USER MANUAL

Tun TCP

TCP/IP Applications for DOS

Version 8.00

ESKER

MAKING OPEN SYSTEMS A REALITY

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PREFACE

Tun TCP for DOS is a set of programs and TSRs (Terminate and Stay Resident) which provide an extensive range of applications for the TCP/IP environment under MS-DOS (File transfer, Client NFS, Printer Sharing, Telnet...)

Tun TCP for MS-DOS is one of a range of complementary packages including Tun KERNEL, Tun EMUL, Tun MAIL and Tun SQL (see table below).

	WINDOWS	MS-DOS
Tun KERNEL	TCP/IP protocol stacks for Windows	TCP/IP protocol stacks for MS-DOS (TSR)
Tun TCP	TCP/IP applications for Windows (NFS, Printer Sharing, FTP, TELNET, TAR ...)	TCP/IP applications for MS-DOS (NFS, Printer Sharing, FTP, TELNET, TAR ...)
Tun EMUL	Comprehensive terminal emulator for Windows (asynchronous emulation, IBM3270, IBM5250)	Comprehensive terminal emulator for MS-DOS (asynchronous emulation)
Tun MAIL	Comprehensive TCP/IP E-Mail	N/A
Tun SQL	ODBC drivers for the Client-Server mode under TCP/IP (RDBMS Oracle, Informix, Sybase)	N/A

Tun TCP for MS-DOS is delivered as standard as part of the package Tun PLUS which incorporates all the above software.

Tun TCP for MS-DOS can be installed independently of Tun PLUS. However the Tun PLUS installation program can handle this automatically if requested.

When purchased by itself, Tun TCP for MS-DOS is delivered with ESKER's TCP/IP protocol stack, Tun KERNEL. This complementary package provides complete TCP/IP transport services for MS-DOS.

TABLE OF CONTENTS

CHAPTER 1 - INSTALLATION

PACKAGE CONTENTS

Please make sure your Tun TCP package contains the following:

- Tun TCP for DOS **user manual**
- 2 **program disks**: 3.5" (1.44 Kb) labeled **TCP/IP Applications for MS-DOS**
- User license
- Sealed envelope containing a serial number, activation key, and a key disk (if applicable)
- Miscellaneous technical bulletins (if applicable)
- 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 TCP.

HARDWARE REQUIREMENTS

To integrate a PC running Tun TCP into a TCP/IP network, you need the following equipment:

- a 100% PC AT 286 compatible micro-computer or higher (ISA, EISA, or MCA bus), with an 84, 101, or 102-key keyboard
- 640 Kb RAM minimum (4 Mb on Windows PCs)
- a Network Interface Card
- a hard disk with approximately 3 Mb free space
- DOS 3.30 or higher

PRODUCT INSTALLATION

If you have received Tun TCP as part of the Tun PLUS package you need not follow the instructions below as the installation procedure for this package will handle Tun TCP's installation.

To install Tun TCP on a PC's hard disk, follow these steps:

