

**USER
MANUAL**

Tun NET™

**TCP/IP, Mail and Fax Applications for
Windows**

Version 8.50



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PREFACE

Tun NET is a complete TCP/IP network software package for PCs running Microsoft Windows 3.x and Windows 95.

Tun NET is one of a range of complementary packages including **Tun KERNEL**, **Tun EMUL**, **Tun SQL** (see table below).

	WINDOWS	MS-DOS
Tun KERNEL	TCP/IP protocol stacks for Windows 3.x only	TCP/IP protocol stacks for MS-DOS (TSR)
Tun NET	TCP/IP applications (NIS, NFS Client and Server, PING, Printer redirection and sharing, FTP Client and Server, TELNET, RSH Client and Server, TAR, WALL, TFTP, TIME), and electronic mail and fax applications	TCP/IP applications for MS-DOS (NFS, Printer sharing, FTP, TELNET, TAR ...)
Tun EMUL	Comprehensive terminal emulator (asynchronous emulation, IBM 3270, IBM 5250)	Comprehensive terminal emulator for MS-DOS (asynchronous emulation)
Tun SQL	ODBC drivers for Client-Server mode under TCP/IP (Oracle, Informix, Sybase DBMS, Progress DB2) and database revamping tools	N/A
TCP/IP Network Services	Browser NIS, Printer redirection and sharing (LPR, LPD)	N/A

Tun NET is delivered as standard as part of the package **Tun PLUS** which incorporates all the above software.

Tun NET can be installed independently of **Tun PLUS**; however, the **Tun PLUS** installation program includes the option to install **Tun NET**.

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PART 1
Tun NET INSTALLATION

CHAPTER 1 - GENERAL INSTALLATION

PACKAGE CONTENTS

Please make sure your **Tun NET** package contains the following:

- The **Tun NET** user manual (TCP/IP Network Applications for Windows).
- The **Tun KERNEL** manual (TCP/IP Communication for Windows 3.x).
- A CD-ROM.
- Installation disks for Netscape Navigator (2 or 3).
- A user license.
- A sealed envelope containing a serial number and an activation key. Miscellaneous technical bulletins (if applicable).
- A registration card.

Note: Opening the sealed envelope indicates that you have accepted the terms and conditions of the User license (indicated on the sealed envelope) for using **Tun NET**.

HARDWARE AND SOFTWARE REQUIREMENTS

To use **Tun NET** for all Windows effectively, you will need the following equipment:

- A 100% PC 486 compatible micro-computer or Pentium.
- 8-16 MB of RAM.
- Windows 3.x or Windows 95.
- TCP/IP stack compatible with the Winsock interface (e.g. **Tun KERNEL** or other Winsock-compatible stacks).
- A modem card or external modem.

PRODUCT INSTALLATION



The following instructions may be ignored if you have acquired **Tun NET** as part of the **Tun PLUS** package since the installation procedure of the latter product will automatically propose the installation of **Tun NET**.

The following procedure describes the installation under Windows of the **Tun NET** package:

1. Insert the CD-ROM into the CD-ROM drive (generally, drive D).
Depending on your Windows version, follow one of these steps:



Under Windows 3.x or Windows NT3.51, choose one of the following methods:

- From the **Program Manager**, select **File→Run** and type the following command:
D:\INSTALL.EXE
- From the **File Manager**, open the drive containing the CD-ROM (drive D) et double-click on the file **INSTALL.EXE**.



Under Windows 95 or Windows NT4, choose one of the following methods:

- Click on the **Add/Remove Programs** icon in the **Control Panel** window. Follow the installation prompts that appear, using the file **INSTALL.EXE** on the CD-ROM.

- From a DOS prompt, type the following command:

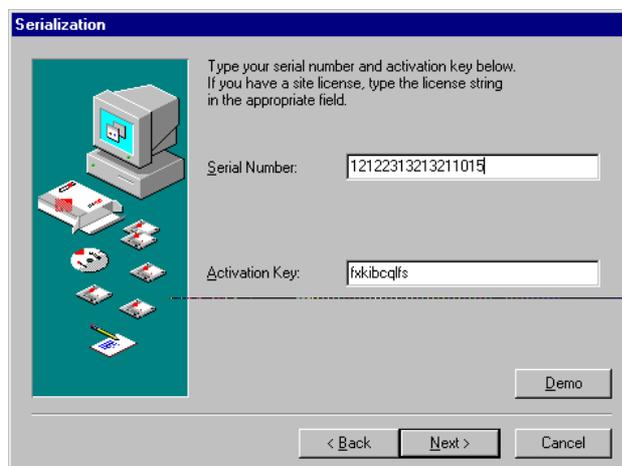
D:\INSTALL.EXE

- From the **Start** menu, select **Run** and type the above command.
- From the **Windows Explorer**, open the drive containing the CD-ROM (drive D) and double-click on the file INSTALL.EXE.

Note: If you are using the **Tun NET** installation disks instead of the CD-ROM, insert the disk labeled "Tun Setup Disk 1/2" into the disk drive (generally drive A), and follow the same procedure with the following command:

A:\SETUP.EXE

2. After the Welcome dialog box, you will see the following installation window.

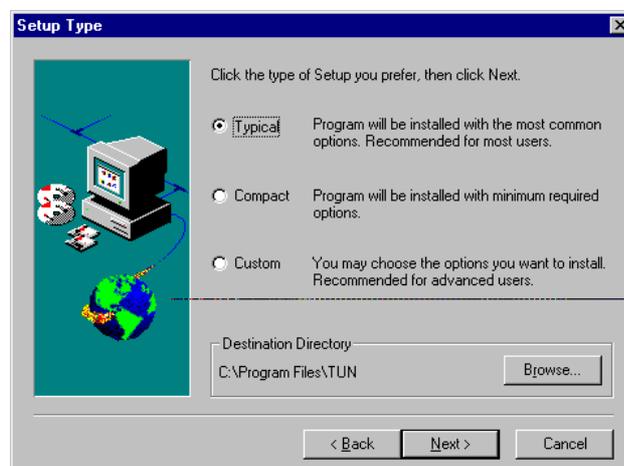


Enter the serial number and the activation key of the software. This information can be found in the sealed envelope accompanying the software.

Click the button **Demo** if you wish to install the demonstration version of **Tun PLUS**. A serial number and activation key will be proposed for the demo installation.

Then click the button **Next**.

3. If the serial number and activation key are correct, the following window will appear:



This dialog box lets you choose the type of installation you want and the installation directory.

Type of installation

There are three types of installation:

- **Typical:** installs the necessary components for normal usage of **Tun NET**.
- **Compact:** installs the minimum number of components for **Tun NET** to function.
- **Custom:** allows you to choose the components you wish to install.

Installation directory



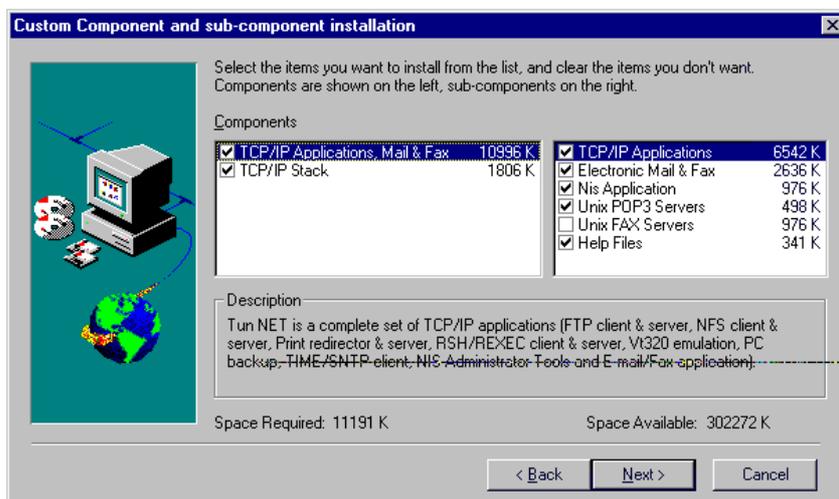
In Windows 3.x, the default directory for the installation of **Tun NET** is C:\TUN.

In Windows 95, the default directory is C:\Program Files\TUN.

The directory may be changed by clicking the button **Browse...**

Click the button **Next** when you are ready.

4. If you chose the custom installation, the following dialog box will appear:



In Windows 95, the option **TCP/IP Stack** is not available, since **Tun NET** uses Microsoft's TCP/IP stack.

Select the check boxes corresponding to the components or subcomponents you wish to install.

TCP/IP Applications

This component include the following subcomponents :

- TCP/IP Applications: NFS Client and NFS Server, Printer sharing and redirection, FTP Client and FTP Server, VT320 Terminal Emulation, Remote command execution and server, Remote backup, Wall and Walld, Time, TFTP.
- Electronic Mail and Fax: e-mail application with integrated fax, compatible MIME, and OLE2 under Windows 95.
- NIS Application : NIS browser for centralized ressources management and use.
- UNIX POP3 Servers : POP3 server for e-mail.
- UNIX Fax Servers : fax servers.
- Help Files : TCP/IP applications on-line help.

If your company's UNIX host does not possess a POP3 server for electronic mail, select the check box **Unix POP3 Servers**. This will copy the file POP3.TAR onto the hard disk of your PC so that it may be

later installed on your UNIX server, according to the instructions in the section "**POP3 installation on a UNIX server**".

If you have not installed the fax server on your UNIX server yet, select the check box **Unix FAX Servers**. This will copy the file TUNFAX.TAR onto the hard disk of your PC, from where it may be later installed on your UNIX server according to the instructions in the section "**Installing the fax server**".

TCP/IP Stack (16-bit version only)

This component includes the following three subcomponents:

- TCP/IP Stack: DLLs et VxD drivers for TCP/IP stack.
- Network Card Driver: Packet Driver, NDIS Driver.
- Help Files: on-line help for the TCP/IP stack.

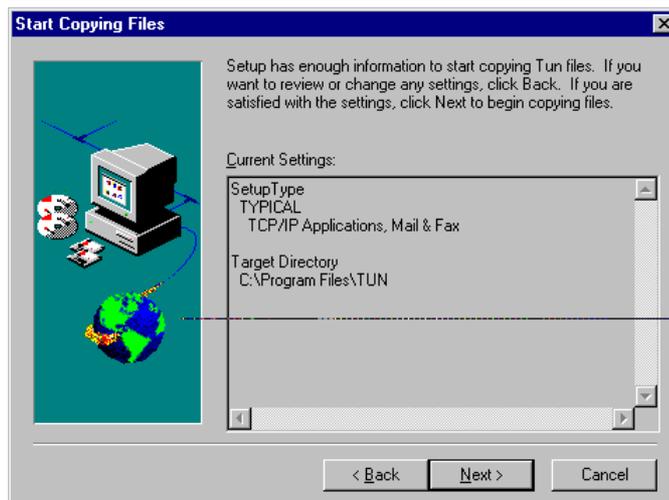
For more information on this component, please consult the manual **Tun KERNEL**.

If you decide to install **Tun NET** on Microsoft's TCP/IP stacks, this must categorically be indicated since different programs are installed to control the NFS client function.

If you decide to install **Tun NET** over TCP/IP stacks which are neither ESKER's nor Microsoft's, the NFS function will not work. The 32-bit versions of the programs use Microsoft's TCP/IP stacks.

Then click the button **N**ext.

5. The following window will appear.

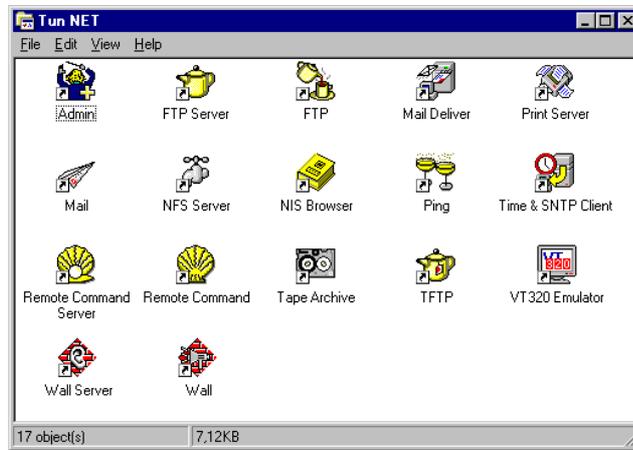


Then click the button **N**ext if you are satisfied with the installation options.



6. At the end of the installation process, if you requested the installation of the TCP/IP stacks, a window will appear proposing the immediate configuration of **Tun KERNEL**. If you agree to this option, the installation procedure switches immediately to the **Tun KERNEL** configuration screens as described in the chapter **Using and Configuring Tun KERNEL** in the **Tun KERNEL** manual. If you refuse this option, it will be possible to return to it later by clicking on the **Administrator** icon in the **Tun KERNEL** or **Tun NET** groups under the Windows Program Manager.

- The following directories are created (unless you have specifically chosen not to install the relevant modules).



For an installation under Windows 3.x, you should be able to see the new **Tun KERNEL** group with the following icons (if you chose to install it):



Note: If the **Tun KERNEL** product has already been installed on the PC, the **Tun KERNEL** icons will be included in the **Tun NET** group.

If **Tun NET** is installed on TCP/IP stacks which were not supplied by ESKER, the PING and TCP/IP icons will not appear.

Tun NET CONFIGURATION

Tun NET is delivered with an interactive program for configuring the product. After installing the program files, this program must be run (by clicking on **Administrator** in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu) in order to set up the various program features.

POP3 INSTALLATION ON A UNIX SERVER

POP is the standard Post Office Protocol for UNIX systems. However, UNIX machines do not usually have the POP3 server necessary for the UNIX Mail interface provided in **Tun NET**. In order to provide the mail service for all UNIX systems, **Tun NET** includes a *freeware* version of this server from the University of California at Berkeley.

Note: If your UNIX server already has POP3 installed, you do not need to install this version of the program. In order to check if POP3 services are currently installed on your UNIX server, use the following command:

```
netstat -a | grep pop
```

The results of this command will tell you if POP services are installed on your server. If they are, you do not need follow the procedures described in this section.

The POP3 server delivered with **Tun NET** is in a file named **POP3.TAR** (in TAR format for UNIX). This file includes:

- A "C" source code for the POP server, modified by ESKER to be compatible with UNIX System V.
- A README file.
- An installation program (from ESKER).
- Several compiled versions of the POP server (for SCO, AIX, HP, and SUN).

Follow these steps to install the POP server on a UNIX host:

1. Transfer the **POP3.TAR** file from the DOS directory containing **Tun NET** into the /tmp directory on the UNIX machine (using the file transfer program supplied with **Tun NET**, for example, Tun FTP).
2. Extract the files from **POP3.TAR** using the following command:

```
tar xvf pop3.tar
```

3. Run the installation program pop3.install, which will update the /etc/services and /etc/inetd.conf files on your system.

Note: If your UNIX system is not listed among the machines for which there is already a compiled version of POP3, the installation procedure contains an option to compile the source code for your particular machine.

THE FAX SERVER

A UNIX fax server is supplied as standard with **Tun NET**. This server is compatible with the following operating systems:

- HP-UX
- SCO
- AIX
- SunOS

If you wish to use Tun NET's fax function, you should install it in accordance with the instructions in the chapter **Server Configuration (LAN): Installing the fax server**.

DIRECTORY STRUCTURE AND INSTALLED FILES

The default installation procedure creates the directory \TUN\TCPW, and installs the following files:

Administrator

TUNNET.DRV	Network Device Driver (16-bit Windows)
WADM2.EXE	Tun NET Administrator (16-bit Windows)
WADM2_32.EXE	Tun NET Administrator (32-bit Windows)
WTCPDLG.DLL	TCP/IP configuration interface (16-bit Windows)
WLPDDL.DLL	LPD configuration interface (16-bit Windows)
WLPDDL32.DLL	LPD configuration interface (32-bit Windows)
WLPRDLG.DLL	LPR configuration interface (16-bit Windows)
WLPRDL32.DLL	LPR configuration interface (32-bit Windows)
WNFSDLG.DLL	NFS client configuration interface (16-bit Windows)
WNFSDL32.DLL	NFS client configuration interface (32-bit Windows)
WNFSDDL.DLL	NFS server configuration interface (16-bit Windows)
WNFSDDL32.DLL	NFS server configuration interface (32-bit Windows)

WFTPDDL.G.DLL	FTP server configuration interface (16-bit Windows)
WFTPDD32.DLL	FTP server configuration interface (32-bit Windows)
*.LG	Language files
*.INI	Program initialization files

Printer Redirection and Sharing

WLPR.DLL	Print redirector (16-bit Windows)
WLPRNP32.DLL	Print redirector (Windows 95)
WLPRPP32.DLL	Print redirector (Windows 95)
WLPD.EXE	Print server for sharing local printers (16-bit Windows)
WLPD32.EXE	Print server for sharing local printers (32-bit Windows)

NFS

TUNREDIR.386	VxD module for disk redirection under ESKER TCP/IP stack Tun KERNEL (16-bit Windows)
WNFS.DLL	NFS client implementation for Tun KERNEL (16-bit Windows)
TUNNFS.386	VxD NFS client for MS-TCP/IP (16-bit Windows)
TUNNFS.VXD	VxD NFS client for MS-TCP/IP (Windows 95)
WNFSD.EXE	NFS server (16-bit Windows)
WNFSD32.EXE	NFS server (32-bit Windows)
WPCNFSD.EXE	NFS server (16-bit Windows)
WPCNFSD32.EXE	NFS server (32-bit Windows)
WLOCKD.EXE	NFS server (16-bit Windows)
WLOCKD32.EXE	NFS server (32-bit Windows)
WPORTMAP.EXE	Portmapper (16-bit Windows)
WPORTM32.EXE	Portmapper (32-bit Windows)
TUNNP32.DLL	Network Provider (Windows 95)

FTP

WFTP.EXE	FTP client (16-bit Windows)
WFTP32.EXE	FTP client (32-bit Windows)
WFTP.MAC	Sample file transfer macro
WFTPD.EXE	FTP server (16-bit Windows)
WFTPD32.EXE	FTP server (32-bit Windows)

NIS

WNISA.DLL	Network Information Service (16-bit Windows)
WNISA32.DLL	Network Information Service (32-bit Windows)
WNISB.EXE	Network Information Service (16-bit Windows)

WNISB32.EXE	Network Information Service (32-bit Windows)
WNISS.EXE	Network Information Service (16-bit Windows)
WNISS32.EXE	Network Information Service (32-bit Windows)
APINIS.DLL	Network Information Service (16-bit Windows)
APINIS32.DLL	Network Information Service (32-bit Windows)
GUINIS.DLL	NIS interface (16-bit Windows)
GUINIS32.DLL	NIS interface (32-bit Windows)
WPRINT32.EXE	Printer install
TUNEXE.EXE	Network Information Service (16-bit Windows)
TUNEXE32.EXE	Network Information Service (32-bit Windows)
*.AVI	AVI files

Windows Applications

WVT320.EXE	Telnet VT320 (16-bit Windows)
VT320_32.EXE	Telnet VT320 (32-bit Windows)
WRSH.EXE	Remote command execution (16-bit Windows)
WRSH32.EXE	Remote command execution (32-bit Windows)
WRSHD.EXE	Remote command server (16-bit Windows)
WRSHD32.EXE	Remote command server (32-bit Windows)
WRSHDDL.G.DLL	Remote command server (16-bit Windows)
WRSHDD32.DLL	Remote command server (32-bit Windows)
WTAR.EXE	PC backup on remote hosts (16-bit Windows)
WTAR32.EXE	PC backup on remote hosts (32-bit Windows)
WMAIL2.EXE	Electronic mail (16-bit Windows)
CPDDOC.DLL	Electronic mail (16-bit Windows)
MIME.DLL	MIME in electronic mail (16-bit Windows)
MAPL.DLL	MAPI in electronic mail (16-bit Windows)
WMAIL3.EXE	Electronic mail (32-bit Windows)
USRCFG.DLL	Mail users setup (32-bit Windows)
SENDMAIL.EXE	Communication channel management (32-bit Windows)
TUNFAT.DLL	File attachment (Mail 32 bits)
TUNMSG.DLL	Messages insertion (Mail 32 bits)
TUNIMG.DLL	Images insertion (Mail 32 bits)
TUNREF.DLL	References insertion (Mail 32 bits)
TUNVAR.DLL	Fields insertion (Mail 32 bits)
MAPI32.DLL	MAPI in electronic mail (32-bit Windows)
POP3.TAR	UNIX POP3 server
EMAILDAT*.*	Data directory for e-mail program
WALL.EXE	Communication utility "Write to all" (16-bit Windows)
WALL32.EXE	Communication utility "Write to all" (32-bit Windows)
WALLD.EXE	Wall agent (16-bit Windows)
WALLD32.EXE	Wall agent (32-bit Windows)
WMOUNTD.EXE	Remote drive mounter (16-bit Windows)
WMOUNT32.EXE	Remote drive mounter (32-bit Windows)
WMOUNT.EXE	Drive mounting utility (16-bit Windows)
WMNT32.EXE	Drive mounting utility (32-bit Windows)
WUMOUNT.EXE	Drive unmounting utility (16-bit Windows)
WUMNT32.EXE	Drive "unmounting" utility (32-bit Windows)
WSNTP.EXE	Time agent (16-bit Windows)
WSNTP32.EXE	Time agent (32-bit Windows)
WTFTP.EXE	File transfer with the TFTP protocol (16-bit Windows)
WTFTP32.EXE	File transfer with the TFTP protocol (32-bit Windows)
WTFTP.DLL	File transfer with the TFTP protocol (16-bit Windows)
WTFTP32.DLL	File transfer with the TFTP protocol (32-bit Windows)
WPING.EXE	Ping (16-bit Windows)
WPING32.EXE	Ping (32-bit Windows)

Under Windows 3.x, after copying these files, the installation procedure modifies the Windows **SYSTEM.INI** file, adding a line for the **Tun NET** Network Device Driver (**TUNNET.DRV**), and a line for **TUNREDIR.386** or **TUNNFS.386**

CHAPTER 2 - INTRODUCTION TO Tun NET

WHAT IS Tun NET?

Tun NET is a complete set of TCP/IP, e-mail and fax applications package designed to function on top of the **Tun KERNEL** protocol stacks (only under Windows 3.x) or any other WINSOCK compatible TCP/IP protocol stacks.

Tun NET for Windows provides the following set of functions:

- **TCP/IP Applications**

- NIS - Network Information Service
- PING - Connection testing
- NFS client - File sharing (with Esker or Microsoft TCP/IP stack under Windows 3.x, and only with Microsoft TCP/IP stack under Windows 95).
- NFS server - File sharing
- LPR - Printer redirection
- LPD - Printer sharing
- FTP client - File transfer
- FTP server - File transfer daemon
- TELNET VT320 - Terminal emulation
- RSH/REXEC - Remote command execution
- RSHD - Remote command server
- TAR - Remote backup
- WALL - LAN communication utility
- TFTP - Trivial file transfer protocol implementation
- TIME / SNTP - Network time coordination
- An administration and supervisor program

- **Advanced E-Mail package**

- E-MAIL - SMTP-POP electronic mail
- Mail-integrated fax facility
- Private and shared addresses
- Grouped addresses
- Folders for more efficient classification of messages
- Delivery and read receipts
- Forwarding and redirection of mail
- Integration of imported text and images and OLE objects

Multi-platform

Tun NET was designed to satisfy all the requirements of commercial networks. The programs will run under Windows 3.x and Windows 95.

Ergonomic environment

The basic idea of **Tun NET** and similar packages is to render the daily use of network-linked computers as simple as possible, removing the formidable obstacles that dealing with UNIX networks can present. **Tun NET** effectively presents a user-friendly interface between the PC and the UNIX machine or machines. The TCP/IP applications remove the possible hardship from ordinary network operations by presenting the user with an attractive graphical user interface (GUI) and the convenience of a modern Windows working environment.

In particular, many network resources have been made more accessible through the implementation of a Network Information Service. **Tun NIS** is based on the Windows 95 interface, reducing learning time for users and presenting the network's resources in a straightforward, icon-based screen display.

Tun FTP is an efficient, reliable file transfer program which enables users to transfer files of any size to the server next door or one on the other side of the globe. The program has been developed with the usual ESKER emphasis on convenience and accessibility.

With **Tun NFS**, the sharing of directories as well as their protection has been simplified. The user has complete control over who exactly may have access to his disk space and the type of authorization to be allowed.

The **Tun VT320** program offers efficient terminal emulation with exciting revamping facilities. Gone are the days of the dark screen and a skeletal emulation environment. Users can now totally revamp their working emulation environment with colorful characters and screen backgrounds.

The e-mail system includes enhanced OLE possibilities, message confirmation (with delivery and read receipts) and paragraph and character formatting. It also includes improved recipient definition, allowing the user to specify different groups of recipients as well as individual recipients.

Faxes can be sent from the e-mail application and received by it, saving time in everyday office tasks.

For brief messages to colleagues, the user can turn to the **WALL** and **WALLD** applications. These can be placed in the startup group so the facility is available from bootup.

TCP/IP CONFIGURATION ON A UNIX HOST

The **Tun NET** TCP/IP Applications are centrally administered from an administration panel. Before being able to run some of the programs on a PC, TCP/IP has to be correctly configured on a UNIX host.

In order for **Tun RSH**, **Tun TAR** and Print Redirection using RSH to function, certain configuration files on the intended UNIX hosts need to be modified.

Note: These modifications are not necessary for the other Tun NET applications.

Declaring the PC

The PC running **Tun NET** must be declared in the following manner on the UNIX host in order to obtain access rights:

1. Declare the PC in the file **/etc/hosts** on the UNIX machine (using the name of the PC entered in the field **Local Host Name** in the TCP/IP startup parameters on the PC).

- In the \$HOME directory of the user whose login name will be used for RSH connections, create or modify the `.rhosts` file, and enter the **Local Host Name** of the PC. The format of the `.rhosts` file is simply the names or IP addresses of the PCs authorized to establish connections with an account name, each entered on a separate line. For example:

```
mike_pc
graphics_pc
pc1
pc2
```

Example:

You have installed a PC with the following characteristics on the network:

```
IP Address                124.131.120.99
Local Host Name           pcalphonse
User Name (used in Windows apps)  alphonse
```

- Add the following line to the `/etc/hosts` on each server that this PC will access:
`pcalphonse 124.131.120.99`
- Check to make sure that the user `alphonse` is declared on each UNIX host.
- Supposing that the home directory for the user `alphonse` is `/usr/alphonse`, you should create or edit the file `/usr/alphonse/.rhosts` and include the name of the PC `pcalphonse`

This file contains the names of all the machines allowed to use this particular user account, entered on separate lines, one under the other.

USING THE Tun NET ADMINISTRATOR

Tun NET is configured and maintained through the **Tun Admin+** program.



Run the **Administrator** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

Under Windows 3.x :



Under Windows 95 :



The buttons in the Administrator control panel each open detailed configuration menus for **Tun NET**'s various functions.

Below is a brief description of the main options, each of which is discussed in detail in the relevant chapters:



TCP/IP (only under Windows 3.x)

All parameters relating to the TCP/IP kernel configuration are contained within this menu option: LAN card drivers, hardware address settings, IP addresses, and SNMP parameters.



Tun NFS

Defines the parameters relating to the NFS (Network FileSystem) client program. This option is used to define, mount, unmount, and monitor virtual disks on remote NFS filesystems.

**Tun LPR**

Configures print redirection via **Tun NET**'s LPR client (**lp Remote**). With this function, PC printer ports may be redirected to remote printers.

**Tun FTPD**

This option is used to define and export PC directories accessible via FTP to other machines on the network.

**Tun NFSD**

This option is used to define and export PC directories accessible via NFS to other machines on the network.

**Tun LPD**

Configures print services provided by **Tun NET**'s LPD server (**lp Daemon**) for sharing printers attached to Pcs.

**Tun RSHD**

Configures the RSH daemon (configuration and declaration of authorized users and machines).

**Tun NIS**

Configures the Tun NIS network resource browser.

**Language**

Allows users to select the language used in the **Tun NET** Administrator menus and messages and in other Tun products installed on the machine.

**About and Help**

Displays program version and serial number, and gives access to on-line help files.

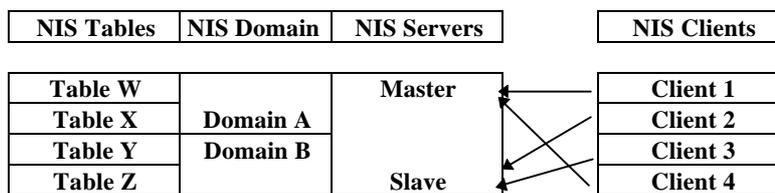
PART 2
Tun NET TCP/IP APPLICATIONS

CHAPTER 3 - THE NIS BROWSER

WHAT IS NIS?

The objective of NIS (Network Information Service) is to allow network users to know which resources are available on the network and to be able to access them from their PCs without having to worry about the location of the resources or their configuration.

The principal of NIS is based on the following architecture: a UNIX server manages the resources which are stored as tables. In general, the NIS server is seldom a totally independent entity but a part of a master/slave architecture: the master server manages a domain, and one or more slave servers make it possible to duplicate the domain's files. Each client calls the first NIS server which replies.



The NIS server tables are known as "yp" tables (for "Yellow Pages", the original name of NIS that had to be changed since it was the trademark of British Telecom's telephone book).

Tun NIS allows NIS clients to access resources from a PC by means of a "browser". The browser serves a double purpose:

- On the one hand, it lets PC clients easily access the network resources from a Windows environment, resources that they can view and use whatever the system.
- On the other hand, it is used by the administrator to manage the resource tables that are present on the remote NIS server.

The NIS browser lets the user access remote servers and PCs, use remote printers without having to install the necessary drivers, mount NFS drives, access data files such as mail address books, data sources, and even run remote applications.

The administration of NIS tables by **Tun NIS** consists of creating resources, modifying and deleting them, and making them immediately available to the network users. Since the information is centralized, it only has to be entered once to provide the users with the most up-to-date configurations.

Tun PRODUCTS AND NIS

Not only the **Tun NET** applications but the whole range of Tun products, **Tun EMUL** and **Tun SQL** may resort to the NIS for one reason or another, and each has its own specific installation and configuration requirements.

When the NIS browser is called by a particular application, the user can only access the resources corresponding to this application. On the other hand, when the NIS browser is called directly from Windows, it allows access to all the tables on the NIS server that the administrator has made available.

In this chapter, only information relating to the general setup of the system is included. For precise information related to individual **Tun NET** applications, please refer to the relevant section in the chapter dealing with the application. In most cases, the application's settings dialog box will include a **NIS...** button for browsing and using NIS resources. If **Tun NIS** is correctly installed on the PC, the user can simply select the desired resource.

Tun NIS SETUP

To install and configure the NIS server on a UNIX machine, proceed as follows:

1. Install the NIS server following the directions in the corresponding UNIX technical manual or bulletin.
2. Change the lines **ftpd -s** and **rexecd** in **/etc/inetd.conf** by removing the character "#".
3. Activate these tasks with the following command:
kill -1 <task number inetd>
4. Transfer the file **nissetup** from **Tun NIS** installation directory (TCPW\nissetup) under Windows, to the UNIX machine.
5. Run the shell **nissetup**.

This program automatically:

- Creates the directory **tftpboot/yp**
- Creates the files for the empty tables in this directory and also their lock.

Files	Locks
Servers	ServersL
Lpr	LprL
Nfs	NfsL
Ftp	FtpL
Tar	TarL
Tftp	TftpL
EmulCfg	EmulCfgL
MailAdr	MailAdrL
Mail	MailL
Data	DataL
Url	UrlL
Appli	AppliL
Path	PathL

- Creates the directories **/tftpboot/yp/files** and **/tftpboot/yp/drivers**

The NIS server is ready to be administered by the NIS Browser.

STARTING THE NIS BROWSER

General remarks



Under Windows 3.x, the context menu, accessed by clicking the right mouse button, and also tooltips are not available. Information on these features are only relevant to the use of the NIS Browser under Windows 95.

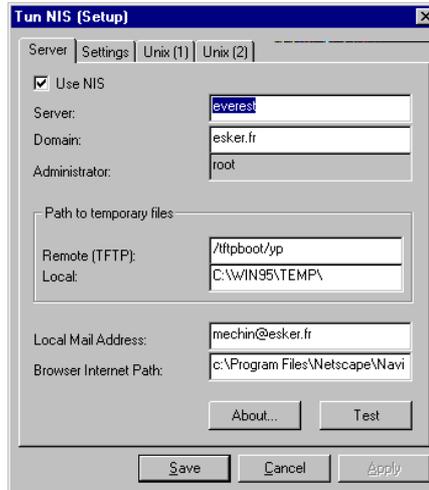
Startup

So that the NIS Browser can be started, the NIS server has to be put into operation.



Run the program **Tun Admin+** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun NIS** button.

The following window is displayed:



So that the NIS browser can be used directly or from the Tun applications installed, it is essential to select the check box **Use NIS**. The **NIS** button will then be made available in all the Tun applications which use the browser. By default, the check box is not selected; in this case the **NIS** button will not appear in the applications, and the NIS Browser can not be launched.

If it has not been done yet, complete the other two fields:

- The domain name which, by default, is "esker.fr". Replace "esker.fr" with your domain name.
- The path to your Internet browser (for example: c:\program files\netscape\navigator\program\netscape.exe)

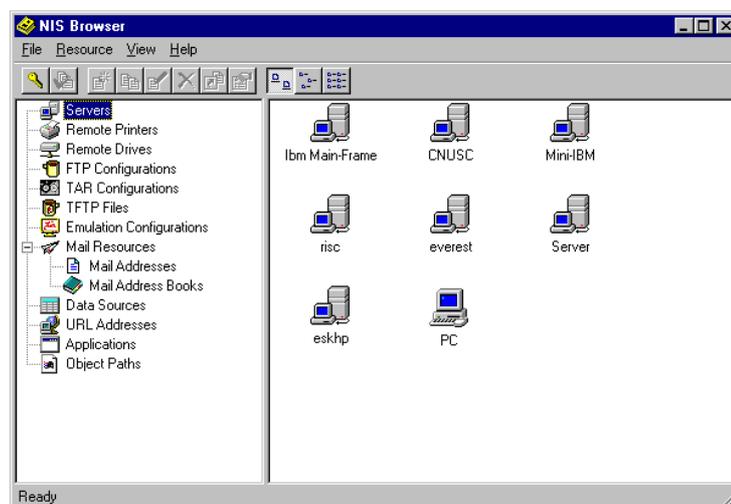
Click **Save** to save the configuration.

Now the NIS browser can be started.



Run the program by clicking on the **Tun NIS** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

The NIS browser delivered with the Tun range of products is presented as a window composed of a left-hand section showing the different categories (or tables) of resources, and a right-hand section showing the content of each table.



To access the contents of a table, select the table in the left-hand section of the window.

The display of the contents of a table can be modified by selecting the appropriate option in the View menu, or by clicking the corresponding button in the NIS browser toolbar:



Large icons



Small icons



List (only under Windows 95)

The same interface is used for user mode (the default) and administrator mode; only the functionality differs. The shift from one mode to the other is effected by clicking the option **File→Administrator Mode** in the main menu, or by clicking the button **Administrator Mode**  in the NIS Browser toolbar. In Administrator Mode, the button remains depressed.

Resources

There are thirteen categories of resources corresponding to thirteen NIS Server tables:

	Servers	Network servers
	Remote printers	Shared network printers
	Network drives	Shared network drives
	FTP configurations	Network FTP servers
	TAR configurations	Backup devices
	TFTP files	Network TFTP servers
	Emulation configurations	Network emulation configurations
	Mail addresses	E-Mail addresses (all types)
	Mail address books	Address books accessible on the network
	Data sources	Network data sources
	URL addresses	URLs selected via the network
	Applications	Applications available through the network
	Object paths	Access to different objects available on the network

Each resource has the following characteristics:

- An icon.
- Properties.
- Associated applications.

Icons

Since there are a large number of icons used by the NIS Browser, they are not all shown here. It should be remembered, however, that each type of resource in each table has its own icon for easy identification. In

addition, devices such as drives or printers that are connected to the user's PC are indicated with a green spot. Devices which are not connected are represented by a grayed icon.

USER MODE

The user may resort to three types of functionality in the NIS Browser:

- Viewing the list of available resources on the network and their properties.
- Using these resources through the applications associated with them.
- Creating shortcuts for each of the resources so as to have immediate access to these resources from the Windows desktop.

Access to the available resources

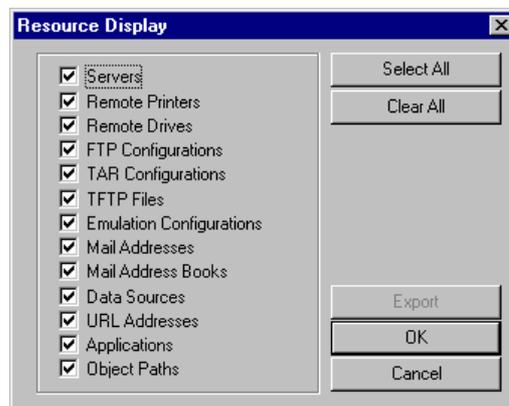
The user can display the list of resources available to him on the network by type (see the section "**Resources**" above).

Not all the resource types, however, may be visible:

- Administrator level: the administrator may choose to make such or such a type of resource available to users, and not other types. Refer to "**Administrator Mode**" for this particular choice.
- User level: the user may select only those resources he wishes to see from among the visible resources to reduce the contents of the NIS window.
- Application level: in each of the applications which use the NIS Browser, access is limited to those which are useful to the application. For example, the application **Tun TAR** allows access to the backup devices (TAR Configurations resource), but not to other resources.

To select the types of resources that can be viewed by the NIS Browser, select the option **View→Resource Display...**

The following window is displayed:



Select or deselect the check boxes appropriate to your needs.

Click the button **Select All** to select all the resources.

Click the button **Clear All** to clear all the check boxes.

Click the button **OK** when you have made your choice.

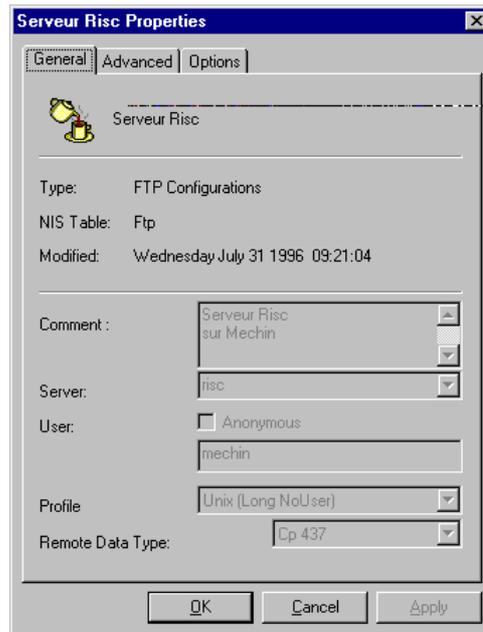
When the selection has been made, the user may then access the properties of each of the resources as described in the preceding section "**Starting the NIS Browser**".

Resource properties

To access the resource properties dialog box (to view them in user mode, or possibly modify them in administrator mode), select the resource, then use one of the following methods:

- Click the button **Resource Properties**  in the NIS Browser toolbar.
- Select the option **Properties...** in the contextual menu for the selected resource.
- Select the option **Resource→Properties...** in the general menu.

Two, three or four tabs are featured, depending on the resource selected.



On the **General** tab, the following options are always displayed:

- The icon representing the resource, as well as its name and type.
- The NIS table corresponding to the type of resource, as well as the date of the last modification of this table.
- A comment field for the resource. This comment appears as a tooltip when the mouse pointer is positioned on the icon representing the resource in the browser window (only under Windows 95).

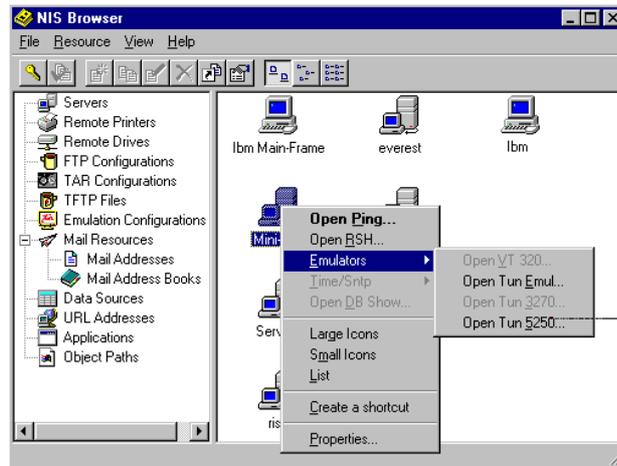
The **Advanced** tab, if there is one, contains the parameters for an advanced configuration. The **Options** tab can be used to include complementary configuration parameters.

The remaining parameters on these tabs vary from one resource to another and are described in detail in the section on the administration of the NIS tables.

Use of resources

One or more applications are associated to each resource allowing it to be exploited. This may vary from single programs (for example, a 3270 emulator) to a series of operations (for example, the installation of a printer). The available applications vary from one type of resource to another, but they also vary from one resource to another depending on individual characteristics.

To run an application, select the resource and display its contextual menu. The list of applications associated with the resource appears in the first part of the menu, with the default application shown in bold print being the one that is run when the resource icon is double-clicked. To access these applications, you can also select the **Resource** option in the main menu.



Example:

The applications Ping (for testing connections between PCs and servers), Tun RSH (for executing remote commands on the server from the PC), Tun EMUL (for performing terminal emulation with the server, with optional types of emulation), and DB Show (for declaring data sources).

When the user runs an application from the NIS Browser, he is actually executing the program installed on his PC. If the program is not installed, the application cannot be run. This is true for all the resources except the resource **Applications** which runs an application located anywhere on the network. This resource then makes it possible to use a remote application from the PC.

The following table presents the possible applications for each resource type, although not every resource will make use of them. The application in bold print is the default application executed when the user double-clicks on the resource icon.

Refer to the corresponding chapter in the **Tun NET** manual for each of the **Tun NET** applications, or to the **Tun SQL** and **Tun EMUL** manuals for the applications related to databases and terminal emulation.

Servers	Ping RSH Emulators (VT 320, Tun Emul, 3270,5250) Time/SNTP DB Show
Remote Printers	Install Uninstall
Network Drives	Connect Disconnect
FTP Configurations	Open FTP...
TAR Configurations	Open TAR...
TFTP Files	Retrieve
Emulation Configurations	Start the Emulator...
Mail Addresses	Open Mail...
Mail Address Book	-
Data Sources	Install Datasource... Use Data Source...
URL Addresses	Open the Internet Browser...
Applications	Run...
Object Paths	Open...

Creating shortcuts

The user can create shortcuts from the NIS Browser by selecting a resource. This functionality allows him to be able to use resources which he accesses frequently straight from the Windows desktop or Program Manager without having to open the NIS Browser. The resource may be a server to which he connects for emulation, a remote archive frequently accessed for backups, or even a URL easily accessed via the Internet browser by simply clicking on the shortcut icon.

To create a shortcut, select the resource desired, then select the option **Create A Shortcut** in the contextual menu related to the selected resource or the option **Resource** in the main menu.

You can also use the **drag 'n drop** to copy a shortcut from the NIS Browser to the desktop or the Windows 3.x Program Manager.

Under Windows 3.x, the program group **Tun NIS Favorites** is then created and contains all the shortcuts created with the NIS Browser.

ADMINISTRATOR MODE

Tun NIS configuration

Normally, the configuration of **Tun NIS** is very simple since the default parameters are generally sufficient for the best use of the server.

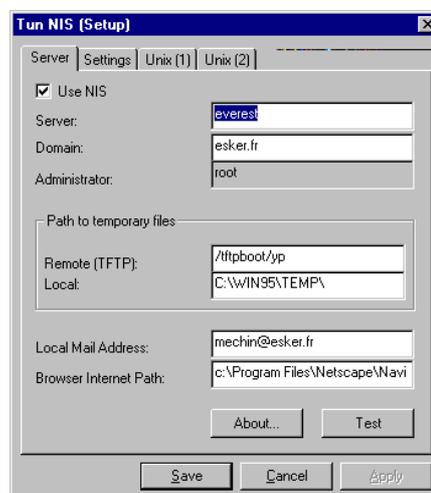
However, the administrator must declare the name of the domain covered by the NIS server to the browser, and put the NIS server into operation.

To access Tun NIS Setup, use one of the following methods:

- Run the program **Tun Admin+** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun NIS** button .
- If NIS has already been activated by the administrator (the option **Use NIS** is activated), run the program by clicking on the **Tun NIS** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu. Then switch to administrator mode.

Since the default login is root, enter the password associated with the root login on your system. Then select the option **File**→**Configuration** in the general menu.

The following window is displayed:



Basic configuration

So that the NIS browser can be used in the Tun applications installed, it is essential to select the check box **Use NIS**. The **NIS** button will then be made available in all the Tun applications which use the browser. By default, the check box is not selected; in this case the **NIS** button will not appear in the applications.

The only two other settings to enter for a basic configuration are:

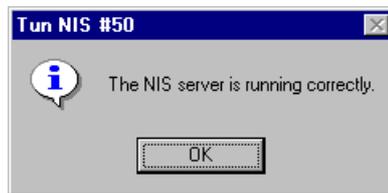
- The domain name which, by default, is "esker.fr". Replace "esker.fr" with your domain name.
- The path to your Internet browser (for example: c:\program files\netscape\navigator\program\netscape.exe

Click **Save** to save the configuration.

The other parameters on the **Server** tab are as follows:

- **Server:** name or IP address of your domain. If you do not know the name or IP address of the NIS server, enter the address **0.0.0.0** or **255.255.255.255** to scan the network for the server.
- **Administrator:** is the administrator's login for accessing the NIS server to maintain the tables.
- **Path to temporary files:** these two fields contain the name of the working directory on the NIS server on which the different files created will be placed, and the name of the working directory on the administrator's PC. You may change the default values if necessary.
- **Local Mail Address:** an e-mail address is created for access to the anonymous FTP accounts (the address replaces the password for anonymous access).

To test the NIS server, click the button **Test**. The following message appears if the server is functioning correctly:



Advanced configuration

The other tabs in the **Tun NIS Setup** dialog box propose advanced server settings.

None of these parameters need be modified. However, you may change the values if your configuration is not standard.

The **Settings** tab contains the following options:

- **Number of Retries:** this is the number of retries made when accessing the NIS server before the attempt is abandoned. The default value is 3.
- **Timeout:** the duration in milliseconds between each access attempt. The default value is 1000 ms (1 second).
- **Server Recognition Delay:** since there may be several NIS servers on the network, it may be necessary to wait a certain time before the server is chosen, so as to let the browser find the server which corresponds exactly to the configuration. Enter the time required in this field. The default value is 1000 ms (1 second), which means that the result of the search for the NIS server will only be given after one second allowing several possible NIS servers on the network to be queried.

The tabs **UNIX (1)** and **UNIX (2)** contain settings for the compilation and decompilation of the NIS tables, and also for the default commands and values required to update the tables from the browser. Only change these values if your configuration is not standard.

When you have entered the settings of your choice, click the button **Save** to register the changes. If you want to exit from the administration dialog box without saving the changes, click the button **Cancel**.

NIS Server stoppage

If the NIS server, for whatever reason, becomes unavailable for a certain time, it is essential to control its correct startup with the **Tun NIS** configuration tool. To do this, run **Tun NIS** from the administrator program and perform the test on the server. The server is available again if a message announcing its correct functioning appears.

Table administration

The principal of administrator mode is to let a user access the NIS server tables with a password. Tables and resources in the tables are updated locally according to the following procedure:

- The selected table is automatically locked and decompiled: the administrator can then make his changes to the table while other users use the version stored on the server.
- After modification, the table is compiled and then unlocked: users can then use the latest version updated by the administrator.

By this principle, the table that an administrator is currently modifying is no longer accessible to another administrator. Similarly, different tables may be updated simultaneously by several administrators.

The modification of one resource in a table means that the whole table is under the administrator's control and cannot be modified by another administrator.

To switch to administrator mode, click the button Administrator Mode  in the NIS Browser toolbar, or select the option **File→Administrator Mode** in the general menu.

The following window is displayed:



The user name is the one set in the configuration of **Tun NIS**. The default is **root**. Enter the password that is associated with this user name in the NIS server settings and click the **OK** button.

Restoring the sample table

When **Tun NIS** is first used, the administrator can load the first, sample table pre-set by Esker.

To do this, enter administrator mode, select the option **File→Restore NIS Tables** from the main menu and then select the file "esker.nis".

Administrator mode icons

The same screen organization is maintained in administrator mode, except that the icons are slightly modified according to the status of the resource in question. When administrator mode begins, all the resources are present and compiled in the table. They are therefore represented by the same icon as in user mode with an added green check mark (✓):



Table and resource operations

For each resource in the tables, the administrator can:

- Create a new resource.
- Change the properties of a resource.
- Delete a resource.
- Restore a deleted resource before recompilation.

After modifying one or more resources, the administrator can compile the relevant table.

Finally, the administrator can save a copy of the NIS tables locally in a file which he can later compile if necessary.

Each of these administration operations is described in the following sections.

Compiling a table

After carrying out the desired modifications, the administrator has to update the NIS table physically on the server. This consists of recompiling the table, then relocking it so that the new version will be available to the network's users.

To compile a table, use one of the following methods:

- Click the button **Compile NIS Table**  in the NIS Browser toolbar.
- Select the option **File→Compile Resources** in the general menu.
- Select another table.

The modified version of the table is available to other users.

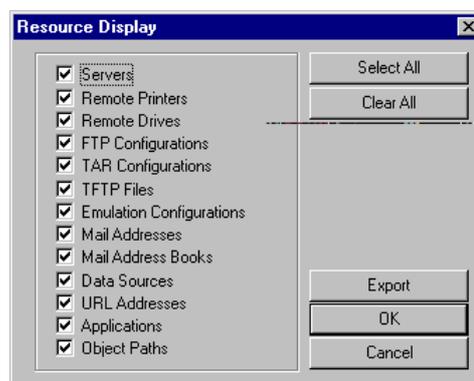
Also note that simply quitting administrator mode or exiting from the browser altogether causes the table to be recompiled, in other words, the changes are saved.

Choosing NIS Browser tables

The administrator can select the tables he wishes to make available to NIS Browser users. This may be useful, for example, if a table has not been updated and the administrator prefers not to make it publicly available.

To select the tables, the administrator proceeds like the general user choosing the tables he wishes to display on screen (refer to the section **User mode**), that is, he uses the option **View→Resource Display...**

The following window is displayed:



The only difference from user mode is that the button **Export** is now active. The administrator uses this button to impose his choice of displayed resources on the system's users. When the button is pressed, a special NIS server table (the View table) is modified.

Example :

*The administrator does not want to display the list of applications available on the NIS server. He deselects the check box **Applications**, then clicks the button **Export** to apply this choice to the users of the server. The users now have access to all the resource lists except the applications list.*

The other functions in this screen are the same as in user mode. This means that if the administrator does not want to view a particular type of resource, he deselects the resource type and clicks **OK** as in user mode.

CREATING A NEW RESOURCE

A new resource is represented by a grayed icon; for example:



represents a new server.

To create a new resource, select the table for the type of resource in question, then use one of the following methods:

- Click the **New Resource** button  in the toolbar of the NIS Browser.
- Select the **Resource** menu in the general menu, then select the option for creating a new resource (**New**).
- Click the right mouse button anywhere in the right-hand part of the NIS Browser window (with no resource selected), then select the contextual menu option which creates a new resource (**New...**).

Example:

*To create a new network drive, select the option **Resource** → **New NFS Drive...** in the main menu*

The properties window for the selected resource type is displayed.

You can also copy an existing resource so that its properties are the basis of the configuration of the new resource. To do this, select the resource to be copied and use one of the following methods:

- Click the button **Copy**  in the NIS Browser toolbar.
- Select the option **Copy...** in the contextual menu of the selected resource.
- Select the option **Resource** → **Copy** in the main menu.

The properties dialog box of the initial resource is displayed. Proceed as for the modification of the properties of a resource and refer to the relevant section for the selected resource below.

Name syntax

Under Windows 3.x, the backslash character (\) is not allowed to be used for the name of a resource. The characters (,) and the comma (,) are not allowed to be used for the name of a resource if you wish to create a shortcut for that resource.

Under Windows 3.x and Windows 95, the file paths to files and applications for the "Emulation Configurations", "Address Books", "Applications", and "Object Paths" types of resource take the following form:

c:\...\...	local file (used for a file available on every machine)
\\server\path\file	file available for Workgroups (the PC server must remain switched on to allow access to the resource)
nfs://server/path/file	file accessible using Tun NFS
tftp://server/path/file	file accessible using Tun TFTP (the path must be authorized by TFTP)
nis:resource name	reference to a NIS "Object Paths" type of resource which contains the actual path of the file or application

The syntax used for URL addresses is as follows:

type://server/path/

where type should be replaced by *http*, *ftp* or any other protocol supported by Netscape Navigator or your Internet browser.

Note: The name of a printer resource should not be longer than 30 characters.
--

Server properties

General tab

- Enter the name of the server as you want it to appear in the NIS browser. Respect the authorized formats (See **Name syntax** above).
- Enter an optional comment: the comment will appear as a tooltip when the mouse pointer is placed on the icon of the resource.
- Enter the actual name or IP address of the server .
- Select the type of server: telnetd, 3270 Site, 5250 Site or PC. If your server does not correspond to one of these types, do not select any of the options.
- Select the server attributes and enter the corresponding port number if the default option is not suitable for your configuration: TIME, SNTP, POP e-mail server, SMTP and **Tun SQL** server.

Printer properties

General tab

- Enter the name of the printer as you want it to appear in the NIS Browser. Respect the authorized formats (refer to the section **Name syntax** above). The name of a printer resource should not be longer than 30 characters.
- Enter an optional comment: the comment will appear as a tooltip when the mouse pointer is placed on the icon of the resource.
- Select the type of printer: "Lpr" for a printer redirected with Tun LPR, otherwise Workgroups.
- Enter the server name as well as the shared name of the printer.
- In the case of a Lpr printer, select the protocol to be used by the TCP connection when printing and enter, if necessary, the UNIX print command (for RSH and REXEC protocols) as well as the UNIX user name to be used to start the print job.

For more information on this last point, please refer to the chapter **Using remote printers'**.

Advanced tab

The parameters on the **Advanced** tab are those supplied by the printer on the test page obtained by accessing the printer properties and printing the printer's test page from the drive to which it is connected.

To perform this operation from a PC running Windows 95, open the properties dialog box for the printer (double-click on the **My Computer** icon in the Windows 95 desktop followed by the **Printers** icon), then select the option **Properties** in the contextual menu for the printer. Click the button **Print Test Page**.

Example contents of a test page:

```

Congratulations!

If you can read this information, you have correctly installed you HP LaserJet
4/4M Plus PS.

The information below describes your printer driver and port settings.

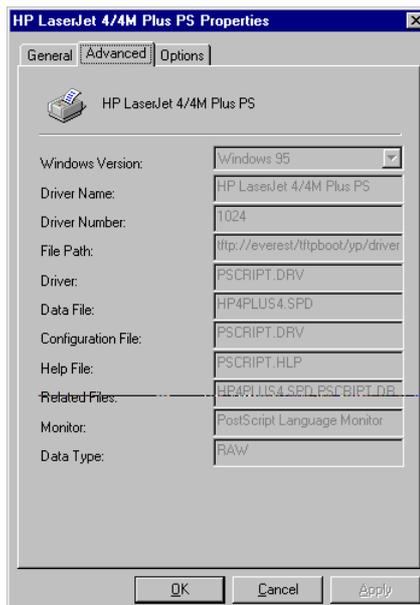
Printer name:   HP LaserJet 4/4M Plus PS
Printer model:  HP LaserJet 4/4M Plus PS
Driver name:    PSCRIPT.DRV
Data file:      HP4PLUS4.SPD
Config file:    PSCRIPT.DRV
Driver version: 4.00
Color support:  No
Port name:      \\Pcccd\hp_printer
Data format:    RAW

Files used by this driver:
C:\WIN95\SYSTEM\HP4PLUS4.SPD
C:\WIN95\SYSTEM\PSCRIPT.DRV   (4.00.950)
C:\WIN95\SYSTEM\PSCRIPT.HLP
C:\WIN95\SYSTEM\PSCRIPT.INI
C:\WIN95\SYSTEM\TESTPS.TXT
C:\WIN95\SYSTEM\APPLE380SPD
C:\WIN95\SYSTEM\FONTS.MFM
C:\WIN95\SYSTEM\ICONLIB.DLL   (4.00.950)
C:\WIN95\SYSTEM\PSMON.DLL    (4.00.950)

This is the end of the printer test page.

