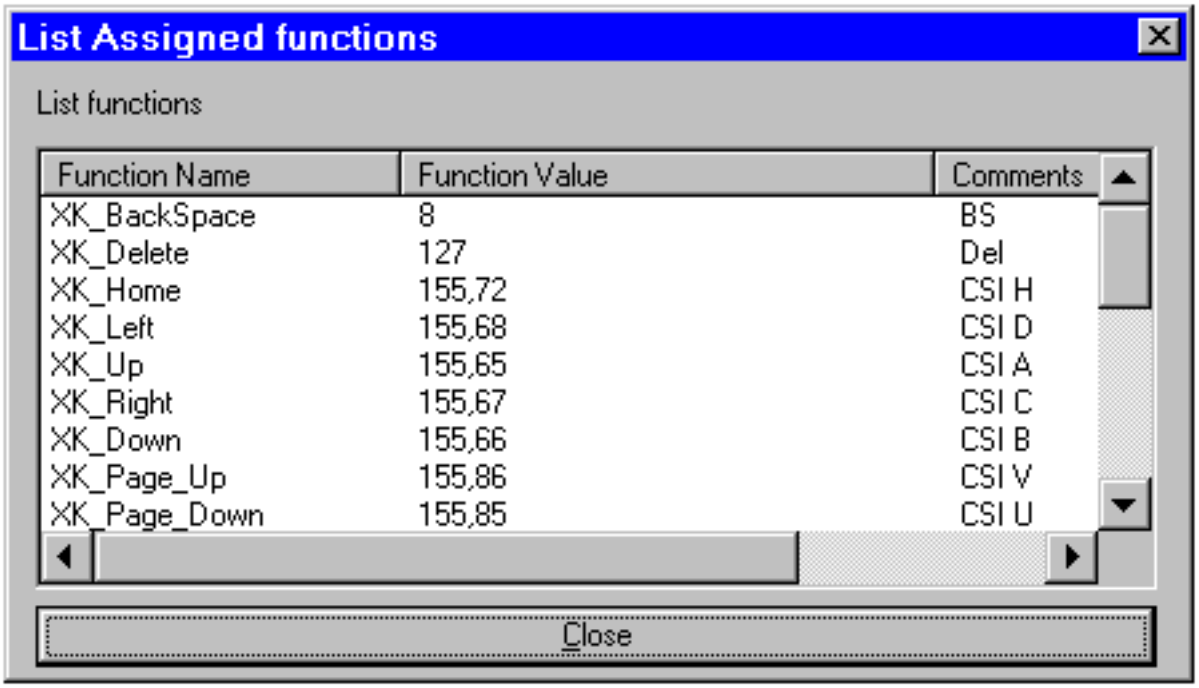
When you have a value highlighted on the Function: list box (of type: XK_symbol, Character, or Composer) and a key selected on the keyboard layout, you can press the Set button to change current values assigned to the key and displayed on the Current Key group box to the new value (according to the radio buttons' states).

Undo

Use this button to immediately restore the previous key value every time you press the Set button.

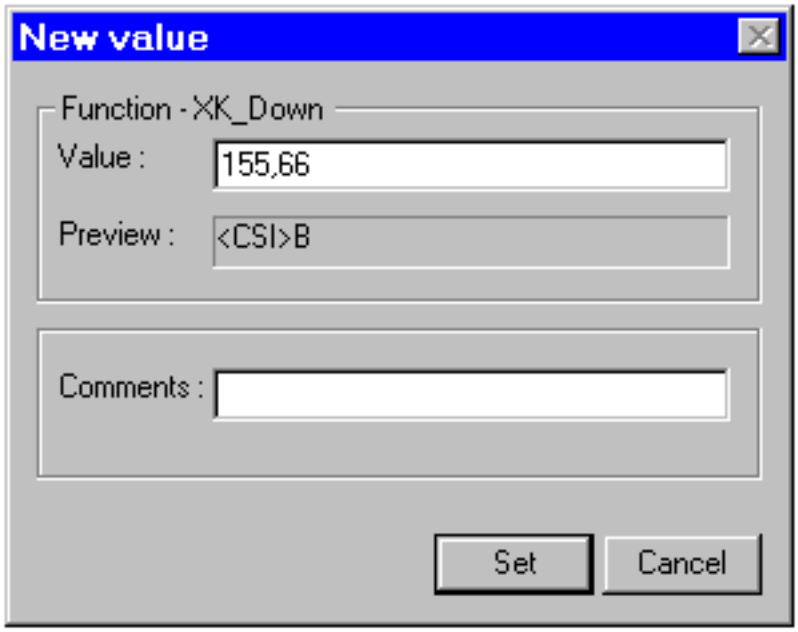
List Assigned Functions

When you press this button, a dialog box appears that allows you to view a list of functions already assigned to functional keys (for the current terminal emulation mode). The list contains function names (X Keysyms), function values (code sequences), and comments on them.



Edit function

When you have a highlighted function of either the XK_symbol or Composer type, you can press the Edit function... button to change the value to define a new key sequence for the function (and current terminal emulation mode). The New value dialog box will appear on your screen.



The Function group box shows the currently selected function.

Value:

This edit field is used to enter a new string for the selected function. The string can include decimal codes (in the range of 0...255) separated with the comma character (as in the List Assigned Functions dialog box). The string should be in valid KMF format described in Appendix A.

Preview:

This field displays a comment value for a selected function.

Comments:

Use this field to enter a new comment for the function you define.

Set

This button stores new values you entered and exits the dialog.

Cancel

You can cancel any changes you made to the dialog box by clicking on this button.

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Terminal Emulation in Telnet

The Telnet program can emulate XTERM, AT386, ANSI, VT52, VT100, VT125, VT220 and VT240 terminals. The terminfo.ini file describes the capabilities of these terminals. This description contains control sequences for them and is very similar to the TERMINFO source code of the UNIX system. So users can edit the file to suit to the special environment.

By editing the terminfo.ini file, users can define the terminal type, the screen size (the number of lines and columns), the number of colors, the color palette (i.e., RGB values for each color number), sequences to be transferred to remote hosts for each user-defined key on the keyboard.

Appendix B contains detailed information on how to describe the terminal emulation capabilities.

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Running Telnet with Command Line Parameters

You can launch Telnet with the 'host' command line parameter to avoid interactive input of it. 'Host' may be either a host name or IP address of the remote machine you want to connect to.

Examples:

PATH\telnet.exe u2-1
PATH\telnet.exe 192.168.136.223

where PATH indicates your nfsAxe home directory.

You can launch Telnet with the command line parameter:

PATH\telnet.exe -xini <IniFilePath>

where <IniFilePath> specifies a full path to a specific ini-file.

This feature allows you to run several Telnet sessions each with its own ini-file (i.e., settings).

In order to do so, you can create a new Telnet shortcut (e.g., in the nfsAxe Programs' folder) and fill in the Target field in Properties of it with the command. By default, the field contains a call of Telnet with no arguments, and the xwp.ini file will be used in this case.

To create your specific ini-file, you can copy the xwp.ini file and then change parameters with the Telnet utility as you need by starting it with the command line parameter.

You can launch Telnet_S with the 'trace' command line parameter

PATH\Telnet_S.exe -trace

to collect debug information in the telnet.out file in the home directory.

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The "[TELNET]" Section of the ini-file

The "[TELNET]" section of the ini-file may have the following entry lines you can customize for particular needs and applications.

ALTforEMACS=1

to allow the ALT key to be used in EMACS.

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8. FTP

This chapter describes how to start and use the FTP program supplied with nfsAxe.

The FTP is a file transfer program which allows you to transfer files between your PC and a remote computer using the ARPANET standard File Transfer Protocol. The program can transfer files in two different format types: ASCII format is used for text files, and Binary format is used for binary files.

The FTP also allows you to perform some basic file and directory management operations, such as deleting, copying, and renaming.

The nfsAxe's FTP must run on a machine that is configured for TCP/IP network communication or Internet access. Access can be gained through Winsock and the use of any dial-up provider, a Remote Access Server (RAS), or a direct connection via a local area network that supports TCP/IP. In order for the FTP to communicate with a remote computer, that computer must have a server implementation of FTP (FTP server based on the TCP/IP transports).

You can be connected to only one remote computer at a time during a FTP session. However, you can run multiple FTP sessions (FTP clients) simultaneously in separate windows, with each session connected to a different host.

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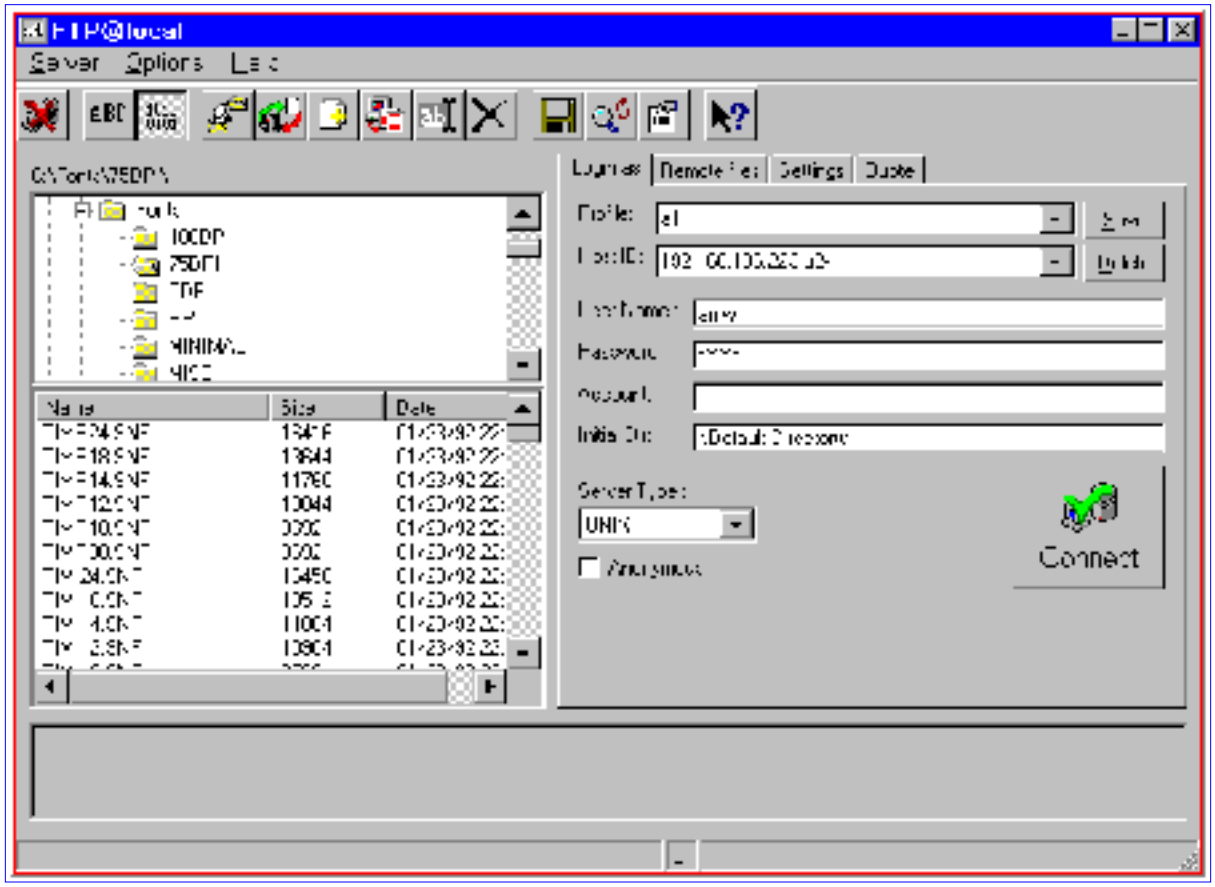
Starting and Terminating the FTP Program

You can start the FTP program by double-clicking on the FTP icon in the nfsAxe Programs' folder:

The main FTP window will appear on your display:



In order to terminate FTP, choose Exit from within the Server menu. It is not necessary to close a connection before terminating FTP; the system will shut everything down for you.

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Main FTP Window

On the upper portion of the main window, there is a Toolbar displaying short-cut buttons that allow you to access commonly-used functions that appear on the FTP menus:

Disconect
ASCII type transfer
Binary type transfer
Copy selected file(s)
Copy file with another name
Append file to another
Reget or Reput selected file
Rename selected file
Delete selected file(s)
Save current settings
View selected file to Notepad
Update panels
Help contents

The left part of the FTP main window consists of two list boxes displaying a current local directory tree structure and a file list for the path above. You can select local files for operations here.

The right part of the FTP main window contains four tabs that house the various program options. These tabs are: Login as, Remote files, Settings and Quote.

The Login as tab is for making connection to a FTP server.

The Remote files tab displays the directory structure of the currently connected server. The window is blank unless FTP is connected to a server, or a server's cached directory information is displayed. Navigating through the server's various folders or directories is accomplished by clicking individual folders with the mouse. Here you can browse your active connection and select directories and files for operations.

When you press the right mouse button on the empty space inside the tab, the drop-down menu will appear so you can use its available options.

The Settings tab is used to configure transfer options.

The Quote tab allows you to control a FTP server by command lines.

You can resize file panels and sort files by clicking on the column name at the top of

the file listing.

On the lower portion of the main FTP window, the message box displays a listing of all commands sent to the remote server and messages on how the FTP commands are executed. The log can be useful for debugging or troubleshooting purposes. You can scroll messages up and down, select them, and place the data in a log-file for future reference (by pressing the right mouse button and choosing the option).

The status line displays a current path (if exists) to remote files, the L/R character to indicate the (Local/Remote) active panel for operations, and descriptions of the program's activities during its connection or file transfer operations.