1. Load the mouse driver if you would like to be able to navigate within the installation menus with a mouse.

2. To install the Tun TCP programs and files, insert the floppy disk**TCP/IP for DOS 1/2** into a drive and type:

   ```
   A:\> INSTALL
   ```

3. Move through the fields using the mouse, arrow keys, or the <Tab> key. Press the space bar to place an "X" in the field for the appropriate drive.

```
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º  ÚÄ Product ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿                             º
º  ³                                              ³                             º
º  ³  [X]  Tun TCP for DOS (Applications)         ³                             º
º  ³  [X]  Tun KERNEL for DOS (TCP/IP Stack)      ³                             º
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```

- Choose the floppy drive containing the program
- If do not want to install the TCP/IP kernel (Tun KERNEL for MS-DOS), deselect the relevant check box.
- Change the destination directory if necessary
- Press the <Enter> key or click on <OK> to continue

4. Next, enter the product's serial number and activation key:

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Serialization ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                     º
º    Serial number  : 8110198765        [   Ok   ]    º
º                                                     º
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```

The serial number and activation key can be found in the sealed envelope of your Tun TCP package. Click on <OK> or press <Enter> to begin installing the program files.

5. The installation program will prompt you to insert the program floppy disks. Click on <OK> or press <Enter> after inserting each disk. During installation, a window will display the names and directories of the files as they are extracted and installed.

6. The installation is now complete; click on <OK> to return to the MS-DOS prompt.

TUN TCP CONFIGURATION

Tun TCP is delivered with a an interactive DOS program (**TUNTCP.EXE**) for configuring the product. After installing the program files, TUNTCP must be run in order to set up the various program features.

DIRECTORY STRUCTURE AND INSTALLED FILES

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

Tun TCP Supervisor program

TUNTCP.EXE	Tun TCP Supervisor Program
*.TLG	Language files used by the Supervisor
ACTIF.TCP	Current Supervisor settings
DTALOGO.DAT	Data file for graphical screen display

Printer sharing modules

VXPRINT.EXE	Virtual printer TSR
RXPRINT.EXE	Remote printer TSR
AUTOLPT.BAT	Batch file for starting printer sharing

NFS modules and utilities

TUNNFS.EXE	NFS Terminate-and-Stay-Resident (TSR)
MOUNT.EXE	For mounting NFS drives
UMOUNT.EXE	For unmounting NFS drives
NFSUTIL.EXE	NFS utility
EXPORTFS.EXE	NFS utility (exported filesystems)
SHOWMNT.EXE	NFS utility (mounted machines)
NFSCHMOD.EXE	NFS utility (UNIX **chmod**)
NFSLS.EXE	NFS utility (UNIX **ls -l**)
FILESYS.NFS	Filesystem configuration files
*.CNF	NFS configuration files
AUTONFS.BAT	Batch file for starting NFS

TCP/IP utilities

FTP.EXE	File transfer utility
TNVT52.EXE	VT 52 emulator
REXEC.EXE	Remote command (with password)
RSH.EXE	Remote command (without password)
RCOPY.EXE	File transfer
TAR.EXE	Backup utility
DEFAULT.TAR	Default configuration file for TAR.EXE

CHAPTER 2 - INTRODUCTION TO Tun TCP

WHAT IS TUN TCP?

Tun TCP for MS-DOS consists of a set of TCP/IP communications tools.
The package provides the following programs and utilities:

- TCP/IP **applications** for terminal emulation (**telnet**), remote command execution (**rsh**, **rexec**), and file transfer (**ftp**)

- **NFS** integration through the use of resident programs and utilities

- PC/UNIX **Printer sharing** and redirection provided by resident MS-DOS programs

- A utility for performing **backups** on remote peripherals

- A menu-driven administration program for managing all components of Tun TCP.

TCP/IP CONFIGURATION ON A UNIX HOST

In order for the Tun TCP tools (RSH, TAR, Print Redirection using RSH) using the TCP/IP stack to function correctly, certain configuration files on the intended UNIX hosts need to be modified.

> **Note**: These modifications are not necessary if you intend to use only the emulation.

Declaring the PC

The PC running Tun TCP 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).

2. In the HOME directory of the User whose login name will be used for **RSH** connections, create or modify the file **.rhosts**, 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
```

For 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
```

1. Add the following line to the file**/etc/hosts** on each server that this PC will access:

```
pcalphonse      124.131.120.99
```

2. Check to make sure that the user**alphonse** is declared on each UNIX host.

3. 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 TCP SUPERVISOR

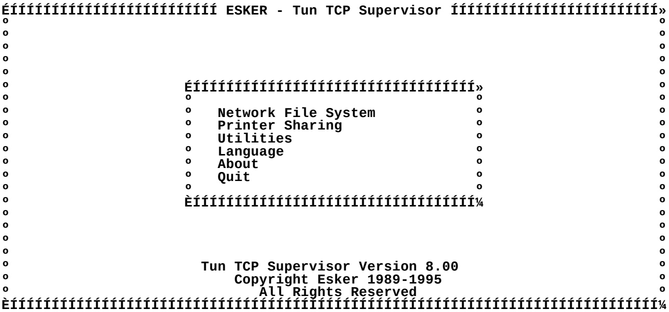
Tun TCP for DOS is configured and maintained through the**Supervisor** program, TUNTCP.EXE. By means of different menus, users are able to set the parameters for their network interface card, TCP/IP kernel, and resource sharing of printers and Network File Systems.

The Supervisor provides a front end for configuring the batch files used to load the resident programs into DOS; the batch files may then be run automatically from the AUTOEXEC.BAT file.

To use the TCP/IP Supervisor program, type the following command at the DOS prompt:

```
C:\TUN\TCPD >TUNTCP
```

The following figure shows the main menu of the Tun TCP Supervisor.