```

The information supplied on this page can be used to complete the fields on the **Advanced** tab:



Tab Fields	Test Page Information
Driver name	Printer model
Driver number	Driver version (converted to binary)
Driver	Driver name
Data file	Data file
Configuration file	Config
Related files	Files used by this driver
Data type	Data format

Only supply the path for the directory created for the drivers during the UNIX installation (see "**Tun NIS setup**"), and separate each file with a comma without using spaces. The names must be written in capitals.

The other fields are for the help file (same as the driver file name only with the extension **.hlp**), and the monitor.

Network drive properties

General tab

- Enter the name of the network drive as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Select the type of network disk: **Nfs** if it is a disk that is accessible with Tun NFS or Workgroups.
- Enter the name of the relevant NFS server as well as the path to the UNIX directory and the user name required to access to the remote drive.

To obtain more information on the last point, or if you wish to change the settings on the advanced tab, please refer to the chapter related to NFS Client.

FTP configuration properties

General tab

- Enter the name of the FTP configuration as you wish it to appear in the NIS browser. Respect the authorized formats (see **Name syntax** above).
- Enter a comment (optional): this comment will appear as a tooltip if the user rests the mouse pointer over the resource icon.
- Enter the name of the relevant FTP server to be used for the FTP connection. Select the check box **Anonymous** for anonymous FTP access.
- Enter the type of server used and the type of data on the server.

For more information on the last two points, please refer to the chapter related to FTP Client, especially the section on server profiles.

Advanced tab

- Enter the name of the subdirectory which will act as the access directory to save the user from unnecessary directory changes on the server. Select the check box **Stay under home directory** to prevent the user from being able to move up the directory structure on the server.
- Select the option **Ascii** or **Binary** to set the default type of data transfer for the connection. If you choose the option **Ascii**, specify the type of data transfer exchanged with the UNIX system in the area **Transfer Data Type**.
- Change the service port number, if necessary, in the field **Service**.
- Change the default data size, if necessary; the default value is 8.
- Deselect the default direct and passive modes.

To obtain more information on the **Advanced** tab settings, refer to the chapter related to FTP Client.

Tar configuration properties

General tab

- Enter the name of the Tar configuration as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Enter the name or the IP address of the server on which the backup device is installed, and also the user name in which the backup will be carried out.
- Enter the name of the relevant NFS server as well as the path to the UNIX directory and the user name required to access to the remote drive.

To obtain more information on these two last points, and also the settings on the **Advanced** tab, please refer to the chapter related to Remote Backup.

TFTP file properties

General tab

- Enter the name of the TFTP file as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Enter the name of the remote server containing the file.
- Enter the names of the source and destination files.

To obtain more information on the last two points, please refer to the section "**Using Tun TFTP**" in the chapter "**Tun Accessories**".

Emulation configuration properties

General tab

- Enter the name of the emulation configuration as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Select the type of emulation required, as well as the configuration file to be used. Respect the authorized formats (see **Name syntax**).

To obtain more information on the last two points, please refer to the chapter '**Terminal Emulation**'.

Mail address properties

General tab

- Enter the name of the e-mail address as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Select the type of address desired, and enter the e-mail address of the mailbox used.

To obtain more information on the last point, please refer to the chapter about electronic mail for Windows 95.

Address book properties

General tab

- Enter the name of the address book as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax**).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.

- Enter the name of the file containing the address book. Respect the authorized formats (see **Name syntax**).

To obtain more information on the last point, please refer to the chapter about electronic mail for Windows 95.

Data source properties

General tab

- Enter the name of the data source as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax** above).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Enter the name of the driver associated with the data source.
- Enter the name of the server containing the data base, as well as the service name used (i.e. the server process linked to the DBMS with the database to be used - tunodbc.ora, for example).
- Enter the name of the data source and (optionally) a description.
- Enter the name of the user authorized to access the data source, and the associated password.

To obtain more information on these four points and the settings on the other tabs, please refer to the **Tun SQL** manual.

URL address properties

General tab

- Enter the name of the URL address as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax** above).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Enter the complete URL address. Respect the authorized formats (see **Name syntax**).

Application properties

General tab

- Enter the name of the application as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax** above).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Select the desired type of application.
- Enter the file path of the program. Respect the authorized formats (see **Name syntax**).

Object path properties

General tab

- Enter the name of the object as you wish it to appear in the NIS Browser. Respect the authorized formats (see **Name syntax** above).
- Enter a comment (optional); this comment will appear in the tooltip when the user rests the mouse pointer over the resource's icon.
- Enter the file path of the object. Respect the authorized formats (see **Name syntax**).
- Enter the type of object (optional).

MODIFYING, DELETING OR RESTORING A RESOURCE

Changing resource properties

A resource which has been modified will be displayed without a green check mark, and its icon is visible in user mode:



represents a server whose properties have been modified but which has not yet been compiled in the NIS table.

To modify the properties of a resource, double-click its icon or else select the icon and use one of the following methods:

- Click the button **Modify Resource**  in the NIS Browser's toolbar.
- Select the option **Modify...** in the contextual menu for the resource.
- Select the option **Resource**→**Modify** through the main menu.

The resource properties box is displayed. Refer to the preceding section "**Creating a new resource**" and modify the resource properties.

Deleting a resource

A resource which is to be deleted during compilation of the table is represented by the same icon as in administrator mode, only it is marked with a red cross:



represents a server which will be deleted when the table is recompiled.

To delete a resource, first of all select it, then use one of the following methods:

- Click the button **Delete/Restore Resource**  in the NIS Browser toolbar.
- Use the **Delete** or **Del** key on the keyboard.
- Select **Delete/Restore...** in the contextual menu for the resource.
- Select the option **Resource**→**Delete/Restore** through the general menu.

The resource properties dialog box is displayed. Check the contents of the resource, then click the button **Delete** to confirm the deletion. The resource will be deleted from the table when the administrator compiles it.

Restoring a resource before compilation

A resource deleted from the table (with a red cross on its icon) is only really deleted after recompilation of the table. Consequently, it is always possible to restore the resource and avoid its definitive deletion as long as the table has not been recompiled.

To restore a resource that is designated for deletion, follow the same steps as for the deletion of the resource (see the preceding section "**Deleting a resource**"), only use the **Restore** option.

SAVING AND RESTORING A NIS CONFIGURATION

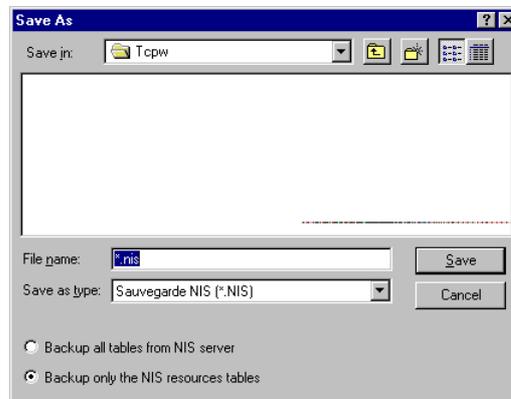
The administrator can save a NIS server configuration locally, so as to have a backup copy of a particular configuration. This could be useful to restore a previous configuration and to modify "manually" a configuration. For the latter operation, a clear understanding of the structure of the NIS tables and their contents is necessary.

Saving a NIS configuration

The saving of a NIS configuration may be partial or total: partial when only the NIS server resource tables are saved, and total when the entire server, including the resource tables, is updated.

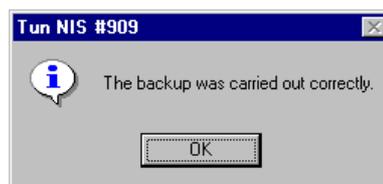
To save a configuration, use the option **File→Save NIS Tables** from the main menu.

The following window is displayed:



- Select the directory in which you wish to save the configuration.
- Select the type of Save, partial or total. By default, the Save is partial.
- Enter the file name, with the extension **.nis**.
- Click the button **Save**.

If the save operation has been carried out correctly, the following message is displayed:



To use a configuration file, open it with Wordpad or a similar application.

Example of a.nis:

```

---NIS:Path (esker.fr) --- OK -----
3270_16 1|1|||bmp||C:\EMULSYNC\3270_16.bmp
as400 1|1|||pan||tftp://194.51.34.1/tftpboot/yp/files/as400.pan
---NIS:Appli (esker.fr) --- OK -----
Notepad 1|1|||999|\pcmechin\temp\notepad.exe
---NIS:Url (esker.fr) --- OK -----
Microsoft\Server 1|1|||http://www.msn.com
URL\Esker 1|1|||http://www.esker.fr
---NIS:proto.nam (esker.fr) --- OK -----
hello hello 63 HELLO
HELLO hello 63 HELLO
ospf ospf 89 OSPF

```

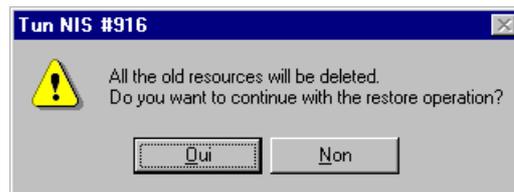
In this example are four tables from the domain esker.fr, namely, Path, Appli, Url, proto.nam. Three of the tables are resource tables.

The syntax of the file is always the same: the name of the table preceded by "NIS" and followed by the domain name. Then, one after the other, the resources contained in the table with the name of the resource and the fields related to the resource separated by vertical lines. No spaces are used at the beginnings or ends of the lines.

Restoring a NIS configuration

To restore a configuration saved locally, select the option **File→Restore NIS Tables** from the main menu and select the corresponding file.

The following message is displayed:



Click **Yes** if you really want to replace the current configuration with the restored configuration. The modifications are only taken into account when the table is recompiled. Remember, however, that if you restore a saved configuration, you will not be able to return to the configuration that you have replaced unless it too has been saved to file.

CHAPTER 4 - PING

INTRODUCTION

Tun PING is a TCP/IP application which tests links between PCs and servers. It works on the principle of emitting packets over a network to a server from which it waits for a reply (echo).

Tun PING AND NIS

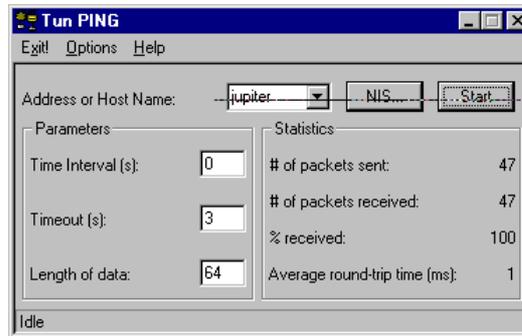
Tun PING benefits from access to the NIS server via the NIS browser included in Tun applications. This functionality can be used to view the servers available on the network and to select them directly with a simple click of the mouse. The network administrator must, of course, have previously configured the NIS server and defined the Servers resource table using the NIS Browser. For a full description of the NIS Browser, please refer to the chapter "**The NIS Browser**".

RUNNING PING



Run the program by clicking on the **Tun PING** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

The following window is displayed:

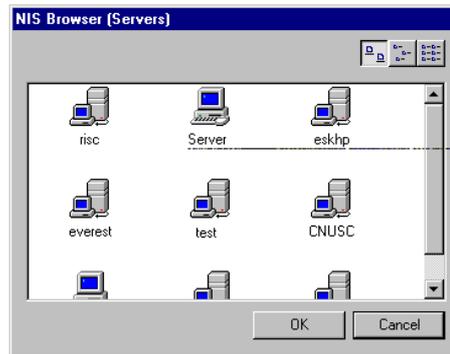


Address or Host Name

Enter the name or the IP address of the server for which you want to test the link with the PC.

Use the **NIS...** button to view the servers present on the network. Refer to the section "**Tun PING and NIS**" above.

Pressing the **NIS...** button displays the following window:



Double-click the desired resource to activate it.

Time interval

This field allows you to specify the time interval between consecutive packets (in seconds).

Timeout

This field allows you to specify the time (in seconds) after which a packet is considered to be lost.

Length of data

This field allows you to specify the length of the data packet to be sent.

This can change in relation to the routers passed to reach the server.

Options

The first two options in the menu **Options** allow you to specify the packet type to be used for testing the connection :

- **ICMP Echo**: this option is only valid with the Tun TCP/IP Kernel. If you are using a different kernel, you should use the ping application supplied with that kernel.
- **UDP Echo**: this option is only valid if the specified server uses this mode. To test the connection with another Windows PC, you should use ICMP.

If the **Beep** option is selected, a beep is emitted during the connection test. This function is useful if the user is trying to reconnect a PC to a server and is not continually looking at his screen.

The **Language** option allows you to choose the language used for displaying menus and messages.

Start

When the test parameters are set, run the connection test by clicking the **Start** button. The **Statistics** section shows the results of the test: the number of packets sent, the number of packets received, the percentage of emitted packets returned and the average round-trip time (in milliseconds).

Stop

Click the **Stop** button to stop the connection test.

CHAPTER 5 - USING THE NFS CLIENT

WHAT IS NFS?

Independent of operating systems, Network File System (NFS) is a transparent mechanism that allows PCs to mount remote directories over a network, and to treat them as if they were ordinary local directories on the PC.

The NFS protocol was developed by SUN Microsystems, and has since been normalized by X/OPEN. The standard was extended to the PC (which does not possess a means of providing security) under the name PC-NFS.

The originality and strength of **Tun NFS** lies in the fact that the server is "stateless", and does not maintain a specific context for each client.

For example, when a client opens a remote file, the *open request* is not transmitted to the server. The name, position, and length of the zone to be read is only transmitted when the client wants to read part of the file. The server opens the file, positions itself at the zone to be read, performs the read, then returns the results and closes the file. After this transaction, the server "forgets" the client.

The advantage to this procedure is that clients and servers are not linked by a permanent connection. If the client reboots (a frequent occurrence on PCs), no resources or residual processes are left on the server. If the server reboots, the client only loses the use of its remote volume during the server's startup.

In order to provide the best possible response times, **Tun NFS** uses the UDP (User Datagram Protocol) layer of TCP/IP, which is by far the fastest. To achieve the highest possible performance, clients and servers have the ability to store data in cache memory.

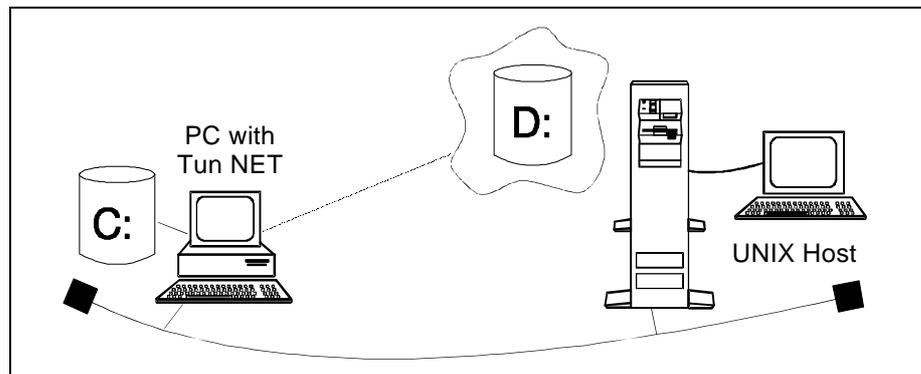
In general, *file and/or record locking* are supported by NFS clients and servers, as is the case with **Tun NET**. Windows file names may be represented under UNIX without problems. However, some UNIX file names cannot be used under Windows 3.x. To resolve this problem, the PC-NFS standard specifies the following:

- UNIX file names not entirely composed of lower-case letters, or whose length is greater than eight characters (not counting the extension) are considered **asincompatible** under Windows 3.x.
- For incompatible file names the NFS client creates a new name for the file based partly on its original name, and partly on a numerical value.
- The NFS client stores the association of the incompatible UNIX file names to translated names in a circular queue called the **name map cache**.
- The numerical value used by the NFS client to generate a Windows file name actually refers to its index position in the circular queue.

Tun NET AND NFS CLIENT

Tun NET implements the PC-NFS client protocol completely, with the exception of printer management which is obtained by using a different procedure.

Tun NET allows PCs to **mount** remote directories with virtual DOS drive letters (D:, E:....., Z:), and to treat them as local DOS drives.



With **Tun NET**, a UNIX host can become a true Windows file server, providing a common area for storing files and executing Windows programs in a multi-user environment.

The **Tun NET** Supervisor program provides a clear and understandable view of the NFS protocol.

Tun NFS AND NIS

The application **Tun NFS** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the NFS network drives and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the Network Drives resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

USING NFS CLIENT UNDER WINDOWS 3.X



Under Windows 3.x, **Tun NFS** uses either Esker's TCP/IP kernel or Microsoft's to permit exchanges between clients and servers.

With Esker's TCP/IP kernel, **Tun NFS** functions on a DLL stack supplied by Esker.

With Microsoft's TCP/IP kernel, **Tun NFS** functions on a VxD (Virtual Device Driver) supplied by Microsoft.

USING NFS CLIENT UNDER WINDOWS 95



In Windows 95, **Tun NFS** is governed by a VxD (Virtual Device Driver) which only works with the TCP/IP kernel supplied with the system (Microsoft's). The VxD implementation enables any Windows or MS-DOS application to access files on the UNIX server.

Note: **Tun NFS** under Windows 95 only works on top of the TCP/IP kernel supplied with Windows 95.

CONFIGURING AN NFS SERVER

To use NFS from a PC, it is first necessary to configure the UNIX host machine (unless this has already been done).

UNIX configuration is performed by following these steps:

- Check that the address of the **PC client** has been properly registered in the **/etc/hosts** file on the server.
- Make sure that **NFS** is running on the UNIX server. This may be done by executing the command "**ps -e**" in order to see if processes such as **pcnfsd**, **biod**, or **mountd** are active.
- Create or modify the file **/etc/exports** to include all of the directories that you would like to *export* (make available). Directories are listed one under the other in this file.
- Add any optional parameters to the directories listed in **/etc/exports** to limit access rights.
- Update the NFS processes with the changes made in these files by executing the command "**exportfs -a**".

Here is an example of an **/etc/exports** file on a UNIX server:

```
/usr -access=clients
/usr/local
/usr3 -access=cheddar:swiss:brie
/usr/bin -ro
```

- ◆ The first line indicates that the directory **/usr** is exported for the network group "**clients**".
- ◆ The second line indicates that the directory **/usr/local** is exported for everyone.
- ◆ The third line indicates that the directory **/usr3** is exported only for machines **cheddar**, **swiss**, and **brie**.
- ◆ The fourth line indicates that the directory **/usr/bin** is exported for everyone, but as **read only**.

To mount a remote filesystem using a user name other than "nobody", the UNIX process **pcnfsd** must be running. If this process is not active on the host, you may need to start it manually. The option "-d" may be used to track down problems.

STARTING THE NFS CLIENT UNDER WINDOWS 3.X



In **Tun NET** for Windows, **Tun NFS** is not the type of program that can be "started" manually. Instead, NFS drives are restored when Windows is started, or are mounted using the File Manager or **Tun Admin+**, and the **Network Device Driver** directly handles the NFS DLL

Therefore **Tun NFS** to function properly, **TUNNET.DRV** must be properly declared in the **SYSTEM.INI** file:

```
network.drv=c:\tun\tcpw\tunnet.drv
or
secondnet.drv=c:\tun\tcpw\tunnet.drv
```

Tunnet.drv is often used as the **secondnet.drv** for declaring **Tun NET** as a second network in Windows for Workgroups.

On TCP/IP Kernel from Esker

Tun NFS for Windows 3.x also uses an NFS device driver called **TUNREDIR.386**, which is activated by the following line in the [386 enh] section of the **system.ini** file:

```
device=c:\tun\tcpw\tunredir.386
```

On Microsoft Kernel

Tun NFS for Windows 3.x also uses an NFS device driver called **TUNNFS.386**, which is activated by the following line in the [386 enh] section of the **system.ini** file:

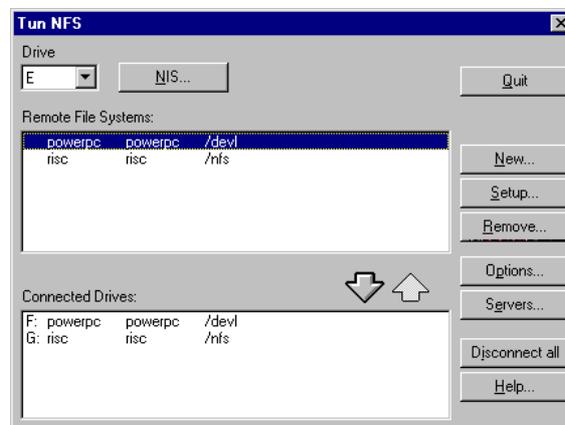
```
device=c:\tun\tcpw\tunnfs.386
```

DECLARING REMOTE FILESYSTEMS

Before you can use remote directories as local Windows drives, you will need to define them using **Tun NFS**.

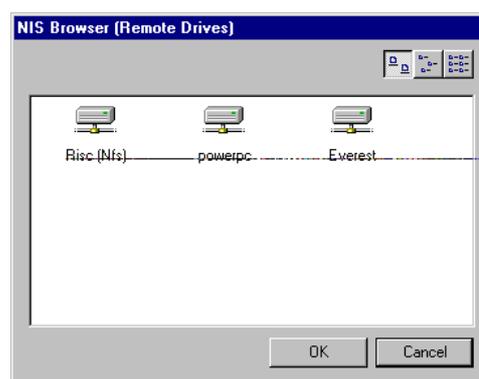


Run the program **Tun Admin+** from **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun NFS** button.



The dialog box shows previously defined and currently connected drives. If no filesystems have been declared, the lists in the dialog box are empty.

To use a previously defined NFS configuration, use the **NIS...** button. This displays the following window:



Double-click on the desired resource to activate it.

Note: Only remote NFS network drives are shown in this screen.

To define a new filesystem, click on the **New...** button.



Under Windows 3.x, the following dialog box will appear:



Under Windows 95, the following dialog box will appear:

Filesystem

Name

This field contains the volume name which will be used by the Windows 95 Explorer or the File Manager in Windows 3.x. It is the name by which the filesystem will be known by potential users. The name itself is of little importance and is merely a means for the user to remember it by. The name of the NFS server is commonly entered in this field.

Remote Host

The host name field contains the name or IP address of the UNIX host containing the NFS file system. You may select a host declared in the host table by clicking on the down arrow next to the field.

Remote Path

This field indicates the absolute directory path of the remote filesystem to mount. **Tun NFS** must be exported (in **/etc/exports**) by the server in order for the specified directory to be mounted.

To view available NFS filesystems on the host, click on the arrow next to the field. This will send a request to the host, and will place the paths of the currently exported filesystems in the field.

At this point, if you receive the error message: **Port Unreachable (Portmapper or Mount daemon)**, **Tun NFS** is probably not installed or configured on the remote system. Check with the host system administrator to make sure that **Tun NFS** is running and that filesystems have been properly exported.

If this procedure works correctly, it implies that **Tun NFS** is running correctly on the PC as well as on the UNIX server.

The directory you assign will be considered as a **root** under DOS (the user will not be able to go back up the directory tree towards the root).

User Name

Enter the name of a valid user account in this field. When an NFS mount is started, the user will be prompted to enter a password. If you enter the pseudo-user **nobody**, no password is required, but access rights are usually reduced to the strict minimum. For a user name other than **nobody**, **pcnfsd** must be running on the host. If you enter a question mark (?), the user will be prompted for both the account name and password when the mount is started.

Note: It is generally recommended **not to use** "root" to login, because **Tun NFS** does not recognize the user **root** (considered as **nobody** if accepted at all).

Default Local Drive

Assigns the drive letter used by DOS, such as **E:**, for the mounted filesystem.

Make sure that the DOS "**lastdrive**" command in the CONFIG.SYS file on the PC allows you to assign the drive letters you want. For example, to be able to assign virtual drives up to **M:**, add the following line to the **CONFIG.SYS**:

lastdrive=m

Reconnect at Logon

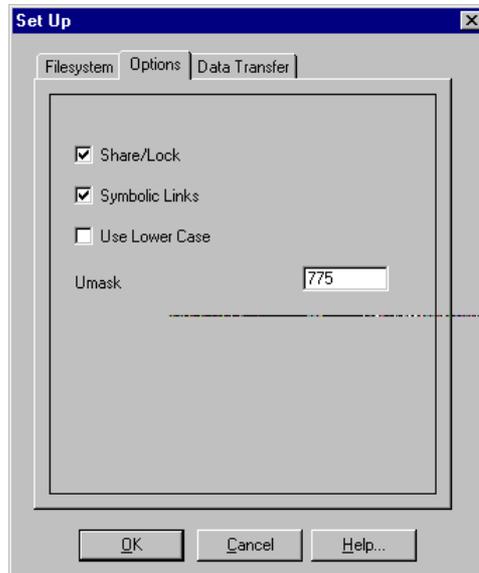
If this check box is selected, then once the filesystem is mounted (see below), it will be automatically re-mounted each time Windows is run.

If the check box is not selected, the user will have to mount the filesystem manually each time Windows is run.

Options



Under Windows 95, click on the **Options** tab to display the following dialog box:



Share/Lock

This option indicates whether or not the NFS server supports file and/or record locking. Most word processing and spreadsheet software require **Share/Lock** to be active.

Symbolic Links

By selecting this option, NFS users are given the right to see, open and delete symbolic links in UNIX files.

Use Lower Case

Select this check box to send lower case names to the UNIX server.

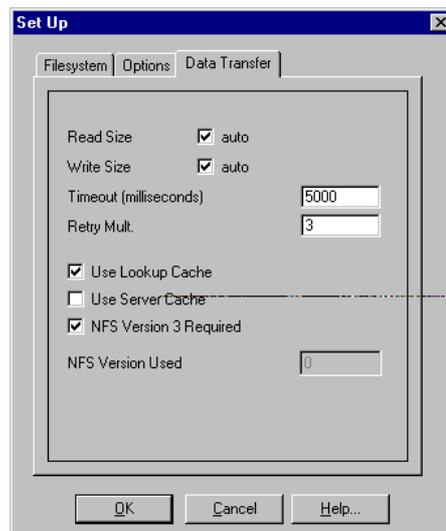
Umask

Sets access rights (using UNIX format) to created files.

Data Transfer (under Windows 95)



Under Windows 95, click on the **Data Transfer** tab to display the following dialog box:



Read Size

When you first start using **Tun NFS**, use the default value given for this option (1376 bytes), leaving the check box on **Auto**.

Read size refers to the maximum size, in bytes, of *read requests* to the NFS server. For example, if a Windows program reads a remote file, **Tun NFS** will use the **Read size** value to divide the request into as many packets as necessary.

Write Size

Usually the default value for this option is best (8 Kb).

Write size refers to the maximum size, in bytes, of *write requests* to the NFS server. If a Windows program makes a write request to a remote filesystem, the requested data is broken down into as many packets of **Write Size** bytes as necessary.

Timeout

Specifies the period of time in milliseconds after which packets will be re-sent to the server if there is no response.

Retry Mult.

The value of the **Retry Multiplier** sets the number of times a packet will be re-sent if there is no response from the server. The default value is 3 times.

Use Lookup Cache

The lookup cache stores information on the accessibility of a file with **Tun NFS**. By selecting this check box, you activate the cache function and accelerate access. The size of the cache and the refresh rate can be set with the button **Options** in the **Tun NFS** window. See "**Additional NFS options**".

NFS Version 3 Required

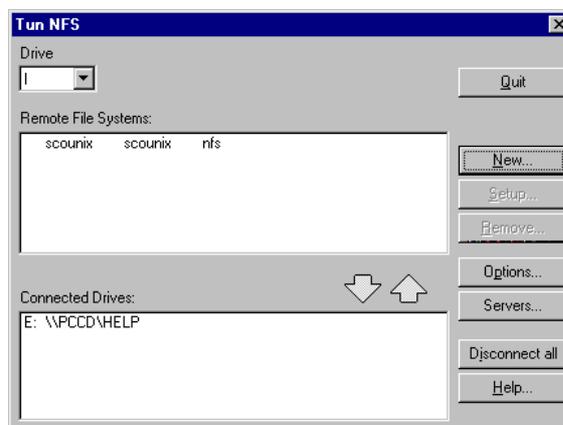
If this check box is selected, the client tries to connect to a NFS server, version 3. If the server is not version 3, the connection is performed with version 2 modality. The version used for the connection is specified in the grayed field **NFS Version Used**

Use Server Cache

This option is available if the previous option is selected (NFS V3). The server maintains a write cache that it uses to send an immediate reply to the client when writing to a file, without having to wait for the whole operation to be completed. If you select this check box, you activate the use of the write cache and accelerate the write operation.

Saving changes

To save a configuration, click on **OK**, which also returns you to the previous menu. Any filesystems you have configured will appear as shown below:



You may add more filesystems to this list using the **New...** button, or remove them using the **Remove...** button.

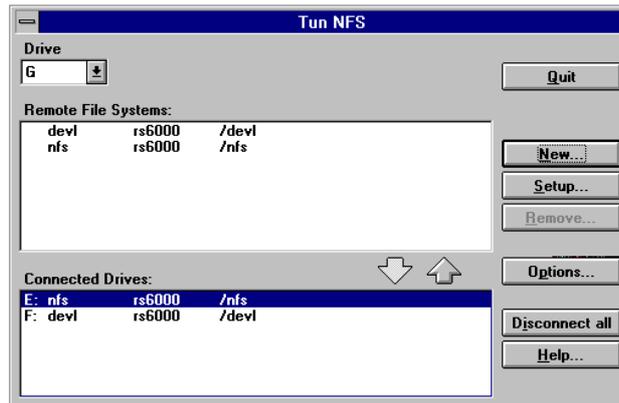
MOUNTING NFS FILESYSTEMS UNDER WINDOWS 3.X



There are two ways to mount configured filesystems:

- By using the down arrow in the window shown above.
- By using the Windows File Manager option, **Drive**→**Connect Network Drive** (if **Tun NET** is installed as the **secondnet.driv**, then click on **Other**).

Mounted filesystems are shown in the lower half of the following window:



Select a filesystem, press the down arrow (↓) to mount it, and then enter the password for the specified user. After the password is approved by the NFS host, the new drive will be available to all of your Windows applications as if it were a local drive.

MOUNTING NFS FILESYSTEMS UNDER WINDOWS 95

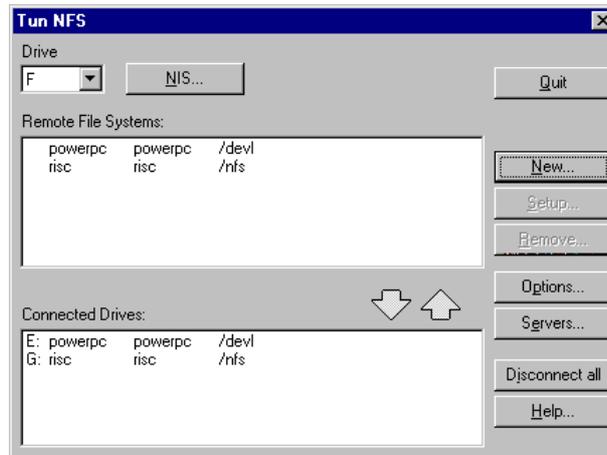


There are several ways to mount configured filesystems under Windows 95:

- Using the administrator (**Tun Admin+**).
- Using the Windows 95 Explorer.
- Using the Network Neighborhood.

Using the administrator (**Tun Admin+**)

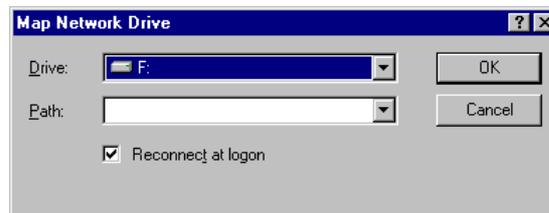
After a remote NFS filesystem has been declared, it should appear in the upper list in the following dialog box:



Select a filesystem, press the down arrow (↓) to mount it, and then enter the password for the specified user. After the password has been approved by the NFS host, the new drive will appear to Windows Explorer as if it were a local drive.

Using the Windows 95 Explorer

After an NFS filesystem has been declared using **Tun Admin+**, it can be mounted directly with Windows Explorer with the option **Tools→Connect Network Drive** in the main menu of this application. This operation displays the following dialog box:



Drive

The field **Drive** should contain the name of the MS-DOS drive to be mounted. The proposed name can be changed.

Path

The field **Path** should contain the name by which you have declared the filesystem you wish to mount. If the filesystem has already been mounted in an earlier Windows session, it should appear in the list associated with this field. If the filesystem has not been mounted before, enter its name in the field.

Reconnect at logon

If this check box is selected, it means that when the filesystem has been mounted once, it will be automatically mounted each time Windows is run. If the check box is not selected, the filesystem will have to be mounted manually each time Windows is run.

Clicking on **OK** mounts the desired filesystem on the chosen drive (D:, E:, F:...). From this moment, the filesystem is mounted and it will appear to Windows Explorer as such.

Note: A filesystem can be mounted directly with Windows Explorer even if it has not been previously declared using **Tun Admin+**. To carry out the mount, enter a character string in the field **Path** as in the following example:

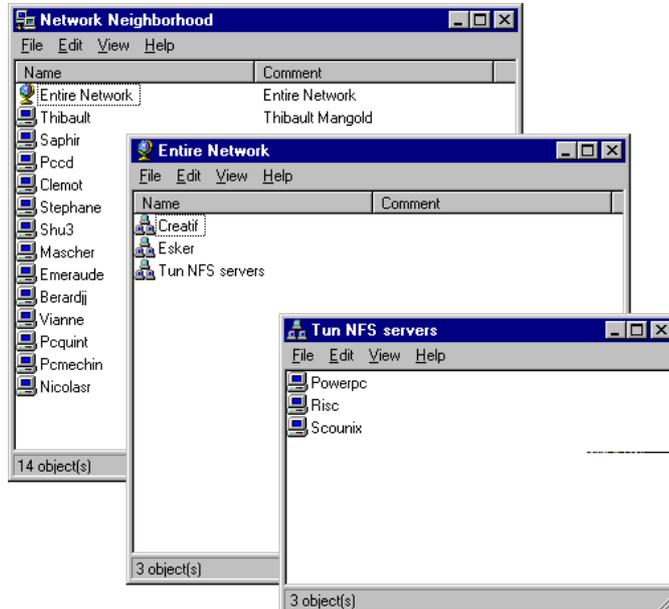
//host/directory

where **host** is the name of the NFS server and **directory** the name of the directory to be exported. In this case, the filesystem will be mounted with the default option **Read Size, Write Size**.

Using the Network Neighborhood

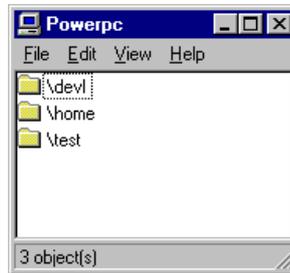
The mounting of a filesystem using the Network Neighborhood presents a particular case since it is not necessary to associate the filesystem with an MS-DOS drive (D:, E:, F:...). In fact, the filesystem is associated with a pseudo-drive with the name **Network Neighborhood**. The pseudo-drive is visible to all the Windows applications. The linking of the file system to the Network Neighborhood is not permanent and Windows will not try to reconnect when the machine is booted.

To perform the mount using Network Neighborhood, proceed as indicated in the following collage:



1. Run the application **Network Neighborhood**
2. Select the entry **Entire Network** from the list showing the different workstations with exported resources.
3. If the NFS software has been properly installed, this operation should display a list which includes the entry **Tun NFS servers**. Select this entry.

4. This operation displays a new window containing the list of NFS servers available on the network (in fact, the list of servers declared using **Tun Admin+**).
5. Selecting one of the servers displays the directories exported by that server:



If one of the directories is selected, a dialog box is displayed requiring a user name and password to access the filesystem. Entering this information will give the user access to the remote directory.

Notes: Without additional information, the remote directory thus selected will not be associated to an MS-DOS drive. Access will only be allowed through the Network Neighborhood.

However, it can be associated with a drive name by choosing the option **File→Map** network drive and entering the drive name to which the remote filesystem is to be associated.

DISCONNECTING NFS DRIVES

Disconnecting NFS drives under Windows 3.x



The procedure for disconnecting NFS drives is the exact opposite as that used for connecting them. In the previously described **Tun NFS** window, **Disconnect all** may be used to deactivate NFS drives, or you may select a connected drive and click on the up arrow (↑) to disconnect it.

Disconnecting NFS drives under Windows 95

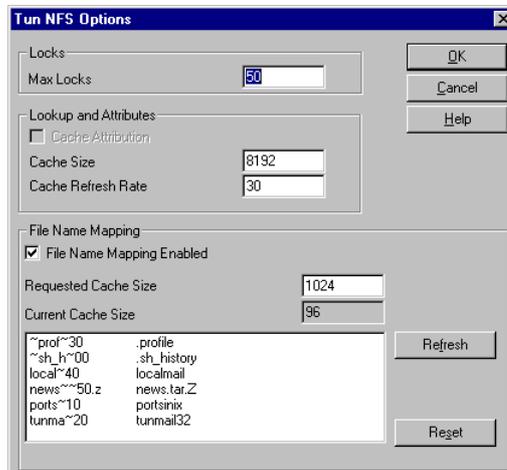


There are two ways to disconnect an NFS network drive under Windows 95:

1. Use the down arrow (↓) in the Administrator (**Tun Admin+**) dialog box (as for 16-bit Windows).
2. Use the option **Tools→Disconnect a network drive** in Windows 95 Explorer.

ADDITIONAL NFS OPTIONS

By clicking on **Options** in the **Tun NFS** first dialog box, you may set additional options and observe the **Tun NFS Options**



The following options may be defined:

Max locks

Indicates the maximum number of file locks that NFS may place.

Lookup and Attributes

This option activates the lookup cache and configures it. Clear the check box **Cache Attribution** to deactivate the cache, and enter values for the cache size in bytes (8192 recommended) and the refresh rate in seconds (30 to 40 recommended).

File Name Mapping

This option is used to handle conflicts due to the differences between acceptable PC file names and UNIX file names.

Under Windows 3.x, when a file copied from a remote system is not compatible with the PC file format (maximum 8 characters with a 3 character extension), it is given a "new" name. The PC equivalent name and the true file name are displayed in the lower section of the dialog box.

If necessary, you may:

- Change the amount of memory allocated for the table (increasing it, if necessary, if you have many files that are incompatible).
- Update the display by clicking on **Refresh**.
- Clear the table by clicking on **Reset**.

CHAPTER 6 - USING THE NFS SERVER

Tun NET AND NFS SERVER

Tun NFSD for Windows is an implementation of a complete (PC) NFS server protocol (excluding printer management which is handled differently).

The NFS server option enables a PC to export one or more of its directories allowing another PC to view them as virtual drives (D:, E:, Z:).

It also enables a PC to export directories so that a UNIX machine can treat them as new virtual filesystems.

The NFS server option enables a UNIX machine to access the contents of the PC hard drives and thus authorizes a centralized backup of the network files. It allows a central server to automatically update specific data or executable files resident on the PC. The NFS server option also allows several PCs to share a CD-ROM drive.

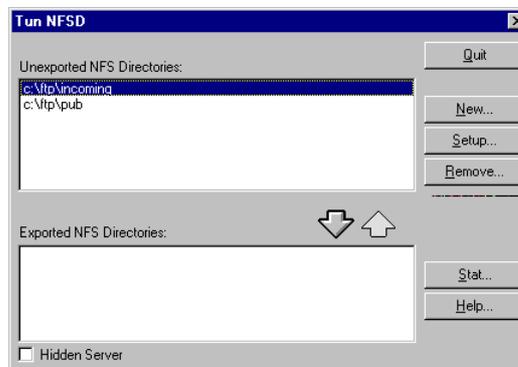
INITIALIZING THE NFS SERVER ON A PC

The configuration of the NFS server consists in declaring one or more directories on the PC which will be accessible using an NFS client application.



Run the program **Tun Admin+** from **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun NFSD** button.

The following screen should appear:



Note: When this dialog box is activated, the option of running the NFS server as a background process (if this is not already the case) is proposed if NFS directories have been exported.

This window can also be displayed by running **Tun NFSD** and then selecting the option **Setup...** in the system menu.

It is possible not to display **Tun NFSD** icon on the screen by selecting the check box **Hidden Server**. This option is useful for avoiding the display of a lot of icons in the Windows environment when the keystrokes **Alt-Tab** or **Ctrl-Tab** are used.

To export a directory, click on the button **New...** which displays the following window:



Directory

This field should contain the full pathname to the MS-DOS directory that you wish to export to permit NFS access.

Export Name

Due to the difference in pathname notation on MS-DOS and UNIX systems (c:\tmp\xxx and /usr/tmp/xxx), the field **Export Name** allows the user to rename the exported directory for a different operating system. The new name must comply with the UNIX system standard.

Comments

The field **Comments** allows a comment to be attached, perhaps explaining why the directory has been exported.

Read Only

The check box **Read Only** limits access to the exported directory to read only. This is a very useful option for **nobody** type access. It prevents users logged on from writing unauthorized information to the exported directory.

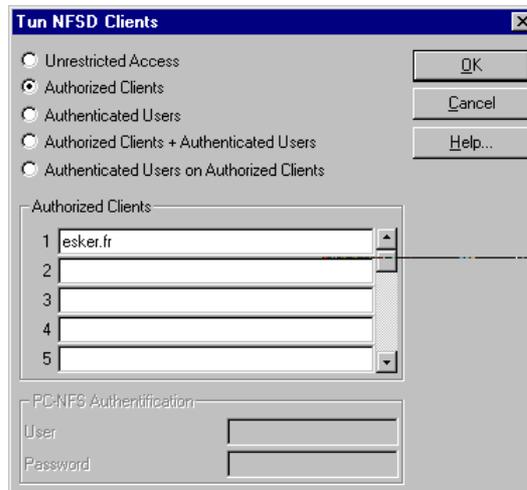
Unrestricted Read

This check box authorizes **nobody** type access. That is, a user may access the exported directory by supplying the name **nobody** as user's name, with no password. In any case, **Unrestricted Read** will not allow him to modify or delete the files in the exported directory.

Clients...

Access to the NFS server can be restricted to a certain number of machines. The button **Clients...** lets the user create or modify a list of IP addresses or names of machines authorized to access the exported directory. Machines not on the list will simply not be able to log in. If the list is empty, any machine may be logged in.

Clicking the button **Clients...** opens the following window:



Unrestricted Access

This radio button allows users unrestricted access irrespective of whether their names appear in the **Authorized Clients** list or in the **PC-NFS Authentication** entry fields or not.

Authorized Clients

For a client to be authorized his host name, IP address or domain name has to be indicated in the list of **Authorized Clients**

Authenticated Users

This radio button indicates that the user name and password entered when the filesystem is mounted must correspond to the entries in the **PC-NFS Authentication** section.

Authorized Clients + Authenticated Users

If this radio button is selected, either of the two preceding situations is acceptable. That is, the user must be either an **Authorized Client** or an **Authenticated User** to access the filesystem.

Authenticated Users on Authorized Clients

This radio button provides the complementary situation, that is, the user must be both an **Authenticated User** and logged on to an **Authorized Client**

Authorized Clients/list

Contains the list of authorized clients in the form of an IP address, host name, domain name. The IP addresses may contain one or more zeros as a mask. For example, 194.51.34.0 gives access to all clients whose IP address starts with the same first three fields.

PC-NFS Authentication

Enter the name of the user (and optionally a password) who is to be granted access to the filesystem. The **PC-NFS Authentication** protocol is generally not used by UNIX users.

Activation

To activate the exportation process once defined, click on the down arrow  and run the program **Tun NFSD** when prompted (**Tun NFSD** is run automatically during this operation if it is not already running).

RUNNING THE NFS SERVER ON A PC

The directories and files exported by the NFS server are only accessible to another machine if the **Tun NFSD** application is running.



Run the program by clicking on the **Tun NFSD** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

The application will immediately take the form of an icon and listen to NFS requests from remote machines.

If access to PC directories is going to be used regularly, it may be best to place the **Tun NFSD** icon in the Windows Startup group.

MOUNTING AN NFS FILESYSTEM FROM ANOTHER PC

For another PC to be able to "mount" an exported filesystem, it has to define a new filesystem with the NFS (client) configuration program and mount it using the activation arrow (cf. the chapter entitled "**Using the NFS Client**"): ↴

MOUNTING AN NFS FILESYSTEM FROM UNIX

For a UNIX machine to be able to mount a filesystem exported in the way described, the following command should be executed:

```
mount pchost:/tmp/xxx /mnt
```

in which:

- **mount** is the UNIX command to be executed.
- **pchost** is the name of the PC running the NFS server.
- **/tmp/xxx** is the name of the directory exported from the PC (in the example we use the Export Name).
- **/mnt** is the name of the UNIX directory under which the remote directory will be mounted.

Note: To carry out the mount, UNIX uses the user number governing the execution of the **mount** command. The PC is incapable of knowing what this number may be. For the UNIX machine to be able to write to the exported directory, its name must figure in the list of authorized clients when the export process is defined.

UNMOUNTING A FILESYSTEM FROM UNIX

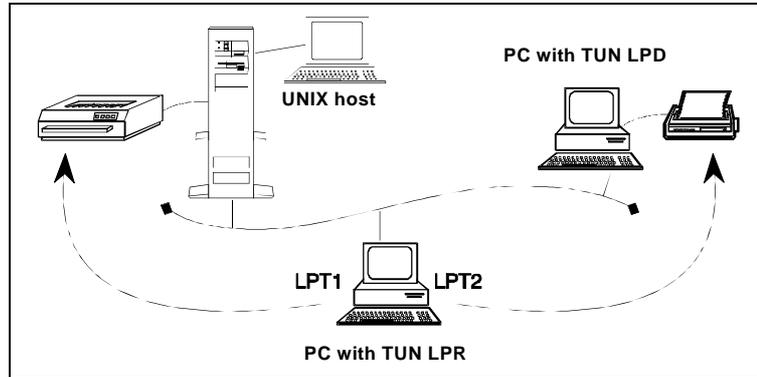
To **umount** a remote directory from a UNIX machine, execute the following command:

```
umount /mnt
```

CHAPTER 7 - USING REMOTE PRINTERS

Tun PRODUCTS AND REMOTE PRINTING

Any Microsoft Windows application can use remote printers as easily as if they were local.



Tun LPR allows a PC to use a network printer or a printer directly connected to a UNIX system or to another PC. This functionality is known as printer redirection. A Windows program can thus use a choice of network printers to edit its documents.



Win 3.x

Print redirection under Windows 3.x is handled by the network device driver, TUNNET.DRV (declared in SYSTEM.INI), which redirects a PC's local printer ports using TCP connections. When a local application sends a print job to a redirected LPT port, a TCP socket is opened on the specified remote machine, and the job is sent out over the network.



Win 95

Remote printing with **Tun LPR** under Windows 95 is performed by a Printer Provider and a Network Provider, which renders this functionality perfectly compatible with the Windows 95 environment. Unlike Windows 3.x, the physical ports (LPT1, LPT2...) are no longer redirected.

To carry out the print job, the TCP connection respects the **RSH**, **REXEC** and **LPD** protocols. The connection is immediately closed once there are no further characters to print.

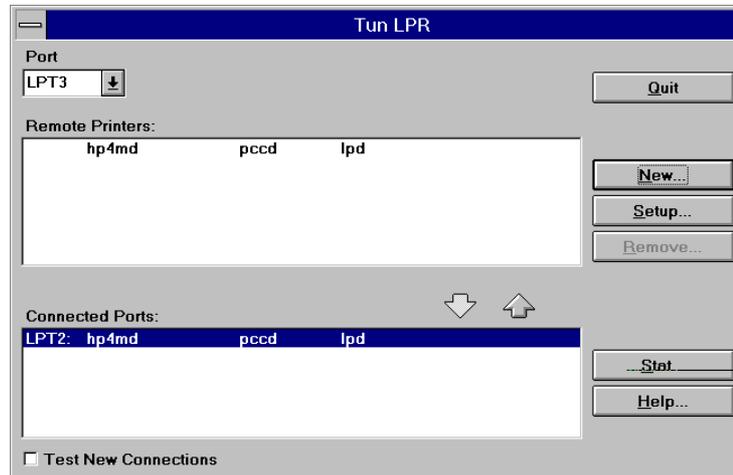
Notes: This connection mechanism has the advantage of *not requiring permanent host processes* or connections. If a PC with redirected ports is re-booted, it does not leave residual processes on the host. Print redirection can run on any UNIX host - every UNIX server with TCP/IP has RSH/REXEC services, and many are equipped with LPD.

SETTING UP REMOTE PRINTERS UNDER WINDOWS 3.X



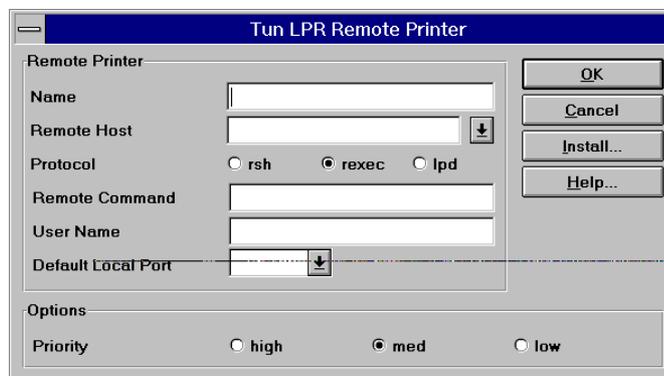
Run the program **Tun Admin+** from the **Tun NET** group, and then click on the **Tun LPR** button.

You can also use the Windows Print manager, **Printers**→**Network connections** to open the printer configuration menu.



Follow these steps to set up printer redirection:

- Select the **Local Port** to redirect.
- Click on **New** or **Setup** to define a **Remote Printer** (described below).
- Activate / deactivate printers using the arrows (↑ & ↓).



The entry fields are as follows:

Name

An alias name for the printer which will appear in Windows modules such as the Print Manager.

Remote Host

Enter the name or IP address of the server that you wish to print to. Pressing the button to the right of the field opens the current Host table.

Protocol

Use these check boxes to specify the protocol that will be used by the TCP connection to transfer print jobs to the remote machine. There are three options:

rsh	Works on all UNIX machines but requires previous configuration of the server.
rexec	Works on all UNIX machines, does not require prior configuration of the server but requests a password for each print job.
lpd	Does not work on every UNIX machine, requires no prior configuration of the server, and does not require a password for each print job.

When possible, it is best to use the LPD protocol (UNIX versions such as AIX, SunOS, Solaris, HP-UX). UNIX configuration for using RSH is described further in this section.

Remote Command

Fill in this field if you are using RSH or REXEC. Enter the name of the UNIX print (or **cat**) command that will handle the LPT port redirection. The most frequently used type of command is **lp**, but you may also use others (i.e. **cat > /tmp/file_name**). Enter the complete command, i.e.:

lp -dhpjet or cat>/tmp/file_name

Remote queue

Enter the name of a valid UNIX print queue when using **LPD** to print. The UNIX command **lpstat -t** will give you a list of the currently-available print queues. Enter only the name of the queue, i.e. **hpjet**

User Name

Enter the name of the UNIX user whose access rights will be used during printing.

Default Local Port

This field shows the name of the PC's parallel port that you wish to redirect: LPT1 through LPT9. Whichever port you select will appear as a normal local port to applications, but will really send print jobs out onto the network. It is best to specify a port that does not physically have a printer attached to it.

Priority

You may select **High**, **Med** or **Low** to affect the rate at which print jobs will be sent from the PC. A high rate will send jobs faster, but may temporarily slow down other Windows applications.

Saving your changes

After you have filled in the relevant fields described above (for up to three different printers), click on the down arrow. LPT ports that have been redirected are listed in the lower portion of the LPR window. You may disconnect active printers by clicking on the up arrow.

STARTING PRINT REDIRECTION UNDER WINDOWS 3.X



In **Tun LPR** for Windows 3.x, print redirection relies on the Network Device Driver TUNNET.DRV, which is loaded into memory when Windows is started. The installation procedure adds the following statement to the **[boot]** section of the SYSTEM.INI file:

```
network.driv=C:\TUN\TCPW\TUNNET.DRV
or secondnet.driv=C:\TUN\TCPW\TUNNET.DRV
```

As TUNNET.DRV is not really an "application," the above statement is the only way to activate or deactivate it.

DECLARING A REMOTE PRINTER UNDER WINDOWS 95



The declaration of a remoteprinter is carried out in two stages:

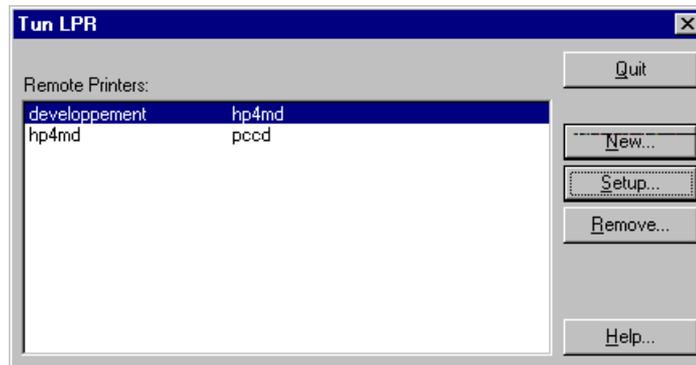
- declare the remote printer settings using **Tun Admin+**.
- install the printer under Windows 95 using the program **Add Printer**.

Declaration using Tun Admin+

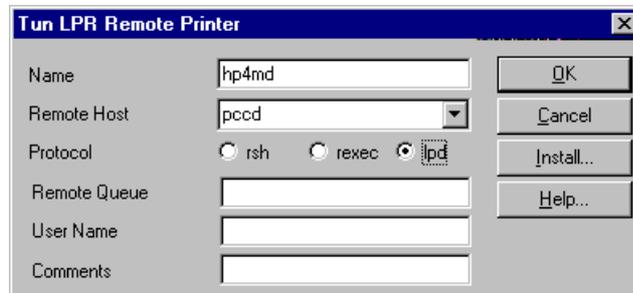


Run the program **Tun Admin+** in the **Tun NET** group from the Windows 95 Start menu, and then click on the **Tun LPR** button.

The following window is displayed:



The list shown should be empty when this screen is displayed for the first time. Click on the button **New...** to declare a remote printer. The following window is displayed:



Name

This field allows the user to give a symbolic name to the remote printer.

Remote Host

This is the name or the IP address of the remote machine which the printer you wish to use is connected to. You may select one of the machines in the local host table for this field. For a network printer, this field is the IP address or the name of the printer.

Protocol

This refers to the type of protocol which is to be used by the TCP connection to transfer the print job to the remote machine. There are three possibilities:

rsh	Works on all UNIX machines but requires previous configuration of the server.
rexec	Works on all UNIX machines, does not require prior configuration of the server but requests a password for each print job.
lpd	Does not work on every UNIX machine, requires no prior configuration of the server, and does not require a password for each print job.

If the server you wish to use implements the LPD protocol (AIX, SunOs, Solaris, HP-UX), it is better to use it. The configuration of the UNIX server for the use of the RSH protocol is described later.

Remote Command

This field only appears if you have selected the RSH or the REXEC protocols. It is intended to take the name of the UNIX command which will receive the characters to be printed on its standard entry. It is common to use the command "lp" in this field but you may enter a different one (e.g. cat >/tmp/tmp).

Remote Queue

This field only appears if you have chosen the LPD protocol. It is intended to take the name of the UNIX print queue which the characters to be printed will be sent to. You can use the command "lpstat -t" directly on the UNIX machine to obtain the list of print queues. This field should not be completed in the case of a network printer.

User Name

This is the name of the UNIX user on whose account you wish to command a print job. The field is ignored in the case of a network printer.

The button **Install...** displays the standard Windows dialog box for declaring printers.

Installation under Windows 95



To install a printer thus declared, open the Windows folder **Printers**. For greater facility, the installation program is also available through the option **Setup→Install** in the **Tun LPR** dialog box (through **Tun Admin+**). The following window is displayed:



Click on the object **Add Printer** to install the printer. This runs the Windows Wizard.

To the question "How is this printer attached to your computer?" answer by selecting the check box **Network printer**:

To the question "Network path or queue name?" give the name of the printer as it was declared in Tun Admin. If you cannot remember, click on the button **Browse...** to display the list of printers under the entry **Tun LPR**.

