1. About This Manual

This User's Manual describes how to install, configure and use the X-WinPro package on a 32-bit IBM PC or compatible personal computer running Microsoft Windows NT, Windows 95 or IBM OS/2. The small volume of the manual reflects the 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 X-WinPro
- Hardware & Software requirements of X-WinPro
- Installation procedure for X-WinPro
- X-WinPro database composition
- Configuring X-WinPro
- X-WinPro working sessions.

2. Introducing to X-WinPro

X-WinPro is a complicated product for integrating the Microsoft Windows and TCP/IP network environments. X-WinPro is an inexpensive but effective way to transform a standard PC running under Microsoft Windows NT, Windows 95 or IBM OS/2 into a multi-finction 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. X-WinPro 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.

What is in X-WinPro

X-WinPro 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, 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 (via LPR, LPQ, LPRM). 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.

- **Startup**

Startup is a program for automating host access with using the REXEC or RSH protocol. By using the Startup program, you can:

- enter a single command and execute it on a host
- run a local startup file (with a sequence of executable commands on a host)
- create/save/select/remove/open/execute startup jobs.

Startup job is a task with a certain set of parameters (start method, login information, command line, settings). You can create a job (i.e. store current parameters under a certain name). A job may be launched by clicking on its icon.

- **Network File System Server**

NFS-Server is a network file server that supports the NFS protocol version 2. It has a multi-threaded code developed for the Microsoft Windows 95 platform and is designed to work with the built-in Windows 95 TCP/IP-32 stack.

The main feature of the NFS-Server utility is to provide access to hard disk space and files residing on your PC to users working on other network nodes under different operating systems (with NFS client support and TCP/IP).

- **Network File System Client**

The NFS Client is a program running under the Windows 95 operating system in order to mount one or more shared network resources from one or more NFS Servers and to share access to files and directories with other PCs and UNIX users across the network. A shared network resource is any folder that the administrator makes available to be mounted and its subdirectories.

The NFS Client does not turn your PC into a fully qualified file server. Instead, it allows a simple access to folders and files for a limited number of systems on the network.

The NFS Client has a multi-threaded code developed for the Microsoft Windows 95 platform and is designed to work with the built-in Windows 95 TCP/IP-32 protocol stack.

- **X server**

The X server is a program that emulates the X terminal on your PC. The X-WinPro's X server is the X server implementation of the X11 R6 release of the X Window System. The X server can run one or more X Window based client applications (X clients) that are resident on a host computer. The host can be any computer that supports the X protocol. X client applications can be displayed in individual windows, or as multiple windows contained in a single X server's window, or in a full-screen mode outside the Microsoft Windows graphical environment. The first two methods include functions to copy and paste data between X clients and the Microsoft Windows clipboard.

- **Font server**

You may use your familiar host based X fonts via X-WinPro's X Font Server. Fonts installed on your system can be used by any graphical X Window System application. Font Server is started automatically with your graphical environment, and all fonts installed on your system are automatically available to all of your X Window System applications. Applications request character information from the Font Server, which can return data in various formats, ensuring high quality display of a variety of font styles and sizes. Font Server provides rasterized fonts with outline data to all X applications. It also provides wide range of local X fonts (standard font sets supplied by MIT along with X11 R6), Font Compiler to compile Microsoft Windows fonts, and Microsoft Windows fonts support in X-sessions.

3. The X-WinPro Requirements

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

PC Hardware & Software Requirements

- A standard 32-bit (i386, i486 or Pentium) IBM PC or 100% compatible
- 8 Mbytes RAM or more
- Color graphics controller supporting SVGA video modes
- Mouse Unit compatible with Microsoft Windows
- Optional math coprocessor
- 11 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:

- Microsoft Windows 95
- Microsoft 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,
- and/or RSH, and/or REXEC
- Optional server implementation of Berkeley Line Printer protocol
- Login account on the host machine.

4. Installing X-WinPro

This chapter describes how to install the X-WinPro software. The chapter assumes that you have installed Windows NT or Windows 95 operating system as described in the corresponding user's guide for the product.

This chapter and the rest of the X-WinPro 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 X-WinPro in a directory different from the default, simply supply your directory name when appropriate directories are requested.

The installation of X-WinPro on PC is carried out by running the Setup program.

Running INSTALL

To run the Setup program:

1) insert the first X-WinPro 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
- Fonts Sets
- 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**.

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.

Upgrading X-WinPro

If you specified the X-WinPro home directory where X-WinPro 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 X-WinPro 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 X-WinPro package completely.

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

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

Multi-user Installation

Multi-user installation is intended for installing a single copy of X-WinPro on a disk that will be shared by multiple users. X-WinPro must be configured for each PC it will be used on. Corresponding files that define the local X-WinPro 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 X-WinPro on a disk that will be used for storing the shared copy (X-WinPro 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 X-WinPro home directory of the shared copy, and a local directory where files defining a particular package configuration will be resident (Configuration Path).

5. The X-WinPro Database

The package database is represented by three ASCII files

- **terminfo.ini**
- **lpr.inf**
- **rgb.txt**

and also by 27 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**.

Keyboard Definition Files

X-WinPro has 27 keyboard definition files allowing you to use one of the 27 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 X-WinPro's configuration files directory (in the location you specified when installing X-WinPro).

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 X-WinPro'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.

Color Definitions File

The **rgb.txt** file shipped by MIT jointly with the X Window System contains predefined colors in the form of correspondence between their specific RGB values and symbolic color names. The color values are present in the **RRR GGG BBB** format, where R, G and B represent single decimal digits and determine the intensity of the red, green and blue primaries that make up each color.

6. Configuring X-WinPro

This chapter describes how to configure the X-WinPro package with the configuration utilities. The utilities allow you to set up X-WinPro for your preferences, your host system and your PC.

X-WinPro supplies two configuration utilities:

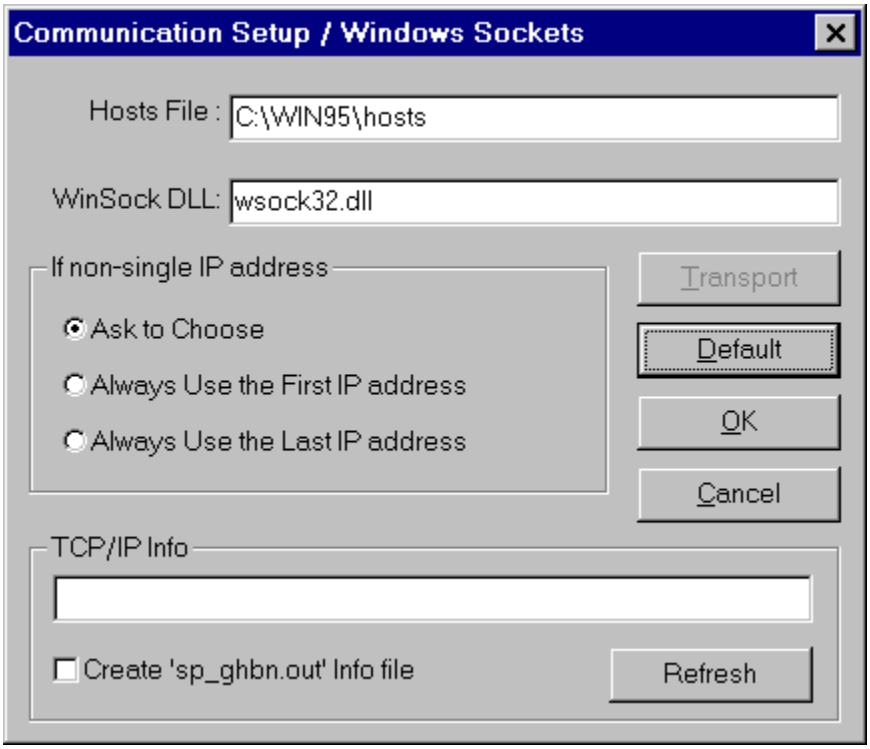
- **ComSetup** allows you to make communication settings relating to the networking aspects of X-WinPro that operate with the TCP/IP transport interface;

- **XSettings** is used to make control settings relating to all aspects of X-WinPro except networking.

ComSetup Utility

You can start the ComSetup by double-clicking on the **ComSetup** icon in the X-WinPro 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), 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 X-WinPro'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.

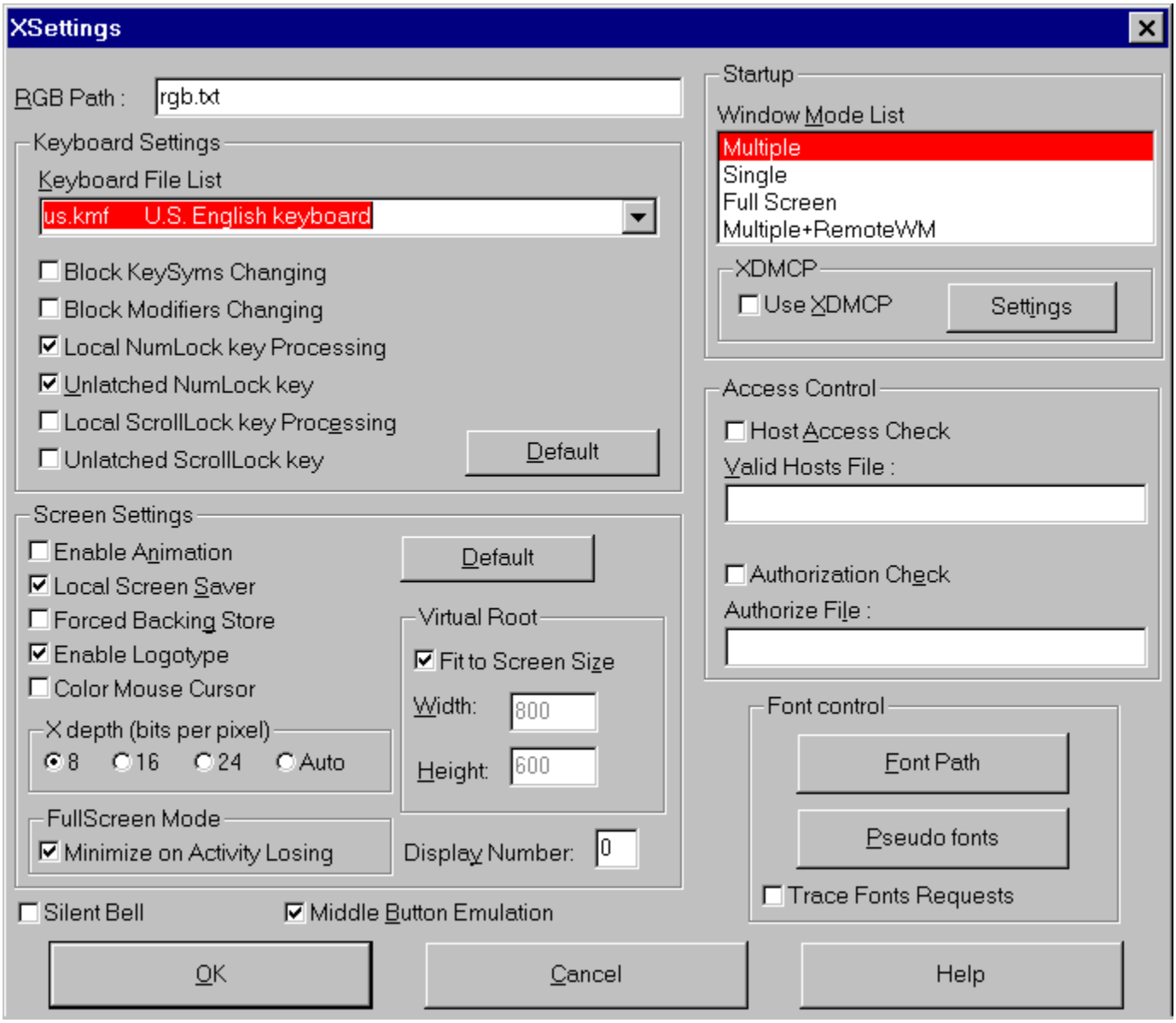
The **Default** button sets up the default values for all these parameters.

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

XSettings Utility

You can start the XSettings by double-clicking on the **XSettings** icon in the X-WinPro Programs' folder:

The **XSettings** dialog box will appear on your display:



You can cancel any changes you make to the **XSettings** dialog box by pressing **Cancel**. By clicking **OK**, any new settings you make will be written in the **xwinpro.ini** file (by default, see also the section **Running XSettings with command line parameters** below).

The following items are available:

RGB Path

This field is used to specify a location of the **rgb.txt** color definition file.

Silent Bell
When enabled, this check box will block all sounds (internal sounds and the X-protocol XBell requests).

Middle Button Emulation
The default setting specifies a two-button mouse with **Middle Button Emulation** enabled. If you are using a **3**-button mouse, click to disable the **Middle Button Emulation** check box. The third button is emulated by clicking both mouse buttons at once.

Keyboard Settings Box

Keyboard File List
The XSettings utility allows you to configure X-WinPro for supporting different international PC keyboards. The package supplies the following 27 keyboard mapping files that define assignments of key functions to physical keys on appropriate keyboards:

Keyboard Filename	Keyboard
belgian.kmf	Belgian Keyboard (for 102 Keyboard)
danish.kmf	Danish Keyboard (for 102 Keyboard)
decemfr.kmf	DEC style Keyboard Mapping for a French Keyboard
decemfrc.kmf	DEC style Keyboard Mapping for a French Canadian Keyboard
decemgr.kmf	DEC style Keyboard Mapping for a German Keyboard
decemuk.kmf	DEC style Keyboard Mapping for a U.K. 102 English Keyboard
decemus.kmf	DEC style Keyboard Mapping for a U.S. Keyboard
dutch.kmf	Dutch Keyboard (for 102 Keyboard)
frencan.kmf	French Canadian Keyboard
french.kmf	French Keyboard
german.kmf	German Keyboard
italian.kmf	Italian Keyboard
jpn106.kmf	Japanese 106 Keyboard
latinam.kmf	Latin American Keyboard
msus.kmf	U.S. English Microsoft Keyboard
norwegia.kmf	Norwegian Keyboard
portugue.kmf	Portuguese Keyboard
spanish.kmf	Spanish Keyboard
swedfinn.kmf	Swedish/Finnish Keyboard
swedish.kmf	Swedish Keyboard
swissfre.kmf	Swiss French Keyboard
swissger.kmf	Swiss German Keyboard
uk101.kmf	U.K. 101 English Keyboard
uk102.kmf	U.K. 102 English Keyboard
uk102m.kmf	U.K. 102 English Keyboard (for SWISSGER 102 Keyboard)
us.kmf	U.S. English Keyboard
userkbd.kmf	user-defined keyboard mapping

You can select an appropriate keyboard file from the **Keyboard File List** by clicking on its file name. The default keyboard is **us.kmf.** All keyboard files are written for keyboards with a separate cursor keypad. Note that there are two U.K. keyboard files supplied. One is for a 101-key U.K. keyboard, and other is for a 102-key keyboard. The 101**-**key U.K. keyboard is identical to the U.S. keyboard except that holding **Shift** and pressing **3** produces a **POUND** sign instead of a '#' sign.

You can enter any kmf-file name in the edit field (KBD format files were used in earlier X-WinPro's versions. The KMF format uses ScanCodes instead of IbmCodes of the KBD format.)

Note: the X-WinPro's Telnet and XServer programs use the same KMF file specified. You can view and edit KMF files by using the Telnet's **Keyboard Mapping** option.

In many European languages (e.g., France, Germany), users need to enter some special characters by combining a Diacritic (or composer) character and a normal letter. KMF files allow for this feature for national keyboards.

Note: If you need to send the four specific key combinations to X clients, you have to manually enter the substitution strings into the [XSETUP] section of the **xwinpro.ini** file (for the X server to be able to use them).

For example:

CtrlEsc2=255.173 ;to send **Ctrl + Esc** press **Ctrl+KEYPAD MINUS SIGN**
CtrlAlt2=255.171 ;to send **Ctrl + Alt** press **Ctrl+KEYPAD PLUS SIGN**
AltEsc2=255.173 ;to send **Alt + Esc** press **Alt+KEYPAD MINUS SIGN**
AltTab2=255.171 ;to send **Alt + Tab** press **Alt+KEYPAD PLUS SIGN**

Block KeySyms Changing
If this check box is enabled, it prevents the XServer keyboard's KeySyms mapping from external changes.

Block Modifiers Changing
If this check box is enabled, it prevents the XServer keyboard's Modifiers mapping from external changes.

Local NumLock key Processing
If this check box is enabled, the X server (not X clients) will process the NumLock key.

Unlatched NumLock key
If this check box is enabled, the X server will consider the NumLock key as a normal key (non-toggling). The NumLock key is **unlatched** by default. This was implemented to suppress the NumLock state's influence on some X-Window managers and programs.

Local ScrollLock key Processing
This is important only for the X server's **Full Screen** mode. The key is used for iconifying the X server's window. If this check box is enabled, the X server (not X clients) will process the ScrollLock key.

Unlatched ScrollLock key
If this check box is enabled, the X server will consider the ScrollLock key as a normal key (non-toggling). The ScrollLock key is **unlatched** by default.

Screen Settings Box

The **Default** button sets up the default values for check boxes and edit fields in the **Screen Settings** box.

Display Number
You can specify the display number of the X server for the particular **X**-session. This allows you to run several X-sessions with different **Display Number** (for example, several Window Managers simultaneously).

(In X11 documentation, the phrase **DisplayNumber** is usually used to refer to collection of monitors that share a common keyboard and pointer (mouse, tablet, etc.). To avoid confusion, each display on a machine is assigned a **display number** (beginning at 0) when the X server for that display is started. The display number must always be given in a display name.)

Each Display Number corresponds to the known Port Number of the X server (0-6000, 1-6001, etc.).

Enable Animation
If checked, this check box causes the X server to more precisely display color images.

Local Screen Saver
If enabled, this check box causes a **Local Screen Saver** program to be run (for the X server's **Full/Single Screen** modes only).

Forced Backing Store
If this check box is checked, the **Backing Store** mode will be used with all X clients.

Enable Logotype
This check box toggles displaying the Logotype image each time the X server starts up.

Color Mouse Cursor
If this check box is checked, the color mouse cursor creation will be allowed.

Virtual Root box

When you select either **Single** or **Full Screen** modes for the X server, you can fill in the **Width** and **Height** fields in the **Virtual Root** box. This box lets you set the default size in pixels of the X server's root window. You can make the virtual screen size larger than your display if you want to. The maximum size is 2048x2048 pixels.

Fit to Screen Size
If enabled, this check box allows to skip input for the virtual **Width** and **Height**.

FullScreen Mode Box

The following check boxes are available when you choose either **Full** or **Single Screen** modes for the X server.

Minimize on Activity Losing
This option is available in **Full Screen Mode** only. If this check box is enabled, the X server's window will be iconified each time the focus changes to another window. Otherwise, it can be obscured by other windows.

Font Control Box

The **Font Control** box contains two buttons: **Font Path** and **Pseudo Fonts**. The **Font Path** button calls a dialog box to control Font Sources. The **Pseudo Fonts** button calls a dialog box to control usage of Windows fonts. They are described in detail in Chapter **Font Control**.

Trace Fonts Requests
If this check box is checked, all font requests (with resolve messages) will be stored in the **xserver.out** file. This is useful for analysis of the X server's font accessibility and resolving.

Startup Box

Window Mode List
This item allows you to make a choice of the X server startup mode. Select the desired window mode by clicking on a mode name.

Use XDMCP
X Display Manager Control Protocol (XDMCP) is the popular method of starting remote login session. Once X-WinPro, configured to use XDMCP, has initiated X-session for the first time, it contacts an 'xdm' process running on a host system. The **Use XDMCP** check box toggles this method. The default setting is disabled.

Settings
This button allows you to set up parameters and modes of the XDMCP startup method. The button is available only if you check the **Use XDMCP** check box. See the **XDMCP Settings** section below for description of XDMCP customization.

Access Control Box

This box contains the following two items which allow you to restrict access to your X server to those hosts you authorize by listing them in the **Valid Hosts File**:

Host Access Check
To enable the **Host Access Check** mode, set this check box to the enable state. Then you have to specify the **Valid Hosts File**. If you set the check box to the disable state, the **Valid Hosts File** field will become grayed, and any host on your network can access the X server.

Valid Hosts File
If the **Host Access Check** mode is enabled, use this field to specify a file containing a list of the hosts you wish to authorize to connect to your X server. The file consists of text lines each of the following format:

IP_address comment
or
name comment

IP addresses are specified in the dotted IP address notation. Names must be specified as official host names or aliases in your **hosts** file.

Note that the host definition syntax allows you to use your **hosts** file as the **Valid Hosts File**.

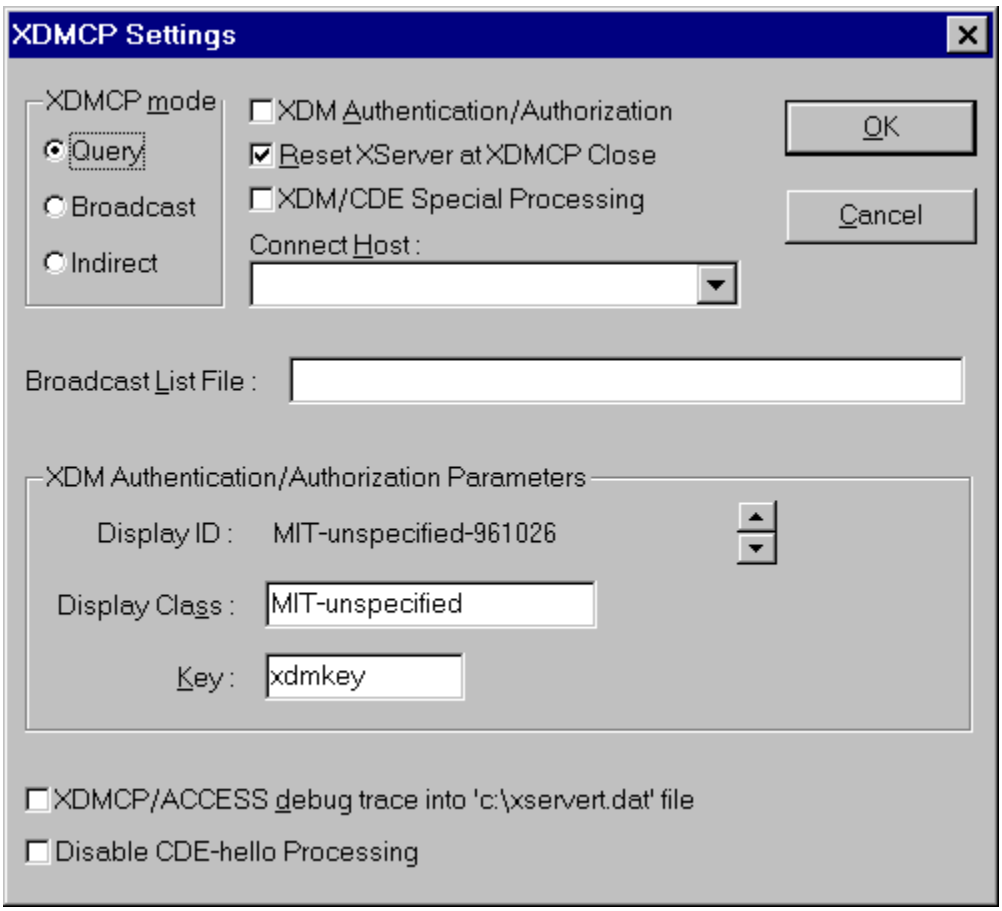
Authorization Check
Enable this check box if you are going to use the standard authorization file created with the 'xauth' program.

Authorize File
This edit field is for specifying the standard authorization file name. This file will be used only if the **Authorization Check** check box is enabled.

XDMCP Settings

XDMCP settings are used to control settings relating to the XDMCP startup method.

When you click on the **Settings** button in the **XDMCP** box, it displays the following dialog box:



Change XDMCP settings only after consulting with your system administrator.

You can cancel any changes you make to the dialog box by clicking on **Cancel**. By clicking on **OK**, any new settings you make will be saved and maintained.

All items of the dialog box are described below:

XDM Authentication/Authorization

This check box allows you to enable XDM authentication (the **XDM-AUTHENTICATION-1** scheme) and XDM authorization (the **XDM-AUTHORIZATION-1** scheme). If your host is using XDM authentication or XDM authorization, set up and report the values in the **Display ID**, **Display Class**, and **Key** fields to your system administrator.

If you disable XDM authentication and XDM authorization, the default client authorization scheme (**MIT-MAGIC-COOKIE-1**) will be used by the X server.

Reset XServer at XDMCP Close

If checked, this check box enables closing all X clients if the remote XDM daemon terminates the XDMCP session with the X server.

XDM/CDE Special Processing
Check this check box if you are going to use the **CDE XDMCP** mode, i.e. with CDE installed on the remote XDMCP host (for the X server's **Multiple Screen** mode only).

XDMCP/ACCESS debug trace into c:servert.dat file
This check box is for debug purposes only. If checked, it enables writing out any special debugging information into the **c:\x11trace.txt** trace file. Be careful when using this option because of significant decreasing the X server's performance and a large size of the trace file.

Disable CDE-hello Processing
This check box is for the X server's **Multiple Screen** mode only. It is normally disabled.

Connect Host
This field is used to specify the network node name or IP address of the host you want to connect to in the **XDMCP Query** or **XDMCP Indirect** startup mode. When you click on the scroll arrow beside the **Connect Host** box, a drop-down box will display host definitions listed in your **hosts** file. To select a host, just click on an appropriate definition.

If the **hosts** file does not contain the host definition you need, enter the host's IP address (in the dotted standard IP address notation).

Broadcast List File
Use this field to specify the file which contains the broadcast list of the **XDMCP Broadcast** startup mode. The file consists of text lines each of the following format:

IP_address comment
or
name comment

Names must be specified as official host names or aliases in your **hosts** file. Note that the syntax allows you to use the **hosts** file as the **Broadcast List File**.

XDMCP Mode Box

You can check one of the following XDMCP modes:

Query
A particular host used to establish the X connection must be specified in the **Connect Host** field.

Broadcast
This mode does not allow you to specify a host in the **Connect Host** field. Instead, the X server will broadcast a request to every host named in the **Broadcast List File** to start the X connection. To use this mode, you must create a **Broadcast List File** as described in this section.

Indirect
The query will be sent to the host specified in the **Connect Host** field. This host will then either start up or broadcast a request for one or more other hosts to start the X connection.

XDM Authentication/Authorization Parameters Box

Display ID

If XDM authentication or XDM authorization has been enabled on the XDM host, your system administrator will need to know the value displayed in this field. This field should normally never be changed. The **Display ID** value consists of these two parts separated by hyphen: the **Display Class** value and the arbitrary numerical value.

In very rare cases, your system administrator may determine that your **Display ID** is a duplicate and will ask you to generate a new one. To do this, use arrows on the right side of the **Display ID** field. The up arrow increases the numerical value of the **Display ID**, and the down arrow decreases it. **Do not do this without consulting with your administrator**.

Display Class

This field can be used to group classes of XDM nodes. The field should only be modified at the request of your system administrator. Otherwise it should be left unchanged.

Key

This field defines the key used in XDM authentication. If your host is using XDM authentication, your system manager will need to know the contents of your XDMCP **Key** and **Display ID** fields. This field should only be modified at the request of your system administrator. Otherwise it should be left unchanged.