```
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º                     º   Network File System            º                     º
º                     º   Printer Sharing                º                     º
º                     º   Utilities                      º                     º
º                     º   Language                       º                     º
º                     º   About                          º                     º
º                     º   Quit                           º                     º
º                     º                                  º                     º
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º                       Tun TCP Supervisor Version 8.00                        º
º                           Copyright Esker 1989-1995                          º
º                              All Rights Reserved                             º
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```

Most options in the main menu contain a series of sub-menus used to configure all the elements of TCP/IP network resource sharing.

Note: Navigation through all Tun TCP menus may be performed using a mouse or other pointing device, as long as the appropriate driver has been loaded before entering the program.

Summary of the Main Menu options

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

Network File System

Defines the parameters relating to the resident NFS program. This option is used to define, mount, unmount, and monitor virtual disks on remote NFS file systems; it also generates the file **AUTONFS.BAT** which is used to load the NFS TSR program.

Printer Sharing

This option is used to define printer sharing for both**local** DOS printers and **remote** printers attached to UNIX hosts. The redirectors may be loaded on a DOS PC by running a file called**AUTOLPT.BAT**.

ARPA Utilities

ARPA Utilities may be used for terminal emulation on remote servers, as well as file transfer between PCs and remote hosts.

Language

Allows users to select the language for Tun TCP menus and messages.

Exit

Exit is used to quit the Supervisor program.

CHAPTER 3 - USING NFS

WHAT IS NFS?

Independent of operating systems, Network File System (NFS) is a transparent mechanism that allows remote directories to be**mounted** over a network, and treated by local machines as ordinary directories.

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 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 acceptable response times, 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 TCP.

DOS file names may be represented under UNIX without problems. However, some UNIX file names cannot be used under DOS. To resolve this problem, the PC-NFS standard specifies the following:

1. UNIX file names not entirely composed of lower-case letters, or whose length is greater than eight characters (not counting the suffix) are considered as **incompatible**.

2. 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.

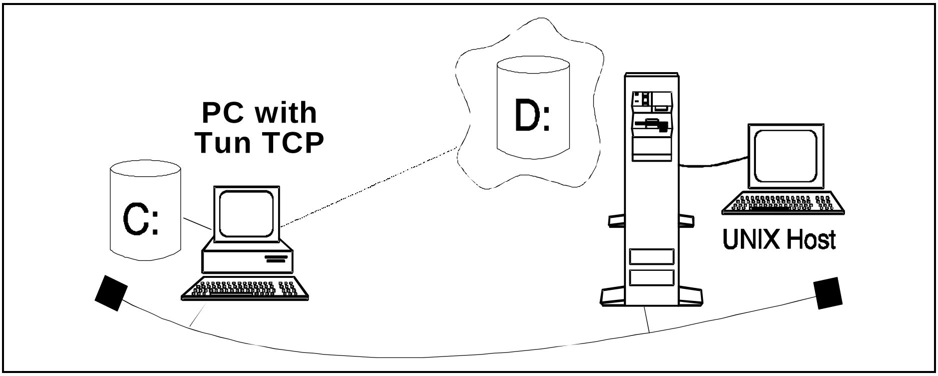
3. The NFS client memorizes the association of the incompatible UNIX file names with translated names in a circular queue called the **name map cache**.

4. The numerical value used by the NFS client to generate a DOS file name actually refers to its index position in the circular queue.

TUN TCP AND NFS

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

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



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

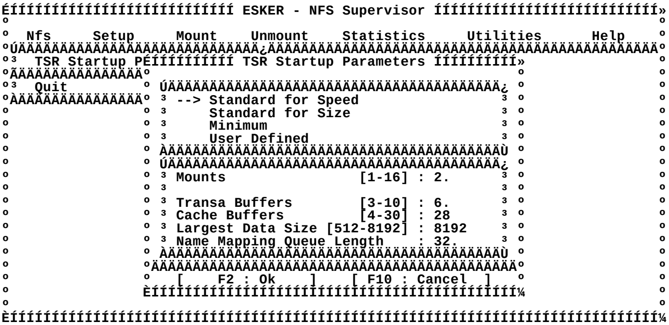
The Tun TCP Supervisor program provides a clear and understandable view of the NFS protocol.

The NFS portion of Tun TCP is contained in a DOS Terminate-and-Stay-Resident program (TSR) of about 26 Kb, and a complementary set of TCP/IP utilities. Loading the NFS TSR has no effect on local DOS disks. Remote filesystems must then be mounted in order to be used as virtual NFS drives.

CONFIGURING THE NFS RESIDENT

By selecting **NFS** from the main menu, the options for configuring all aspects of NFS are displayed.