The remaining questions asked by the Wizard do not concern a network printer.

From the moment the remote printer is acknowledged by Windows, it can be used like an ordinary printer.

CONFIGURATION UNDER UNIX

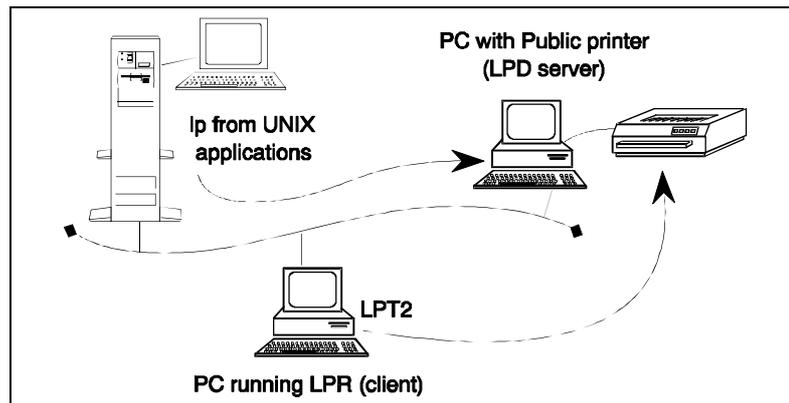
If you use the REXEC or LPD protocol, there is nothing to set up on the UNIX server to be able to use the printers connected to it. All that is required is to know the right UNIX command to execute or the name of the print queue to use. If you wish to use the RSH protocol, you have to configure the UNIX server as described in the section " **TCP/IP configuration on a UNIX host** " in the chapter " **Introduction to Tun NET** " in this manual.

CHAPTER 8 - SHARING PC PRINTERS

Tun PRODUCTS AND PRINTER SHARING

Tun LPD is a program that allows PCs to share their printers with other network users (UNIX machines, other PCs...).

A UNIX program (management or calculating applications, etc.) can use a PC's printer to perform print jobs. This functionality is known as "printer sharing".



The principal is as follows:

- A PC with a public printer runs the **Tun LPD** program. This program is actually an **LPD** and **RSH** server that sends print jobs to the Windows Print Manager.
- Printers that are declared **public** are referred to by their logical name, that is, the name of the Print Manager queue. For example:

```
printer1=HP LaserJet 4/4M on LPT2  
printer2=Postscript on LPT1
```

- When a UNIX machine wants to print on a PC's printer, it opens an **LPD** or **RSH** connection with the PC, and specifies the name of the printer to use.
- Characters that are sent across the connection towards the PC are received by **Tun LPD**, and then sent to the appropriate Print Manager print queue.

The procedure behaves as if a UNIX "pipe" were created between the printing application and the serving PC's parallel port.

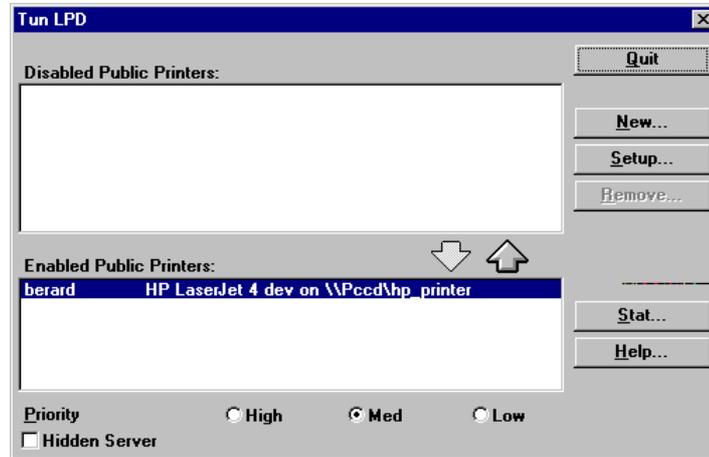
Notes: **Tun LPD** has the advantage of *not* establishing a permanent connection between PCs and UNIX machines. Therefore, there are no residual processes left on the UNIX machine if the PC is rebooted.

Tun LPD is able to run with *any* UNIX server. All UNIX machines equipped with TCP/IP contain an RSH (RCMD, REMSH) client.

SETTING UP PRINTER SHARING

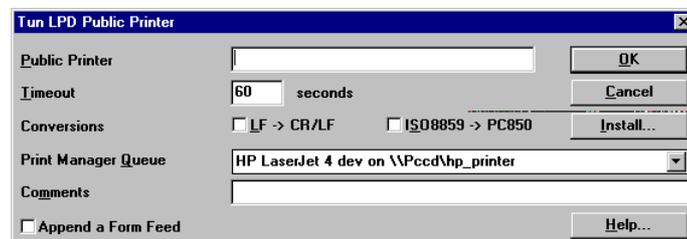


Run the program **Tun Admin+** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun LPD** button.



Note: If a public printer has been activated, this dialog box gives the user the choice of running **Tun LPD** as a background process (if this is not already the case). This window may also be displayed by clicking on the **Tun LPD** icon in the **Tun NET** group and then selecting **Setup**. It is possible to hide the LPD server icon by selecting the check box **Hidden Server**. This is useful to avoid having too many icons displayed in the Windows environment when the keys **Alt Tab** or **Ctrl Tab** are used.

To add printers and assign them to print queues, click on **New** to display this screen:



The fields shown in the above screen should be completed as follows:

Public Printer

This field contains a logical name for the public printer, which is easier than having to refer to the full Windows print queue name each time you want to print. The logical name will be used by the LPD or RSH client to print to the correct printer.

Timeout

Expressed in seconds, the value given in the **Timeout** field determines the length of time after which **Tun LPD** will consider that a print job is finished. If **Tun LPD** has not received characters within the timeout period, it will close its connection with the client.

With a default value of 60 seconds, this option releases the **Tun LPD** application in case a client machine locks up during a print job.

Data Conversion during printing

CR/LF Conversion

If this option is used, all LF characters received from a remote machine will be converted into CR/LF. As UNIX only uses LF to mark the end of a line, and DOS/Windows uses CR/LF, this option enables files sent by UNIX machines to be printed correctly.

ISO8859 Conversion

This field indicates whether or not **Tun LPD** should apply an ISO8859 character conversion filter. If your UNIX system uses ISO8859 character tables to encode national characters (accents, special characters), you should use this option in order to print correctly on a Windows printer.

Print Manager Queue

Enter the real name of the Windows print queue in this field. You may choose from a list of currently configured printers by clicking on the button to the right of the field. In fact, **Tun LPD** really shares Windows print queues and not parallel ports.

Append a Form Feed

Selecting this check box forces a form feed at the end of the print run. This option is useful for printouts originating in a UNIX server which do not always carry a final form feed.

Saving your changes

After setting-up public printers, click on **OK** to save your changes.

Note: You may activate several public printers on a single PC.

ACTIVATING PUBLIC PRINTERS

Tun LPD must be running in order for public printers to be available to other users.



Run the program **Tun Admin+** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun LPD** button.



You can also run the program by directly clicking on the **Tun LPD** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

If public printers are going to be used regularly, it may be best to place the **Tun LPD** icon in the Windows Startup group so that it will be loaded automatically every time Windows is started.

USING PUBLIC PRINTERS WITH RSH

As indicated earlier, **Tun LPD** is an LPD/RSH server. For this reason, using a public printer from a UNIX machine requires access to an LPD or RSH client command.

Using RSH from a UNIX host

Usually the RSH client command is called **rsh**, but on some systems it is called **rcmd** (SCO UNIX), or **remsh** (Motorola). This section describes the mechanism for sending print jobs to public printers. UNIX spoolers for the most common UNIX servers are dealt with further on in this chapter.

To print a file from a UNIX machine on a PC printer without using a spooler, execute the following command:

```
cat file | rsh pc_name printer1
```

or

```
cat file | rsh pc_name lp -dprinter1
```

In this command:

cat file | types a file and "pipes" the characters into another UNIX command

file name of a file (i.e. `/etc/passwd`).

rsh name of the RSH client command (it can be replaced by `rcmd` or `remsh`).

pc_name is the name or IP address of the PC with the public printer (running VXPRTN).

printer1 logical name of the public printer (assigned during setup).

This type of command may be included in a spooler model, as discussed in the next section.

Remote query of public printers

To find out which parallel ports have been made public on a PC, execute the following command:

```
rsh pc_name lpts
```

In this command:

rsh is the name of the RSH client command (possibly replaced by `rcmd` or `remsh`).

pc_name is the name or IP address of the PC with the public printer (running Tun LPD).

lpts is a command recognized by Tun LPD that returns the list of available print queues.

The message displayed by this command might be:

```
printer1 : HP LaserJet 4/4M
printer2 : Postscript
```

Print options from the UNIX side

Even when **Tun LPD** is configured to use conversion parameters (ISO8859, CR/LF), it is still possible to force the use of different parameters from the UNIX side. In order to do this, add one of the following options to the remote shell command shown above, just after the port name. For example:

-oa Forces CR/LF conversion

-oi Requests conversion from ISO8859 to CP850 (extended ASCII on a PC)

-op Prints without converting extended characters (>128)

-ob No conversion. Causes LF characters not to be converted into CR/LF.

For example, the following command requests CR/LF conversion and uses the ISO8859 filter.

```
cat /etc/hosts | rsh denis_pc printer1 -oa -oi
```

Connecting a System V spooler using RSH

Most spoolers on UNIX System V use a shell "model" in order to print to peripheral devices.

However complex a spooler model may be, there is always a line invoking the UNIX `cat` command. This line is often preceded or followed by a series of `echo` commands used to send "form feeds" or banners.

For a printer model to be able to send characters and files to a print queue through Tun LPD, you need to find the lines in the model that actually carry out the printing procedure, and enclose them in parentheses (). By doing this, it is then possible to "pipe" the output of the print command to an "rsh" command.

Note: It is recommended that both the virtual printer and the PC to which it is attached be turned on when configuring and testing remote print queues.

Creating a print queue on SCO UNIX

Here is an example of a printer model that has been tested on a SCO UNIX system:

```
# printer model for wlpd printing for multiple
# printers devices on SCO-UNIX
# print syntax is: lp -dprintername [-oa|-ob]
#                               [-oi|-ot] [-onoff] files
# where   -oa for LF -> CR/LF conversion
#         -ob for non LF -> CR/LF conversion
#         -oi for iso8859 conversion
#         -ot for non iso8859 conversion
#         -noff for no form feed at the end of
#         printing

while true
do
  A=`echo "\007" | rcmd pcname printername`
  if echo $A | grep "001"
  then
    break
  fi
  sleep 5
  echo "Printer Problem PC ${A}" >/dev/consle
done
copies=$4
options=$5
shift; shift; shift; shift; shift
files="$*"
SWconvert=""
SWiso=""
SWff=ff
for option in $options
do
  case $option in
    convert|a|c)
      SWconvert="-a";;
    noconvert|b)
      SWconvert="-b";;
    iso|iso8859|i)
      SWiso="-i";;
    noiso|t|p)
      SWiso="-p";;
    noff)
      SWff=noff;;
  esac
done
(
  i=1
  while [ $i -le $copies ]
  do
    do
      for file in $files
      do
        cat $file
        if [ "$SWff" != "noff" ]
        then
          echo "\014\c"
        fi
      done
      i=`expr $i + 1`
    done
  ) |rcmd pcname printername $$SWconvert $$SWiso
exit 0
```

Note: In the `rcmd` command on the last line, `pcname` refers to the name or IP address of the PC running **Tun LPD**, and `printername` is the printer's logical name as defined during setup.

Enabling a new print queue

The easiest way to add a print queue to a SCO UNIX system using the above model is to use the commands given below rather than **system administration** menus (such as **sysadmsh**):

```
/usr/lib/lpshut
/usr/lib/lpadmin -p tun -mmodel -v/dev/null
/usr/lib/lpsched
/usr/lib/accept tun
enable tun
```

In this example:

tun	is the name of the print queue to create
model	is the name of the file containing the model shown above
/dev/null	is the device driver assigned to the printer port

USING PUBLIC PRINTERS WITH LPD

On UNIX systems, remote printing to LPD servers is a function in the print subsystem. Therefore, in order to use LPD, you must first create a print spooler on the UNIX machine.

The procedure for declaring printers on UNIX varies widely from system to system, but this section gives a brief overview of some of the most popular systems.

Note: Not all UNIX systems include the LPD protocol (i.e. SCO, Motorola). If this is the case, use RSH for printing to public printers.

LPD on SUN

On SUN servers (SunOS, Solaris 1.1) you may declare remote printers by inserting the following lines in the file **/etc/printcap**:

```
wlpd|wlpd line printer:\
lp=:rm=pc_name:rp=printer1:sd=/tmp/wlpd:mx=0:
```

In this example:

rm	"remote machine" specifies the name of the PC with the public printer. The PC "pc_name" must be entered in the /etc/hostsfile on the UNIX machine.
rp	"remote printer" indicates the public printer's logical name
sd	"spool directory" indicates the name of the UNIX directory that will serve as a print queue. You will need to create this directory using amkdir command.

After inserting the above lines in **/etc/printcap**, you may print to a public printer using the command:

```
lpr -Pwlpd /etc/passwd
```

In this command:

wlpd	is the name of the print queue as described above
-------------	---

LPD on IBM RS/6000 (AIX)

To declare a remote printer on an IBM RS/6000 (AIX) machine, insert the following lines into the file `/etc/qconfig`:

```
wlpd:
  device=wlpd
  up = TRUE
  host = pc_name
  s_statfilter = /usr/lpd/aixshort
  l_statfilter = /usr/lpd/aixlong
  rq = printer1
wlpd:
  backend = /usr/lpd/rembak
```

In this command:

- host** specifies the name of the PC with the public printer. The PC **pc_name** must be entered in the `/etc/hosts` file on the UNIX machine.
- rq** "**remote queue**" indicates the **logical name** of the public printer (as configured on the PC)

After inserting the above lines in `/etc/qconfig`, you will be able to print using the command:

```
lp -Pwlpd /etc/passwd
```

In this command:

- wlpd** is the name of the UNIX print queue as described above

LPD on HP 9000 (HP-UX)

On HP 9000 (HP-UX) machines, it is best to create remote printers using the system administration program **sam**. Run **sam** and follow these steps:

- Printers and Plotters →
- Printers/Plotters
- Actions
- Add Remote Printer/Plotter
- Complete the fields with the name of the PC and with the public printer and the logical name of the printer

After declaring a remote printer, you will be able to print to it using the command:

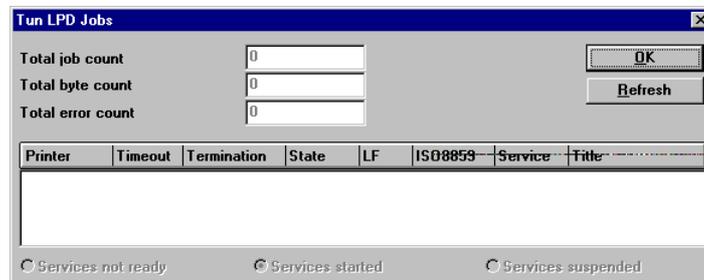
```
lp -dwlpd /etc/passwd
```

In this command:

- wlpd** is the name of the UNIX print queue as described above

STATISTICS

It is possible to obtain statistical information on the functioning of the Tun LPD server. To do this, click on the icon of the Tun LPD server when it is running to display the system menu. Then choose the option **Stat...** which displays the following window:



The screen displays the number of jobs and also the number of characters received by the **Tun LPD** server, and supplies information on current printing operations. As the screen does not provide updated information in real time, this can be obtained by clicking on the **Refresh** button.

USING PUBLIC PRINTERS DIRECTLY FROM PCs

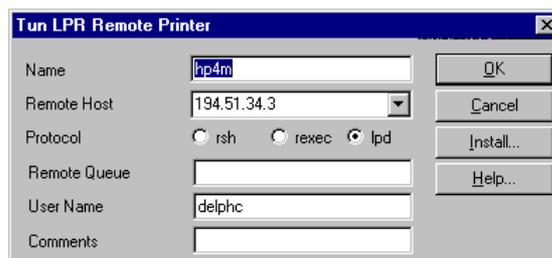
With **Tun LPR**, PCs may print directly to public printers without going through a UNIX system. In other words, the print redirection client (LPR) may declare another PC running LPD as the remote host. To configure direct PC-to-PC printing using LPR:



Run the program **Tun Admin+** from the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun LPR** button.

Then follow these steps :

- Click on **New...** or **Setup...**:



- Fill in the fields just as you would for redirecting an LPT port to a UNIX host:
 - **Name** A local alias name for the remote printer
 - **Remote Host** The name of the **PC** with the public printer
 - **Remote Queue** Enter the **logical name** of the public printer (as declared on the other PC) in this field. You may use either RSH or LPD to print (it is best not to use REXEC).
- Click on **OK** to save your settings, and then on the down arrow to connect
- Print to the redirected port as if it were a normal local LPT port.

CHAPTER 9 - FILE TRANSFER WITH FTP CLIENT

WHAT IS FTP ?

The FTP protocol (File Transfer Protocol) is used for transferring files from one machine to another. The FTP client establishes a connection with the FTP server to transfer data (in the direction client/server or vice versa). A PC may be the FTP client or the server or both.

FTP uses two main transfer modes, binary and ASCII. In binary mode, the bits comprising the files are transferred without modification and the file and its copy are exactly identical. This means that the receiving machine can re-read the file in its original form, which would not necessarily be the case for two machines with different architectures (for example, a UNIX server and a Windows PC). ASCII mode allows files to be transferred from a UNIX environment to a Windows environment and vice versa with the correct management of carriage return and line feed characters.

By implementing the FTP client protocol, **Tun NET** allows a PC to become a FTP client and exchange files with a server.

Tun NET AND FTP

Tun FTP offers an easy-to-use graphical interface to FTP, the standard File Transfer Protocol used to transfer files between servers and TCP/IP clients. **Tun FTP** is a client program.

There are two ways to use **Tun FTP**:

- **Interactive mode** is very similar to the Windows File Manager, in which the user selects files and destination servers with the mouse.
- **Programmed mode** is used to automate file transfer tasks in written procedures.

Tun FTP AND NIS

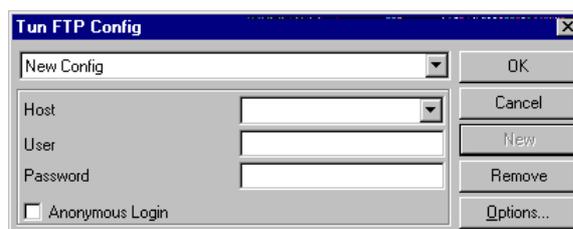
The application **Tun FTP** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the network's FTP configurations and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the FTP Configurations resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

STARTING Tun FTP



Run the program by clicking on the **Tun FTP** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

After starting **Tun FTP**, the screen is cleared and the main window opens maximized. Then the following dialog box is displayed:

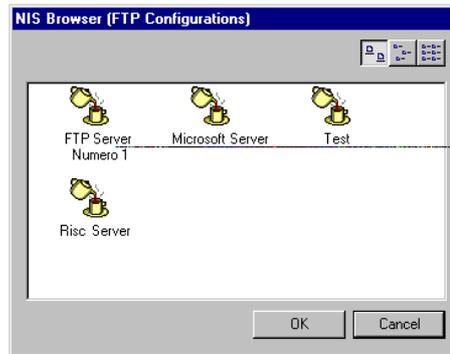


The dialog box invites you to connect immediately to a FTP server.

NIS configuration

If you wish to use a FTP configuration available through the NIS, quit this dialog box by choosing the option **Cancel** and select the option **File→Open NIS Connection**

The following window is displayed:



Double-click the desired resource to activate it.

Direct configuration

If you wish to define your own FTP configuration, complete the **Tun FTP Config** dialog box as follows:

Configuration Name

The first field in the dialog box contains the configuration name. By default, **Tun FTP** stores the parameters of the connections in a log file (**wftp.ini**). The name used to save the configuration is composed of the host name and the user name. This makes it easier to establish a connection with the most frequently used FTP servers without having to supply the same information each time. To select a configuration from the log file, open the list of configurations, select one and press **OK**. To create a new configuration, click on the button **New**; all the fields are then cleared and the new configuration values can be entered.

<p>Note: The configuration files do not hold the password.</p>

Host

Enter the name or IP address of the FTP server to which you wish to connect in the server field.

User

Enter the name of the account whose access rights will be used for accessing the server.

Password

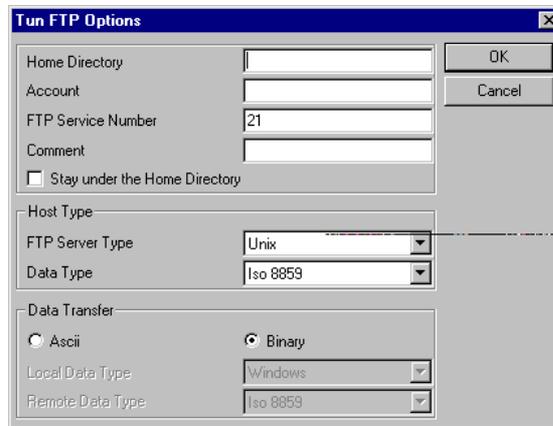
Enter the user's password in the password field.

Anonymous Login

If you select this check box, the name "anonymous" will be automatically placed in the **User** field, and the password prompt will be replaced by a prompt for the user's e-mail address.

Options

The **Options...** button activates a dialog box for additional FTP connection parameters:



The fields in this dialog box are as follows:

Home Directory

This field is used to indicate the working subdirectory after the connection is established. Using this option avoids making time-consuming directory changes in large FTP servers.

Account

Some servers require an account number, which should be entered in the **Account** field, as well as the user's name and password. If a password is required for access to the account, a dialog box will appear for this purpose.

FTP Service Number

The default FTP connection always uses TCP/IP port number 21. Some non-standard servers may use a different value. The **FTP Service Number** field can be used to change the default port.

Comment

The **Comment** field allows the user to enter a description which will be displayed instead of the configuration name. This field can be used to provide a descriptive title for an FTP connection in addition to the server and user names.

Stay under the Home Directory

Selecting this check box means that opening an FTP connection with a particular user account causes that user's home directory to be treated as a "root" in the remote file system, making it impossible to access public directories such as **/tmp**.

Host Type

The two fields in this section are used to specify the type of the remote Host (if known).

The **FTP Server Type** is used to scan directory lists received from the server. The format of the directory lists is system-dependent. The **FTP Server Type** can be chosen from among the predefined main server types, or else a new **FTP Server Type** can be defined (See further on: *Defining Server Profile*).

The **Data Type** is used for converting the character string messages received from the server during the FTP session.

Data Transfer

This field is used to specify the default data transfer type for the connection to be opened. It is possible to change these values after the connection has been opened.

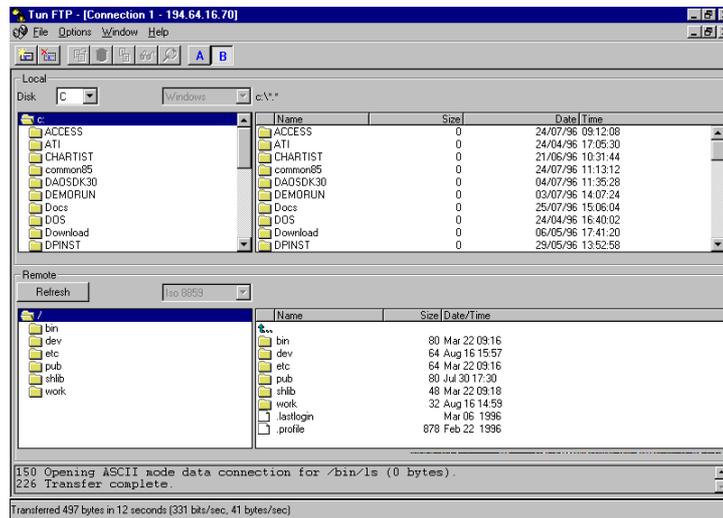
If the **Binary** radio button is selected, then the files will be transferred as they are with no conversion.

If the **Ascii** button is selected, then **Carriage Return** and **Line Feed** conversions between DOS and UNIX will be performed. In addition, the local and remote data types can be specified. The default values are

standard and are suitable for most purposes, though if either machine is known to have a different character standard then this can be specified and the relevant conversions will be performed during file transfer.

Connection

After completing the required fields, click on the **OK** button to try and establish the connection. If the server is available and the user information is correct, the **Tun FTP** file manager screen is displayed:



The screen is divided into four main sections:

Local

A graphical representation of the PC file system, similar to that of the Windows File Manager.

Remote

The file system of the remote machine (displaying the home directory of the account used for the connection).

History

Lists the command "dialog" between the PC and the server. You may double-click in this area to enlarge the view of exchanged commands.

Status bar

Message area containing the results of the most recent command.

Multiple connections

Tun FTP runs in MDI (Multiple Document Interface) mode. This means that you may open simultaneous sessions on different servers, assuming that you have allocated enough TCP connections in your kernel (see "**TCP/IP Configuration on a UNIX host**" in this manual for more details).

Managing sessions

You may switch between active sessions by clicking on the session you want with the mouse. The Window option can also be used to bring a particular session to the foreground.

To reorganize the display of active sessions automatically, use the options **Window→Cascade** or **Window→Tile**.

Reducing and resizing sessions

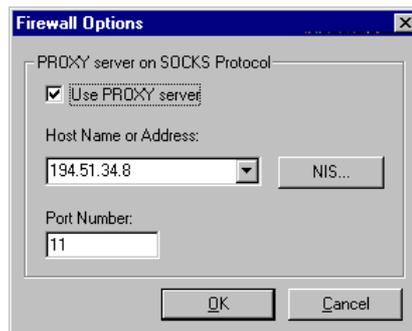
You may use the mouse to resize session windows as desired, or even reduce a session to an icon by clicking on the down arrow in the upper right-hand corner.

Closing a session

You may close a file transfer session by double-clicking with the mouse on the square located in the upper left-hand corner of the session window, or by using the options **File→Close Connection**

Using a firewall

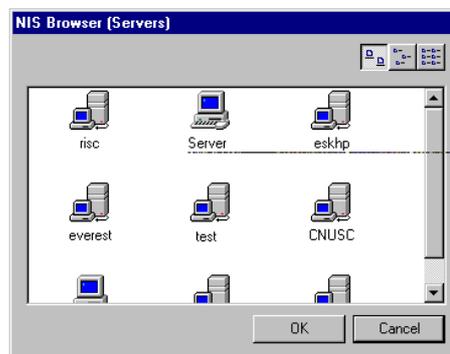
The option **Options→Firewall** in the main menu can be used to implement a firewall. This means you can access an outside server by passing through a gateway machine of the Proxy type, which acts as a security filter to protect the local network.



Check the box **Use Proxy Server** and enter the name or IP address in the gateway field.

You can use the **NIS...** button to view the servers installed on the network. Refer to the section "**Tun FTP and NIS**" for more details.

The following window is displayed:



Double-click the desired resource to activate it.

INTERACTIVE MODE

Navigation

Tun FTP uses the standard "look and feel" of Microsoft Windows to navigate through the file systems on local and remote machines.

File structure representation

An icon in the form of a yellow file folder represents directories, with the current directory shown as an open file folder.

Files are represented by an icon which looks like a sheet of paper; its appearance varies according to the type of file in question (as in the Windows File Manager).

File information such as size and date of creation is displayed next to file icons. To see more detail on files, use the options **Options→File Details...** You may also use **Options→File Sort...** in order to limit the display or sort files.

Directories first

Since directories are displayed before files, use the mouse to click on a particular directory and view the contents.

Double-click on remote directories in order to send explicit requests to the FTP server, or highlight the directory and use the **Refresh** button to send the request.

After the directory has been read, all of its files will be displayed. The directory tree remains displayed on the left side of the window, but may be removed with the options **Options→File Details...→Tree** so as to increase the size of the file window.

Due to the large number of FTP requests, refreshing a remote file system takes longer than refreshing a local file system.

Simple transfers

Here is one way to transfer a file from one machine to another:

1. Click on the file you wish to transfer from the source machine (the file will remain highlighted).
2. Select the target directory on the destination machine.
3. Click on the **Copy** button. ()
4. The progress of the transfer is displayed in a status window.
5. After the file transfer has been completed, the status window is erased and the target filesystem display is refreshed.

Note: You cannot use a directory icon to select a directory for transfer. If the file name is incompatible with the format used by the destination system, a dialog box allows you to rename the file.

Transferring multiple files

In order to transfer more than one file at a time, hold the <Shift> key down and select the desired files with the mouse.

Transfers using "drag and drop"

You may also transfer files using the mouse (drag and drop):

1. Select the files you wish to transfer.
2. Hold the mouse button down after selecting the last file, and move the cursor onto the icon of the destination directory.
3. Release the mouse button.
4. A dialog box will ask you to confirm the transfer.
5. If you accept, the transfer will take place as described above.

Transfers between servers

You may easily transfer files between servers using "drag and drop" by opening simultaneous FTP connections on the desired servers.

Applying Filters

 File transfer is performed in **binary** mode by default. Click on the button to transfer files exactly as they are (with no conversion filters) between the two machines.

 To take account of the differences between the end-of-line characters in the DOS and UNIX systems, select **ASCII** mode to change the CR/LF character to LF or vice-versa depending on the direction of the transfer.

Additionally, in ASCII mode, a format conversion is effected in accordance with the format of the local and remote data as selected in the corresponding list boxes.

File management

The file management buttons perform the following functions:

Delete

() Use the **Delete** button to remove selected files. By default, you will be asked to confirm your choice, but you may suppress the confirmation dialog box by using the option **Options→Confirmation**

Rename

() You may change the name of a file by using the **Rename** button. A dialog box will prompt you to enter a new name for the selected file.

View

() To see the contents of a selected file, use the **View** button. Of course, this is more useful for simple text files.

Detail

() In order to see all the attributes of a particular file (size, attributes, date, name, owner...), select the file, then click on the **Detail** button.

AUTOMATED FILE TRANSFER

Introduction

Tun FTP contains an integrated macro language that may be used to replace keystrokes and mouse-clicks in order to manage file transfer sessions automatically. You may run a macro from within the **Tun FTP** program, or associate a macro with the program icon in Windows so that it is executed automatically when the program is started.

Enter the following command line in the **Properties** of the program icon:

```
C:\TUNTCP\>WFTP -Mmacro_file
```

macro_file the name of a file with a .MAC suffix that contains connection and transfer instructions.

To execute a macro from within **Tun FTP**, use the mouse to select the options **File→Execute Macro**, and then enter the name of the macro you wish to run.

Macro example

Below is an example of a macro (WINFTP.MAC) that prompts the user for his login information, makes a connection, then transfers all the files with a **.BAT** extension in the directory TUN\TCP into **/tmp** on a UNIX server:

```
# Display the Message Window
ShowMessage

ReadVar "Enter the host name" HOST
IfEqual "" %HOST exit
ReadVar "Enter your user name" USER
IfEqual "" %USER exit
ReadPasswd "Enter your password" PASSWD
IfEqual "" %PASSWD exit

ClearMessage

verbose "on" -s
debug "off"

#Connection

login %HOST %USER %PASSWD
IfError ERROR
lcd "\\tun\tcp"
cd "/tmp"
mput "*.bat"
logoff

Echo "Macro has finished" -b "Message"
exit

Label ERROR
Echo "Connection Error" -b "Error"
exit
```

LANGUAGE DESCRIPTION

Instructions consist of valid commands followed by parameters, with one instruction allowed per line. The command name is always the first word on a line.

In this manual, commands are composed of capital and small letters in order to make them easier to read. However, it makes no difference to the program which case you use. For example, ReadPasswd, READPASSWD, and readpasswd are all interpreted the same.

Lines beginning with the character # are considered as comments.

The macro language is only capable of handling strings of characters (any characters with ASCII values between 0 and 255) delimited by double quotes. For example: "**Tun NET** is a communications software package".

Variables

You may define an unlimited number of variables to store character strings. These variables may be then used in place of command parameters.

When used in instructions, variables must be preceded by the character %:

Login %HOST, %USER, %PASSWD

When variables are defined and assigned, the % character is not used:

i.e. Set variable "abcde"

If an instruction calls a variable that has not been defined, the macro-language interpreter looks to the DOS environment to see if it has been set there instead. If the variable remains undefined, an empty string will be used.

List of instructions

Below is a list of the available **Tun FTP** commands with a brief description of each. The exact syntax is described in the last chapter of this manual.

aget	Initiate file transfer from the host machine to the local machine in ASCII mode
append	Add the contents of a local file to the end of an existing file located on a remote host
aput	Transfer files from the local machine to the host machine in ASCII mode
ascii	Change default transfer mode into ASCII mode
bget	Copy a file from the host machine to the local machine in binary mode
binary	Change the default transfer mode into binary
bput	Transfer a file from the local machine to the host machine in binary mode
cd	Change current directory on the host machine
ClearMessage	Erase all messages in the execution window
debug	Write a .LOG file with messages sent to FTP
delete	Delete a file on the server
Dos	Execute a DOS command

drive	Select a new current drive on the local machine
Echo	Display a character string in the execution window or in a specified message box
Exit	Unconditional exit from a macro
lcd	Change the current directory on the server
get	Copy a file from the server to the local machine
Goto	Unconditional branch to a label
HideMessage	Hide messages in the macro execution window
Host_text	Set the server's charset
IfConnected	Test whether or not the local machine is connected to a server
IfEqual	Test a variable or most recent FTP response for equality
IfError	Test the results of the most recent command
IfNoEqual	Test a variable or the most recent FTP response for inequality
IfNoError	Test the results of the most recent command
Label	Define a label
lcd	Select a new current directory on local machine
local	Set word size on the local machine
login	Establish connection with a server
logoff	Close the current connection
mdelete	Delete one or more files on the server
mget	Copy one or more files from the server to the local machine
mkdir	Create a directory on the server
mput	Copy one or more files from the local machine to the server
option	Set an option
Pause	Wait one second
parent	Change to the parent directory on the server
put	Copy a file from the local machine to the server
ReadVar	Enter a character string in a dialog box and assign it to a variable
ReadPasswd	Enter a character string and assign it to a variable without displaying the characters
rename	Change the name of a file on the server
rmdir	Remove a directory on the server

Set	Define and assign a variable
ShowMessage	Display the macro-execution window
stat	Check whether FTP responds to commands (testing for possible disconnection)
text_codes	Set the text formats for the local and remote files
Title	Assign a title to the macro-execution window
verbose	Display or hide messages

For more details and examples, please refer to the chapter **Tun FTP Macro Commands** further on in this manual.

Note: If you are having trouble connecting to an FTP host using **Tun FTP**, please read the next section for suggestions on how to deal with some of the differences in the way UNIX servers handle FTP.

DEFINING SERVER PROFILES

FTP Server Type

Most servers are of the standard UNIX type. This section need only be read closely if you have problems establishing a connection with the predefined server types.

Directory Lists

If the wrong server profile is used to connect to a specific FTP server, the remote directory appears to be empty. First of all, check the format of the directory lists received from the server. There are two ways to view the directory lists.

The first way is to check the **Special Files** option in the **Options→File Details...** menu. The second possibility is to use the **-Z** option in the **Tun FTP** command line. The directory lists may then be consulted in the file **DIR.DBG** in the **Tun FTP** working directory.

You might also be able to obtain information on the type of server by double-clicking on the log window (at the bottom of the session window) or by typing the remote command **SYST** in the **File/Other Command** menu.

Profile Section

A new server profile can be defined by creating a new **[ProfileN]** section in the **Tun FTP** initialization file under Windows 3.x, (where **N** is a number between 1 and the maximum number of profiles), or under the key **\HKEY_LOCAL_MACHINES\Software\Esker\Tun\8.50\Wftp** in the registry under Windows 95.

Under Windows 3.x, the **Tun FTP** initialization file is usually called **TCPW\WFTP.INI** and is found in the Tun installation directory but may have been redefined in the **WFTP** setting of the **[Init]** section in the **TUN.INI** file in the **WINDOWS** directory.

The maximum number of profiles possible is stored in the **MaxConfig** setting of the **[Profile]** section, which should be incremented if necessary.

The profile section may contain the following settings:

Name	the profile name
Dir	the field descriptor sequence
SubdirMark	the character used to separate directories in a path name
PathHeader	the string to be inserted at the beginning of a path name
PathTrailer	the string to be appended to the end of a path name
FileHeader	the string to be inserted between the directory name and the file name
MaskHeader	the string to be inserted between the directory name and a file mask
DefaultMask	the string used as a mask if the server requires one
BlockSize	the number of bytes in a block

The default values for these settings are those used for standard UNIX FTP servers. The **SubdirMark**, **FileHeader** and **MaskHeader** settings have the slash character as default. The **PathHeader**, **PathTrailer** and **DefaultMask** default settings are null. The **BlockSize** default setting is 512 bytes (not used for UNIX).

Field Descriptor

Each line of the directory list sent by the FTP server is scanned by the FTP client using the field descriptor sequence. Each field descriptor in the sequence corresponds to a field in the lines to be scanned. A field descriptor is a letter code:

F	file name,
A	file attributes,
D	file date and time,
U	the user who owns the file,
G	the group which owns the file,
L	number of links to the file,
S	file size (number of bytes),
B	file size (number of blocks).

The other field descriptors refer to information which can be ignored. The same field descriptor code may appear several times in the sequence, in which case the corresponding fields from the scanned line are concatenated.

Field Separators

By default, a field descriptor matches all the characters of the scanned line up to (but not including) the first blank character encountered (or the end of the line). A blank character or a group of contiguous blanks is matched by a coma or a colon. A coma is used to skip the blanks whereas a colon is used to place them in the output field.

Example

A standard UNIX directory list line looks like this:

```
-rw-r--r-- 2 root system 890 Sep 12 15:24 passwd
```

It contains the following fields:

- the file attributes (file type and access rights)

- the number of links to the file
- the user who owns the file
- the group which owns the file
- the number of bytes stored in the file
- the month of the last modification
- the day of the last modification
- the time (or year) of the last modification
- the file name

A simple profile can be created to deal with this kind of FTP server:

A,L,U,G,S,D:D:D,F

Note that the 3 fields of the scanned line corresponding to the date and time of the last modification have been concatenated using the sequence **D:D:D**.

Field Descriptor Modifier

Field descriptor default behavior may be changed by appending a modifier. Four types of modifiers are possible:

- a length modifier,
- a character set modifier,
- a pattern string modifier,
- a string constant modifier.

The length modifier is used for fields in which the number of characters is known. The field does not have to end with a blank character and may even contain blanks. For example, the field descriptor **A10** may be used when the scanned lines have an attribute field of exactly 10 characters. A length of **0** means an unlimited length.

The character set modifier is used when the character set appearing in the field is known. The character set is indicated between square brackets. A caret as the first character of the set means that the field may contain any character except the one(s) indicated in the bracketed group. An interval may be defined by placing a dash between the interval bounds.

The backslash character is an escape character: (**\t** is a tab character, **\]** is a square bracket, **\-** is a dash, **** is a backslash). The character set modifier may be followed by a length modifier. In this case the field ends either at the first scanned character which is not part of the character set or when the given length is reached.

Examples of character set modifiers are:

[0-9]	a decimal number,
[0-9a-fA-F]	a hexadecimal number,
[^ \t]	every character excluding blanks and tab characters,
[rwx\~]9	UNIX simple access rights (read, write and execute).

The pattern string modifier is used to match a string in the scanned line. The complete pattern should appear in the scanned line at the current scan position for the field to be recognized.

A pattern string modifier is indicated between braces. If the pattern string is to contain a closing brace, it should be preceded by a backslash. For example, to test whether a line received by some MS-DOS FTP servers corresponds to a subdirectory or not, the pattern string modifier **{<DIR>}** may be used.

Typically, a pattern string modifier is used in conjunction with a field descriptor test mark.

The string constant modifier is used to append a string constant to an output field. No scanning is carried out. The string constant is enclosed in double quotes. Double quotes in the string constant must be preceded

by a backslash. For example, to insert a dot between the file name and extension when they are received separately from the server, the modified field descriptor "." should be used.

Field Descriptor Test Mark

Finally, a test mark may be appended to a field descriptor.

Three different test marks are possible:

/	a subdirectory test mark,
+	file positive test mark,
-	file negative test mark.

The subdirectory test mark is used to determine whether or not the scanned line is a subdirectory line. If the scanned field matches the field descriptor, the line is considered as a subdirectory line. The file positive or negative test marks are used to determine whether or not the scanned line is an ordinary file line. For the file positive test mark, if the scanned field does not match the field descriptor, the scanned line is considered to be a non-ordinary file line. For the file negative test mark, if the scanned field matches the field descriptor, the scanned line is considered to be a non-ordinary file line.

Before scanning, every line is considered as an ordinary file line. After the scan, lines which are neither subdirectory nor ordinary file lines are omitted. If the scan results in an empty file name, or the . and .. file names, the line is also omitted.

An exclamation mark following a test mark indicates that the field will be rejected after testing (the field will be re-scanned using the next field descriptor).

Scan Direction

By default, each line is scanned from left to right but the scan direction can be changed by placing a semicolon before the field descriptor.

In the following example, the attribute field and the link field are first of all scanned from left to right, then the file name field, date field, size field, group field and finally the user field are scanned backwards from the end of the line.

A,L;U,G,S,D,F

Note: Field descriptor letter codes are not case sensitive. Field descriptors may be separated by blanks (to make them easier to read). If several contiguous field descriptors have the same letter code, all but the first letter code may be omitted (if there is no ambiguity).

For example, the standard UNIX attributes may be defined by the following sequence of three field descriptors:

A[d]l/ [\\-]l+ [rwx]9

Compatibility

Profile field descriptor sequences from previous versions are fully compatible except for the **\$DT** field descriptor which should be replaced by the corresponding number of **D** field descriptors, separated by semicolons. For example, **\$DT3** should be replaced by **D:D:D**.

The **\$** sign placed in front of each profile field descriptor is now ignored.

If semicolons were used in a field descriptor sequence in an earlier profile, it is generally better to replace them with simple commas.

CHAPTER 10 - USING THE FTP SERVER

Tun NET AND THE FTP SERVER

Tun NET for Windows implements the full FTP server protocol.

The FTP server function enables one PC to export one or more of its directories so that another PC or UNIX machine can read the files contained in them or write files to them.

The FTP server function allows a UNIX machine to update files or retrieve files from the PC without the user of the PC having to perform any special operations.

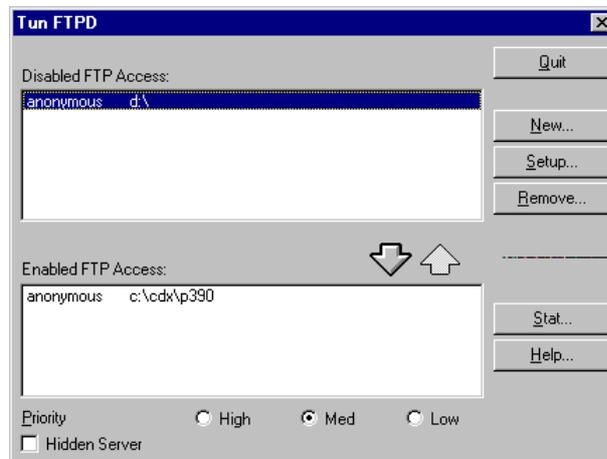
CONFIGURATION OF THE FTP SERVER ON THE PC

Configuring the FTP server consists in specifying one or more directories on the PC which the user can access from a client FTP application (e.g. **Tun FTP**).



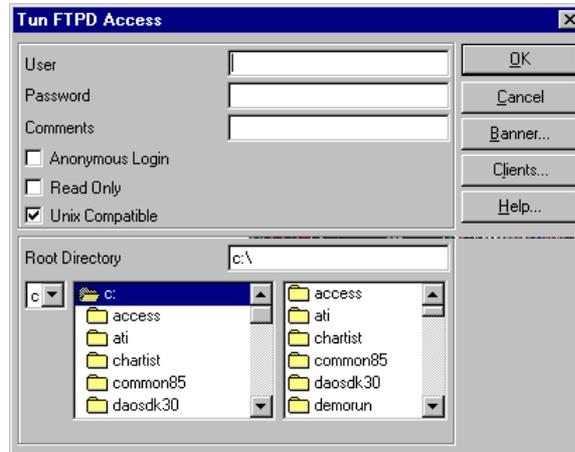
Run the program **Tun Admin+** from **Tun NET** group under Windows 3.x or from the Windows 95 Start menu, and then click on the **Tun FTPD** button.

This displays the following window:



Note: It is also possible to display this screen by clicking on the FTPD icon in the **Tun NET** group under Windows Program Manager or from the Windows 95 Start menu and then selecting the option **Setup...** in the FTPD system menu.

To export a directory, click on the button **New**, which displays the following dialog box:



The dialog box contains the following fields:

Root Directory

The full path name for the MS-DOS directory which is to be made accessible to a FTP client should be indicated in this field.

User

The User field should contain the name of the person who is to be authorized access to the exported directory. Any character string may be used here as long as it is communicated to potential users wishing to access the exported directory.

If you wish to provide unlimited access to the exported directory, you may use the **Anonymous Login** check box. Consequently, anybody may log in without having to supply a password by entering the user name **anonymous**

Password

If access is not to be anonymous, a password must be associated with the code of the user authorized to log in.

Comments

The **Comments** field can hold a brief description of the reasons why a directory has been exported.

Anonymous Login

The **Anonymous Login** check box gives unrestricted access to the exported directory. Anyone at all may log on to the server by entering the user name "anonymous". The password will not be checked.

Read Only

The **Read Only** check box limits access to the exported directory to read only. This option is very useful when permitting anonymous logins. It prevents users logged on from writing to the exported directory.

Unix Compatible

If this box is selected, the list of files in the exported directory will be displayed in UNIX format. For example:

```
-r--r--r--  1 root other 212544 Jun 14 10:51 3270.exe
-r--r--r--  1 root other 130144 Apr 28 12:15 3270.zip
-r--r--r--  1 ftp  group 2699882 Jun 14 14:05 euro.zip
-r--r--r--  1 root other 107631 Apr 25 19:01 httpd.Z
```

Otherwise, the list of files is displayed in MS-DOS format. For example:

```

3270      EXE          212 544 14/06/95  10:51
3270      ZIP          130 144 28/05/95  12:15
EURO      ZIP          2 699 882 14/06/95  14:05
HTTDP     Z           107 631 25/04/95  19:01

```

This option is useful for particular FTP clients which expect to find a file list in UNIX format. This list, accordingly, is interpreted and displayed differently on the screen.

Banner

The **Banner** button make it possible to record texts which will be displayed when users log in. The server banner is displayed during login before the requests for the user's identification and password.

The banner may be use to supply information on the contents of the files contained in the exported directory or to indicate access restrictions.

Clients

Access to the FTP server can be restricted to a specific number of machines. The **Clients** button makes it possible to create or modify a list of IP addresses or names of machines authorized to access the exported directory. Machines not included in the list will not have access rights. If the list is empty, all the machines connected will be allowed access.

Activation

To activate the export procedure thus defined, click on the arrow pointing downwards in the **Tun FTPD** window, then quit the **Tun FTPD** dialog box (the FTP daemon will be run automatically during activation if it was not already running).

EXECUTION OF THE FTP SERVER

The directories and files exported by the FTP server are only accessible to another machine if the **Tun FTPD** application is running.



Run the program by clicking on the **Tun FTPD** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

If the **Tun FTPD** program has to be launched repeatedly, it is preferable to place a copy of the program in the Windows Startup Program Group.

IMPLEMENTATION OF A FILE TRANSFER

To carry out a file transfer using **Tun FTPD**, run the program on another machine, supplying the name and password of the user.

CHAPTER 11 - VT320 TERMINAL EMULATION

Tun NET AND VT320 TERMINAL EMULATION

VT320 is one of the most advanced and most common types of emulation on the market, and is supported by many different types of host machines. However, there are multi-user applications, written for different types of terminals, that will not run properly with a VT320 emulation. Users requiring a more complete terminal emulation package, with a much larger selection of terminal types should consider using **Tun EMUL** (which is included in **Tun PLUS**).

Tun VT320 is a terminal emulation program running under Windows that offers DEC VT320 emulation using standard *telnet* services.

Tun VT320 AND NIS

The application **Tun VT320** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the servers on the network and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the Servers resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

USING Tun VT320

Startup



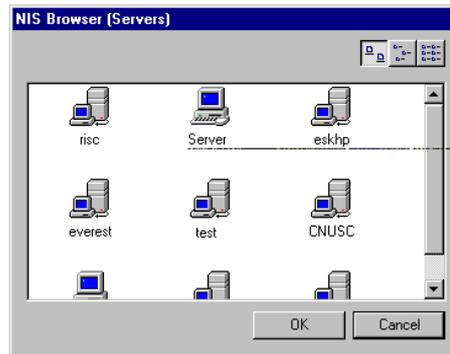
Run the program by clicking on the **Tun VT320** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

Enter the name or IP address of the desired host in the dialog box as follows:



Use the **NIS...** button to view the servers present on the network. Refer to the section "**Tun VT320 and NIS**" above.

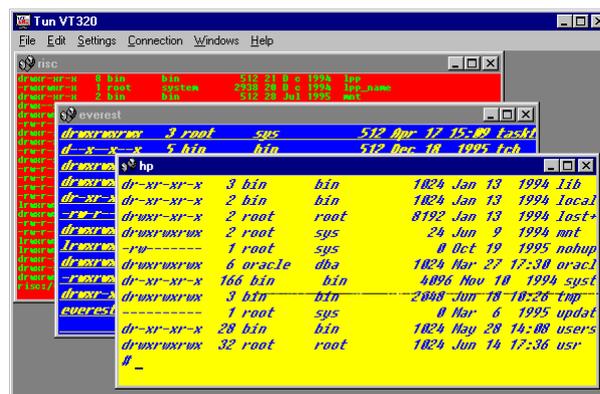
Pressing the NIS... button displays the following window:



Double-click on the desired resource to activate it.

You may choose from the list of servers declared in the TCP/IP host table by clicking on the down arrow next to the **Host Name** field.

If the server is available, an emulation session will be opened as shown below (this example shows three simultaneous sessions in operation):



Multiple connections

Tun VT320 runs in MDI (Multiple Document Interface) mode. This means that you may open simultaneous emulation sessions on different servers, assuming that you have allocated enough TCP connections in your kernel.

Managing sessions

You may switch between active sessions by clicking on the one you want with the mouse, or use the Window option to bring a particular session to the foreground.

If you would like to automatically reorganize the display of active sessions, use the options **Window→Cascade** or **Window→Tile**.

Reducing and resizing sessions

You may use the mouse to resize session windows as desired, or even reduce a session into an icon by clicking on the down arrow in the upper right-hand corner (Windows 3.x) or the minimize icon (Windows 95).

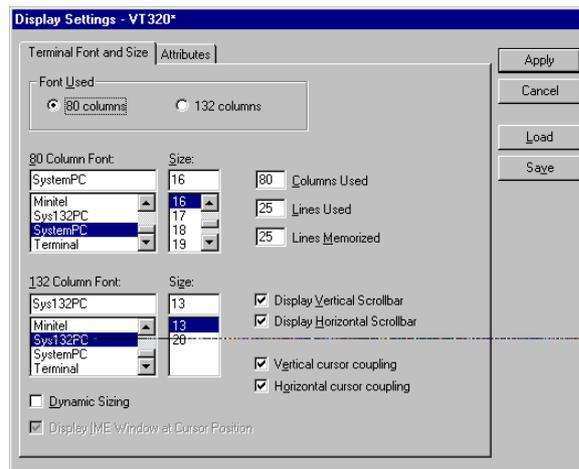
Closing sessions

You may close a terminal emulation session by double-clicking with the mouse on the square located in the upper left-hand corner of the session window, or by using the options **File→Close Session**. The option **File→Close All Sessions** or exiting the program closes all open connections.

TERMINAL OPTIONS

Changing the display

You may change the display characteristics of an emulation session by using **Settings→Display settings...**



Terminal Font and Size

Font Used

You may change the character font used in the terminal display to a font available in Windows. Only non-proportional (fixed) character fonts are offered as choices for emulation. We strongly suggest that you use SystemPC and System132, two fonts delivered with **Tun VT320** that provide full character sets, including semi-graphic characters, in sizes from 2 to 20 points.

Dimensions

The default setting for **Tun VT320** emulates 80 x 25 screens. It is possible to change this setting by changing the fields **Columns Used** and **Lines Used**. This is useful for emulating other terminals that use different dimensions (for example, 132 columns or 43 lines).

Generally speaking, only 25 lines are simultaneously memorized by **Tun VT320**; however, this value may be changed in the field **Lines Memorized**. This allows the emulator to scroll backwards using the vertical scroll bar. The maximum value for this field is 1024.

Note : SystemPC is best suited for 80 columns; Sys132PC works best for 132 columns.

Display Scrollbars

Vertical and horizontal scroll bars may be used to access parts of the screen that may not be currently visible. The **Lines Memorized** option determines how many lines are stored in the vertical scroll bar's buffer. This option may only be used if **Dynamic Sizing** is not active.

Cursor Coupling

The check boxes **Horizontal Cursor Coupling** and **Vertical Cursor Coupling** allow you to enable or disable cursor coupling in either direction. Cursor coupling scrolls the screen so that the cursor is always visible. If either check box is unmarked it is possible to move the cursor beyond the view of the terminal window.

Dynamic Sizing

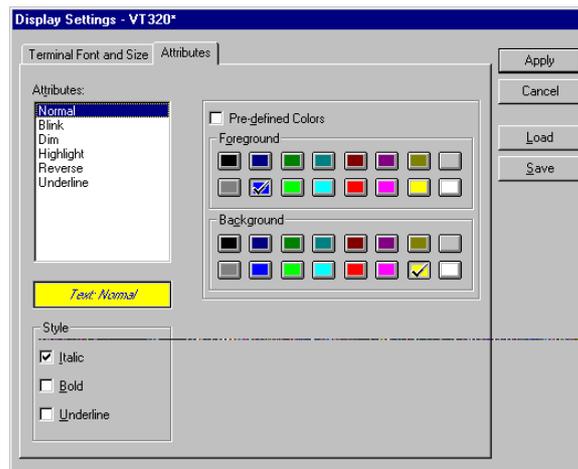
Select this option to always have a full terminal screen in emulation. When using SystemPC and Sys132PC, users can change the size of the emulation window, and the font size will change accordingly, whether in 80 or 132 columns (with 25 lines).

Display IME Window at Cursor Position

This option opens a window at the cursor position allowing the user to send Japanese characters. Since it is only useful on Japanese machines, the option is grayed on other types of machine.

Attributes

Click on this tab to change character style and foreground and background colors:



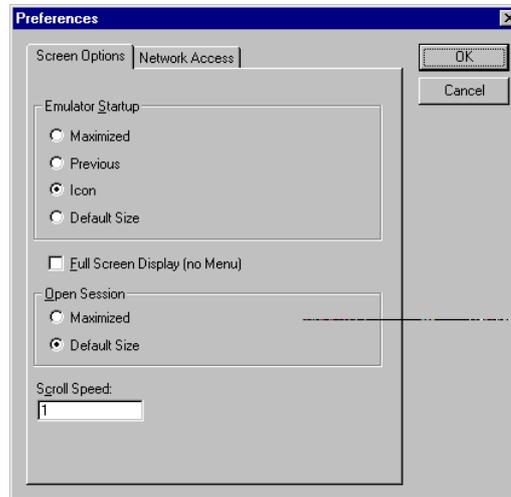
Use the mouse to select the attribute (normal, reverse video, highlight, etc.) you wish to change, then choose the foreground and background colors. If you wish to change the normal character style, select the option desired, italic, bold or underline, or a combination of all three.

Saving your changes

Click on the **Apply** button to apply any changes you have made to the current session. If you would like to use the same display context the next time you open an emulation session, click on the button **Save** (in the main **Display Settings** window). This will record the current display options for future connections. Likewise, click on the button **Load** to load previously saved settings.

Emulation preferences

By selecting **Settings→Options...**, users can change other aspects of the VT320 emulator:



Screen options

- Choose the startup screen size: this may be the maximum possible size, **Maximized**, the size of the screen on leaving the **Previous** session, reduction to **Icon** form, or the **Default Size** indicated on the **Terminal Font and Size** tab in the dialog box **Settings→Display Settings...**
- Choose a full-screen display without menus, or other display controls.
- Choose the default screen size for the opening of a new session.
- Select the **Scroll Speed** defining the speed at which screen scrolling will take place. The default is 1.