Running XSettings with Command Line Parameters

You can launch the XSettings utility with command line parameters:

xset.exe -xini <IniFilePath>

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

This feature allows you to run several XSettings each with its own ini-file (i.e., settings). Note that you can launch the X server, giving different ini-files to it (see the section **Running XServer with command line parameters** in Chapter **Using the X Server**).

In order to do so, you can create a new XSettings shortcut (for example, in the X-WinPro Programs' folder) and fill in the **Target** edit field in its properties with your command line parameters. By default, this field calls the XSettings without parameters, in which case the **xwinpro.ini** file will be used.

To create your specific ini-file, you can copy the **xwinpro.ini** file and then change parameters with the XSettings utility as you wish by starting it with the command line parameters.

7. Network File System Server (NFS-Server)

This chapter describes how to start and use the NFS-Server program supplied with X-WinPro.

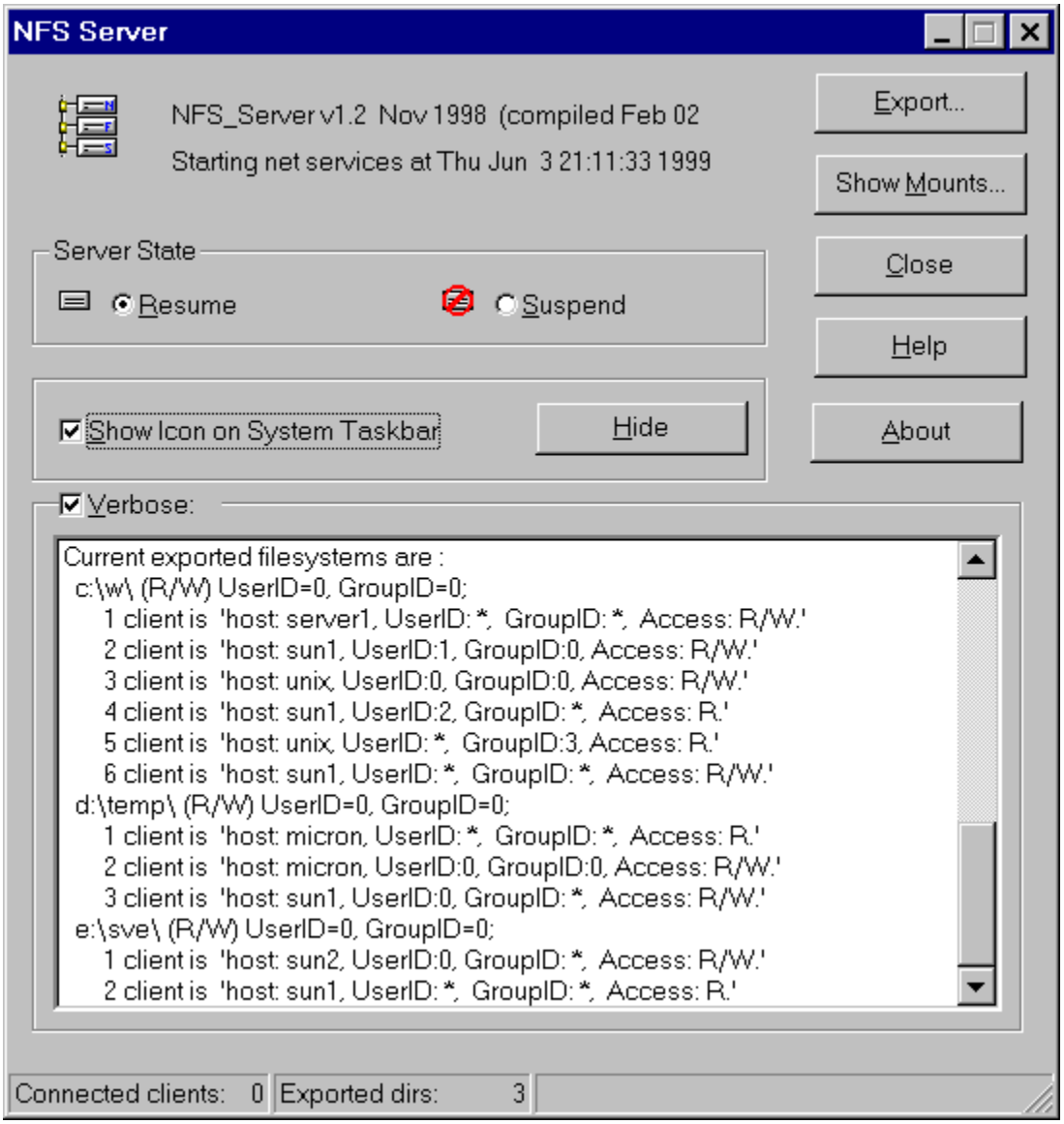
NFS-Server is a network file server that supports the NFS protocol version 3 (see **RFC1813. NFS version 3 protocol specification**) and the NFS protocol version 2 (see **RFC1094. NFS: Network file system protocol specification**). It has a multi-threaded code developed for the Microsoft Windows 95 platform and is designed to work with the built-in Windows 95 TCP/IP-32 stack.

The main feature of the NFS-Server utility is to provide access to hard disk space and files residing on your PC to users working on other network nodes under different operating systems (with NFS client support and TCP/IP).

Starting and Terminating the NFS-Server

You can start the NFS-Server by double-clicking on the **NFS-Server** icon in the X-WinPro Programs' folder.

The **NFS-Server** window will appear on your display. You can then specify the information required to give access to exported subdirectories on your PC (i.e., determine the directory trees you wish to make available as exported filesystems for remote NFS clients).



The following control items in the **NFS-Server** window are available.

Export...
Used to change lists of exported directories and remote users.

Show Mounts...
Used to show which directories of your PC are available for remote users.

Close
Used to terminate the NFS-Server.

About
Used to display the **About NFS-Server** dialog box.

After start-up the NFS-Server on your PC you can check access to your exported directories by the following way:

1) On your NFS client system, add your PC's IP address to its host table and give it a name (e.g., 'xtp3').

2) Make sure that there is proper connectivity to your PC. On a typical UNIX system, you can try the following command line:

showmount -e xtp3

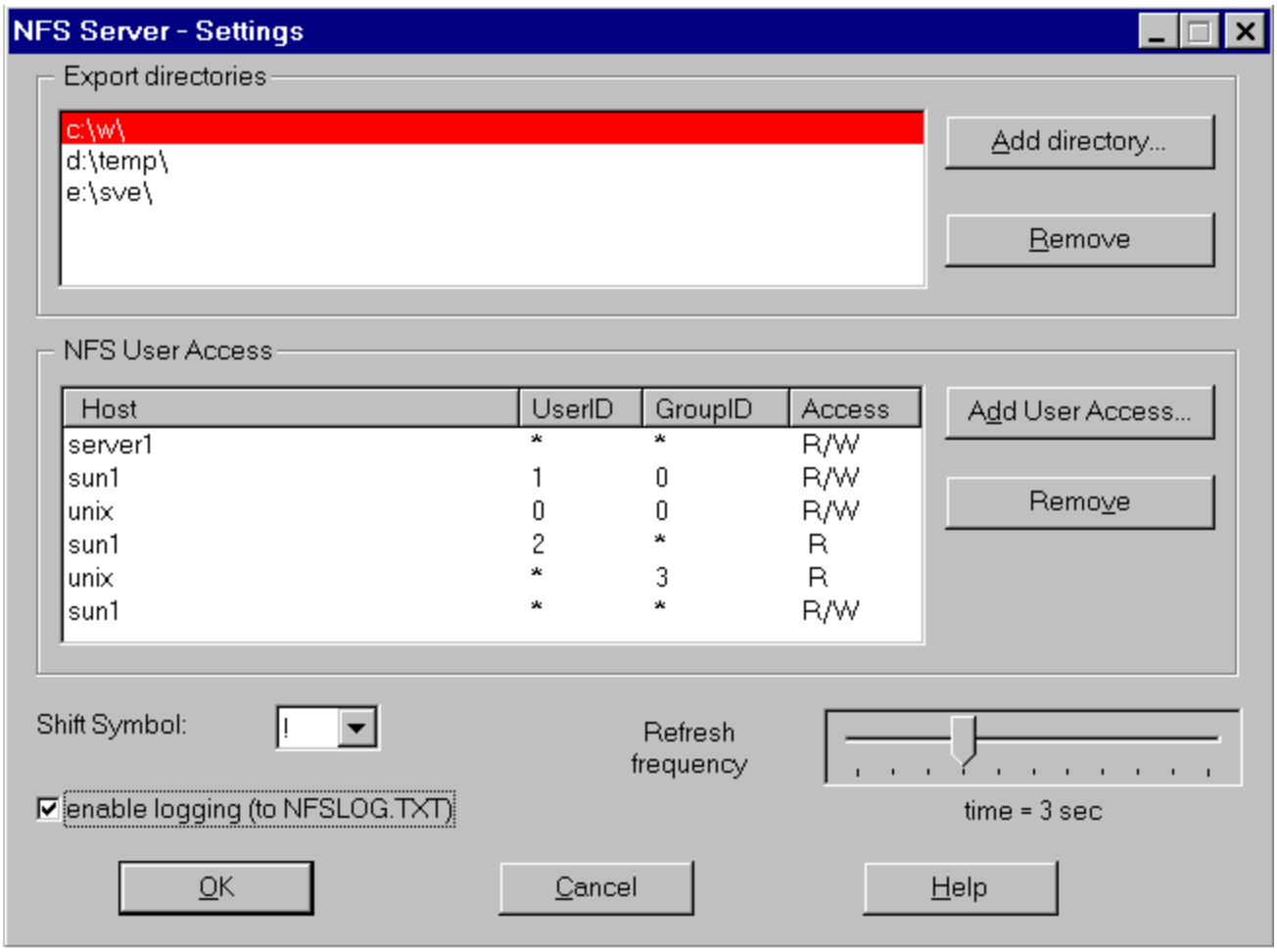
You will see the list of exported directories for remote mounting.

3) The sample mounting command may have the following appearance:

mount xtp3:/g /mnt

Configuring the NFS-Server

To configure the NFS-Server, click on the **Export...** button. The **NFS Server-Settings** dialog box will appear on your display.



You can then change the list of exported directories and the **NFS User Access Table**.

You can add a new directory to the current list or remove a directory from it.

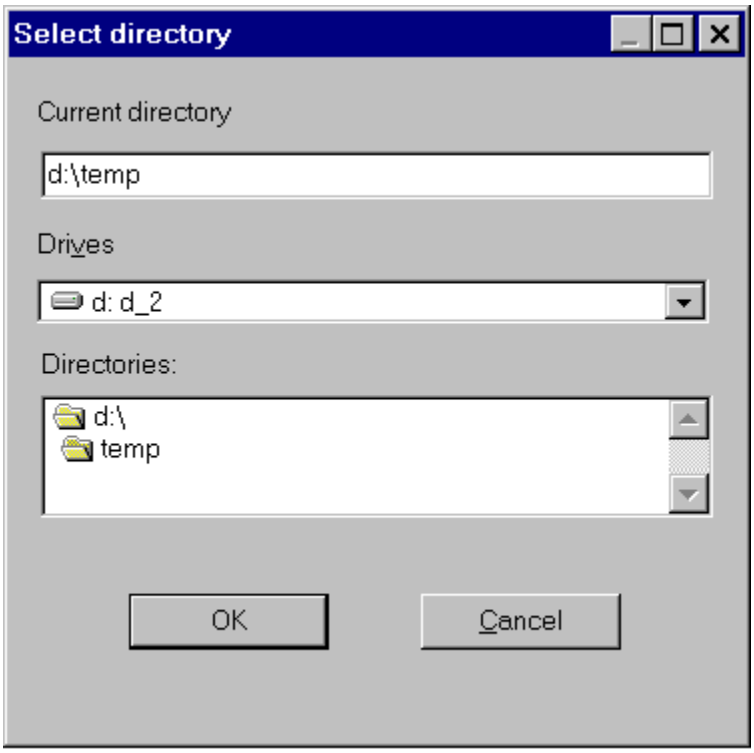
For each selected directory, you can add a new user to the **NFS User Access Table** or remove a user from it.

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

If checked, the **Enable logging** check box enables storing the information (about the NFS-Server's start/finish and every mount/unmount command) in the **nfslog.txt** file in the X-WinPro's home directory.

Adding an Exported Directory

To add an exported directory to the current list, click on the **Add directory** button.
The **Select directory** window will appear on your display.



Specify the **Drive** and **Directories** fields in that window.

After clicking **OK** the selected directory will appear on the **Export Directories** list box.
Clicking on **Cancel** will not change the current list.

Removing an Exported Directory

To remove a directory from the **Export Directories** list:

- select a directory in the **Export Directories** list box;
- click on the **Remove** button.

Changing the NFS-User Access Table

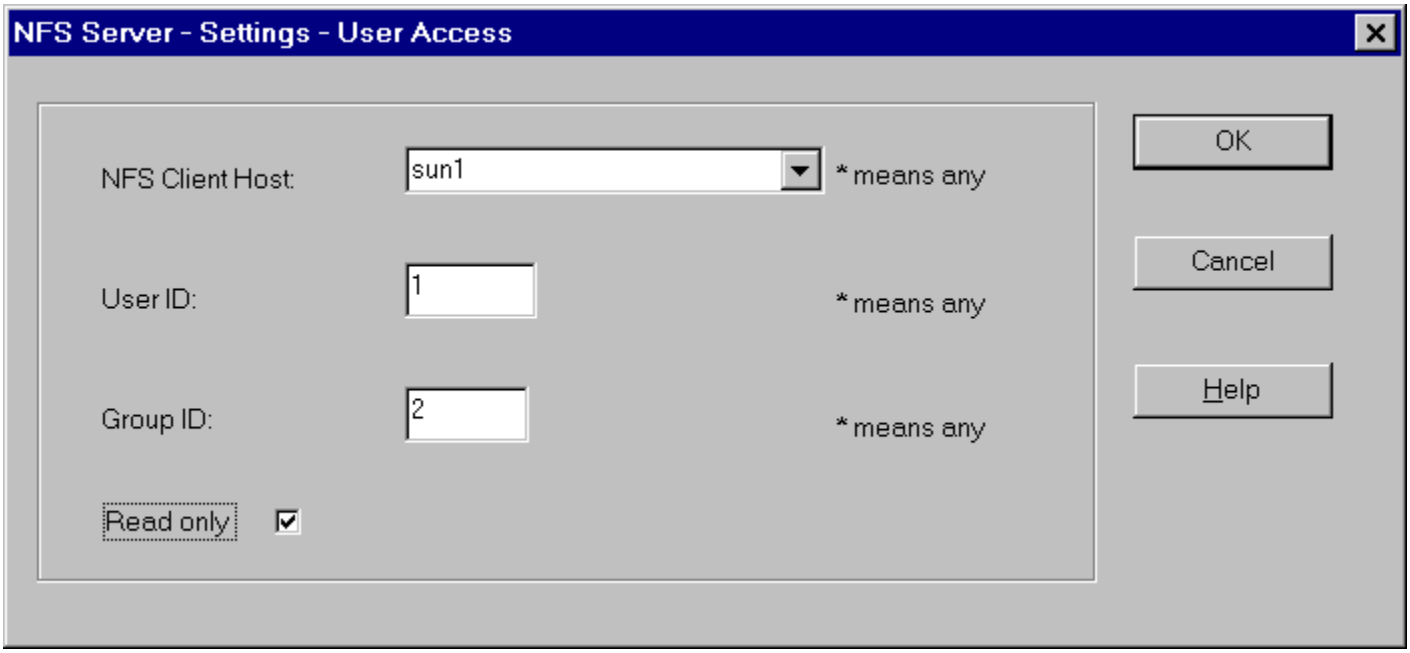
Each exported directory may have a list of users which are allowed to access to it. Access information is stored in the **NFS User Access Table.**

Adding a User

To add a user to the **NFS User Access Table:**

- select a directory in the **Export Directories** list box;
- click on the **Add User Access** button;

the **User Access** window will appear on your display:



then you have to specify the following fields in that window:

- **NFS Client Host**;
- **UserID**;
- **GroupID**;
- **Access** (check the **Read-Only** check box).

After clicking **OK** the specified values will appear on the **NFS User Access** list box. Clicking on **Cancel** will not change the current access list.

Removing a User

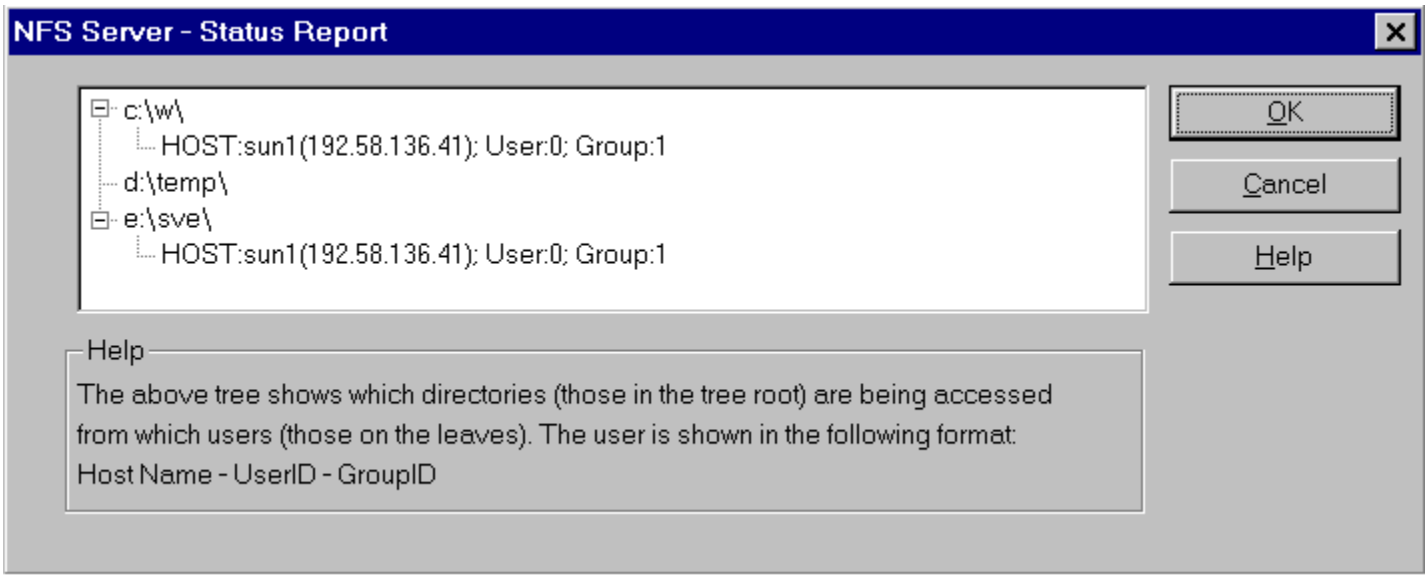
To remove a user from the **NFS User Access Table:**

- select a directory in the **Export Directories** list box;
- select a user in the **NFS User Access** list box;

- click on the **Remove** button.

Status

To view which directories of your PC are being accessed by remote users, click on the **Show Mounts...** button in the **NFS-Server** window. The **Status Report** window will appear on your display.



For each exported directory, remote users are designated with **HostName, UserID**, and **GroupID**.

Restrictions

1) The current version of the NFS-Server can use read/write buffers of **1024, 2048, 4096 or 8192 byte size** (see the 'mount' command parameters 'rsize'**,** 'wsize').

2) This version of the NFS-Server supports UNIX-like file names (directory and file names are case-sensitive and can have several extensions).

8. Network File System Client (NFS Client)

This chapter describes how to install and use the NFS Client program supplied with X-WinPro.

The NFS Client is a program running under the Windows 95 operating system in order to mount one or more shared network resources from one or more NFS Servers and to share access to files and directories with other PCs and UNIX users across the network.

A shared network resource is any folder that the administrator makes available to be mounted and its subdirectories. The process of making such resources available is called exporting a shared network resource. On the NFS client side, a shared network resource is seen as a physical disk drive.

The NFS Client does not turn your PC into a fully qualified file server. Instead, it allows simple access to folders and files for a limited number of systems on the network.

The NFS Client has a multi-threaded code developed for the Microsoft Windows 95 platform and is designed to work with the built-in Windows 95 TCP/IP-32 protocol stack.

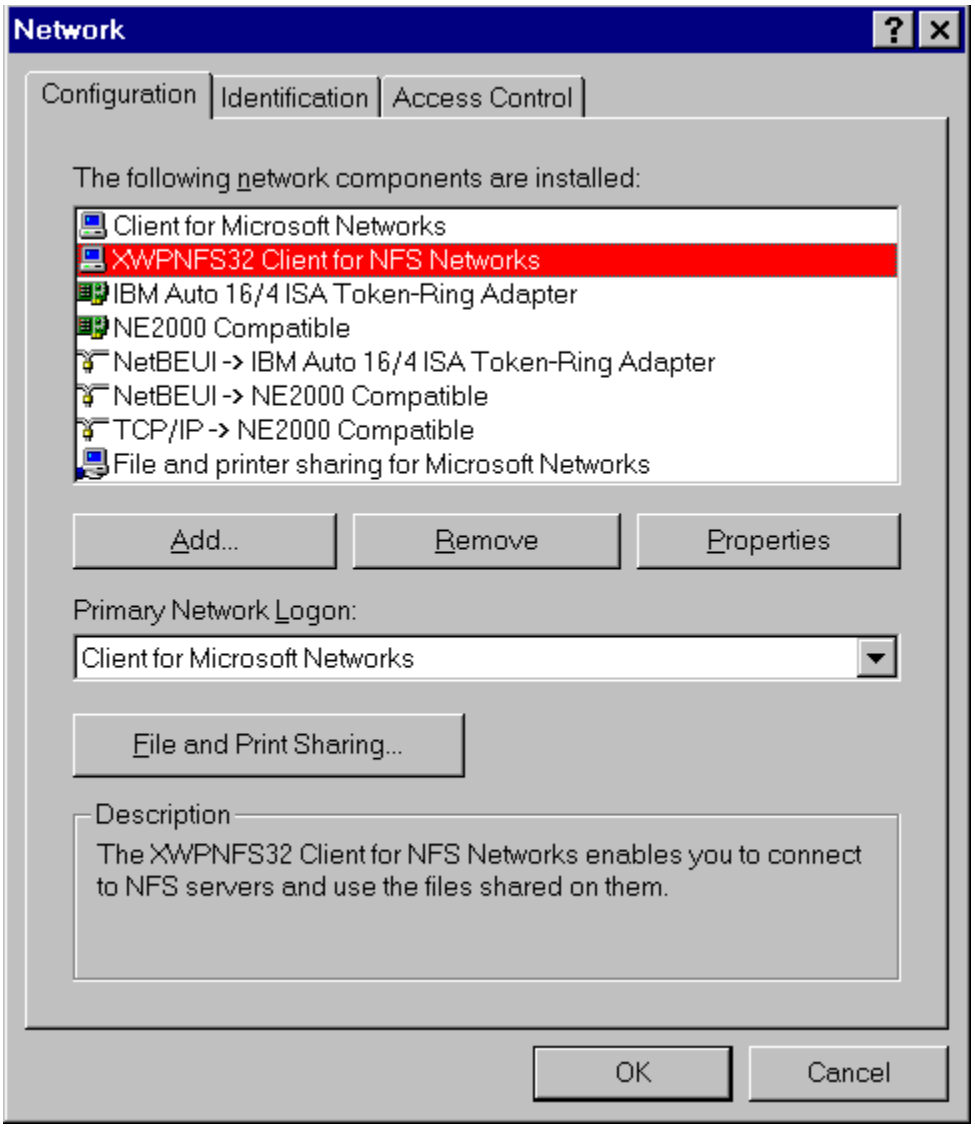
NFS Client Settings

All configuration parameters for the NFS Client are set by making selections in property pages. These property pages are accessed through the Microsoft **Network** applet in **Control Panel**.

To make the NFS Client settings:

1) On the DESKTOP, choose **My Computer**, then **Control Panel**, and then the **Network** applet;

2) select **XWPNFS32 Client for NFS Networks** from within the list of network components installed, and click **Properties**.

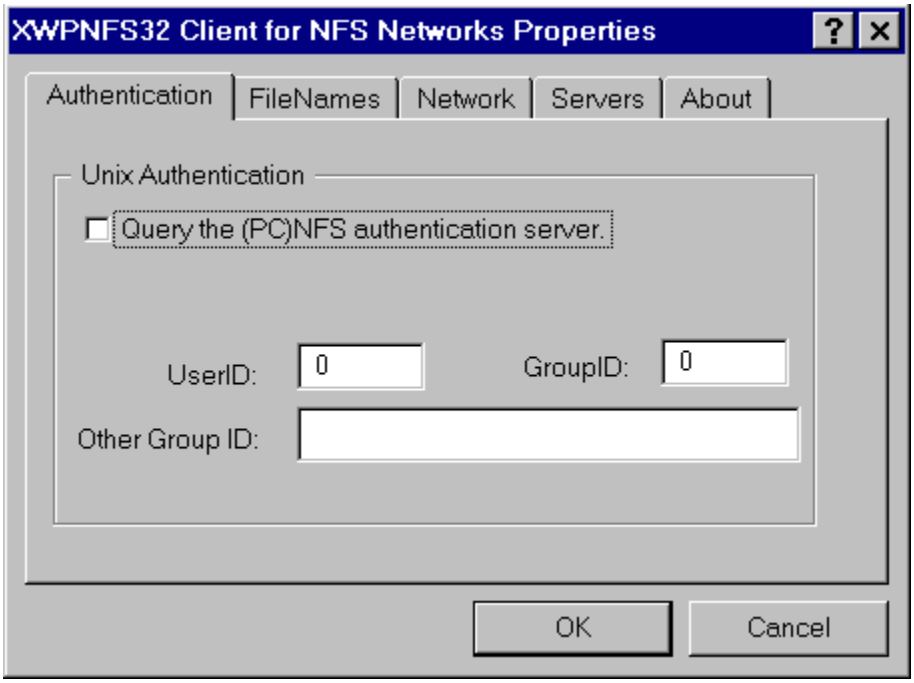


The **XWPNFS32 Client for NFS Networks Properties** dialog box will appear with the following five tabs: **Authentication**, **FileNames**, **Network**, **Servers**, and **About**.

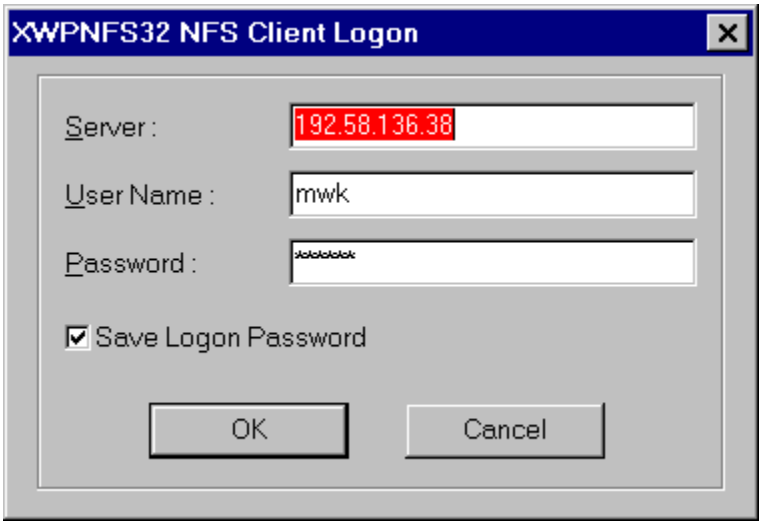
The Authentication Tab

This tab has one group box: **Unix Authentication.**

If the **Query the (PC)NFS authentication server** check box is disabled, then this box allows you to specify UserID and GroupID for mounting to UNIX systems. If the user exists in several groups, they can be specified in the **Other Group ID** field with the space or comma characters as separators.