The first thing to do is to configure the NFS Terminate-and-Stay-Resident program (TSR) with **TSR Startup Parameters**. The figure below shows the screen that is displayed:



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
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º³  TSR Startup PÉÍÍÍÍÍÍÍÍÍÍ TSR Startup Parameters ÍÍÍÍÍÍÍÍÍÍ»                º
ºÃÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄº                                            º                º
º³  Quit         º ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ º                º
ºÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄº ³ --> Standard for Speed                 ³ º                º
º                º ³     Standard for Size                  ³ º                º
º                º ³     Minimum                            ³ º                º
º                º ³     User Defined                       ³ º                º
º                º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º                º
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º                º ³ Mounts                [1-16] : 2.      ³ º                º
º                º ³                                        ³ º                º
º                º ³ Transa Buffers        [3-10] : 6.      ³ º                º
º                º ³ Cache Buffers         [4-30] : 28      ³ º                º
º                º ³ Largest Data Size [512-8192] : 8192    ³ º                º
º                º ³ Name Mapping Queue Length    : 32.     ³ º                º
º                º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º                º
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º                º   [    F2 : Ok    ]    [ F10 : Cancel  ]   º                º
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```

The first field in the window shown in the figure contains several options for setting the size of the NFS TSR program as well as the number of NFS volumes that may be mounted simultaneously.

Option	Definition
Standard for Size	For mounting up to two simultaneous NFS drives, using an 8 Kb write buffer (fastest)
Standard for Speed	For mounting up to two simultaneous NFS drives, using a 1 Kb write buffer
Minimum	For mounting 1 NFS drive using a 1 kb write buffer
User-defined	Parameters are determined by the user

For **Minimum** and **Standard** configurations, the buffer and data parameters are optimized automatically.

For **User Defined** configurations, buffers and data size need to be set manually.

Mounts

Sets the maximum number of filesystems that may be mounted simultaneously. The default value is 2. The higher the value, the more memory used by TUNNFS. If you increase the value for this parameter, you must increase the other parameters in the same proportions.

Transaction Buffers

Determines the number of transaction buffers used by the TSR. These buffers are used to record details of data transactions (RPC, XDR).

The default value is 6.

Cache Buffers

Specifies the number of cache buffers used by the TSR. These buffers are used to store information, thereby reducing the amount of network requests. Cache buffers store the context of open files, remote directory contents, and incompatible file name associations.

The default value is 28.

Largest Data Size

Specifies the size of the *large buffers*. This size depends on the type of network being used. In general, the value needs to be increased for Token Ring networks.

The default value is 8192.

Name Mapping Queue Length

Changes the length of the **name map queue**, the internal table containing the associated file names of incompatible UNIX and DOS files.

The default queue length is 32 names, which is usually sufficient.

Saving changes

To save your changes at any time, click on <OK> with the mouse, or press <F2>. To cancel, click on <Cancel>, or press <F10>. In either case, you will be returned to the previous menu.

If you choose to save your changes, the following message will be displayed:

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Information ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                           º
º          The file AUTONFS.BAT has been modified.          º
º        For these changes to be taken into account         º
º             the procedure must be restarted.              º
º                                                           º
º                                                           º
º                                                           º
º                                                           º
º                       [    Ok    ]                        º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
```

All changes are saved in the file AUTONFS.BAT

CONFIGURING AN NFS SERVER

In order to be able to use NFS from a PC, it is first necessary to configure the UNIX host machine (if this has not already been done).

UNIX configuration is performed by following these steps:

1. 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.

2. 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.

3. Add any optional parameters to the directories listed in **/etc/exports** to limit access rights.

4. 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**.

In order to be able 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.

LOADING THE NFS TSR

As described earlier, configuration procedures in the Tun NFS Supervisor modify the file **AUTONFS.BAT**.

AUTONFS.BAT is a batch file that is used to automatically load the NFS resident program; it can be placed in the AUTOEXEC.BAT file, or run directly from the DOS prompt. AUTONFS.BAT must be run to obtain access to most of the functions in the NFS Supervisor program.

Note: The NFS TSR may be unloaded from memory by executing AUTONFS.BAT with the option "stop" (**AUTONFS stop**). The TCP/IP kernel must be loaded before the NFS TSR.

Here is a sample AUTONFS.BAT file:

```
@echo off
if "%1" = ="" goto start
if "%1" = ="START" goto start
if "%1" = ="start" goto start
if "%1" = ="STOP" goto stop
if "%1" = ="stop" goto stop
:error
echo "Usage : %0 START|STOP
goto end
:start
C:\TUN\TCPD\TUNNFS
goto end
:stop
C:\TUN\TCPD\NFSUTIL -u
:end
```

TESTING NFS

The **Utilities** option in the NFS Supervisor menu provides access to a utility for testing NFS connections.

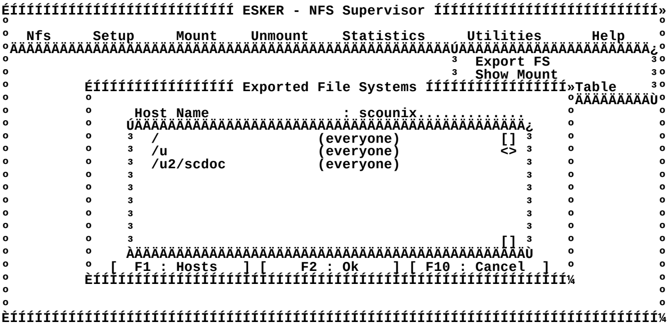
> **Note**: The options in this menu can only function if the resident TCP/IP and NFS layers have been loaded.

Export FS

Use **Export FS** to view the filesystems that have been exported (made public) by an NFS server. In DOS, the program EXPORTFS.EXE serves the same purpose as this menu option.

After selecting **Export FS**, enter the IP address or the name of the host you wish to query (as entered in the Host table) into the**Host Name** field in the window on your screen. You may press <F1> to obtain the list of hosts in the Host table.

After entering the name of the host, press <Enter>, <F2>, or click on <OK> to send the query.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿º
º                                                     ³  Export FS            ³º
º                                                     ³  Show Mount           ³º
º         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Exported File Systems ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»Table    ³º
º         º                                                         ºÄÄÄÄÄÄÄÄÄÙº
º         º     Host Name                : scounix.............     º          º
º         º    ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿    º          º
º         º    ³  /                   (everyone)            [] ³    º          º
º         º    ³  /u                  (everyone)            <> ³    º          º
º         º    ³  /u2/scdoc           (everyone)               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                            [] ³    º          º
º         º    ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ    º          º
º         º  [  F1 : Hosts   ] [    F2 : Ok    ] [ F10 : Cancel  ]  º          º
º         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼          º
º                                                                              º
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```

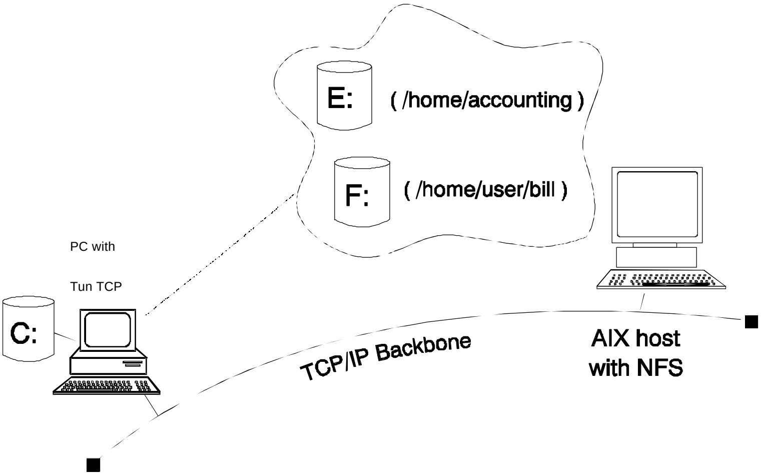
At this point, if you receive the error message: **Port Unreachable (Portmapper or Mount daemon)**", NFS is probably not properly mounted on the remote filesystem. Check with the host system administrator to make sure that NFS is running and that filesystems have been properly exported.

If the operation was successful, a list of the exported filesystems is displayed on the screen, as shown in the above figure.

When this procedure works correctly, it implies that NFS was correctly installed on the PC as well as on the UNIX server.

DEFINING NFS DRIVES

The **Setup** option in the NFS menu is used to define the remote filesystems which are to be mounted as virtual DOS drives.