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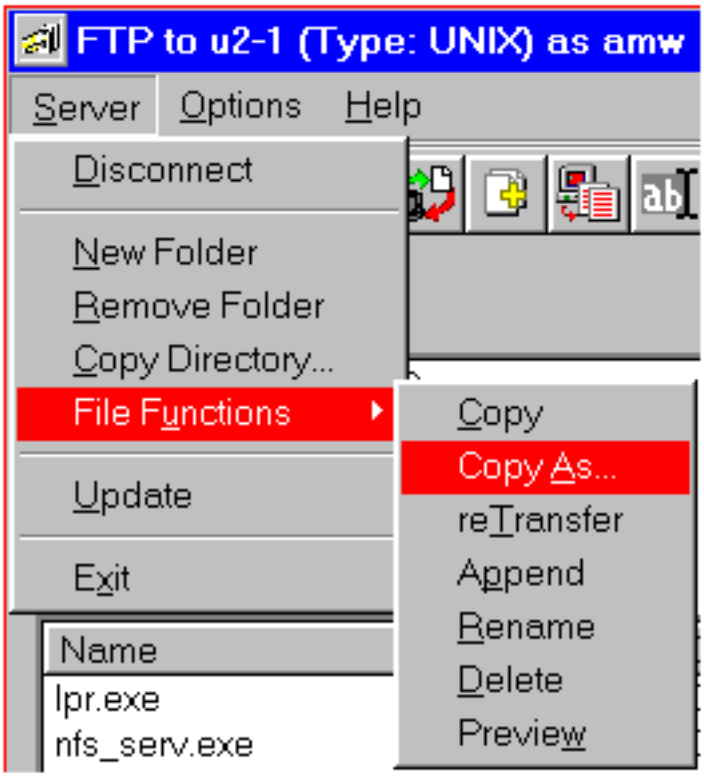
The Server Menu



Disconnect

Closes an active connection with a FTP server (see Disconnecting From FTP server for details).

New Folder

Makes a directory on your PC or a FTP server (see Making Directory for details).

Remove Folder

Deletes a selected local/remote (empty) directory (see Removing Directory for details).

Copy Directory

Copies a selected directory to or from the host (see Copying Directory for details).

Update

Refreshes the contents of the list boxes. Use this option to reload the file listing of the current directory. This option is only available if a connection is active. You may also refresh the current directory listing by pressing the Update panels button on the tool bar.

Exit

Exits the FTP program.

File Functions

This sub-menu has the following items for file management operations:

Copy Copying selected files
Copy As Copying a file with changing its name
ReTransfer Re-getting or re-putting a file
Append Appending one file to another
Rename Renaming a selected file
Delete Deleting selected files
Preview Viewing a selected file

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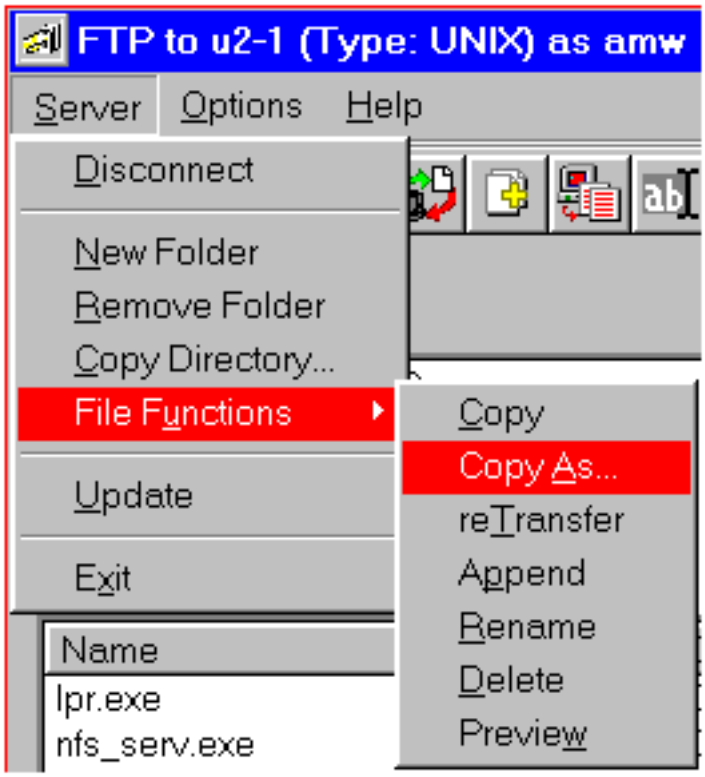
The Options Menu



ASCII type

Toggles to the ASCII transfer type.

Binary type

Toggles to the Binary transfer type.

Enable Save Password

Toggles enabling to save password on exit.

Save Settings on Exit

If enabled, settings will be saved on exit.

Save Settings Now

Settings are saved immediately.

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Performing File Transfer

A file transfer downloads files from a remote machine to your local PC, or uploads files from your machine to a remote one. You can also delete and rename files on, and append files to, a remote machine.

Before any file transfers can take place between your machine and the desired server, the server's information must be entered. When connection is open, FTP allows you to perform directory and file management operations on the remote computer. FTP allows you to perform basic directory and file management operations on your PC as well. If no connection to a remote computer is open, FTP will then recognize local commands only.

While you are connected, you can perform a number of tasks on the FTP server, using various server options.

Next you can select files for transfer. Based on the files you have selected, you set up transfer options. Transfer options control the format of the file transfer, and whether you will be prompted before operations. With transfer options set, you can perform file management operations.

While transferring multiple files, each copy is given the same name as the original. Filenames are sent in lowercase.

When you are done, you can disconnect from the FTP server.

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Connecting to the FTP Server

To create connection between your PC and a remote computer, carry out the following on the Login as tab:

1) Select a FTP server (HostID) in the list box of hosts (defined in your hosts file). Alternatively, you can enter the host address for the server (can be either the DNS entry or its IP address) in the HostID edit field.

2) In the UserName edit field, enter your login name that is required by the selected server to access your FTP account.

If you do not have an account with the selected server, and it accepts anonymous FTP requests, enable the Anonymous option (explained below).

3) In the Password edit field, enter the password that is required by the server to access your FTP account. The characters of the password will appear as asterisk (*) symbols for security purposes unless you chose the anonymous login option.

4) Specify your Account (if required).

If the Account field is specified, the account command will be relayed to the remote server after the login sequence is completed if the remote server did not require it for logging in.

5) In the Initial Directory field, enter the path on the server in which you want to begin. If this field does not contain a value, the root directory will be the default listing.

6) Select the operating system type of the remote computer from within the Server Type list box. The UNIX system type is used by default. (Currently supported types are: UNIX, DOS, VMS, MVS, OS/2, SI NT FTPD, IBM VM, AS/400).

7) Click the Connect button to establish the connection.

Alternatively, you can select a proper connection profile name and press the Connect button (see the Profile section below).

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Disconnecting from the FTP Server

The Disconnect option is only available if a server is currently attached. Choosing this option will break the connection from the server. To close a connection to the current FTP server, you can choose Disconnect from within the Server menu. Alternatively, press the Disconnect button on the tool bar.

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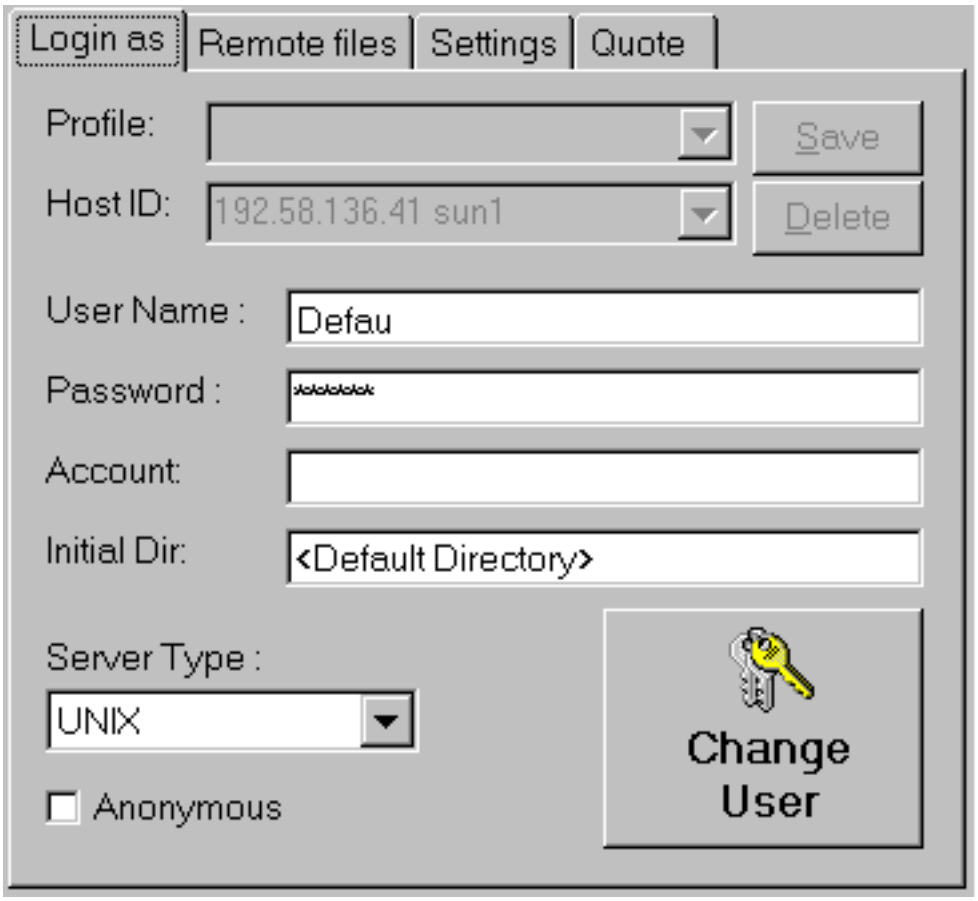
Changing to a User Name

During a FTP session, you can change to another user name. This option is only available if a server connection is active. To change to another user name:

1) Select the Login as tab from the TabForm.



2) Enter a new user name in the corresponding edit field.

3) Specify a password (if required).

4) Press the Change User button to confirm your Login.

If there are problems with your Login, you will be returned to the Login dialog box and given another chance to Login. If your Login is successful, you will be returned to the FTP session.

Alternatively, you can select a proper profile name and press the Change User button (see the Profile section below).

To cancel changing user name, just select another tab from the TabForm.

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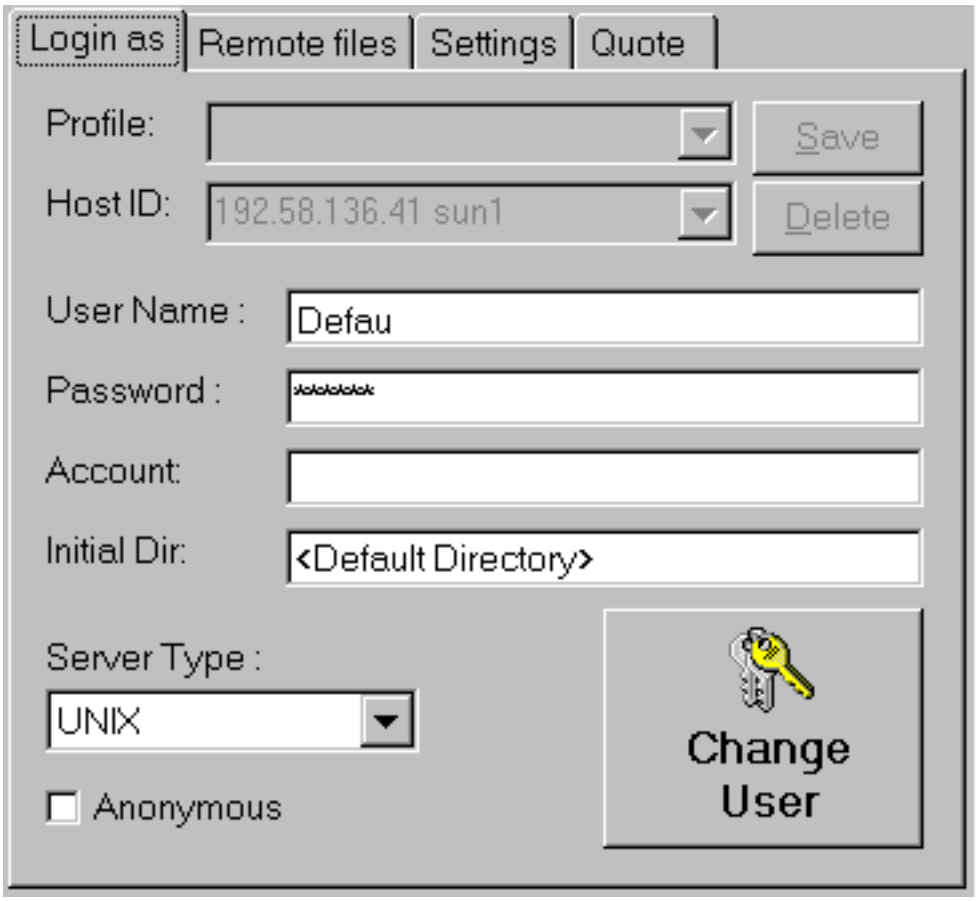
Changing to a User Name

During a FTP session, you can change to another user name. This option is only available if a server connection is active. To change to another user name:

1) Select the Login as tab from the TabForm.



2) Enter a new user name in the corresponding edit field.

3) Specify a password (if required).

4) Press the Change User button to confirm your Login.

If there are problems with your Login, you will be returned to the Login dialog box and given another chance to Login. If your Login is successful, you will be returned to the FTP session.

Alternatively, you can select a proper profile name and press the Change User button (see the Profile section below).

To cancel changing user name, just select another tab from the TabForm.