If the **Query the (PC)NFS authentication server** check box is enabled, the dialog box will appear at start of Windows 95.



When you enter your User Name and Password, and the authentication server entered in the **Server** field successfully authenticates you, then it gives you your UserID and GroupID for

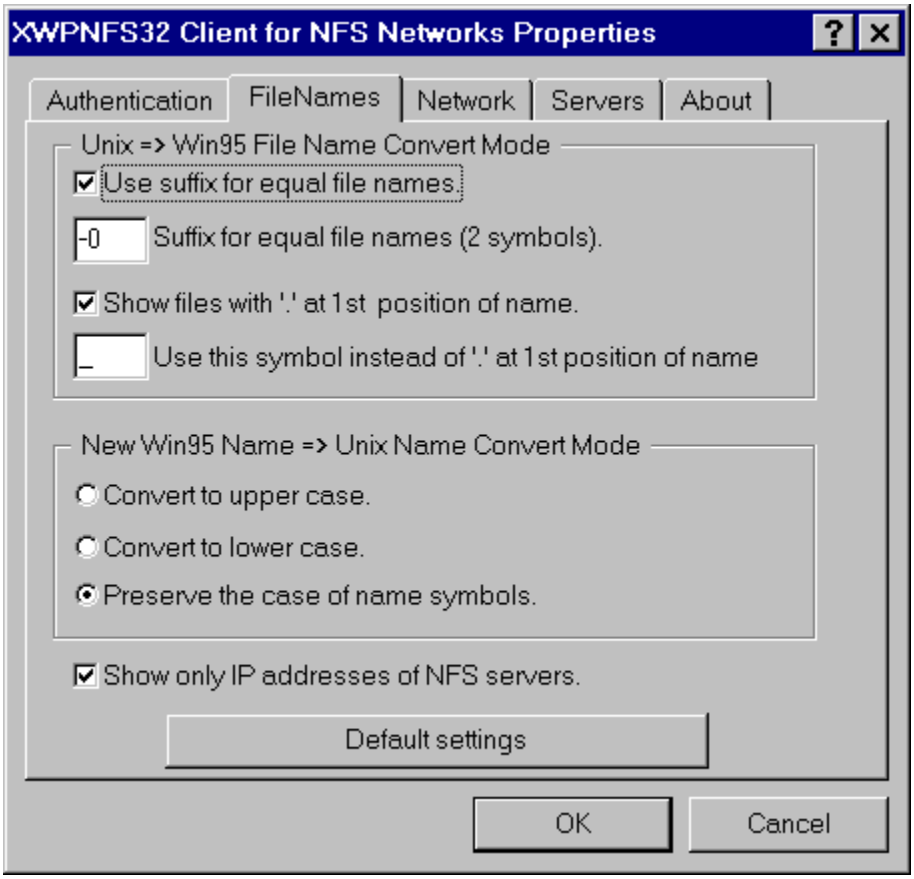
the Windows 95 session (after pressing OK). If authentication failed (the server does not respond, permission is denied, or you pressed **Cancel**), then this dialog box will appear later when you want to access your network resources (for mounting).

Network Neighborhood is used to browse your network for NFS file servers and to check for the available resources on these servers. Every time you access an NFS server, either to browse its exported resources or to mount a shared network folder, the server requires you to authenticate yourself so that it can verify your identity.

In a NFS network, once the user is authenticated, that user's access to network file resources is further defined by the permissions granted for certain files and folders. When browsing you will be able to see all the exported folders, however, viewing the contents of the folders as well as opening and editing files will depend on whether you have the correct permissions.

The FileNames Tab

This tab has two group boxes: **Unix => Win95 File Name Convert Mode** and **Win95 Name => Unix Name Convert Mode.**



The **Unix => Win95 File Name Convert Mode** group box allows you to specify file name conversion rules from the UNIX format to the Windows 95 format.

If you enable the **Use suffix for equal file names** check box, then the UNIX file names which differ by cases only will be concatenated with a two-character suffix. The second

character will be changed by incrementing its code by 1. You can specify an initial value for the suffix in the **Suffix for equal file names** field.

If you disable the **Show files with '.' at 1st position of name** check box, then you can see all file names but those beginning with a period. For the file names beginning with a period, it is desirable to substitute the first period character in the file name with another character. You can specify the character in the **Use this symbol instead of '.' at 1st position of name** field.

The **Win95 Name => Unix Name Convert Mode** group box allows you to specify file name conversion rules from the Windows 95 format to the UNIX format.

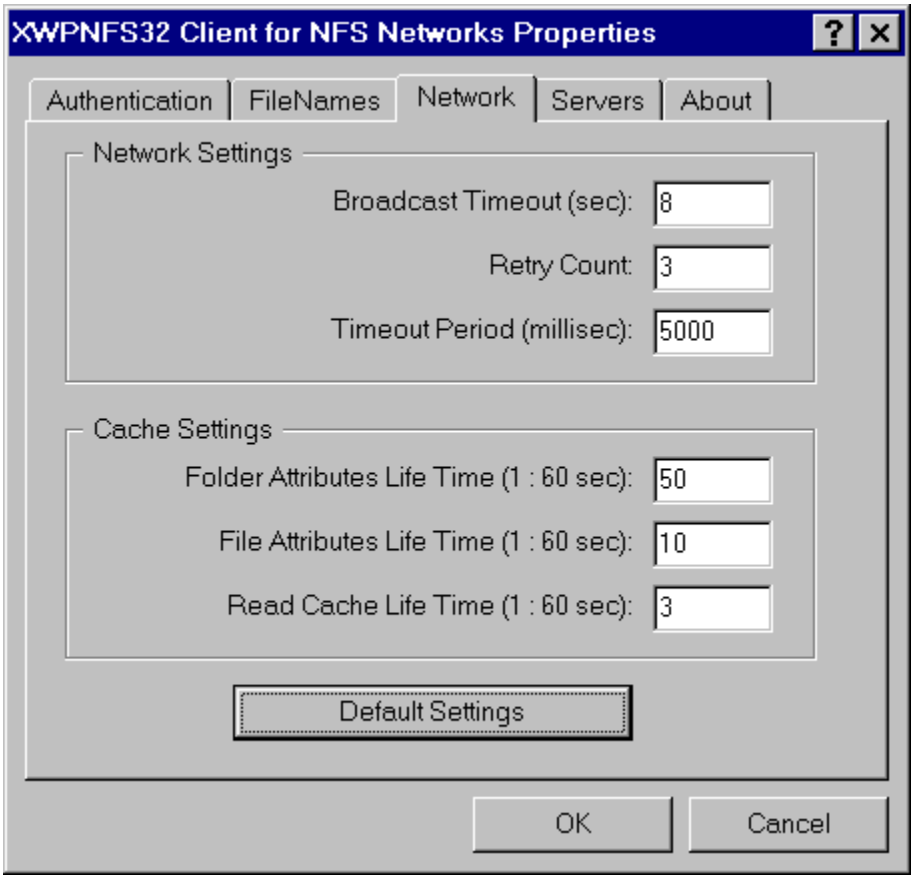
New names of files and directories created or renamed under Windows 95 will be converted to upper/lower case or unchanged depending on the mode you choose: **Convert to upper case**, **Convert to lower case**, or **Preserve the case of name symbols**.

If the **Show only IP addresses of NFS servers** check box is disabled, then IP addresses of NFS servers are displayed with corresponding host names. This feature helps prevent you from timeouts because of possible DNS accessibility problems.

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

The Network Tab

This tab has two group boxes: **Network Settings** and **Cache Settings**.



The **Network Settings** group box allows you to specify:

- **Broadcast Timeout** - when watching network for hosts supporting the NFS and MOUNT protocols, specifies the number of seconds that the NFS Client will wait before retransmitting a request.

- **Timeout** - when sending requests of the MOUNT and NFS protocols, is the absolute time in seconds that the NFS Client will wait for the server's response before returning a timeout error.

- **Retry Count** - when sending requests to a server, is a number of times not replying during the timeout specified before a timeout error, due to no response from the server, occurs.

These parameters may need to be fine tuned to ensure that your NFS client is not sending requests faster than the server is able to reply resulting in further unnecessary network traffic.

The **Cache Settings** group box allows you to specify the following 'Life Time' values for time-driven renovating of file/directory attributes stored in the NFS Client's internal cache:

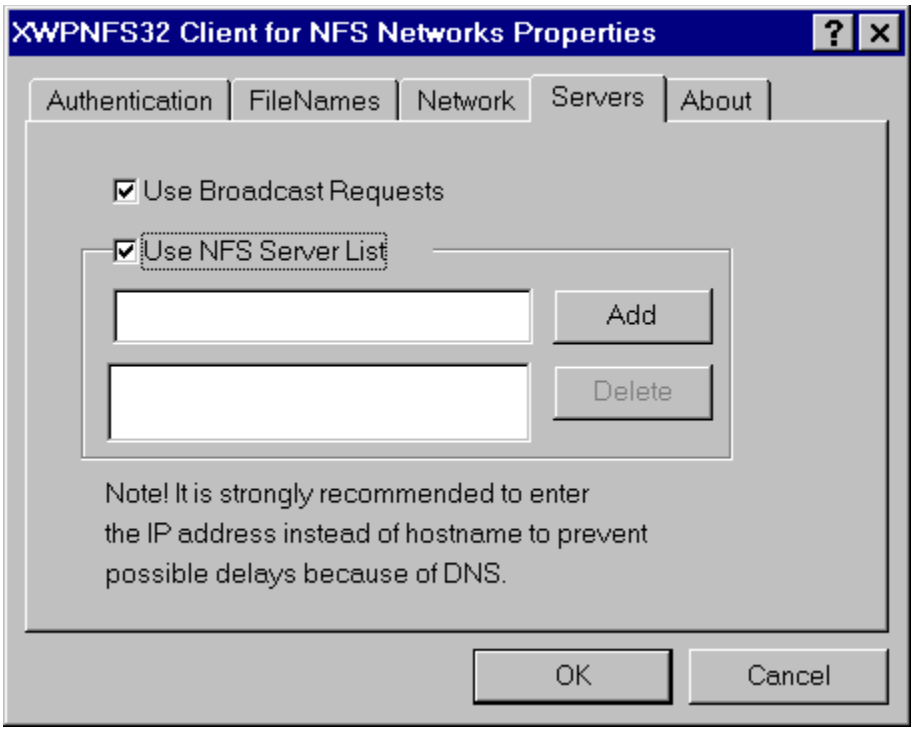
- Folder Attributes Life Time
- File Attributes Life Time
- Read Cache Attributes Life Time

The NFS Client will preserve the original attributes for existing folders and files and will create new folders and files with the default attribute values. These are the standard UNIX file attributes.

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

The Servers Tab

This tab allows you to choose a mode for requesting NFS servers. You can also manage a **NFS Server List** for specific hosts.

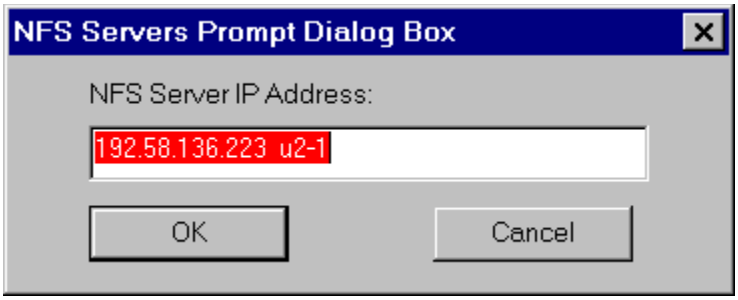


If the **Use Broadcast Requests** check box is enabled, then, to locate all available remote NFS servers in LAN, broadcast messages will be sent (in LAN only).

If the **Use NFS Server List** check box is enabled, then remote NFS servers specified in the list will be only requested (no matter in LAN or WAN).

You can enter an IP address (or a host name of the NFS server you want to request) into the edit field, and then **Add** the server to the current list. To remove a NFS server from the list, highlight it and use the **Delete** button.

If both the check boxes are disabled, then, when you want to mount an exported file system, the prompt dialog will appear for you to enter the IP address or host name to check accessability of the NFS server (that will become the first item in the list).



If both the check boxes are enabled, then broadcast requests are first sent, followed by the NFS Server List requests (resulting in Network Neighborhood items).

The About Tab

This tab contains reference information about the NFS Client release, protocols and versions supported.

At present, the NFS Client supports the following protocols:

- NFS protocol, version 2;
- MOUNT protocol, version 1;
- PORTMAP protocol, version 2;
- UDP protocol at the transport level is used.

Mounting a NFS File System

Before you can mount a NFS exported file system as a network drive:

- your host name must be defined in the hosts database on the NFS server from which you want to mount a file system
- the file system that you are trying to mount must be an exported directory on the remote system
- you require the appropriate permission to mount and access the particular file system.

The NFS Client can mount drives from Microsoft Explorer or through the Network Neighborhood application.

Mounting in Network Neighborhood

To mount an exported file system as a network drive in Network Neighborhood:

1) position the cursor on the exported network folder that you wish to mount and right click the mouse button
2) select the **Map Network Drive** command
3) using the **Drive:** pull down list box, select the drive letter you wish to associate with the new file system.

Disconnecting a Currently Mounted File System

To disconnect a mounted file system, you can highlight the drive that you wish to disconnect and right click the mouse button to choose the **Disconnect** command.

9. Using the X Server

This chapter describes how to use the X server of X-WinPro in Multiple Window Mode, Single Window Mode, and Full Screen Mode.

Starting the X Server

You can start the X server by double-clicking on the **XSession** icon in the X-WinPro Programs' folder:

The server will be started in a default window mode (according to settings stored in the ini-file used). When the server runs, you can change current window mode by selecting an appropriate item from the server's Control Menu or by launching the XSettings utility.

Initiating Remote Login Sessions

Working with an X server typically includes the following steps:

1) initiating the remote login session;
2) starting a session manager. The first client run in a login session acts as the session manager. A useful session manager is 'xterm' or a window manager, both of which allow other clients to be run;
3) running clients;
4) completing the work with a session manager.

First of all a user has to initiate login session using the XDMCP, Telnet, REXEC or RSH method.

Note, a special case of working with clients is their starting from other X terminals without initiating remote login session on your PC. Clients have to be started with the option **-display** that defines your PC as a display.

XDMCP Method

To use XDMCP, you have to run the XSettings utility and preset the **Use XDMCP** check box to the enable state. After loading the X server, XDMCP contacts an 'xdm' process running on a host system. Then 'xdm' initiates login session as follows.

- An optional authentication procedure takes place in which 'xdm' proves to the terminal that it is authorized to manage that display.
- A session key is generated to be used for subsequent client authorization.
- A username/password is requested to authenticate the user.
- A session manager is run, typically **/usr/lib/X11/xdm/Xsession**, which is typically a shell script that ends up executing the required session manager such as 'xterm'.

When the session manager terminates, all other clients have their windows destroyed and should then terminate themselves. A new session is then initiated by 'xdm'.

Many XDMCP parameters may be redefined if required in **/usr/lib/X11/xdm/xdm-config** and **/usr/lib/X11/xdm/Xresources**. See xdm(1) for details. In particular, sites may find it useful to tailor the login window greeting in Xresources to identify the host system:

```
xlogin*Login*namePrompt: CLIENTHOST login:
```

CLIENTHOST is replaced by the host name of the system running 'xdm'.

Telnet Method

Although XDMCP is recommended for convenience, it may sometimes be necessary to start clients without it, such as when the host system software does not support XDMCP or does not have it configured correctly. In these situations, clients can be run by typing shell commands in the normal manner. To gain access to a shell, you must first log in to the host system, for example on a dumb terminal such as the system console. For convenience, X-WinPro has the Telnet virtual terminal network interface. Start the Telnet program, connect to a host and enter commands to start clients.

Rexec & RSH Method

The REXEC and RSH methods can be used for automating host access and X client startup with using the REXEC and RSH protocols respectively. You can use the **Startup** program to enter a single command and execute one on a host, or run a local startup file that will automatically start one or more X clients. If the X server has not been started, it will start.

In order to run Startup, your host system must support either the REXEC or RSH protocol.

Note: If you use Startup to start your X server, and XDMCP is enabled, the program will switch off the XDMCP startup method. This will be done because the host XDM script will most likely run before your command or file.

The REXEC and RSH session dialogs are quite similar. Both of them ask for a host name, user ID name, and command. In addition REXEC needs to know a user password.

Terminating the X Server

To terminate the X server, click on the **XSession** icon or a box at the top left corner of the X-session window and select the **Close** command from the Control Menu. Whereupon all client sessions will be terminated. To terminate individual X clients, use the client's standard terminate program command.

Note, the server can also be terminated by terminating Microsoft Windows.

A Note on Copy and Paste

A number of copy and paste commands described in this chapter resemble an X selection. In the X environment, the X selection is a buffer with a specific name which stores data you select in an X client's window.

The X selection also serves as the source for certain X-WinPro copy commands and the target for certain paste commands.

X selections are the mechanisms you can use to copy data from X to Windows or vice versa.

The name of the X selection a client uses and how it is used depends on the client. Most use the **PRIMARY** X selection, but other selections like **SECONDARY** and **CUT_BUFFER0** through **CUT_BUFFER7** are also defined. Some clients can make use of more than one X selection.

If you find that data is not being copied or pasted, X-WinPro provides the **X Selection** item on the **Options** menu. This item lets you define which X selection to use (see **The Options Menu** below).

Multiple Window Mode

This mode provides the most integrated way to run Microsoft Windows and X on the same computer. When an X client starts, it appears in a window like any other displayed by Windows. Each client you start creates its own new window on your display.

The client window's controls (i.e., its borders, Control Menu box, move window functions, etc.) are all handled by Microsoft Windows on your PC. This makes for an integrated environment where you can manipulate X client windows in the same way as the windows displayed by Explorer or any other Windows' program.

In **Multiple Window Mode**, Microsoft Windows works as a local window manager for your X clients. Since window management functions do not have to be provided via a remote host, this mode speeds up window management functions and reduces network traffic.

Functions that affect an X server as a whole are controlled by clicking the **X-session** icon.

Note, in Multiple Window Mode the **XSession** icon cannot be changed into a window, as its only purpose is to control the overall settings for X clients that appear in their own windows.

The X Client's Menu

On the X client window's Control Menu, you can use both Windows commands and menu items added by X-WinPro.

Restore, **Move**, **Size**, **Minimize**, **Maximize** and **Close** all function as with any Windows application.

The **Edit** menu gives you access to all X-WinPro Copy & Paste commands. A number of these commands specify the current X selection as the source or target of the command (see **A Note on Copy and Paste** earlier in this chapter).

The **Edit** menu presents the same set of commands displayed from the server's Control Menu in **Single Window Mode** (see **The Edit Menu** section of **X Server Commands** below), but the **Copy Rectangle** and **Copy All** commands affect only the current client's window.

Single Window Mode

This mode presents all X clients in a single X-session window. Within the window, the window management and all other functions are typically controlled by an X Window System manager you start on the host.

The X-session window itself can be sized and moved like any Microsoft Windows window.

You can use scroll bars to display all parts of the virtual screen. Pressing a scroll arrow will move the window a pixel at a time. Dragging the scroll elevator or clicking on either side of the elevator will move the window more rapidly.

Functions that affect the server as a whole can be selected from the X-session's Control Menu. This menu will be presented when you click on a box at the top left corner of the X-session window.

Full Screen Mode

This mode presents all X clients in a single root window taking up full the screen outside the Microsoft Windows graphical environment. Window management and all other functions are typically controlled by an X Window System window manager you start on a host.

For transition from the X Window System graphical environment into Microsoft Windows graphical environment, the **ScrollLock** key is used. In the Windows environment, **Full Screen Mode** displays the **XSession** icon at the bottom of your display. Functions that affect the X server as a whole are controlled by clicking this icon.

For transition from the Microsoft Windows graphical environment into the X Window System graphical environment, the **Alt+Esc** or **Alt+Tab** keys are used.

If you have used the Virtual Root box described earlier to define a virtual screen larger than your display, you can display all parts of the virtual screen moving a cursor to borders of PC's physical screen. Trying to move the cursor beyond a physical screen border results in the virtual screen moving in an opposite direction.

X Server Commands

In **Multiple Window** and **Full Screen Mode**, X server commands are displayed by clicking on the **XSession** icon.

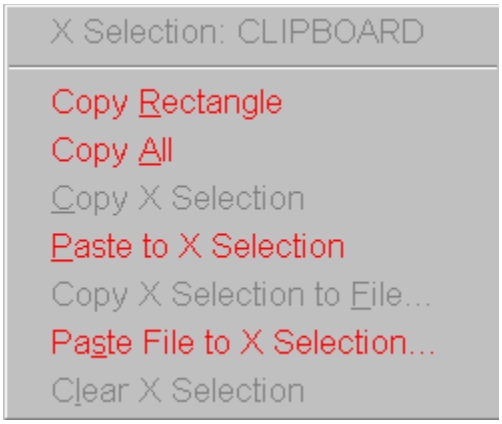
In **Single Window Mode**, X server commands can be accessed by clicking on the Control Menu box at the top left corner of the X-WinPro window.

The top of the Control Menu presents the standard Windows commands (**Restore**, **Move**, **Size**, **Minimize**, **Maximize**, and **Close**).

The bottom of the menu presents X-WinPro commands. They are described below.

The Edit Menu

When you select **Edit**, the Edit Menu commands are displayed:



All available Edit commands are described below.

The first item shows you the current X Selection.

Note: Whenever the X selection is the source or target of a copy or paste command, you can define the X selection being used with the **Options-X Selection** menu item. This item is described in **A Note on Copy and Paste** and **The Options Menu** sections in this chapter.

-
- Edit - Copy Rectangle

This command is available in **Single Window Mode** only. It copies any visible part of the X-session window. When you choose this item, a camera icon is displayed. Click at the rectangle's origin, and drag the mouse to define the rectangle. As you drag the mouse, lines will delineate the rectangle to be copied. When you release the mouse button, the selected rectangle will be copied to the Windows Clipboard. You can then save and paste this image into programs running under Microsoft Windows that support bitmap paste.

-
- Edit - Copy All

This command is available in **Single Window Mode** only. It copies all visible parts of the X-session window to the Windows Clipboard.

- Edit - Copy X Selection

This command copies text and graphics from the X selection to the Windows Clipboard. You can use an X client's selection procedure to select the data you want to copy.

Once data is in the Clipboard, you can use the Clipboard to save data or paste it into any Microsoft Windows application that supports copy and paste.

- Edit - Paste to X Selection

When you choose this command, text or graphics in the Microsoft Windows Clipboard is pasted to the X Selection. You can then use an X client's paste procedure to paste this data into an X client.

This function works for both text and graphics, although many clients do not support graphics.

- Edit - Copy X Selection to File...

This item lets you save any text that is in the current X selection to a file. When you select it, you will be prompted for the name of the file you want to save it to.

When you click OK, the X selection will be copied to the specified file.

- Edit - Paste File to X Selection...

This item lets you paste any text file to the X selection. When you select it, you will be prompted for the name of the file you want to paste.

- Edit - Clear X Selection

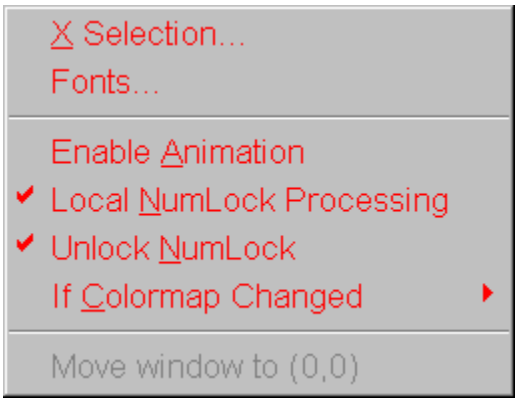
This item will be grayed unless the X server has control of the X selection.

Whenever you choose the **Paste to X Selection** or **Paste File to X Selection** commands, the X server takes control of the X Selection. You can use the **Clear X Selection** function to clear the buffer and free the memory required to maintain it.

Note: This function can also be performed by making another selection in an X client application.

The Options Menu

The Options menu controls options that affect the operation of the X server as a whole. When you select **Options**, the Options Menu commands are displayed:



All available Options commands are described below.

- Options - Full Screen

This option is available in **Single Window Mode** only. It lets you switch to **Full Screen Mode**.

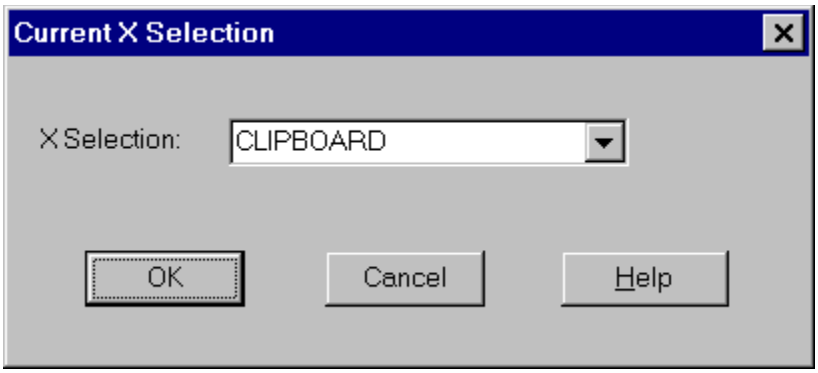
- Options - Single Window

This option is available in **Full Screen Mode** only. It lets you switch to **Single Window Mode**.

- Options - X Selection

This option determines which X selection will be used by the X-WinPro's **Copy X Selection**, **Paste to X Selection**, **Copy X Selection to File...**, **Paste File to X Selection...** and **Clear X Selection** commands.

Whenever you select this option, a dialog box will appear on your display asking you to specify which X selection buffer should be used. The current choice will appear at the top of the menu. Use the mouse to select the choice you want and then click on the OK button.



Most X applications use PRIMARY. With X clients that support SECONDARY, CLIPBOARD, or CUT_BUFFER0 through CUT_BUFFER7, you can change the X selection by selecting it from the list.

Note:You can also use the edit field at the top of the dialog box to type the name of a custom X selection. This is only useful if the name is defined by an X client. If you do this, the name will be saved and will appear in the dialog box whenever you select this option.

-
- Options - Minimize on idle

This option is available in **Full Screen Mode** only. If this option is enabled, the X server's window will be iconified each time the focus changes to another window. Otherwise, it can be obscured by other windows.

-
- Options - Enable Animation

The **Enable Animation** mode provides careful operations with colors while drawing. Note that this mode decreases performance of the X server.

-
- Options - Local NumLock Processing

If this option is enabled, the numeric keypad keys are processed by the X server depending on the NumLock key state (locally) and results are sent to X clients. Otherwise, X clients process the keys (remotely).