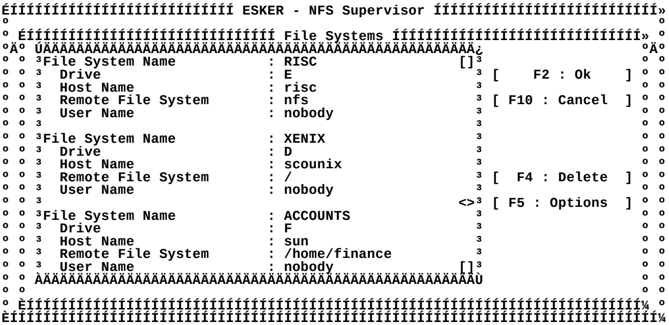


Under **Setup** in the NFS Supervisor, there are two ways to define remote filesystems as virtual DOS drives, as described in the table below:

Menu Option	Function	Related configuration file
Filesystem	Creates a list of remote filesystems that may be mounted individually with the default mount parameters.	FILESYS.NFS
Configurations	Defines configuration files containing one or more filesystems. Entire configurations may be mounted with one command; offers the possibility of changing the default mount parameters.	*.CNF

SETTING UP FILESYSTEMS

Selecting the **Filesystems** option from the **Setup** menu opens the window shown below.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ File Systems ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ» º
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º º ³File System Name           : RISC                 []³                   º º
º º ³  Drive                    : E                      ³ [    F2 : Ok    ] º º
º º ³  Host Name                : risc                   ³                   º º
º º ³  Remote File System       : nfs                    ³ [ F10 : Cancel  ] º º
º º ³  User Name                : nobody                 ³                   º º
º º ³                                                    ³                   º º
º º ³File System Name           : XENIX                  ³                   º º
º º ³  Drive                    : D                      ³                   º º
º º ³  Host Name                : scounix                ³                   º º
º º ³  Remote File System       : /                      ³ [  F4 : Delete  ] º º
º º ³  User Name                : nobody                 ³                   º º
º º ³                                                  <>³ [ F5 : Options  ] º º
º º ³File System Name           : ACCOUNTS               ³                   º º
º º ³  Drive                    : F                      ³                   º º
º º ³  Host Name                : sun                    ³                   º º
º º ³  Remote File System       : /home/finance          ³                   º º
º º ³  User Name                : nobody               []³                   º º
º º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                   º º
º º                                                                          º º
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```

This window displays the parameters for filesystems that have already been defined. Filesystems may be added and removed using this window.

A remote filesystem definition associates the following parameters to a single name:

Filesystem Name

Like the DOS "volume" label, this field determines the drive name that will be displayed when using commands like **dir**. It is for display purposes only, and may be any name the user chooses.

Drive

Assigns the drive letter used by DOS 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 **config.sys**:

```
lastdrive =M:
```

Host Name

The host name field contains the alias name or IP address of the UNIX host containing the NFS filesystem. When the cursor is in this field, click on <Hosts> or press <F1> to display the list of hosts defined in the Host table. Select an available host by clicking with the mouse or pressing <Enter>.

Remote File System

This field indicates the absolute directory path of the remote filesystem to mount. NFS must be exported (in **/etc/exports**) by the server for the specified directory to be mounted. Use the **Utilities ⇨ Export FS** option to view the available NFS filesystems.

The directory you assign will be considered as a **root** under DOS.

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 a strict minimum.

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 log in, because NFS does not recognize the user **root** (considered as "nobody", if accepted at all).

Saving your changes

When you have finished setting up filesystems, click on <OK> or press <F2> to record your changes in the file **FILESYS.NFS.**

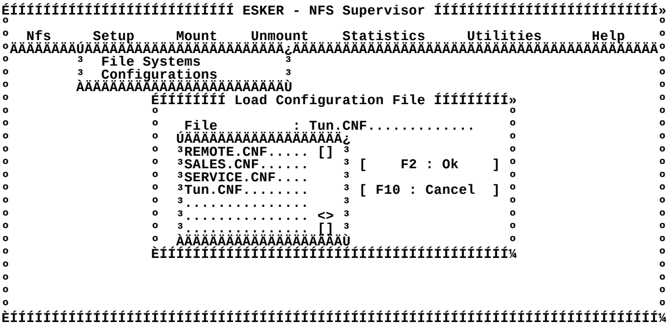
If you would like to delete an entry, click on <Delete> or press the <F4> key. The current entry will be removed from the list.

If you would like to return to the previous menu without saving any changes, click on <Cancel> or press the <F10> key.

DEFINING CONFIGURATIONS

The **Configuration** option places several filesystem definitions in a single file (with a **.CNF** extension) so they can be mounted together with one command. With this option, it is possible to change the default mount parameters.

The figure below shows the window which is used to create or select a configuration.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
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º        ³  File Systems          ³                                            º
º        ³  Configurations        ³                                            º
º        ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                                            º
º                 ÉÍÍÍÍÍÍÍÍ Load Configuration File ÍÍÍÍÍÍÍÍÍ»                 º
º                 º                                          º                 º
º                 º   File         : Tun.CNF.............    º                 º
º                 º  ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿                   º                 º
º                 º  ³REMOTE.CNF..... [] ³                   º                 º
º                 º  ³SALES.CNF......    ³ [    F2 : Ok    ] º                 º
º                 º  ³SERVICE.CNF....    ³                   º                 º
º                 º  ³Tun.CNF........    ³ [ F10 : Cancel  ] º                 º
º                 º  ³...............    ³                   º                 º
º                 º  ³............... <> ³                   º                 º
º                 º  ³............... [] ³                   º                 º
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```
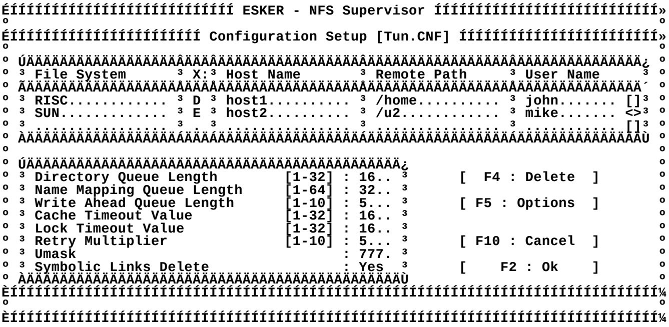

To create a new file, type the name in the**File** field; to select an existing file, scroll through the list using the <Up> and <Down> arrows or the mouse.

Once you have chosen a configuration file, click on <Ok> or press <F2> to enter into the setup window.

The figure below lists the filesystems and hosts contained in a configuration file called **Tun.CNF**.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Configuration Setup [Tun.CNF] ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º ³ File System      ³ X:³ Host Name       ³ Remote Path     ³ User Name     ³ º
º ÃÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÅÄÄÄÅÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÅÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÅÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ´ º
º ³ RISC............ ³ D ³ host1.......... ³ /home.......... ³ john....... []³ º
º ³ SUN............. ³ E ³ host2.......... ³ /u2............ ³ mike....... <>³ º
º ³ ................ ³   ³ ............... ³ ............... ³ ........... []³ º
º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º
º                                                                              º
º ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿                              º
º ³ Directory Queue Length        [1-32] : 16.. ³      [  F4 : Delete  ]       º
º ³ Name Mapping Queue Length     [1-64] : 32.. ³                              º
º ³ Write Ahead Queue Length      [1-10] : 5... ³      [ F5 : Options  ]       º
º ³ Cache Timeout Value           [1-32] : 16.. ³                              º
º ³ Lock Timeout Value            [1-32] : 16.. ³                              º
º ³ Retry Multiplier              [1-10] : 5... ³      [ F10 : Cancel  ]       º
º ³ Umask                                : 777. ³                              º
º ³ Symbolic Links Delete                : Yes  ³      [    F2 : Ok    ]       º
º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                              º
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```

The fields in a configuration file contain the same information as those for a single filesystem: **File System Name**, **Drive** (in the **X:** column), **Host Name**, **Remote File System**, and **User Name**.

In the above example, two virtual drives are configured:

1. Drive **F:**, with a label of **SUN**, on the UNIX host **sun**, using the root (**/home**) filesystem, with a user name of**root**.

2. Drive **G:**, with a label of**ACCOUNTS**, on the UNIX host**risc**, using the **/home/finance** filesystem; the user will be prompted to enter both the account name and password (because a **?**" was entered in the **User Name** field).

A number of parameters may be customized for any given configuration. It is recommended, however, to leave the values at their default (Auto) settings when first starting.

Directory Queue Length

Changes the value of the **Directory Queue Length**. In order to reduce the amount of network requests, TUNNFS stores the contents of remote directories during a session. If you access a large number of different directories or files (i.e. using the **TREE /f** command), it may be useful to increase this value.