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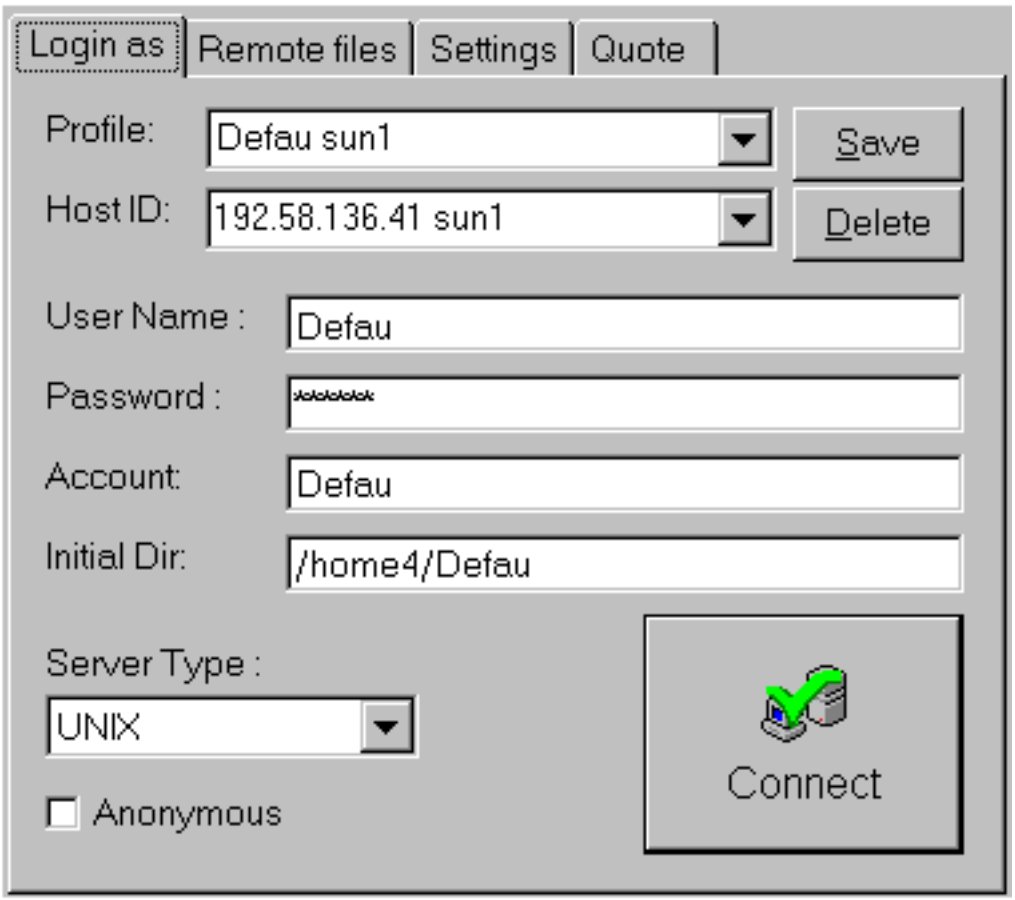
Profile

You can assign a name to the connection data set by entering it in the Profile edit field. This set includes: HostID, UserName, Password, Confirms.



The text displayed in this field can either be the profile name that is selected in the list, or it can be text that has just been entered. Click on an entry in the list to choose the profile and automatically display the related connection information for it. Any relevant data previously configured in the connection dialog for each server will be displayed after its selection from the list.

To edit an existing profile name, simply select the profile to edit from the list, then move the cursor to the point in the profile name that you wish to change, and make the desired changes.

To add a profile to the profile list, click on the Save button.

To remove a profile from the profile list, select it in the profile list box and press the Delete button.

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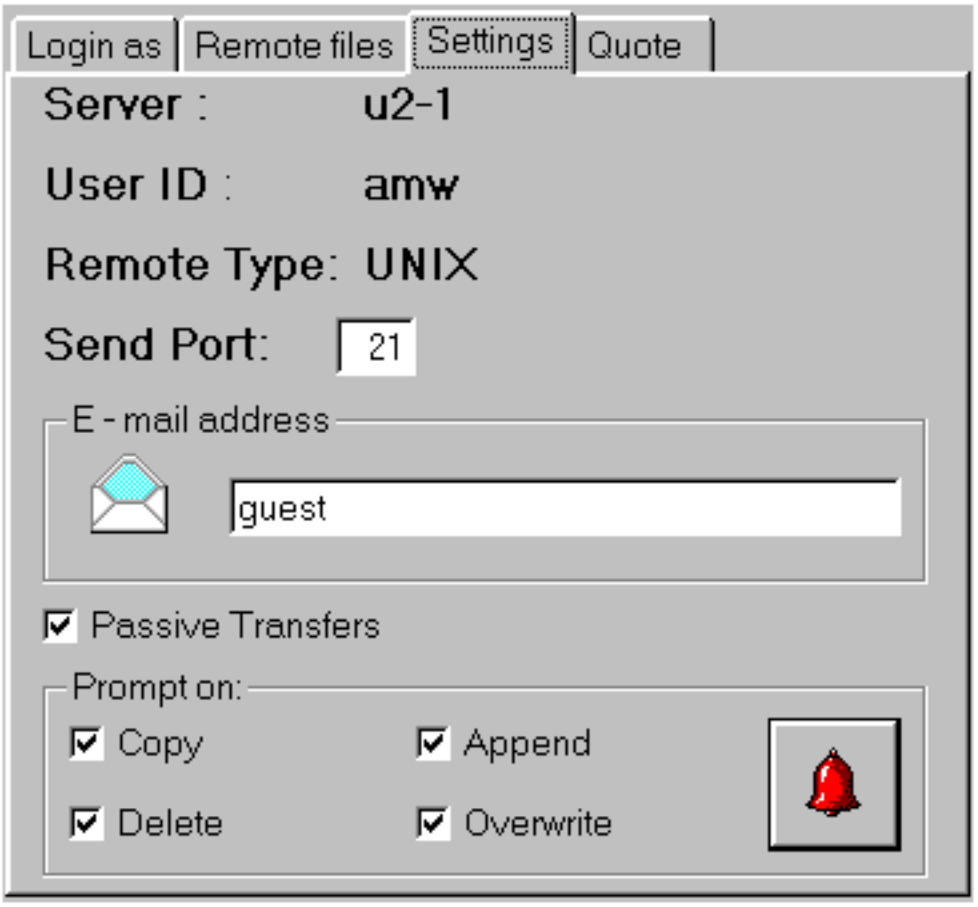
Transfer Options

Transfer options you may configure include the following:

- transfer format type (ASCII, Binary)
- sound upon completing operations
- confirms for Copy, Delete, Append and Overwrite operations
- port number
- transfer mode

To display current settings, select the Settings tab from the TabForm. This will bring up the tab with current options of your FTP session:



To save current settings, press the Save current settings button on the tool bar. You do not have to be connected to a server.

Setting Transfer Options:

Transfer options will be in effect until you change them or close the server connection.

1) To set up transfer format type (ASCII, Binary), you can choose the necessary item from within the Options menu. Alternatively, press the suitable button on the toolbar.

If the ASCII option is selected, all transfers to or from the remote server will be made in the ASCII format. This is necessary for ASCII text, files on some servers, but cannot be used for transfer of binary executables, or files other than those composed strictly of ASCII text.

The Binary option makes FTP treat all transfers to and from the remote server in a binary format, which is necessary for binary executables, or very generally, for files that are not composed strictly of ASCII text.

There is no special checking on the selections to determine if this is appropriate. For example, if you select a .exe file and select ASCII as the transfer type, you will not be notified.

2) To toggle the Sound upon completing operations option, press the Red Bell button on the Settings tab. This option will enable the system sound upon connect, and successful download or upload of a file or files.

3) To change the confirmation settings, check the Copy, Append, Delete or Overwrite check boxes if you want to be prompted to confirm whether to continue when you are performing the corresponding file operation.

4) To specify a port number, enter it in the edit field (if you wish to communicate via a specific port on the FTP server). Otherwise, leave this field's default as 21.

This port number will be used throughout the session. An optional port number may be supplied, in which case FTP will attempt to contact a FTP server at that port. Most servers accept FTP connection requests on port 21, but there are those that do not (for security or other reasons). Port number 21 is usually used for FTP clients.

5) When the Passive Transfers check box is disabled, then a FTP server will (normally) try to establish connection with your FTP client and perform operations. When enabled, this mode makes a FTP server passive (with the PASV command) so your FTP client will try to connect to a FTP server. This mode is useful when your PC is behind a firewall or proxy server.

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Operations with Files

Copying Files

Copying files duplicates selected files to another file system. You can copy local files to a remote system, or remote files to your PC. Copying can be carried out by using the Copy button, which assumes that you want to use the same file name, or the Copy As button, which will prompt you for a new name for the file.

Use Copy As to transfer UNIX files with a file name not conforming to DOS file naming conventions. When you have to operate with such 'specific' UNIX names, then choose NONE as the server type in the Server Type list box.

Note: Copy and Copy As can only be used with files, not directories.

To copy a file:

1) Connect to a server, using a valid server profile.

2) Navigate through either the local or remote directories to locate a file of your interest in the file list.

3) Select the file by clicking on it. A status bar letter will appear to indicate the currently active panel.

Note that Copy As can only be used with one file at a time.

If more than one file is to be selected, you can use standard Microsoft Windows' techniques to make multiple selections (with the Ctrl key for individual files, or with the Shift key for adjacent files).

4) Display a destination directory to place the files.

5) Verify that the transfer options be configured appropriately.

6) Choose the Copy selected file(s) or Copy file with another name button from the toolbar, or choose the Copy or Copy As item from within the Server/File Functions menu.

7) If the Copy confirmation is turned on, you will be prompted to confirm the operation.

If you are doing Copy As, you are always prompted for a new name and the Copy As dialog brings up.

8) If files exist with the same names as the selected source files in the destination directory and the Overwrite confirmation is on, the Overwrite dialog will bring up.

You can choose Yes to overwrite the file, or choose NO to skip copying the file.

You can choose Yes to All to overwrite the rest of selected files.

9) While the transfer is in progress, the transfer status is displayed.

If you press the Cancel button, the Copy operation will be cancelled, but any files that have already been copied will exist on the target file system.

You can Copy, not Copy As, by just dragging the selected files and dropping them onto the target panel to begin the operation.

Appending One File to Another

Appending a file concatenates it to another file. You may append a local file to a remote one.

Note: Appending can only be used with files, not directories.

To append a file:

1) Navigate through your local directories tree and a file list to locate a file of your interest.

2) Select the local file by clicking on it.

3) Display a destination directory where to append the file.

4) Verify that the transfer options be configured appropriately.

5) Press the Append file to another button on the toolbar, or choose the Append item from within the Server/File Functions menu.

6) If the Append confirmation is turned on, you will be prompted to confirm the operation.

You can choose NO to skip appending a selected file.

The default is to use the same file name in the current directory on the remote file system (to which you are moving the file).

Note: If you press the Cancel button on the transfer progress dialog, your destination file will be invalid!

Renaming Files

Renaming a file changes the name of the file. Rename does not support simultaneous moving that file. You may rename both local and remote files. Rename will prompt for a new name for the highlighted file. The new name will replace the old one, providing your login grants you permission to rename files on the server to which FTP is

attached.

Note: Rename can only be used for files, not directories.

To rename a file:

1) Select a file of your interest in the local or remote file list. You may not select multiple files to be renamed.

2) Press the Rename selected file button on the toolbar, or choose the Rename item from within the Server/File Functions menu. The file name will turn into edit field with the file name highlighted.

3) Enter a new name for the file in the field, using standard Microsoft Windows' techniques.

4) Press the Enter key to complete renaming, or ESC to cancel it.

Deleting Files

Deleting a file removes it from its file system. You can delete local and remote files. This option will delete the currently highlighted remote files, provided that your account on the server to which the FTP program is connected permits deletion.

To delete files:

1) Navigate through either the local or remote directories to locate files of your interest in the file list.

2) Select one or several files.

If more than one file is to be selected, you can use standard Microsoft Windows' techniques to make multiple selections.

3) Press the Delete selected files button on the toolbar, or choose the Delete item from within the Server/File Functions menu. Alternatively, you can simply press the Delete key on your keyboard.

4) If the Delete confirmation is turned on, you will be asked to confirm the operation.

You can choose Yes to remove the current file.

You can choose No to skip removing the current file.

You can choose Yes to All to remove the rest of selected files.

If you press the Cancel button, the removal will be cancelled, but any files that have already been deleted cannot be restored.

Re-getting or Re-putting Files Transferred Partially

Retransfer acts like Copy except that if a selected file exists and is smaller than the file on another side, the file is presumed to be a partially transferred copy of the file from

another side and the transfer is continued from the apparent point of failure. This option is useful when transferring very large files over networks that are prone to dropping connections.

To retransfer a file:

1) Select a file of your interest as for Copy. A status bar letter will indicate the currently active panel.

2) Choose the reTransfer item from within the Server/File Functions menu, or press the Reget or Reput selected file button on the toolbar.

Previewing Files

FTP allows you to display a portion (up to the first 32Kb) of specified client or server files in the Preview window. To preview a file, select it from a file list box and click the View selected file to Notepad button on the toolbar, or choose the Preview item from within the Server/File Functions menu.

If you are previewing a server file, FTP transfers data from the server file to a temporary file on your PC, cancels the transfer after receiving 32K bytes, and then calls the Notepad program to display the contents of the temporary file. When you close the window, temporary files are removed.

FTP always uses the ASCII file transfer method for previewing server files. Undisplayable characters in a binary file are changed to a period.

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Operations with Directories

Making Directories

You may create a directory on the FTP server or on one of your local drives. Use this option to create a new folder in the directory that is being displayed in the active panel. The remote option is only available if a server connection is active. Your user permissions must include the right to create directories.

To create a directory:

1) Navigate through either the local or remote directories to locate a directory of your interest where you wish to create a new one.

2) From within the Server menu, choose the New Folder item. The edit field will appear with the default folder name highlighted.

Also, you can create a remote directory by pressing the right mouse button on the empty space inside the Remote files tab and choose New Folder in the drop-down menu.

3) Enter a new name for the folder in the field, using standard Microsoft Windows' techniques.

Removing Directories

You may remove a directory on the FTP server or on one of your local drives. You can delete a file directory only if it is empty. Removing a directory on the FTP server is only available if a server connection is active. Your user permissions must include the right to remove directories.

To remove a directory:

1) Navigate through either the local or remote directories to locate a directory of your interest.

2) Select the directory or folder you wish to remove.

3) From within the Server menu, choose the Remove Folder item. The highlighted directory will be removed without any confirmation (if empty).

Copying Directories

You may copy a directory from your PC onto the FTP server, or from the FTP server to

your local drives. The remote option is only available if a server connection is active. Your user permissions must include the right to create directories.

You can copy a full sub-tree structure (all files with all subdirectories) or the first-level files only.

To copy a directory:

1) Navigate through either the local or remote directories to locate a directory of your interest.

2) Verify that the transfer options be configured appropriately.

3) From within the Server menu, choose the Copy Directory... item. A dialog box will appear on your screen prompting you to specify a destination directory and a mode of operation.

4) Specify the destination directory if it differs from the current one.

5) Check the Include Subdirectories check box as you need. If checked, this check box enables copying the selected directory sub-tree and all files from all subdirectories. Otherwise, only the selected directory and its files will be copied.

6) Click the Copy button to begin copying, or Cancel to cancel the operation.