-
- Options - Unlock NumLock

This option corresponds to the **Unlatched NumLock key** check box in the XSettings utility's window. If this option is enabled, the X server will consider the NumLock key as a normal key (non-toggling). The NumLock key is **unlocked** by default. This option was implemented to suppress the NumLock state's influence on some X-window managers and programs.

-

- Options - If Colormap Changed

The **If Colormap Changed** menu lets you specify the X server response to the hardware colormap (Windows system palette) changes. An X client can require to install its own colormap into the hardware colormap when the user indicates that the application should be active. When this occurs, all other applications can appear in false colors. As soon as you change input focus to another X client, you expect to see right colors displayed in its windows as well as windows using the same colormap as the X client.

The X server regenerates colors of windows using a policy specified by one of the following options:

Redraw
This option causes redrawing the active X client windows as well as windows using the same colormap as the X client.

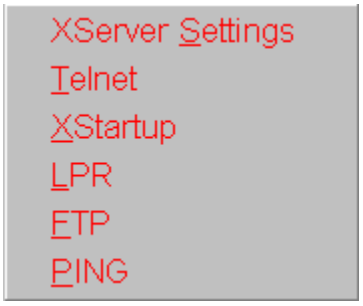
Update Colors
If you choose this option, the X server will directly update the colors in all the X client windows when you activate an application which requires to change the hardware colormap. The option provides a reasonable compromise between performance and color accuracy.

Note that this option is not supported by some video drivers.

If you do not check any of these options, the X server will do nothing to regenerate colors of windows when changing the hardware colormap. The colors displayed in all the X client windows will potentially be incorrect until the windows update their display. You can redraw all X client windows by choosing the **Refresh** or **Local Refresh** item from the X server's Control Menu.

The Run Menu

This menu lets you launch a number of X-WinPro's programs. When you select **Run**, the Run Menu commands are displayed:



XServer Settings
The XSettings utility changes information stored in the ini-file, including settings used by the X server.

Telnet
The Telnet utility starts terminal emulation with a remote system running a Telnet service.

XStartup

The Startup utility uses the REXEC or RSH protocols to access hosts and then execute commands (e.g., to launch X clients).

LPR
The LPR utility prints files on printers attached to remote hosts on your network.

FTP
The FTP utility transfers files to and from a computer running an FTP service.

PING
The PING utility verifies connections to remote hosts.

Note that you have to restart the X server after having changed any settings made by the XSettings utility (in the ini-file).

The Refresh Item

The **Refresh** option is available in **Multiple Window Mode** only. This option causes all your X clients to re-display their windows.

The Local Refresh Item

The **Local Refresh** option lets you re-display all your X clients' windows locally (by the X server, not X clients).

The Restart Xserver Item

This option lets you restart the X server with closing all your X clients and re-reading the ini-file used for the current X-session (that stores all X-WinPro's settings). The default ini-file is **xwinpro.ini**.

The Messages Item

The **Messages** item displays server related information and error messages.

The About Item

The **About** item displays information about your X-WinPro package.

The Help Item

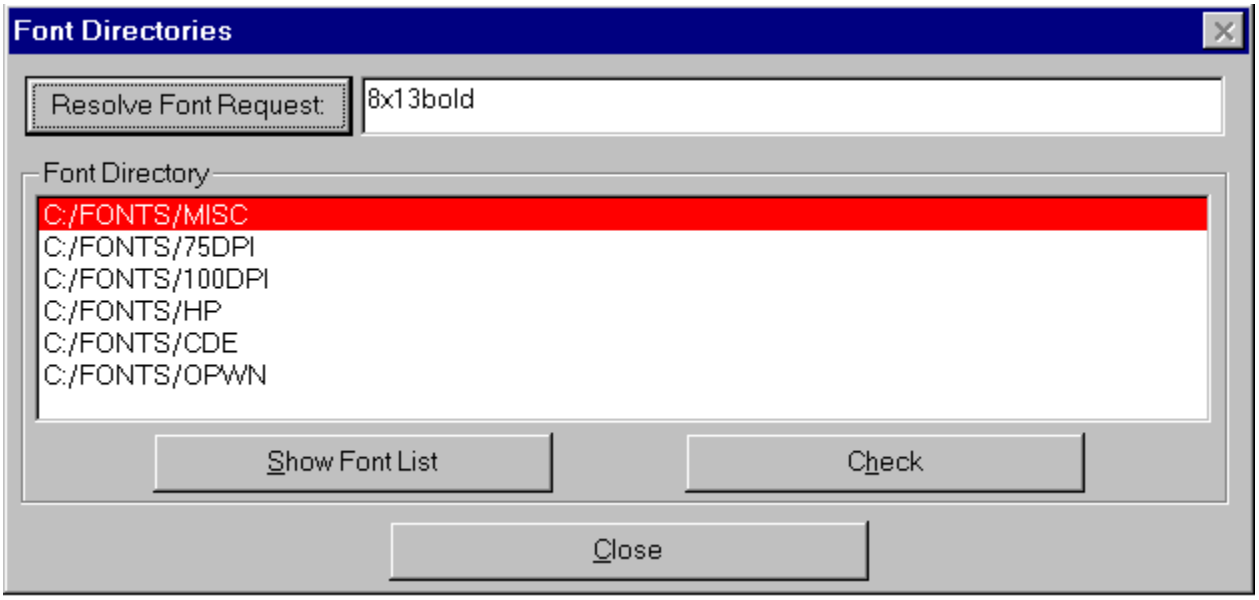
The **Help** item displays the on-line help text of this chapter.

The Readme & Ordering Info Item

The **Readme & Ordering Info** item uses Notepad to display the **readme** file.

The **Fonts** item allows you to view fonts accessible for X clients in the current X-session. You may use this item instead of 'xlsfonts' (with any options) and 'xfd' X clients.

When you click the **Fonts** item, the **Font Directories** dialog box will appear.

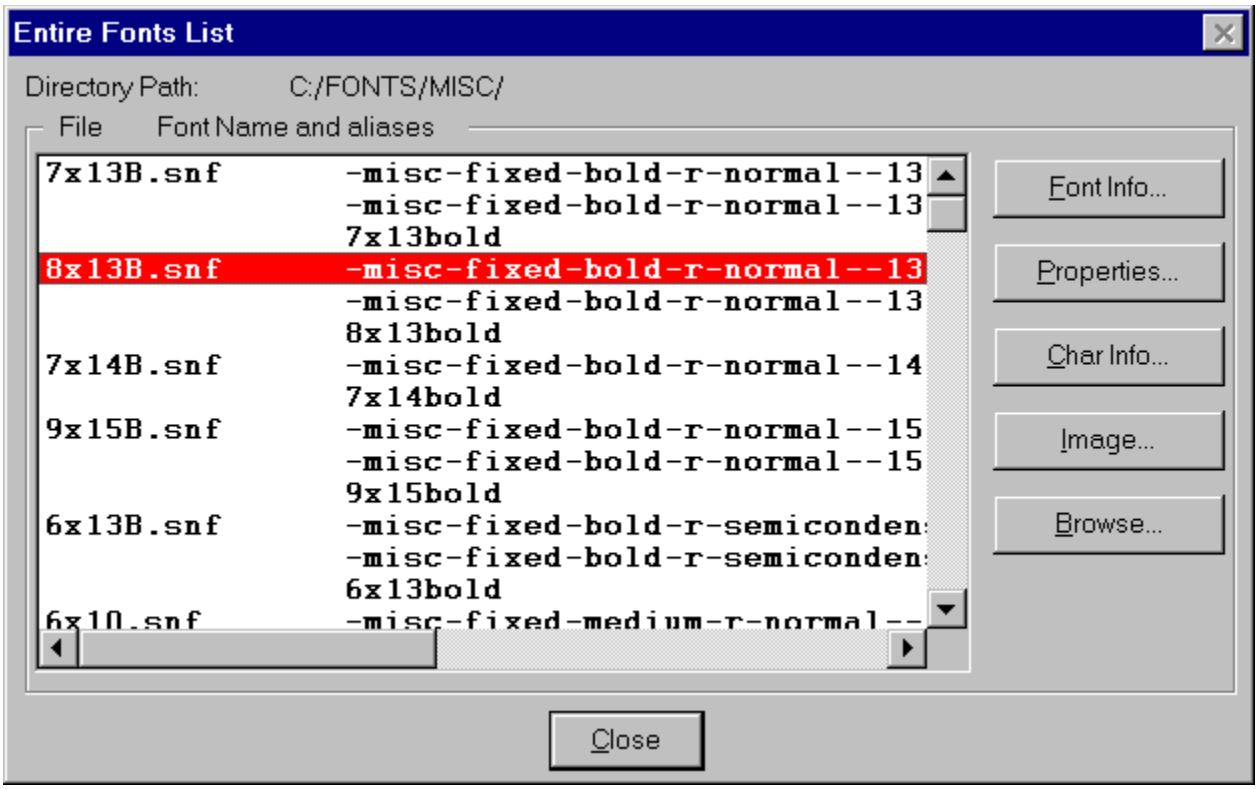


This dialog box shows Font Directories listed in Font Path. You may change Font Path in the **XSettings** dialog.

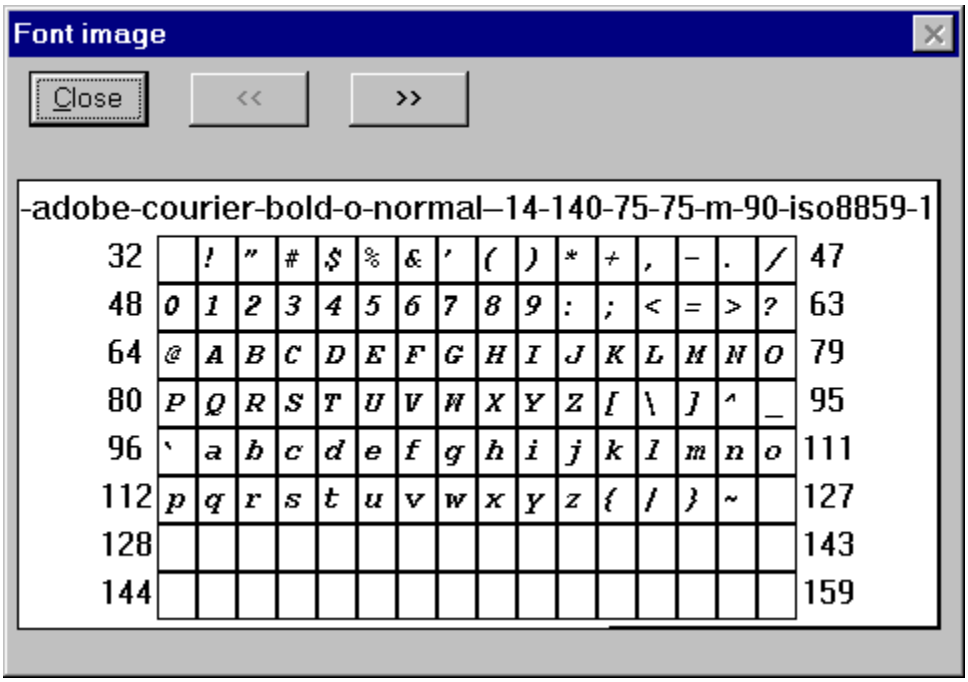
You may check how the X server resolves the particular X client's font request by typing the requested font name in the edit control and by pressing the **Resolve Font Request** button. The program will show Font Directory and Font File corresponding to the requested name.

You may check any Font Directory by pressing the **Check** button. The program will notify you about detected unresolved font aliases and unresolved references to font files in this Font Directory. It might be useful after making any manual changes in Font Directory.

You may list font names in any Font Directory by pressing the **Show Font List** button or double-clicking on **Font Directory**. The **Font Directory** dialog box will appear.



This dialog box shows font files and corresponding font names and aliases. For any font selected, you can view **Font Info**, **Font Properties**, **Character Info** and **Character Images** by pressing the corresponding button. To find a particular name in a long list, you may use the **Search** button.



Note that you cannot view the font which is hidden by the similar font name in Font

Directory preceding in Font Path. To view and use such a font, you should place its directory first in Font Path.

If you plan to use Windows Fonts in the X-session, press the **Pseudo fonts** button in the **XSettings** dialog box to choose Windows fonts and assign aliases to them. This action means creation of Pseudo Fonts. You may compile Pseudo Font into X11 format and save it in any font directory for later use. You may also create Pseudo Font directly in the X-session on particular X client's font request. To enable this, switch on the **Use pseudo fonts** and **Create pseudo on X client request** modes in the **Pseudo Fonts** dialog box of the XSettings utility. Pseudo Fonts created in the X-session become accessible only after its restarting. See the **Font Control** chapter for more details.

Running XServer with Command Line Parameters

You can launch the X server (and begin X-sessions) with command line parameters:

xserver.exe -xini <IniFilePath>

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

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

In order to do so, you can create a new X-session shortcut (for example, in the X-WinPro Programs' folder) and fill in the **Target** edit field in its properties with your command line parameters. By default, this field contains the X server's call without parameters, in which case the **xwinpro.ini** file will be used.

To create your specific ini-file, you can copy the **xwinpro.ini** file and then change parameters with the XSettings utility as you wish by starting it with the same command line parameters (see the section **Running XSettings with command line parameters** in Chapter **Configuring X-WinPro**).

Note: Simultaneously running X-sessions must use different Display Numbers.

Note: When launched from the Run menu, the XSettings utility reads the same ini-file as the X server does.

10. Telnet

This chapter describes how to start and use the Telnet program supplied with X-WinPro.

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 Windows 95 computer, the foreign host must be configured with the TCP/IP program, the Telnet server program or daemon, and a user account for the computer running Windows 95.

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.

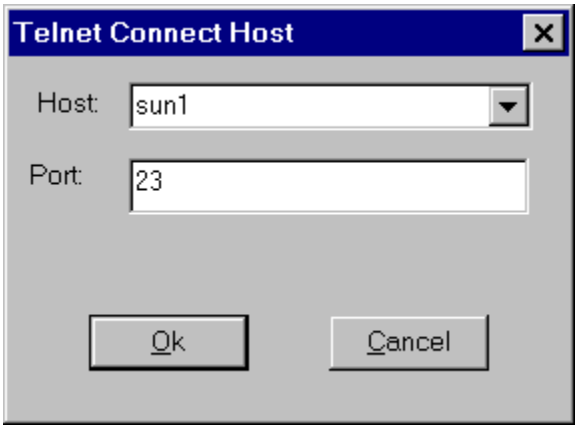
By using the Keyboard Mapping option, you can load, change (re-define keys and create a new keyboard layout), and save any keyboard definition file.

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.

Starting and Terminating Telnet

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

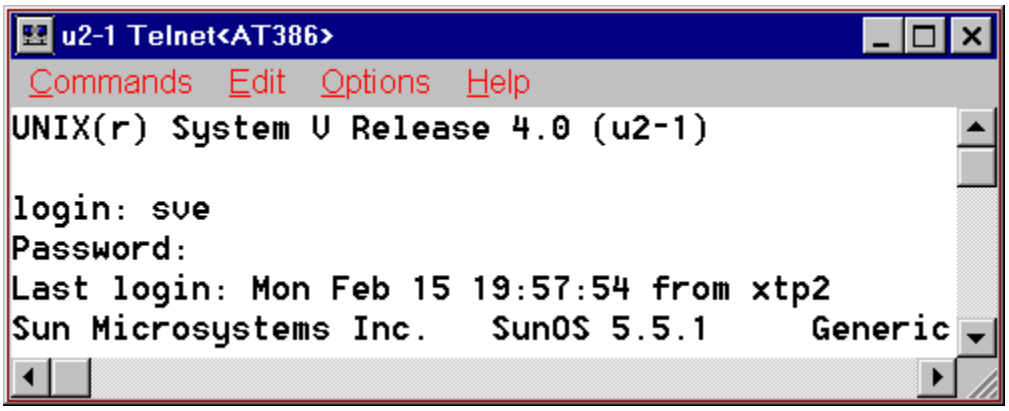
The **Telnet Connect Host** dialog box will appear on your display:



Host specifies the host name or IP address (network node specification) of the remote system you want to connect to. **Port** specifies the remote port you want to connect to. The default value is specified by the 'telnet' entry in the **SERVICES** file. If no entry exists in the **SERVICES** file, the default connection port value is decimal 23.

Enter the network name or address of the host you want to connect to, then change the default Telnet port number if required, and press OK. 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.

Once you connect to a host, the host name or 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:



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 clients.

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.

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).

Telnet Menu Options

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

The Help Menu

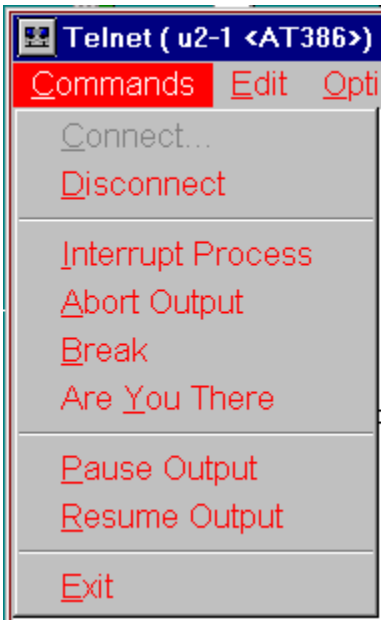
The **Help** menu contains the following menu commands:

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 to the 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 to the 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 to the 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 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.

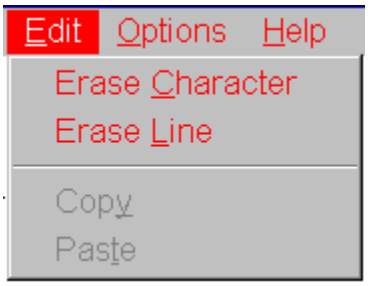
Pause Output
This command pauses output (it sends **Ctrl+S** to the host). The **Resume Output** item then becomes active and can be selected.

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 <char1> BS <char2>...

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

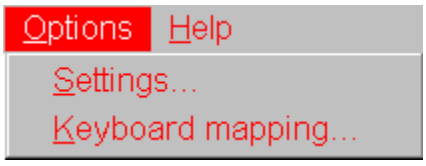
To copy text onto the Clipboard, leaving the original text intact and replacing the previous Clipboard contents, select the text you want to copy, and choose **Copy**. This command is unavailable until you have selected text.

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.

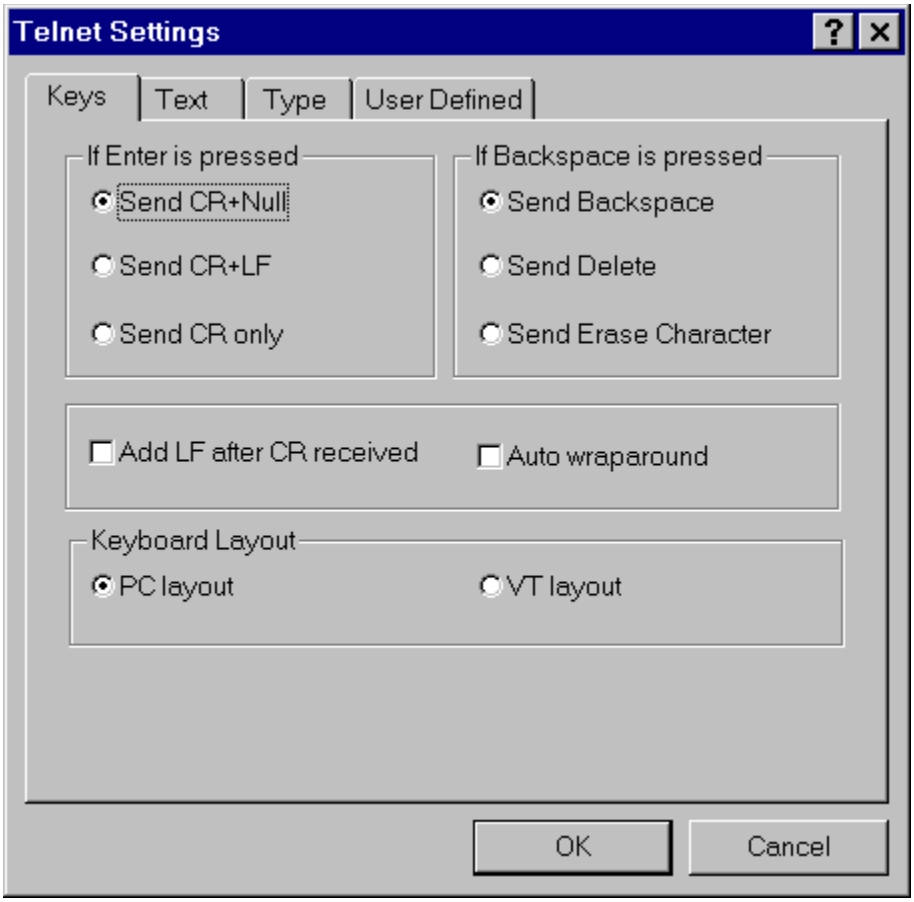


The Settings Option

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.

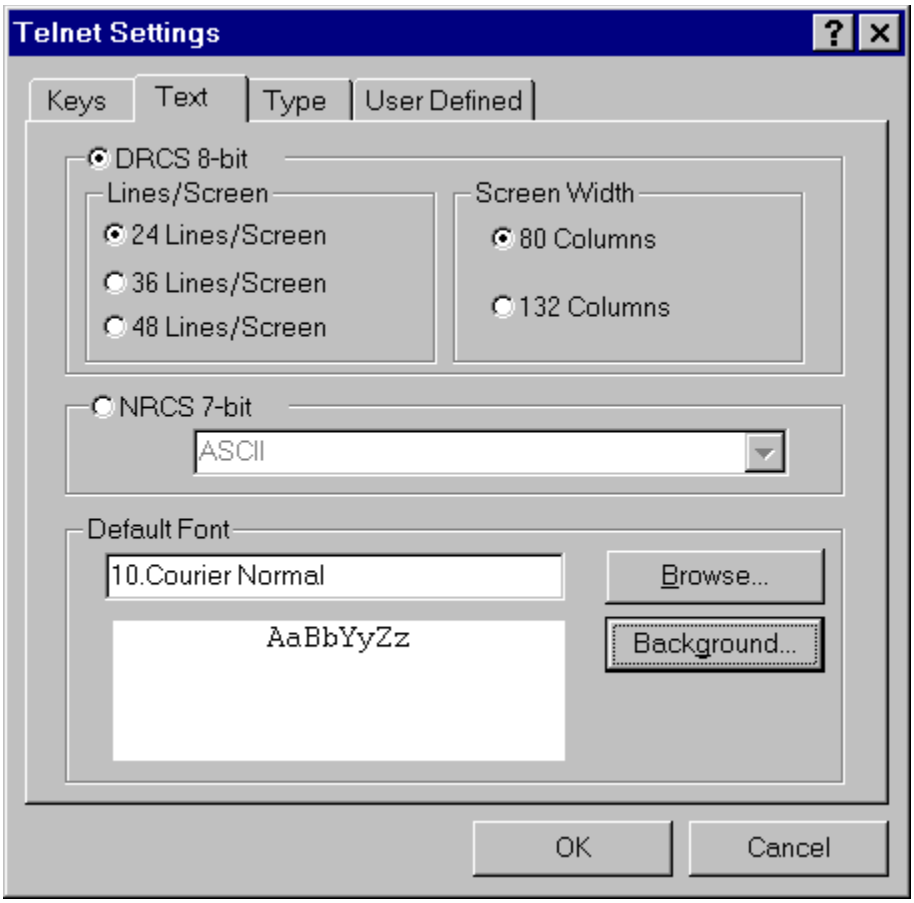
If Backspace is pressed
Options in this group box specify whether the **Backspace** key will be interpreted as **Erase Character**, **Backspace**, or **Delete**.

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. Otherwise, input is stopped so you cannot enter more characters.

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

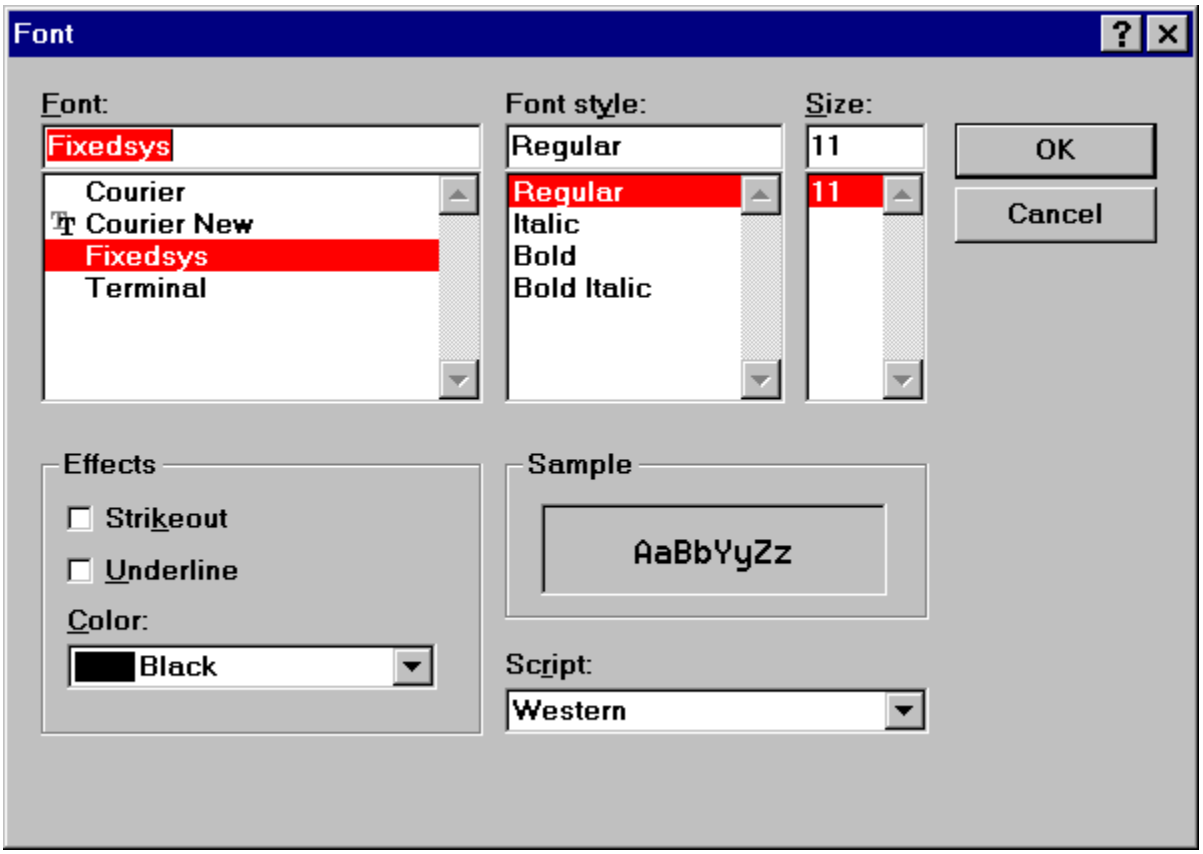
In VT100 mode, VT52 mode, or when **7-bit NRCS characters** is selected (through Set-Up or the DECNRCM command), only ASCII, NRC sets, and DEC Special Graphic characters are available.

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.