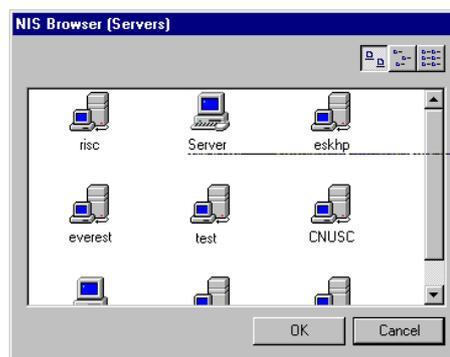
Network Access

The **Network Access** tab can be used to implement a firewall. This means you can access an outside server by passing through a gateway machine of the Proxy type, which acts as a security filter to protect the local network.

Check the box **Use Proxy Server** and enter the name or IP address in the gateway field.

You can use the **NIS...** button to view the servers installed on the network. Refer to the section "**Tun VT320 and NIS**" for more details.

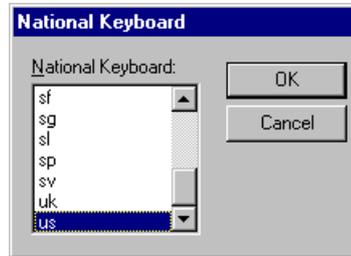
The following window is displayed:



Double-click on the desired resource to activate it..

National Keyboard

Use the option **Settings→National Keyboard...** to change the default keyboard to a different national type. Only the relevant keys are changed; the terminal keys remain the same. Select **Auto** to use the keyboard type installed in Windows.



Session Preferences

Click on the option **Settings→Session...** to choose backspace key, autowrap and cursor preferences:



Backspace

This option takes into account the various uses of the backspace key on different host systems. For example, a SUN machine uses the **delete** character (0x7f) instead of a **backspace** character ((0x08). Most other machines (SCO, RS/6000, HP...) use the standard **backspace** key.

Autowrap

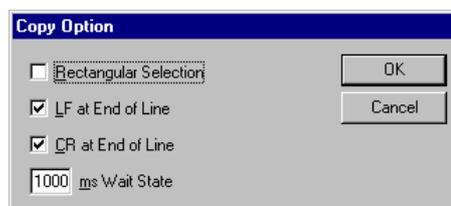
Selecting the autowrap mode induces automatic carriage returns if the body of the text is wider than the screen.

Cursor Shape

These radio buttons can be used to choose the shape of the cursor which can be either a rectangular block or a simple horizontal line.

Copy Option

By using **Edit→Copy Option...**, you may control **CR/LF Conversion**, the **wait state** (useful when Clipboard contents are very large), and whether or not you wish to select rectangular blocks of an emulation screen.



The field **Wait State** (expressed in milliseconds) delays the clearing of the clipboard during a voluminous paste operation. This avoids creating a bottleneck in the communication channel.

CHAPTER 12 - EXECUTING REMOTE COMMANDS

Tun NET AND RSH

Tun RSH (Windows **R**emote **S**hell) is based on the standard TCP/IP services SHELL (514) and REXEC (512).

This program was designed to allow users to run simple commands (*lpstat, who, ls, finger...*) or start procedures (backup, SQL requests, man...) on remote servers. The command results may be:

- Viewed in a window.
- Stored in a file on the PC.
- Placed in the Windows clipboard.

Servers may be accessed with or without a password. In the latter case, the UNIX host needs to be configured to give the user access rights. (see the section "**TCP/IP configuration on a UNIX host**" in Chapter "**Introduction to Tun NET**").

The advantage of running a remote shell command, rather than opening a *telnet* session, is that connection with the server is only established during the execution of the command. It is closed immediately upon completion. The program is therefore economical in terms of system and network resources.

With **Tun RSH**, you may execute commands on one or more remote servers and view the results in a window, without establishing either a telnet or emulation session. In addition, **Tun NET's** Remote Shell program is completely customizable, allowing you to easily configure frequently used commands.

Tun RSH AND NIS

The application **Tun RSH** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the network's servers and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the Servers resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

USING Tun RSH



Run the program by clicking on the **Tun RSH** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

When **Tun RSH** starts, the screen is cleared and the main application window is displayed maximized.

In order to execute remote command, you must first select the server you wish to access. Click on **File→Open Connection...:**

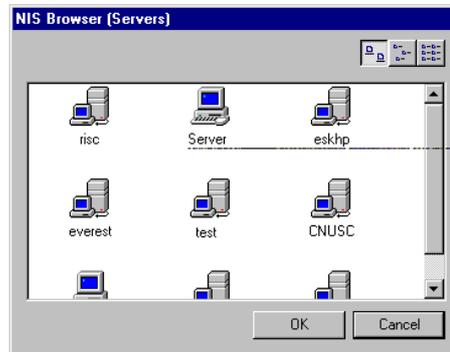


Host

Enter the name or IP address of the server on which you wish to execute commands into the server field.

Use the **NIS...** button to view the servers present on the network. Refer to the section "**Tun RSH and NIS**" above.

Pressing the **NIS...** button displays the following window:



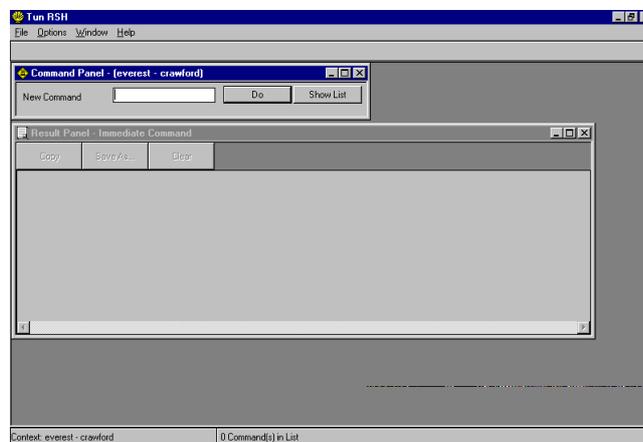
Double-click on the desired resource to activate it.

User

Enter the name of the account whose rights will be used when accessing the server. By default, this field already contains the name used during the previous connection.

If you would like to be prompted for your password after each command, click on the option **REXEC**. If no password is necessary, deactivate REXEC by clicking in the box. In this case, the UNIX host must be configured correctly to give the user access rights.

When connection is made, the following screen will be displayed:



The above remote shell screen contains a Button bar, which is empty when the program is first started, and two main windows:

- **Command Panel** for entering non-interactive commands.
- **Result Panel**: displays the results of remote commands.

Multiple connections

Tun RSH runs in MDI (Multiple Document Interface) mode. This means that you may open simultaneous **Command Panels** on different servers. The **Result Panel** remains common to all executed commands.

Managing remote shell sessions

You may switch between active **Command Panels** by clicking on the one you wish to make active. The **Window** option can also be used to bring a particular panel to the foreground.

If you would like to reorganize the display of active sessions automatically, use the options **Window→Cascade** or **Window→Tile**.

Reducing and resizing sessions

You may use the mouse to resize **Command** and **Result Panels** as desired, or even reduce them to icons.

Closing sessions

Close all Remote Shell sessions by double-clicking with the mouse on the square located in the upper left-hand corner of the program window, or the eXit square in the upper right-hand corner in Windows 95, or by using the options **File→Exit**.

Command execution

Type the name of the command you wish to execute in the **New Command** field, then click on the button **Do** or press <Enter> to send the request.

If the connection information is correct (**Host** name, **User** name, etc.) the results of the command will be displayed in the **Result Panel**. In the event of an error, a window explaining the cause will be displayed.

Command recall

The **Show List** button displays the commands that have already been executed. You may use the mouse to select a command from the list to execute it again without having to retype it.

Result Panel

By default, command results are displayed in the graphical **Result Panel**. You also have the option of saving the information to a file on disk or to the Windows Clipboard (**Options→File...** and **Options→Clipboard**). The command buttons **Save** (to a file) and **Copy** (to the Clipboard) perform the same functions.

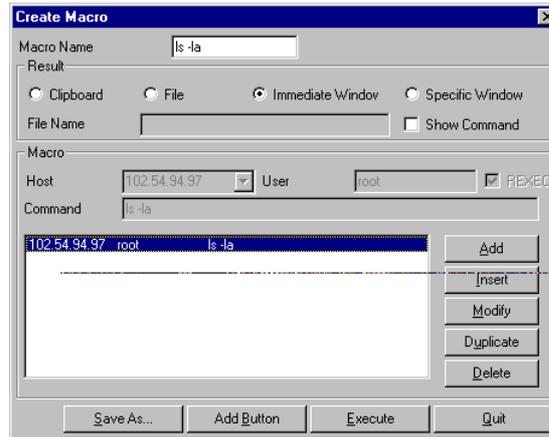
You may choose to erase the results in the **Result Panel** after each new command, or append the results of one command after another using the option **Options→Auto-clear**.

CUSTOMIZING Tun RSH

It is very convenient to be able to record frequently used commands and sequences rather than typing them each time. **Tun RSH** includes a macro application for this purpose.

Defining a macro in Tun RSH

Use the options **File**→**Create Macro...** to define a new macro:



The above screen contains the following fields:

Macro name

Enter a name for the macro if you would like to associate it with a button.

Result

Select a destination for command results, by default the **Result panel**. If **File** is chosen, the **File Name** field is activated and the user can enter the name of the file to which the results are to be written.

Macro

This window contains the complete list of the commands to execute (on one or more servers). Enter the name of the host, the user and the command to be executed. If access to the host normally requires a password, check the box **Rexec**.

Click on **OK**. The macro will be registered in the lower part of the dialog box. The **OK** button will change to an **Execute** button. The user may then decide whether to execute the macro immediately, save it or add it to the button bar as a button. If the user decides to execute the macro immediately, a dialog box will offer him the option of saving it.

Adding commands to a macro

To add a new command to the list, click on the **Add** button, and fill in the **Host** name, **User** name, and **Command** fields as necessary.

After adding the desired commands, you may save the macro file (with a **.MAC** extension) by clicking on the button **Save As...** This is the name that will be used when recalling the macro from within the program.

Tun RSH Macro files created in this manner may be added as buttons to the menu bar (under **File**). To do this, press **OK** and select the option **Add Button** in the macro editor after entering all the desired commands. The button uses the name of the macro as a title, and there is a limit of eight buttons.



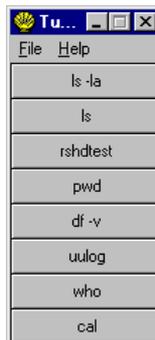
Once defined, the command buttons will appear automatically during subsequent program execution. You may change the contents of the menu bar at any time by using the options **File→Modify Macro Button** and **File→Delete macro button**.

Macro execution

The easiest way to execute macros is to associate them with Buttons as described above. Otherwise, the option **File→Load Macro** may be used to bring a macro to the screen, and then you may run it by clicking on the button **Execute** in the **Edit Macro** dialog box which appears.

Opening Tun RSH in button mode

If run with the option **-b**, **Tun RSH** presents only pre-configured command buttons to the user:



In this case, the only **Tun RSH** menu options available are **File** and **Help**, listing only macro buttons.

All the buttons in this example are one-line macros created using the procedure described in the previous section. Clicking on a command button executes the associated macro.

CHAPTER 13 - REMOTE COMMAND SERVER

Tun NET AND RSHD

A PC may act as a server and allow remote commands to be executed from another PC or a UNIX machine. **Tun NET** enables a PC to act as a RSH server, to which one or more machines can be authorized to access to execute remote commands.

When the Remote Command Server (**Tun RSHD**) is run on a host PC, it opens two sockets of the port and rexec type. It then remains in listening mode for requests from an authorized RSH client.

Remote authorized users may then execute commands on a PC running the RSH daemon.

SETUP



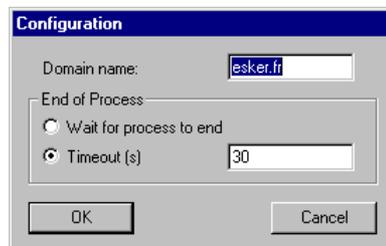
Run the program by clicking on the **Tun RSHD** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

If there are no users or machines have been authorized access, one or two messages are displayed to this effect.

You know **Tun RSHD** is running when the following icon is displayed in the taskbar: 

To configure **Tun RSHD**, select the option **Configuration** in the context menu (displayed by clicking the **Tun RSHD** icon).

The following dialog box is displayed:



Domain Name

Enter the name of the domain from which other users may access the PC running the RSH daemon. It is not obligatory to fill in this field, but it means that the full IP addresses of authorized users do not have to be entered.

End of Process

In normal circumstances, the second option **Timeout** is sufficient. When another PC sends a command to the host PC, **Tun RSHD** will wait for the timeout value, in seconds, before interrupting the connection.

If **Wait for process to end** is chosen, **Tun RSHD** will wait until the command has been fully executed before closing the link. However, there is always the risk that, if the command does not end, or there was a problem with the network, the RSH server would be blocked.

This could occur, for example, if the client sent the command *dir /p* to the server and the current directory on the host PC was packed with files. As far as the server is concerned, since it has interrupted the link, further pressing of a key would go unacknowledged. In such a case, the user of the PC host would have to stop the server by pressing Alt-Ctrl-Del.

With the **Timeout** option selected, the server closes the connection after the chosen time, whether or not the command has finished.

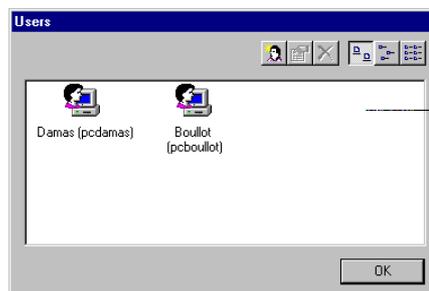
Click on **OK** to register the details.

USING Tun RSHD

Authorized users or machines have to be declared. Click on the **Tun RSHD** icon with the right mouse button and choose the option **User** or **Machine**.

Defining a user

The user must have an account on the network server:



In the above screenshot, two users have been declared, i.e. they have been authorized access to **Tun RSHD**. To examine the **Properties** of a user, select his icon and click on the button . You may also use the context menu accessed by clicking on the right mouse button.

Users may be removed by selecting the appropriate icon and clicking on the button . Confirmation is always required when removing **Users** or **Machines**.

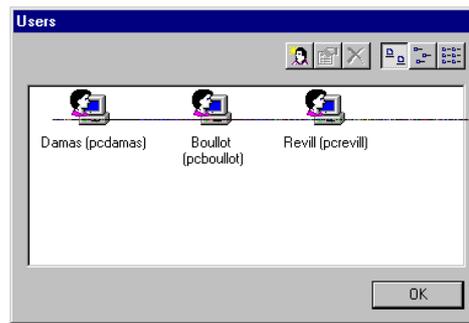
To add a new user, click on the first button . Fill in the following dialog box:

 A screenshot of a "New User" dialog box. It contains four text input fields:

- Local Name: Revill
- Remote Name: pcrevill
- Password: masked with asterisks (*****)
- Current Directory: D:\

 At the bottom are "OK" and "Cancel" buttons.

The fields **Local Name** and **Password** are obligatory. A warning message is displayed if the user tries to validate the dialog box without filling in these fields. **Local Name** is used to identify the remote user as displayed in the **Users** window:



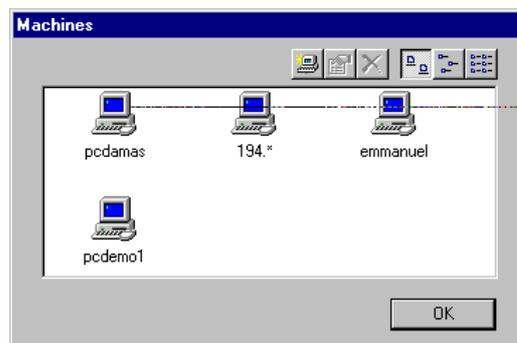
The **Remote Name** field is optional. It adds additional information on, for example, the authorized user's remote machine, as shown above, but it can also be used as an added restriction. If no **Remote Name** is provided, the **Tun RSH** server does not implement **Remote Name** restrictions.

Confirmation is required for the obligatory password, which should, of course, be communicated to the authorized user.

The **Current Directory** is the default directory in which the authorized user's remote command will take effect.

Defining a machine

To define a machine, click on the RSHD icon with the right mouse button and select the menu option **Machine**. The following dialog box is displayed:



Click on the button  and enter the name of the machine or its IP address in the highlighted field beneath the new machine icon. The button bar is inactive as long as this step is not completed.

Note that the wildcard character (*) can be used if an IP address is entered, e.g. 194.123.*. Then click in an empty part of the dialog box window for the information to be recorded and the buttons rendered active again.

The authorized user may then execute remote commands from an authorized PC using **Tun RSH** or a UNIX machine.

Examples

The following are examples of commands executed from a UNIX machine on a PC running **Tun RSHD**.

- `rsh pcrshd "dir c:\windows > c:\test.txt"`

This command copies the contents of the directory `c:\windows` on the PC `pcrshd` to a file on a PC called `c:\test.txt`. The user name in this case is the one used for the UNIX login before the command was given. This user name, as well as the name of the UNIX machine, must be authorized on the PC "pcrshd".

- `rsh pcrshd "dir c:\windows" > /tmp/test.txt`

This command is similar to the previous one, except that the destination file is located on the UNIX machine (the redirection operator `>` is not included in the quotation marks, indicating the destination file is local).

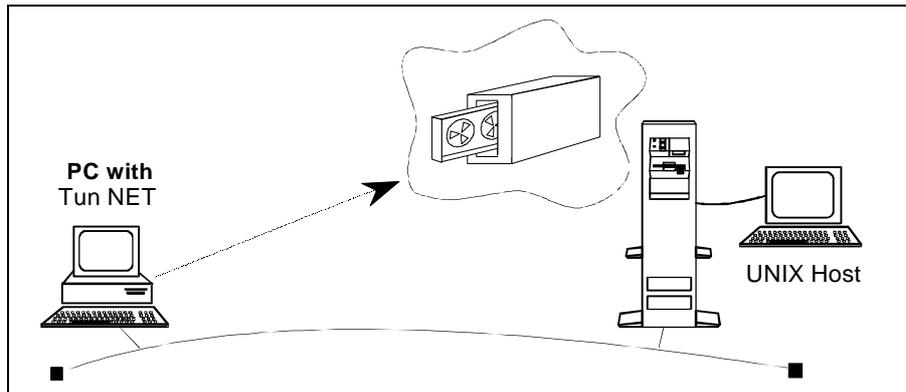
- `rsh pcrshd -l john dir`

This command executes a "dir" command on the PC "pcrshd" in the name of the user "john" (local PC name). The remote name of this user must be that used for the login on the UNIX machine. If no remote name is specified, this command from the user "john" could be carried out from any UNIX login.

CHAPTER 14 - REMOTE BACKUP

Tun NET AND REMOTE BACKUP

Tun NET makes Windows/UNIX resource sharing complete by giving Windows users the ability to use remote UNIX backup devices (tape drives, streamers, DAT drives...).



Tun TAR can be used to backup and restore (in tar format) a PC's local drives onto remote peripherals such as tape drives, DAT, streamer, floppy disk, or even into files on a UNIX server's hard disks.

When performing a backup operation, **Tun TAR** establishes an RSH or REXEC connection with the UNIX machine, transmits an "image" of the data to backup, and then requests that it be written to the appropriate device. Restore operations establish the connection, read the data from the device and transmit an image of the data to restore to the PC.

Tun TAR AND NIS

The application **Tun TAR** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the network's backup devices and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the TAR Configurations resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

RELATED UNIX CONFIGURATION

Users must be correctly declared on the UNIX host in order to use **Tun TAR** properly without having to supply a password. The files `$HOME/.rhosts`, and `/etc/hosts` need to be modified or created as described in the section "TCP/IP Configuration on a UNIX host".

Accessing a UNIX device

By default, **Tun TAR** uses a redirected `dd` command on the UNIX server in order to access a particular device. The program functions as if the following command were given on the UNIX server:

```
tar cf - | dd of=/dev/rct0
```

in which the character "l" represents the network and `/dev/rct0` is the device name for the UNIX tape drive.

STARTING Tun TAR



Run the program by clicking on the **Tun TAR** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.



In the program screen, the icons represent the main tar procedures:

- **Backup** all or part of the PC's hard disk
- **Restore** all or part of the PC's hard disk
- **Load** all or part of the contents of a backup
- **View** the details on backup and restore operations

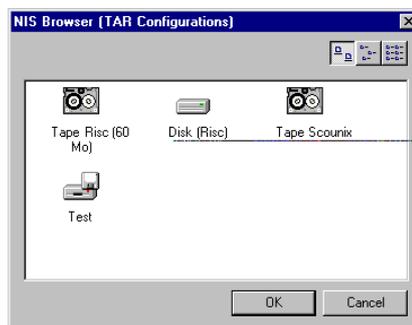
Click with the mouse on one of the icons to open the program. You may open all the program functions at the same time, and switch from one to the other using the mouse or the **Window** option in the main screen.

COMMUNICATION CONFIGURATION

Each of the first three icons available (**Backup**, **Restore** or **Load**), has a field called **Archive** which allows the user to enter a communication configuration.

Use the **NIS...** button to view the Tape Archive backup resources present on the network.

Pressing the **NIS...** button displays the following window:



Double-click on the desired resource to activate it. Note that when an NIS resource is selected the **Setup...** button is grayed. This is because the backup, load or restore operation will have been automatically configured.

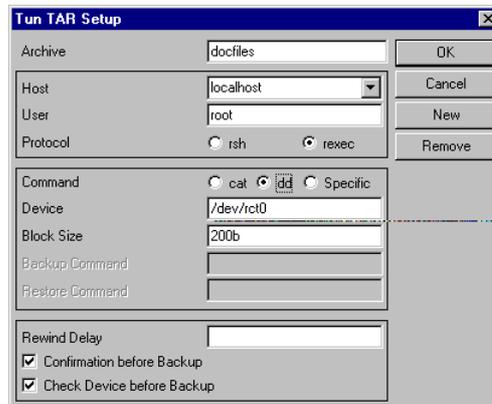
In the Archive name field of the backup, restore or load screen, a little yellow tape is displayed before the name if the archive is an NIS archive:



Otherwise a gray tape is shown.

The Archive will then take the same name as the resource and the Setup will be automatic (hence, the **Setup...** button becomes grayed). See **'Tun TAR and NIS'**.

A communication configuration may be created or modified by clicking on the button **Setup** just beside the field **Archive**. This displays the following dialog box:



The entry fields are as follows:

Archive

Archive is the file name under which the communication parameters registered by this dialog box will be stored. It is possible to create a new archive file by clicking on the **New** button. All the archives created using the button **New** are stored and may subsequently be reused. The **Delete** button removes an archive which is no longer needed.

Host

The **Host** field holds the name or the IP address of the UNIX server to which the client machine is connected. Backup is effected on the client machine.

User

The field **User** contains the name of the UNIX user in which you wish to carry out the operation.

Protocol

Two communication protocols are available for transmitting data to be saved to, or loaded from, the server:

- rsh
- rexec

The **rsh** protocol enables the user to save or load data without having to enter a password. You cannot use this protocol if the UNIX server has not been correctly configured (cf. **"TCP/IP Configuration on a UNIX Host"** in Chapter **"Introduction to Tun NET"**).

The **rexec** protocol does not require prior configuration on the UNIX server but the user has to enter a password each time he carries out a backup or load operation. We recommend the use of the **rexec** protocol when the **Tun TAR** application is first used.

Command

This is the name of the UNIX command used to read characters transmitted by the PC via a pipe and transmit them to the backup device and vice-versa. Two default commands are available:

```
cat (tar cv | cat > /dev/rmt0
dd (tar cv | dd of=/dev/rmt0 ibs=20b obs=200b)
```

The **cat** command is by far the most simple and the most common. However, it may be the case that it does not work on some servers with certain peripheral backup devices. If such is the case, **dd** is a suitable alternative. If neither **cat** nor **dd** work (which is very unlikely) there is always the possibility of using a

specific command by selecting the radio button **Specific** and completing the fields **Backup Command** and **Restore Command**

Device

Device is the name of the driver for the backup device (e.g. `/dev/rct0`, `/dev/rmt0`, `/dev/fd0` etc.) To complete this field, consult the technical documentation of the UNIX machine.

Block Size

The field **Block Size** should only be completed if the UNIX command **dd** has been selected. This parameter corresponds to the value of the parameter **obs=** (for a backup) or **ibs=** (for a restore operation) of the command **dd**. It indicates the number of bytes read from, or written to, the peripheral backup device in one operation.

Backup and Restore Commands

These two fields should only be completed if the check box **Specific** has been selected. In this case, they should contain an exact description of the specific commands.

Rewind Delay

It may be the case with a slow server that problems are encountered writing to the tape which do not exist when writing to a file. To reduce the problem you can increase the timeout value by completing the field **Rewind Delay**.

Confirmation before Backup

Selecting this check box means you want the application to display a **request for confirmation** before each backup operation to avoid writing over saved information.

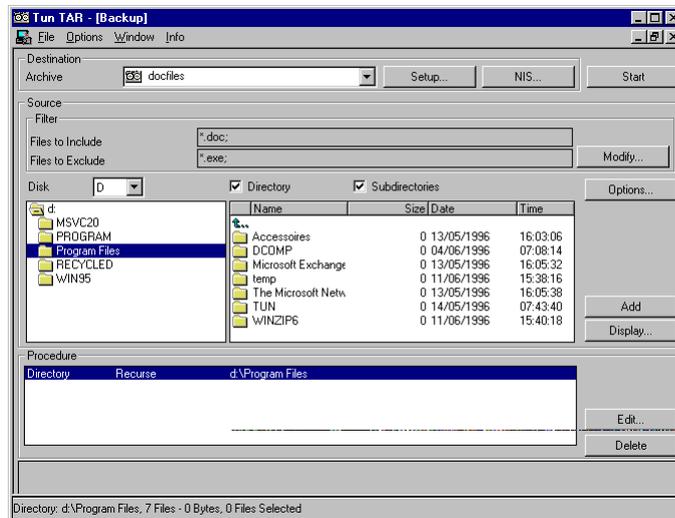
Check Device before Backup

Selecting this check box means that you want the application to verify that the communication is functioning properly and that there is definitely a storage medium in the backup device before each backup operation.

Note: The same check boxes are displayed for the Restore, Backup and Load programs. There is no longer any need to use the Setup... dialog box if the NIS... option is used. See further on.
--

BACKING UP

To perform backup operations, click on the **Backup** icon:



Contents of the backup window

Archive

Enter the name of the communication configuration in the **Archive** field, if it is empty, or click on the **Setup...** button to create a new configuration. Click on the list box arrow to show previously used archives.

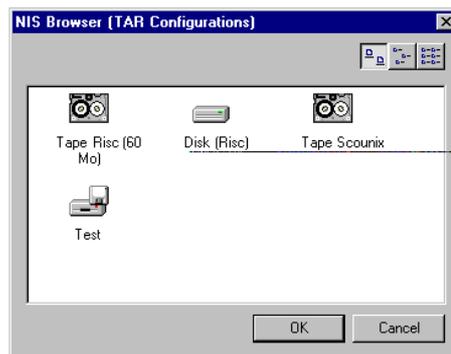
Setup...

Refer to the previous section.

NIS...

Use the **NIS...** button to view the Tape Archive backup resources present on the network.

Pressing the **NIS...** button displays the following window:



Double-click on the desired resource to activate it. Note that when an NIS resource is selected the **Setup...** button is grayed. This is because the backup, load or restore operation will have been automatically configured.

In the Archive name field of the backup, restore or load screen, a little yellow tape is displayed before the name if the archive is an NIS archive, otherwise a gray tape is shown.

The Archive will then take the same name as the resource and the Setup will be automatic (hence, the **Setup...** button becomes grayed). See **'Tun TAR and NIS'**.

Filter

The filter section is used to specify and select the source files to include and exclude from the backup. Use the **Modify...** button to enter the desired filters.

Disk

Contains the name of the MS-DOS drive you wish to backup.

Directory

Determines whether or not the backup applies to entire directories or only to selected files.

To include subdirectories, check the box **Subdirectories**. Select the files and directories you wish to backup from the graphical file list windows.

Procedure

This window (empty at first) contains the list of selected files and directories for the backup operation. The buttons **Edit** and **Remove** may be used to change any of the elements in the window.

Options...

Allows you to specify backup options such as whether or not to use a catalog, or perform relative or absolute backup (with respect to directories).

Start

In the upper right-hand corner, the **Start** button begins the configured backup procedure.

Backing up multiple directories

To illustrate the procedure for backing up several directories at once, let us imagine that you would like to backup the contents of C:\DOS and C:\WINDOWS on the streamer **/dev/rct0** on the UNIX machine **bigserver**. Follow these steps to perform the backup:

1. Create an archive by pressing the **Setup...** button to display the appropriate dialog box.
2. In the dialog box, enter the name **bigserver** in the field **Host**, enter a valid **User** name, choose the **rexec** protocol and enter the value **/dev/rmt0** in the **Device** field.
3. In the principal window, select the options **Directory** and **Subdirectories** (click on both check boxes with the mouse).
4. Select drive C: in the **Disk** field.
5. Navigate through the file structure window, and click on the **DOS** directory.
6. Click on the **Add** button to add the DOS directory to the backup procedure list.
7. Navigate through the file structure window, and click on the **Windows** directory.
8. Click on the **Add** button again.
9. Directory selection is now complete.

Starting the backup

1. Make sure the destination tape drive is ready and contains a cartridge.
2. Press the **Start** button.

After confirmation and a password request, the backup will begin and a status window will display the backup process. You may continue to work in other Windows programs during backup operations.

Verifying a backup

When the backup has finished, you may use the option Report-Immediate to view the details of the operation. You may also use a command such as the following directly from UNIX:

```
tar tvf /dev/rmt0
```

Relative and absolute directory backups

By default, **Tun TAR** performs absolute backups, meaning that files are saved along with their complete file path.

You may change this mode to perform Relative backups by clicking on the **Options...** button, and selecting **Relative**. In this case, the backup files will not include the path.

Backing up selected files

Follow the instructions given in the previous section in order to select certain files for backup. You must, however, deselect the **Directory** option in order to be able to choose individual files. Backup procedures may include directory and individual file backups as long as each is added using the proper options.

Backing up an entire hard disk

The same instructions also apply to the procedure for backing up an entire hard disk. Simply choose the root directory, and make sure that the options **Directory** and **Subdirectories** are selected.

You may include more than one hard disk by adding the root directories of other drives to the procedure, even Netware or NFS drives which are currently available to the User.

Using filters

The filters in **Tun TAR** allow you to choose the types of files that you would like to include or exclude from a procedure. For example, to back up all the files with a .DOC extension on your hard disk (C:), follow these steps:

1. Enter the name of a communication configuration in the archive field.
2. Click on the **Modify...** button in the filter box.
3. In the window that appears, press the **Add** button and enter the file "mask" *.DOC in the field Files to include, and click on **OK** to confirm.
4. Select C: in the **Disk** field.
5. Make sure that **Directory** and **Subdirectories** are turned on (which they are by default).
6. Select the root directory of the C: drive in the file structure window.
7. Click on **Add** to add the request to the **Procedure** list.
8. Make sure that the tape drive on the server is ready.
9. Click on the **Start** button.

This operation will backup all the *.DOC files on the C: drive to the selected UNIX tape drive.

Notes: Different filters may be used at the same time (i.e. *.DOC and *.TXT). The filter zone is common to all backup selections. The **Edit...** option, however, allows you to apply certain filters to specific subdirectories.

Using the exclude filter

Exclusion filters function the same way, but serve to select the types of files not to include.

Creating a catalog

In order to be able to rapidly consult the contents of a particular backup, you may choose to create a catalog as part of the backup. The catalog contains the names of all the files in the backup, and may be read quickly by **Tun TAR**.

Activate this option by selecting the **Create Archive Catalog** check box in the **Options...** dialog box.

Saving a backup macro

Backup procedures and archive names may be easily stored as macros, and re-used without having to retype all the information. Select the options **File** ⇨ **Save macro as...** in order to save the current configuration. TAR macro files use the extension *.TMF.

Loading a backup macro

To load a pre-defined macro procedure, select **File→Load macro...** Use the **Start** button to execute the operation.

RESTORE

Suggested use

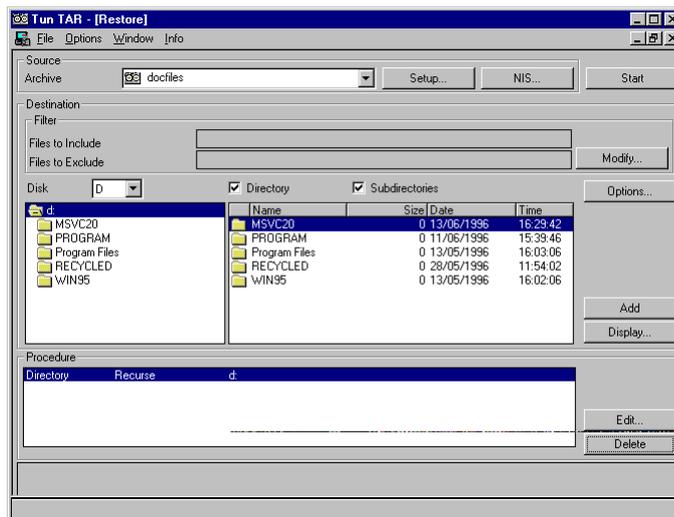
The Restore feature in **Tun TAR** is useful when the backup corresponds to the existing directory and file structure on the hard disk. For example, if the backup contains the directory C:\DOS, the PC's hard disk must also have the directory C:\DOS in order to be able to restore the data.

In fact, Restore files are actually selected from the local disk, and then the request is sent to the server.

Restore was designed for users who regularly perform backups of their systems, and may need to restore a particular file, directory, or even an entire disk.

To load directories or files that do not currently exist on the PC, it is best to use the **Load** program, which reads the backup file first, and then presents the list of files contained within.

Double-clicking on the **Restore** icon opens the window below:



Contents of the Restore window

Archive

The Archive field should contain the name of a communication configuration; if this field is empty or you wish to create a new configuration, you should click on the **Setup...** button to supply the new parameters.

NIS...

The NIS button gives instant access to the Tape Archive resources on the network.

Filter

The filter section is used to specify and select the source files to include and exclude from the restore. Use the **Modify** button to enter the desired filters.

Disk

Contains the name of the DOS drive onto which you wish to restore.

Directory

Determines whether or not the restore applies to entire directories or only to selected files.

To include subdirectories, check the box **Subdirectories**. This option is only valid if the **Directory** box is also selected.

Select the files and directories you wish to restore from the graphical file list windows. The check box **Directories** must be deselected before you select files.

Procedure

Empty at first, this window contains the list of selected files and directories for the restore operation. The buttons **Edit** and **Remove** may be used to change any of the elements in the window.

Options

Allows you to specify restore options such as whether or not to use a catalog, relative or absolute restore (with respect to directories), etc.

Start

In the upper right-hand corner, the **Start** button begins the configured **Restore** procedure.

Restoring a single file

To illustrate a restore procedure, let us assume that after a system error, the file C:\WINDOWS\WIN.INI was corrupted, but had been backed up on the UNIX server called **bigserver** on a tape device called **/dev/rmt0**. Follow these steps to restore the file:

1. Insert the tape into the UNIX tape drive.
2. Select an archive which corresponds to the server **bigserver** and the device **/dev/rmt0**.
3. Deselect the options **Directory** and **Subdirectories**.
4. Select C: as the hard drive, and navigate through the file structure and click on the Windows directory.
5. Select the file WIN.INI. (The files to restore are chosen from existing versions already on the hard disk).
6. Click on the **Add** button.
7. Click on **Option** button, and select **Replace old file**.
8. Click on **Start** to execute the restore.

After confirmation, the restore will begin, and a status window will display the progression of the restore procedure. You may continue to use other Windows programs during restore operations.

Verifying a restore

When the restore has finished, you may use the **Report-Immediate** icon to view the details of the operation.

Relative and absolute directory backups

You may restore files and directories to a location other than their place of origin by clicking on the **Options...** button, selecting the **Relative** mode, and specifying the destination path.

Saving a restore macro

Restore procedures may be easily stored as macros, and re-used without having to retype all the information. Select the options **File→Save Restore Macro As...** in order to save the current configuration. TAR macro files use the extension *.TMF.

Loading a restore macro

To load an already-defined macro procedure, select **File→Open Restore Macro...** Use the **Start** button to execute the operation.

SELECTIVE LOAD

The **Load** function in **Tun TAR** is more sophisticated than **Restore**, allowing you to select files directly from the backup source and then restore them to the PC.

The contents of backup files may be read quickly by using the button **Refresh catalog** described in this section, if they were backed up with a **Tun TAR** catalog.

Contents of the Load window

The fields and buttons in the **Load** window are identical to those in the **Backup** and **Restore** windows described earlier.

The only button that is different is **Refresh catalog**, whose purpose is to read and then display the contents of a remote backup catalog.

Retrieving the backup catalog

The first thing to do when restoring files using the Load procedure is to rebuild the backup catalog, as described below:

1. Insert the relevant tape into the UNIX tape drive.
2. Select an archive which corresponds to the server **bigserver** and the device **/dev/rmt0**.

If the backup was performed using the option **Create archive catalog**, retrieval of the file list will be very fast. If not, the program has to read the entire tape or **tar** file in order to retrieve the file names.

Choosing files and directories

Use the graphical presentation of the backup's contents to load a file or directory, then follow the instructions given for the **Restore** command.

Saving a load macro

Load procedures may be easily stored as macros, and re-used without having to retype all the information. Select the options **File→Save Load Macro As...** in order to save the current configuration. TAR macro files use the extension *.TMF.

Reading a load macro

To load an already-defined macro procedure, select **File→Open Load Macro...** Use the **Start** button to execute the operation.

AUTOMATIC BACKUPS

Backup and **Restore** (and **Load**) procedures may be entirely automated, so that all a user has to do is click on an icon to start an operation.

As described earlier, **Tun TAR** macros (with a .TMF extension) can be used to memorize:

- type of operation (backup, restore, load)
- host name
- archive device or file
- file and directory selection
- options and filters
- destination for completion messages (file, clipboard...)

To create a macro containing this type of information, use the option **File→Save Macro As...** as described in the previous sections (where x depends on the type of operation you would like to automate).

To run a macro directly from the **Tun TAR** icon in Windows, edit the program **Properties** under the Windows Program Manager using the following syntax:

```
C:\TUN\TCPW\>WTAR -Mproc_file -T
```

where

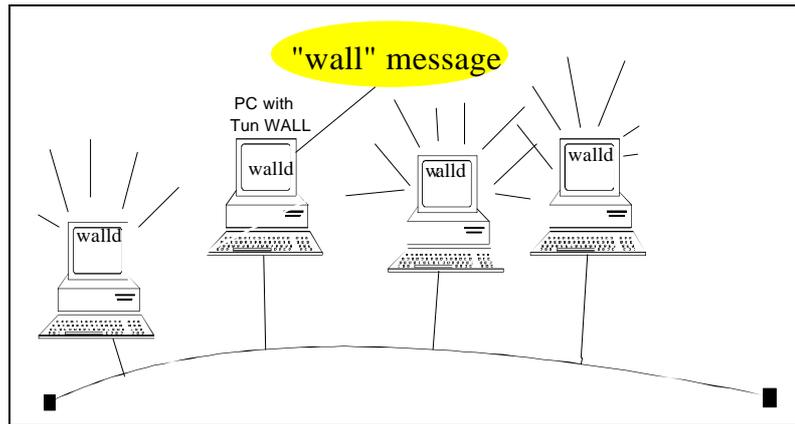
proc_file is an existing macro file

-T causes the **Tun TAR** application to close after the macro is done.

CHAPTER 15 - WALL AND WALLD

Tun NET AND WALL

Wall (Write to all) is a utility for sending messages to all the other PCs on the network to warn, for example, the other users of particular events (stoppage of a server, closure of a DBMS, backups...). For WALL to function, WALLD must be already running on the PCs (e.g. it could be included in the startup group). There is no need to supply an address or password.

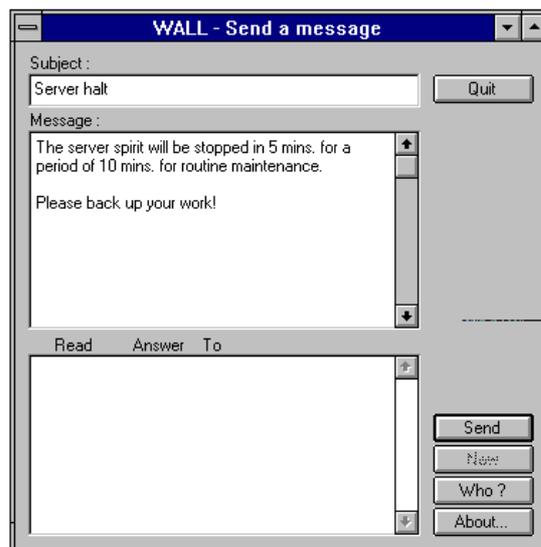


SENDING A MESSAGE



Run the program by clicking on the **WALL** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

Suppose, for example, that the administrator wishes to inform the users of a possible stoppage of the server; he clicks on the icon **WALL** in the **Tun NET** group. The following window appears:



Subject

The subject of the message may be entered in the first field. Completing this field is not obligatory but it gives the addressees a general idea of the message.

Message

The message area is designed to hold short messages only.

Click on the button **Send** to send the message to all the users connected to **WALL**. The message is immediately displayed on the stations which have loaded **WALLD**.

The information area

The lower part of the window gives the sender information about the reception of the message, that is, if the message has been received by the addressees and if a reply is being prepared.

Read	Answer	
-		Received but not acknowledged
x	-	Read and acknowledged
x	x	Read with answer pending

A "-" in the column **Read** indicates that the message has been received but that it has not been acknowledged (read) by the addressee.

An "x" in the column **Read** and a "-" in the column **Answer** indicates that the message has been received and acknowledged (read) by the addressee. He or she is not preparing an answer to the message.

An "x" in both the columns, **Read** and **Answer**, indicates that the message has been received and acknowledged (read) by the addressee and that he is preparing an answer.

The button **Who?** can be used to find out who is likely to receive messages:

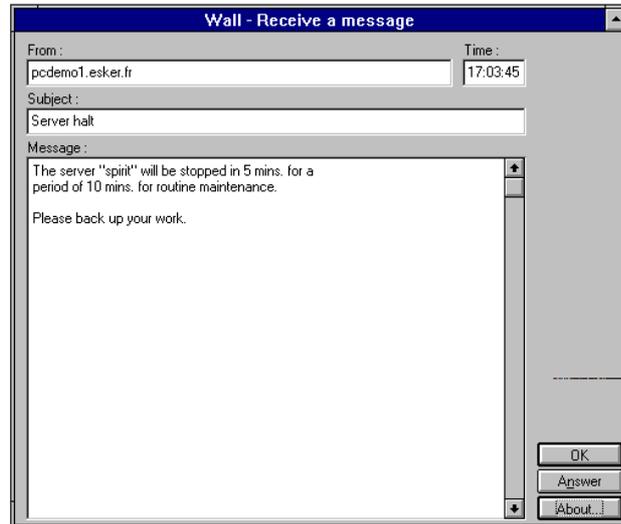


RECEIVING A MESSAGE



Run the program by clicking on the **WALLD** icon in the **Tun NET** group under Windows 3.x or from the Windows 95 Start menu.

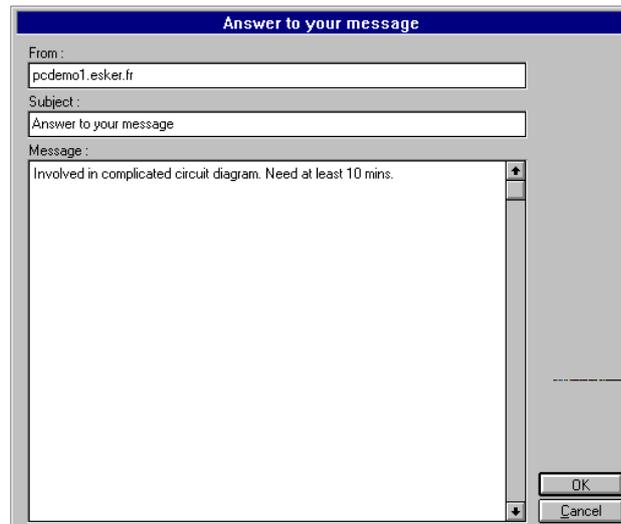
If the utility **WALLD** is running on the addressee's machine, a dialog box appears to inform him of the reception and contents of a message:



After reading the message, the receiver can acknowledge it by clicking on the button **OK** or answer by using the button **Answer**.

ANSWERING A MESSAGE

The button **Answer** is used to acknowledge reception of a message and answer it directly. A dialog box is displayed for the composition and sending of an answer:



The answer is only sent to the sender of the original message.

CHAPTER 16 - Tun ACCESSORIES

WHAT IS TFTP?

Trivial File Transfer Protocol is a subset of the Internet protocol, implemented on top of UDP, which allows users to send a file quickly to another machine. The implementation of the TFTP protocol is restricted to the transfer of one file at a time. TFTP is often used for booting terminals simply and efficiently on sites with few terminals or for feeding system files to network devices.

The source and destination file names and also the file path must be known. There is no directory listing facility included in the TFTP protocol. There is no provision in the protocol for user authentication. The main advantages of **Tun TFTP** (and of TFTP in general) are its speed and simplicity of use.

Tun TFTP AND NIS

The application **Tun TFTP** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the servers and TFTP configurations on the network and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the "Servers" and "TFTP Files" resource tables using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

USING Tun TFTP

Tun TFTP is simplicity itself. The program can operate simultaneously in Client and Server mode.

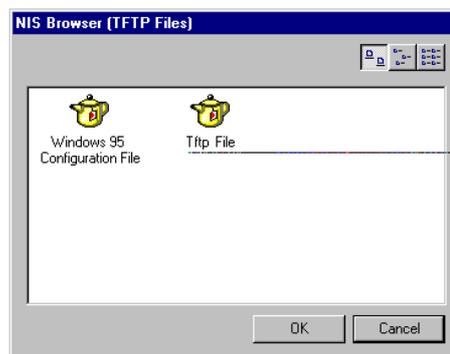
By default, **Tun TFTP** functions in client mode only. By using the option **-s** on the command line, you can run **Tun TFTP** in both client and server mode. With the command line options **-s** and **-h**, you can run **Tun TFTP** in server mode only.



Run the program by clicking on the **Tun TFTP** icon in the **Tun NET** group for Windows 3.x or from the Windows 95 Start menu.

NIS configuration

To access an already defined TFTP configuration, select the **NIS** option in the context menu (click the **Tun TFTP** icon in the taskbar with the right mouse button). The following dialog box is displayed on the screen:



Select the TFTP configuration of your choice.

New configuration

To configure **Tun TFTP**, select the option Configuration in the context menu (click the **Tun TFTP** icon in the taskbar with the right mouse button). The following dialog box is displayed on the screen:

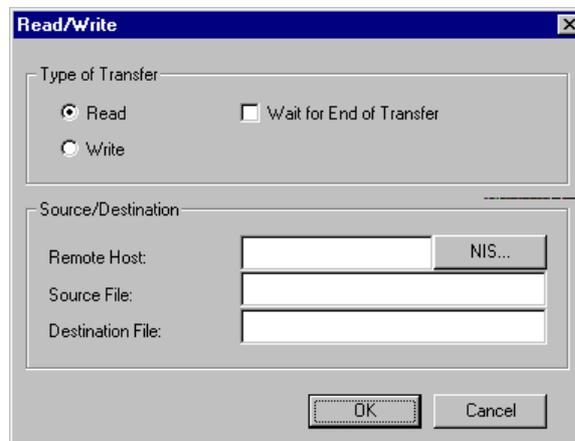


The dialog box shows the default settings. These values will be found to be suitable for the majority of cases. According to the example a message error will be displayed three times after a delay of 5 seconds, and will be repeated 3 times. The user may alter these values to suit his needs.

The **Show error messages** check box should be selected if the user wishes to be informed of any possible error (e.g. if a file is being transferred in background mode). This option is recommended in Client mode. In Server mode, however, it is better left unselected since any unsuccessful access to the TFTP server will provoke an error warning.

Read/write

To use **Tun TFTP**, select the option **Read/Write** in the context menu (click the **Tun TFTP** icon with the right mouse button). The following dialog box is displayed on the screen:



Type of transfer

Select the type of transfer desired, **Read** to transfer a file from the remote host, or **Write** to send a file to the remote host. The check box **Wait for end of transfer** indicates that the transfer will take place in *synchronous mode*; in this case the dialog box will remain on the screen for the duration of the operation. If the check box is not selected, the transfer will be effected in *asynchronous mode*. The dialog box will be cleared from the screen at the start of the transfer operation and another transfer can immediately be engaged.

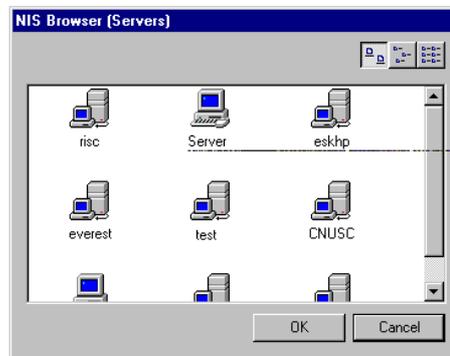
There is a risk of the user not being informed of possible errors if a file is being transferred and the check boxes **Wait for end of transfer** and **Show error messages** (in the settings dialog box) are not selected. Therefore, if the **Wait for end of transfer** check box is not selected, it is safer to ensure the **Show error messages** check box is.

Remote host

Enter the name or the IP address of the remote machine.

Use the **NIS...** button to view the servers present on the network. See **"Tun TFTP and NIS"**.

Pressing the **NIS...** button displays the following window:



Double-click on the desired resource to activate it.

Source file/Destination file

It is imperative that the user knows the source and destination file names of the file he wishes to send or receive. Enter these with the full file path name and press **OK** to start the transfer. The transfer is only carried out in binary mode.

Security

The fact that there is no user authentication means that the network administrator has to take special measures to protect the system from inexperienced or mischievous hands. There is a danger that a remote intruder could obtain host system files (e.g./etc/passwd) or overwrite existing files.

If there is a risk, restrict access to a subtree of the host file system, or run the Server in safe mode with the option **-s**.

On the UNIX server, the "rwx" permissions for other groups may be set appropriately to control access.

WHAT IS TIME?

The Time utility is used to make the time on the local PC correspond to that of the server chosen or just simply to find out the time on the remote host. The program is based on the UNIX Time/SNTP protocols. The program works only in synchronous mode on top of UDP and simply sends a request and waits for an answer. The program only runs in client mode.

Tun SNTP AND NIS

The application **Tun SNTP** benefits from access to the NIS server through the NIS Browser included with Tun applications. This functionality lets the user view the servers installed on the network and select them directly by simply clicking the mouse. The administrator must have previously configured the NIS server and defined the "Servers" resource table using the NIS browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

USING TIME



Run the program by clicking on the **Tun SNTP** icon in the **Tun NET** group for Windows 3.x or from the Windows 95 startup menu.

Configuration

To configure **Tun SNTP**, select the option **Configuration** in the context menu (displayed by clicking the **Tun SNTP** icon on the taskbar with the right mouse button). The following dialog box is displayed on the screen:

The check boxes contain the default values which are suitable for most cases.

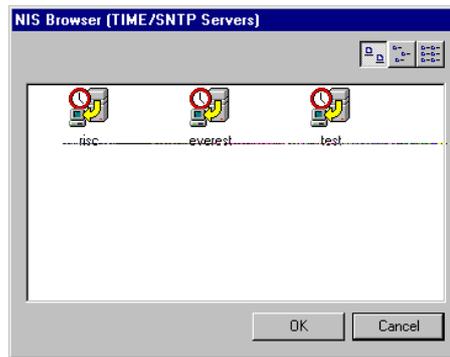
Default parameters

To obtain the server's date and time on the PC, complete the default parameters in the dialog box.

Enter the name or IP address of the server.

Use the **NIS...** button to view the servers present on the network. See "**Tun SNTP and NIS**" above.

Pressing the **NIS...** button displays the following window:



Double-click on the desired resource to activate it. Only the servers which use the Time or SNTP protocol are displayed.

Next select the type of protocol used by the server (UDP/Time or SNTP).

Enter the frequency with which the server will be queried for the time (in seconds). If the frequency is zero, the server will not be queried for the time automatically. On the other hand, if the frequency is not zero, for example 3600 seconds, the date and the time on the PC will be automatically updated every hour.

Error parameters

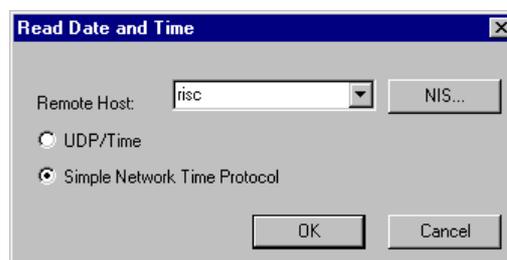
The lower half of the dialog box displayed is similar to that of the TFTP program. Refer to the preceding section "**Trivial File Transfer Protocol**".

Click the **OK** button for the parameters to be taken into account. If you selected a server, your PC will copy the date and time of this server.

The following window will be displayed:



To read a server's date and time, select the option **Read date and time...** in the context menu (click the **Tun SNTP** icon in the taskbar with the right mouse button). The following dialog box is displayed on the screen:



Proceed as for the preceding section '**Configuration**'.

NIS

The time may also be set by using the **NIS Browser**→**Servers** table. Click on a server icon with the right mouse button. If a Time/SNTP server is running on that particular host, the menu option **Time / Sntp...**→**Time...** will be activated and will give the same results. Refer to **The browser NIS**'.

PART THREE
ELECTRONIC MAIL

CHAPTER 17 - INTRODUCTION TO ELECTRONIC MAIL

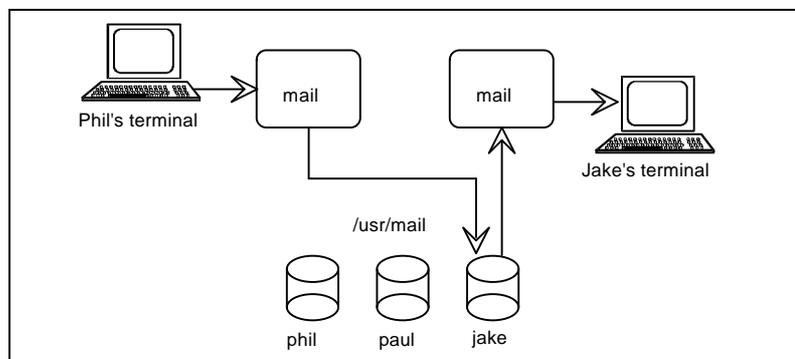
The goal of this chapter is to offer some simple explanations about the protocols and components of electronic mail in **Tun NET**. The first section gives a short overview the SMTP, POP3 and MIME standards. The second section explains how they interact with the electronic mail functionality in **Tun NET**.

E-MAIL CONCEPTS: SMTP AND POP ON UNIX

Basic UNIX E-mail

Ever since the commercial distribution of UNIX in the early 1980s, E-mail has always been part of this operating system. At first, the program was quite simple. Users were only able to send messages to other users on the same physical server.

The original UNIX mail system functions according to the following diagram:



Every user on the UNIX box has a unique mailbox **file**, usually located in the **/usr/mail** directory. The name of the mailbox is identical to the user's login name. If user (phil) wants to send a message to another user (jake), he uses the UNIX **mail** command. This application lets Phil compose a message and then place it into the mailbox of the recipient. The recipient (jake) can check the contents of this mailbox using the same **mail** program.

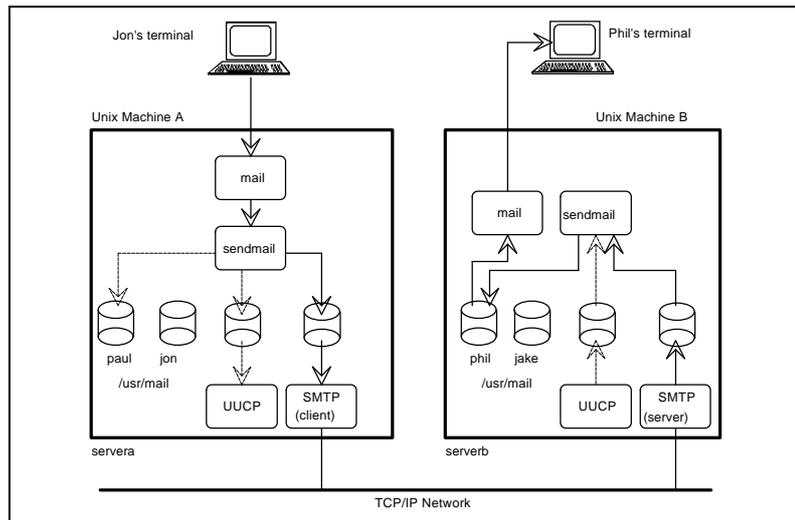
This system of mail delivery was never really used to its fullest by most UNIX end-users. The absence of user-friendliness limited the use of **mail** mostly to gurus. And since only a small number of users were connected to the same UNIX box, this also limited its usefulness.