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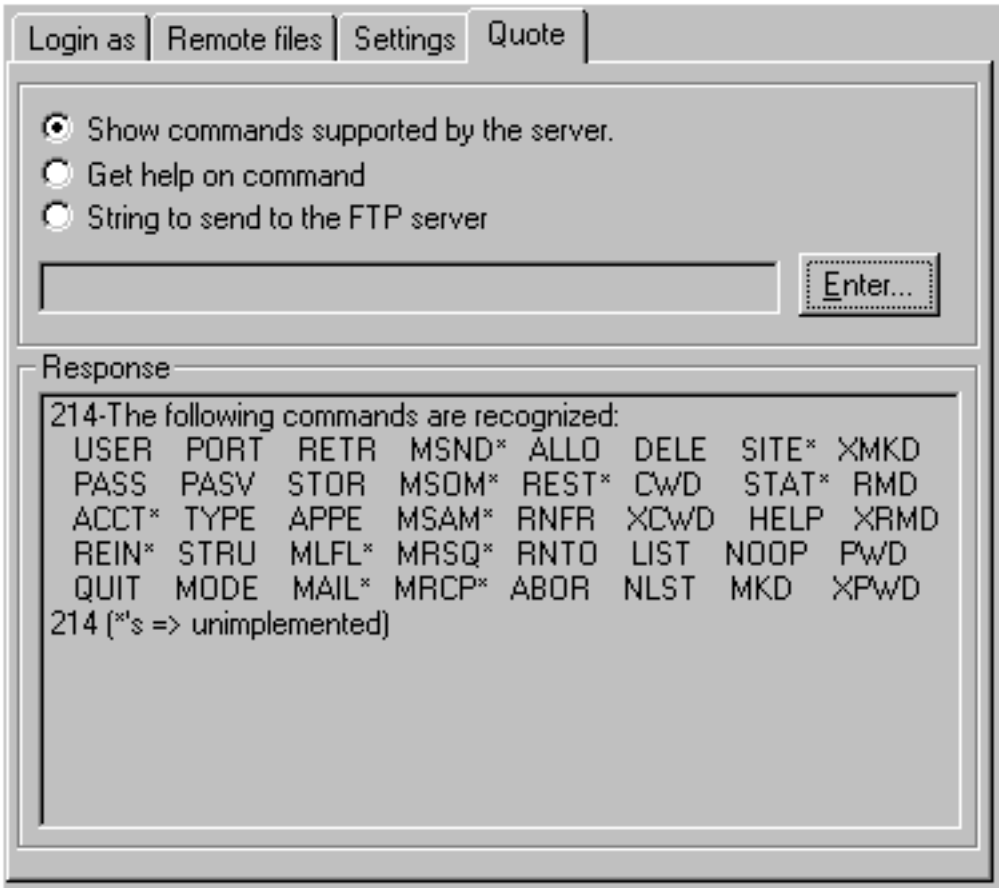
The Quote Tab

The Quote tab allows you to communicate with a FTP server in a command line mode while your connection to the server is active.



To dismiss the Quote dialog, just select another tab from the main TabForm.

Determining Commands Supported by the Server

Different FTP servers can support different subsets of available FTP commands. This may cause a server to be unable to execute certain commands. To determine commands your FTP server supports:

1) Choose Show commands supported by the server.

2) Press Enter.

A list of commands supported by that server will be displayed in the Response field.

Getting Help on Command

You can get help for any individual command. To get help for a specific FTP command:

1) Choose Get help on command and enter the name of the command in the input field.

2) Press Enter.

The FTP server's help for that command will be displayed in the Response field.

Sending a String to the FTP Server

You can forward a command directly to the FTP server to execute it. To send a string:

1) Make sure your current local/remote directories are as you need.

2) Enter a command with proper arguments in the input field.

3) Press Enter to execute the command

A response from the server will be displayed in the Response field.

Note: commands that require a data connection, such as STOR, NLST, and LIST, will not work with the current version of the FTP utility.

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Running FTP with Command Line Parameters

Running FTP with Command Line Parameters

You can launch FTP with the command line parameter:

PATH\ftp.exe -xini <IniFilePath>

where <IniFilePath> specifies a full path to a specific ini-file and PATH indicates your nfsAxe home directory.

This feature allows you to run several FTP sessions each with its own ini-file (i.e., settings).

In order to do so, you can create a new FTP shortcut (e.g., in the nfsAxe Programs' folder) and fill in the Target field in Properties of it with the command. By default, the field contains a call of FTP with no arguments, and the xwp.ini file will be used in this case.

To create your specific ini-file, you can copy the xwp.ini file and then change parameters with the FTP utility as you need by starting it with the command line parameter.

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9. TFTP

This chapter describes how to start and use the TFTP program supplied with ftpAxe.

TFTP is a file transfer program that allows you to transfer files between your PC and a remote computer using the DARPA standard Trivial File Transfer Protocol. The program can transfer files in two different format types: the ASCII format is used for text files, and the binary format is used for binary files.

In order for ftpAxe to communicate with a remote computer, that computer must also have a server implementation of TFTP.

You can run multiple TFTP programs simultaneously in separate windows.

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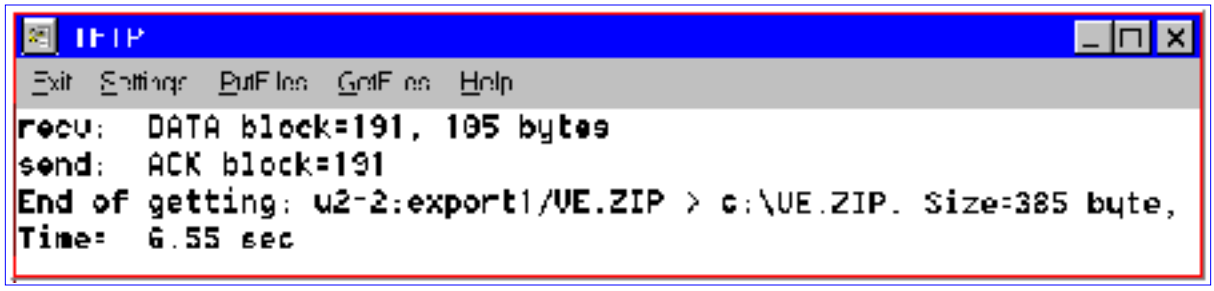
Starting and Terminating the TFTP Program

You can start the TFTP program by double-clicking on the TFTP icon in the ftpAxe Programs' folder:

The TFTP window will appear on your screen:



You can terminate TFTP by double-clicking on the Control Menu box or by clicking Exit on the TFTP menu bar.

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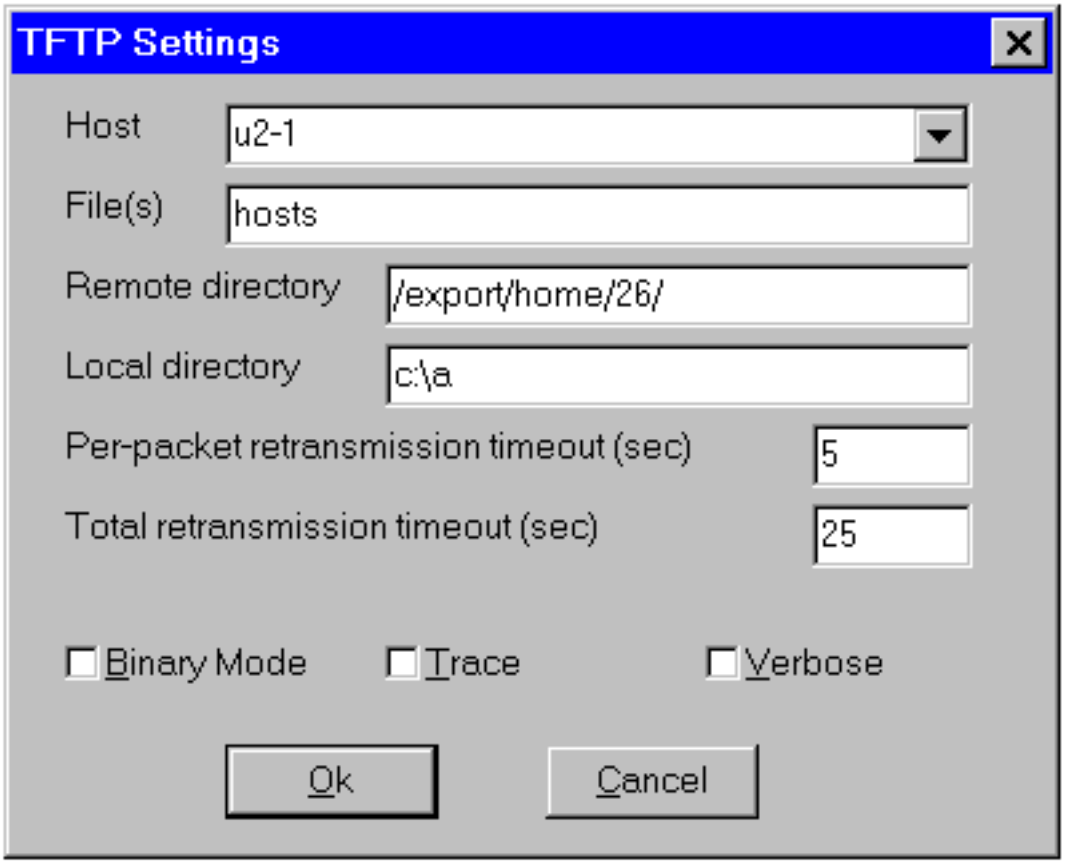
TFTP Menu Options

The TFTP menu bar displays five menus: Exit, Settings, PutFiles, GetFiles and Help. The Exit menu terminates the TFTP program, and the Help menu displays any help information available about the TFTP. The other three are described below.

The Settings Menu

The Settings menu allows you to set up parameters and modes of transfers. When you select this menu, a dialog box will appear:



You can cancel any changes you make to the dialog box by clicking on Cancel. By clicking on OK, any new settings you make become the defaults for future TFTP sessions.

The following input fields and check boxes are available:

Host
This field is used to specify a network node name or address of the host used for

transfers. When you click on the scroll arrow beside the Host box, a drop-down box will display host definitions being in your hosts file. To select a host, click on an appropriate definition.

File(s)
This field is used to specify one or more names of files you are about to transfer. File names are separated by a space.

Remote Directory
This field is used to specify a file directory on the host.

Local Directory
This field is used to specify a file directory on your PC.

Per-packet retransmission timeout (sec)
This field lets you set the per-packet retransmission timeout, in seconds. The default setting is 5 sec.

Total retransmission timeout (sec)
This field lets you set the total retransmission timeout, in seconds. The default setting is 25 sec.

Binary Mode
This check box is used to toggle between ASCII and binary modes for transfers. The default setting is disabled.

Trace
This check box allows to toggle packet tracing. The default setting is disabled.

Verbose
This check box is used to toggle verbose mode of transfers. The default setting is disabled.

The PutFiles Menu

The PutFiles menu initiates putting a file or set of files to the remote directory, all specified in the Settings dialog box. The remote host is assumed to be a UNIX machine. Note, for every sent file the UNIX site file is to exist with the same name and the permission to write for all user categories.

The GetFiles Menu

The GetFiles menu initiates getting a file or set of files from the remote directory, all specified in the Settings dialog box. Note, every received file is to have the permission to read for all user categories.

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10. Ping

This chapter describes how to start and use the Ping utility supplied with ftpAxe.

You can test that the TCP/IP transport is installed and configured correctly by using the Ping utility. Ping can isolate network hardware problems and incompatible configurations by allowing you to verify a physical connection to a remote host.

Ping communicates with only one remote host at a time. However, you can run multiple Ping sessions simultaneously in separate windows with each session connected to a different host.

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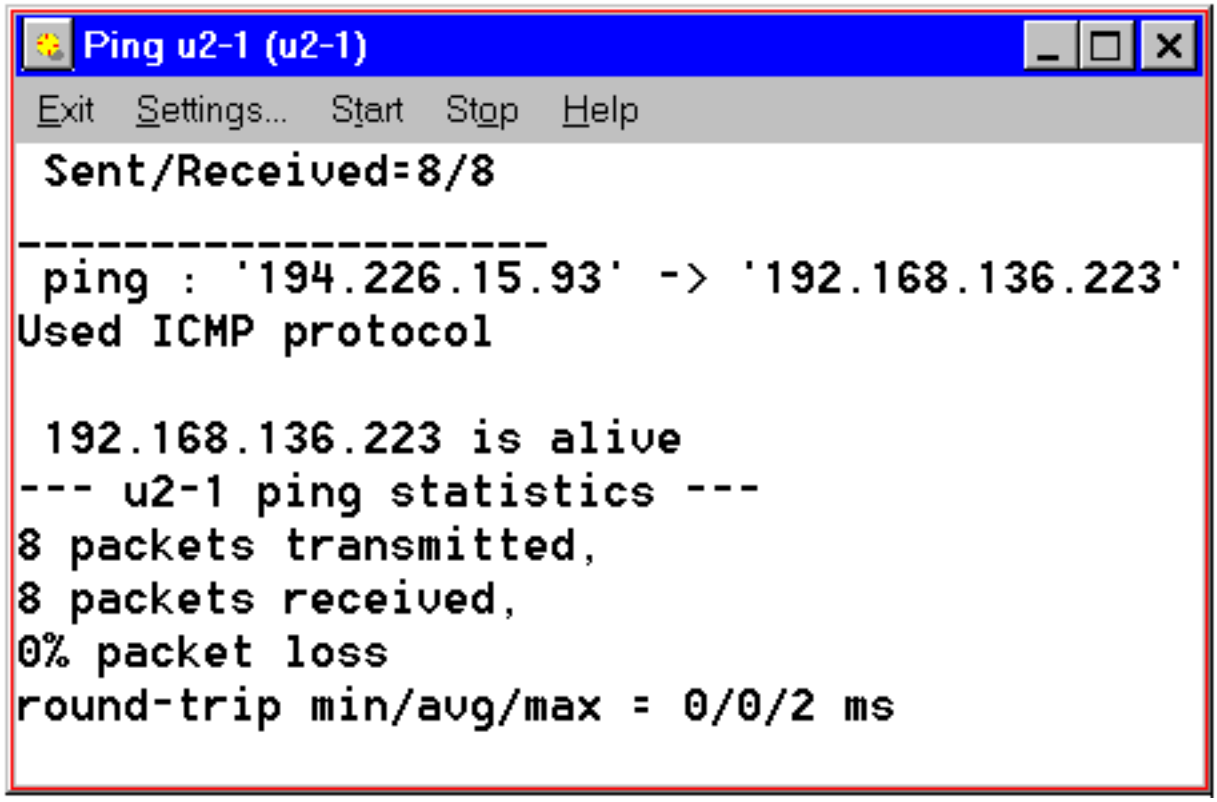
Starting and Terminating the Ping Utility

You can start the Ping utility by double-clicking on the Ping icon in the ftpAxe Programs' folder:

The Ping window will appear on your display:



You can close the Ping window by double-clicking on the Control Menu box, or by selecting Exit on the Ping menu bar.