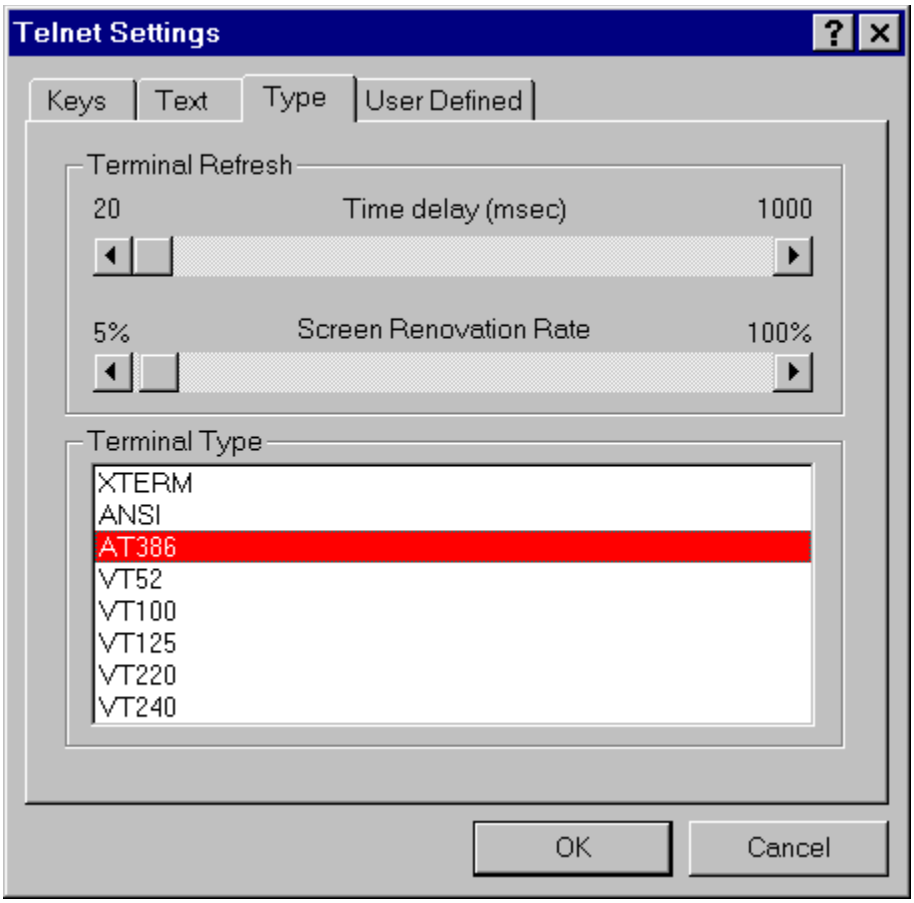
Effects
In the **Effects** group box, choose **Strikeout** to put a dash through every letter on the screen, or choose **Underline** to underline all the text.

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.

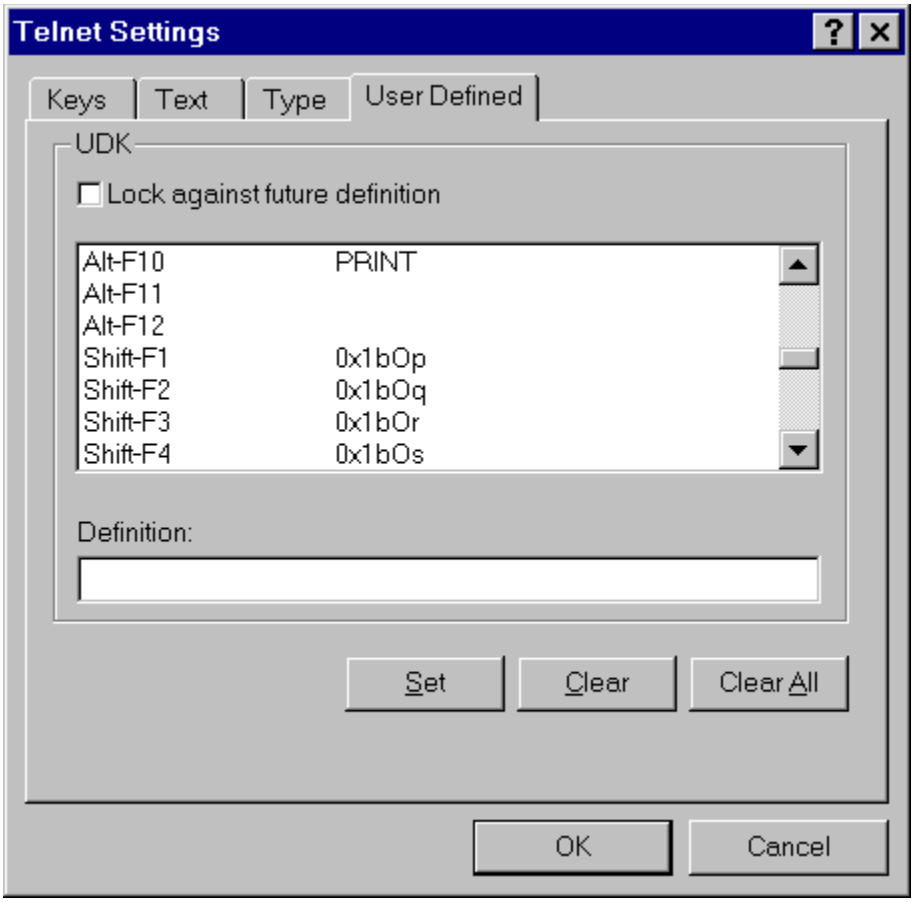
The **Screen Renovation Rate** parameter sets the ratio (5%...100%) of screen changes (e.g. characters entered or modified) to full screen that defines when the screen area modified will be re-displayed.

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 Windows 95 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, 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 X-WinPro's programs in the XSettings utility's window.

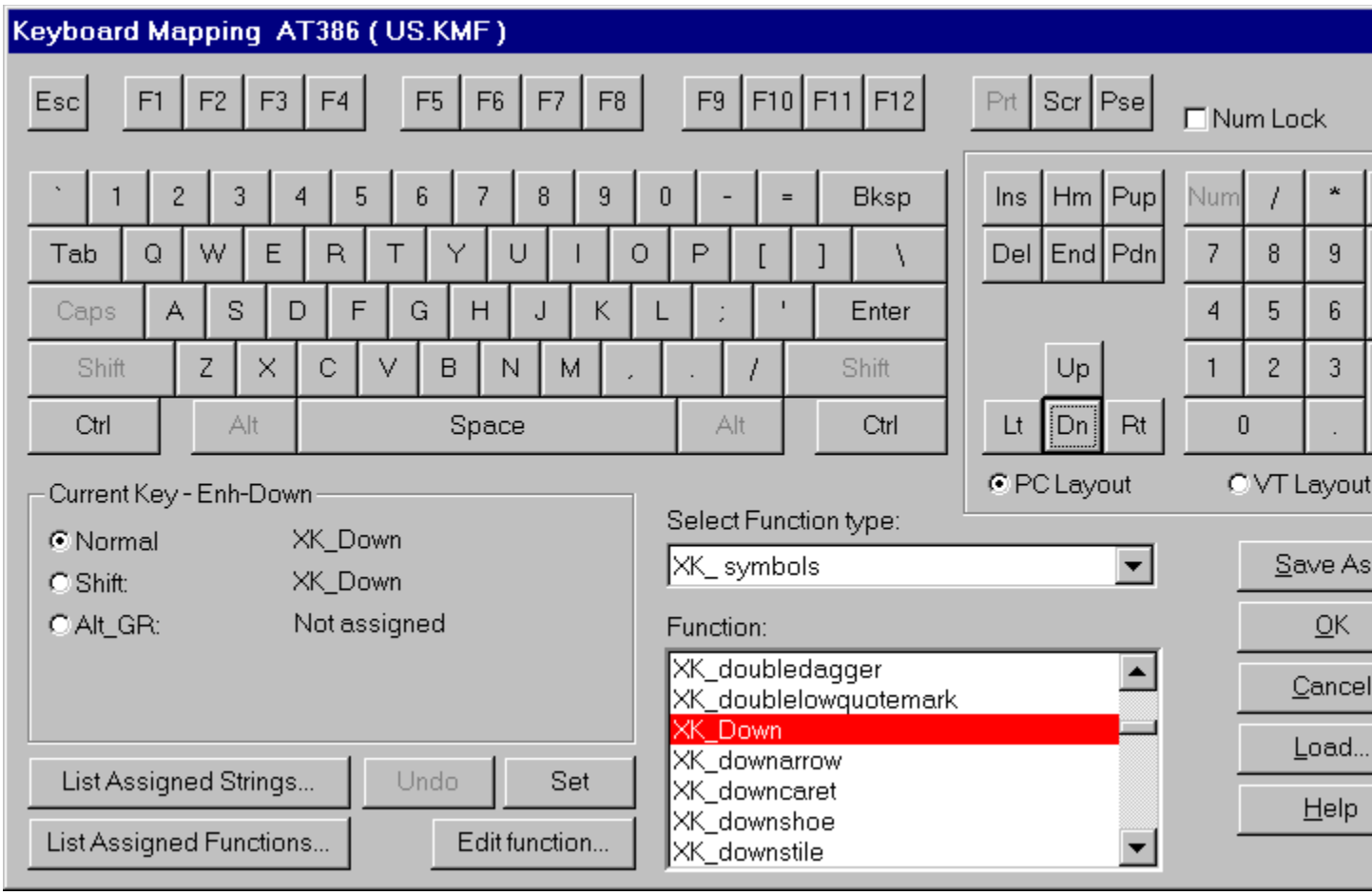
The keyboard mapping file format uses scancodes which allow the terminal to transmit **make and break** codes for each keystroke corresponding to the hardware scan codes used by PC keyboards (scan set 1). **Make** means when the key is pressed; **break** means when the key is released. The Keyboard Mapping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

The **Keyboard Mapping** dialog box allows you to map either 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.

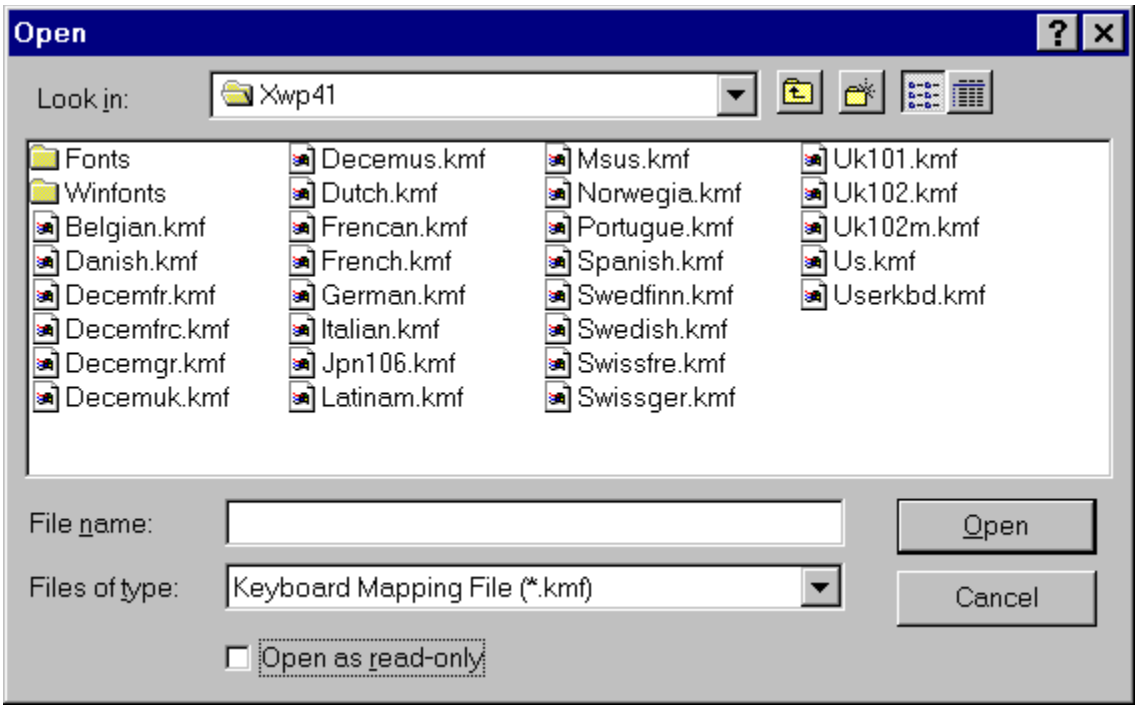
On the **KeyPad** group box, the KeyPad layout is shown according to the **PC Layout** and **VT Layout** radio buttons states. You can toggle between them to change the KeyPad layout.

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 either 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**

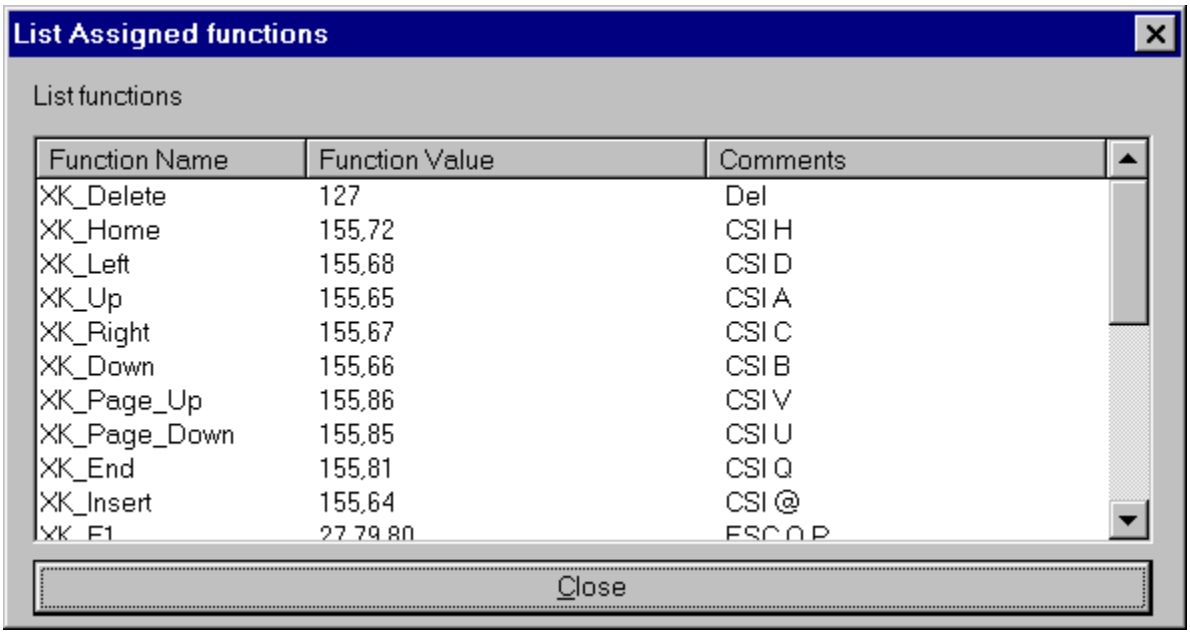
Key group box to the new value (according to the radio buttons' states).

Undo

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

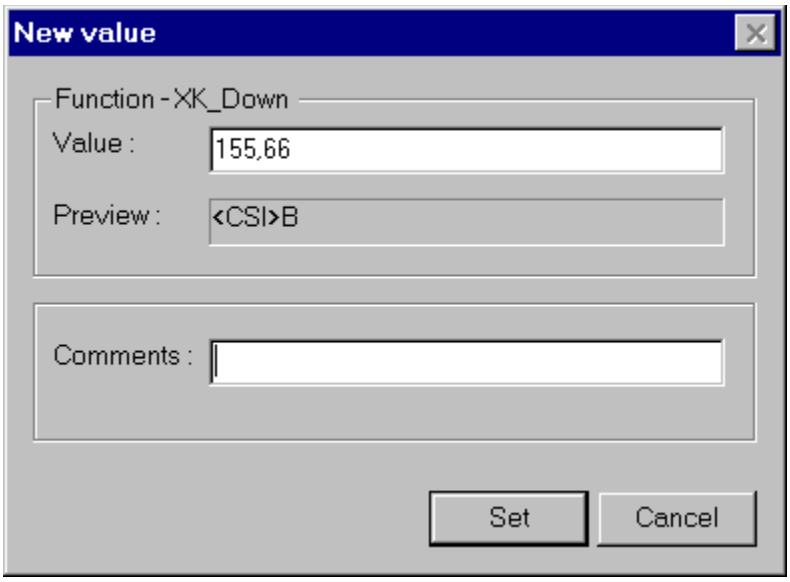
List Assigned Functions

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.

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.

11. Startup

This chapter describes how to use the Startup application supplied with X-WinPro.

Startup is a program for automating host access with using the REXEC or RSH protocol. You can enter a single command and execute one on a host, or run a local startup file that will automatically run remote commands.

In order to use Startup, your host system must support either the REXEC or RSH protocol. Besides, you need to know the following information about any host you want to connect to:

1) For REXEC startup, your user ID name and password.

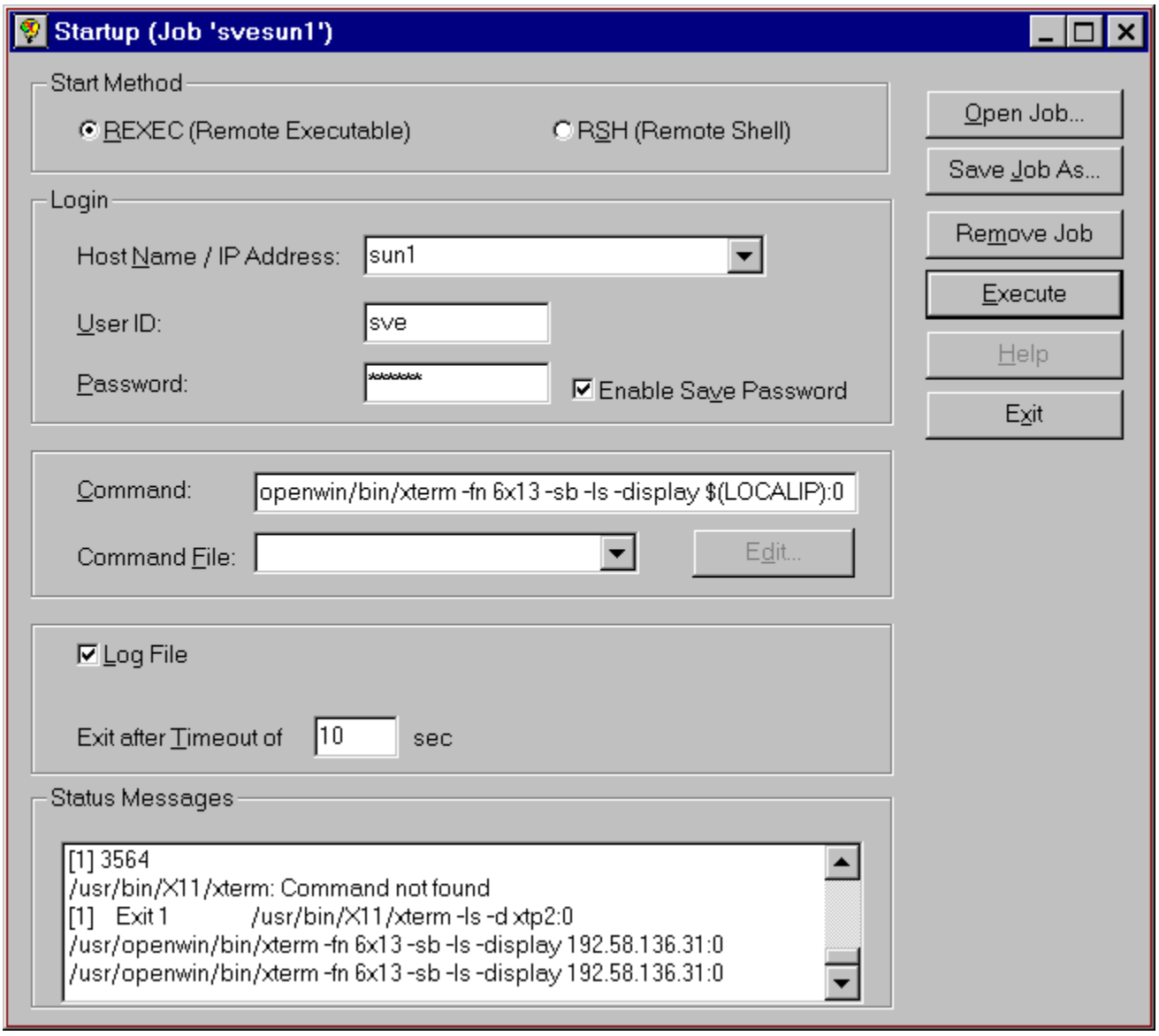
2) For RSH startup, your user ID name. Some hosts require your PC to be authorized before using RSH, as it does not require a password. On UNIX systems, you need to add your PC name to the host's **hosts.equiv** file in the **/etc** directory.

3) Either the network name or address of the host.

Starting and Terminating Startup

You can start the Startup program by double-clicking on the **Startup** icon in the X-WinPro Programs' folder:

The **Startup** window will appear on your display:



You can then enter information required to run remote commands into the window (see **Entering Startup Info** below).

Once you have done this, you can execute commands or run startup files on a host as it described in the next section.

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

Running a Startup File

A startup file consists of a sequence of executable commands on the host. Use your text editor to create the file in the X-WinPro's home directory. All startup files have to have the **.SU** extension.

In order to execute instructions in any startup file, specify a name of the file you want to run and press the **Execute** button (see the **Command Box** section below).

Command/File Execution

When you execute a command or startup file, the following takes place:

- The login information in the **User ID**, **Host**, and **Password** fields will be used to make a connection.

- The command in the **Command** field or in the startup file will be sent to the host with the name or IP address specified in the **Host** field. If the command starts a client, the client session will commence. The initial socket will be closed after the amount of time specified in the **Exit after Timeout of** field.

- If **Log file** has been checked, host or command messages will be saved in a log file for the amount of time specified in the **Exit after Timeout of** field.

Entering Startup Info

This section describes the Startup fields you can use to select or enter proper parameters to run remote commands.

The Start Method Box

The first thing you should select is the **Start Method**. Initially **REXEC** is selected. If you click on **RSH**, the **Password** field will be grayed.

The Login Box

The **Login** box lets you enter information required to log onto a host. If your start method is set to **RSH**, the **Password** field is disabled.

HostName/IP Address
This field defines a name of a host you want to connect to. You can enter either the network node name of the host or its network address. When you click on the scroll arrow beside the **HostName** field, a drop-down box will display host definitions being in your **hosts** file. To select a host, click on an appropriate definition.

User ID
This field is where you enter your **User ID** for the host you want to connect to.

Password
This field defines your password for the **REXEC** startup method. When you enter your password, an asterisk will appear for each character you type in.

Enable Save Password
If this check box is disabled, then you will be prompted to enter a password each time when it is needed.

The Command Box

The **Command** box lets you enter information required to execute a command or to run a startup file on the specified host.

Command
This field is used to enter a command that will be sent to a host or to specify a startup file you want to run. The command you enter depends on your host system and how it is set up.

UNIX C Shell Command
If you have defined all necessary environment variables in the C shell resource file (i.e., the **.cshrc** file), then you can simply enter a command. For example, to start **xterm**:

```
xterm &
```

UNIX Bourne Shell Command
Because the Bourne shell startup file (i.e., the **.profile** file) will not be invoked when the Startup program logs onto the host, it is recommended that you include the **path**

and **display** variables on the command line. For example:

path/xterm **-display** mypcname:0 &

where **path** is the location of the **xterm** on the host, and **mypcname** is the network name or IP address of your PC.

Note that you can use $(LOCALHOST), i.e. the macro for the network name or IP address of your PC, in a command or a startup file. For example:

path/xterm **-display** $(LOCALHOST):0 &

To execute a command entered in the field, click on the **Execute** button.

Command File

This field is used to specify a startup file you want to run on a host or edit it.

When you click on the scroll arrow beside the **Command File** field, a drop-down box will display all startup files stored in the X-WinPro's home directory.

In order to execute instructions in a startup file, select from the box or enter into the field a name of the file you want to run, enter the **@** sign into the **Command** field, and run the file by pressing the **Execute** button.

Another way of specifying a startup file is to enter into the **Command** field a file name preceded by the @ sign, for example **@mystartup.su**.

Edit

When you press on this button, the Microsoft Notepad is invoked and the startup file specified in the **Command File** field will be opened. This lets you view or modify the file before running it.

Log file

When you enable this option, whenever you execute a single command or a startup file, any startup or error message information that the host or client would normally display will be sent to a file. The log file resides in the X-WinPro's home directory. The file's name differs depending on how you execute commands.

- If you execute a single command entered into the **Command** field, all log information will be saved in a file called **startup.log**.

- If you run a startup file, the log file will be saved as *filename***.LOG**, where *filename* is the name of the startup file.

Information will be sent to a log file for the amount of time specified in the **Exit after Timeout of** field, after which the socket will be closed.

Exit after Timeout of

This field defines the amount of time the socket will stay open after the host connection has been made. The default value is of ten seconds. If the connection gets established but the invoked program does not get time to start up, you can set this to a higher value.

Status Messages

Whenever you execute a single command or a startup file, any startup or error message information that the host or client would normally display is sent to the box.

Startup Jobs

A job is a named task with a certain set of parameters. Job's main parameters include: start method, login information, command lines, settings.

The **Startup Job Name** list contains names of currently available jobs. You can create an icon for a job and choose a Program Group to contain these icons. By default, this is the **StartIcons** folder.

A job may be launched by double-clicking on its icon (in the **StartIcons** folder by default).

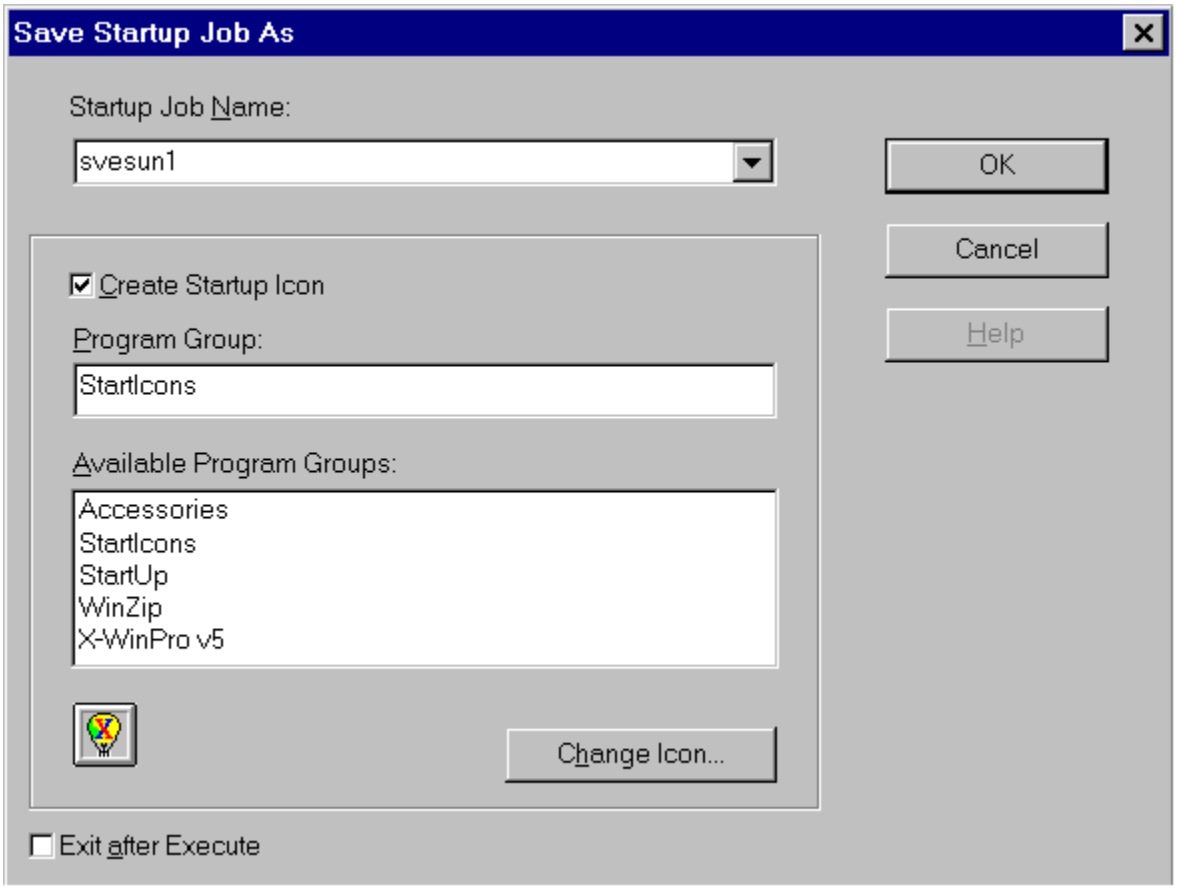
The **Save Job As**, **Open Job** and **Remove Job** buttons in the **Startup** window are for manipulating with Startup jobs.