System administrators, however, greatly appreciated **mail**, since it allowed them to receive information about applications running in the background (daemons).

The SMTP protocol

From the very beginning, the Internet has, for the most part, consisted of UNIX servers, and the operating system itself was therefore able to adapt rapidly to sending and receiving messages over TCP/IP networks. The protocol used to send messages is called **SMTP** (Simple Mail Transfer Protocol). It is defined in RFC 822 (dated 1982).

Here is a simplified diagram showing how SMTP fits into UNIX mail:



A user on server A (jon) who wants to get a message to a user on server B (phil) would use the UNIX **mail** command. To specify the destination address, the user would use the name of the recipient (phil) and the name of the server the recipient has the account on (serverb), resulting in the address **phil@serverb**.

After the message is composed, it is submitted to the **sendmail** program, which then submits the message to the SMTP message queue.

SMTP (generally implying **sendmail**) then takes over and opens a communications link with server B. SMTP uses all address resolution mechanisms available on the TCP/IP network, as well as the TCP/IP network itself.

If a connection is achieved, the message will be transmitted to the corresponding SMTP server on the remote host.

The SMTP server of host B receives the messages and transmits them immediately to the local **sendmail** process. Again, the address is analyzed and the message is placed into the mailbox of the user in question. The recipient (phil) may now check the contents of his mailbox using the **mail** command.

The main advantage to SMTP lies in its simplicity, and in the fact that it facilitates connections with several servers, using TCP/IP as the link, without requiring all the servers to know each other.

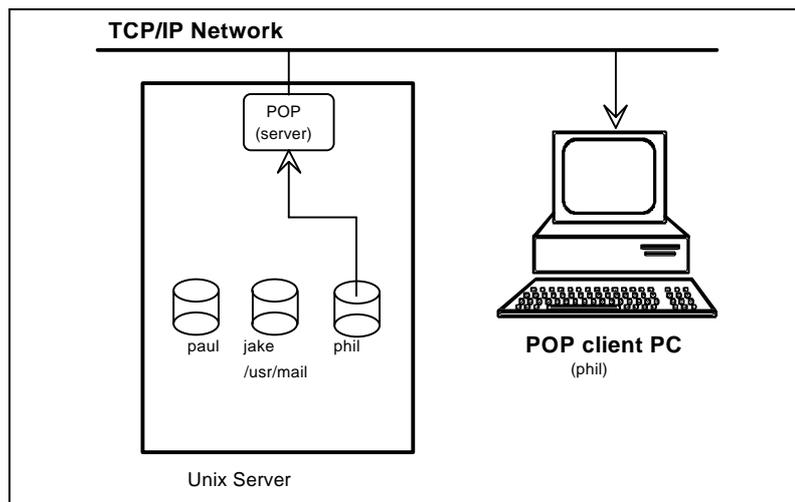
The main disadvantage to SMTP is that it is based on TCP/IP. This limits access from the outside, since not all networks use this architecture.

The POP protocol

With the arrival of microcomputers, more and more users wanted their PCs to provide the only connectivity solution on their desktop. They appreciate the user-friendliness of Windows applications and would prefer not to use ordinary dumb terminals. In particular, they prefer not to utilize “old” applications such as the character-based UNIX mail program.

RFC 1460 (1990) was written to address the needs of these users. This RFC discusses the POP protocol (Post Office Protocol), which lets a remote user query his mailbox over a TCP/IP network. There are several versions of the POP protocol, the latest one being version 3.

Here is a simplified diagram showing how the POP protocol functions:



User **phil** only has a PC on his desk. His mailbox is located on the UNIX server, which also acts as his post office. He has access to a POP client application (**Tun MAIL** in this case) which queries the POP server process on the UNIX host. During each query, the POP server checks to see if there are messages in Phil's mailbox. If this is the case, it extracts any available messages and transmits them to the PC over TCP/IP. Thus, the user Phil can consult his messages with a user-friendly application such as **Tun MAIL**.

The POP protocol lets users have access to the powerful UNIX mail application without making them confront the complexities of this system.

Note:	The POP protocol only lets the user load messages from the UNIX mail host. It does deal with sending mail, which is handled by the SMTP protocol described above.
--------------	---

UUENCODE and the MIME format

RFC 822 (1982) which defines the SMTP protocol to transmit messages over the Internet or other TCP/IP networks, never really took into consideration the content of the messages being sent. It was assumed that messages would only consist of 7 bit ASCII characters.

This fact not only excludes extended ASCII characters (for French, German, Spanish, etc.) from messages, but it also restricts binary file attachment.

At first, to overcome this limitation, UNIX users had access to such commands as **UUENCODE** and **UUDECODE** which allowed them to convert binary files to 7 bits. That way, these files could be added on to SMTP messages.

Since 1992, several RFCs (Request For Comment) have been published, which define precisely how to create messages containing images, sound and extended ASCII text, all using the SMTP protocol. This collection of RFCs (1521, 1522) constitutes the MIME standard (Multipurpose Internet Mail Extension).

MIME is a presentation layer which precisely defines how to encode *compound messages*. A compound message is a message that may simultaneously contain text (accented or not), binary information, sound files, image files, or even other compound messages.

MIME consists of rules that separate and identify the different components of a message. MIME also offers several methods of converting binary information to 7-bit text.

MIME is important because it allows complex messages to be created with one mail tool, sent over the Internet, and read by a different mail package.

OLE OBJECTS

The OLE (Object Linking and Embedding) mechanism is a process which allows Windows applications to exchange data.

It is based on the encapsulation of exchanged data (allowing the transfer of data from one application to another) and the creation of data links (an OLE object inserted in one document will be dynamically updated if it is modified by the application to which it is attached).

For example, an Excel spreadsheet might be inserted into a Word document as an OLE object. By clicking on this object in the Word document, the user can access Excel's tools and can then work in the spreadsheet before returning to the Word document. Also, if the Excel spreadsheet is modified directly in Excel, the changes are automatically taken into account in the Word document.

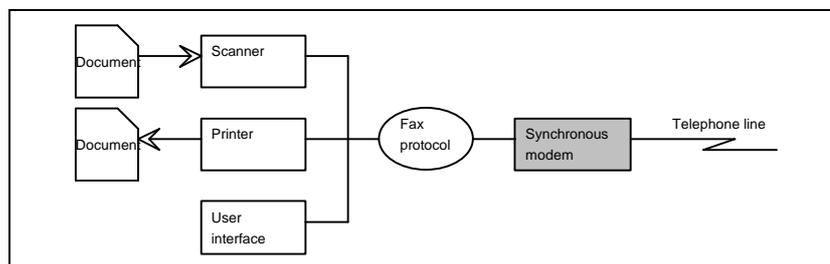
OLE2, the successor to OLE1, allows end-users to change from one application to another transparently: the principal is to incorporate the options required by the application called in the calling application (in the menus and toolbars) without a new window being opened.

To take the preceding example, Excel menus and toolbar buttons would be incorporated in the Word menus and toolbar to let the user access Excel commands from the same window.

THE PRINCIPLES OF FAX

In spite of the power and performance of e-mail systems (SMTP and others), they do not yet enjoy widespread acceptance throughout the business world. On the contrary, fax is at present still the most widely used means of exchanging written information.

The principle of fax is illustrated in the following diagram:



Sending a fax

The operator puts his document into the machine and dials the number of his correspondent. When the call is connected, the document is translated into digital form by a scanner which produces a bitmap encoded in G3 format (similar to the TIF format). The contents of the bitmap are then sent by the synchronous modem, line by line.

The **fax** protocol (class 1 or class 2) is used for the communication between the two modems and the data is transmitted along the line in HDLC packets (packets of bits).

Receiving a fax

The fax machine is continually open to the telephone line. When a call arrives, the machine answers and tries to establish a reliable link with the remote machine. If it is successful, the contents of the bitmap are transmitted by the synchronous modem, line by line.

The **fax** protocol (class 1 or class 2) is used for the communication between the two modems and the data is transmitted along the line in HDLC packets (packets of bits). As the image is received it is printed directly on the printer of the receiving fax machine.

DESCRIPTION OF Tun MAIL

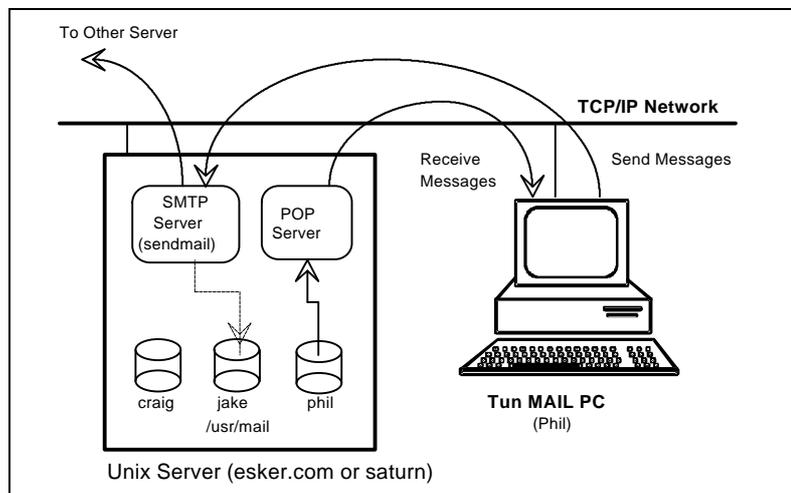
The **Tun MAIL** product was developed to be the most complete mail client possible for the UNIX-SMTP-POP3 environment. Every establishment that has a UNIX server will find **Tun MAIL** the necessary tool for building an efficient UNIX-PC mail system, either locally or over the Internet.

At the same time, **Tun MAIL** has fax sending and receiving facilities. The fax server program is run from the UNIX server. Fax support in **Tun MAIL** allows users to use a single tool to send and receive written information, irrespective of the hardware used by their correspondents. **Tun MAIL** is the ideal tool to help business fax users to change over smoothly to e-mail.

SMTP/POP on a LAN

Tun MAIL is most often used on local TCP/IP networks in a UNIX environment. In this type of local area network environment, messages are sent and received using the SMTP/POP protocols.

The following diagram shows how **Tun MAIL** operates in such an environment:



Phil is a user whose PC is running **Tun MAIL**. He is declared as user **phil** on the UNIX host **Saturn** which is known on the Internet as **esker.com**. Thus his e-mail address would be: **phil@esker.com**. As all other users on that host, Phil's mailbox is located in the directory **/usr/mail** on **Saturn**.

Receiving messages using POP

Every time Phil starts up **Tun MAIL**, it asks for his username ("phil"), his password and the name of the host ("saturn") on which he is declared. Using this information, **Tun MAIL** opens a connection with the POP server on the UNIX host **saturn** to see if there are any messages waiting for the user **phil**. The POP server checks the contents of the mailbox belonging to **phil** and responds depending on what it finds. If there are messages, the application **Tun MAIL** asks Phil if he wants to load them. If Phil accepts, all messages in his UNIX mailbox are loaded onto his PC and deleted on the UNIX side. After this, the connection is terminated and Phil can read and manipulate his mail at his leisure.

In this set-up the UNIX host **saturn** acts as the post office.

Sending mail via SMTP

After composing a message in **Tun MAIL**, Phil hits the **Send** button to send it off. The **Tun MAIL** application immediately establishes a connection with the SMTP server (sendmail) on **saturn** and transmits the message. The **sendmail** process receives the message and analyzes the destination address.

If this address does not contain the @ character (e.g. **craig**), **sendmail** will recognize that this must be another user on the **saturn** machine, and the message will be placed in this user's mailbox.

If the destination address does contain the @ character (**jon@cia.gov** for example), **sendmail** will try to establish a connection with the host whose name follows the @ character. In this case, the contents of the message will be transmitted to the above host, changing the return address from **phil@saturn** to **phil@esker.com** since **esker.com** is the official Internet name of **saturn**.

Once again, the UNIX host **saturn** plays the role of the post office.

SMTP/POP over phone line

More and more TCP/IP communication products (**Tun NET** for example) are being supplied with SLIP (Serial Line Internet Protocol) and PPP (Point to Point Protocol) interfaces. These protocols enable the PC to use TCP/IP over phone lines. Since server connections cannot be permanent when using phone lines, messages are placed into a message queue.

Tun MAIL messages

The **Tun MAIL** product conforms to the MIME 1.0 standard, so far the only one available as of this writing.

Tun MAIL lets you create true compound messages and, at the same time, integrate accented text, file attachments and OLE1 objects (Mail 16 bits) or OLE2 objects (Mail 32 bits). Before sending them onto the network, **Tun MAIL** encodes them in MIME format so that they can easily be re-read by third party mail products that are MIME compatible (except for OLE2).

Of course, to address compatibility issues, **Tun MAIL** also incorporates the "old" encoding standard based on SMTP (RFC 822) and **UUENCODE** and **UUDECODE**.

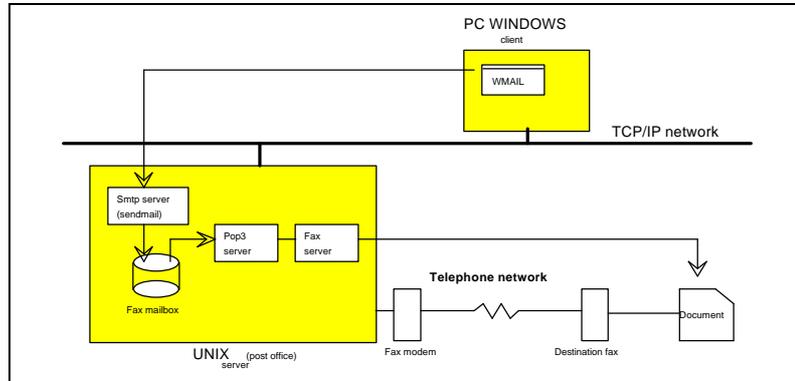
Before a message is sent, the user must know the type of mail program used by the recipient (MIME or non-MIME) and must select the applicable encoding standard by checking the appropriate box.

Similarly, messages containing OLE2 objects can be read by **Tun MAIL** for Windows 95.

Since the composite messages of **Tun MAIL** are prepared under Windows, it is quite possible to convert them into monochrome bitmaps which can be transmitted over a fax system.

Sending a fax

The principle of sending a fax over **Tun MAIL**'s e-mail system is illustrated below:



The user prepares a message using the application **Tun MAIL** and specifies the name(s) of his correspondent(s) in the field **To**. When he has finished, he starts the transmission of the message in the form of a fax, specifying the number or numbers of the correspondents (e.g. 78937428; 78935536).

The **Tun MAIL** application on the PC makes a digitized image to this effect (a bitmap) which it incorporates in a SMTP message in MIME format. The message contains as many bitmaps as there are pages in the fax.

The message is then transmitted to the application SENDMAIL on the UNIX machine which is responsible for sending it to a particular e-mail mailbox (e.g. tunfax@esker.fr).

The fax server checks the mailbox at regular intervals using the POP3 protocol. If there is a message waiting, the fax server tries to log onto the designated correspondent's fax machine and send it the image contained in the body of the message.

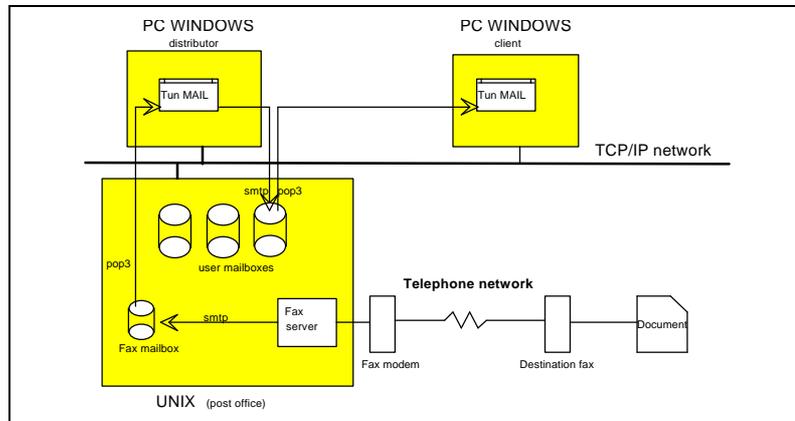
If successful, it will clear the message from its mailbox and warn the sender that his fax has been sent.

If unsuccessful, it postpones the operation and warns the sender of the transmission failure.

After several failures, the transmission of the fax is suspended and the sender is warned of the definitive abandoning of the operation.

Receiving a fax

The principle of receiving and distributing a fax using the **Tun MAIL** e-mail system is illustrated below:



The fax facility is ready for any calls received by the server. It manages the fax exchange and receives the image. It encapsulates the fax image in an SMTP message in MIME format and uses this protocol to store it in the default mailbox (**faxin@esker.fr**).

A particular user (the distributor) is authorized to log in to the fax reception mailbox (**faxin**) using the e-mail application (a name can be used so the **faxin** mailbox corresponds to a real user). The POP3 protocol is used to deliver the messages.

The distributor uses the re-direction mechanism to address the faxes to the intended users. He has to look at the first page of the fax to know who to address it to.

The user the fax is addressed to receives it like an ordinary message.

CHAPTER 18 - SERVER CONFIGURATION (LAN)

HOW IT WORKS

On a TCP/IP LAN, **Tun MAIL** uses the POP3 and SMTP protocols as described in the previous chapter.

Set-up

For this architecture to function properly, the following components must be in place on the UNIX host:

- All users who need access to e-mail must be declared
- A POP3 server must be installed
- An SMTP server must be configured

The following sections will show how to set up the above components.

DECLARING USERS (WINDOWS 3.X)



The first step in this process is to declare all users who will be using **Tun MAIL** for Windows 3.x on the UNIX host. To do this, simply set up a valid user account using the appropriate administration tool (smit, sysadmsh, sam, etc.) or by directly modifying the `/etc/passwd` file.

Note: All users *must* use a password

POP3 SERVER INSTALLATION

In general UNIX servers do not all come equipped with a POP3 server, which is necessary to operate **Tun MAIL**. To overcome this problem, **Tun MAIL** is shipped with a freeware version of this server (University of California at Berkeley).

Preliminary verification

You do not have to install this program on your UNIX server if it exists already. To see if this service is set up on your system, use the following command:

```
netstat -a | grep pop
```

If you get the following result:

```
tcp 0 0 *.pop *.* LISTEN
```

your system is already set up for POP3. It is not necessary to read the rest of this section.

Installing the POP3 server

The POP3 server delivered with **Tun NET** is in a file called POP3.TAR (in TAR format for UNIX). This file includes the following:

- Several compiled versions of the POP server (for SCO, AIX, HP, SUN).
- The "C" source code for the POP server, modified by ESKER to be compatible with UNIX System V.
- A README file.
- An installation program (by ESKER).

Follow these steps to install the POP server on a UNIX host:

1. Transfer the file POP3.TAR in **binary mode** from the DOS directory containing **Tun MAIL** into the /tmp directory on the UNIX host (using the Tun FTP file transfer program **ifTun NET** for example).
2. Extract the files from POP3.TAR using the following command:

```
tar xvf pop3.tar
```

3. Run the shell script **pop3.install**, which will update the /etc/services and /etc/inetd.conf files on your system.

Note: If your UNIX system is not listed among the machines for which there is already a compiled version of POP3, the installation procedure contains an option to compile the source code for your particular machine.

Updating configuration files

The following files are updated by the **pop3.install** installation script:

- /etc/services
- /etc/inetd.conf

If the '**pop**' service did not already exist, the following line will be added to your **/etc/services** file:

```
pop      110/tcp      #Post Office
```

If the '**pop**' service was not already active, the following line will be added to your **/etc/inetd.conf** file:

```
pop3    stream  tcp    nowait  root    /etc/popper  popper
```

Note: /etc/popper is the name of the application that implements the functions of the POP3 protocol.

Type the following command to update your TCP/IP configuration and activate the new service:

```
kill -1 inetd_process_no
```

Checking the installation

To verify that the pop service was correctly installed, type the following command:

```
netstat -a | grep pop
```

The following output indicates that POP is up and running:

```
tcp    0  0  *.pop  *.*    LISTEN
```

If you don't find a pop server listening, verify the contents of the **/etc/services** and **/etc/inetd.conf** files and execute the command **kill -1 inetd_process_no** again or simply stop and restart TCP.

CONFIGURING THE SMTP PROTOCOL

In general, UNIX servers come equipped with the SMTP protocol which **Fun MAIL** needs to run properly.

Preliminary verification

To check if the protocol is installed on your system, type the following:

```
telnet localhost 25
```

This command opens a **telnet** connection to **port 25** of the host **localhost** (the server you are logged on to). Port 25 corresponds to the SMTP service and the **sendmail** process should be listening on this port.

If the SMTP protocol is correctly installed on your server, the following message will appear:

On SUN:

```
sun: /> telnet localhost 25
Trying 127.0.0.1 ...
Connected to localhost.
Escape character is '^]'.
220 sun.noname Sendmail 4.1/SMI-4.1 ready at Mon, 13 Feb 95 12:02:54
GMT
```

On AIX:

```
# telnet localhost 25
Trying 127.0.0.1 ...
Connected to localhost.
Escape character is '^]'.
220 esker.fr Sendmail AIX 3.2/UCB 5.64/4.03 ready at Mon, 13 Feb 1995
12:06:28 - 2300
```

On SCO UNIX (ODT)

```
# telnet localhost 25
Trying 127.0.0.1 ...
Connected to localhost.
Escape character is '^]'.
220 odt3.esker.fr Server SMTP (Complaints/bugs to: postmaster)
```

On HP-UX:

```
# telnet localhost 25
Trying 127.0.0.1 ...
Connected to localhost.
Escape character is '^]'.
220 eskhp HP Sendmail (1.37.109.4/16.2) ready at Mon, 13 Feb 95
12:11:03 +0100
```

If **telnet** is not able to open a connection over port 25, SMTP is either not installed or is incorrectly configured on your system. Refer to your UNIX *help* reference to address the problem.

If the **telnet** connection was successful, you may exit by typing **quit**.

The **sendmail.cf** file

In general, the **server** part of the SMTP protocol is defined as the program **/usr/lib/sendmail** which runs in the background as a daemon process. The **sendmail** program is configured using the ASCII file **sendmail.cf** located in **/usr/lib** and sometimes in **/etc**. It may be necessary to modify this file so the **sendmail** process puts the correct address into the **From** field of your messages. This chapter does not attempt to treat the

complexities of **sendmail** but rather to indicate that most problems are the result of the incorrect initialization of the above file.

Notes: On some SCO systems (Santa Cruz Operation), there is a process called **mmdf**, which acts as **sendmail**. To configure **mmdf**, run the command **mkdev mmdf** (logged in as the user "mmdf") and follow the instructions given.

There is a handy reference book written by Bryan Costales called "SENDMAIL" published by O'Reilly & Associates which discusses *everything but* **sendmail** in its 800 pages.

CENTRALIZED MAILING LISTS (WINDOWS 3.X)



A mailing list is an address that corresponds to several recipients. It can be extremely useful to use these lists in order to send one message to several users at the same time. For example, there could be an address list for all the members of the sales department or even all the employees of the company.

The most efficient way to create such a list is to modify the **/etc/aliases** file on UNIX. This file lets you group several recipients together under one single name.

For example, the following line in the **/etc/aliases** file on the UNIX server "esker.com",

```
sales:john@esker.com;anke@esker.de;graziella@esker.it
```

allows you to contact three people at the same time by using the address "sales@esker.com". This type of addressing makes it possible to create discussion forums, since a response to such an address would also reach all of the other members of that group.

There is no limit on the number of lists that can be created in **/etc/aliases**, however, it is important to update 'sendmail' with these changes by typing:

```
sendmail -bi
```

INSTALLING THE FAX SERVER

Tun MAIL is delivered with a fax server for UNIX as standard. The server is delivered for the following systems:

1. HP-UX
2. SCO
3. AIX
4. SunOS

Preliminary checks

For the server to function, it is imperative that the POP and SMTP components are in place. There is no point in trying to install the fax server if the installation of the POP3 and SMTP servers has not been carried out as described above.

Loading the fax server

The fax server delivered as standard with **Tun MAIL** comes in the form of a TAR format file (fax.tar) containing the following:

- Several compiled versions of the server for the most widely used UNIX machines (SCO, AIX, HP, SUN)
- A README file
- The installation procedure

Note: If your system is not included in the list of machines for which there is a compiled version, please contact your supplier to obtain a copy.

Follow these steps to install the FAX server:

1. Create a directory for the fax server and change to it (for example **/usr/tunfax**):

```
mkdir /usr/tunfax
cd /usr/tunfax
```

2. Transfer the file **TUNFAX.TAR** from the **Tun MAIL** installation directory to the directory **/usr/tunfax** of the UNIX machine (using **Tun FTP** program, for example)
3. Decompress the file tunfax.tar using the command:

```
tar xvf /tmp/tunfax.tar
```

Latest versions of files

The following files are created in the installation directory at the command **tar**:

File	Function
./bin/tunfax	Fax server program
./bin/send	Fax sending program
./bin/receive	Fax receiving program
./bin/faxview	Fax server supervisor
./bin/faxinstall	Configuration procedure
./bin/fax	Unix-based fax sending program (xfax)
./incoming	Reception directory for incoming faxes
./outgoing	Storage directory for outgoing faxes
./etc/modem.db	Database of recognized fax modems
./etc/tunfax.install	Fax server configuration script
./sample	Example of fax
./tmp	Temporary directory
./etc/faxaliases	Alias list file similar to /etc/aliases

Declaring a mailbox for the fax server

As explained earlier, the fax server will look for the faxes it has to send in a special mailbox. Before configuring the fax, a mailbox has to be created for it. This is done simply by declaring a user **tunfax** on the UNIX machine.

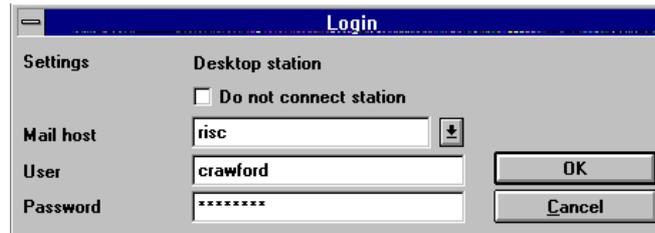
Note: A different name from **tunfax** may be used as long as the new name is indicated during the configuration of the fax server.

CHAPTER 19 - ELECTRONIC MAIL FOR WINDOWS 3.X

CONNECTING

 Run the program by clicking on the **Tun MAIL** icon in the **Tun NET** group.

An empty screen will appear with a large window and the following dialog box:



Mail host

Fill in the name of the **Mail host** you will be accessing. This is simply the name or IP address of the server that is set up as your post office.

User

Fill in the name of the **user** whose mailbox you want to access. The user may be changed without quitting the application by using the option **Special**→**Change User...**

Password

Fill in the **password** of the user. The user's password may be changed by using the option **Special**→**Change Password...**

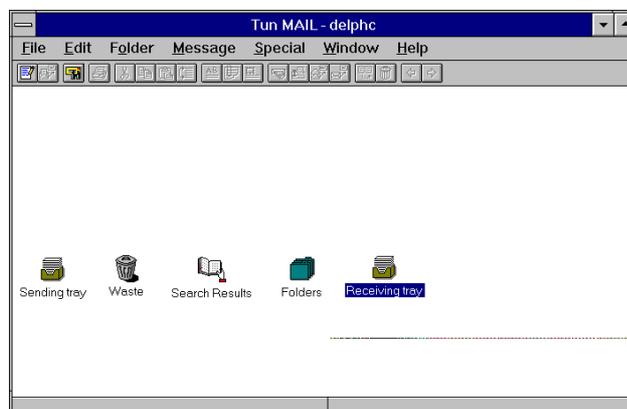
Do not connect station

By checking the box **Do not connect station** the user may access **Tun MAIL** for Windows 3.x without automatically connecting to a mail host in order to work off-line.

Note: The above information may be entered automatically by modifying the command line options in the Windows Program Manager (**File**→**Properties**). Refer to the heading **WMAIL2** in the reference section at the end of this book.

Tun MAIL FOR WINDOWS 3.X PROGRAM DESCRIPTION

After connecting and loading any new messages, the following screen appears:



New messages are extracted from the UNIX machine and placed into the **Receiving Tray** window. **TunMAIL** for Windows 3.x will indicate the number of new messages received in the bottom left-hand status bar of the main window. The above window contains the following elements:

- A **Receiving Tray** window containing all received messages (old and new) that have not yet been deleted (moved to **Waste**) or filed away to any of the folders.
- A **Sending Tray** icon which contains all messages that have been composed (sent or not) which have not been filed away yet.
- A **Waste** icon which contains deleted messages.
- A **Folders** icon which lets you organize messages.
- A **Search Results** icon which will contain the output of a search.
- Command buttons with actions related to messages (forward, compose). These buttons are active or inactive (grayed out) depending on the user's environment.

Note: The automatic searching of read receipts can be deactivated by inserting the following line in the section [TUNMAIL2] of the tunmail.ini file:

NotLookForReadReceipt=1

In this case, the read receipts are included in the number of new messages and are only loaded when the messages are loaded.

Here is a description of the icons in the toolbar:



Compose

Select this button to create a new message. This can also be achieved by selecting **Message → Compose** in the main menu. This action is described in more depth in the section **Composing messages**



Reply

This button lets the user compose a new message within a received one. The address of the sender is put into the **To** field. This can also be done by selecting **Message → Reply** in the main menu. This action is described in more depth in the section **Replying to messages**



Look for Messages

By pressing this button, the user can quickly check for new messages.



Print

It is possible to send the contents of a message (header and body) to a printer by selecting this button, use **File → Print Messages** and **File → Print Content**.



Cut

This button cuts the selected text to the Windows Clipboard (menu options **Edit → Cut**).



Copy

This button copies the selected text to the Windows Clipboard (menu options **Edit → Copy**).



Paste

This button can be used in the main body of a message during composition and in the header fields. Text will be inserted at the cursor position (menu options **Edit → Paste**). For text objects from word processing programs, use the menu option **Edit → Paste as Text** to include the selection as simple text.



Select All

This button lets the user select the entire body of the message to copy it, for example, into the Windows Clipboard (menu options **Edit → Select all**).

**Insert Text File**

This button can only be used in the main body of a message. It lets the user select a text file and insert it after the cursor (menu options **Edit → Insert text file**). This action is described in more depth in the section **Composing messages** section.

**Attach File**

This button can only be used when the cursor is in the main body of a message during composition. With it you can attach a file (text or binary) to the main body of your message. The attachment will be made visual by a special icon in the body of the message (menu options **Edit → Attach file**). This action is described in more depth in the section **Composing messages**

**Insert Object**

This button can only be used in the main body of a message during composition. Thus OLE1 objects may be inserted in the body of the message. This attachment will be represented by a symbol inside the message (menu options **Edit → Insert object**). This action is described in more depth in the section **Composing messages**

**Send**

After composing a message it can be sent over the network by selecting this button.

**Send As Fax...**

Use this button to convert the message into fax form and send it directly via the fax server.

**Forward**

This button duplicates a received message, so that it may be forwarded to another recipient. This action is described in more depth in the section **Forwarding messages**

**Redirect**

This button lets you redirect a received message to another recipient. You would select this option if you don't want to edit the message. This action is described in more depth in the section **Redirecting messages**

**Transfer**

This button lets users store messages in a specific folder. This action is described in more depth in the section **Storing messages in folders** section.

**Delete**

This button can be used to delete messages and place them in the Waste folder. Waste contents will be purged after the application is closed unless the options are set otherwise. If this button is used inside the waste folder, messages are deleted immediately.

**Previous and Next**

These two buttons let you move back and forth within the message list without returning to the corresponding folder.

RETRIEVING MESSAGES

Automatic message polling

When **Tun MAIL** for Windows 3.x is started, it connects to the mail (by default every 10 minutes) to see if any new messages are available. To execute this feature manually, select **Messages → Look for new messages** from the main file menu.

The frequency of this look-up may be modified by selecting **Special → Options**.

Depending on the state of the application (icon or full screen) and depending on the options selected, the user will be advised of a new message in the following ways:

- By default, if **Tun MAIL** for Windows 3.x is an icon, new messages are indicated by movement of the red flag on the mailbox. In this case, switch to e-mail to access new messages
- By default, when **Tun MAIL** for Windows 3.x is in full screen mode, the user is informed of incoming mail by a moving letter icon on the bottom of the screen. Clicking on this icon will load the new messages.
- If the option **Show popup** is selected (**Special**→**Option**) the arrival of new messages is indicated by a dialog box that appears in the application the user is in at the time. Select **OK** to load new messages. If **Cancel** is selected, this popup dialog box will not reappear even if other messages are subsequently received unless the following line is added to the file TUNMAIL.INI:
AlertForEveryNewMessage=1

In addition to the above, the arrival of new messages may be indicated by a beep (**Special** →**Options** →**Use beep**).

Checking for new messages manually

To check for new messages manually, select **Message**→**Look for new messages** from the main menu. This will query the mail host.

Loading messages

If messages are available on the mail host, the following window will appear, indicating the number of new messages:



Yes will load the available messages onto the PC into the Receiving Tray. They will be deleted from the mail host.

No will not load the messages and will not affect them on the mail host.

If you answer **Yes** and place an "X" in the check box **Do not delete messages in the post office's mailbox**, all available messages will be copied to the PC without deleting them from the mail host. These messages are considered as "temporary", and will disappear when **Tun MAIL** for Windows 3.x is closed.

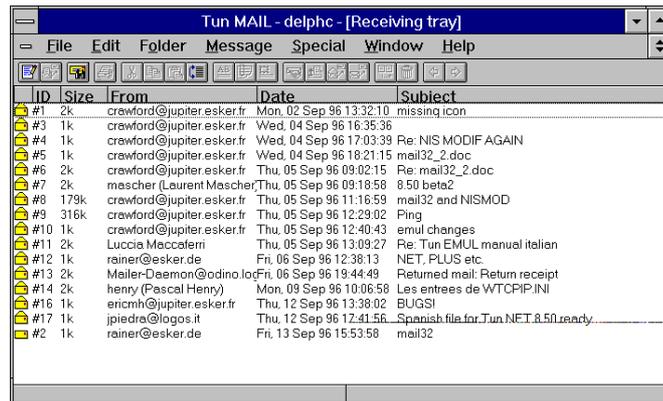
One of the uses of this option is to be able to access messages from a different PC than the one you usually use.

READING MESSAGES

When the application is first started and there are new messages, the Receiving Tray is displayed in the middle of the screen. It contains all new messages as well as those that have not yet been stored in a folder or deleted. If it doesn't appear, double-click on the Receiving Tray icon.

The receiving tray

The **Receiving Tray** window has the following appearance:



Messages are displayed with the following elements:

- An envelope icon indicating whether the message has been read (open or closed envelope), or is currently being read. The envelope for normal messages is yellow, but when messages are retrieved without deleting them from the source (temporary messages), the envelope is red and is deleted when **Tun MAIL** for Windows 3.x is closed.
- A message ID number
- The name or address of the correspondent
- The size of the message in Kb
- The date the message was sent
- The message subject, if any

The complete e-mail address of the correspondent may be displayed in the message fields and folder lists (if it is not included in the address book) by inserting the following line in the section [TUNMAIL2] of the TUNMAIL.INI file:

```
DisplayFullAddress=1
```

You may change the width of any of the columns by dragging the lines in the title bar with the mouse.

Sorting messages

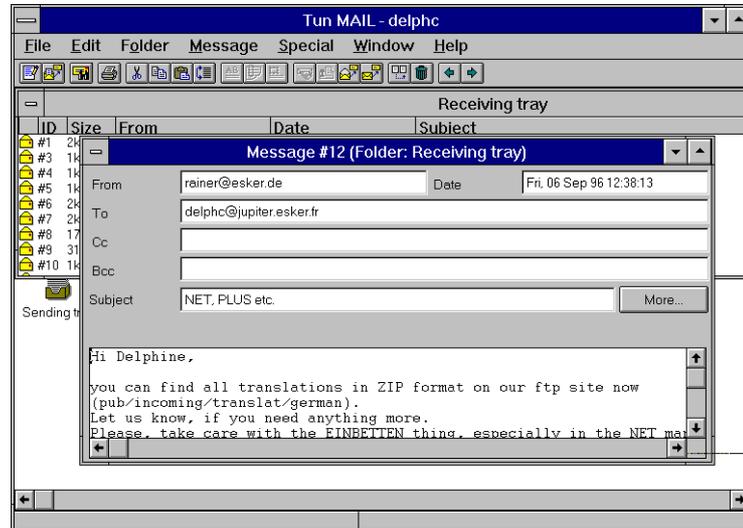
The **Sort...** option (under **Folder**) may be used to display messages according to the Message ID, the Correspondent, Date, or Subject. Messages may also be sorted by simply clicking on the column header. The different timezones may be taken into account when sorting messages in a folder or tray according to their date. To enable this option, add the following line to the section [TUNMAIL2] of the TUNMAIL.INI file:

```
SortUsingTimeZone=1
```

By default, this sorting mode is not activated since it is noticeably longer (3 to 5 times).

Opening a message

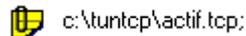
To read a message, simply click on the corresponding envelope in the receiving tray:



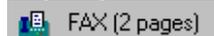
The fields contained in the message window are similar to those in the receiving tray:

From	Indicates the address of the sender
Date	Indicates the date the message was sent
To	Indicates the message's main destination
Cc	Carbon copy indicates other destinations for the messages, if any
Message	The contents of the message
More	For viewing the address header details

If a message contains one or more attached files, this icon, followed by the names of the files, will be displayed:



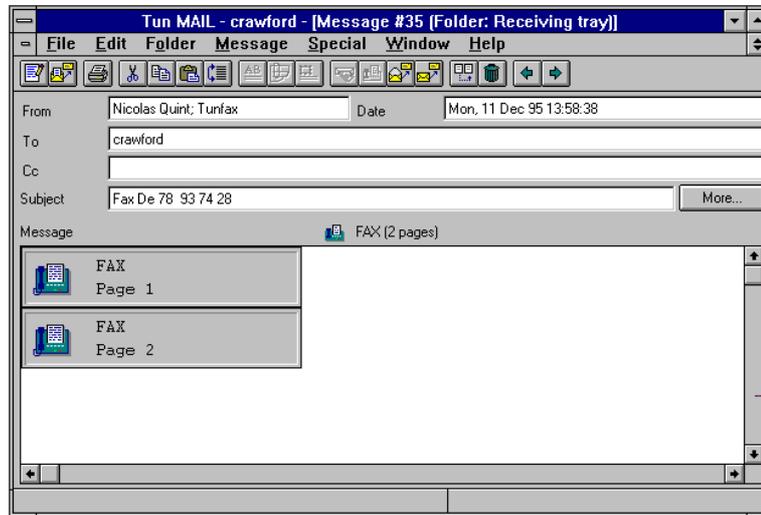
If the message is a fax, this will be indicated by the presence of the following icon:



The user can view the whole of the text using the direction arrows and the scroll bar. A part of the message can be selected with the mouse or the direction arrows and copied into the clipboard. The received message cannot be modified.

Fax messages

If the message received is a fax, it will appear on the screen in the following form:



Each of the pages of the fax are represented on the screen in the form of an attached object. Click on one of the pages to display its contents. This runs the Windows program Paintbrush with the contents of the selected fax page. A different program may be defined to view the pages of the fax using the option **Special→Fax...** in the main menu.

If the option **Ask For Page Orientation When Launching Viewer** is selected in **Special→Fax...** in the main menu, a dialog box is displayed to this effect before the viewer application is run.

To extract one or other of the pages and store it in a file, click on the small icon above the message. This displays a dialog box which allows the user to select the page or pages to be saved and to name the storage files.

To move around the message body, use arrows keys or the scroll bar.

It is possible to select part of a message by using the mouse or the arrow keys to copy it to the Windows Clipboard. You cannot change a received message.

Extracting attached files

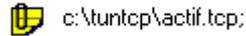
If a message contains attached files, double-click on the attachment icon or use the option **Edit→Extract Attached File...**, which will open the following dialog box:



The **Copy** button may be used to copy an attached file from a mail message without removing it.

The **Extract** button is used for removing an attached file from a message. The message, in this case, does not keep the file for future use, but rather indicates the location it was copied to. This option frees up space in the folders.

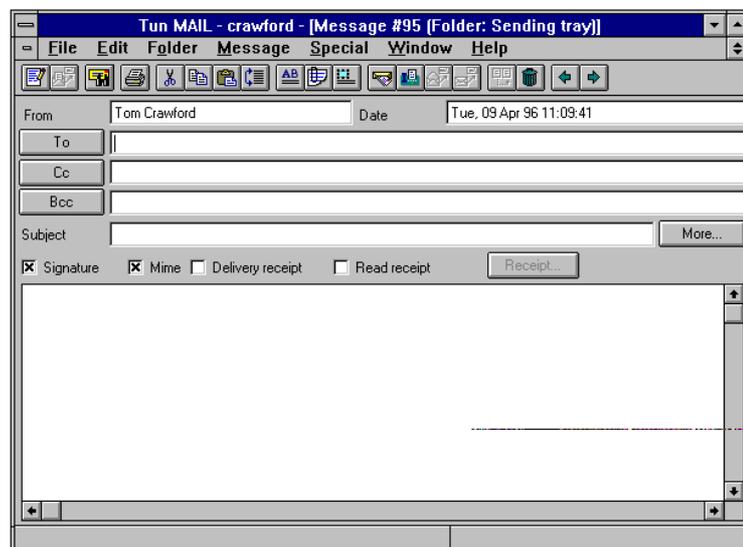
The same can be achieved by double-clicking on the icon below found in the message header:



COMPOSING MESSAGES

Composing a message

Whatever the current **Tun MAIL** for Windows 3.x screen may be, the **Compose** button () for writing new messages is always present and active (menu options **Message**→**Compose**). Clicking on this button opens up the following window:



The fields in this window are the same as those in the message viewing window, with the addition of:

To

Indicates the message's main destination. The **To** button gives you access to the **Address Book**, where you may find existing addresses or add new ones. If addresses cannot be modified, added or deleted, then the address book file is in read only mode and the network or e-mail administrator has to be contacted so that changes can be made.

You may select several addresses for the same message. Mail addresses may also be entered directly in the **To** field using the keyboard. Multiple addresses may be added by separating them with a semicolon.

Even if the message is to be faxed, it is still useful to fill in the field **To**, since the information from this field will be used on the cover sheet of the fax.

Cc

Carbon copy indicates other sub-destinations for the message (if any). This button works like the **To** button.

Bcc

Blind carbon copy indicates sub-destinations for messages that will not be communicated to the principal recipient, i.e. the recipient will be unaware that a carbon copy of the message has been sent to a third party or parties.

Subject

It is preferable to fill in the **Subject** field, since it clarifies the contents of the message for the recipient. Even if the message is to be faxed, it is still useful to fill in the field **Subject**, since the information from this field will be used on the cover sheet of the fax.

Signature

If the **Signature** box is checked (by default), the contents of the signature file will be appended to the body of all sent messages. This signature file can be created or update by using the option **Special**→**Signature**.

MIME

If the **MIME** box is checked the application will let you send an entire message (body and file attachments) in MIME format. Otherwise the message sent will be in the standard RFC822 format and any file attachments will be handled using UUENCODE.

By default, the **MIME** box uses the setting specified in **Special**→**Options**. If your correspondent's mail application doesn't have MIME capabilities, it is best not to use MIME encoding in **Tun MAIL** for Windows 3.x.

Delivery receipt

Clicking this check box means that a "receipt" will be returned to the sender proving that the message reached the remote host containing the recipient's mailbox.

Read receipt

Clicking this check box means a "receipt" will be returned to the sender proving that the message reached the recipient's machine and was opened by the recipient or someone with access to his machine.

More

You may directly edit the SMTP header using the **More** button:



This window shows the default message header generated by the application. You may change the information in this window, or add extra fields such as **Reply-To**:

If you would like the program to keep the fields you have added, without modifying the main header, click on the button "Use extra fields".

If you want **Tun MAIL** for Windows 3.x to use the fields that you have modified in the header (without using its own), click on the button "Use all fields".

<p>Note: The To and Message fields must be filled in.</p>
--

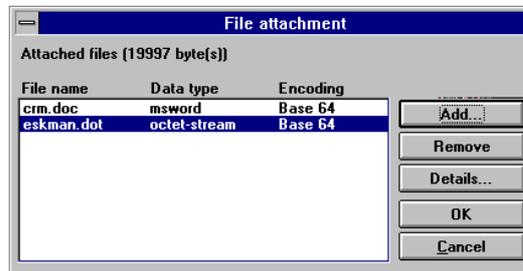
The message body

The message body's text editor is similar to the Windows Notepad. All the keys except the tab key may be used in a message. Of course, apart from pure text, the main body of a message may contain encapsulated files or OLE1 objects.

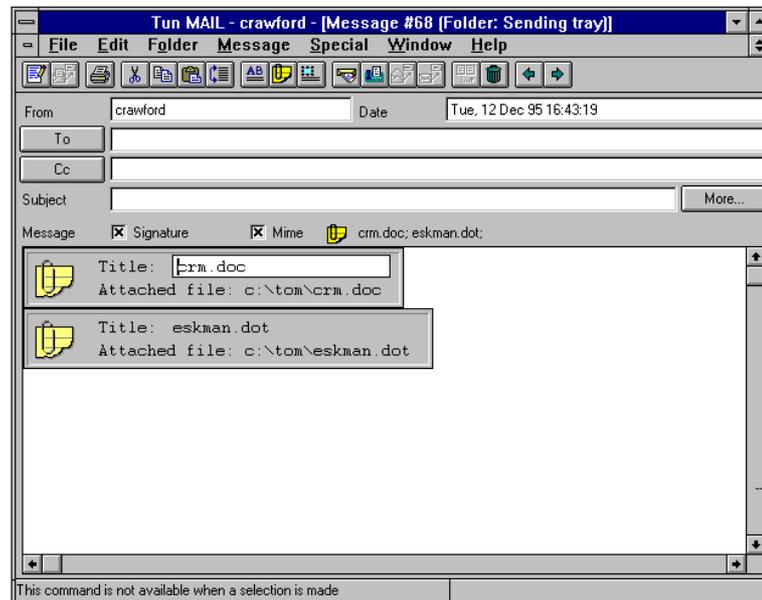
The following sections describe how binary OLE objects may be attached to messages.

Attaching files

To attach one or more files, click on the **Attach File** button  or select **Edit→Attach File...**:



Clicking on **Add** lets you browse your disk for the appropriate file to add it to the message. One or more files may be selected at the same time (using the Shift and Control keys as in Windows File Manager). When you add files, the following boxes will appear:



If the option **MIME** isn't selected, **Tun MAIL** for Windows 3.x will use **UUENCODE** to attach files. If **MIME** is selected, files will be encoded using *MIME base64*. This can be changed by selecting a more appropriate method under the **More** button.

To see the list of attached files again with their details, simply double-click on the attachment icon in the message header area.

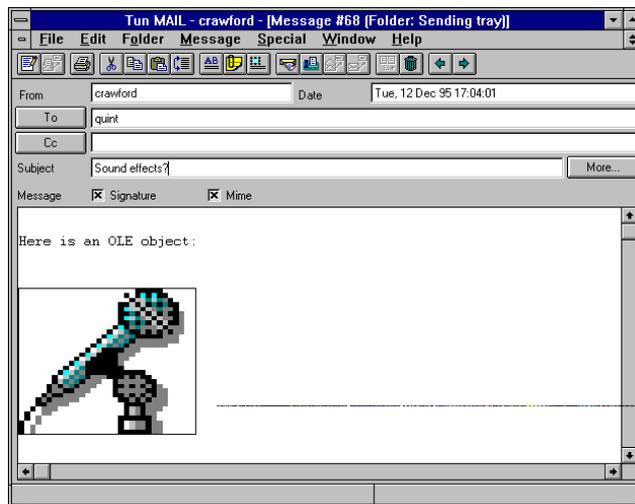
Including a text file

To include an existing text file in a message, use the option **Edit→Insert Text File** or the **Insert Text** button . This will place the contents of the file into the message below the cursor.

Inserting an OLE object

An OLE1 object can be inserted into the main body of a message by using the **Insert Object** button  or the option **Edit→Insert Object** from the menu indicating which object type will be used (Excel, Paint, Word, ...) This function is ideal for sending sounds, images, documents or spreadsheets directly without having to attach a file.

One message may contain several OLE objects. The window below shows a message containing a sound object:



Attached objects can be easily accessed by double-clicking on them with the mouse.

Note: OLE objects can only be opened if the recipient of your mail is using **Tun MAIL** for Windows 3.x to access his messages.

Importing Text

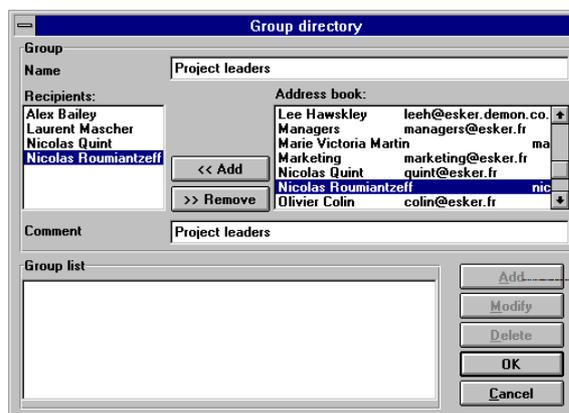
Text from word processing programs can be directly integrated into the message as text and not as an imported object with the option **Edit** → **Paste as Text**.

USING THE ADDRESS BOOK

There are two ways to access the **Address Book**. When sending a message, press the **To** button in the message header section of the composition window. Then press **New** to add or edit entries in the **Address Book**. Secondly, the latter dialog box can be displayed by using the menu options **Special** → **Address Book...**

Defining groups

Recipient groups can be defined to facilitate the sending of messages to more than one person or to a particular category of persons. Click on the **Groups...** button in the **Address Book** dialog box. The following window is displayed:



Enter the name by which the group will be known in the first field. Use the **Address Book** escalators and mouse to select the recipients to be included in the group. Press the << **Add** and >> **Remove** buttons to form the desired group. A comment may be added in the **Comment** field as a reminder to the user. Press **OK** to validate the group.

When the group is displayed in the **Group list**, press **OK** again to return to the **Address Book** dialog box. The **OK** button in this dialog box must finally be pressed to register the new group (or possible changes to groups). The new group names will then appear in the relevant **Address List**.

SENDING MESSAGES

Sending the current message

To send a message after it has been created, simply click on the **Send**  button. **Tun MAIL** for Windows 3.x opens up a communication link with the selected system (SMTP for mail host) and transmits the message. This message is then automatically saved to the **Sending Tray**.

By default **Tun MAIL** for Windows 3.x also closes the message after it has been sent.

A sent message may be resent but cannot be modified. To modify it, the message may be copied by using **Edit**→**Duplicate message** or edited directly using **Edit**→**Modify a sent message**.

Sending the current fax

To fax a message, click on the **Fax** button  or use the option **Message**→**Send As Fax...**. This displays the following dialog box:



You must fill in the field **Recipient's Fax No.** before sending the fax to the fax server. Several phone numbers may be entered, separated by a colon. The fax number directory may be used to fill in this field: click on **Fax Book**. This option may also be used to store the most frequently used fax numbers dynamically. After transfer, the message is then automatically saved to the **Sending Tray**.

It is also possible to send the fax you have prepared to several addressees. There are two ways to do this: enter several numbers directly, separated by colons, e.g. '8037428:161425636:72071526', or enter a text which corresponds to an entry in the file */etc/faxaliases*.

It is also possible to make the modem pause between two numbers in the fax number by inserting a comma. This could be useful when waiting for a tone (617,1456456 for example). The pause is generally about two seconds long (depending on the modem) but more than one comma may be used.

- | | |
|--------------|--|
| Note: | For the fax to be sent successfully, the fax server on the UNIX host must be suitably installed and configured. |
| | The fax server on the UNIX host must also have the same mail address as that defined using the option Special → Fax... in the main menu. |
| Note: | The fax sent will be the exact image of the current screen. If this image is too large, it will be sectioned into as many pages as are necessary. Optionally, the fax may be preceded by a header page which uses the information contained in the fields From , To , CC and Subject . The header page is defined using the option Special → Fax... in the general menu. |

The sending tray

Sent messages and messages being created are automatically placed in the **Sending Tray** for future reference or re-use. The icons used for messages in this tray are as follows:

- | | |
|---|--|
|  | The message is being composed and has not been sent. |
|  | The message is still in the queue and has not left the PC yet. |
|  | The message has been sent. |
|  | The message has been sent by fax. |

The **Sending Tray** can be manipulated in the same way as the **Receiving Tray**. Messages saved in this tray may be filed in another folder by using the option **Folder→Transfer message(s)**.

Sent messages may re-sent after confirmation.

A sent message may be modified by using **Edit→Modify a Sent Message**

Messages in the Sending Tray may be duplicated by selecting **Edit→Duplicate message**.

Sending messages from the Sending Tray

One or more unsent messages may be sent directly from the **Sending Tray** without being opened, simply by selecting the messages and clicking on **Send**.

This is especially convenient for users whose PCs are not always connected to a network, and who can create messages and send them at a later point in time when a link becomes available.

REPLYING TO MESSAGES

You may respond to a message by clicking on the **Reply** button (). This has the following advantages:

- The return address of the sender is automatically inserted into the **To** field of the new message. However, it is a good idea to double-check this address, since the return address could be truncated or transformed if the Internet configuration on the server is not set up correctly.
- The original subject of the message is inserted into the **Subject** field preceded by "Re:".
- The original message is inserted into the new message body, all of the lines being preceded by the character ">". Thus allowing the user to make comments on parts of the original message.

If the message you are responding to was sent to several users, you have the option of responding to the original sender only, or to all of the recipients, by checking the boxes in the window below:



After completing these actions, the message is no different from a normal message that you would write.

FORWARDING MESSAGES

If a message is of interest to other users, it can be easily sent to them by selecting the **Forward** button (📧). The following window will appear:



The options are as follows:

Allow modification of message before sending it

Checking this box lets you change the header and body of a message before sending it. If this box is not checked, the destination address must be selected from the address book and no further access to the message is allowed. If it isn't checked, it is best to click on **Send directly**, since the **OK** button copies the message into the sending tray and it must be sent from there.

Send message using MIME encoding

By checking this box the sent message will be MIME encoded. To correctly decode this format, the recipient must have mail software with that capability. This box is selected or not selected according to the parameters set up in **Special → Options**.

Append signature

This option lets you append your signature to the end of the message being sent.

Use address book for getting recipient(s)

This option lets you use the address book for selecting addresses.

Delete original message in source folder

If this check box is selected, the original message will be deleted from its folder.

Do not copy forwarded message to Sending Tray if sent directly

If this check box is selected, the message in question will not be copied to the Sending Tray if the user sends the message with the button **Send directly** and the check box **Allow modification of message before sending** is not selected.

If **Allow modification of message before sending it** is selected, the message window accessed will have the normal features of the Sending Tray. Select **Send** to send it. A copy will be placed in the Sending Tray.

REDIRECTING MESSAGES

If you receive a message in error, you may redirect it to the appropriate user using **Redirect** (). The following dialog box appears:



The options are same described in the above section **Forwarding messages**.

If **Send directly** is chosen, the address of the recipient(s) will be available only through the address book and the message will be sent directly over the network.

STORING MESSAGES IN FOLDERS

To keep your messages organized, **Tun MAIL** for Windows 3.x lets you store messages in specific folders. This feature also keeps the receiving and the sending tray from becoming over-crowded.

Creating folders

To create a folder use **Folder→New**, which opens up the following window:



Folder names follow the same rules for naming DOS files: the length is limited to 8 letters and certain characters (spaces) are not accepted.

A folder may be set up to contain sent, received or both types of message, the latter being the default.

Transferring messages into folders

To store a message in a folder, select the message(s) in question and click on the **Transfer** button (). This will open a window that contains a list of the available folders. Select the appropriate folder and the message will be stored there.