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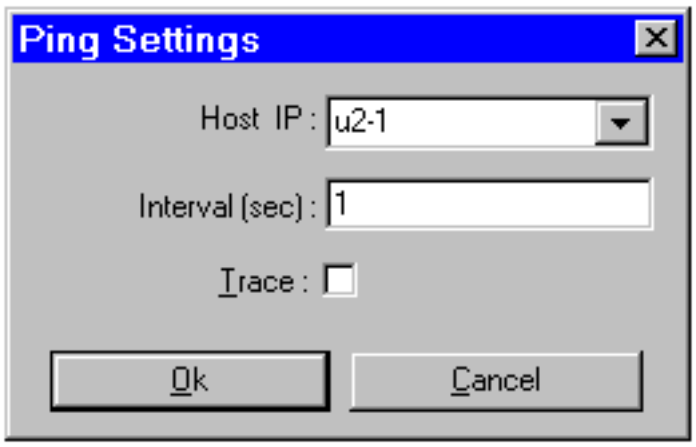
Ping Menu Options

The Ping menu bar displays five menus: Exit, Settings, Start, Stop and Help. The Exit menu terminates the Ping utility, and the Help menu displays any help information available about the Ping. The other three are described below.

The Settings Menu

The Settings menu allows you to set up parameters of the Ping session. When you select this menu, a dialog box will appear:



You can cancel any changes you make to the dialog box by clicking on Cancel. By clicking on OK, any new settings you make become the defaults for future Ping sessions.

The following input fields and check boxes are available:

Host IP

This field is used to specify a network node name or address of the remote host, which you wish to verify a physical connection to. When you click on the scroll arrow beside the Host IP box, a drop-down box will display host definitions located in your hosts file. To select a host, click on an appropriate definition.

Interval

This field lets you set a time interval between two neighboring data packets, in seconds.

Trace

This check box allows to toggle packet tracing. The default setting is disabled.

The Start Menu

The Start menu initiates a Ping session with the host specified in the Settings dialog box. Your PC sends a sequence of data packets to the host with the time interval specified in the Settings dialog box. When the connection between your PC and the host exists, the PC will receive a response after every packet sent. If the Ping finds the host or IP address, it will return the message (or IP address) is alive. If you get this message, then you know that the TCP/IP transport is set up correctly.

If there are any hardware problems, please check that your cable connection is good, and check to see if the host can ping back to your PC.

The Stop Menu

The Stop menu terminates the Ping session with the remote host specified in the Settings dialog box.

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11. LPR - Remote Printing

This chapter describes how to start and use the LPR program supplied with ftpAxe.

LPR is a network printing program that allows access to printers attached to remote computer systems on your network. Of course, you will need to have access to a computer that will accept print jobs from you. The computer must support the Berkeley Line Printer protocol, and your PC name must be defined in the /etc/hosts.equiv or /etc/hosts.lpd file.

You can specify a number of copies, titles and banner pages, print one or several files residing on your PC, view print jobs in the queue, remove jobs from the queue.

You can run multiple LPR programs simultaneously in separate windows.

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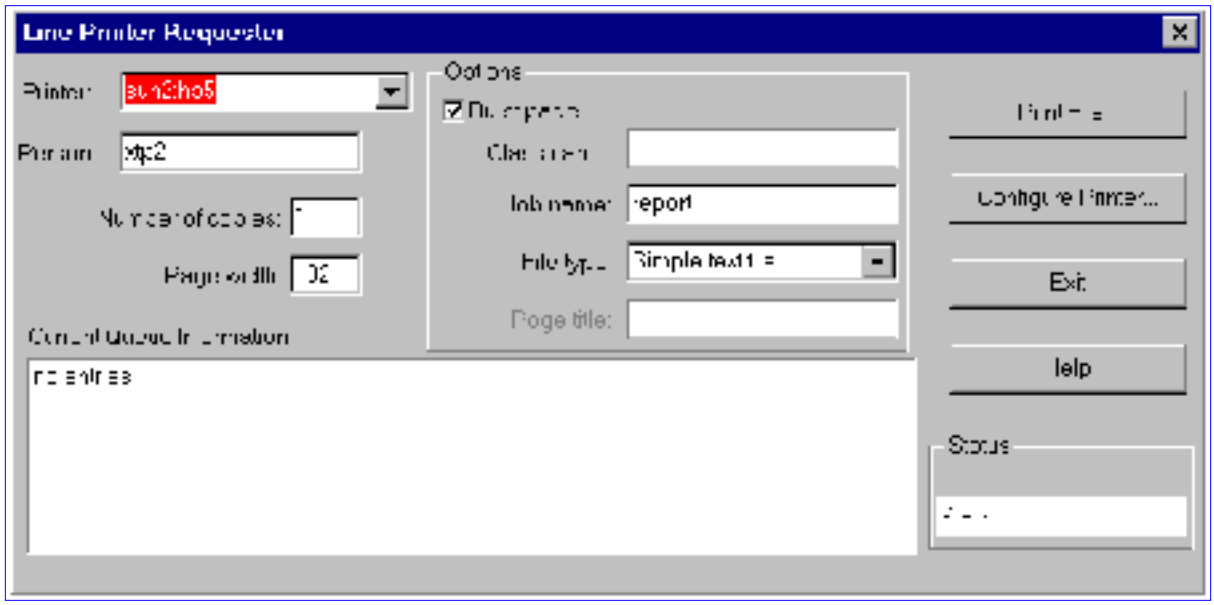
Starting and Terminating the LPR Program

You can start the LPR program by double-clicking on the LPR icon in the ftpAxe Programs' folder:

The LPR window will appear on your display:



You can then enter the information required to get access to a remote printer, specify job options and print your files.

In order to terminate the LPR program, click on the Exit button.

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Entering LPR Info

This section describes the LPR items you can use to print your files. The following items are available:

Printer

Your output is sent to the printer identified by a server/printer combination shown in the Printer box. All server/printer combinations which the program can connect to are stored in the list of defined network printers. When you click on the scroll arrow beside the Printer box, a drop-down box will display the contents of the list. To select a new current printer, click on an appropriate printer definition.

Person

This field is used to specify an owner of your print jobs. When your output is sent to the printer, the contents of the Person field identifies your print jobs in the Current Queue Information box. The person name must not contain any spaces. It defaults to your machine name unless set in the Person field.

Number of copies

This field is used to specify a number of copies you want to produce. The default number of copies is 1. Note that the remote computer you are sending your print files to may impose limits on how many copies you can produce.

Page width

This field is used to specify the page width. The default is 132 characters.

Current Queue Information Box

Since several people may want to use the same printer at the same time, and each job may take a length of time to print, a job that you send may not be printed immediately. Instead, it may have to wait in a queue until the printer is available. The Current Queue Information box helps you to find out if your output has been printed. The remote computer will be queried every few seconds and the status of the jobs it is processing will be displayed in the box. The queue information display includes your jobs as well as other peoples' jobs.

The Current Queue Information box is also used for selecting the print job you want to cancel (see Cancelling Output below).

Options Box

This box consists of items allowing you to specify your job options.

Burst page

Print jobs are normally separated by a 'burst page' which identifies the owner of the output. Printed on the burst page are the job classification and the job name. The Burst page check box is used to toggle the burst page. If you prevent the burst page from being printed, the Class name and Job name fields will become unavailable.

Class name

This field is used to specify the job classification printed on the burst page. The class name must not contain any spaces. It defaults to your machine name unless set in this field.

Job name

This field is used to specify the job name printed on the burst page. The job name must not contain any spaces. It defaults to the name of the file being printed unless set in the field.

File Type

This list box lets you choose the mode of file printing.The syntax of the text commands corresponding to these modes is described in the lpr.inf file (see below). You can delete, add, or edit (legal) command lines in this file as you wish.

Page title

This field is used to specify the page title other than the file name. Note that there must not be any spaces within your title. You can specify the page title only if the Pages check box is set to the enabled state. Page title defaults to the file name unless set in the field.

Status Box

This box displays the current program status.

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Printing Files

To print a file, click on the Print File button. The File(s) to Print dialog box will appear on your display. Use dialog box items to select one or more files for printing. Locate and select files to print and click OK. The file(s) will be sent over the network to the current LPR printer and then printed.

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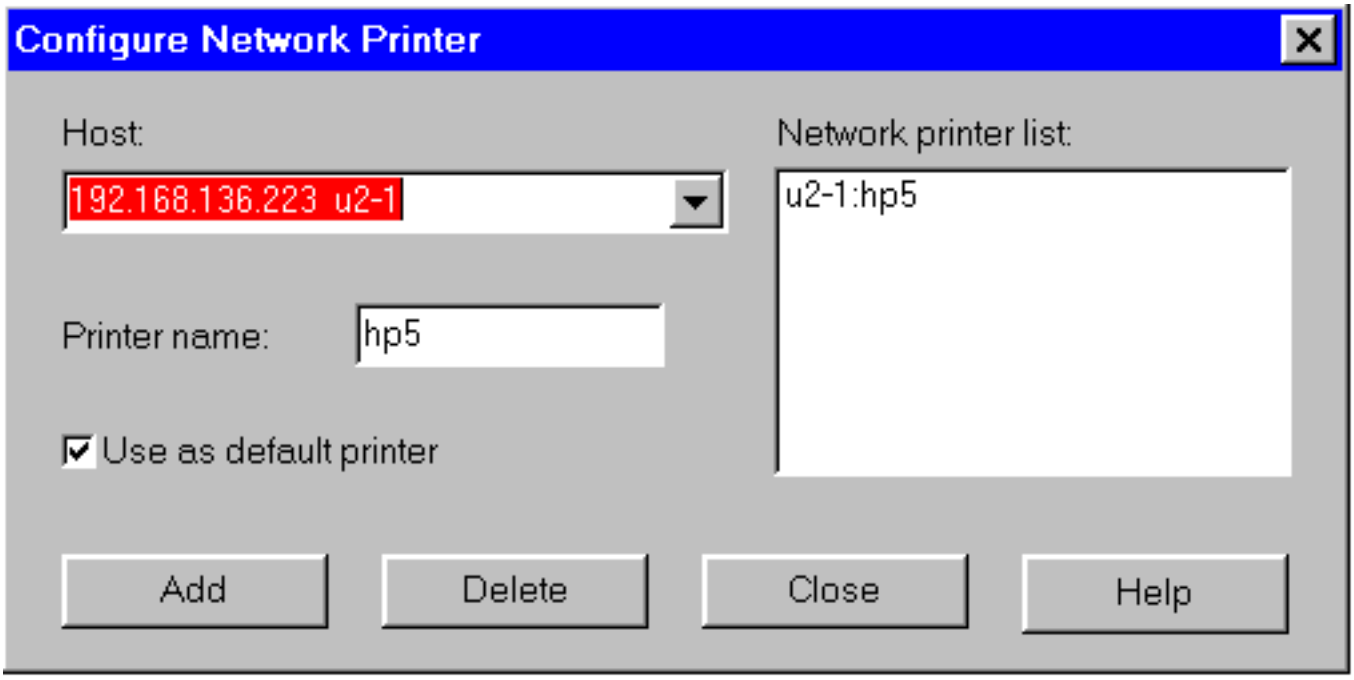
Configuring a Network Printer

To configure a printer available on your network, click on the Configure Printer button. The Configure Network Printer dialog box will appear on your display:



Then you can add a new printer to the LPR printer list, or remove a printer from the list.

To close the Configure Network Printer dialog box, click on the Close button.

Adding a New Network Printer

Before you add a new printer to the LPR printer list, you must define a server/printer combination. You can designate one as the default printer. The default printer will be the current printer each time you start the LPR program.

Use the following items:

Host
This field is used to specify a network name or address of the print server computer. When you click on the scroll arrow beside the Host box, a drop-down box will display host definitions stored in your hosts file. To select a host, click on the appropriate definition.

Printer name

This field is used to specify a name of the printer attached to the host in the Host edit box.

Use as default printer
This check box allows you to assign the printer you just defined as the default LPR printer.

To add the printer you just specified to the LPR printer list, click on the Add button. The new server/printer combination will be displayed in the Network printer list box.

Make sure that your PC name is defined in the /etc/hosts.equiv file or /etc/hosts.lpd file on the host UNIX system, and the Page Width setting corresponds to your remote printer. If there is no entry in the host's /etc/hosts.equiv file or /etc/hosts.lpd file for the user, and the user tries to print a file, LPR responds with the host error message that the user has no access to a line printer.

Deleting a Network Printer

In order to remove a printer from the LPR printer list, select an appropriate server/printer combination in the Network printer list box, and then click on the Delete button. The combination selected will disappear in the Network printer list box, and the printer will become unavailable for use with the LPR program.

You can select and delete more than one printer at once.

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Cancelling Output

If you change your mind after sending a file for printing, but before it has actually been printed, you can cancel it. The status of the jobs the current LPR printer is processing is displayed in the Current Queue Information box. Locate and double-click your job that is awaiting print. A confirmation dialog box will then appear on your display. If you click on the Yes button, the selected job will be cancelled.

Note that you can only cancel your own jobs.

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The lpr.inf file

The **lpr.inf** file supplied with the package contains five commands (for more details see the document **Request For Comments #1179**):

f - Print formatted file

This command causes the data file to be printed as a plain text file, providing page breaks as necessary. Any ASCII control characters which are not in the following list are discarded: HT, CR, LF, FF, and BS.

l - Print file leaving control characters

This command causes the specified data file to be printed without filtering the control characters (as is done with the 'f' command).

o - Print PostScript output file

This command prints the data file to be printed, treating the data as standard PostScript input.

p - Print file with 'pr' format

This command causes the data file to be printed with a heading, page numbers, and pagination. The heading should include the date and time that printing was started, the title, and a page number identifier followed by the page number. The title is the name of file as specified by the 'N' command, unless the 'T' command (title) has been given. After a page of text has been printed, a new page is started with a new page number. (There is no way to specify the length of the page.)

r - File to print with FORTRAN carriage control

This command causes the data file to be printed, interpreting the first column of each line as FORTRAN carriage control. The FORTRAN standard limits this to blank, "1", "0", and "+" carriage controls.

v - Raster file

This command causes the data file to be printed with no data conversion.