The **Save Job As** button creates a job and adds its name to the list. The **Open Job** button opens a specified job for modifying. You may remove an opened job by pressing the **Remove Job** button.

Any changes of the **Startup Job Name** list are automatically displayed in the corresponding Program Group (**StartIcons** by default).

Saving a Job

When you click on the **Save Job As** button, it displays the following dialog box:



This dialog box allows you to create a job, i.e. to store current parameters under a certain name. If a job with the same name already exists, it will be overwritten; if it does not exist, the new job will be created and added to the **Startup Job Name** list. The displayed default icon for the job may be changed by using the **Change Icon** button.

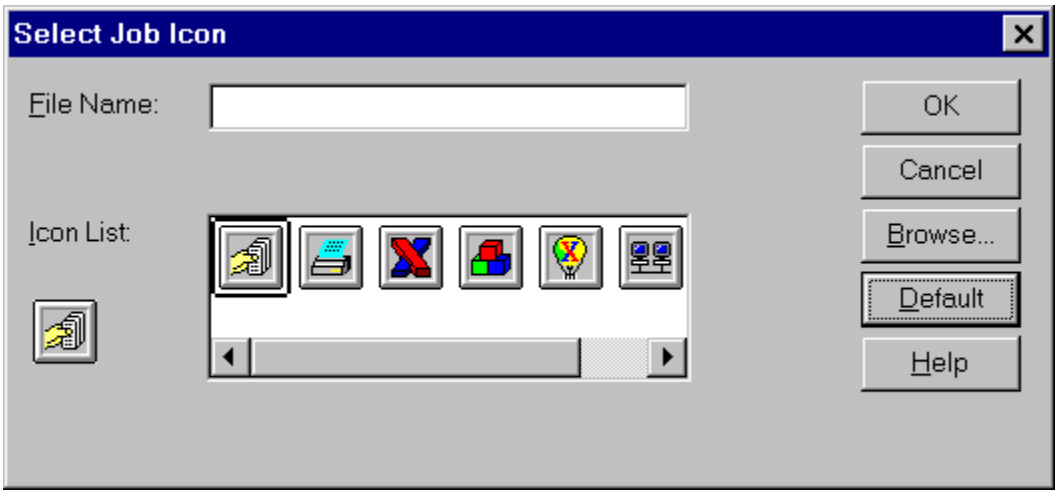
Startup Job Name
This field defines a name for the job to be saved. In the drop-down box, you can view all available job names in the list.

Create Startup Icon
If this check box is checked, then a job will be displayed in the Program Group you will choose for your jobs (**StartIcons** by default) with an icon you will specify; otherwise the job will be only added to the **Startup Job Name** list.

Program Group
This field is used to specify the group to contain your job's icons (**StartIcons** by default). You can enter a name in the field or select a name from the **Available Program Groups** field. The Program Group will first be cleared and then all jobs from the **Startup Job Name** list (marked to **Create Startup Icon**) will be moved into it.

Available Program Groups
This box lets you select a group to contain your job's icons. The name will appear in the **Program Group** field.

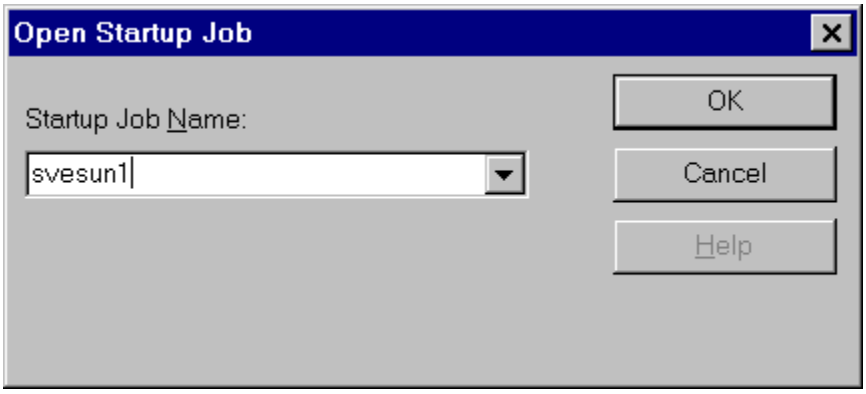
Change Icon
When you click on the button, it displays the following dialog box:



This box gives you a possibility to choose a suitable icon for the job to be saved. The **File Name** field displays a current file name and the corresponding **Icon List**. If you want to assign to your job an icon other than by **Default**, select the desired icon from the current **Icon List**. To change list of available icons, press the **Browse** button and choose a suitable icon from the **Open** window.

Exit after Execute
If this check box is disabled, then the **Startup** dialog box will stay on and you will be able to continue working on it.

When you click on the **Open Job** button, it displays the following dialog box:



This box allows you to view the **Startup Job Name** list and to select a certain job from it. After highlighting a job in the drop-down box or entering a job name into the edit field, press **OK** to open the job. Its parameters will be displayed in corresponding fields of the **Startup** window, so you can view or change them before running the job.

12. FTP

This chapter describes how to start and use the FTP program supplied with X-WinPro.

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.

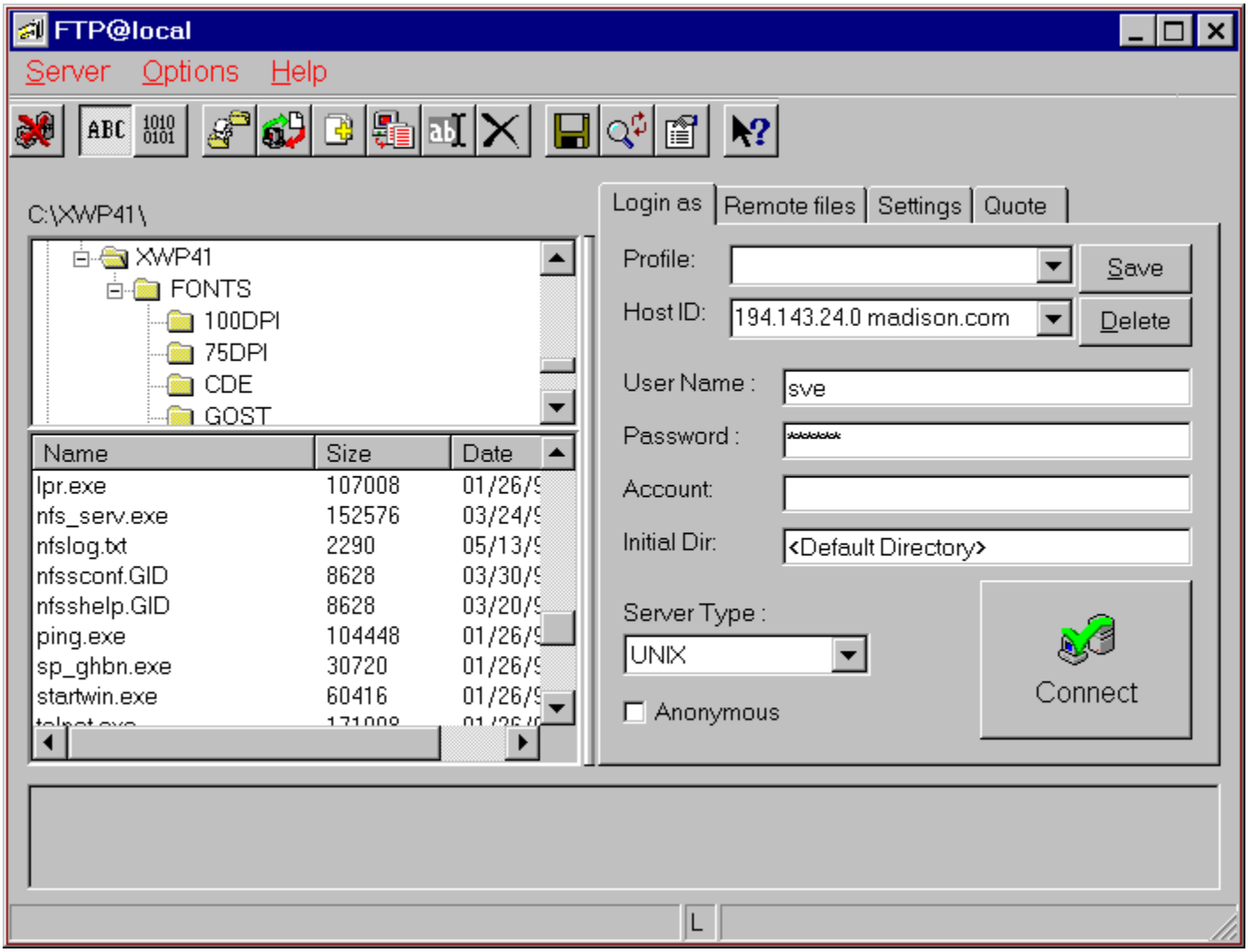
The X-WinPro's FTP must run on a machine that is configured for TCP/IP network communication or Internet access. Access can be gained through Winsock and the use of any dial-up provider, a Remote Access Server (RAS), or a direct connection via a local area network that supports TCP/IP. In order for the 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.

Starting and Terminating the FTP Program

You can start the FTP program by double-clicking on the **FTP** icon in the X-WinPro 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.

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:

- Disconnect
- 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.

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.

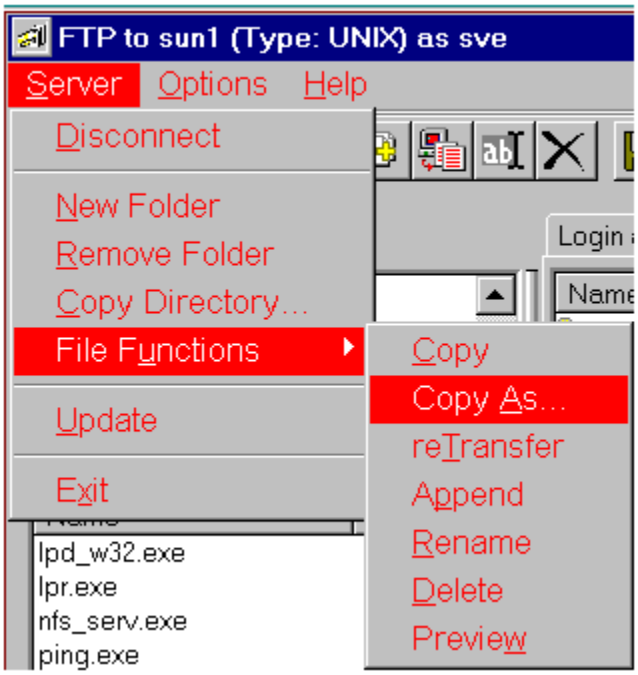
On the lower portion of the main **FTP** window, the message box displays a listing of all commands sent to the remote server and messages on how the FTP commands are executed. The log can be useful for debugging or troubleshooting purposes. You can scroll messages up and down, select them, and place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

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.

FTP Menu

The **FTP** menu bar has three menus: **Server**, **Options** and **Help**. The **Help** menu displays help information available about the FTP program. The other two are described below.

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.

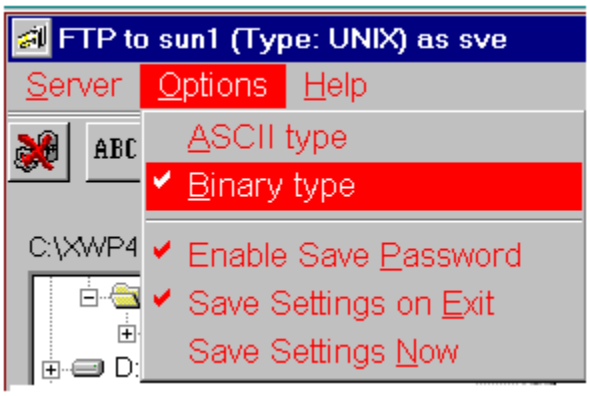
Exit
Exits the FTP program.

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

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.

How to Perform 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.

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).

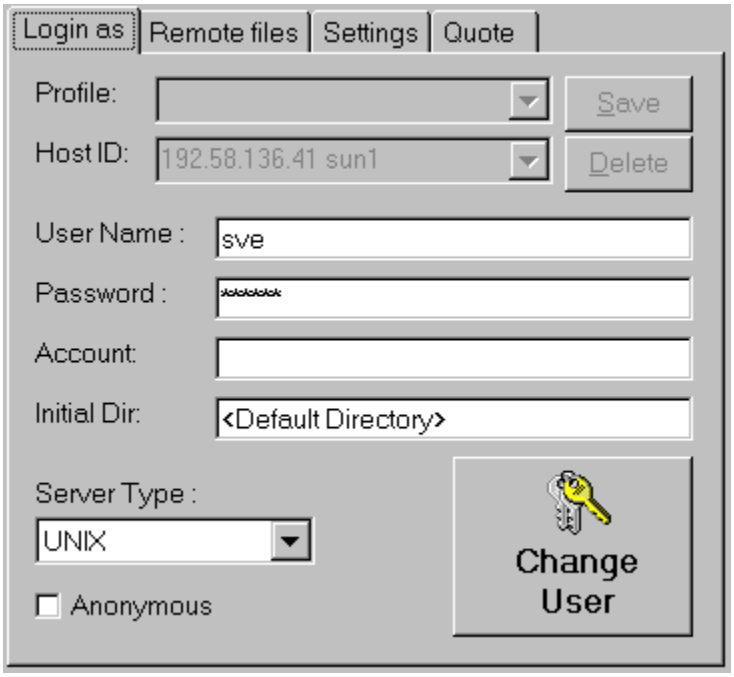
Disconnecting from the FTP Server

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.

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.

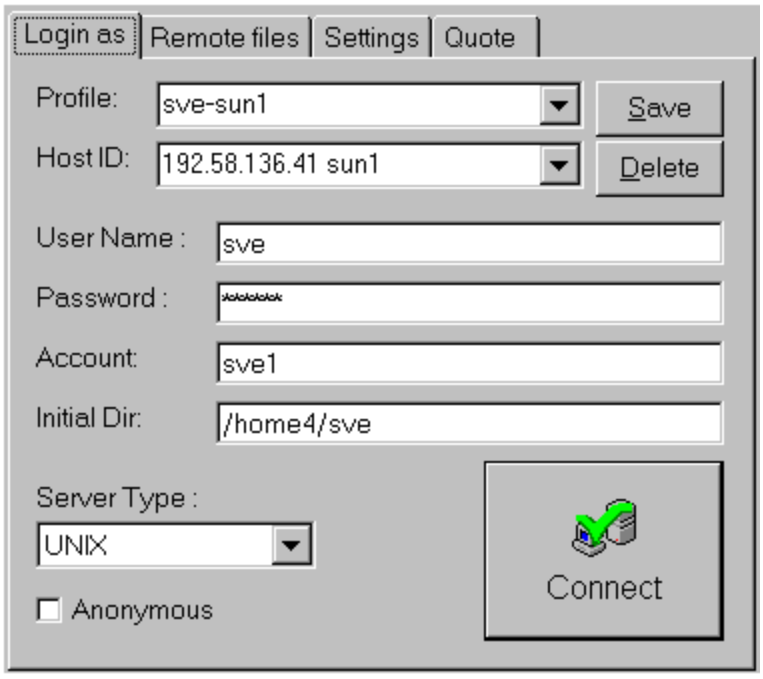
If there are problems with your Login, you will be returned to the Login dialog box and given another chance to Login. If your Login is successful, you will be returned to the FTP session.

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.

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.

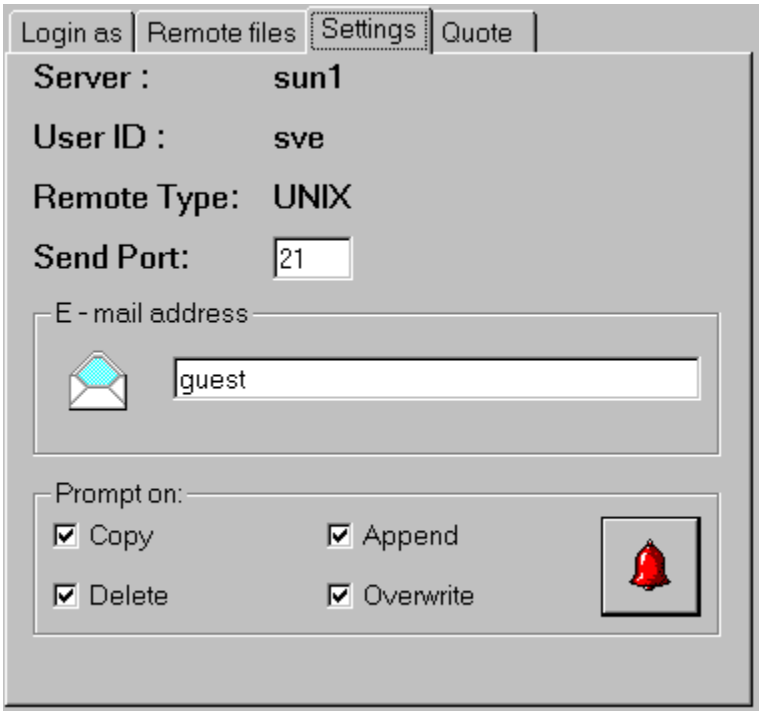
To remove a profile from the profile list, select it in the profile list box and press the **Delete** button.

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

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.

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.

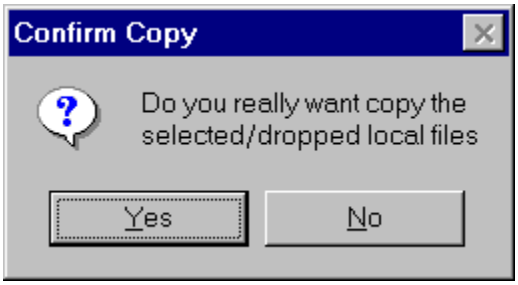
If more than one file is to be selected, you can use standard Microsoft Windows' techniques to make multiple selections (with the **Ctrl** key for individual files, or with the Shift key for agjacent files).

4) Display a destination directory to place the files.

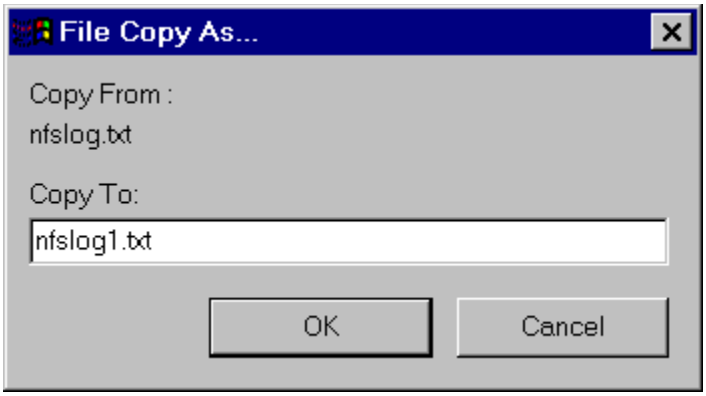
5) Verify that the transfer options be configured appropriately.

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.

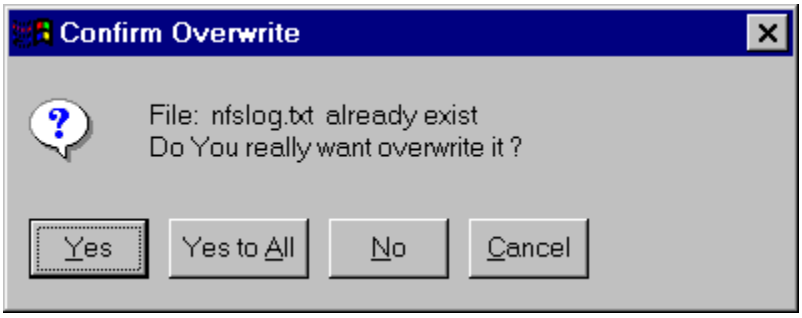


If you are doing **Copy As**, you are always prompted for a new name and the **Copy As** dialog brings up.



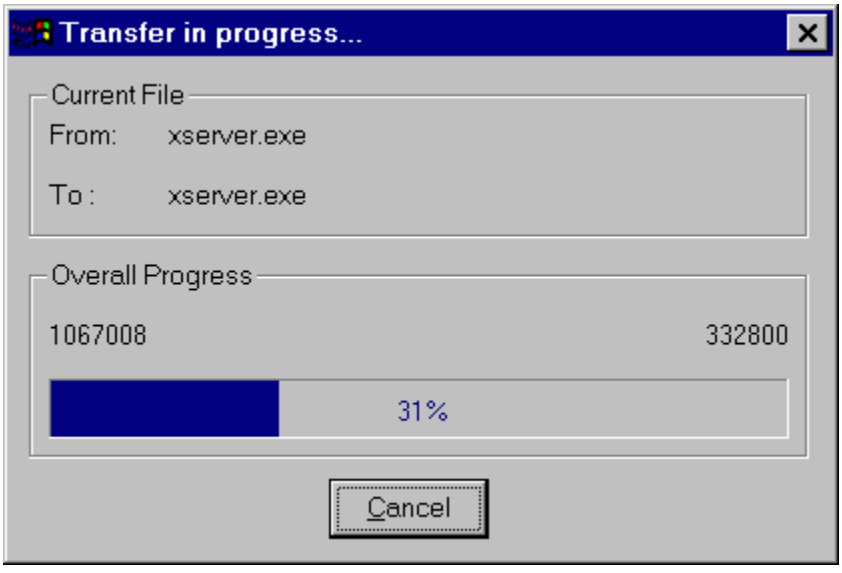
You can choose **NO** to skip copying the selected files.

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.

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.

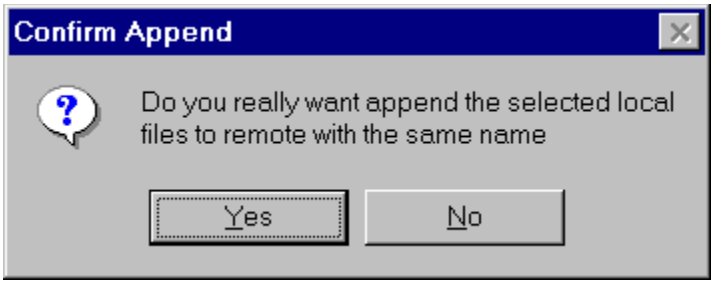
2) Select the local file by clicking on it.

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:

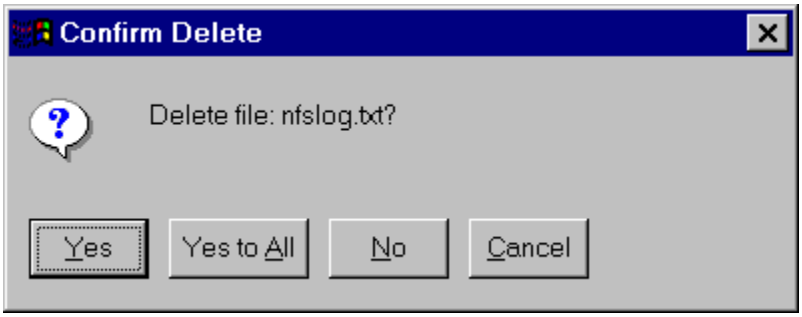
1) Navigate through either the local or remote directories to locate files of your interest in the file list.

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.

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.

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.

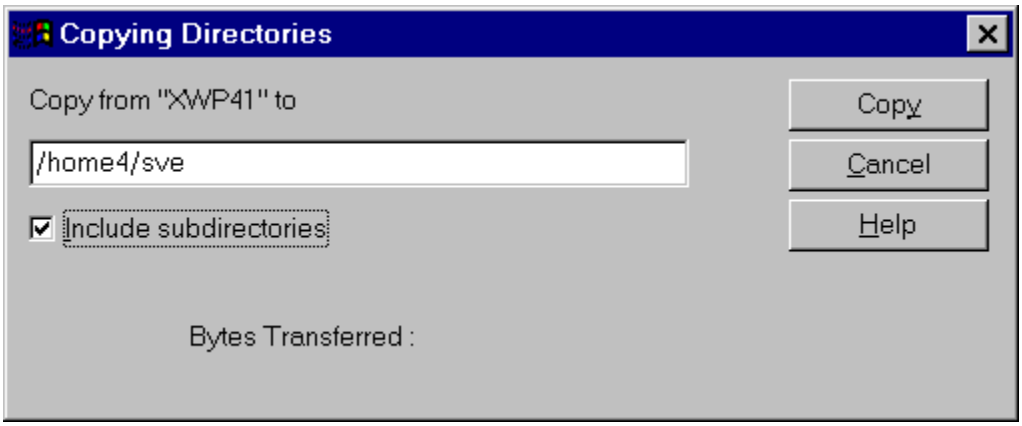
You can copy a full sub-tree structure (all files with all subdirectories) or the first-level files only.

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.

Determining What Commands the FTP Server Supports

Each FTP server can support a different subset of available FTP commands. This may cause a server to be unable to execute certain features. If you need to determine what commands your current FTP server supports, you can use the **remotehelp** command. You can also get help for any individual command.