Messages may also be moved by “drag and drop”; press the shift key and the left mouse button to perform this maneuver.

Note: You may not store unopened or unsent messages.

Working with folders

The list of folders may be accessed by double-clicking on the **Folders** icon.

Selecting a folder in the list will open up the folder and give access to the messages it contains.

Folders have the same properties as the **Sending** and **Receiving Trays**.

Moving messages from one folder to another is handled the same way as described in the previous section.

DELETING MESSAGES

Messages that don't need to be saved clutter up space and should be deleted. One or more messages may be deleted by selecting them and clicking on the **Delete** button ().

By default, unopened messages cannot be deleted. To change that option, select **Special** → **Options** from the menu and put a check by **Enable delete for messages not read**. Checking the **Confirmation** box will display a request for confirmation before an unopened message is deleted.

Deleted messages may easily be retrieved since they are placed into the Waste folder. To move them back into another folder use **Transfer** from the menu.

By default, the waste is never emptied. It is possible to purge it when exiting the application by selecting **Delete messages on exit** in the **Special** → **Options** dialog box.

Waste messages may also be purged by selecting them in the Waste folder and then clicking on the **Delete** button.

Messages may be deleted more directly from the receiving tray by choosing **Folder** → **Clear Receiving Tray** (there are similar commands for the other folders in the same menu). This option will confirm the deletes and will not move the messages into the waste folder as before. Be careful to save important messages in other folders before resorting to this option.

SEARCHING FOR MESSAGES

Multi-criteria searches are possible in **Tun MAIL** for Windows 3.x. Select a folder (**Folder** → **Search**), which opens the following window:



One or more messages may be searched according to the following criteria:

- Type of message (received or sent).
- The name of the user.

- The subject of the message.
- The SMTP header of the message (the same as provided by the **More** button).
- The contents of the message.

The presence or absence of a character string in any of these criteria fields determines the message selection. The search can be made case sensitive by checking the **Case sensitive** box. Specific dates may also be indicated by filling in the **Date** fields.

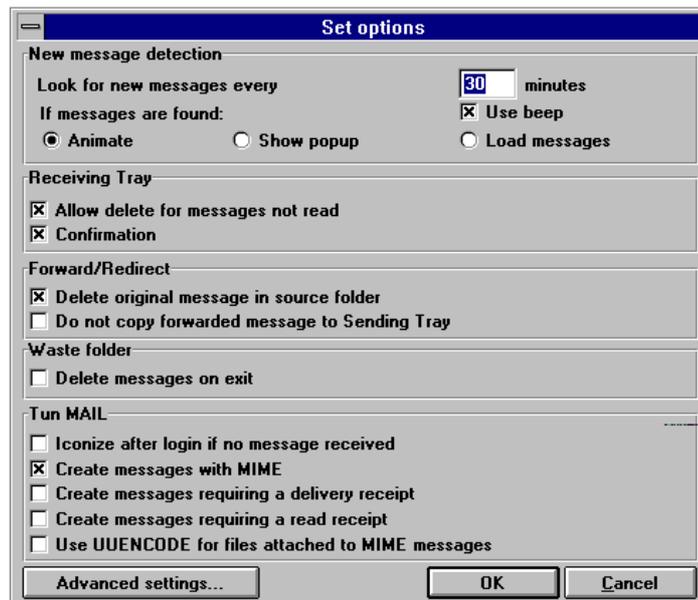
Search results are collected in a temporary folder called **Search Results** accessible through the icon on the bottom of the screen.

Multiple searches can be gathered in this folder by de-selecting the **Clear search folder** box. Otherwise the **Search Results** folder is emptied before every search.

Tun MAIL FOR WINDOWS 3.X PARAMETERS

Functional parameters

Certain features of **Tun MAIL** for Windows 3.x can be changed using **Special**→**Options** from the main menu:



Here is a description of these options:

Look for new messages

Enter the interval in minutes that the mail host are called to query for new messages. The default is every 10 minutes.

Animate

If this option is chosen, the user will be informed of the availability of new mail by a mailbox icon whose flag moves up and down.

Show popup

If this option is chosen, the user will be informed of the availability of new mail by a dialog box that will appear in the foreground of the current application.

Load messages

This check box is for the user to indicate if he wants to store automatically the messages from the POP server on his PC. He would no longer need to give his confirmation each time a message arrives. The messages will be automatically deleted on the POP server. He would no longer be warned either when a message arrives (except by a beep).

Use beep

If this option is chosen, the user will be informed of the availability of new mail by the sounding of a beep.

Enable delete for messages not read

This option lets you delete messages before they have been opened for the first time. By default it is not enabled.

Confirmation

This option gives you a confirmation message before deleting unopened messages. By default it is not enabled.

Delete original message in source folder

Indicates that no copy of the original message should be kept in the source folder when it is forwarded or redirected.

Do not copy forwarded message to Sending Tray

This check box is used to indicate that no trace should be kept of a forwarded message.

Delete messages on exit

If this option is selected, the messages contained in the Waste folder will be deleted when the application is closed. Thus messages will be completely purged.

Iconize after login if no message received

Selecting this option lets the application revert to an icon after connecting if there was no new mail waiting.

Create messages with MIME

Here the default message format can be selected (MIME or RFC822).

Create messages requiring a delivery receipt

When this check box is selected, messages are created requiring a delivery receipt by default. The delivery receipt proves that the message reached the foreign host on which the correspondent's mailbox is situated.

Create messages requiring a read receipt

When this check box is selected, messages are created requiring a read receipt by default. A read receipt will be returned to the sender proving that the message was opened on the recipient's machine either by the recipient or someone with access to the recipient's mail program.

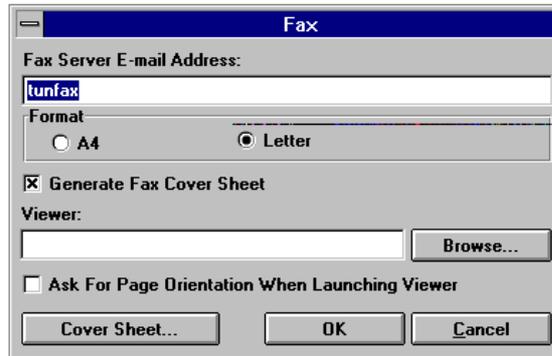
Use UUENCODE for file attachments in MIME messages

By default, base64 encoding is used to transmit files attached to a message in MIME format. With this option, files may be attached using UUENCODE instead.

Workspace settings

Workspace settings in **Tun MAIL** for Windows 3.x may be customized by selecting **Special**→**Workspace...**

Fax server settings



To be able to submit faxes to the fax server for transmission, the application **Tun MAIL** for Windows 3.x needs to know its e-mail address. The user may enter the fax server's e-mail address using the option **Special→Fax...** (the default is **tunfax**). This option may also be used to nominate the Windows application which will be used to view the fax pages one at a time, to define the header page which will precede the actual pages of the fax and select the page format of the fax, A4 or letter.

Return address

Occasionally, a mail system may be incorrectly configured on the UNIX server. This could cause your return address to be changed in all of the messages you send. Thus, unless recipients know your true address, they will not be able to respond to your messages.

The option **Special→Set Reply Address** resolves this issue by letting users specify which return address is placed in the **Reply-To** field.

The From field

By default, **Tun MAIL** for Windows 3.x places the user's name in the field **From** in the messages composed. It is possible that this name is not suitable and you prefer to put a different value instead (an alias, for example). The option **Special→Set From Address...** was conceived to solve this problem. Your exact address may be entered and this will be automatically placed in your messages in the standard **From** field.

Signature

By default **Tun MAIL** for Windows 3.x places a signature at the end of a composed message. To create or edit your signature select **Special→Signature** from the main menu.

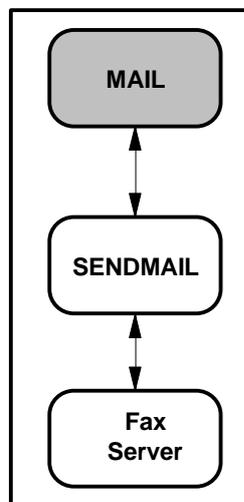
CHAPTER 20 - ELECTRONIC MAIL FOR WINDOWS 95

WORKING PRINCIPLES

The **Tun NET** e-mail application for Windows 95 is composed of two modules:

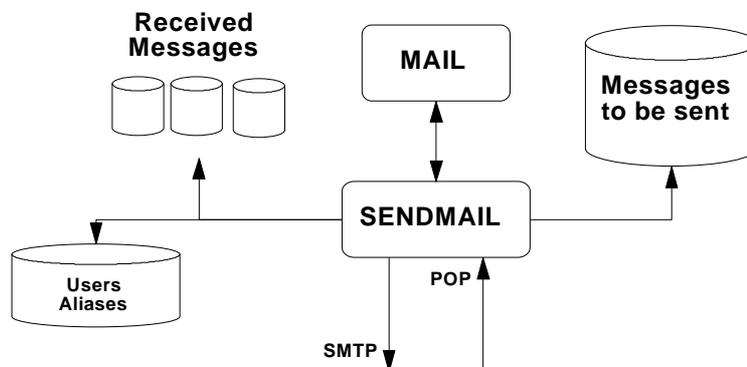
- An application module for normal e-mail use (composing, sending and receiving messages).
- An administrative e-mail module which handles the communication channels through which the messages are transmitted (**Tun Sendmail**).

The application is complemented by the fax server whose configuration and use are described in the chapter "**The Fax Server**".



When a user sends a message with **Tun MAIL** for Windows 95, it is transmitted to the program **Tun Sendmail** which analyses the addresses of the recipients and selects the SMTP channel that will be used to send the message.

At the same time, when messages are received by the users of the application, they are distributed by **Tun Sendmail** to each of the recipients' mailboxes.



The PC can be used for e-mail in two modes:

- Client mode: in this mode the PC can be used for sending and receiving messages.
- Server mode: in this mode, the PC acts as a mail office for other PCs and contains the mailboxes of the clients using the server to communicate with other clients.

At the same time, **Tun MAIL** for Windows 95 lets the user send messages using the SMTP protocol and receive messages using the POP3 protocol.

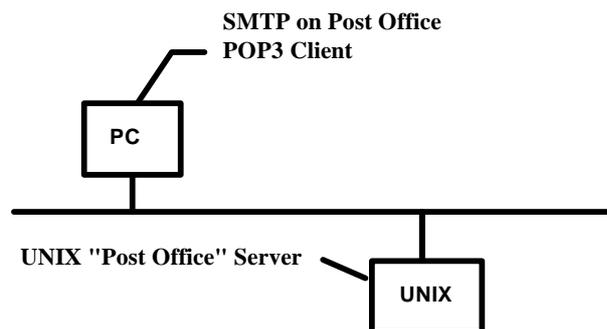
Consequently, there are four main types of communication channels possible:

- SMTP client
- SMTP server
- POP3 client
- POP3 server

Additionally, there are two types of SMTP client protocol: SMTP on Post Office (the messages go through a server which establishes a connection with the outside world), and SMTP direct (the PC handles the establishment of the connection with the outside world directly).

There are three principal types of architecture which implement the different types of channel:

PC-UNIX client/server architecture (regular)



Each PC sends its messages via a "SMTP on Post Office" channel. The messages are transmitted to the recipients through the UNIX server (mail server).

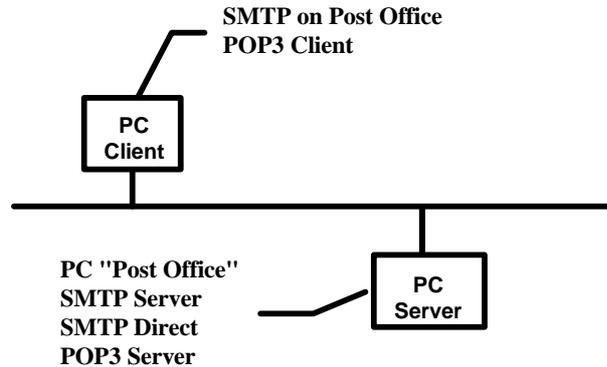
To retrieve his messages the user queries the UNIX server from his PC by using a POP3 channel.

Single PC architecture



A lone PC acts simultaneously as a mail client and server: the messages are sent directly through a "SMTP direct channel" (they do not go via another machine); the messages received arrive on the PC through a "SMTP server" channel.

PC client/PC server architecture



For the PC clients, the principle is the same as in a PC client/UNIX server configuration.

However, in this case the PC acts as a mail server to the PC clients on the network. Hence, the PC implements a SMTP direct channel (to send mail users' messages), a SMTP server channel (to receive the users' messages) and a POP3 serverchannel (that the users use to retrieve messages from the PC server).

From these three initial configurations you can construct the client/server architecture of your choice depending on your requirements and the available PCs and servers on your network.

Generally speaking, **Tun MAIL** for Windows 95 is sufficient for defining for each user the main communication channels he needs (SMTP on Post Office client, SMTP direct client or POP3 client). However, to define a PC as an e-mail server for other PCs, it can be useful to use the **Tun Sendmail** application directly to configure the channels. To do this, refer to the chapter "**Managing Communication Channels for 32-bit E-Mail**".

The present chapter deals with the use of the e-mail application **Tun MAIL** for Windows 95.

GENERAL USE

The objective of this introduction is to present an overview of the **Tun MAIL** for Windows 95 interface and the program's principal commands.

The interface is largely based on that of the Windows 95 Explorer and includes:

- Object hierarchy.
- Two view display of the directory structure and object contents.
- Easy manipulation of objects with "drag and drop".
- Context menus displayed by clicking the right mouse button.
- Management of object properties.

Manipulating objects

To manipulate objects, you may use:

- The main menu.
- The mouse.
- Context menus displayed by clicking the object with the right mouse button.
- Keyboard accelerators, obtained by pressing keys in combination.
- Toolbars for each of the **Tun MAIL** windows.

Viewing the contents of an object

To view the contents of an object, select the object in the left view (it is then highlighted) and its contents will appear in the right view.

Viewing the tree structure

To view the tree structure of the components attached to a given object, use one of the following methods:

- Double-click the object.
- Click the plus (+) sign beside the object in the left view to display the substructure beneath the object and the minus sign (-) to hide the substructure.

Displaying object properties

To display an object's properties, use one of the following methods:

- Double-click the object.
- Select the option **Properties** in the object's context menu.
- Select the menu corresponding to the type of object in the main menu and choose the option **Properties**.

Moving an object

To move an object from one place to another, select the object and then use one of the following methods:

- Drag and drop the object to the desired location.
- After selecting the object, select the option **Edit→Move...** in the main menu, and then select the object in which you wish to place it in the dialog box which is displayed.
- Select the option **Move...** in the object's context menu, then precede as for the previous method.

Copying an object without a link

To copy an object without creating a link from one place to another, select the object and use one of the following methods:

- Drag and drop the object you wish to copy to the object into which you wish to place it while holding down the **Ctrl** key.
- Select the option **Edit→Copy** in the main menu to copy the selected object and then use the option **Edit→Paste** to paste it to the required location.
- Use the option **Copy** in the context menu of the object you want to copy, and then the option **Paste** in the context menu of the object to which you wish to copy it.

Deleting an object

To delete an object, first of all select it and then use one of the following methods:

- Select the option **Edit→Delete** in the general menu.
- Select the option **Delete** in the context menu of the selected object.
- Use either the key **Delete** or **Del**.
- Click the **Delete** button  in the toolbar.

Selecting more than one object

To select several objects on which you want to perform the same operation simultaneously (copy, paste, delete, save...), use one of the following methods:

- Select a group of adjacent objects: hold the **Shift** key down and click the desired objects.
- Select several objects which are not next to each other by holding the **Ctrl** key down and clicking the desired objects.

Changing the display

To display or hide the toolbar and status bar in **Tun MAIL**'s windows, select or cancel the options **View→Toolbar** and **View→Status Bar** in the main menu.

Changing the program language

To change the language in which the program is running, select the option **Options→Language** from the main menu and select the language in which you wish to work.

Obtaining help

To access the on-line help or to obtain more information on **Tun MAIL** for Windows 95, select the main menu option **Help**.

Exit

To quit the application, select the option **File→Exit** from the main menu.

Tun MAIL FOR WINDOWS 95 AND NIS

Tun Mail for Windows 95 benefits from access to the NIS server through the NIS Browser included with Tun applications. This feature allows you to view the shared addresses and address books on the network and to select them directly with a simple click of the mouse. The network administrator, of course, must have previously configured the NIS server and defined the Mail resource tables using the NIS Browser. Please refer to the chapter "**The NIS Browser**" for comprehensive instructions on that application's use.

CONNECTING



Run the program by clicking on the **Tun MAIL** icon in the **Tun NET** group from the Windows 95 Start menu.

The following dialog box is displayed:

The dialog box is titled "Connection" and contains the following elements:

- A "User" text field containing the text "crawford".
- A "Password" text field containing "*****".
- An "OK" button to the right of the "User" field.
- A "Cancel" button to the right of the "Password" field.
- A checkbox at the bottom left labeled "Do not connect to station", which is currently unchecked.

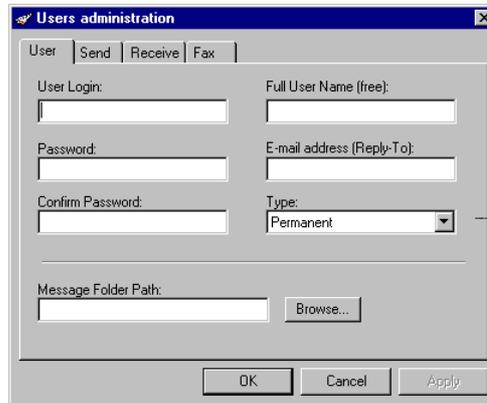
This dialog box asks for the name of the user connecting and his password if there is one.

Click the **OK** button to open the connection.

Declaring a new user

When a user connects to the e-mail for the first time, **Tun MAIL** for Windows 95 proceeds automatically to the declaration of the user and uses the name which the user entered in the connection dialog box.

At the first connection, clicking the **OK** button (in the **Connection** dialog box) will display a dialog box which registers user information (identification, configuration of the communication channels).



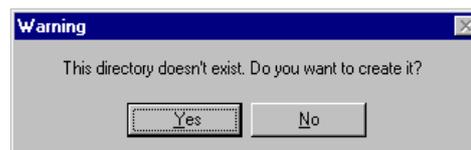
This dialog box contains four tabs: the **User** tab is used to define information identifying the user, the **Receive** tab to define the parameters for message reception and to generate the required POP3 channels, the **Send** tab to define the parameters for sending messages and the SMTP channels, and the **Fax** tab to define information that completes user identification.

User tab

This tab holds the information identifying the user:

- **User Login:** user's login for connecting to the e-mail. This field must be completed.
- **Password:** the password requested at each connection to the e-mail. This field is optional. However, without a password anyone who knows the user's login name will have access to all the e-mail application's functions, and, in particular, the user's messages.
- **Confirm Password:** the password entered in the previous field must be entered again for it to be taken into account.
- **Full User Name:** this field can be completed with any string you like. This name will be put before the e-mail address in the From field of the message.
- **E-Mail Address (Reply- To):** the address at which the user wants to receive replies to his messages may be different from the e-mail address he sent the messages from. This field holds this second address for replies.
- **Type:** the type of user is permanent or temporary. A temporary user's messages are automatically deleted from the recipient's e-mail when the recipient quits his application, if he has read his messages.
- **Message Folder Path:** messages sent, received or simply redirected can be saved by the user in folders (refer to the section "**Managing folders**"). This field specifies the directory in which the user's folders will be created. By default, the directory takes the login name of the user and is located just beneath the installation directory of **Tun MAIL** for Windows 95 in the directory tree.

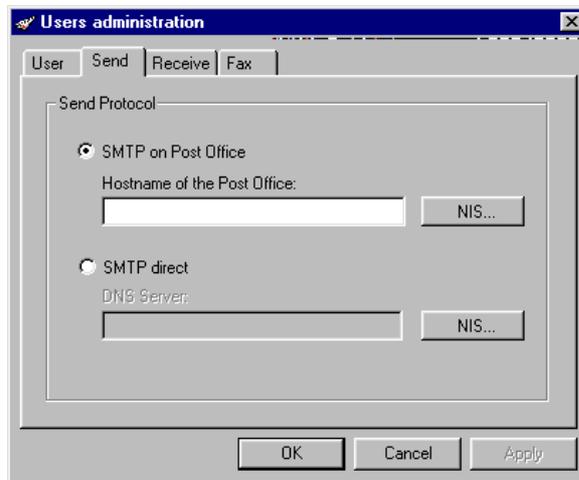
When a new user is declared, the directory in which the message folders are to be created and the address directories do not exist. In this case, the following message is displayed:



Click the **Yes** button to confirm the creation of this directory.

Send tab

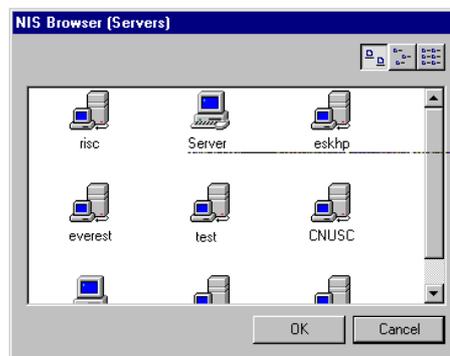
This tab can be used to define for the user in question the communication channels he will use to send his messages.



- Select the option **SMTP on Post Office** if the user's messages are to be transmitted to a SMTP server for sending. In this case, enter the server name.
- Otherwise, select the option **SMTP Direct** if the messages will be sent directly from the user's PC without going through a server. In this case, enter the name of the DNS used to find the IP address of the recipient's mail server (entry MX).

Use the **NIS...** button to view the servers present on the network. Refer to the section "**Tun Mail for Windows 95 and NIS**" above.

Pressing the **NIS...** button displays the following window:



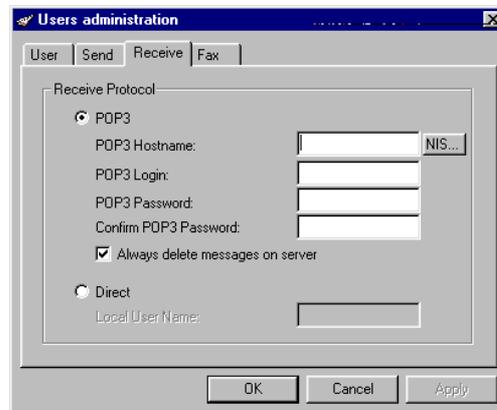
Double-click the desired resource to activate it.

The options recorded for the first user created will be proposed by default when subsequent users are created.

Example: if the first user created uses a SMTP on Post Office channel on the server *Risc*, all the subsequent users created will take this configuration by default; the configuration can then be adapted.

Receive tab

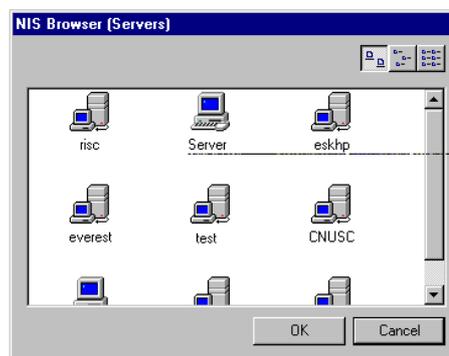
This tab can be used to define for the user in question the communication channels he will use to receive his messages.



- Select the option POP3 if the user has to query a POP server to retrieve his messages.
- In this case, specify the name of the server, the user's login name to access the POP server and his password.

Use the **NIS...** button to view the servers present on the network. Refer to the section "**Tun Mail for Windows 95 and NIS**" above.

Pressing the **NIS...** button displays the following window:



Double-click the desired resource to activate it.

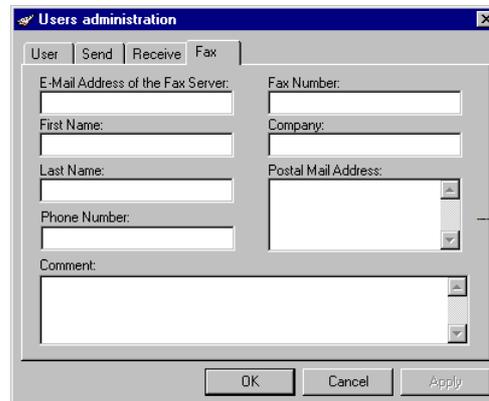
- Select the check box **Always delete messages on server** to delete the messages on the server after the user has retrieved them.
- If the user does not use a POP server to retrieve his messages (for example, if the PC itself acts as the server), select the option **Direct**. Enter the local user name for the PC.

The options recorded for the first user created will be proposed by default when subsequent users are created.

Example: if the first user created uses a POP3 channel on the server *Risc*, all the subsequent users created will take this configuration by default; the configuration can then be adapted.

Fax tab

The Fax tab can be used to enter information for the user which is needed to process his fax messages.



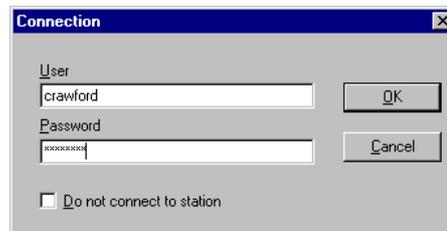
The information entered on the **User** and **Fax** tabs in this dialog box are used to compose messages, and create message headers and signatures.

Saving the configuration

The user configuration, that is, the definition of the communication channels used by the user is saved in the file `users.cfg`. The application which manages channels, **Tun Sendmail**, uses this file to update the communication channels required by the e-mail users. Refer to the chapter "**Managing Communication Channels for 32-bit E-Mail**".

Connecting as a different user

When **Tun MAIL** for Windows 95 is running, it is possible to connect to the e-mail system with another user name without quitting the application. To do this, select the option **Options→Connection...** in the main menu. The following dialog box is displayed:



Enter the name of the user and the associated password to be used for the connection. Then click the **OK** button.

If the user does not exist, the user properties dialog box will be displayed. Fill in the fields to declare the user as described in "**Connecting**".

When **Tun MAIL** for Windows 95 is running, it is possible to access a user's properties at any time to consult or modify them (for example, to change the POP access password). To do this, proceed as follows:

1. Select the option **Options→User...** from the main menu.
2. Enter the user password if there is one.
3. Click the **OK** button.

The user properties dialog box is displayed. Proceed as for a first connection to modify the parameters.

CONNECTING IN AUTONOMOUS MODE

Tun MAIL for Windows 95 allows the user to connect in autonomous mode when a session is started. This mode of connection blocks the message sending and receiving functions and lets you work in the application without being connected to the server.

To connect in autonomous mode, select the check box **Do not connect to station** in the Connection dialog box (which appears when the program is run and when the option **Options→Connection...** in the main menu is used).

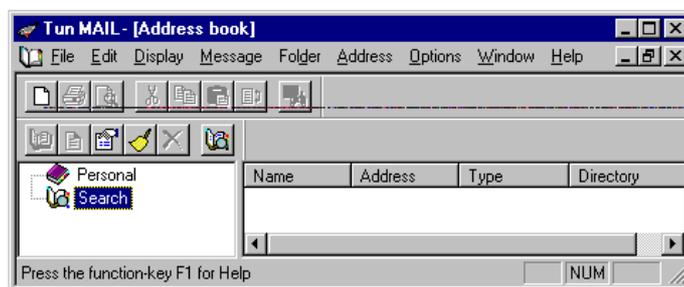
DISCONNECTING

To disconnect, the user must quit the application or open a connection with a different user name (See "**Connecting**").

ADDRESS BOOK ADMINISTRATION

The user can organize his own address book on his PC, while at the same time sharing common address books with other network users.

The Address Book window displayed on connection lets the user organize his address book. It contains two default directories: the first, named **Personal** is the root directory in which address directories as well as addresses can be created; and the second, named **Search**, will hold the results of searches in the address book.



The user can store addresses in address directories which facilitate the classification of the addresses and allow the creation of distribution lists: an address directory may be used as a simple drawer, but it can also be a means of creating groups of recipients.

Example:

The user has the list of addresses of the sales representatives of his company. He creates the address directory "sales" in which he references these addresses.

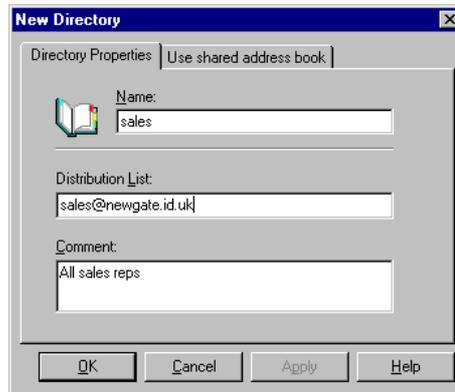
He then wants to send messages to all the sales representatives at the same time. He attributes a unique address to the directory "sales", thus creating a distribution list.

Creating a new directory

 To create a new address directory in the address book tree structure:

1. Select the parent directory in which you wish to create the new directory (on first use of the address book, this will be the directory **Personal**).
2. Select the option **Address→New** from the main menu or click the button **New Directory**  in the **Address Book** toolbar.

The following window is displayed:



Proceed as follows:

1. Enter the name of the directory in the **Name** field, and then enter the e-mail address you want to give it in the **Distribution List** field if you are creating a distribution list for all the addresses in this directory.
2. Select the tab **Use Shared Address Book** if you want to import a directory of shared addresses. For more information on address sharing, see the section **Sharing addresses**'.

Directory properties

The properties (name, address and comment) of a directory can be changed at any time.

To access the directory properties dialog box, select the directory and then use one of the following methods:

- Select the option **Address→Properties** in the main menu.
- Click the button **Properties**  in the **Address Book** toolbar. Select the option **Properties...** in the context menu for the selected directory.

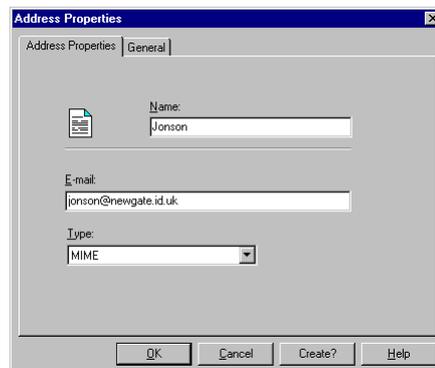
Make the desired changes.

Declaring addresses in a directory

 To declare an address in a directory:

1. Select the directory.
2. Select the option **Address→New Address** from the main menu or click the button **New Address**  in the **Address Book** toolbar.

The following window is displayed:



Proceed as follows:

1. Enter the recipients name and e-mail address (or fax number).
2. Select the type of message reception for the recipient: fax (the address is a fax number), simple MIME (the recipient's e-mail is MIME-compatible), MIME (the recipient's e-mail is MIME-compatible and can read word processing details like bold text, italic text,...), Tun NET (the recipient uses Esker's Mail for Windows 95 which reads Tun NET's OLE2 objects) or Regular (none of the others).
3. Select the **General** tab to enter the exact address of the recipient. All the information recorded on this tab can be reused for composing messages and creating signatures and message headers.

To declare several addresses in the same directory without closing the dialog box, use the **Create** button instead of the **OK** button to store the settings.

Address properties

The properties of an address can be changed at any time.

To access the address properties dialog box, select the address and then use one of the following methods:

- Select the option **Address→Properties...** from the main menu.
- Click the button **Properties**  in the **Address Book** toolbar.
- Select the option **Properties** in the context menu for the selected address.

Change the desired fields.

Operations on addresses

The user can carry out the following operations on addresses:

- Move an address from one directory to another, without duplicating it: use one of the methods for moving objects described in the introduction.
- Copy an address from one directory to another as a simple copy or as a link (see the section "**Copying addresses**").
- Delete an address from a directory: use one of the methods for deleting objects described in the introduction.

Copying addresses

Since the same address may belong to different directories, it is useful to be able to copy an address quickly from one directory to another. There are two ways to copy an address:

- The address can be copied with its current parameters: consequently, changing the parameters of the address in one directory will not change them in another.
- The address can be copied as a link: consequently, any modification of the address in one directory will automatically be made for all the other occurrences of the address.

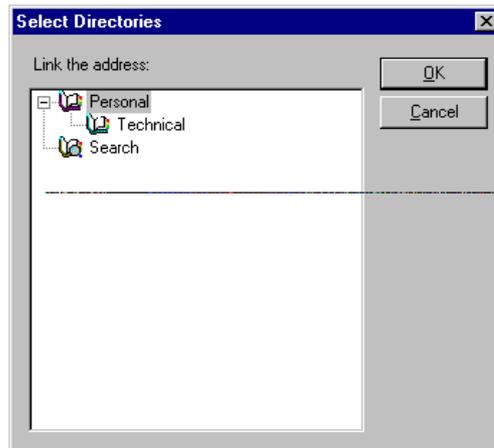
 To copy an address with its current parameters, use one of the methods for straightforward copying described in the introduction.

The copied address will appear in the target directory with the name "**Copy of XXX**" where XXX is the name of the address in the source directory.

 To copy the address as a link, select it first and then use one of the following methods:

- Drag and drop the selected address to the desired directory with the Shift key pressed.
- Select the option **Address→Link...** from the main menu.

The **Select Directories** window is displayed:



Then select the target directory and click the **OK** button.

Sharing addresses

The addresses in the Address Book can be shared with other network users who can import them to their own Address Books.

There are two functions for this: a function for sharing addresses which makes the addresses available to all the other users from a server, and a function for copying shared addresses from a server. The copied addresses are stored in a directory located beneath the root at the same level as the directories **Personal** and **Search**.

To share addresses, that is to make them available to the other users from a server:

- Select the addresses or the address directories to be shared using one of the methods for selecting an object described in the introduction.
- Select the option **File→Save Directory As...** from the main menu.
- Select the destination directory for these addresses on the relevant drive.
- Select the type **Address Book** to save the addresses in a file with the extension **.mma**.
- Enter the name attributed to this address directory (including the extension **.mma**).
- Select the check box **Export Subdirectories** to save the subdirectories of the directory or directories selected.
- Click the **Save** button.

To copy shared addresses to the Address Book:

- Create a new directory (see the section "**Creating a new directory**") at the root level (same level as the directories **Personal** and **Search**).
- Enter the name of the directory on the tab **Directory Properties**
- Select the tab **Use Shared Address Book**
- Select the option **Use shared address book** to choose a shared address directory.
- Enter the path name of the shared address directory or use the **Browse** button to select one.

You can use the **NIS** button to run the NIS Browser and access the shared address books proposed by the NIS server (see the section "**Tun MAIL for Windows 95 and NIS**").

The following window is displayed:



Choose the desired resource and click the **OK** button.

- Then select the check box **Share on connection** to be able to access this shared address book each time you connect.
- Click the **OK** button.

Directory operations

The user can carry out the following operations on the directories:

- Move a directory and its contents without making a copy of it: use one of the methods for moving objects described in the introduction.
- Copy a directory and its contents: use one of the methods for copying objects described in the introduction.
- Delete the contents of a directory: see the section (**Clearing a directory**).
- Delete a directory and its contents: use one of the methods for deleting objects described in the introduction.

Clearing a directory

A directory can be cleared of all the addresses it contains. To do this, select the directory and then use one of the following methods:

- Select the option **Address→Clear** from the main menu.
- Click the button **Clear Directory**  in the **Address Book** toolbar.
- Select the option **Clear** in the context menu for the selected directory.

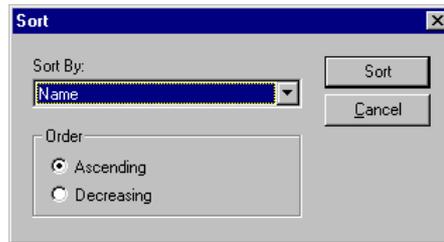
Sorting directory addresses

The addresses held in a directory can be sorted by name, address or type of reception in ascending or descending order.

To sort the contents of a directory, first of all select the directory and then click the relevant column header; click once for ascending order and click again for descending order. You can also use the following method:

- Select the option **Address→Sort** from the main menu.

The following dialog box is displayed:



- Select the sorting criterion from the **Sort By** list.
- Select the option **Ascending** to sort the addresses in ascending order or **Descending** to sort in descending order according to the chosen criterion.
- Click the button **Sort**.

Finding addresses

When the Address Book contains a lot of addresses, the user could have problems finding a particular address. It may also be useful to group together all the addresses with a common element (for example, the same domain name, the same fax number or else addresses containing the same string of characters, etc.).

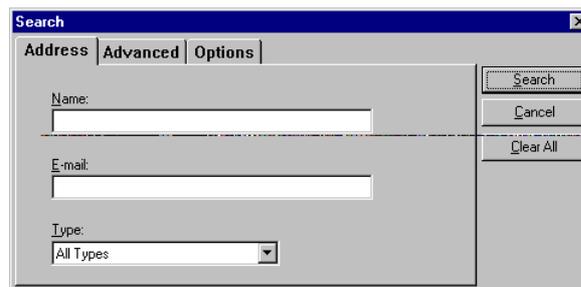
The search function lets you identify or list the addresses which correspond to the search criteria specified by the user. The search results are placed in the **Search** directory listed in the **Address Book** window.

Note: More than one criterion may be chosen for the search: an address is copied to the Search directory if it answers to all the selected criteria.

To search for one or more addresses:

- Select the directory or directories you wish to search.
- Select the option **Address→Find** from the main menu or click the button **Find Address**  in the **Address Book** toolbar.

The following dialog box is displayed:



Enter the search criteria on the Address tab:

- Search by name: enter the name or a part of the name of the recipient as recorded in the address book.
- Search by e-mail: enter the e-mail address or a part of the e-mail address of the recipient.
- Search by address type: select the type of message reception attributed to the address; the default value is **All Types**.

You can narrow the search down using the fields on the **Advanced** tab:

Select the search options on the **Options** tab:

- Choose the option **Update Search** to update the search results each time the **Search** directory is opened so that any changes made to the addresses since the last search will be taken into account. Choose the option **Save Last Result** to save the previous results without updating the search directory.
- Select the check box **Match Case** if you want to match the case of the search string.
- Select the check box **Search Subdirectories** to search all the subdirectories of the selected directory.
- Select the check box **Clear Search Folder** to clear the previous results from the **Search** Directory. This check box is selected by default.

When you have finished entering information on the tabs, click the button **Find**.

To clear the search criteria without closing the dialog box, click the button **Clear All**.

MANAGING FOLDERS

The e-mail user can create folders in which to store his messages (messages composed, sent or received). Folders are managed through the application's folder window.

There are five default storage folders:

- The root folder **Personal** at the top of the folder hierarchy. It contains the different folders in which the user stores his messages.
- The default folder **Default** in which all the messages received by the user are at first placed. See the section "**Retrieving messages**".
- The search folder **Search** in which the results of searches carried out on the messages are stored. It does not contain any messages as such, only links to the messages found after a search operation.
- The waste folder **Waste** in which the messages that are deleted from the other folders are stored until it is cleared.
- The **Send Folder** in which all the messages currently being sent are stored. See the section "**Sending a message**".

The five default folders can be neither moved or destroyed.

Starting with this initial configuration, the user can create as many folders as he wants in which to store his messages, and also construct his own folder hierarchy by creating subfolders below the root folder or any other folder except the folders **Waste**, **Search** and the **Send Folder**.

Creating folders

 To create a new folder:

- Select the parent folder in which you wish to create a new folder, or select the root folder **Personal** if you want to create a new folder just below the root.
- Select the option **Folder→New** from the main menu or click the button **New Folder** in the **Folders**  toolbar.

The following dialog box is displayed:



Enter the name you want to give to the folder, and, optionally, an appropriate comment. The comment may be a succinct description of the folder's contents.

Folder properties

The properties of a folder (name and comment) can be changed at any time.

To open the folder properties dialog box, first of all select the folder and then use one of the following methods:

- Select the option **Folder→Properties...** from the main menu.
- Click the button **Folder Properties**  in the **Folders** toolbar.
- Select the option **Properties** in the context menu of the selected folder.

Then modify the desired fields.

Storing messages in folders

By default, all the messages received by the user are stored in the **Default** folder as soon as they are retrieved from the POP server. In the same way, all the messages that have been sent or that have to be sent are kept in the current folder (i.e. the one that is open at the time of sending).

Creating new folders lets the users structure the storage of his messages as he likes.

Specific icons in folders represent each particular types of message:

	message in the send folder currently being sent
 (yellow icon)	message received but not yet read
 (yellow icon)	message received and read
	message sent or being sent in the folder in which it has been saved
	temporary message
 (red icons)	

All the folders except the Send Folder contain the following information on the messages:

- **From:** sender of the message
- **Subject:** message subject
- **Date:** date of sending
- **Size:** size of the message

The Send Folder contains the following information:

- **From:** sender of the message
- **Subject:** subject of the message
- **Send To:** approximate date and time of the sending of the message
- **Size:** size of the message
- **Send Status:** status of the send operation (standby, in progress or sent)
- **Sending Rate:** percentage of the message sent

Messages can be stored in folders using one of the following operations, depending on the particular case:

- To move a message from one folder to another, without copying it: use one of the methods for moving objects described in the introduction.
- To copy a message from one folder to another: use one of the methods for copying objects described in the introduction.
- To delete a message from a folder: use one of the methods for deleting an object described in the introduction.

Reading the contents of a message

Irrespective of the folder in which the message is stored, its contents can always be conveniently read.

To access the contents of a message, use one of the following methods:

- Double-click the message icon.
- Select the option **Message**→**Open** from the main menu.

Message properties

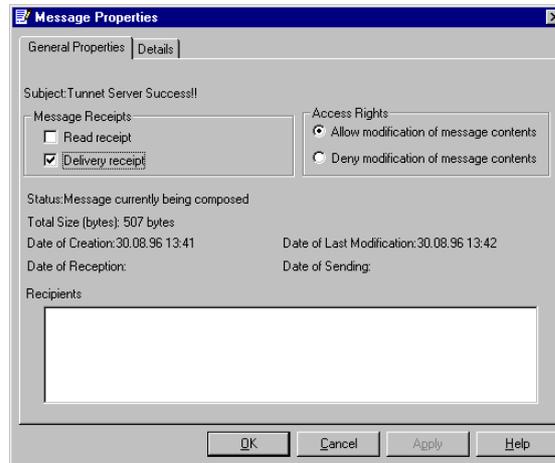
To access the properties of a message, first of all select it and then use one of the following methods:

- Select the **Properties** option in the context menu of the selected message.
- Select the option **Message**→**Properties** from the main menu.

You can also access message properties after opening the message (double-click the message icon to open the message). Use one of the following methods:

- Click the **Properties** button  in the message window's toolbar.
- Select the option **Message**→**Properties** from the main menu.

The following window is displayed:



The **General Properties** tab contains the following properties:

- The subject of the message.
- Message modification rights: when the message is being composed, the options **Allow modification of the message** and **Prevent modification of the message** are available and allow or prevent later modification of the message contents.
- A read receipt request (the sender is informed that the recipient has read the message) or the more common delivery receipt request (the sender is informed that the message has arrived on the host containing the recipient's mailbox).
- Information on the message status (sent, received, read or waiting to be sent) and different dates (date of creation, date of reception, last modification date or the date when the message was last sent).
- The recipients of the message.

The **Details** tab displays further message properties:

- The type of MIME encoding (default, 7bit, base64, quoted-printable, binary or 8bit).
- The recipient's fax format (Default, A4 or Letter).

It also displays information on the number and size of files and images that might be attached to the message.

Opening an object contained in a message

To open an object inserted in a message, first of all select the object and use one of the following methods:

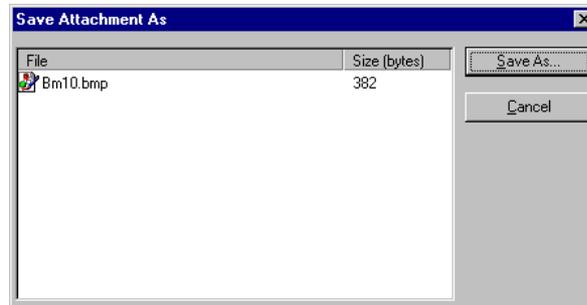
- Double-click the inserted object.
- Select the option **Open** in the context menu of the selected object.
- Select the option **Edit→Object→Open** from the main menu.

The application associated with the type of object is run automatically, allowing it to be read. If there is no application associated with the object, you can select one from the list that is displayed.

Extracting a file

To save one or more files attached to a message, open the message and then select the option **File→Save Attachment As**

The following window is displayed:



This window displays information on the size of the attached files in the message and lets you save them. To do this, select the file you want to save and click the button **Save As...**

- Next select the target directory for the attached file and enter the name of the file.
- Select the extract option: the file is copied from the message to the chosen destination (the original stays in the message), or else the file is copied and deleted from the message.
- Click the **Save** button.

To save a single file, you can also select the object and then use the option **Save As...** in the context menu of the selected object. Then proceed as described above.

Operations on the folders

The user can perform the following operations on the folders:

- Move a folder and its contents without making a copy of it: use one of the methods for moving objects described in the introduction.
- Copy a file and its contents: use one of the methods for copying objects described in the introduction.
- Delete the contents of a folder: see the section **"Clearing a folder"**.
- Delete a folder and its contents: use one of the methods for deleting objects described in the introduction.

Clearing a folder

A folder can be cleared of all the messages it contains. To do this, select the folder and use one of the following methods:

- Select the option **Folder→Clear** from the main menu.
- Click the button **Clear Folder**  in the **Folders** toolbar.
- Select the option **Clear** in the context menu for the selected folder.

Sorting messages in a folder

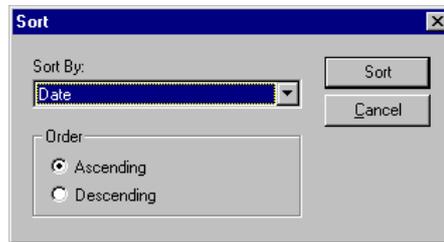
The messages stored in a folder can be sorted in ascending or descending order by different criteria.

The sorting criteria depend on the type of folder in which the messages are stored.

To sort the contents of a folder, first of all select it and then click the column header by which you want to sort the messages, once for ascending order and a second time for descending order. You can also proceed as follows:

- Select the option **Folder→Sort...** from the main menu.

The following dialog box is displayed:



- Select the sort criterion in the **Sort By** list.
- Select the check box **Ascending** to sort the messages in increasing order by the chosen criterion, or **Descending** to sort in decreasing order.
- Click the button **Sort**.

Looking for messages

When the folders contain a lot of messages, the user may have some difficulty finding a particular message. It may also be useful to be able to group together all the messages with a common element (for example, the recipient, the date of reception, etc.).

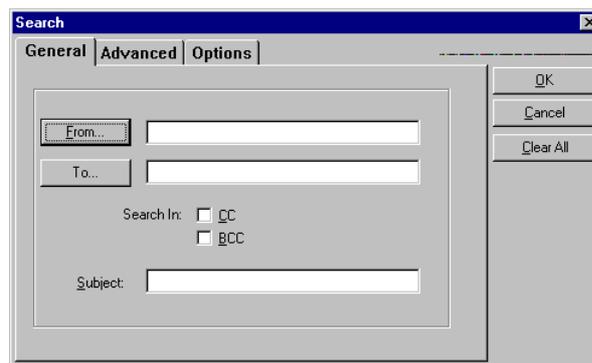
The search function lets you identify or list the messages which correspond to the search criteria specified by the user. The search results are placed in the **Search** folder.

Note: More than one criterion may be chosen for the search: an address is copied to the Search folder if it answers to all the selected criteria.

To search for one or more messages:

- Select the folder or folders in which the search is to be carried out.
- Select the option **Folder→Search** from the main menu or click the **Search** button  in the **Folders** toolbar.

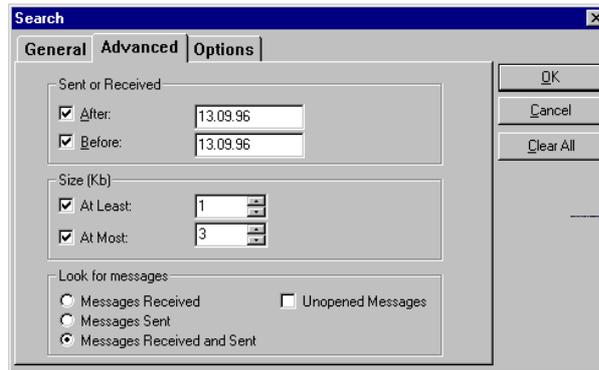
The following tabbed dialog box is displayed:



On the **General** tab, enter the search criteria:

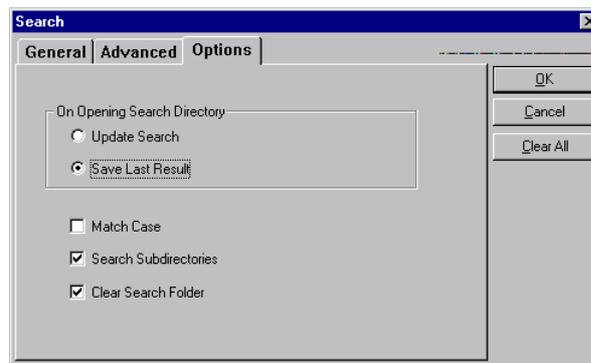
- Search by sender: enter the name or select a name from the address book by clicking the button **From...**
- Search by recipient: enter the name or select a name from the address book by clicking the button **To...**
- Search by **Cc** or **Bcc** recipient: select the check box **Cc** or **Bcc** in the **Search In** section for a search by recipient to take account of these parameters.
- Search by character string in the subject text: enter the character string in the **Subject** field.

You can narrow the search down using the fields on the **Advanced** tab.



- Search based on the date of sending or reception of the message: select the check box **After** and/or **Before** and enter the date(s) after and/or before which the message was sent or received.
- Search by message size: select the check box(es) **At Least** and/or **At Most** and enter or select the minimum and/or maximum size(s) of the message (in kilobytes, 1KB = 1024 bytes).
- Search by message type: choose the option **Received** to limit the search to received messages, **Sent** to limit the search to sent messages or **Received and Sent** to include both types. Select the check box **Only Non-read** to limit the search to unread messages.

Choose the search options on the **Options** tab:



- Choose the option **Update Search** to update the results of the search each time the Search folder is subsequently opened, and take into account any changes made to the messages since the search was made. Choose the option **Save Last Result** to save the previous results and not update the search folder.
- Select the check box **Match Case** for letter case to be taken into consideration in the search criteria.
- Select the check box **Search Subdirectories** to search all the subdirectories of the selected folder.
- Select the check box **Clear Search Folder** to clear the results of the previous search from the search folder. This check box is selected by default.

When you have completed the tabs, click the **OK** button.

Click the button **Clear All** to clear all the search criteria fields without closing the dialog box.

RETRIEVING MESSAGES

There are different methods for retrieving new messages depending on the configuration chosen for the POP3 communication channel (see the section on **Tun Sendmail**):

- Automatic search at connection time.
- Automatic intermittent search.
- Search effected at the user's request.

To change this configuration, proceed as described in the chapter **E-mail Administration**'.

Whatever configuration is chosen, the user can query the POP server at any time to retrieve his messages. A password, however, must have previously been registered in the user parameters (using the option **Options→User...** in the main menu).

To query the POP server, use the option **Message→New Messages** or else click the button **Look For Messages**  in the main toolbar.

To organize the messages in the folders and carry out operations on the messages, please refer to the section **"Managing Folders"**.

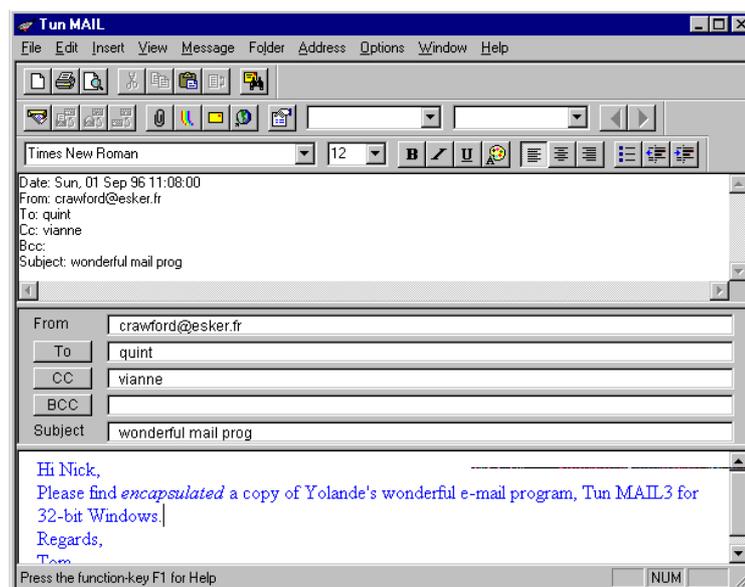
COMPOSING A MESSAGE

Creating a message

 To create a new message, select the option **Message→New Message** or click the button **New Message**  in the main toolbar.

You can also access the **New Message** option by clicking anywhere on the screen with the right mouse button, as long as no object is selected.

A window similar to the following is displayed::



The window is composed of several parts:

- The message parameters which can be displayed or hidden (**To**, **Cc**, **Subject**, etc.).

- The body of the message, situated beneath the message parameters.
- The SMTP message header as it will appear to the recipient; it can be displayed above the parameters by placing the cursor on the upper limit of the message parameter block and moving it downwards (split window functioning). The sender may change the contents of the header if he wishes.

The SMTP header is created automatically as the message parameters are completed by the user. It can be modified within the limits defined in RFC 822. For example, the reply address can be changed manually by the user. In any case, a check is made when the message is sent to ensure the header conforms to the RFC.

The message parameters defined by default are:

- The **To** field containing the recipient's address.
- The **Cc** field containing the addresses of recipients who are to be sent a carbon copy.
- The **Subject** field in which the sender enters the subject of his message.
- The **Date** field which is automatically displayed when the message is received.

The other fields that can be used to parameter the message are:

- The **From** field containing the sender's address (SMTP header **From** field).
- The **Bcc** field which allows a copy of the message to be sent to recipients without the other recipients knowing about it.

To display or hide the fields **From**, **To**, **CC** and **BCC**, use the main menu option **View** and select or deselect the relevant option.

Editing a message

Tun MAIL for Windows 95 includes a message editor for formatting the content of messages with basic word processing functions (bold, italic and underlined characters, colors, justification, etc.).

In a message, the user is able to:

- Enter text with varied character and paragraph formatting (bold, italics, underlined, colors, centering, bullet lists, etc.).
- Attach files.
- Insert different elements such as pictures, text files, messages, references, variable fields, objects.

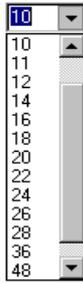
For further information on the two last items, please refer to the section **Inserting elements"**.

To format the contents of a message:

- Enter the body of your message in the lower pane of the **Message** window.
- Select the items you wish to format.
- Choose the relevant option from the formatting toolbar:
 - Font list to change the font of selected text.



- Font size list for changing font size.



- Bold, italics, underline and color buttons.



- Text justification buttons.



- Bullet and indentation buttons.



You can also select the option **Message→Format** from the main menu to format a paragraph, select a font or insert a bullet at the start of a paragraph.

The formatting will be maintained to a greater or lesser degree depending on the type of the recipient's messaging system:

- A regular recipient will only be able to see non-formatted text, and will not be able to see objects inserted into a message as file attachments (except OLE objects). A message addressed to this type of recipient does not require formatting.
- A MIME or Tun NET recipient type will be able to read the message contents as the sender intended.

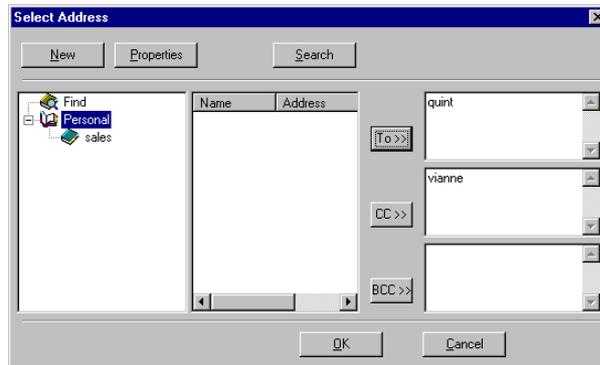
Recipients

The message recipient(s) must be identified by their e-mail addresses. The field relating to the recipients is the **To** field in the message settings (and SMTP header). To send a copy of the message to one or more recipients, complete the **Cc** field. To send a copy of the message to one or more recipients without the other recipients knowing about it, complete the **Bcc** field.