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12. LPD - Network Print Server

This chapter describes how to start and use the LPD (Line Printer Daemon) program supplied with nfsAxe.

LPD is a Network Print Server (daemon) that provides access to your local (attached to your PC) and Microsoft-network-accessible printers across TCP/IP. Remote computers must have the LPR program that supports the Berkeley Line Printer protocol (see Request For Comments #1179).

(This RFC describes an existing print server protocol widely used on the Internet for communicating between line printer daemons (both clients and servers).

The Berkeley versions of the UNIX operating system provide line printer spooling with a collection of programs: lpr (assign to queue), lpq (display the queue), lprm (remove from queue), and lpc (control the queue). These programs interact with an autonomous process called the line printer daemon.)

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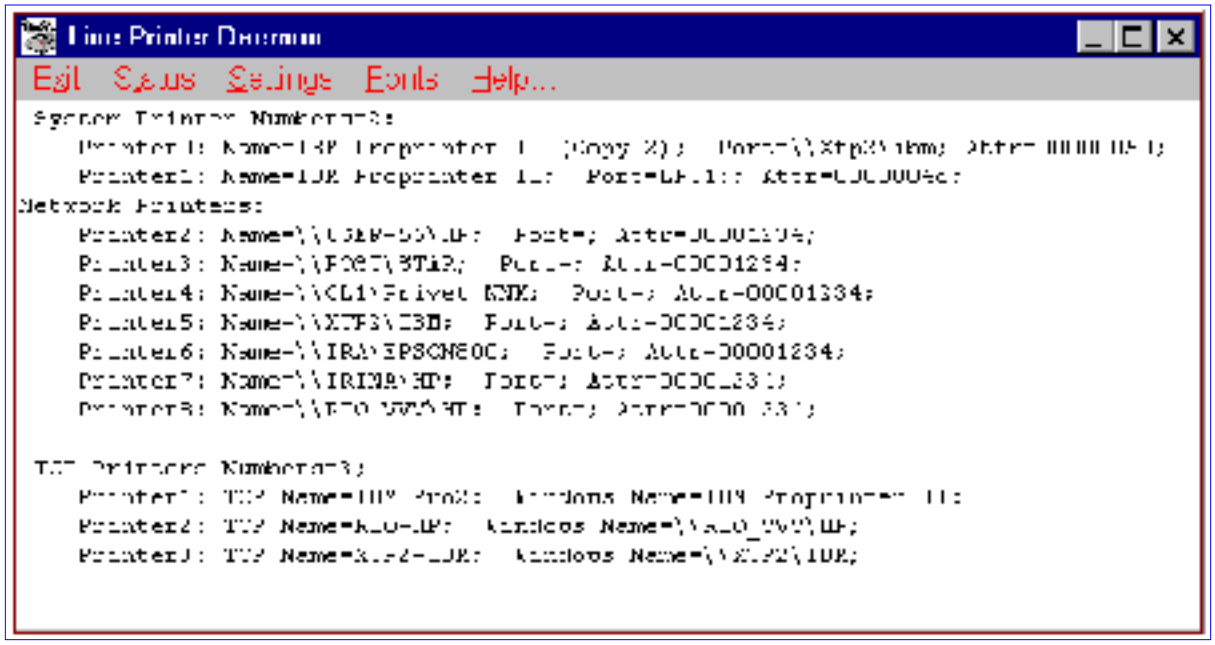
Starting and Terminating the LPD Program

You can start the LPD program by double-clicking on the LPD icon in the nfsAxe Programs' folder.

Starting and Terminating the LPD Program

The LPD program determines accessible local (System) and Microsoft-network (Network) printers and creates the Windows printers list. Then it creates the Available printers list and modifies it with the previous information from the ini-file and your directions, and then iconifies itself.

When you start the LPD program from the task bar, the main LPD window will appear on your display, showing all printers found (system, network, and TCP printers).



You can then enter information required to provide or change access to them.

The following menu items in the LPD window are available:

Exit

Used to terminate the Network Print Server (LPD).

Status

Used to view the Available printers list with their states.

Settings

Used to change LPD settings (the printers list, queue directory and users' access).

Fonts

Used to change fonts for displaying the LPD window.

Help...

Used to display the About LPD dialog box and this help text.

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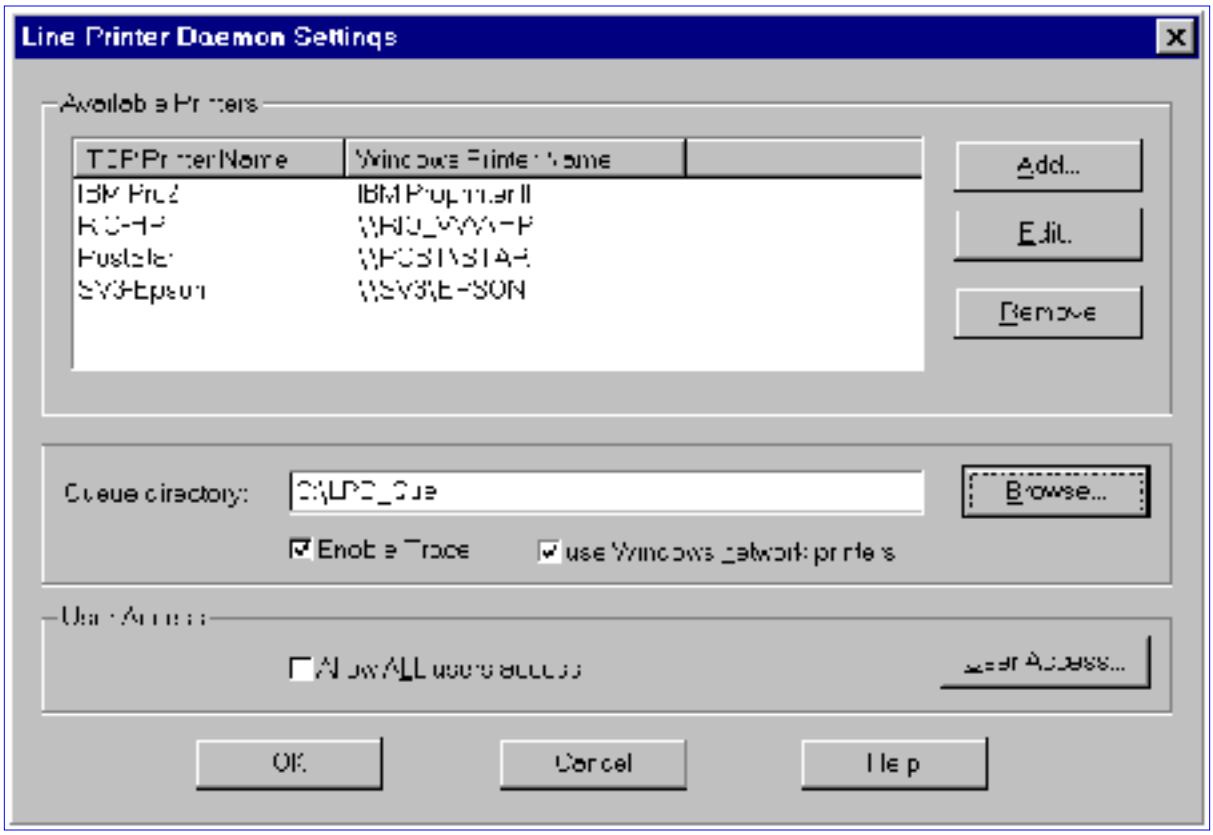
Configuring the Network Print Server

To configure the Network Print Server (LPD), click on the Settings menu item. The LPD Settings dialog box will appear on your display.



In the Available Printers group box, you can add a new TCP printer, change settings for TCP printers, and remove a TCP printer. The TCP printers list contains printers which the LPD program will control.

In the Queue Directory group box, you can specify a directory on your hard disk to be used for printer's data streams.

In the User Access group box, you can specify a list of users who can print files via the LPD program running on your PC.

To close the LPD Settings dialog box, click OK if you wish to save settings, otherwise click on the Cancel button.

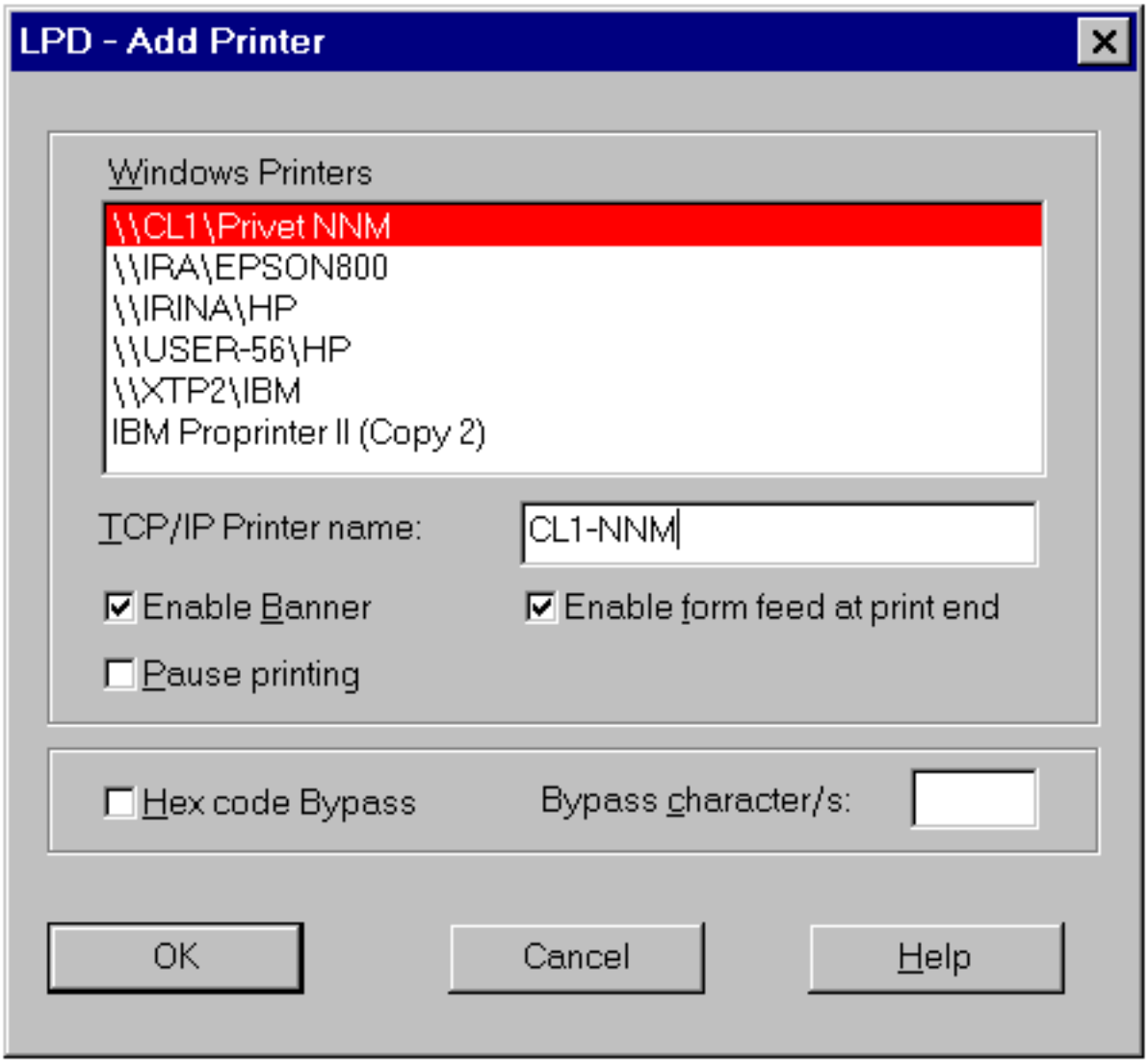
To display the Help window with this text, click on the Help button.

Available Printers group box

Every Windows printer found during searching can be included into the Available Printers list which the LPD program will control. Printers included must be given the TCP Printer Name - the name by which the LPD and LPR programs will identify the printer over the network.

Adding a new network printer

When you press on the Add... button, the LPD - Add Printer dialog box will appear on your display.



The following items are available:

Windows Printers
This list box contains names of Windows printers not yet included into the Available Printers list.

TCP/IP Printer name
This edit field is used to specify a TCP/IP name for a new printer you want to add into the Available Printers list.

Enable Banner
If this check box is enabled, the printer will print the banner page for any job.

Pause printing
If this check box is enabled, the LPD program will not allow jobs to be printed on the printer.

Enable form feed at print end
If this check box is enabled, the printer will begin every job with a new page.

Hex code Bypass
If this check box is enabled, then the LPD program will scan the data it receives, and if it finds the so-called By-pass sequence in the data stream it will convert the next two characters into a hexadecimal byte and send it to the printer.

For example, a user specified the By-pass sequence as ^^. If the data stream received is:

123^^1B45678^^2b90

the data output in HEX should be as follows:

31 32 33 1B 34 35 36 37 38 2B 39 30

Note: the hex characters after the By-pass sequence are case insensitive.

Bypass character/s:
This edit field is for specifying the By-pass sequence (one or more characters).