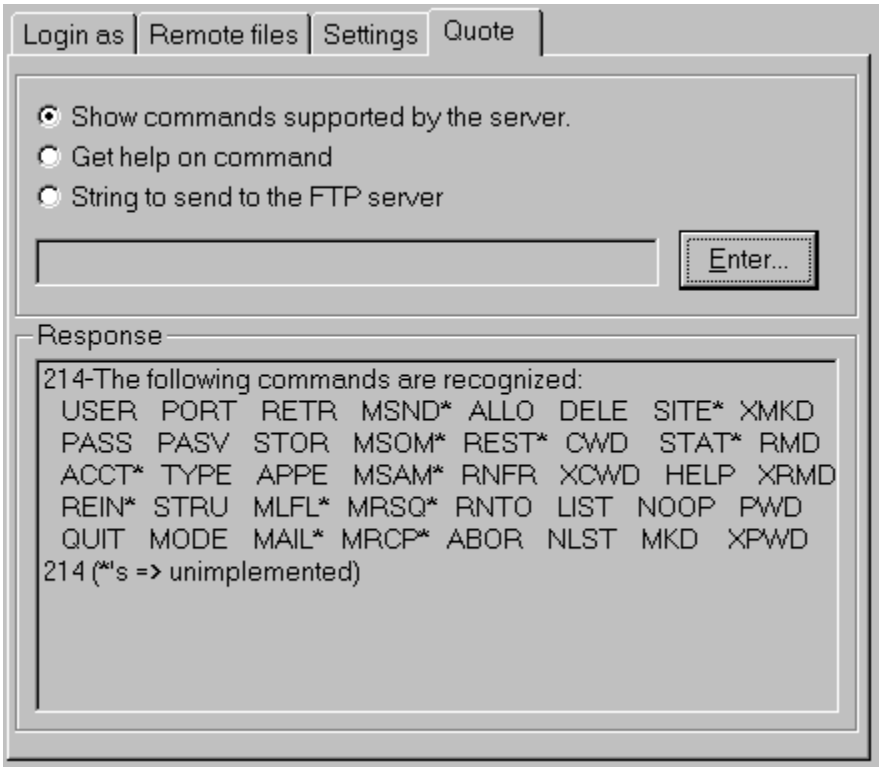
To determine what commands a FTP server supports:

1) Make sure your connection to the server is active.

2) Choose the **Quote** tab from the main TabForm.

3) Choose **Show commands supported by the server**.

4) Click **OK**. A list of commands supported by that server will be displayed.



To get help for a specific FTP command:

1) Make sure your connection to the server is active.

2) Choose the **Quote** tab from the main TabForm.

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

4) Choose **OK**. The FTP server's help for that command will be displayed.

Sending a String Directly to the FTP Server

You can enter a command directly to the FTP server. This option is only available if a server connection is active.

To send a string:

1) Make sure your connection to the server is active.

2) Choose the **Quote** tab from the main TabForm.

3) Enter the string you want to send in the input field, and press **Enter** to send it to the server. The response from the server will be displayed. (Commands that require a data connection, such as **STOR, NLST** and **LIST**, will not work with the current version of FTP.)

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

13. TFTP

This chapter describes how to start and use the TFTP program supplied with X-WinPro.

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.

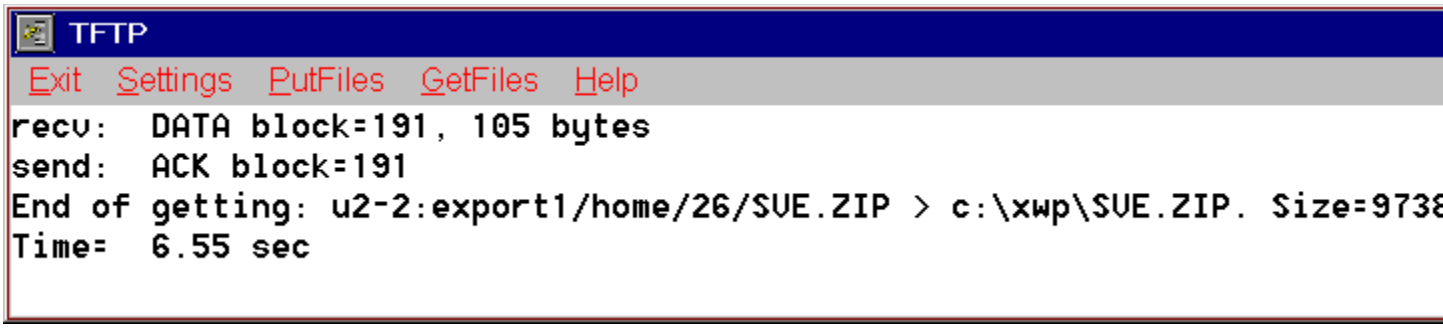
In order for X-WinPro to communicate with a remote computer, that computer must also have a server implementation of TFTP.

You can run multiple TFTP programs simultaneously in separate windows.

Starting and Terminating the TFTP Program

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

The TFTP window will appear on your screen:



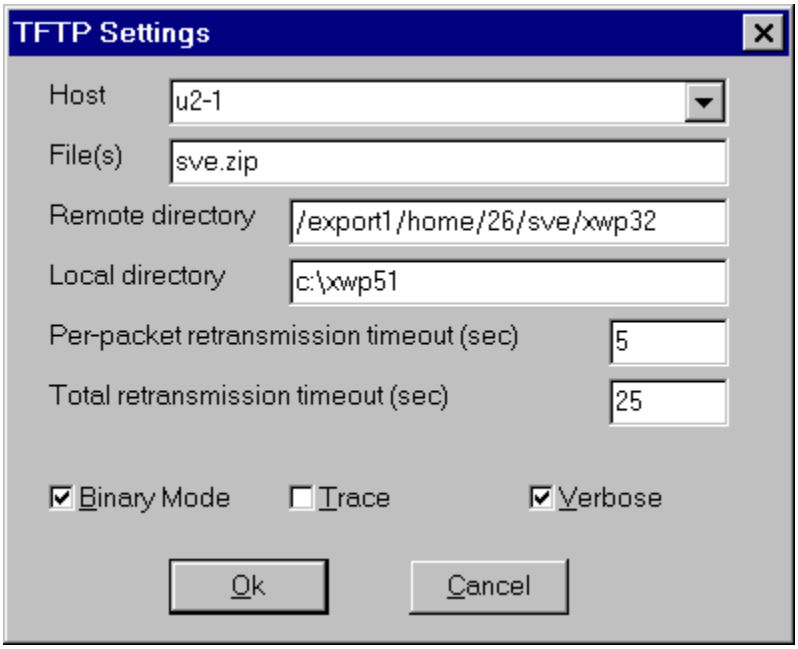
You can terminate TFTP by double-clicking on the Control Menu box or by clicking **Exit** on the TFTP menu bar.

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.

14. Ping

This chapter describes how to start and use the Ping utility supplied with X-WinPro.

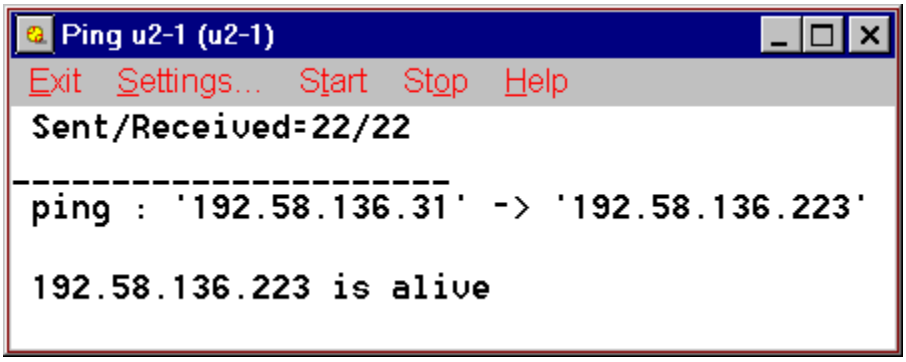
You can test that the TCP/IP transport is installed and configured correctly by using the Ping utility. Ping can isolate network hardware problems and incompatible configurations by allowing you to verify a physical connection to a remote host.

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.

Starting and Terminating the Ping Utility

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

The **Ping** window will appear on your display:



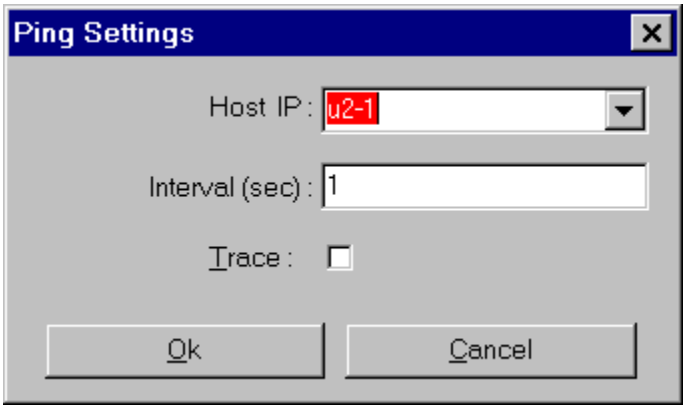
You can close the **Ping** window by double-clicking on the Control Menu box, or by selecting **Exit** on the Ping menu bar.

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 **<host> (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.

15. LPR - Remote Printing

This chapter describes how to start and use the LPR program supplied with X-WinPro.

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.

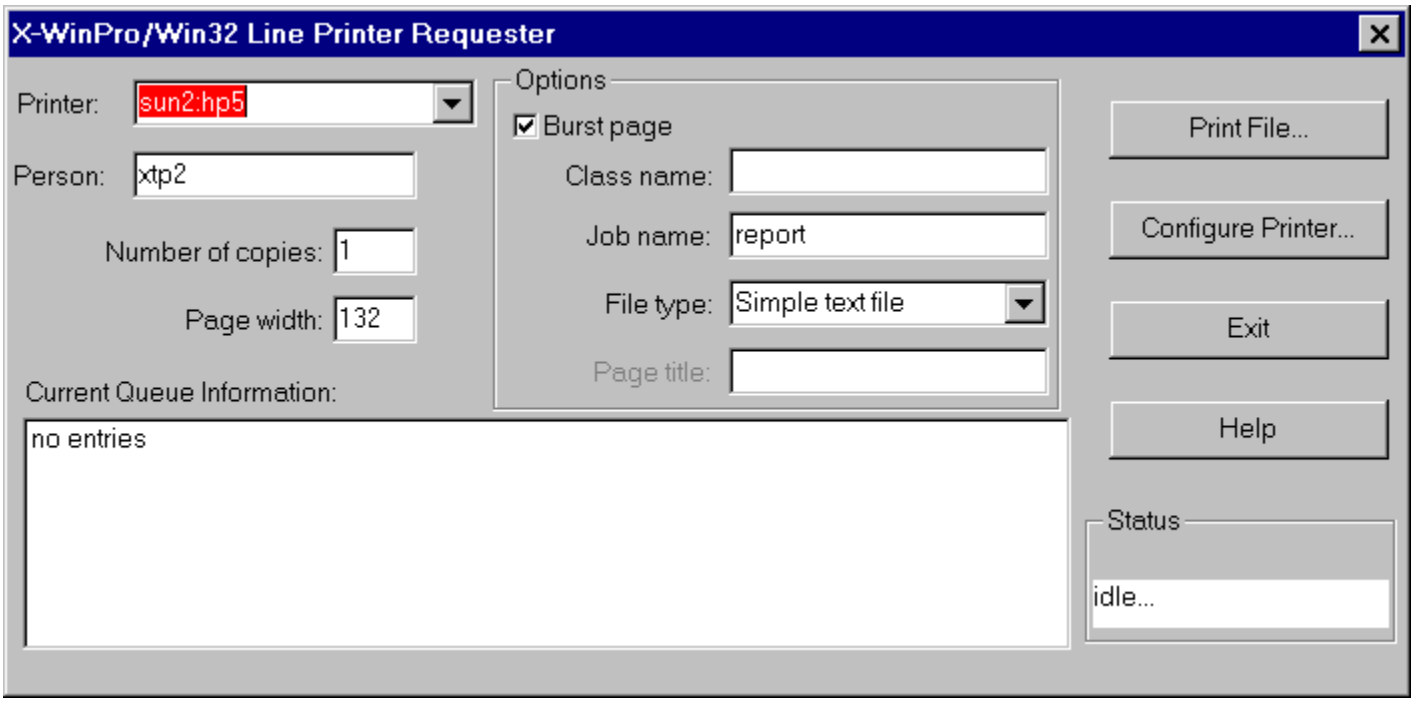
You can specify a number of copies, titles and banner pages, print one or several files residing on your PC, view print jobs in the queue, remove jobs from the queue.

You can run multiple LPR programs simultaneously in separate windows.

Starting and Terminating the LPR Program

You can start the LPR program by double-clicking on the **LPR** icon in the X-WinPro 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.

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.

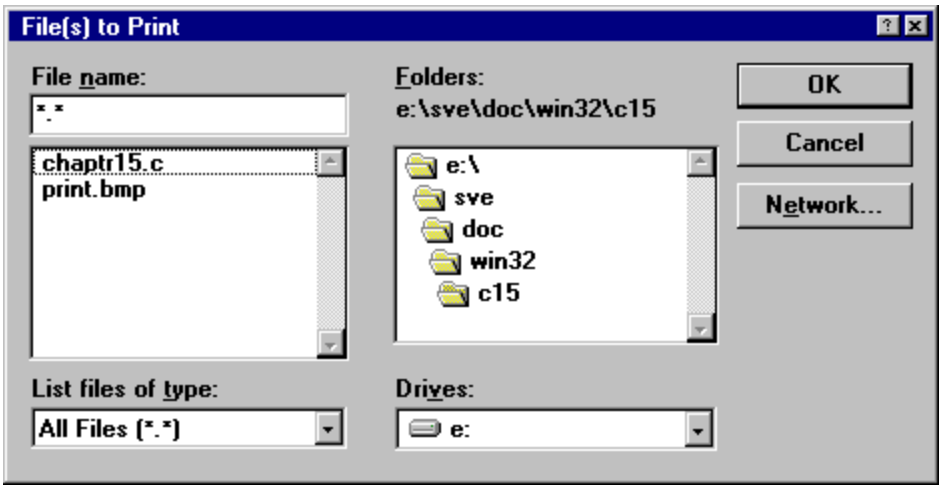
Page title
This field is used to specify the page title other than the file name. Note that there must not be any spaces within your title. You can specify the page title only if the **Pages** check box is set to the enabled state. Page title defaults to the file name unless set in the field.

Status Box

This box displays the current program status.

Printing Files

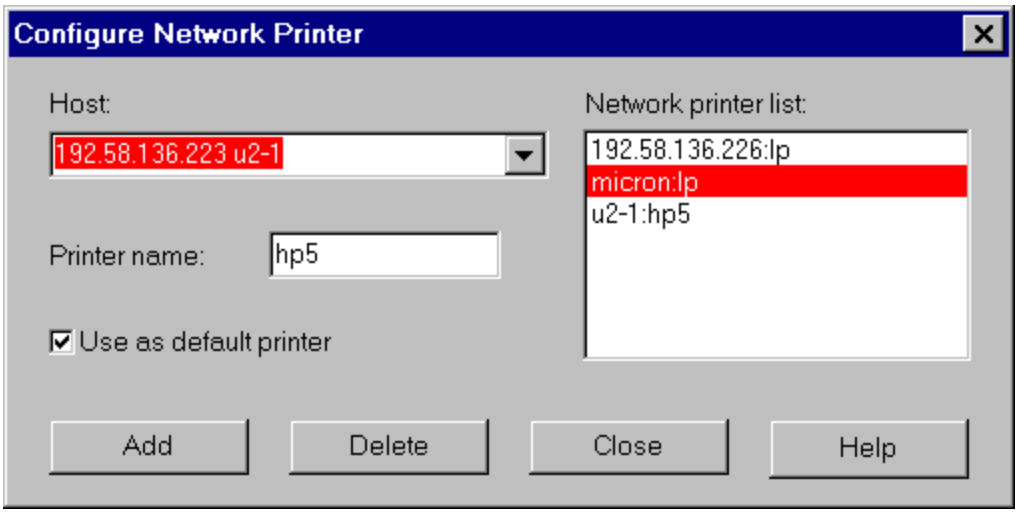
To print a file, click on the **Print File** button. The **File(s) to Print** dialog box will appear on your display:



You must 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.

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.

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.

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.

16. LPD - Network Print Server

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

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).

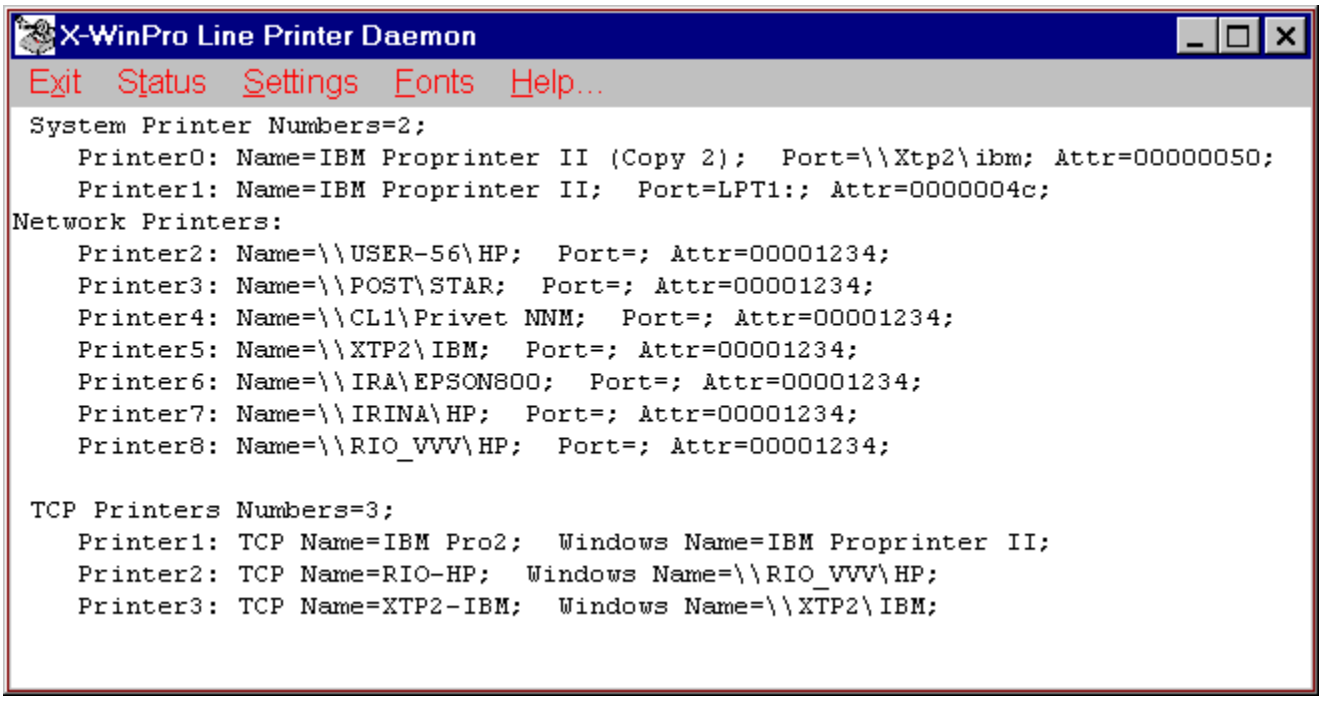
The Berkeley versions of the UNIX operating system provide line printer spooling with a collection of programs: **lpr** (assign to queue), **lpq** (display the queue), **lprm** (remove from queue), and **lpc** (control the queue). These programs interact with an autonomous process called the line printer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

Starting and Terminating the LPD Program

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

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.

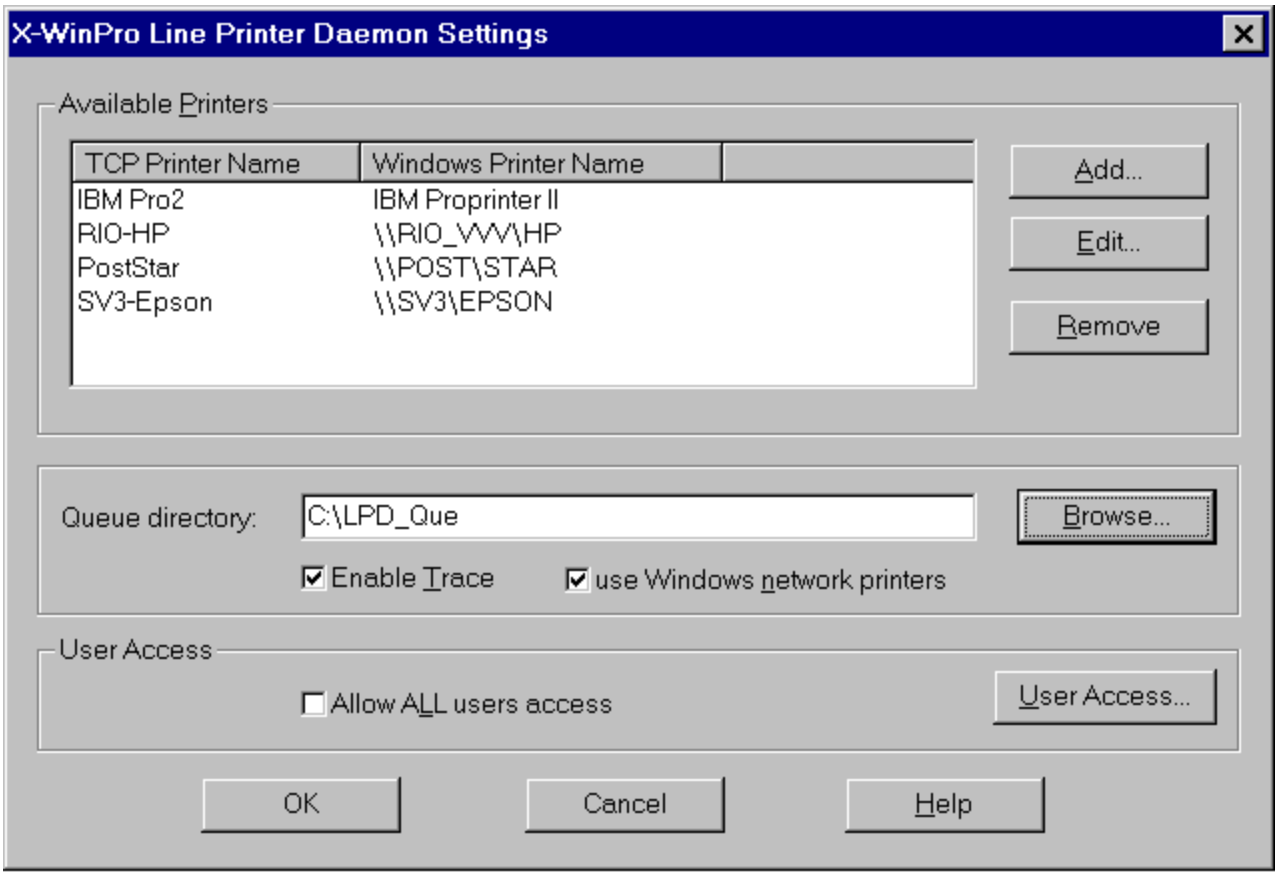
Settings
Used to change LPD settings (the printers list, queue directory and users' access).

Fonts
Used to change fonts for displaying the LPD window.

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

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.

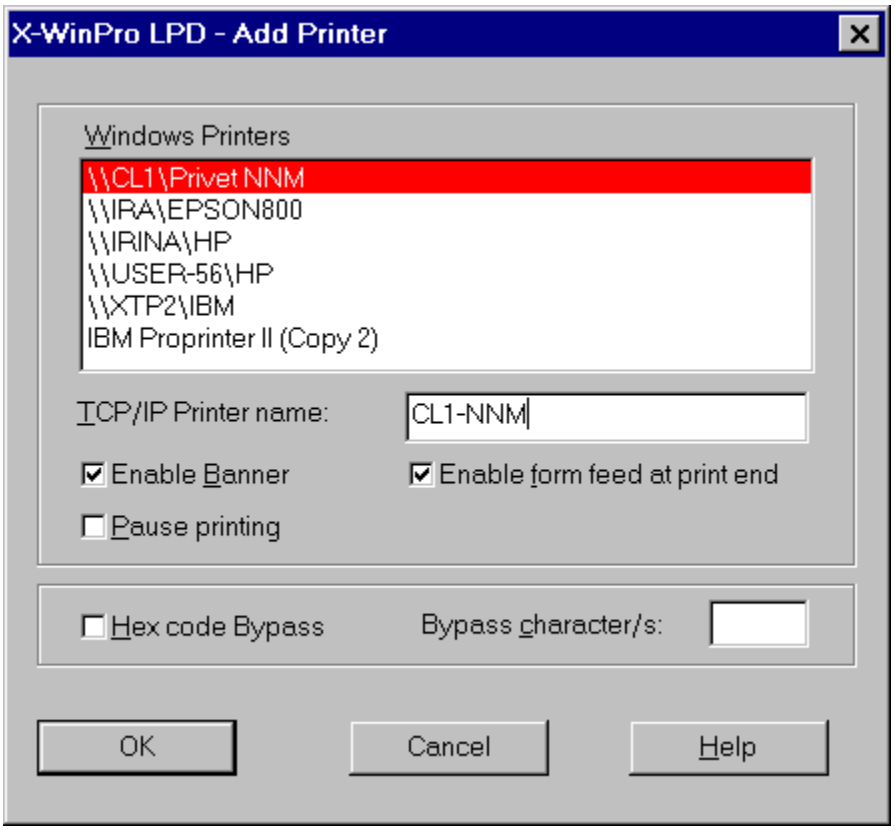
Available Printers group box

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).

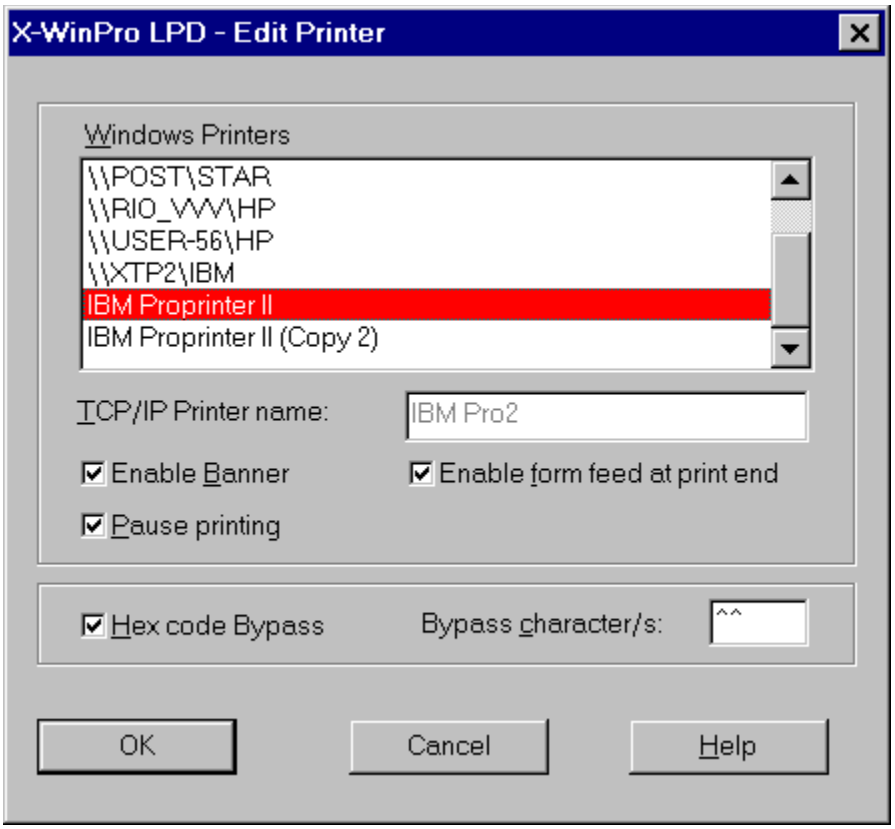
To add a new printer:

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.