To complete the field(s), use one of the following methods:

- Enter the recipients' e-mail addresses in the relevant fields (**To**, **Cc** and/or **Bcc**).
- Click the buttons (**To**, **Cc** or **Bcc**) to select the address(es) from the address book(s).

If you use the second method, the following window is displayed:



Note: The **To**, **CC** and **BCC** fields are only displayed if they are displayed in the message parameters. The default field is the one the user pressed to open this dialog box.

This window not only lets you select the address(es) for the fields **To**, **CC** and **BCC** from the address directories where they stored but also lets you manage the address book itself: creation of new addresses in the address book, access to directory and address properties, search function. For further information on these functions, see the section "Address Book Administration".

To enter an address in a message field:

- Select the directory containing the address in the directory tree structure (left-hand pane).
- Select the address from the list that is displayed in the right pane.
- Click the button **To**, **CC** or **BCC** depending on the field which you wish to complete. The address will appear in the space on the right of the button you clicked. Double-click the address to enter it in the relevant message parameter field.
- Repeat the procedure for any other addresses.
- Click the **OK** button when you have finished selecting addresses.

You can also drag and drop addresses from directories to the relevant **To**, **CC** or **BCC** space.

Headers and signatures

Tun MAIL for Windows 95 lets you include headers and signatures in your messages.

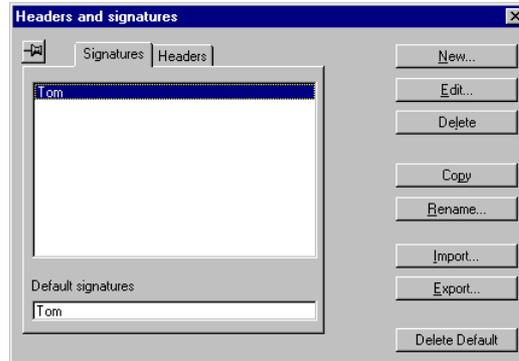
If the user has already created headers and signatures, they will appear in the list boxes situated above the message editor's toolbar.

To include a particular header and/or signature in the message, select it/them from the relevant list box.

You may create as many headers and signatures as you want, and in this way customize your messages at will.

To create or change a header or a signature, select the option **Options→Header/Signature** from the main menu.

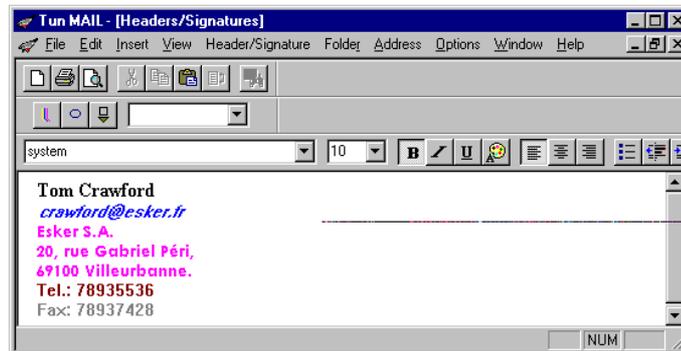
The following window is displayed:



On the tabs **Signatures** and **Headers**, you can:

- Create a new header or signature by clicking the button **New...**
- Modify a header or signature by selecting the item and clicking the button **Edit...**
- Delete, copy or rename a header or a signature by clicking the buttons **Delete...**, **Copy...** or **Rename...**
- Import and export headers and signatures from and to other directories by clicking the buttons **Import...** or **Export...**
- Select the header or signature which is to be the default using the button **Default**.

When the user clicks the **New...** button or the **Edit...** button, an editing window appears to let the user create or change the contents of the header or signature.



In the header or signature, the user can:

- Enter text with different text and paragraph formatting (bold, italics, underline, colors, paragraph justification, bullet lists, etc.).
- Insert different items such as pictures, text files, variable fields and objects.

To import, export, rename, copy or format a header or a signature when the Headers/Signatures window is open, select the relevant options from the main menu option **Header/Signature**.

To format the contents of a header or a signature, proceed as for the modification of messages (see the section "Editing a message").

To insert different elements in headers and signatures, proceed as for the insertion of elements in a message (see the section "Inserting elements").

While a header or signature is being edited, the user can keep the Header/Signature list displayed on the screen by clicking the **Stay Visible** button:



allows window to be hidden



leaves window visible

INSERTING ELEMENTS

Tun MAIL for Windows 95 offers excellent functionality for inserting elements. The use of object encapsulation with MIME makes it possible to send all sorts of composite messages including text, color attributes, pictures, OLE2 objects, etc.

To enhance the contents of a message (or a header or signature), the user can:

- Attach a file (for messages only): the message contains an attached file that the recipient may view, open or save on reception.
- Insert a text file: the body of the message contains the text of a text format file.
- Insert an image: the body of the message contains the image itself.
- Insert a message (for messages only): the body of the message contains another message (already written, sent or received by the user).
- Insert a reference (for messages only): the body of the message contains a link to a reference of type FTP, HTTP, Gopher, local file, etc. allowing access to an Internet site or a local file.
- Insert a variable field (for headers and signatures only): the header (or signature) contains a variable if its value is known.
- Insert an object: the body of the message contains an object.

File attachment

The sender can attach files to any message and send them to the recipient. **Tun MAIL** for Windows 95 offers two modes for attaching files:

- **Copy**: a copy of the file in its current state is attached to the message. Future modifications of the file will not be taken into account in the message before it is sent.
- **Link**: the file is attached to the message as a link: consequently, any modification of the file will be automatically taken into account when the message containing the latest version of the file is sent. If the file is destroyed, the link is removed.

To attach a file to a message:

- Select the option **Insert→Attach File...** from the main menu or click the button **Attach File**  from the **Message** toolbar.
- Select the file(s) you wish to attach.
- Select either the check box **Copy** or **Link** depending on the attachment mode you want.
- Click the button **Insert**.

Inserting a text file

The sender can insert the contents of a text file at the point of insertion of the cursor in the body (or header or signature) of a message.

The file format may be:

- **.txt**: ASCII text format.
- **.rtf**: rich text format.

To insert a text file in the body of a message, header or signature:

- Move the insertion point to the chosen place.
- Select the option **Insert→Insert Text File** from the main menu.
- Select the desired file.
- Click the button **Open**.

Inserting an image

The sender can insert an image at the insertion point in the body of a message (or header or signature). **Tun MAIL** for Windows offers two modes for inserting images:

- **Copy**: the image is inserted in its current version. Later modifications made to the image will not be taken into account when the message is sent.
- **Link**: the image is inserted as a link. Any modification made to the image will be included when the message, containing the latest version, is sent.

To insert an image in the body of a message, header or signature:

- Move the insertion point to the desired spot.
Use the option **Insert→Insert Image...** or click the button **Insert Image**  in the **Messages** toolbar.
- Select the desired image file.
- Select the check box **Link** or **Copy** depending on the desired insertion mode.
- Click the button **Insert**.

Inserting a message

The sender can insert the contents of another message from his message folders at the insertion point in the body of the message being composed. **Tun MAIL** for Windows 95 offers two message insertion modes:

- **Copy**: the current version of the message is inserted. Later modifications of the message's contents will not be taken into account when the containing message is sent.
- **Link**: the message is inserted as a link. Any modifications made to its contents will be automatically taken into account when the containing message is sent with the latest version of the inserted message.

To insert the contents of another message in a message being composed:

- Move the insertion point to the chosen location in the message.
- Select the option **Insert→Insert Message...** from the general menu or click the button **Insert Message**  in the **Messages** toolbar.
- Select the message you wish to insert.
- Select the check box **Link** or **Copy** depending on the desired insertion mode.
- Click the button **OK**.

The message selection window also allows access to the message properties and searches in the folders. For information on these functions, please refer to the section **Managing Folders**".

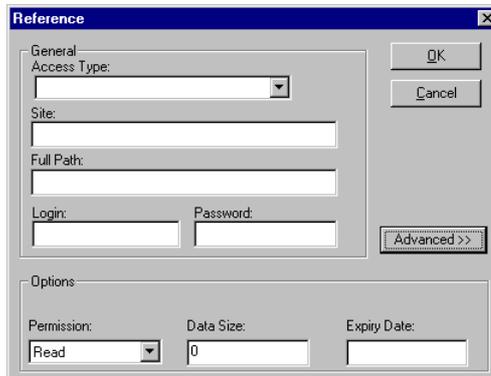
Inserting a reference

The sender can insert a reference at the insertion point in the body of a message. A reference is a link which points the recipient to an Internet site (FTP, TFTP, HTTP, Gopher, etc.) or a file situated on the recipient's hard disk (local file). By clicking the reference, the recipient can access the designated site or file. Internet sites are accessed via the Internet browser specified on the recipient's machine.

To insert a reference in the body, header or signature of a message:

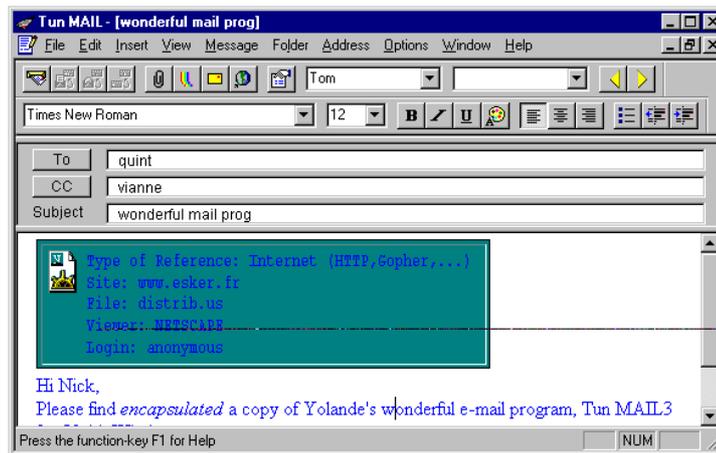
- Move the insertion point to the desired position.
- Select the option **Insert→Insert Reference...** from the main menu or click the button **Insert Reference**  in the **Messages** toolbar.

The following window is displayed:



- Select the type of reference desired and complete the fields with all the necessary details (login and password, file path, advanced configuration, etc.).
- Click the **OK** button.

The reference will then be inserted in the message:



Inserting a variable field

The sender can insert variable fields in the header or signature at the insertion point. The variables can be general (date and time) or can relate to the user or the message recipient.

The variable values relating to the application user can be assigned in the user declaration window which is accessible with the option **Options**⇒**User...** in the main menu.

The variable values relating to the message recipient can be assigned in the recipient's properties which are accessible through the Address Book window (refer to the section "Address Book Administration" to assign these variables).

The variables relating to the application user or the message recipient are as follows:

- Application user name (for the user, this is the login name used to access the e-mail application; for the recipient, it is the current name used to identify him in the address book).
- First name.
- Last name.
- Fax number.
- Phone number.
- E-mail address.
- Fax comment.
- Postal address.

All the variables with assigned values can be inserted in the body of the message, the header and the signature.

To insert a variable field in the body of the message, the header or the signature:

- Move the insertion point to the desired position.
- Select the option **Insert→Insert Field** from the main menu.
- Select the variable group **General** for general variables, **User** for user-related variables or **Recipient** for recipient-related variables.
- Select the desired variable.

Inserting an object

The sender can insert an OLE2 object at the insertion point in the message body, header or signature. For example, the object may be an Excel spreadsheet, an OLE unit, a video, etc.

To insert an object in the message body, header or signature:

- Move the insertion point to the desired position.
Select the option **Insert→Insert New Object** from the main menu or click the button **Insert Object**  in the **Message** toolbar.

If the object you want to insert does not exist:

- Select the check box **Create New** (it is selected by default).
- Select the type of object you wish to insert.
- Select the check box **Display as Icon** if you want the object to be displayed in the message body, header or signature as an icon.
- Click the **OK** button.
- Create your object in the application that is started.

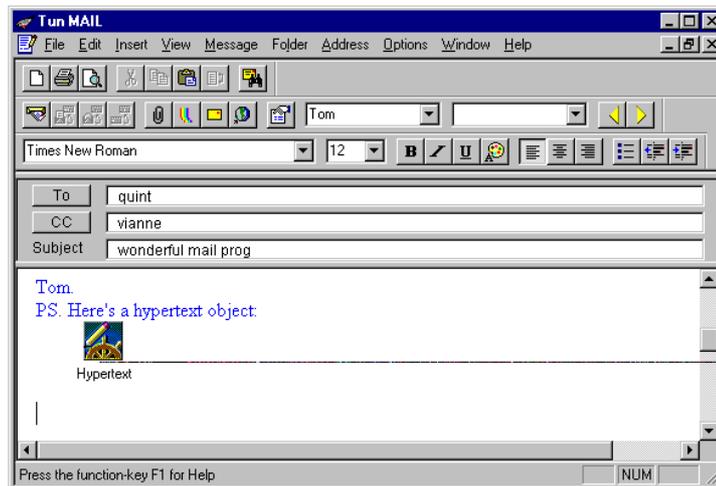
If the object you want to insert is contained in an existing file:

- Select the check box **Create From File**.
- Enter the source file name or select a source file with the button **Browse...**
- Select the check box **Link** if you want any modifications made to the file to be taken into account.
- Select the check box **Display as Icon** if you want the object to be displayed in the message body, header or signature as an icon.
- Click the **OK** button.

Including an object as icon

To include an object in a message as an icon, select the object and then use the option **Edit→Display As Icon** in the main menu.

An example of the inclusion of an object is shown below:

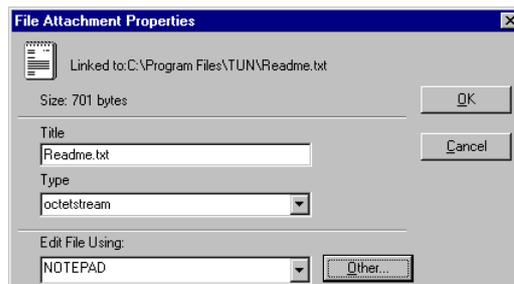


Object properties

An object in a message has properties you can view or modify. To access the properties of an object inserted in a message, select the object and then use one of the following methods:

- Select the option **Properties** from the context menu of the selected object.
- Select the option **Edit→Object→Properties** from the main menu.

A window similar to the following is displayed:



You can modify the properties of an object (title, type, associated application).

SENDING A MESSAGE

Sending a message

When the message has been composed by the user and the header duly completed to allow correct transmission and reception (the **To** field completed with the name of the recipient from the address book or a valid address, the **Subject** field completed to facilitate communication), the user can send the message.

A message can either be sent when it is open or sent from the sending folder if it has been sent before.

To send a message, select it from the sending folder or open it. Then use one of the following methods:

- Click the button **Send**  in the toolbar of the message if it is open or the toolbar of the folders window if the message has been stored in a folder.
- Select the option **Message→Send** from the main menu.

The following window is displayed for a new message:



Select the folder in which you want to store the message you are sending and then click the button **Yes**. If you do not want to keep a copy of this message, click the button **No**.

DEALING WITH MESSAGES

Replying to a message

When the user has received a message, he can answer his correspondent(s) by composing a reply whose main parameters will be generated automatically by **Tun MAIL** for Windows 95. The **Reply** function allows the user to:

- Avoid having to enter the address of the sender(s) the user is replying to. It is advisable, however, to check the address to make sure the message goes to the correct recipient.
- Have a message subject in the form **Re** followed by the subject of the message received by the user. This allows the recipient to easily recognize a reply to his message.
- Include the original message in the reply with each line preceded by the character "<". This allows the user to recall the details of the message received and to add comments on each without having to type them again.

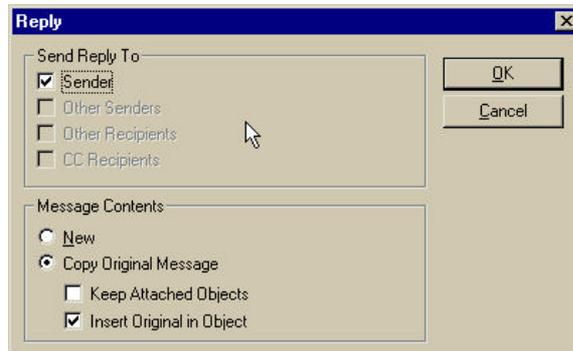
With these parameters set, the reply can be written like a normal message.

The user can reply to a message which is open or one that is in the **Waste** folder if it has been copied there after being deleted.

To reply to a message, first of all select it in the **Waste** folder or else open the message. Then use one of the following methods:

- Click the button **Reply**  in the toolbar of the message if it is open or the folder window toolbar if the message is already in the **Waste** folder.
- Select the option **Message→Reply** from the main menu.

The following dialog box is displayed:



Then proceed as follows:

- Select or deselect the desired check boxes: **Sender** if you want to reply to the sender of the message, **Other Senders** to change the name of the sender, **Other Recipients** to include other recipients of the message, or **CC Recipients** to include recipients who received a carbon copy of the message.
- Select the option **New** if you want to start with an empty message (without the body of the received message), or else the option **Copy Original Message** if you want to include the original message in the reply.
- If you selected the option **Copy Original Message**
 - Select the check box **Insert Original in an Object** if you want the original message to be inserted into the reply as an object.
 - Select the check box **Keep Attached Objects** if you want the objects attached to the message to be also attached to the reply.
- Click the button **OK**.

Forwarding a message

When the user has read a message he has received, he can forward it to one or more recipients he would like to read it. He can also change the contents of the message before forwarding it.

A message can be forwarded from the viewer when it is opened or from the **Waste** folder if the message has been copied there after being deleted..

To forward a message, first of all select it in the **Waste** folder if it is there or else open the message. Then use one of the following methods:

- Click the button **Forward**  in the message toolbar if the message is open, or the folder window toolbar if the message is in the **Waste** folder.
- Select the option **Message→Forward** from the main menu.

The original message is then inserted as an object. The parameters of the original message (sender, copy, subject, etc.) are deleted. Add the necessary information to the message before sending it (send parameters, message body, header, signature, etc.) Refer to the section **Composing a message**'.

Redirecting a message

If the user receives a message by mistake, he can redirect the message to the correct addressees without modifying it.

A message can be redirected when it is open or else from the **Waste** folder if the message has been copied there deletion.

To redirect a message, first of all select it in the **Waste** folder if it is there or else open the message. Then use one of the following methods:

- Click the button **Redirect**  in the message toolbar if the message is open, or the folder window toolbar if the message is in the **Waste** folder.
- Select the option **Message→Redirect** from the main menu.

ARCHIVING AND RESTORATION

The address directories, message folders, addresses and messages can be archived and restored. This function lets the user lighten the application of data or use data in other applications.

To archive data, first of all select the data and proceed as follows:

- For messages, select the option **File→Save As...** from the main menu.
- For attached files, select the option **File→Save Attached File As...** from the main menu.
- For folders, select the option **Folder→Save Folder As...** from the main menu.
- For directories, select the option **Folder→Save Directory As...** from the main menu.
- For addresses, select the option **Folder→Save Address As...** from the main menu.

For each of the above cases, select the directory in which you want to store the object as a file, type the file name of your choice and accept the default extension proposed:

- **.txt** for a folder, directory or address.
- **.txt, .rtf** or **.mmm** (i.e. MIME) for a message.
- all file types for an attached file.

In the case of a directory, select the check box **Export Child** to also save the first subdirectory of this directory.

In the case of a folder, select the check box **Export Subfolder** to also save the first subfolder of this folder.

To restore an archived file, select the object in which you want to place it (a parent directory for a directory, a parent folder for a folder, a folder for a message, a directory for an address), and proceed as follows:

- For a message in MIME format, select the option **File→Load Message...** from the main menu.
- For a folder, select the option **File→Load Folder...** from the main menu.
- For a directory, select the option **File→Load Directory...** from the main menu.
- For an address, select the option **File→Load Address...** from the main menu.

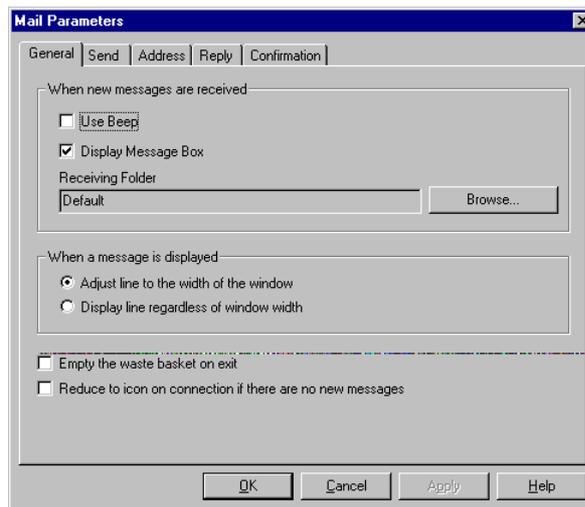
Select the file corresponding to the archive you want to restore, then click the button **Open**.

Tun MAIL FOR WINDOWS 95 SETTINGS

Tun MAIL for Windows 95 has a number of configuration parameters which the user can view or modify as required.

To access the application's parameters, select the option **Options→Mail Parameters** from the main menu.

The following dialog box is displayed:



General tab

This tab lets you select options relating to:

- The arrival of new messages (beep, message box).
- Line formatting for the display of messages (adjustment to the window or not).
- Automatic clearance of the Waste folder on quitting the application.
- Minimization (to an icon) of the application if no message is found on connection.

Send tab

This tab lets you select options relating to the general sending of messages:

- Request for Delivery and Read Receipts for all the messages sent.
- The default format for faxes sent.
- Automatic closing of the message after it is sent.
- The options for storing messages after they have been sent (propose folder list, default folder, deletion of the message).

Address tab

This tab lets you select options relating to addresses:

- Choice between error message display or use of default message type when an address has no address type specified in its properties.
- Choice between display of personal and shared address books as the default address book (displayed for selecting a recipient when sending a message).
- Adding of new recipients to the address book.

Reply tab

This tab lets you select options relating to replies to messages received:

- Choice between displaying the options dialog box to set the reply's parameters and using default options (new message or original message, copy of attached objects when using the original message and/or the insertion of the original message in the reply as an object).
- The forwarding options for a message (deletion of the original in the source folder, deletion of the forwarded version).
- Automatic closing of the original message after reply or redirection.

Confirmation tab

This tab lets you select options relating to confirmation:

- The deletion and moving of unread messages.
- Confirmation for the deletion of messages and addresses.
- Confirmation for search-related operations.

MANAGING USERS

When the user connects to the e-mail application for the very first time, a user account is automatically created and the necessary user settings can be entered immediately. Refer to the section **Connecting**.

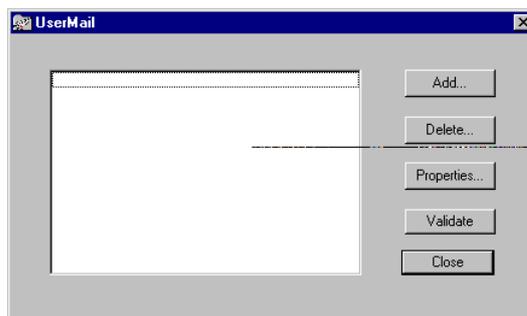
Tun MAIL for Windows 95 includes administration capabilities on the PC for managing user access to the e-mail server (SMTP and POP).

Each user is assigned properties relating to access to the e-mail application (login, password), to the user himself (fax address, e-mail address for replies, etc.) and to the communication channels used by the user (SMTP, POP3).

The use of this functionality is usually restricted to the e-mail administrator who is responsible for declaring each of the users.

Select the option **Options→Administration...** from the main menu.

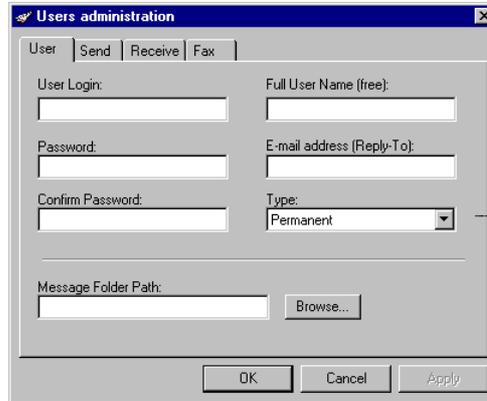
The following window is displayed:



Declaring users

To declare a new user, click the **Add** button.

The following window is displayed:



The screenshot shows a dialog box titled "Users administration" with a close button (X) in the top right corner. It has a tabbed interface with the "User" tab selected. The dialog contains several input fields and a dropdown menu:

- User Login:** An empty text input field.
- Full User Name (free):** An empty text input field.
- Password:** An empty text input field.
- E-mail address (Reply-To):** An empty text input field.
- Confirm Password:** An empty text input field.
- Type:** A dropdown menu currently set to "Permanent".
- Message Folder Path:** An empty text input field with a "Browse..." button to its right.

At the bottom of the dialog are three buttons: "OK", "Cancel", and "Apply".

Complete the tabs as indicated in the section "**Connecting**" at the beginning of this chapter.

Changing the properties of a user

To change the properties associated with an existing user, select the user name from the list of users proposed in the main window and click the button **Properties**.

The following window is displayed:



The screenshot shows a dialog box titled "Tun MAIL" with a close button (X) in the top right corner. It contains two input fields and two buttons:

- Name:** A text input field containing the text "crawford".
- Password:** A text input field containing a series of asterisks "*****".

At the bottom of the dialog are two buttons: "OK" and "Cancel".

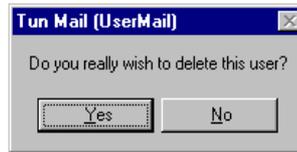
Enter the password for the name of the user if there is one. Then click the **OK** button to change the properties. If no password is associated with the user, just click the **OK** button.

The user properties window is displayed. Modify the desired entries. Refer to the section "**Declaring users**" for more information.

Deleting a user

To delete one or more users, select the name(s) of the user(s) in the list displayed in the main window (to select more than one name, use one of the methods described in the section **General use**).

Confirm the deletion by clicking the button **Yes** when the following confirmation message is displayed:



Enter a password, if there is one, for each user as requested by the dialog box and click **OK** to delete the user. If the user does not have a password, just click **OK**.

Validation of the user list

For the modifications to the list of declared users to be taken into account, click the button **Validate**.

When the list of users has been updated, click the button **Close**.

CHAPTER 21 - MANAGING COMMUNICATION CHANNELS FOR 32-BIT E-MAIL

INTRODUCTION

The module **Tun Sendmail** (SENDMAIL.EXE) lets the mail administrator configure the communication channels used by the PC for the sending and receiving of messages.

Tun MAIL for Windows 95 automatically creates the SMTP and POP client channels for the mail users. Refer to the section "**Connecting**" in the chapter "**Electronic Mail for Windows 95**".

However, the application **Tun Sendmail** may be run independently of **Tun MAIL** for Windows 95 (for example, in the case of a PC server) to create the specific communication channels manually.

Additionally, the advanced configuration parameters are only accessible through **Tun Sendmail**. If it is necessary to set these parameters, **Tun Sendmail** must be run as well as **Tun MAIL** for Windows 95 with which the channels were originally created.

Notes:	Channels created with Tun MAIL for Windows 95 cannot be removed with Tun Sendmail if they are associated with a user. Channels created automatically with Tun MAIL for Windows 95 are removed as soon as no existing users are using them. However, a channel created manually with Tun Sendmail will not be automatically removed if a user is associated to it. It has to be removed manually.
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COMMUNICATION CHANNELS (REMINDER)

The PC can be used for e-mail in two modes:

- Client mode: in this mode the PC can be used for sending and receiving messages.
- Server mode: in this mode, the PC acts as a mail office for other PCs and contains the mailboxes of the clients using the server to communicate with other clients.

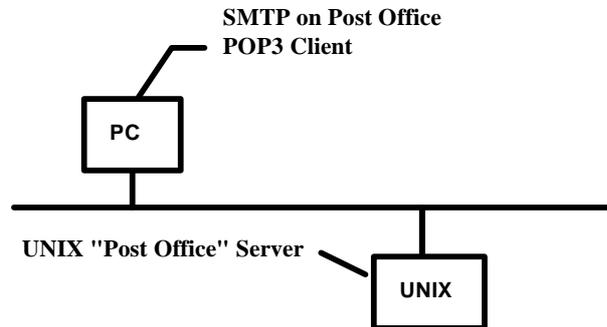
At the same time, **Tun MAIL** for Windows 95 lets the user send messages using the SMTP protocol and receive messages using the POP3 protocol.

Consequently, there are four main types of communication channel possible:

- SMTP client
- SMTP server
- POP3 client
- POP3 server

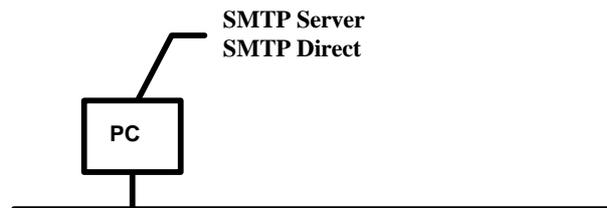
Additionally, there are two types of SMTP client protocol: SMTP on Post Office (the messages go through a server which establishes a connection with the outside world), and SMTP direct (the PC handles the establishment of the connection with the outside world directly).

There are three principal types of architecture which implement the different types of channel:

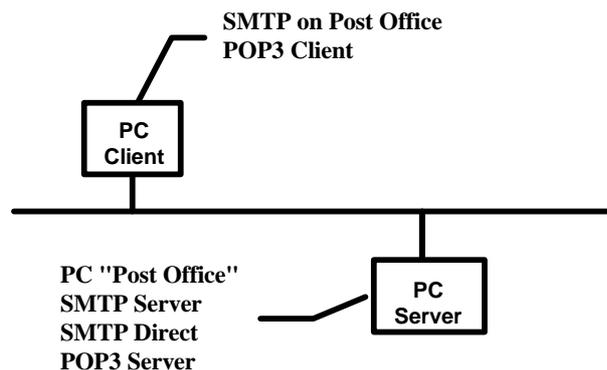
PC-UNIX client/server architecture (regular)

Each PC sends its messages via a "SMTP on Post Office" channel. The messages are transmitted to the recipients through the UNIX server (mail server).

To retrieve his messages the user queries the UNIX server from his PC by using a POP3 channel.

Single PC architecture

A lone PC acts simultaneously as a mail client and server: the messages are sent directly through a "SMTP direct channel" (they do not go via another machine); the messages received arrive on the PC through a "SMTP server" channel.

PC client/PC server architecture

For the PC clients the principle is the same as in a PC client/UNIX server configuration.

However, in this case the PC acts as a mail server to the PC clients on the network. Hence, the PC implements a SMTP direct channel (to send mail users' messages), a SMTP server channel (to receive the users' messages) and a POP3 server channel (that the users use to retrieve messages from the PC server).

From these three initial configurations you can construct the client/server architecture of your choice depending on your requirements and the available PCs and servers on your network.

RUNNING Tun SENDMAIL



Run the program by clicking on **Tun Sendmail** icon in the **Tun NET** group from the Windows 95 Start menu.

The default configuration is composed of channels which are automatically created from **Tun MAIL** for Windows 95 and those created manually from the application **Tun Sendmail**. If two different POP3 or SMTP channels are defined for two users, two SMTP (or POP3) are created by **Tun Sendmail**

Any possible modifications which may have been made since the last time **Tun Sendmail** was used are taken into account when **Tun Sendmail** starts.

Whenever **Tun Sendmail** is run in fact, it automatically takes the modifications made to the channel configurations from **Tun Mail** into account.

CONFIGURING CHANNELS MANUALLY

Configuring a SMTP client channel

Note: As a general rule, it is not necessary to create this type of channel with **Tun Sendmail**, since **Tun MAIL** for Windows 95 lets you do it automatically on a per user basis.

There are two ways to configure a SMTP channel:

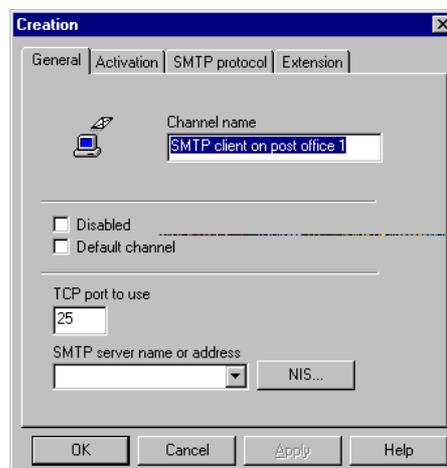
- The messages are sent through a Post Office which sends them to the recipients. For this to happen, a connection is established between the PC and the server for each message to be sent. This is known as **SMTP on Post Office**
- The messages are sent directly from the PC to the recipient's machine by using the services of a DNS (Domain Name Server). This is known as **SMTP Direct**.

SMTP on Post Office

To configure a SMTP client channel on a Post Office server, select the option **Channel→New** from the main menu, then choose the option **SMTP Client**

To accede to the **New** option, you can also click the right mouse button anywhere in the left-hand pane of the window.

The following window is displayed:



- Change the channel name if you want.

- Enter the name or the IP address of the SMTP server
You can configure as many channels of this type as you want if, for example, there are a number of SMTP servers installed on the network.

SMTP Direct

To configure a SMTP client channel which does not have recourse to a SMTP server, select the option **Channel→New** from the main menu and then choose the option **Direct SMTP Client**.

To accede to the **New** option, you can also click the right mouse button anywhere in the left-hand pane of the window.

The following window is displayed:



- Change the name of the channel if you wish.
- Enter the name or IP address of the DNS used to find out the IP address of the recipient's mail server (MX entry).

In general, only one channel of this type can be configured.

To complete the parameters on the other tabs, refer to the section "**Advanced configuration of SMTP channels**".

Configuring a POP3 client channel

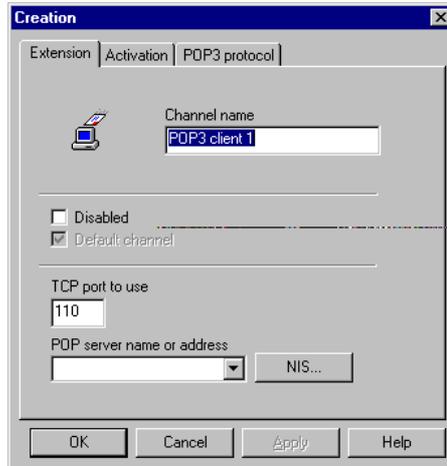
Note: As a general rule, it is not necessary to create this type of channel with **Tun Sendmail** since **Tun MAIL** for Windows 95 does it on a per user basis.

A channel of this type makes it possible to query a POP server acting as a Post Office. The establishment of a POP connection via TCP/IP between the PC and the server requires the authentication of the user (login and password) by the server.

To configure a POP3 client channel, select the option **Channel→New** from the main menu and then choose the option **POP3 Client**.

To accede to the **New** option, you can also click the right mouse button anywhere in the left-hand pane of the window.

The following dialog box is displayed:



- Change the name of the channel if you wish.
- Enter the name or IP address of the POP3 server

You can configure as many channels of this type as you want if, for example, there are a number of POP servers installed on the network.

To complete the parameters on the other tabs, refer to the section "**Advanced configuration of POP3 channels**".

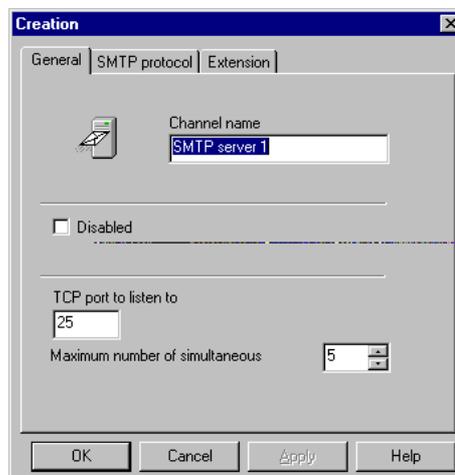
Configuring a SMTP server channel

This type of channel lets the PC act as a SMTP server. A sender can establish a SMTP connection with a PC server running the program **Tun Sendmail**

To configure a SMTP server channel, select the option **Channel→New** from the main menu and then choose the option **SMTP Server**.

To accede to the **New** option, you can also click the right mouse button anywhere in the left-hand pane of the window.

The following dialog box is displayed:



Change the name of the channel if you wish.

Only one channel of this type can be configured since the server is the PC itself.

To complete the parameters on the other tabs, refer to the section "**Advanced configuration of SMTP channels**".

Configuring a POP3 server channel

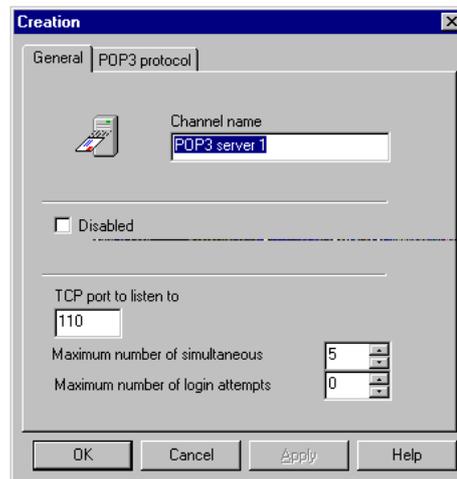
This type of channel lets the PC act as a POP server. A sender can establish a POP connection with a PC server running the program **Tun Sendmail** to retrieve the messages in his mailbox.

Only users declared on the system are accessible via the configured POP3 server

To configure a POP3 server channel, select the option **Channel→New** from the main menu and then choose the option **POP Server**.

To accede to the **New** option, you can also click the right mouse button anywhere in the left-hand pane of the window.

The following dialog box is displayed:



Change the name of the channel if you wish.

Only one channel of this type can be configured since the server is the PC itself.

To complete the parameters on the other tabs, refer to the section "**Advanced configuration of POP3 channels**".

Advanced configuration of SMTP channels

General tab

Select the check box **Disabled** to disable a channel. By default, this check box is cleared: the channel thus configured is active.

In the case of a SMTP server channel, enter or select the maximum number of connections that are to be simultaneously authorized on the SMTP server.

You can also change the port number for the SMTP protocol. However, such a change should only be made with good cause since the usual port for the SMTP protocol is number 25.

Activation tab (for a SMTP clientchannel)

You can change the activation mode for SMTP connections between the PC client and the server: the SMTP connection is either made at the user's request (in **Tun MAIL** for Windows 95, this in fact corresponds to the sending of a message), or it is established at a periodic frequency (in which case the message will be sent at the next SMTP connection).

By default, activation is provoked once a minute.

- Select the option **On demand** for activation to take place at the user's behest.
- Otherwise, select the option **Periodically** and enter or select the time in minutes between each connection.
- Enter or select the number of connection attempts before the operation is abandoned. The default value is 3. This means that after 3 unsuccessful attempts to make a SMTP connection, an error message will be displayed.

Protocol Settings tab

The SMTP protocol complies with a number of rules detailed in RFC 821. The SMTP protocol is based on the following communication model: when the user makes a request to send a message, the client opens a bi-directional transmission channel with the server. The SMTP commands are generated by the client and received by the server. The replies to these commands are sent from the server to the client.

The **Protocol Settings** tab allows the definition of the different maximum response times for the commands sent by the client to the server when a message is sent by SMTP.

For each of the commands listed below, the response time corresponds to the maximum time (in minutes) that the client will wait for a response from the server. After the maximum time, the SMTP connection is interrupted. The message is not transmitted.

Initial banner	Welcome message sent by the server after a SMTP connection request from the client
HELO command	Identification of the domain when the channel is opened
MAIL FROM command	Identification of the sender of the message
RCPT TO command	Identification of the recipients of the message
RESET command	Resetting of the connection by the client
DATA command	Sending of message contents
Data transfer	Converting data from 8 to 7 bits for transport over TCP/IP
Data transfer acknowledgment	End of data transfer
QUIT command	End of connection requested by client

Extension tab

The SMTP form can be used in an extended form which means in fact a limitation on the size of the messages sent.

The SMTP server can set a limit on the maximum size of the messages it handles: this means that if a client sends a message that is bigger than the maximum size imposed it will not be sent to the recipient.

The extended SMTP protocol can be selected at the SMTP client end to avoid the sending of messages that are too big. In this case, the HELO command becomes EHLO to enable the server to recognize the version of the SMTP protocol being used (extended or normal).

Two other options are proposed for a SMTP serverchannel:

- **Allow VERIFY command:** this option authorizes the server to verify that it knows the names used in a command generated by the client for the sending of a message. After verification, the server sends a positive or negative reply depending on the result.
- **Allow EXPAND command:** this option has the same effect as the preceding but makes the server return the list of known users under the name it has verified.

Advanced configuration of POP3 channels

General tab

Select the check box **Disabled** to disable a channel. By default, this check box is cleared: the channel thus configured is active.

In the case of a POP3 server channel, enter or select the maximum number of connections that are to be simultaneously authorized on the POP3 server.

You can also change the port number for the POP3 protocol. However, such a change should only be made with good cause since the usual port for the POP3 protocol is number 110.

Activation tab (for a POP3 clientchannel)

You can change the activation mode for POP3 connections between the PC client and the server: the SMTP connection is either made at the user's request (in **Tun MAIL** for Windows 95, this in fact corresponds to the retrieving of messages), or it is established at a periodic frequency (in which case the messages will be retrieved at the next POP3 connection).

By default, activation is provoked once a minute.

- Select the option **On demand** for activation to take place at the user's behest.
- Otherwise, select the option **Periodically** and enter or select the time in minutes between each connection.
- Enter or select the number of connection attempts before the operation is abandoned. The default value is 3. This means that after 3 unsuccessful attempts to make a POP3 connection, an error message will be displayed.

Protocol Settings tab

Like the SMTP protocol, the POP3 protocol complies with a certain number of rules (detailed in RFC 1460).

The **Protocol Settings** tab allows the definition of:

- The maximum time (in minutes) the server can wait to reply to the client before the POP connection is interrupted. The **Initial banner** field is for the sending of a welcome message when a connection request is made by the client, and the field **Command** is for the sending of a reply after a command from the client.
- An extra option for encoding the user login and password with a key known only to the client and server (the check box **Use APOP command**). This option reinforces security for client/server exchanges and prevents the hacking of passwords.

For the latter option, a key has to be defined on the server and declared on the client by completing the field **Secret key** which is only displayed when the option is selected.

Saving the configuration

The configuration thus defined must be saved as a file if you want to keep it and re-use it. To save the configuration, use one of the following methods:

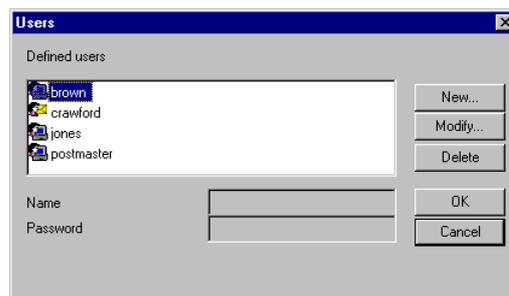
- Click the button **Save**  in the **Tun Sendmail** toolbar.
- Select the option **File** → **Save** from the main menu to save the current configuration.

Declaring users

If the PC is an e-mail server (i.e. it contains a SMTP or POP3 server channel), the administrator can create the mailboxes for the users of the server, if these mailboxes have not already been created with **Tun MAIL** for Windows 95 (which would be the case, for example, with a PC being used as a server, on which **Tun MAIL** for Windows 95 is not used). The administrator can also view the list of mailboxes created on the PC used as a client.

To view the list of users of the server or create new users, select one of the two server channels (SMTP or POP3). Then select the option **Users** in the context menu of the selected channel.

The following window is displayed:



The Postmaster mailbox for the administration of the e-mail server is created automatically.

To create a new mailbox, click the **New** button and enter the name of the mailbox and the associated password.

To modify a mailbox, first of all select it, then click the **Modify...** button and make the necessary modifications.

To delete a mailbox, first of all select it and then click the button **Delete**.

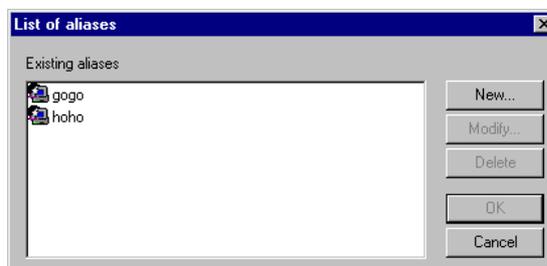
Click **OK** to validate the changes made to the mailbox list, otherwise click **Cancel** to cancel the changes.

Declaring aliases

In the same way as for users, the administrator can create aliases and attribute them to one or more users. The aliases may also be used to temporarily redirect messages to another address.

To view the list of aliases or create new aliases, first of all select the option **File→Aliases...** from the main menu.

The following window is displayed:



It shows the list of any existing aliases.

Creating aliases

To create a new alias, click the **New...** button.

The following window is displayed:



- Enter the name of the alias in the **New Alias** field.
- Select the user or alias name to link to the new alias from the list box in the lower part of the screen and click the **Add** button.
- Repeat the operation for all the user or alias names that you want to associate to this alias.

The list of recipients (user or alias) associated with this alias is displayed in the upper part of the screen.

To delete one of these recipients, select the recipient first and click the **Remove** button.

When the list of recipients for the new alias has been completed, click the **OK** button. Click **Cancel** to return to the previous window without validating the new alias.

Redirecting an address through an alias

To allow a user to receive his mail temporarily at another address, follow these steps:

- Display the alias creation window as described in the preceding section.
- Create a temporary user name: this name must be associated with the new address that the messages are to be redirected to. To do this, click the **New** button in the lower part of the window and enter the name in the field which is activated.
- Associate the user alias (in fact, the normal user name) with this temporary name: enter this alias in the field **New alias** in the upper part of the window, then click **Add**.

A temporary user is represented by the following icon:



Example:

The user "smith" whose usual address is "smith@company.com" wants to temporarily receive his mail at the address "jones@company.fr". To do this, he has to create a user name "jones" in the lower part of the alias creation window and assign the alias "smith" to it. In this way, the messages addressed to "smith" will in fact be sent to "jones" whose address is "jones@company.fr".

**Modifying an alias**

To modify an existing alias, first select it from the list of alias and then click the button **Modify**. The following window is displayed:



To delete one or more of the recipients of this alias, select them first in the upper part of the window and click the **Remove** button. To select several recipients at the same time, press the **Shift** key (for sequential names) or the **Ctrl** (for names out of sequence) while selecting.

To add one or more recipients to the alias name, do the same thing in the lower part of the window and click the button **Add**.

Click the button **OK** to validate your choice or the button **Cancel** to quit the modification of an alias window without saving the changes.

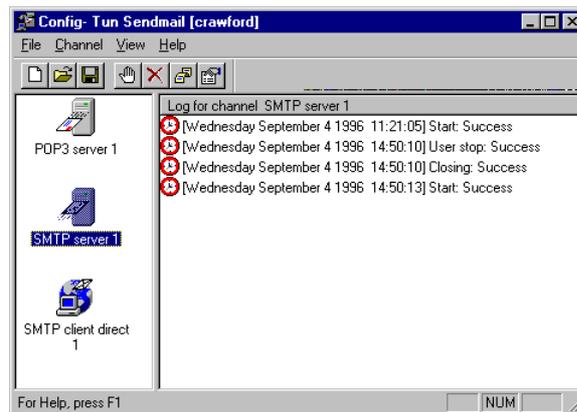
Deleting an alias

To delete one or more aliases, first of all select them in the alias list and click the **Delete** button. To select several aliases at once, press the **Shift** key (for sequential items) or the **Ctrl** key (for aliases out of sequence) while selecting.

Displaying logs

When all the necessary channels for mail communication have been defined, the application **Tun Sendmail** displays the log for each channel.

To view the log of a channel, click the icon of the relevant channel in the left-hand pane. The log contents are displayed in the right-hand pane.



To clear the log of a channel, select the option **Clear Log** in the context menu for the selected channel.

Start/Stop/Suspend/Resume transmission on a channel

In the case of a SMTP or POP3 channel, the administrator can:

- Start the channel: transmission is started for all send or receive requests.
- Stop the channel: all transmission is definitively stopped.
- Suspend transmission on the channel: the transmission is temporarily stopped.
- Resume transmission on the channel: transmission is resumed from the point at which it was previously interrupted.

For each of these operations, use one of the following methods:

- Select the option required (Start, Stop, Suspend, Resume) from the context menu for the selected channel.
- Select the option required (Start, Stop, Suspend, Resume) from the main menu option **Channel**.

Viewing the trace

The administrator can view the trace relating to the use of a channel with different degrees of detail. To view the trace for a channel, select the channel and use one of the following methods:

- Click the button **Trace**  in the **Tun Sendmail** toolbar.
- Select the option **Trace** from the context menu of the selected channel.
- Select the option **Channel** → **Trace** from the main menu.

Select the desired trace level.

Disabling a channel

Disabling a channel consists of preventing any transmission on the channel and using another instead. To disable a channel, select it first and use one of the following methods:

- Click the button **Properties**  in the **Tun Sendmail** toolbar.
- Select the option **Disabled** in the context menu for the selected channel.
- Select the option **Properties** from the context menu for the selected channel, then select the check box **Disabled** on the **General** tab.

Deleting a channel

It is only possible to manually delete a channel that has been created manually with **Tun Sendmail**

To delete definitively a channel that has been created with **Tun Sendmail**, select it first and then use one of the following methods:

- Click the **Delete** button  in the **Tun Sendmail** toolbar.
- Select the option **Delete** in the context menu for the selected channel.
- Select the option **Channel→Delete** from the main menu.

CHAPTER 22 - THE FAX SERVER

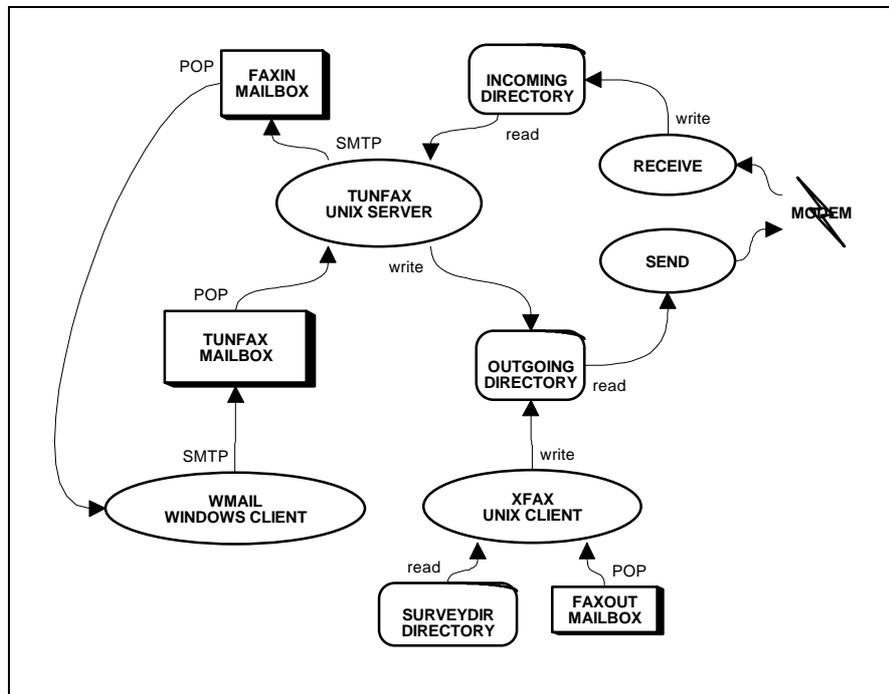
PRESENTATION OF THE FAX SERVER

General architecture

The fax server is a part of the following architecture:

- Two fax clients: the Windows e-mail application **Tun MAIL**, and the UNIX application XFAX.
- The UNIX fax server included with **Tun MAIL**.

The use of the **Tun MAIL** e-mail application is described in detail in the preceding chapters. This chapter describes the use of XFAX.



How the fax server and client applications work

Sending a fax with Tun MAIL

The **Tun MAIL** user sends a fax message to the mailbox of the fax server (the "tunfax" mailbox).

The fax server retrieves the message using the POP protocol, and writes the fax to the **outgoing** directory.

The program "SEND" reads the contents of the directory "outgoing" and transmits the fax via the modem.

If the fax is sent successfully, the fax server sends a message to the user's mailbox to confirm the transmission.

If there is a problem, the fax server sends a message to the administrator (for example, to a mailbox named **admin**).

Receiving a fax

The program "RECEIVE" receives a fax by modem and writes the contents to the **incoming** directory.

The fax server reads the fax, then sends it using the SMTP protocol to the distributor's mailbox (called **faxin**, for instance).

The distributor, using **Tun MAIL**, retrieves the faxes from **faxin** and distributes them to their respective addressees.

If there is a problem, the fax server sends a message to the administrator (to a mailbox named **admin**, for example).

Sending a fax by XFAX

XFAX is a 100% UNIX application which allows faxes comprised of ASCII files from UNIX or other systems to be sent.

The **XFAX** client reads files from the directory **surveydir** (the fax monitoring directory), or fetches messages from a mailbox (named **faxout**, for example).

The **XFAX** client writes these files to the **outgoing** directory.

The program SEND reads the contents of the directory **outgoing** and sends the fax via the modem.

CONFIGURING THE FAX SERVER

After installing all the files necessary for the correct functioning of the fax server, it has to be configured. The fax server is configured using the shell script **./bin/faxinstall**. Note that this executable is run automatically when the installation procedure **./etc/tunfax.install** is called. The configuration procedure informs the fax server of the different e-mail addresses it has to use as well as the number and type of modems connected. The shell script **./bin/faxinstall** displays the following screen:

```

TunFax Installation

1. General settings
2. Modem Configuration
3. Modem Database
4. Security

Your choice :

```

General settings

The first thing to do is to pass the general variables to the fax server by selecting option 1 (**General settings**). The following variables can then be assigned (to **./etc/tunfax.cfg**):

Tfax_mailbox

Since the fax server looks in a mailbox for the faxes to send, one has to be designated. The simplest way to do this is to create a specific user for the fax server (as was done earlier). The variable **TFAX_MAILBOX** must contain the user name chosen for the fax server (**tunfax** by default).

Tfax_m_pass

This variable should contain the user password associated with the fax server.

Tadmin

When the fax server encounters important errors, it needs to transmit them to an individual user by e-mail. This variable should contain the name of an existing user who the fax server can transmit this information to (the default is **root**).

Tmail_to

When the fax server receives a fax from outside, it is incapable of determining who it is addressed to. This variable should contain the name of an individual user (a secretary) to whom all the incoming faxes will be passed. This user will be responsible for reading the first page of the fax and transmitting it to the rightful owner using the redirection mechanism of the **Tun MAIL** electronic mail system.

Tmailer

To transmit the faxes received as well as the acknowledgment and error messages, the fax server needs to know the UNIX application which sends the messages. This variable should contain the name and the full path name of this application (the default is **/usr/bin/mail**).

Tfax_station_id

The fax server requires an identification to place as a heading at the top of the faxes it sends. This variable should contain this identifier. It may be the phone number of the fax modem or a string of characters identifying the corporation.

Tfax_send_max_tries

This variable contains the maximum number of attempts the fax server must make if there is a page transmission error. When this value is reached, the transmission of the fax will be suspended and postponed until later.

Tmax_error_try

This variable contains the maximum number of connection or transmission attempts the fax server should make before acknowledging failure. In the case of failure, the fax server will destroy the fax and warn the sender of the nature of the error encountered.

Tlanguage

This variable contains the language used to send warning messages to the users. For French, the variable should contain 'FRENCH'.

Modem Configuration

The second operation to carry out is to associate one or more modems to the fax server by selecting option 2 (**Modem Configuration**). This displays the following screen:

```

Currently configured modems :
None

Available options :
    1. Add a modem

Your choice :
```

As no modem has been declared yet, the only possible operation is to choose option **1** which allows the user to supply values for the following variables:

Tmodem_type

This variable contains the name of one of the modems proposed by the procedure. The list of proposed modems is contained in the file **/etc/modem.dba**

If the fax modem that you are using is not on the list, you may choose the **Hayes generic** model which most modems are compatible with. You can also add the characteristics of the modem you are using to the file **modem.dba** using option 3 (see below).

Tfax_modem_ttys

This variable contains the name of the asynchronous line of the UNIX machine to which the modem in question is associated. Generally, this is a string of characters such as **ttyxx**. Since the lines come from the directory **/dev**, there is no need to add the complete file path.

Tmodem_state

This variable indicates the state of the modem which may be one of the following values:

- **SEND** indicates that the modem is transmitting a fax only.
- **RECEIVE** indicates the modem is receiving a fax only.
- **BOTH** indicates the modem may at the same time send and receive faxes.