To add a new printer:

1) from within the Windows Printers list box, select a printer to be used as the TCP printer;

2) specify the TCP/IP Printer name under which the printer will be known in the TCP/IP network (the full name of a network printer consists of the hostname of your PC and the TCP/IP name of a printer);

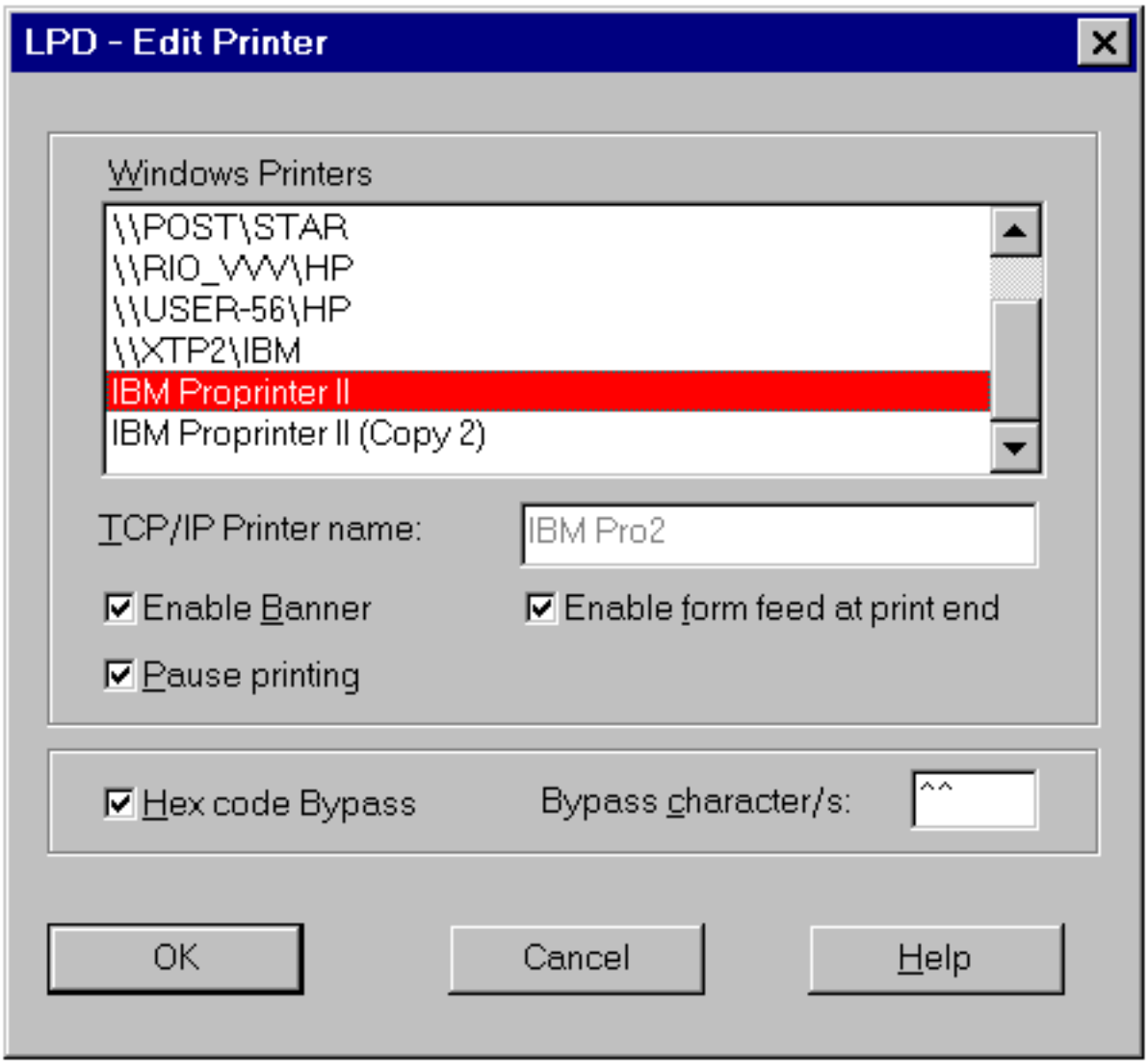
3) check all check boxes as you wish;

4) click OK if you wish to add the printer, otherwise click Cancel.

Note: To run the lpr utility, operating systems first register lpr-printer names. For example, you have to use the admintool utility of the SunSolaris 2.x operating system to add/modify/remove lpr-printers. TCP/IP Printer name must be one of the registered lpr-printer names.

Changing printer settings

When you select a TCP Printer Name from within the Available Printers list box and then click on the Edit... button, the LPD - Edit Printer dialog box will appear on your display.



Then you can change any settings for the selected TCP printer almost the same way as in the Add Printer dialog box.

To edit a TCP printer: 1) from within the Windows Printers list box, select a printer to be used as the TCP printer under the TCP/IP Printer Name shown below; 2) check all check boxes as you wish; 3) click OK if you wish to save settings for the printer, otherwise click Cancel.

Deleting a printer

In order to remove a TCP printer, select an appropriate TCP Printer Name from within the Available Printers list box and then click on the Remove button.

Queue Directory group box

This box specifies the directory path showing where to save control and data files to be printed on network printers. The subdirectories with TCP printers names will be created in this directory.

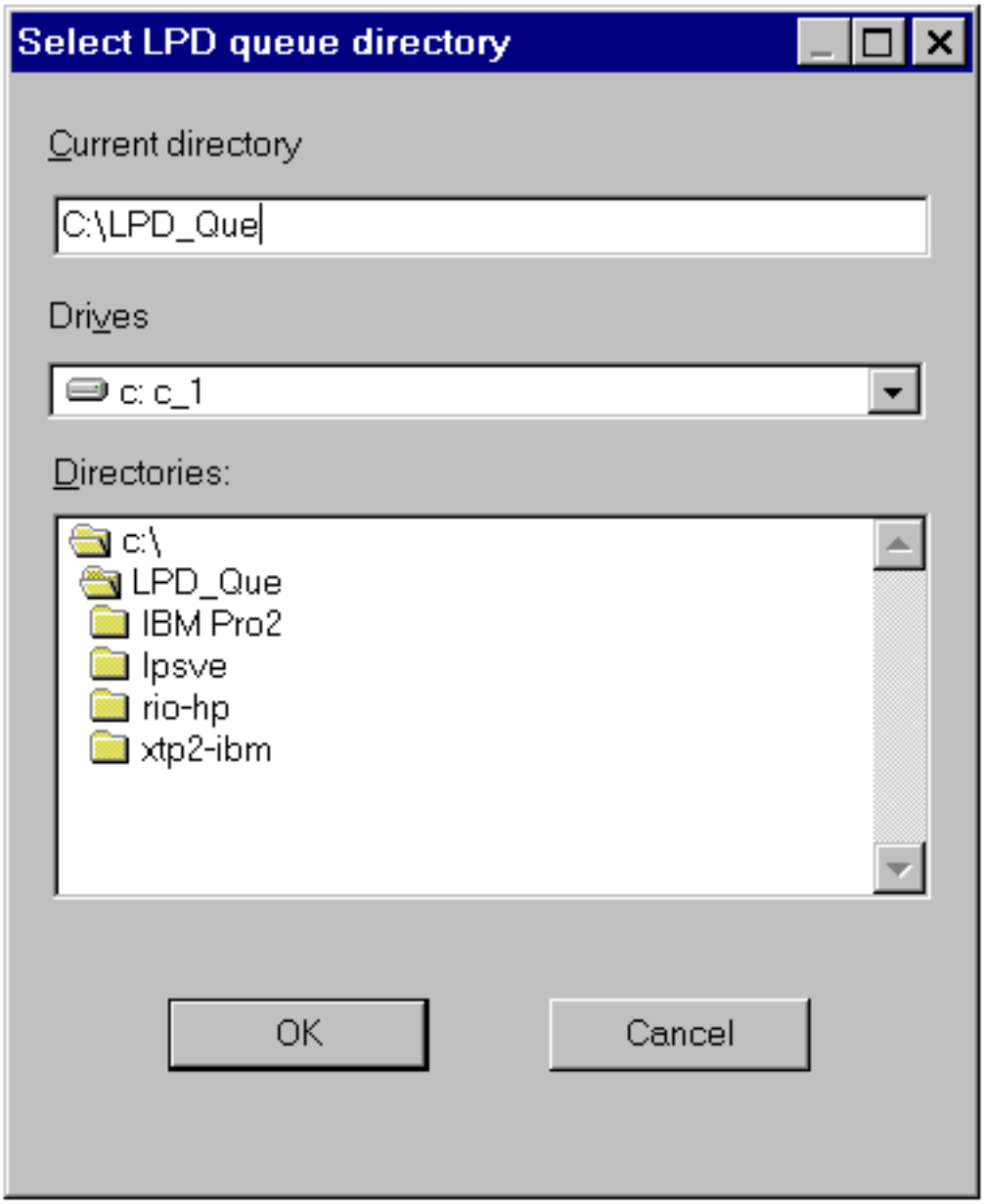
use Windows network printers

If this check box is enabled, both local and network printers will be included into the Windows printers list (for Add and Edit). Otherwise, local printers will be used only.

Enable Trace
If this check box is enabled, the trace information is output to the main LPD window and, simultaneously, to the lpd.ptr trace file in the WinaXe's home directory.

You can specify a queue directory by typing its full path name in the Queue Directory edit field or selecting the name by browsing.

When you press the Browse... button, the Select LPD queue directory dialog box will appear on your display.



The Current directory edit field lets you specify the queue directory path.

The Drives list box allows you to choose the drive for the directory.

The Directories list box lets you choose the queue directory in which subdirectories

with TCP printers names will be created for queuing.

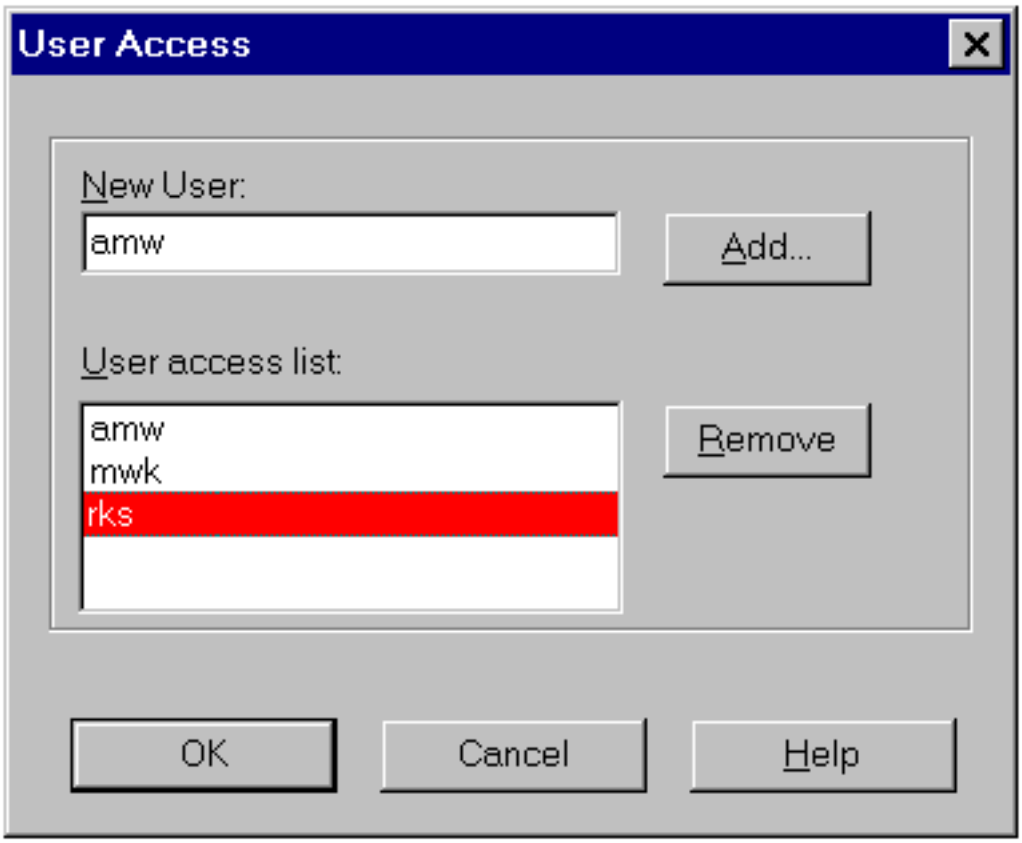
To close the dialog box, click OK if you wish to use the Current directory as the queue one, otherwise click on the Cancel button.

User Access group box

You can support a list of users who are allowed to print files (with the LPR program) via the LPD program running on your PC. Also you can modify the User access list (add and remove user names).

If the Allow ALL users access check box is enabled, any user can use LPD on your PC.

When you click on the User Access... button, the User Access dialog box will appear on your display.



The User access list shows those users who are currently allowed to print files on LPR-accessible printers via your LPD program.

To add a new user to the User access list, specify the user name in the New User edit field and then click on the Add... button.

To remove a user from the User access list, select an appropriate name on it and click on the Remove button.

To close the dialog box, click OK if you wish to save the modified list, otherwise click on the Cancel button.

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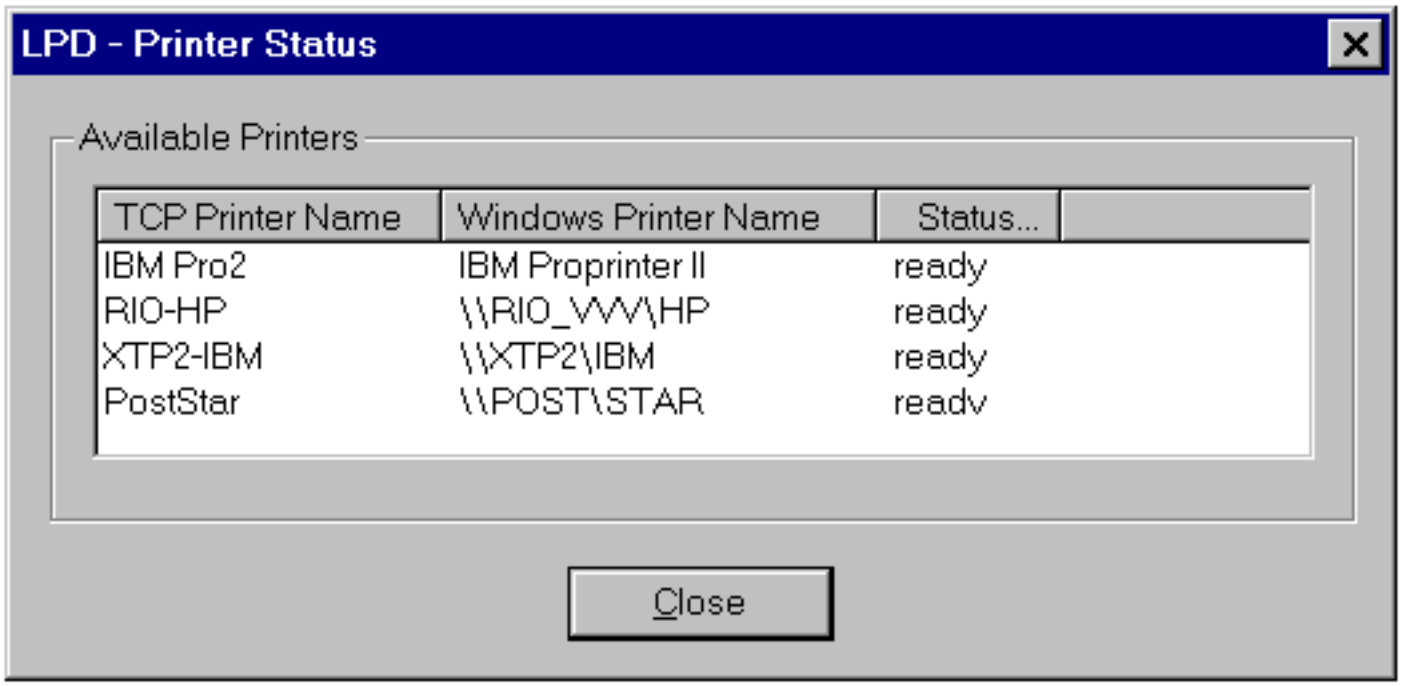
Printer Status

When you choose the Status menu item, the LPD - Printer Status dialog box will appear on your display.