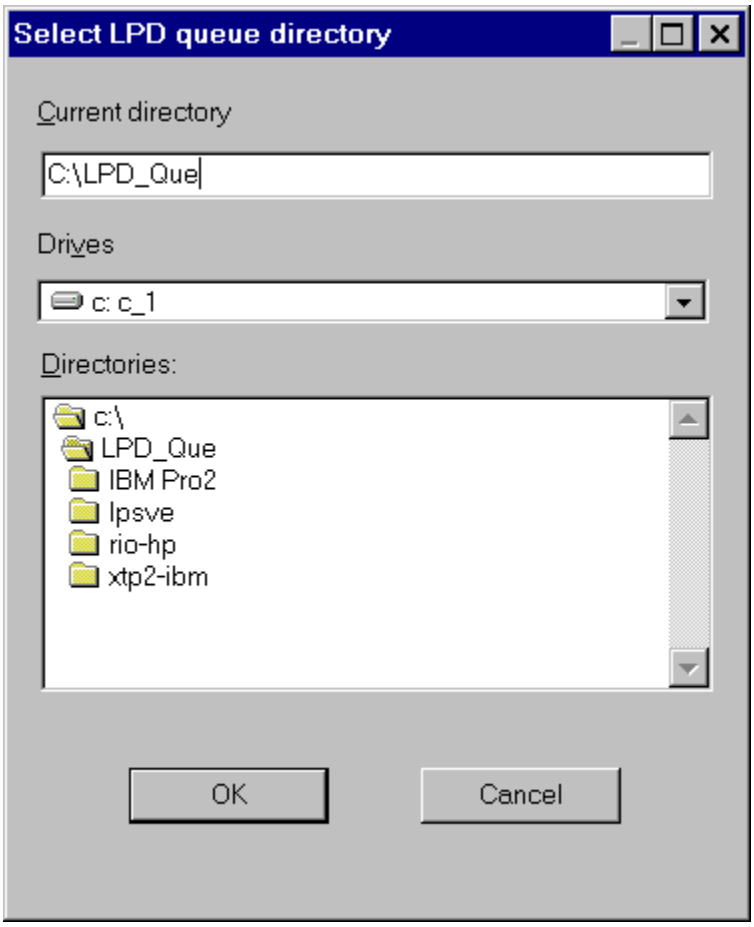
Enable Trace

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 X-WinPro'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.

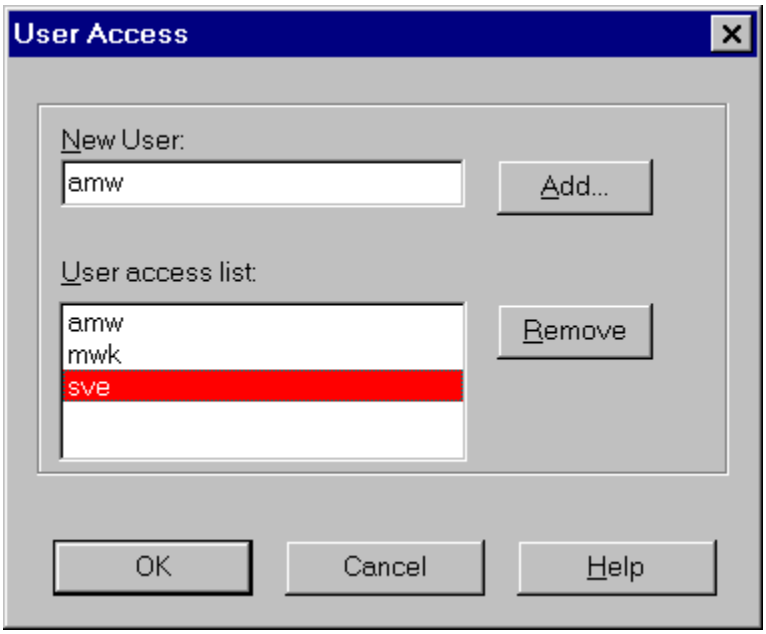
To close the dialog box, click **OK** if you wish to use the **Current directory** as the queue one, otherwise click on the **Cancel** button.

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.

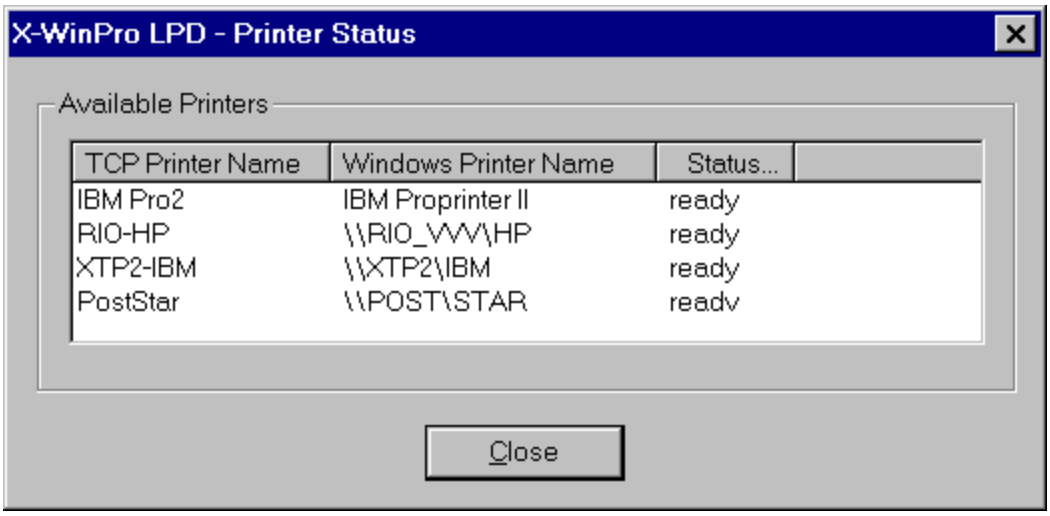
To add a new user to the **User access list**, specify the user name in the **New User** edit field and then click on the **Add...** button.

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.

Printers Status

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



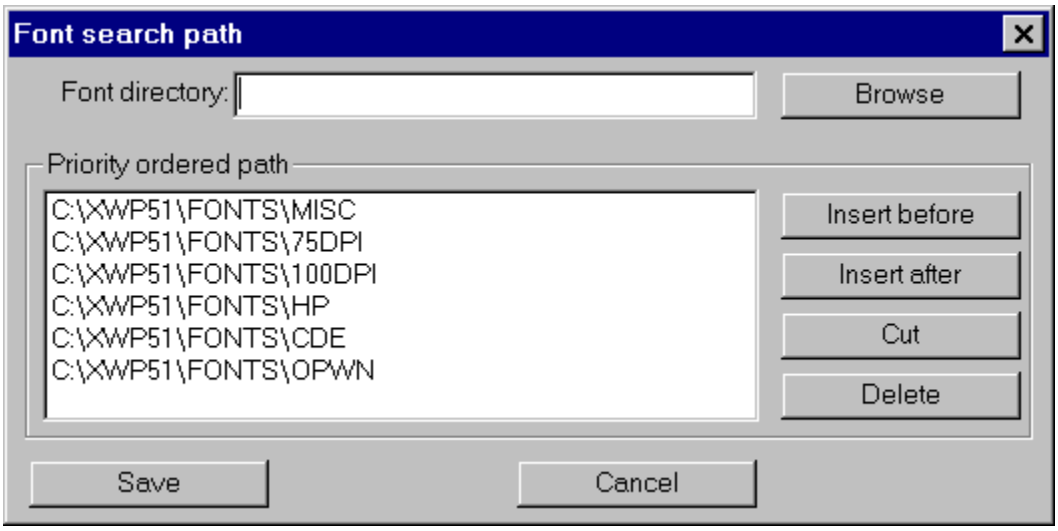
You can view current states of all **Available TCP printers** (pause, ready, print).

17. Font Control

You can get access to the Font Control via **Font Control** box in the **XSettings** dialog (see the **Font Control Box** section of the XSettings utility). The **Font Control** box contains two buttons: **Font Path** and **Pseudo Fonts**. The **Font Path** button calls a dialog box to control Font Sources. The **Pseudo Fonts** button calls a dialog box to control usage of Windows fonts. The **Fonts** item in the X-session Control menu allows you to see: the actual Font Path; a font list of each Font Directory; Font Info, properties, metrics, and images of any font.

Font Path

The Font Path is an ordered list of Font Sources. A Font Source may be: a Font Directory, a reference to Font Server, a Pseudo Fonts Directory. The Font Path is used by the XServer on X client's requests for any font. The XServer searches the font according to the order of font sources till the first matching occurs. To control the Font Path, press the **Font Path** button in the **XSettings** dialog. The **Font Path** dialog box will appear on your display.



The **Save** button in the **Font Path** dialog actually writes new Font Path in the **xwinpro.ini** file in the X-WinPro home directory. This cannot be suppressed if you press **Cancel** afterwards in the parent **XSettings** dialog.

Font Directory

A Font Directory contains font description files in X11 formats. The X server has the set of Font Directories in the FONTS subdirectory in the X-WinPro home directory. The X server must have access at least to the **fixed** and **cursor** fonts so Font Path must contain Font Directory for these fonts. The \FONTS\MINIMAL and FONTS\MISC Font Subdirectories contain them. Font Directory can be specified manually in the **Font Directory** edit box or selected by means of the **Browse** button, which calls the Windows Common Open File Dialog Box. Font Directory always contains the **fonts.dir** file. You may press **OK** in any directory containing the **fonts.dir** file. The selected directory path appears in the **Font Directory** edit box.

Font Server

You can also specify that you want to use a font server running on one or more hosts. Font servers are defined in the X11 R6 release of the X Window System. Instead of forcing the X-WinPro's X server to read all fonts from your PC file system, the X FontServer Protocol makes it possible to manage fonts separately from the X server, directing the X server to request fonts from a font server via this new X Consortium standard network protocol. In addition, for fonts which take a long time to open, this allows the X server to continue with other clients while the font server services the font requests.

A font server specification for TCP/IP has the following format:

tcp/name: port' [/catalogue+catalogue+]

name
is the network name or IP address of the machine running the font server.

port
is the remote port on which the font server is listening. This is usually 7000, but check with your system administrator.

catalogue
is an optional list of the font catalogue(s) you want to use. If more than one catalogue is specified, separate each name with a plus sign (+).

For example, the following specifies a font server called **fsHost** on port **7000**:

tcp/fsHost:7000'

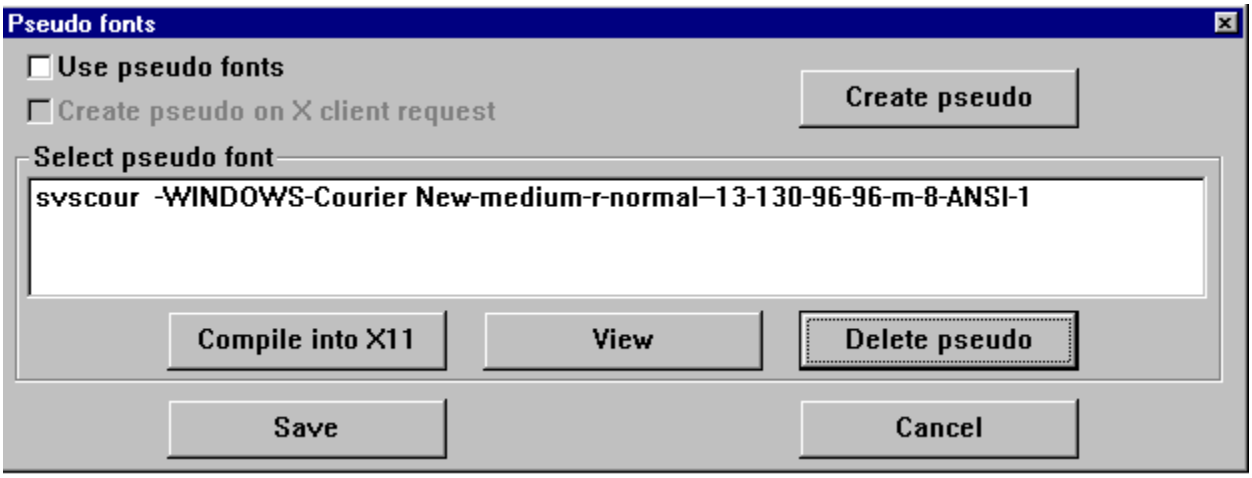
More than one font server may be in the Font Path.

Font Path Editing

The contents of the **Font Directory** edit box may be inserted into the Font Path. To do this, select a position in the **Priority ordered path** list box, then press the **Insert Before** or **Insert After** button. To remove the selected Font Source from the Font Path, press the **Delete** button. To transfer the selected Font Source from the Font Path into the **Font Directory** edit box, press the **Cut** button.

Pseudo Fonts

If you need some X font that is inaccessible, the X Server allows you to utilize any Windows font instead of it. Windows fonts do not support **X11** font naming conventions. Therefore, pseudo names - aliases - are used to access them. To utilize a Windows font, it is necessary to choose one and assign a desirable alias. This actionis named as the Pseudo Font creation. Pseudo Fonts may be created in advance in the XSettings Utility or directly in the X-session. You can manipulate Pseudo Fonts via the **Pseudo Fonts** dialog box.



To call the **Pseudo Fonts** dialog box, press the **Pseudo Fonts** button in the **Fonts Control** box in the **XSettings** dialog. The **Save** button in the **Pseudo Fonts** dialog actually writes all changes in the Pseudo Fonts Directory. These changes can't be suppressed if you press **Cancel** afterwards in the parent **XSettings** dialog.

Pseudo Fonts Directory

Windows font specifications and aliases of Pseudo Fonts are stored in the Pseudo Fonts Directory. The Pseudo Fonts Directory has the constant location: the WINFONTS subdirectory in the X-WinPro home directory.

Pseudo Font Creation

To create a new Pseudo Font, press the **Create Pseudo** button in the **Pseudo Fonts** dialog box. The Windows Common Font Selection Dialog Box will appear on your display. Select a suitable font and press **OK**. The box prompting for a Pseudo font alias will appear. The Alias must not be already in use (among Pseudo Fonts). The Alias must contain only alphanumeric characters (including "_"). The new created Pseudo Font will appear in the alphabetically ordered list in the **Select Pseudo Font** list box.

Pseudo Font Visualization

To visualize a Pseudo Font, select it in the **Select Pseudo Font** list box, then press the **View** button. The window with the Pseudo Font sample in it will appear on your display. Take into account that you see the font image reproduced by the Windows (not by the X server). This feature is designated only for font identification. To check the X server font image

reproduction, use **xfd -fn <alias>** command in the X-session.

Pseudo Font Deletion

To delete a Pseudo Font, select it in the **Select Pseudo Font** list box, then press the **Delete pseudo** button. You may delete more than one font at a time. You will be prompted to confirm the total number of the selected fonts and each deletion.

Pseudo to X11 Compilation

Loading of Pseudo Fonts takes additional time (about 3-4 sec.) to create their images. Reading of image from X11 format file may be done faster. It becomes essential if X client uses a lot of fonts. To prevent this time loss, you may save images of frequently used Pseudo Fonts in the X11 similar format in your Pseudo Fonts Directory. This will require some disk space. To save the image, select the required font in the **Select Pseudo Font** list box, then press **Compile into X11**. You will be prompted to specify the directory where the X11 font file will be saved. The Font Directory may be specified manually in the **Font Directory** edit box or selected by means of the **Browse** button, which calls the Windows Common Open File Dialog Box. If the specified directory is not the Font Directory (e.g. empty), then **fonts.dir** file will be created automatically and this directory becomes a Font Directory. To use this Font Directory, do not forget to include it into the Font Path.

Pseudo Fonts Creation on X Client Request

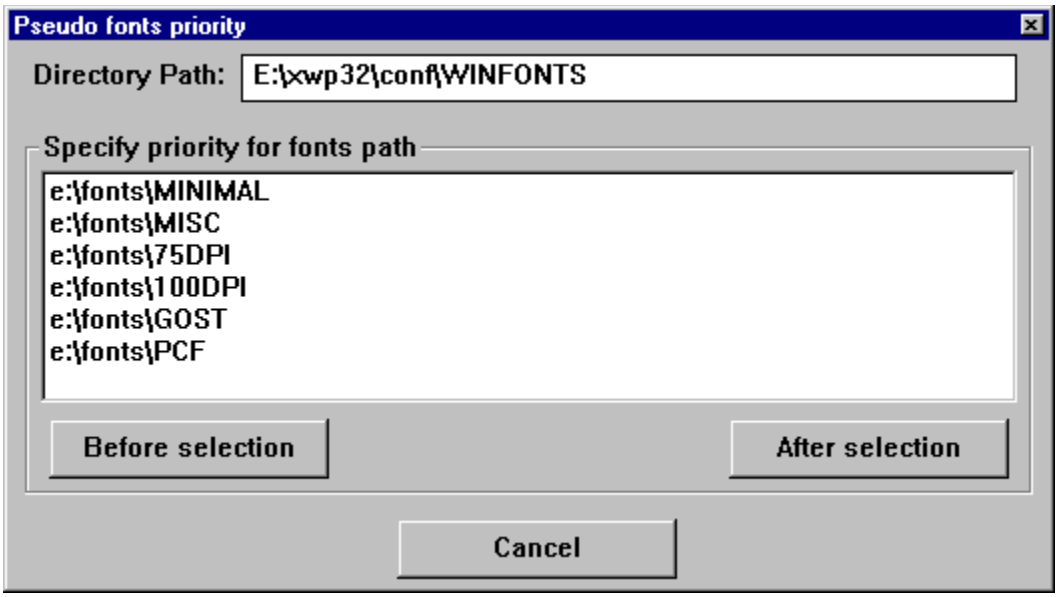
Pseudo Fonts may be created not only in the XSettings utility, but also directly in the X-session on particular client request. If the requested font is not found, a user will be prompted to create a new Pseudo Font. Pseudo Fonts creation in the X-session is identical to the one in the **Pseudo Fonts** dialog. You may use the requested font name as Pseudo Font alias.

Pseudo Font creation in the X-session is especially useful when you run new X applications for the first time. For batch X clients, it is preferable to disable Pseudo Font creation to avoid interactive requests. To enable Pseudo Font Creation in the X-session, set the **Create pseudo on X client request** check box in the **Pseudo Fonts** dialog.

Unfortunately, Pseudo Fonts created on X client's request, become accessible only after the X-session restarting. In the current session, the X server uses the default font instead of requested one.

Enabling to use

Use of Pseudo Fonts during the X-session may be enabled or disabled. If it is enabled, the X server uses Pseudo fonts as well as X fonts. If it is disabled, the X server may use only X fonts, and the Pseudo Font creation in the X-session is suppressed. To disable use of Pseudo Fonts, reset the **Use pseudo fonts** check box. Pseudo Fonts Directory will be removed from the Font Path. To enable use of Pseudo Fonts, set the **Use pseudo fonts** check box. The **Pseudo Fonts Priority** dialog box will appear on your display. You must specify a Pseudo Fonts Directory priority among other Font Sources in the Font Path.


Pseudo fonts priority
Directory Path:
E:\xwp32\conf\WINFONTS
Specify priority for fonts path
e:\fonts\MINIMAL
e:\fonts\MISC
e:\fonts\75DPI
e:\fonts\100DPI
e:\fonts\GOST
e:\fonts\PCF
Before selection
After selection
Cancel

Restriction of Windows Fonts Accessibility

The current version of the X server provides access only to Windows fonts, presented in the Windows System Font Table. Therefore, the particular Windows font's accessibility depends upon Windows session history. If you try to use an inaccessible Windows font, Windows will grant some other font with the closest metrics. The X server guarantees getting of exactly requested Windows font if you create Pseudo Font immediately after starting Windows or compile it into the X11 format.

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.

X-WinPro 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
```

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' untill 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.

Appendix B

Description of Terminal Capabilities

terminal.inf is the ASCII file that describes the emulation capabilities of terminals. This description is very similar to the TERMINFO source code of UNIX system. A description of the terminal contains some text lines with the terminating character "\" . This character signals the continuation of the description on the next line. The last line of the description must not contain this character as a terminating symbol.

The description may contain comments. They must be limited on both sides by the "!" character. If the right "!" does not exist, the comment is limited by the end of the current line.

Each description contains a set of records separated by the "," character (comma). Each record consists of a keyword, a separator (the "=" character), and a parameter (the set of characters).

The logical name of the emulated terminal limited by the ":" character (colon) must be at the beginning of the description. This logical name is used for selection the terminal type in the Telnet **Settings** mode. The logical name is followed by a set of records which describes parameters of a terminal, and a set of records describing sequences of bytes which must be sent to a host after you press any function key.

- Terminal Parameter Settings

You can set up terminal parameters by records with the following keywords:

term_type=NAME
a terminal type on a host side. This name must be sent to a host at the beginning of the Telnet protocol and must be identical to the terminal name in the TERMINFO on a host side;

lines=number
a number of lines on a screen of a terminal;

cols=number
a number of characters in a line;

colors=number
the maximum number of colors on the screen;

RGB=arg1.arg2.arg3.arg4
the palette description for a certain color;
arg1 is the number of the color, arg2, arg3 and arg4 are relative intensities for red, green, and blue primaries for this color. Here are the default colors:

0 - Black	8 - Grey
1 - Blue	9 - Bright blue
2 - Green	10 - Bright green
3 - Cyan	11 - Bright cyan
4 - Red	12 - Bright red

5 - Magenta 13 - Pink
6 - Brown 14 - Yellow
7 - White 15 - Bright white

CSI_Yes
The emulated terminal can use 8-bits control sequences. For example, they are IND(0x84), SS3(0x8f), DCS(0x90), CSI(0x9b) for the DEC VT240 terminal.

Use2W
The emulated terminal can use double width symbols. See the control sequence Esc#6 for DEC terminals.

Use2HW
The emulated terminal can use symbols with double height and width. See control sequences Esc#3 and Esc#4 for DEC terminals.

TabSet=n1.n2.n3...
Horizontal tabulation stop set description for the emulated terminal used as the default tabulation set. If no arguments, it means that the tabulation set is empty. If this keyword does not exist in the terminal description, then it means that horizontal tabulation stops are at every 8 columns.

MG0=inp.out
MG1=inp.out
Remapping description for a certain character set (MG0 - main, MG1- alternate character set).
inp - an input character code to be remapped;
out - a character code from the font used to display inp-symbol.

Byte Sequence Settings

To describe byte sequences which must be sent to a host after you press any function key, you can use the following record type:

```
KEYWORD=string
```

The string may contain alphabetic and digital characters. If there is the "^" symbol before any character, then only the last 5 bits of this character are sent (this is equal to Ctrl+Key). Sequences beginning with the "\" character denote the following codes:

```
\E   = Esc              (code \033)
\e   = Esc              (code \033)
\b   = backspace        (code \010)
\t   = tab              (code \011)
\n   = linefeed   (code \012)
\r   = return           (code \015)
\f   = formfeed  (code \014)
\s   = space            (code \040)
```

Here are key-names and corresponding keywords for the description of sequences:

KEY	KEYWORD
Backspace	kbs

Insert	kich1
Delete	kdch1
Home	khome
End	kend
PageUp	kpp
PageDown	knp
Up	kcuu1
Down	kcud1
Right	kcuf1
Left	kcub1
F1	kf1
F2	kf2
F3	kf3
F4	kf4
F5	kf5
F6	kf6
F7	kf7
F8	kf8
F9	kf9
F10	kf10
F11	kf11
F12	kf12

To describe sequences which will be sent if you press keys listed above (except backspace) in combination with Shift, Ctrl, or Alt key, you can add the following suffixes at the right of the keyword:

+S - if the left or right Shift key is pressed;
+LS - if the left Shift is pressed;
+RS - if the right Shift is pressed;
+C - if the left or right Ctrl key is pressed;
+LC - if the left Ctrl key is pressed;
+RC - if the right Ctrl key is pressed;
+A - if the left or right Alt key is pressed;
+LA - if the left Alt key is pressed;
+RA - if the right Alt key is pressed.

Here are some samples of a description of sequences:

kf1=\E[A, If F1 is pressed, the **Esc[A** will be sent;

kf1+S=\E[a, If F1 and any Shift are pressed, **Esc[a** will be sent;

kf1+S+RC=\E[x, If F1 and any Shift and right Ctrl are pressed, **Esc[x** will be sent;

kf1+S+RC+LC=\E[x\EOy If F1 and any Shift and right Ctrl and left Ctrl are pressed, **Esc[xEscOy** will be sent.

Appendix C

Troubleshooting

Here are the answers to some frequently asked and particular questions.

- **Is there any way that the FTP can be configured to execute a script to automatically copy an entire directory from the host back to the PC?**

It is impossible in the **Point-and-Click** mode (graphical interface). In the **Command Line** mode (text interface), you can:

- create all necessary subdirectories (tree) at the local side;
- run the **mget DIR** command where **DIR** is the name of the directory.

In this case, all files from **DIR** and its subdirectories on the remote host will be copied to the current directory and its corresponding subdirectories on the local host.

- **Is it possible to convert fonts used in Motif to be used with X-WinPro (the fonts with the .pcf suffix)?**

Yes, it is possible. You must create a directory with **.pcf** files and with the **fonts.dir** and **fonts.ali** files in it, and add the corresponding item to FontPath via XSettings. XServer makes use of **.pcf** fonts by the same way as **.snf** fonts.

- **Is there a difference between using the X-manager and the windows manager in cutting and pasting?**

X-WinPro cannot write the XSelection/bitmap to a file.

- **When trying to start some of our local UNIX applications, the following error was displayed - Cannot accept '/usr/local/Apstools/12.1/lib/fonts' FontPath Element.**

You need to avoid this problem. While executing, your application adds a new item '/usr/local/Apstools/12.1/lib/fonts' to XServer's FontPath. This action is not legal for X-WinPro's XServer because it works only with local FontPath and/or FontServer.

- **Cut and Paste did not work between windows (eg. Between W'95 Notepad and SUN/UNIX Textedit). I have still to try dragging and dropping a file between windows (eg. UNIX Filemanager to W'95 File system).**

You should choose **Clipboard** X Selection to provide the transfer needed.

- **I would like to know what True color support means... Will True color work with more than 256 colors?**

True color support (in Windows) means that a video-driver supports the color palette with 64K colors. XServer supports 256-color palette and CAN operate with any High/True-color video-driver of Windows.

- **When using the X Display manager the font that is on the screen is the same as the one I am using now. But when I log in from the host or HP Xterminal the font looks like a 'sans serif' or 'arial' type of font. How can I get the required font? I noted down the fonts that are loaded by an Hp-Xterminal when it boots up from the host. They are /usr/lib/X11/700X/fonts/hp-roman8/75dpi/system19.snf and system23.snf, system16.snf, system17.snf, system13.snf, ser11x19.snf. I copied these fonts to my local PC and added these fonts to the font path, but when I started the X Display manager, I received garbage on the screen, where the login and password words were before.**

HP-snf font format actually differs from X11-snf font format. X-WinPro's X-session processes only X11-snf fonts and cannot process HP-snf fonts. X-session cannot differ these formats because they have the same file name extension.

You need to convert the HP-snf to X11-snf.

- **There are some problems with 'special' Unix file names.**

FTP can choose the remote host's OS type (DOS, Unix, etc.). This gets FTP to 'understand' file names of the remote host's directory. To choose the OS type on the remote host, you may use the **Server Types** Option.