This variable makes it possible to restrict particular modems to one function only so that it can receive faxes all the time, even when there is a large number of faxes being sent out. If only one fax modem is installed on the server, it is better to allow it to both send and receive faxes with the value **BOTH**.

Tspeed

This variable defines the speed of the serial port, hence the transmission rate between the terminal and the modem in bits/second. Note that this speed must always be higher than the transmission rate between the two modems. If you enter 9600 bps, the connection will only operate at 7200 bps. The value entered should also be defined on the UNIX machine.

The recommended value is **19200** bps.

After the first modem has been declared, the following screen should appear:

```

! Id !           Device ! Mode ! Speed !
-----
!  1 !           Hayes generic ! BOTH ! 19200 !
-----
Available options :
    1. Add a modem
    2. Remove a modem
    3. Reconfigure a modem

Your choice :
```

It is possible to add other modems with option **1**.

Modems can be deleted from the list or reconfigured with options **2** et **3**.

Each time you wish to modify the configuration of the fax server, you will have to use the procedure **./bin/faxinstall** or the command **Configure** in **Faxview**. It is possible to modify the files "modem.cfg" et "tunfax.cfg" directly but this may lead to errors. It is advisable to use the configuration procedure.

Modem Database

It is also possible to modify the modem database using option **3** (Modem Database, in the TunFax Installation menu). This choice displays the following screen:

```

1. Protocol analyzer
2. List of Hayes commands
3. List of Hayes register
4. List of Fax commands
5. Add a modem
6. Remove a modem
7. Reconfigure a modem

Your choice :
```

Option 1 allows the user to follow the progress of a transmission or reception operation in accordance with the defined list of commands (in `modem.dba`). The commands are interpreted on the basis of the Hayes standard.

Options 2, 3 and 4 supply information on the Hayes standard and the different commands available.

Lastly, options 5, 6 et 7 allow you to modify the database by creating, removing or changing configurations.

Modifying the configuration

When the server is running, certain precautions have to be taken regarding the modification of the configuration files:

The general configuration (`tunfax.cfg`) is only read when the server is started. To have the server re-read the settings, use the Faxview command **Reconfigure**.

The modem configuration (`modem.cfg`) cannot be modified while the server is running. It is necessary to stop the server, modify the configuration and restart it; otherwise, there is a possible risk of errors which might interfere with the server's operation.

The modem database (`modem.dba`) may be modified at any time. The changes come into effect at the next transmission or reception of data.

Security

The last configuration option (number 4 in the Tunfax Installation window) concerns security. This choice displays the following question:

```
No authorized list created.
Do you want to create one ?
```

If the answer is positive ('yes'), the file `/etc/hosts` is created and the following menu is displayed:

```
*****
* Security *
*****

1/ What is it for?
2/ Visualize host list
3/ Copy /etc/hosts into the list
4/ Add a new host

Your choice :
```

This dialog box can be used to edit the authorizations list. If the list does not exist, anyone with access to the mailbox (`tunfax@mycorporation.com`, for example) may submit a fax. If the list exists, but is empty, only the system's users can submit a fax (N.B. only the users with a field *From*, without a domain name, are considered as users of the system: `me@mycorporation.com` would be automatically refused).

Non-authorized access provokes the transmission of a refusal message to the sender of the fax, with a copy of the message sent to the user defined in TADMIN.

Verification of the configuration

After installing and configuring the fax server, it is necessary to verify if the parameters it has been given are correct and coherent. To do this, execute the following command:

```
./bin/tunfax -test
```

The fax server will then read and analyze the parameters held in the files `modem.cfg` and `tunfax.cfg` and signal any errors detected. There is no point in trying to start the fax server if it has not displayed a message saying it has not detected any errors. If there are any errors, the configuration procedure must be started again (`./bin/faxinstall` or `configure` in Faxview) in order to resolve them. It is also possible to modify the

files **modem.cfg** and **tunfax.cfg** directly using a text editor (these files are documented in the reference guide in this manual).

THE /ETC/FAXALIASES FILE

During the installation of the fax server, the file **/etc/faxaliases** is automatically created. Its contents are as follows:

```
# (C) Copyright Esker 1995

# This file is used by tunfax (Esker's fax server) for multi-diffusion
  fax mailing.
# The syntax is :
# name :number1 :number2 :... :numberN

# When you compose a fax from TunMail, you must specify the name
  instead of a number...
#Changes are immediately taken into account by the server

Esker :78937428
```

This file corresponds to the mail file **/etc/alias**. The syntax is: Alias name: number1: number2: number3.

When the fax is sent, the alias name may then be substituted for the telephone number.

The changes take immediate effect (unlike **sendmail -bi**).

STARTING THE FAX SERVER

Simple start

To start the fax server, execute the following command:

```
./bin/tunfax
```

The fax server will then analyze the information contained in the files **modem.cfg** and **tunfax.cfg** and configure itself in accordance. If the fax server detects an error or an anomaly in the configuration files, it will stop immediately and display the detected errors on the screen. If the fax server does not detect any errors, it starts to run as a background process.

Trace Mode

When the fax server is first being used it may be helpful to run it in trace mode. To do this, run the application **tunfax** with the option **-debug** as in the example below:

```
./bin/tunfax -debug
```

All the transactions carried out by the fax server as well as any errors detected will be displayed on the screen that was used to run the server.

Automatic start

To avoid having to run the fax server each time the UNIX machine is started, proceed as follows: Add the following line to the file **/etc/inittab** in the UNIX server.

```
fax:2:once:/usr/tunfax/bin/tunfax > /dev/console 2>&1
```

Then execute the following command to have the UNIX server take account of the change:

```
telinit q
```

Verifying the fax server

There are two ways to check that the fax server is working correctly: send a message as if it was being sent from a Windows PC with **Tun MAIL**, or else send it as if it was being sent from a UNIX machine with XFAX.

To perform this check, execute one of the following commands from the UNIX machine:

- transmission by **Tun MAIL**:

```
cat sample | mail tunfax
```

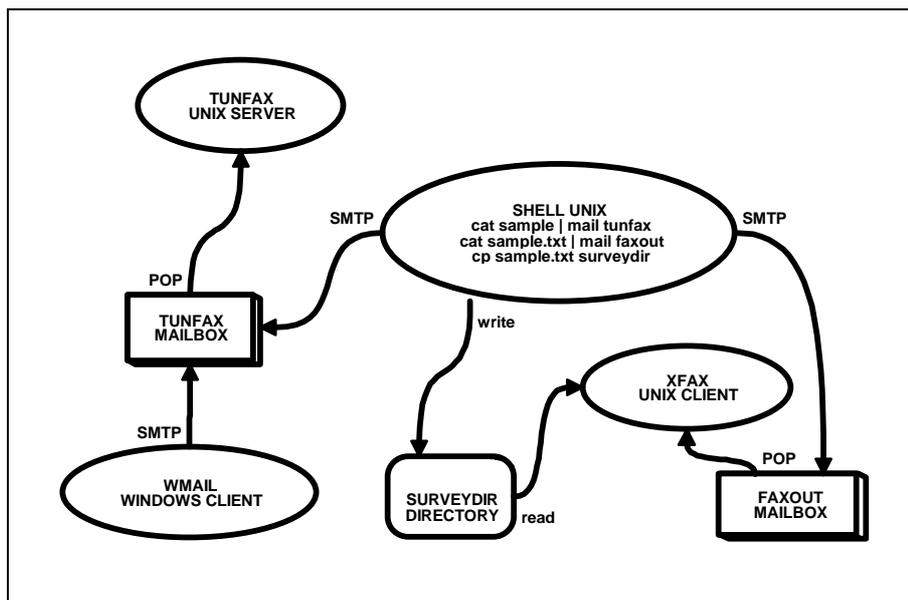
where:

- **sample** is an identical message to those transmitted by **Tun MAIL**
- The file **./sample** is transmitted to the fax server through the mailbox **tunfax** using the UNIX command mail.
- transmission from the mailbox using XFAX:

```
cat sample.txt | mail faxout
```

- transmission from the directory SURVEYDIR:

```
cp sample.txt surveydi r
```



Notes: It may take a few minutes for the fax to be sent.
To watch the progress of the fax server, run it in debug mode using the following command:

```
./bin/tunfax -debug
```

Sending a fax from a PC

Once the fax server seems to be working, you may send a fax using the **Tun MAIL** option **Message → Send As Fax...** Declare the recipient as a "Fax" type of recipient and enter his fax number in the corresponding field. Refer to the section dealing with the use of the e-mail application.

Receiving faxes

All the faxes received are transferred to the mailbox of the user declared in the variable `TMAIL_TO` in the file `tunfax.cfg` using the configuration procedure `tunfax.install`. This user will use the redirection mechanism proposed by the application `Tun MAIL` to send the faxes to the right addressee.

The user can be quickly changed from Faxview: enter `configure` to change the name (going through the configuration procedure), then `reconfigure` for the change to be taken into account by the server.

Administration of the fax server

The fax server can be supervised using the program `./bin/faxview`. This program is a small command interpreter which lets the user see the state of the fax server and make changes. On execution, `faxview` displays the prompt `fax>`. The following commands may then be used:

<code>exit</code>	Quit <code>faxview</code> .
<code>clearlog</code>	Clears the log file.
<code>help (or ?)</code>	Shows the list of commands available for <code>faxview</code> .
<code>list</code>	Lists all the faxes waiting for transmission.
<code>log nb_event</code>	Shows the <code>nb_event</code> most recent events that have occurred in the fax server. If there are no parameters, this command displays the whole log.
<code>modemstatus</code>	Displays the state of the modem.
<code>toppriority message_id</code>	Gives a fax priority transmission status over the other faxes in the waiting list.
<code>remove message_id</code>	Deletes a fax in the transmission waiting list.
<code>stat</code>	Displays a menu giving access to operational statistics.
<code>configure</code>	Runs the configuration procedure.
<code>reconfigure</code>	Makes the server take into account the changes made in <code>tunfax.cfg</code> .
<code>start</code>	Starts the fax server.
<code>stop</code>	Stops the fax server.
<code>!<code>command</code>></code>	Executes <code><command></code> from the shell.

XFAX

XFAX is a 100% UNIX application which uses the fax server to send faxes from ASCII files on the UNIX machine (or which come from another system via a mailbox).

Operating modes

Normal mode: files are processed individually, or else standard input is used.

Server mode: processing is carried out as a background task; the server scans a pre-defined directory and/or a mailbox.

Entry format

The entry format is ASCII. The extended table characters may be chosen according to one of two formats: standard or ISO-8859-1. Monochrome or colored bitmaps (16 or 256 colors) may also be inserted.

The ASCII text may be enriched using mark-ups to modify the form or the attributes of the text.

A language may be chosen (from five available languages) to define defaults for the headers. Consequently, by defining a single variable, a fax header can be set for the country in question. The choice of language can be modified for each file sent in server mode, allowing the headers to be adapted for different destination countries.

Transmission may be delayed by up to 24 hours from the time the command is given. This facility enables multiple transmissions to be effected at night, reducing disturbance for other users and also costs. This delay may be set as a default (all the files could be sent at 01.00 hours) or set for individual cases.

The entry mailbox (server mode) may be protected to prevent intruders submitting faxes to the system. This security measure is based on a list of hosts authorized access.

The various operations taking place may be monitored in server mode using a log file which registers the operations and any possible errors.

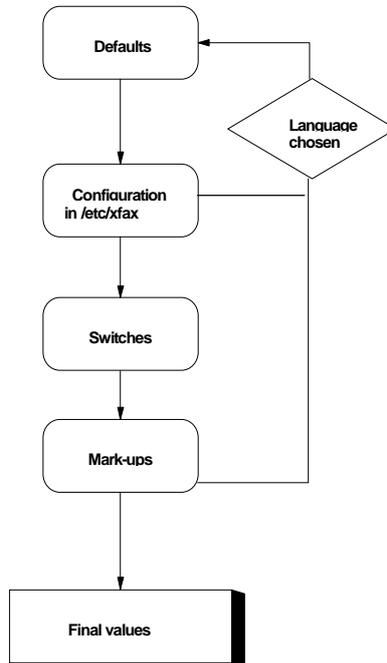
It is possible to run several implementations of the application in parallel. This allows processing to be accelerated if there are a lot of faxes to send (batch output, for example).

Care should be taken, however, to use different log files (using the switch *-L*), otherwise the outputs are jumbled! Also, the more processes there are running in parallel, the more frequent is the message "Cannot read from POP server" because of collisions between the different processes. This may also slow down the UNIX machine considerably.

The fields of which the fax header is composed, as well as the different parameters relating to the composition and sending of the fax, are contained in variables. These variables may be defined from different sources: program defaults which ensure coherent values even when nothing is entered; the configuration file */etc/xfax* which can be edited to change the defaults; switches entered when the program is started, making it possible to modify the default settings for all the faxes sent by the application (in server mode).

File mark-ups which can be used to change the defaults only in the file in which they are used.

Priorities for determining the values of the variables



Running xfax

Syntax

```
fax [<Switch>["<string>"] <switch>["<string>"] ... <switch>["<string>"]]
```

Switches

- N : Specifies a telephone number or an entry in the file *etc/faxaliases*.
- E : Imposes a file as the data source. By default, takes standard entry.
The switch is ignored in server mode.
- M : Changes mode to server mode: the application becomes a background process, scanning continually the directory specified in the variable *SURVEYDIR* (see below) and/or the mailbox defined by the variable *POPNAME*. The process can be stopped correctly by sending a type 15 signal (Software Termination Signal = CTRL-D), that is: *killprocess n°*.
In server mode, there is no screen display. Output is redirected to a log file indicated by the variable *LOGNAME*.
- F : Replaces the default "report receiver".
- P : Replaces the default "sender".
- R : Replaces the default "receiver" or addressee.
- D : Replaces the default "receiver's company".
- S : Replaces the default subject.
- C : Sends a carbon copy to the "dispatcher" defined in *tunfax*.
- T : Test mode: nothing is sent; carbon copy made
- L : Location of the log file (server mode). This switch is specially useful if the application is run in several processes in parallel.
- Z : Name of the input mailbox and the related password.
Syntax: *-Z "username ;password"*
- Y : Name of the monitoring directory (useful in parallel mode).
- X : Defines a different configuration file from *'etc/xfax.cfg'* (useful in parallel mode). The location of the file is important since the application loads the configuration file when it is encountered. Certain switches placed in front, such as -F or -S, are then ignored.

Configuration file (/etc/xfax.cfg)

VARIABLE	DEFINITION	DEFAULT
<i>TUNFAXDIR</i>	Server location.	Current working directory (cwd).
<i>LANGUAGE</i>	Language used for the default headers. Possible values: ENGLISH FRANCAIS ESPANOL ITALIANO DEUTSCH	ENGLISH.
<i>SECURITYLIST</i>	This variable contains the location of the file with the list of hosts authorized to submit faxes to be sent via the mailbox POPNAME. If the file does not exist, all faxes are accepted. If the file exists but is empty, no faxes will be accepted which come from different systems.	<i>TUNFAXDIR</i> /etc/hosts, i.e. the same file that is used by the fax server.
<i>SURVEYDIR</i>	Monitoring directory.	None.
<i>POPNAME</i>	User associated with the recovery mailbox.	None.
<i>POPPWD</i>	Password associated with the recovery mailbox.	None.
<i>LOGO</i>	Full file path of the bitmap containing the logo.	Nothing.
<i>LOGOPOSITION</i>	Position of the logo: 1 = Left 2 = Center 3 = Right	2 = Center .
<i>CHARSET</i>	Choice of extended character set: 1 = Standard 2 = ISO-8859-1	1 (Standard).
<i>BEGINTIME</i>	Time of the first attempt to send the fax (syntax: hh : m); postpones transmission by up to 24 hours.	ASAP.
<i>WORDCUT</i>	NO if the words are not to be cut at the ends of lines, otherwise, YES.	NO.
<i>LOGNAME</i>	Absolute path name of the log file used in server mode.	<i>TUNFAXDIR</i> tmp/ faxx.log.
<i>BANNER</i>	Fax banner (fax title at the top of the first page).	Depends on the language chosen.
<i>FROMUSERDEFAULT</i>	Receiver of transmission reports and "carbon copies". Can be canceled with the switch- F .	root.
<i>FROMPERSONDEFAULT</i>	Default name of sender. Can be canceled with the switch- P .	Nothing.
<i>FIRMNAME</i>	Name of the corporation sending the fax.	Nothing.
<i>TOPERSONDEFAULT</i>	Default receiver's name. Can be canceled with the switch- R .	Nothing.
<i>TOFIRMDEFAULT</i>	Name of the default receiver's corporation. Can be canceled with the switch- D .	Nothing.
<i>SUBJECTDEFAULT</i>	Default subject. Can be modified using the switch- S .	Nothing.
<i>FROMTEXT</i>	Fax origin field (name of sender).	Depends on the language chosen.
<i>FROMFIRMTEXT</i>	Fax origin field (name of corporation).	Depends on the language chosen.
<i>TOTEXT</i>	Addressee header (receiver).	Depends on the language chosen.
<i>TOFIRMTEXT</i>	Addressee header (receiver's company).	Depends on the language chosen.
<i>DATE</i>	Date field.	Depends on the language chosen.
<i>SUBJECTTEXT</i>	Subject field.	Depends on the language chosen.

Mark-ups**Dispatch tags**

Dispatch tags are used in the file itself to define different settings such as the telephone number, the name of the addressee, etc.

These tags take priority over all the other modifiers (configuration file, switches or default settings).

<NUMBER=Telephone number or faxalias**>**

Number to dial or entry in 'etc/faxaliases'.

<FROMUSER=*userx***>**

Receiver of transmission reports and "carbon copies".

<FROM=Sender**>**

Actual sender.

<TO=Receiver **>**

Actual addressee.

<TOFIRM=Receiver's company**>**

Destination corporation.

<HOUR=xx :xx**>**

Dispatch time, or "ASAP" immediate dispatch.

<SUBJECT=subject**>**

Subject.

<LANGUAGE=language**>**

Language used for the headers: this choice cancels for the current fax the header fields defined in "/etc/xfax.cfg".

<CHARSET=1 or 2**>**

Extended character set. Only applies to the characters in the current fax. A fax may therefore be based on both the standard set and the ISO-8859-1 set. This is useful notably in the case of a document which passes through a mailbox. The default settings are entered under UNIX (using, for example, the standard set) and the body of the fax message is sent using SMTP (e.g. the ISO 8859-1 set).

N.B.: These tags must be placed at the top of the file, one tag per line, without intervening blank lines.

Character and page formatting tags

These tags are used to format the text which is going to be sent.

</U> Start of underline

<\U> End of underline

**** Start of bold

<\B> End of bold

</I> Start of italics

<\I> End of italics

</H2> Start of double size

<\H2> End of double size

</H3> Start of triple size

<\H3> End of triple size

</IMG=*Full file path of image***</L>** [**</R>**]

Insertion of an image. The **</R>** tag indicates right alignment. The alignment. If nothing is indicated, the image is centered.

</L> indicates left

Note:

The images must be of the Windows Bitmap (BMP) type, uncompressed, with 2 (monochrome) or 16 and 256 colors. Image files in 16,000,000 colors are rejected. Files produced using PaintBrush, for example, are accepted.

Conversion from 16 colors (or even 256) to black and white produces more or less satisfying results depending on the type of image. It may sometimes be more appropriate to use special utilities (e.g. PaintShop Pro) to reduce the colors.

Since the fax format is 1728x1200 lines, a ratio of approximately 1.5 while the screen ratio is 1.33, there is an impression of vertical image "stretching". It might be worthwhile stretching the images horizontally with a utility before using them.

Double size is incompatible with triple size. The start of one automatically stops the other if it is being used.

The tag </H2> (or </H3>) provokes a carriage return if it is not at the beginning of the line, as does the tag <\H2> (or <\H3>).

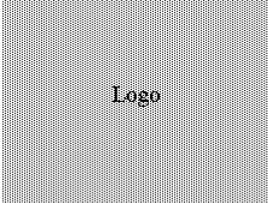
The number of characters per line is only 40 for double size and 25 for triple size.

Specifics of transmission by mail

If the program is running in server mode and is monitoring a mailbox, the handling of the retrieved mail includes the following features:

- the sender of the message automatically becomes the **receiver of the report** and the carbon copies (equivalent to <FROMUSER=xxx>);
- the subject of the message is replaced by the subject of the fax (equivalent to<SUBJECT=xxxx>);
- If the sender has included a subject in the form: *Text* <name@domain> (for example: Nicolas Quint <quint@esker.fr>), the string *Text* will be used in the field **Sender** (equivalent to <FROM=Mr xxx>).

Example showing the headers used

17 th December	Company	Page n°1
<div style="text-align: center; margin: 20px 0;">  </div> <div style="text-align: center; margin: 20px 0;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;">Fax title</div> </div>		
Date field:	17 November 1995 18h23	
Subject field:	Subject	
Sender field:	Sender	
Company:	Sender's company	
To:	Receiver	
Company:	Receiver's company	

PART FOUR
APPENDICES

APPENDIX A - REFERENCE GUIDE

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WNISS.EXE WNISS32.EXE	Network Information Service program
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WRSHD.EXE WRSHD32.EXE	Remote command server
WSNTP.EXE WSNTP32.EXE	Time applet; sets PC time to the selected host's time

WTAR.EXE WTAR32.EXE	Backup and restore on remote peripheral devices
WTFTP.EXE WTFTP32.EXE	File transfer using the trivial file transfer protocol
WUMOUNT.EXE WUMNT32.EXE	Drive unmounting utility
WVT320.EXE VT320_32.EXE	Terminal emulation in DEC VT320 mode over TELNET services
XFAX	UNIX application for sending faxes

FAXVIEW

FAXVIEW

Unix application for supervising the fax server

Syntax

faxview

Description

The program **faxview** is a small UNIX command interpreter which informs the administrator of the state of the fax server. On execution, **faxview** displays the prompt **fax>**. The following commands may then be used:

exit	Quit faxview .
clearlog	Clears the log file.
help (or ?)	Shows the list of commands available for faxview .
list	Lists all the faxes waiting for transmission.
log nb_event	Shows the nb_event most recent events that have occurred in the fax server. If there are no parameters, this command displays the whole log.
modemstatus	Displays the state of the modem.
toppriority message_id	Gives a fax priority transmission status over the other faxes in the waiting list.
remove message_id	Deletes a fax in the transmission waiting list.
stat	Displays a menu giving access to operational statistics.
configure	Runs the configuration procedure.
reconfigure	Makes the server take into account the changes made in tunfax.cfg .
start	Starts the fax server.
stop	Stops the fax server.
!<command>	Executes <command> from the shell.

See also

tunfax

MODEM.CFG

MODEM.CFG

File containing the list of fax modems installed on the UNIX server

Description

The file **modem.cfg** takes the following form:

```
[modem1]
TMODEM_TYPE=UsRobotics
TMODEM_STATE=BOTH
TFAX_MODEM_TTYS=tty0
TSPEED=19200
```

```
[modem2]
TMODEM_TYPE=UsRobotics
TMODEM_STATE=SEND
TFAX_MODEM_TTYS=tty1
TSPEED=19200
```

This file has as many sections as there are modems installed on the UNIX server. The sections have to be separated by a blank line. Each section must be preceded by the name of the modem in square brackets. The variables in each section are as follows:

TMODEM_TYPE

This variable contains the name of one of the modems in the list contained in the file **modem.dba**

TMODEM_STATE

This variable indicates the function of the modem. This may be one of the following values:

SEND	indicates that the modem is in transmission mode only
RECEIVE	indicates the modem is reception mode only
BOTH	indicates the modem may at the same time send and receive faxes

This variable makes it possible to restrict particular modems to one function only so as to be able to receive faxes all the time, even when there is a large number of faxes being sent out. If only one fax modem is installed on the server, it is preferable to allow it to both send and receive faxes with the value **BOTH**.

TFAX_MODEM_TTYS

This variable contains the name of the asynchronous line of the UNIX machine to which the modem in question is associated. Generally, this is a string of characters such as **tyxx**. It is preferable if no other UNIX process (for example, **getty**) uses the asynchronous line at the same time.

TSPEED

This variable defines the speed of the serial port, hence the transmission rate between the terminal and the modem in bits/second. Note that this speed must always be higher than the transmission rate between the two modems. If you enter 9600 bps, the connection will only operate at 7200 bps. The value entered should also be defined on the UNIX machine.

The recommended value is **19200** bps.

See also

modem.dba, tunfax.cfg

MODEM.DBA

MODEM.DBA

Database containing the description of the modems recognized by the fax server

Description

The file "**modem.dba**" contains the definition of the following variables:

```
[hayes]
TEXPECT_SEND="" ATQ0V1H0 OK \dATS0=0&K3 OK
TLISTEN=<< >> AT&K6 OK
TRESET="" ATZ OK
TEXTIT="" +++ "" ATH0 OK
TFAX_DIAL_PREFIX=ATD
TFAXREC_FLOW=FLOW_SOFT|FLOW_HARD
TFAXSEND_FLOW=FLOW_SOFT|FLOW_HARD
TFAX_SEND_IGNORE_CARRIER=0
TFAXSEND_NO_XON=0
TBOR=0
```

This file has as many sections as there are modems recognized by the fax server. The sections have to be separated by a blank line. Each section must be preceded by the name of the modem in square brackets. The sequence `\d` imposes a pause of 500 ms and the sequence `\r` a carriage return.

The variables in each section are as follows:

TEXPECT_SEND

This variable should contain all the character strings to be sent to the modem to initialize it before sending a fax. These character strings must be separated by values which have to be sent back by the modem. In the above example, no value is expected from the modem before sending it the string **ATQ0V1H0**. The acknowledgment of the modem in the form of the string **OK** is then expected before sending it the string `\dATS0=0&K3` and waiting again for the reply **OK**.

TLISTEN

This variable must contain all the strings of characters to be sent to the modem to initialize it before the reception of a fax. These character chains must be separated with values which must be returned by the modem. In the above example, no value is expected from the modem before it is sent the string **AT&K6**. The acknowledgment of the modem is then expected in the form of the string **OK**.

TRESET

This variable contains all the strings of characters to be sent to the modem to initialize it completely. These character strings must be separated by values which must be returned by the modem. In the above example, no value from the modem is expected before it is sent the string **ATZ**. The **OK** acknowledgment from the modem is then expected.

TEXTIT

This variable must contain all the character strings to be sent to the modem when an operation is terminated in which a connection has been made. TEXTIT is therefore a hangup and exit procedure.

TFAX_DIAL_PREFIX

This variable must contain the command which will make the modem dial a number. The chain of characters will be followed by the destination fax number.

TFAXREC_FLOW

Indicates the flow control mode which must be used on the line during reception. The value **FLOW_HARD** indicates that flow control based on RTS and CTS signals is to be used. **FLOW_SOFT** indicates that flow control based on the characters XON/XOFF is to be used. Both values may be combined using the character "|" (this is hardly ever used).

TFAXSEND_FLOW

Indicates the flow control mode which must be used on the line during transmission. The value **FLOW_HARD** indicates that flow control based on RTS and CTS signals is to be used. **FLOW_SOFT**

indicates that flow control based on the characters XON / XOFF is to be used. Both values may be combined using the character "|" (this is hardly ever used).

TFAX_SEND_IGNORE_CARRIER

Some fax modems lower the signal on the line as soon as a page has been transmitted. Assigning the value **1** to this variable enables the fax server to ignore this event during transmission.

TFAX_SEND_NO_XON

If this variable is assigned the value **1**, it informs the fax server that it has to wait for the arrival of the character **XON** before sending a page. This functioning mode is appropriate for some obsolete modems.

TBOR

This variable defines the direction in which the server loads the bytes on reception of a fax. Since some modems use the opposite direction (TBOR=1), this value should be changed if the fax is illegible.

See also

modem.cfg, tunfax.cfg

SENDMAIL

SENDMAIL

Communication channel management

Syntax

`sendmail`

Description

SENDMAIL.EXE controls the SMTP and POP3 communication channels in the e-mail application **Turn MAIL** for Windows 95.

TUNFAX

TUNFAX

Fax server

Syntax

```
tunfax [-test] [-debug]
```

Description

The **tunfax** program is the UNIX executable file corresponding to the **Tun MAIL** fax server. When run without parameters, the program changes to a background process (a daemon) and ensures the transmission and reception of faxes. It takes its working parameters (modem type, asynchronous line...) from the files **modem.cfg** and **tunfax.cfg** in the directory **etc** beneath the installation directory. It extracts the faxes to be sent from the UNIX mailbox which is associated with it. It passes the faxes received by the modems to a specific mailbox. In everyday use, the fax server must be running permanently on the UNIX system. It is a good idea to run it automatically from the file **etc/inittab**.

-test

The option **"-test"** enables the fax server to read and analyze the parameters found in the files **modem.cfg** and **tunfax.cfg**. It signals any errors detected and stops immediately. If there are errors, the configuration procedure has to be gone through again (**./etc/tunfax.install**) to resolve them. The files **modem.cfg** and **tunfax.cfg** may be modified directly using a text editor.

-debug

The option **-debug** indicates to the fax server that it has to display on the screen all the transactions carried out and any possible errors detected. This mode is specially useful when the fax server is first used.

See also

tunfax.cfg, modem.db, modem.cfg, faxview

TUNFAX.CFG

TUNFAX.CFG

File containing the general working parameters of the fax server

Description

The file tunfax.cfg contains the definition of the following variables:

```
TFAX_MAILBOX=tunfax
TFAX_M_PASS=tunfax
TADMIN=root
TMAIL_TO=root
TFAX_STATION_ID>HelloWorld&Co
TFAX_SEND_MAX_TRIES=5
TMAX_ERROR_TRY=5
TLANGUAGE=ENGLISH
```

The meaning of the different variables is as follows:

TFAX_MAILBOX

Since the fax server looks in a mailbox for the faxes to send, one has to be designated. The simplest way to do this is to create a specific user for the fax server (as was done earlier). The variable **TFAX_MAILBOX** must contain the user name chosen for the fax server (**tunfax** by default).

TFAX_M_PASS

This variable should contain the user password associated with the fax server.

TADMIN

When the fax server encounters important errors, it needs to transmit them to an individual user by e-mail. This variable should contain the name of an existing user who the fax server can transmit this information to (the default is **root**).

TMAIL_TO

When the fax server receives a fax from outside, it is incapable of determining who it is addressed to. This variable should contain the name of an individual user (a secretary) to whom all the incoming faxes will be passed. This user will be responsible for reading the first page of the fax and transmitting it to the rightful owner using the "redirection" mechanism of the **Tun MAIL** electronic mail system.

TFAX_STATION_ID

The fax server can identify itself to the remote station. The identifier will be displayed on the remote fax machine if it has a screen. This variable should contain this identifier. It may be the phone number of the fax modem or a string of characters identifying the corporation.

TFAX_SEND_MAX_TRIES

This variable contains the maximum number of attempts the fax server must make if there is a page transmission error. When this value is reached, the transmission of the fax will be suspended and postponed until later.

TMAX_ERROR_TRY

This variable contains the maximum number of connection or transmission attempts the fax server should make before acknowledging failure. In the case of failure, the fax server will destroy the fax and warn the sender of the nature of the error encountered.

TLANGUAGE

This variable contains the name of the language used for displaying warning messages to the user. For Spanish, this may be **SPANISH** or **ESPAÑOL**.

See also

tunfax, modem.cfg, modem.db

WADM2

WADM2

Tun NET Administrator

Syntax

wadm2	under Windows 3.x
wadm2_32	under Windows 95

Description

WADM2.EXE (WADM2_32.EXE) is the **Tun NET** administration program for the applications Tun NFS, Tun LPR, Tun FTPD, Tun NFSD, Tun LPD, Tun RSHD and Tun NIS.

WALL

WALL

Communication utility for short messages

Syntax

wall [-m] under Windows 3.x
wall32 [-m] under Windows 95

Description

WALL.EXE (WALL32.EXE) is a communication utility for short messages for users on the same network.

The command line option for WALL.EXE (WALL32.EXE) is:

-m maximized screen at startup

WALLD

WALLD

WALL agent

Syntax

walld [-h] [-q] for Windows 3.x
walld32 [-h] [-q] for Windows 95

Description

WALLD.EXE (WALLD32.EXE) is the *daemon* for receiving messages sent with the utility WALL.

The startup options for WALLD.EXE (WALLD32.EXE) are:

-h hides the program icon

-g displays the program icon if the program has been
run with the parameter **-h**.

WFTP

WFTP

File transfer using standard FTP services

Syntax

```
wftp [-c"config"] [-k"Niskey"] [-m"macro_file"]  
[-t"number"]  
under Windows 3.x
```

```
wftp32 [-c"config"] [-k"Niskey"] [-m"macro_file"]  
[-t"number"]  
under Windows 95
```

Description

WFTP.EXE (WFTP32.EXE) offers an intuitive graphical interface to the standard file transfer protocol (FTP) over TCP/IP.

The startup options are listed below:

-c"config"	configuration name
-k"Niskey"	launches the program from a NIS configuration
-m"macro_file"	name of macro file to be run (.mac)
-t"number"	tests a particular profile identified by its number

WFTPD

WFTPD

FTP server

Syntax

wftpd	under Windows 3.x
wftpd32	under Windows 95

Description

WFTPD.EXE (WFTPD32.EXE) enables a PC to act as a FTP server.

WLPD

WLPD

Sharing PC printers

Syntax

<code>wlpd</code>	under Windows 3.x
<code>wlpd32</code>	under Windows 95

Description

WLPD.EXE (WLPD32.EXE) allows a PC to share its printer with other machines on the network.

WMAIL2

WMAIL2

E-mail client application running on the TCP/IP standard services (SMTP, POP3) under Windows 3.x.

Syntax

```
wmail2 [-h"host_name"] [-u"user_name"] [-C] [-P] [-L]
```

Description

This interactive program provides a user-friendly, graphic interface for the TCP/IP e-mail standard service under Windows 3.x. The command line options for WMAIL2 are as follows:

-h"hostname"

Lets the user indicate the name or the IP address of the server on which the mailbox which messages will be taken from is situated. If the parameters -U, -P and -H are supplied, the application will only ask for the password before looking for new messages on the server.

-u"user_name"

Is the user name which will be used for the connection.

-C

- The option '-C' can be used on the command line to force the display of the connection dialog box before the main application window opens.

-P

-The option '-P' can be used to supply a password when **Tun MAIL** for Windows 3.x is executed. If '-P' is used alone, the password for the particular user is searched in the database.

If '-P' is followed by a password, the latter is then used during the connection procedure.

If the options '-U' and '-H' are also included (or if '-H' is not specified but the settings for the execution of **Tun MAIL** for Windows 3.x without connection to the mail host are), the connection is established directly without the connection dialog box being displayed.

-L

- The option '-L' can be used to force the display of the connection dialog box even if the option '-P' is specified (the "password" field is filled in but the dialog box is not validated, i.e. the 'OK' button has to be pressed).

WMAIL3

WMAIL3

E-mail client application running on the TCP/IP standard services (SMTP, POP3) under Windows 3.x.

Syntax

```
wmail3 [-?] [-k"Niskey"] [-y"Nistable"]  
[-u"user_name"] [-p"password"] [-c]
```

Description

This interactive program provides a user-friendly, graphic interface for the TCP/IP e-mail standard service under Windows 95. The command line options for WMAIL3 are as follows:

-?	help with the parameters
-k"Niskey"	NIS ressource key
-y"Nistable"	NIS table (Mail Addresses or Mail Address books)
-u"user_name"	name of the connecting user
-p"password"	password of the connecting users
-c	displaying of the connection dialog box before the main application window opens.

WMOUNT

WMOUNT

Drive mounting utility

Syntax

```
wmount [-c"name"] [-d"disk"] [-k"Niskey"] [-n"name"] [-p"password"] [-r"directory"] [-u"user"] [-v] [-w]
under Windows 3.x
```

```
wmnt32 [-c"name"] [-d"disk"] [-k"Niskey"] [-n"name"] [-p"password"] [-r"directory"] [-u"user"] [-v] [-w]
under Windows 95
```

Description

The program WMOUNT.EXE (WMNT32.EXE) is used for mounting network drives.

The command line options for WMOUNT.EXE (WMNT32.EXE) are:

-c"name"	configuration name for the mount (excludes the use of -w and -k , associated with -r)
-d"disk"	name of the local drive to mount (e.g. -dE)
-k"Niskey"	mounts a drive from a NIS resource (excludes the use of -r and -n)
-n"name"	mounts a drive from a saved NFS configuration (excludes the use of -r and -k)
-p"password"	password (associated with -u)
-r"directory"	mount directory (e.g. "\\pc01\temp" in Workgroups, "mechin:/temp" in NFS)
-u"user"	user name
-v	verbose mode
-w	Workgroup path type (associated with -r)

WNISS

WNISS

Network Information Service

Syntax

```
wmiss [-k"Niskey"] [-y14] [-y15] [-o"file"]
[-s"file"] [-v]
under Windows 3.x
```

```
wmiss32 [-k"Niskey"] [-y14] [-y15] [-o"file"]
[-s"file"] [-v]
under Windows 95
```

Description

The **Tun NET**work Information Service (NIS) allows the user to access and administer network resources. The program presents an efficient, user-friendly graphical interface between the PC and the UNIX **yp** tables.

The command line options for WNISS.EXE are:

-k"Niskey"	NIS resource (excludes the use of -o and -s , must be associated with -y)
-y14	the NIS resource is an application (excludes the use of -y15 , associated with -k)
-y15	the NIS resource is an object (excludes the use of -y14 , associated with -k)
-o"file"	object path (excludes the use of -s and -k)
-s"file"	path to a script or executable (excludes the use of -o and -k)
-v	verbose mode

WPING

WPING

Tests network connections

Syntax

wping [-h"hostname"][-k"Niskey"] under Windows 3.x
wping32 [-h"hostname"] [-k"Niskey"] under Windows 95

Description

WPING.EXE (WPING32.EXE) tests connections between a PC and a server by sending and receiving UDP or ICMP packets.

The command line option of WPING.EXE (WPING32.EXE) is:

-h"hostname"	lets the user indicate the name or the IP address of the server .
-k"Niskey"	starts Tun PING with a connection to a NIS-defined server

WRSH

WRSH

Command execution on a remote server using RSH or REXEC

Syntax

```
wrsh [-b] [-c] [-e"command"] [-f"file"] [-h"server"] [-k"Niskey"] [-m"macro_file"] [-t] [-u"user"] [-x]
under Windows 3.x
```

```
wrsh32 [-b] [-c] [-e"command"] [-f"file"]
[-h"server"] [-k"Niskey"] [-m"macro_file"] [-t]
[-u"user"] [-x]
under Windows 95
```

Description

WRSH.EXE (WRSH32.EXE) executes commands on a remote server and displays the results in a graphical window. This application is based on the standard RSH and EXEC services.

The startup options are as follows:

-b	Toolbox mode
-c	output placed on the Clipboard (cannot be used with -f)
-e"command"	command to be executed (can be used with -u , -h and possibly -x , -c , -f , and -t)
-f"file"	output written to file (cannot be used with -c)
-h"server"	server name (used with -u)
-k"Niskey"	for connection to a NIS server
-m"macro_file"	macro to be executed with its path (.mac) (can be used with -t , -c , and -f)
-t	exits wrsh after a command or a macro (can be used -m or -e)
-u"user"	user name (used with -h)
-x	"Rexec" protocol (the default is "RSH")

WRSHD

WRSHD

Remote Command Server

Syntax

wrshd under Windows 3.x
wrshd32 under Windows 95

Description

When the Remote Command Server (WRSHD.EXE (WRSHD32.EXE)) is run on a host PC, it opens two sockets of the port and rexec type. It then remains in listening mode for requests from an *authorized* RSH client.

Remote authorized users may then execute commands on a PC running the RSH daemon.

WSNTP

WSNTP

Sets the PC clock to the time on a UNIX host

Syntax

wsntp [-?] [-a"interval"] [-h] [-k"Niskey"] [-s] [-r"server"] [-t] [-v]
under Windows 3.x

wsntp32 [-?] [-a"interval"] [-h] [-k"Niskey"] [-s] [-r"server"] [-t] [-v]
under Windows 95

Description

WSNTP.EXE (WSNTP32.EXE) is used to make the time on the local PC correspond to that of the server chosen.

The startup options are listed below:

-?	help with the parameters
-a"interval"	time interval (in seconds) between each setting of the time
-h	invisible mode (can be used with -a and -r or -k , cannot be used with -s)
-k"Niskey"	setting of the time on the PC from a NIS server
-s	visible mode
-r"server"	name or IP address of the server
-t	"Time" protocol (the default is "SNTP")
-v	verbose mode

WTAR

WTAR

Backup and restore on remote peripheral devices

Syntax

```
wtar [-a"archive_name"] [-d"target_path"]
[-k"Niskey"][-m"macro-file"]
[-p"macro_file"] [-t]
under Windows 3.x
```

```
wtar32 [-a"archive_name"] [-d"target_path"]
[-k"Niskey"][-m"macro_file"] [-p"macro_file"]
[-t]
under Windows 95
```

Description

Based on the standard SHELL service, WTAR.EXE (WTAR32.EXE) is used to perform file backup and restore operations using remote resources.

The startup parameters are as follows:

a"archive_name"	name of the archive to be used
-d"target_path"	target path for the restored archive (can be used with -m)
-k"Niskey"	use a NIS archive at startup
-m"macro_file"	macro file to be executed (may be used with -d and -t)
-p"macro_file"	same as -m (obsolete, included for backward compatibility)
-t	terminates wtar after execution of a macro

WTFTP

WFTP

File transfer using standard TFTP services

Syntax

```
wtftp [-a] [-h] [-k"Niskey"] [-l"file"] [-m"server"] [-r"file"] [-s"directory"] [-v] [-w]
under Windows 3.x
```

```
wtftp32 [-a] [-h] [-k"Niskey"] [-l"file"]
[-m"server"] [-r"file"] [-s"directory"] [-v] [-w]
under Windows 95
```

Description

The implementation of the TFTP protocol is restricted to the transfer of one file at a time in synchronous mode. TFTP is often used for booting terminals simply and efficiently on sites with few terminals or for feeding system files to network devices.

The startup options for Tun TFTP are:

-a	visible mode
-h	hidden server mode
-k"Niskey"	file retrieval from a NIS resource (cannot be used with -r , -l and -m)
-l"file"	local file name (used with -m and -r)
-m"server"	remote server name (used with -l and -r)
-r"file"	remote file name (used with -l and -m)
-s"directory"	launches program in protected mode - restricts access to a particular directory (only in server mode)
-v	verbose mode
-w	writes from the local to the remote machine (the default is from the remote to the local machine, used with -m)

WVT320

WVT320

Terminal emulation in DEC VT320 mode over standard telnet services

Syntax

wvt320 [-h"server"] [-s"service"]
under Windows 3.x

vt320_32 [-h"server"] [-s"service"]
under Windows 95

Description

This program is designed to give **Tun NET** users access to basic terminal emulation functions, primarily for configuring UNIX hosts.

The startup options are as follows:

-h"server"	name or IP address of the server. Connection is established immediately on startup.
-s"service"	service number used to establish the TELNET connection (by default 23).

WUMOUNT

WUMOUNT

Driver unmounting utility

Syntax

wumount [-d"**disk**"] [-k"**Niskey**"] [-n"**name**"] [-v] [-x]
under Windows 3.x

wumnt32 [-d"**disk**"] [-k"**Niskey**"] [-n"**name**"] [-v] [-x]
under Windows 95

Description

The program WUMOUNT.EXE (WUMNT32.EXE) is used for uninstalling network drives.

The WUMOUNT.EXE (WUMNT32.EXE) command line options are:

-d"disk"	name of the local disk to uninstall (e.g. -dE)
-k"Niskey"	uninstalls a drive from a NIS resource (cannot be used with -n and -d)
-n"name"	uninstalls a drive from a saved NFS configuration (cannot be used with -k or -d)
-v	verbose mode
-x	deletes the NFS configuration (used with -n)

XFAX

XFAX

Unix application for sending faxes

Syntax

```
fax [<Switch>["<string>"] <switch>["<string>"] ...
    <switch>["<string>"] ]
```

Switches

- N : Specifies a telephone number or an entry in the file *etc/faxaliases*.
- E : Imposes a file as the data source. By default, takes standard entry.
The switch is ignored in server mode.
- M : Changes mode to server mode: the application becomes a background process, scanning continually the directory specified in the variable *SURVEYDIR* (see below) and/or the mailbox defined by the variable *POPNAME*. The process can be stopped correctly by sending a type 15 signal (Software Termination Signal = CTRL-D), that is: *killprocess n°*.
In server mode, there is no screen display. Output is redirected to a log file indicated by the variable *LOGNAME*.
- F : Replaces the default "report receiver".
- P : Replaces the default "sender".
- R : Replaces the default "addressee".
- D : Replaces the default "receiving company".
- S : Replaces the default subject.
- C : Sends a carbon copy to the "dispatcher" defined in *tunfax*.
- T : Test mode: nothing is sent; carbon copy made.
- L : Location of the log file (server mode). This switch is specially useful if the application is run in several processes in parallel.
- Z : Name of the input mailbox and the related password.
Syntax: *-Z "username ;password"*
- Y : Name of the monitoring directory (useful in parallel mode).
- X : Defines a different configuration file from *'etc/xfax.cfg'* (useful in parallel mode). The location of the file is important since the application loads the configuration file when it is encountered. Certain switches placed in front, such as -F or -S, are then ignored.

APPENDIX B - Tun FTP MACRO COMMANDS

INDEX

aget	File transfer from the host machine to the local machine in ASCII mode
append	Add the contents of a local file to the end of an existing file located on a remote host
aput	Transfer files from the micro computer to the host machine in ASCII mode
ascii	Change default transfer mode to ASCII mode
bget	Copy a file from the host machine towards the local machine in binary mode
binary	Change the default transfer mode to binary
bput	Transfer a file from the micro-computer to the host machine in binary mode
cd	Change the current directory on the host machine
ClearMessage	Erase all messages in the execution window
debug	Write a .LOG file with messages sent to FTP
delete	Delete a file from the server
Dos	Execute a DOS command
drive	Select a new current drive on the local machine
Echo	Display a character string in the execution window or in a specified message box
Exit	Unconditional exit from a macro
fed	Change the current directory on the server
get	Copy a file from the server to the local machine
Goto	Unconditional branch to label
HideMessage	Non-display of messages in the macro execution window
Host_text	Set the charset used by the server
IfConnected	Test whether or not the local machine is connected to a server
IfEqual	Test a variable or the most recent FTP response for equality
IfError	Test the results of the most recent FTP command
IfNoEqual	Test a variable or the most recent FTP response for inequality
IfNoError	Test the results of the most recent FTP command
Label	Define a label
lcd	Select new current directory on local machine
local	Set word size on the local machine
login	Establish connection with a server
logoff	Close the current connection
mdelete	Delete one or more files on the server
mget	Copy one or more files from the server to the local machine
mkdir	Create a directory on the server

mput	Copy one or more files from the local machine to the server
option	Set an option
Pause	Wait one second
parent put	Change directory to the parent directory on the server Copy a file from the local machine to the server
ReadVar	Enter a character string in a dialog box and assign it to a variable
ReadPasswd	Enter a character string in a dialog box and assign it to a variable without displaying the characters
rename	Change the name of a file on the server
rmdir	Remove a directory on the server
Set	Define and assign a variable
ShowMessage	Display the macro-execution window
stat	Check whether FTP responds to commands (testing for possible disconnection)
text_codes	Set the text formats of the local and remote file
Title	Assigns a title to the macro-execution window
verbose	Display or non-display of messages

AGET

AGET

Retrieves a file from the server to the PC in ASCII mode:

```
aget remote_file [local_file]
```

remote_file The name of the file to transfer.

local_file The name the file will take on the PC. If not given, the file will have the same name as it did on the server.

ASCII mode converts UNIX LF characters into CR/LF in DOS.

See also: aput, bput, bget, ascii, binary, text_codes

APPEND

APPEND

Adds the contents of a local file to end of a remote file:

```
append local_file remote_file
```

local_file The name of the local file to send. The current filter (ascii, binary, iso) will be applied.

remote_file The name of the file onto which the local file will be appended.

APUT

APUT

Copies a file from the PC to the server in ascii mode:

```
aput local_file [remote_file]
```

local_file The name of the file on the PC.

remote_file The name for the new file on the server. If not specified, the name will be the same as it was on the PC.

This transfer mode converts DOS CR/LF characters into LF in UNIX.

See also: aget, bput, bget, ascii, binary, text_codes

ASCII

ASCII

Sets the transfer mode to ASCII:

```
ascii
```

After this command has been executed, the commands **put** and **get** will transfer files in ASCII mode (with conversion of LF to CR/LF and vice versa).

See also: binary, text_codes

BGET

BGET

Copies a file from the server to the local PC in binary mode:

bget remote_file [local_file]

remote_file The name of the file to transfer from the server.

local_file The name for the new file on the PC. If not specified, the file name will be the same as it was on the server.

This transfer mode does not perform any LF to CR/LF conversion.

See also: aput, aget, bput, ascii, binary

BINARY

BINARY

Sets the transfer mode to BINARY:

binary

After this command has been executed, the commands put and get will transfer files in BINARY mode (without any conversion of LF to CR/LF or vice versa)

See also: ascii

BPUT

BPUT

Copies a file from the PC to the server in binary mode:

bput local_file [remote_file]

local_file The name of the file on the PC.

remote_file The name for the new file on the server. If not specified, the name will be the same as it was on the PC.

This transfer mode does not perform any CR/LF to LF conversion.

See also: aget, aput, bget, ascii, binary

CLEARMESSAGE

CLEARMESSAGE

Erases any messages present in the application execution window:

ClearMessage

See also: Echo

DEBUG

DEBUG

Displays messages sent by the application to the FTP server:

debug on|off

Messages may be sent to the execution window and/or to a .LOG file according to the parameters given to the verbose command.

See also: verbose

DELETE, MDELETE **DELETE**

To delete one or more remote files:

```
delete "remote_file"
mdelete file1 [file2....]
```

DOS **DOS**

Execute a DOS program during the FTP session:

```
Dos "pif_file"
```

This command may be used to run .PIF files that call .BAT, .COM, and .EXE programs.

DRIVE **DRIVE**

Changes the current local drive on the PC:

```
drive x:
```

ECHO **ECHO**

Displays a message in the execution window or in a specific dialog box:

```
Echo message [-b [title]]
```

This command is used to display messages on the screen while the program is running.

-b Sends the message to the dialog box specified as a character string after the option -b.

See also: ClearMessage

EXIT **EXIT**

Unconditional exit from the macro:

```
Exit
```

FCD, PARENT **FCD**

Changes the current directory on the remote machine (foreign change directory):

```
fcd directory
parent
```

The parent command is equivalent to "cd ..".

See also: lcd

GET, MGET **GET**

Copies one or more files from the server to the local PC:

```
get remote_file [local_file]
mget file1 [file....]
```

remote_file	The name of the file or files to transfer from the server.
local_file	The name for the new file or files on the PC. If not specified, the file names will be the same as they were on the server.

This transfer mode uses the current conversion filter (as given by the commands: `ascii` and `binary`).

With `mget`, the files will have the same names on the PC as they did on the server. It is also possible to use wildcard characters (* and ?).

See also: `put`, `ascii`, `binary`, `text_codes`

GOTO**GOTO**

Unconditional branch to a LABEL

Goto label

See also: `Label`

HIDE & SHOWMESSAGE**SHOWMESSAGE**

Display or non-display of messages during execution:

HideMessage

ShowMessage

These commands determine whether or not messages will be displayed while macros are running.

See also: `ClearMessage`, `Echo`

HOST_TEXT**HOST_TEXT**

Sets the charset used by the server:

host_text serveur_charset

serveur_charset is the character coding used on the remote machine. Here is the list of recognized formats:

Dos	Ebcdic	Cp1250
Windows	Cp437	Cp1251
Iso-8859	Cp850	Cp1252
Shift-Jis	Cp860	Cp1253
Euc	Cp861	Cp1254
Jis	Cp863	Cp1255
Unicode	Cp865	Cp1256

IFCONNECTED**IFCONNECTED**

Checks to see if the application is still attached to the server.

IfConnected label | exit

This command is used to test whether or not the FTP connection is still valid. If confirmed, the program can branch to an `exit` command or to a LABEL.

IFEQUAL, IFNOEQUAL

IFEQUAL, IFNOEQUAL

Tests the value of a variable or the most recent FTP command for equality or inequality:

```
IfEqual "value" [Variable] label | exit  
IfNoEqual "value" [Variable] label | exit
```

This command can be used as a conditional branch to a LABEL or an exit command.

Example:

```
mput *.bat  
IfEqual "226" OK  
Echo "Error" -b  
logoff  
exit  
  
label OK  
Echo "Successful"  
logoff  
exit
```

See also: IfError

IFERROR, IFNOERROR

IFERROR

Tests the results of the most recent FTP command:

```
IfError label | exit  
IfNoError label | exit
```

Example:

```
mput *.bat  
IfError ERROR  
Goto OK  
  
label ERROR  
Echo "Error" -b  
logoff  
exit  
  
label OK  
Echo "Successful"  
logoff  
exit
```

See also: IfEqual

LABEL **LABEL**

Defines a label:

Label name

Labels are used to branch from IfError, IfEqual, IfConnected, and Goto instructions.

See also: Goto

LCD **LCD**

Changes the current directory on the local PC (local change directory):

lcd directory

See also: fcd

LOCAL **LOCAL**

Defines word size on the PC:

local size

LOGIN **LOGIN**

Establishes a connection with an FTP server:

login hostname username passwd [service_no]

hostname	name of the FTP server
username	user's account name
passwd	password for the user's account
service_no	the default service number (21)

Any of above parameters may be replaced by variables in a macro procedure.

IfError may be used to test the results of a login command.

See also: logoff

LOGOFF **LOGOFF**

Closes a connection with an FTP server:

logoff

See also: login

MKDIR, RMDIR **MKDIR, RMDIR**

Create or remove a directory on the server:

mkdir directory
rmdir directory

PUT, MPUT

PUT, MPUT

Copies one or more files from the PC to the server:

```
put local_file remote_file
mput file1 [file2...]
```

local_file	The name of the file or files to transfer from the PC.
remote_file	The name for the new file or files on the server. If not specified, the file names will be the same as they were on the PC.

This transfer mode uses the current conversion filter (as given by the commands: ascii, binary and iso).

With **mput**, file names will be the same on the server as they were on the PC. It is also possible to use wildcard characters (* and ?).

See also: mget, get, aget, bput, bget, ascii, binary, text_codes

OPTION

OPTION

Changes local FTP options:

```
option casehack|ask|pathack on|off
```

casehack	when on, will convert default remote filenames to lower case
ask	when off, will not prompt user during mget and mput operations
pathhack	when on, will strip paths of default remote filenames

PAUSE

PAUSE

Waits for a period of time specified in seconds:

```
Pause nbsec
```

READPASSWD, READVAR

READPASSWD, READVAR

Reads a character string and assigns it to a variable:

```
ReadVar message variable [title] [-o|-y]
ReadPasswd message variable [title]
```

This command displays the text given by message in a dialog box, and waits for the user to enter information (which will be assigned to variable). The name of the variable must not be preceded by a \$.

title	to assign a title to the dialog box
-o	place OK and Cancel buttons in the dialog box. The title of the selected button will be stored in the variable.
-y	Only the message and the buttons Yes and No will be displayed. The title of the selected button will be stored in the variable.

ReadPasswd works the same as ReadVar, but the characters type by the user are not displayed.

See also: Echo

RENAME **RENAME**

Changes the name of a remote file:

```
rename remote_file new_file_name
```

SET **SET**

Creates and assigns a new variable:

```
Set variable "string"
```

This command is used to assign a character string to a variable. The name of the variable must not be preceded by a \$.

See also: ReadVar, ReadPasswd

STAT **STAT**

Shows server status:

```
stat
```

TEXT_CODES **TEXT_CODES**

Sets the text format for local and remote files:

```
text_codes local_file_format remote_file_format
```

See also: get, aget, put, aput, ascii, binary, host_text

TITLE **TITLE**

Assigns a title to an application execution window:

```
Title "string"
```

See also: HideMessage, ShowMessage

VERBOSE **VERBOSE**

Tells FTP whether or not to be talkative:

```
verbose on|off [filename] [-s|-f|-b]
```

- | | |
|-----------|--|
| on | displays FTP messages. |
| -s | messages will be displayed in the program execution window. |
| -f | messages will be sent to the file given by filename. If no file name is given, messages will be written to FTP.LOG by default. |
| -b | writes FTP messages both in the window and to a file. |

See also: debug

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