You can view current states of all Available TCP printers (pause, ready, print).

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The "[LPDAEMON]" Section of the ini-file

The "[LPDAEMON]" section of the ini-file may have the following entry lines you can customize for particular needs and applications.

EnableRembak=1

to enable the AIX "Rembak" print service. In this case, the "/usr/lib/lpd/rembak" binary file is skipped (i.e., it is not sent).

TextUnixToDos=1

to provide conversion of text files from UNIX to DOS format (adding LF after CR).

FilterIsV=1

to specify the v type (as for raster files, i.e. no data conversion) to every incoming data file (see the lpr.inf file).

FontFace=

to set up a preferred font face name (to dispay messages in windows). The , "Courier New", "Courier", font face priority is supported.

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Appendix A

Keyboard Mapping File Format

The Keyboard Mapping file has two sections, [KEYS] and [COMPOSERS_XKK], each consisting of keysym statements and possible comments. Text entered after a ';' sign is ignored and will be treated as a comment.

A keysym specification uses a set of standard X numbers to describe a symbol. For example, a lowercase 'a' has a special number code.

The KEYS Section

In the [KEYS] section, each keysym statement associates a set of one to four keysyms with a physical key.

Synopsis of a statement is:

KEYnn = keysym1 [, keysym2 [, keysym3 [, keysym4]]]

'nn' is the identifying number of a PC's key. Every PC's key has an entry in the section. The entry name is the text KEY followed by the decimal ScanCode number (key_number) and followed by the letter 'E' if the key has the extended flag set.

keysym1 is the keysym associated with the key in a non-shifted state (Normal). This is the only parameter that must be entered.

keysym2 is the keysym associated with the key when the key is Shifted.

keysym3 is the keysym associated with the key when a Mode-Shift key is pressed (Alt-Gr).

keysym4 is the keysym associated with the Shift + Mode-Shift sequence (Shift + Alt-Gr).

A Mode-Shift is a physical key which has a keysym value of 0xFF7E, (predefined as the ModeSwitch symbol), and which is assigned to one of the modifiers MOD1 to MOD5.

A full keysym specification consists of four numbers, each of which is in the range of 0 through 255 decimal (or 0x00 through 0xFF hex). The standard predefined X keysyms use only the third and fourth numbers. The first two numbers are assumed to be zero.

nfsAxe accepts keysyms in the following three formats:

1) In the dotted notation, where up to four numeric components are separated by periods

'.'. Each numeric component represents one of the four numbers that defines a keysym. If a component is omitted, it is assumed to be zero in the left-most position. If two components are omitted, the two left-most components are assumed to be zero, etc. For example, if you enter the numbers

32.255

two of the four possible components are omitted. The keysym will be interpreted as

0.0.32.255

In the dotted notation, the two lines below both represent the same keysym:

255.0xFE
0.0.255.0xFE

2) A single numeric value containing up to four bytes specifications. Unspecified numbers are assumed to be zeroes in the left-most position. For example:

0xFF20

represents the values 0xFF and 0x20. The keysym is interpreted as follows:

0.0.0xFF.0x20

Predefined symbols can be used instead of the keysym formats described above. The following three symbols are predefined:

ModeSwitch 0xFF7E
VoidSymbol 0xFFFFFF
NoSymbol 0

You can get a full list of X-keys via the xmodmap utility of UNIX by using the -pm and/or -pk options.

The values of keysyms for keys may be obtained via the /usr/openwin/demo/xev X-Window's UNIX utility.

3) A keysym value can be of a composer type, i.e. the COMPxx entry exists in the [COMPOSERS_XKK] section with the keysym value 'xx'. See the [COMPOSER_XKK] section below for details of how composers work.

Examples:

```
[KEYS]
KEY30 = 97, 65          ; LATIN LETTER a / A
; KEY30 = 0x61, 0x41    ; (XK_a, XK_A);
                        just the same as the previous line
KEY80E= 255.84, 255.84  ; cursor DOWN / cursor DOWN
; KEY80E=0xff54, 0xff54 ; (XK_Down, XK_Down); just the same
```

Examples of remapping

Suppose that you selected to use the us.kmf file (with the Xsettings utility) and you want to change the keyboard mapping for Up(8) and Down(2) keys of the additional keyboard and for the F1 key. You can find the following lines in the us.kmf file for them:

KEY59=0xffbe, 0xffbe ; (XK_F1,XK_F1)
.....
KEY72E = 0xff52, 0xff52 ; (XK_Up,XK_Up)
KEY80E = 0xff54, 0xff54 ; (XK_Down,XK_Down)

By using the "xev" or "xmodmap -pk" commands on the SUN Xserver, you can get keysyms for all keys. For example, you choose:

Help=0xff6a;
Paste=0xffcf;
Copy=0xffcd;

If you modify the lines of the us.kmf file as follows:

KEY59=0xff6a, 0xff6a ;(Help,Help)
.....
KEY72E = 0xffcf, 0xffcf ; (Paste,Paste)
KEY80E = 0xffcd, 0xffcd ; (Copy,Copy)

you will emulate the "Help" (F1), "Copy" ("Down") and "Paste" ("Up") functions of the SUN keyboard.

The COMPOSERS_XKK Section

In many European languages (especially in France, Belgium and Holland), users need to enter some special characters by combining a Diacritic (or composer) character and a normal letter. For example, the user enters first the '^' sign and then the 'a' character, then this should result in the 'b' keysym.

The [KEYS] section does not determine composer characters. The Composers are only defined in the [COMPOSERS_XKK] section.

In the [COMPOSERS_XKK] section, each composer statement associates a set of key_ number map pairings with a keysym value.

Synopsis of the composer statement is:

COMPxx = key_number > key_number[S] [, key_number > key_number[S] ...]

In the composer entry, COMP is the entry name and 'xx' is a decimal keysym value for a composer key (in the range of character codes). The '>' sign defines single code mapping (from the left to the right), while a comma separates possible map pairings. The 'S' character, if exists, allows both cases for a key_number mapping pair, otherwise lower case only.

If for a keysym value 'xx' of a key (say, KEYcc), a composer entry COMPxx exists in the [COMPOSERS_XKK] section (i.e. the XServer can find it there), then the 'cc' value will not be sent to the XClient (otherwise, it will).

In the composer case, the XServer will save the keysym value 'xx' until the user presses the next key. If the next key (say, KEYyy) is in the COMPxx entry (like 'yy > zz' in a pair), then the XServer will send the value 'zz' from the pair to the XClient. If 'yy' is not found in the COMPxx entry, then the XServer will send the composer's key_number 'cc' and the second key_number 'yy'.

Note that the values 'yy' and 'zz' are in the range of character codes.

Note that if Composer is pressed twice, then the XServer will send the single value 'cc' to the XClient.

Example:

```
[KEYS]
KEY18 = 0x65, 0x45      ; (XK_e, XK_E)
KEY22 = 0x75, 0x55      ; (XK_u, XK_U)
KEY23 = 0x69, 0x49      ; (XK_i, XK_I)
KEY24 = 0x6f, 0x4f      ; (XK_o, XK_O)
KEY30 = 0x61, 0x41      ; (XK_a, XK_A)
KEY41 = 94, 176         ; Circumflex Accent (^) /
                          DEGREE SIGN, RING ABOVE
; KEY41 = 0x5e, 0xb0    ; (XK_asciicircum, XK_degree)
KEY162 = 0xe2, 0xc2     ; (XK_acircumflex, XK_Acircumflex)
KEY170 = 0xea, 0xca     ; (XK_ecircumflex, XK_Ecircumflex)
KEY174 = 0xee, 0xce     ; (XK_icircumflex, XK_Icircumflex)

KEY180 = 0xf4, 0xd4     ; (XK_ocircumflex, XK_Ocircumflex)
KEY187 = 0xfb, 0xdb     ; (XK_ucircumflex, XK_Ucircumflex)

[COMPOSERS_XKK]
; Definition of Circumflex Accent as a composer
COMP94=30>162S,18>170S,23>174S,24>180S,22>187S
```

In this example, if the user presses (normally) the key 41 which is the circumflex accent (on German keyboard), the XServer will check if the keysym value 94 is found in the [COMPOSERS_XKK] section (the COMP94 entry), and if yes, then the XServer will wait until the user enters the next character. If the next character is in the COMP94 entry (in our case 30), then the XServer will send 162 to the Xclient (both cases are allowed). If the second key_number is not found in the COMP94 entry, then the XServer will send the composer's key_number (in our case 41) and the second key_number.

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Appendix B

Description of Terminal Capabilities

terminfo.ini is the ASCII file that describes the emulation capabilities of terminals. The description is very similar to the TERMINFO source code of UNIX system.

The file consists of terminal sections. Each section begins with a header string - a logical terminal name enclosed in brackets. The name is used to select the terminal type in the Telnet Options/Settings/Type tab.

The section header is followed by a set of entry records which describes the emulation capabilities of the terminal. Each record consists of a capability keyword, a '=' separator, and one or more capability values separated by a ',' delimiter. White spaces after the ',' separator as well as after the last value are ignored.

Any line may contain a comment. A comment begins with a ';' character on a line and lasts to the end of the current line.

Normally there may be several groups of records in each terminal section:

- a group of terminal capability definitions (e.g., Lines, Columns, Colors, UseCRT, MG0, MG1, RGB, UseCSI, Use2W, Use2HW, Tab8, TabSet).

- a group of X-keys definitions (for non-standard keys of keyboards, e.g., auxiliary keypads or function keys). A X-keysym name followed by a '=' separator begins the record. X-keys definitions may have a single value for the PC-layout mode, or a single value for the VT-layout mode, or both. A '/' sign must precede the VT-layout mode value. In case of both modes, the first value is for the PC-layout mode. A value is a code sequence of one or more key codes (separated by a ',' delimiter) to be transmitted when you use the X-key defined. A code is a decimal number in the range of 0...255 (to represent valid escape or control sequences for the terminal).

Examples for VT240:

```
XK_Home=155,72 / 155,50,126 ; CSI H / CSI 2 ~
XK_KP_Home=155,72/143,119   ; CSI H / SS3 w
XK_KP_Space=/143,117        ; / SS3 u
```

- a group of user defined keys (UDK) definitions. You can reprogram them in the Telnet Options/Settings/User Defined tab. A UDK's name followed by a '=' separator begins the record. A value may be a sequence of one or more characters and/or hex codes (without any separator) to be transmitted when you use the UDK defined.

Examples:

```
Alt-F10=PRINT   ; five characters
Shift-F1=0x1bOp ; one hex code 0x1b with two characters O and p
```

Terminal Parameter Settings

You can set up terminal capabilities by records with the following keywords and values:

Lines=number

The record specifies a number of lines on a screen of a terminal. (Example: Lines=24)

Columns=number

The record specifies a number of characters in a line. (Example: Columns=80)

Colors=number

The record specifies the maximum number of colors on the screen. (Example: Colors=16)

RGB=R.G.B, ...

The record specifies the palette description for colors to be used for color terminals instead of default colors of MS Windows. Each color number (beginning at 0 to Colors-1) is represented by R, G and B - the relative intensities for red, green, and blue primaries (each in the range of 0...255 decimal) to be used for a certain color. The RGB values indicate normal locations in color space. The primaries in a triple are '.' separated while triples are separated by a ',' delimiter.

UseCSI=1

The terminal can (UseCSI=1) or cannot (UseCSI=0) use 8-bit control sequences.

UseCRT=1

The record defines to use the terminal or application mode for arrows keys instead of ANSI mode (as default).

Use2W=1

The terminal can (Use2W=1) or cannot (Use2W=0) use characters with double width. (See the control sequence Esc#6 for DEC terminals.)

Use2HW=1

The terminal can (Use2HW=1) or cannot (Use2HW=0) use characters with double height and width. (See control sequences Esc#3 and Esc#4 for DEC terminals.)

Tab8=1

The terminal can use the 8-space default tab stops (in case the TabSet record below does not exist).

TabSet=n1,n2,...

The record defines the horizontal tabulation stop set to be used as the default tabulation set for the terminal. Decimal numbers separated by a ',' delimiter (n1,n2,...) are column numbers for horizontal tab stops. No values means the tabulation set is empty.

MG0i=inp.out,...
MG1i=inp.out,...

The records define re-mapping tables for the main character set (MG0) and for the alternate character set (MG1). Each table consists of code pairs separated by a ',' delimiter. A code pair has an input code (to be remapped), a '.' sign, and an output code from the character set used to display characters. The codes must be a hex number. Tables may continue onto multiple lines. The 'i' suffix in the keywords (MG0i or MG1i) shows the value for 'line number - 1'.

Example for AT386 (9 pairs for MG0 on 2 lines):

MG00=0x90.0xC9,0x91.0xBB,0x92.0xBC,0x93.0xC8,0x94.0xCD;
MG01=0x95.0xBA,0x97.0xB9,0x98.0xCA,0x99.0xCC;

Example for DEC terminals and XTERM (15 pairs for MG1 on 3 lines):

MG10=0x6A.0xD9,0x6B.0xBF,0x6C.0xDA,0x6D.0xC0,0x6E.0xC5;
MG11=0x6F.0xC4,0x70.0xC4,0x71.0xC4,0x72.0xC4,0x73.0xC4;
MG12=0x74.0xC3,0x75.0xB4,0x76.0xC1,0x77.0xC2,0x78.0xB3;

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