The default value is eight (8) blocks.

Name Mapping Queue Length

Changes the length of the**Name Map Queue**, the internal table containing the associated file names of incompatible UNIX and DOS files.

The default queue length is 32 names, which is usually sufficient.

Write Ahead Queue Length

Changes the length of the **Write Ahead Queue**, a circular queue used to prepare packets ahead of time to send to the server.

The default write ahead queue length is 3.

Cache Timeout Value

Changes the value of the**Cache Timeout**. This value represents the amount of time in seconds after which TUNNFS considers that the contents of its cache buffers are no longer valid.

The default value is 1 second.

Lock Timeout Value

Changes the value of the **share timeout**. This value represents the amount of time in seconds after which the inability to open a remote file is considered by TUNNFS to indicate the presence of a **file lock** on the file.

The default value is 3 seconds.

Retry Multiplier

Changes the value of the **retry multiplier**, the number of times a packet will be re-sent in case there is no response from the server.

Umask

Changes the value of **umask**, used to assign the default UNIX rights (execute, read, write) for files created on a remote filesystem by a PC.

Symbolic Links Delete

Indicates whether or not the PC has the right to delete symbolic links (BSD).

Saving changes

<F4> may be used to remove a filesystem from the current configuration. To save a configuration, click on <OK> with the mouse, or press <Enter> when <OK> is highlighted. To return to the previous menu without saving your changes, click on <Cancel>, or press <Enter> when <Cancel> is highlighted.

MOUNTING NFS FILESYSTEMS

Once Filesystems have been configured using **Setup**, they may be mounted using **Mount**.

There are three sub-menus under **Mount** in the NFS Supervisor menu:

1. Show
2. Filesystem
3. Configuration

Showing currently-mounted drives

The option **Show** is used to display active filesystem mounts. Any virtual drives that are currently in use by the PC will appear in a list as shown in the figure below:

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
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º                  ³  Show                     ³                               º
º                  ³  File System              ³                               º
º                  ³  Configuration            ³                               º
º                  ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                               º
º      ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Mounted File Systems ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»     º
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º      º ³ File System      ³ X:³ Host Name       ³ Remote Path        ³ º     º
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º      º ³ scounix          ³ E ³ 132.141.126.10  ³ /u              [] ³ º     º
º      º ³ risc             ³ D ³ 132.141.126.56  ³ /nfs            <> ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
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º      º                         [    Ok    ]                            º     º
º      ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼     º
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```

This screen shows that two drives (D: and E:) are currently loaded. Drives are listed along with their corresponding volume and host names and the filesystem path on the NFS host.

Mounting a Filesystem

In order to mount one or more of the filesystems configured in the **filesys.nfs** file (as described in the previous section), select the **Filesystem** option from the **Mount** sub-menu.

The following shows the window that is displayed listing the choices of configured filesystems.

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄº
º                  ³  Show                     ³                               º
º                  ³  A File System            ³                               º
º                  ³  A Configuration          ³                               º
º                  ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                               º
º      ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Mount a File System ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»     º
º      º ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÂÄÄÄÂÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÂÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ º     º
º      º ³ File System      ³ X:³ Host Name       ³ Remote Path        ³ º     º
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º      º ³ RISC             ³ E ³ risc            ³ /nfs            [] ³ º     º
º      º ³ XENIX            ³ D ³ scounix         ³ /               <> ³ º     º
º      º ³ ACCOUNTS         ³ F ³ sun             ³ /home/finance      ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                 [] ³ º     º
º      º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º     º
º      º                                                                 º     º
º      º       [  F2 : Mount   ]                  [ F10 : Cancel  ]      º     º
º      ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼     º
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```

Use the <Up> and <Down> arrows or the mouse to highlight the filesystem you wish to mount, then press <F2>, or click on <Mount>.

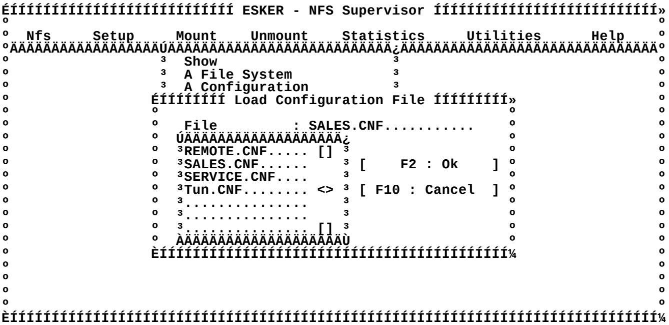
If the mount is successful, you will receive the message **Drive *X:* is available**". You may then use the mounted UNIX filesystem as a virtual DOS drive. If the mount was not successful, a message will indicate the error encountered.

With the option **Mount ⇨ A Filesystem**, you may individually mount as many drives as the TUNNFS resident will support.

If a user name other than **nobody** was assigned to a filesystem, a password prompt will be displayed. If a "?" was entered, the user name will also be requested.

Mounting A Configuration

When you choose to mount **A Configuration**, the following screen is displayed:



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  Nfs     Setup     Mount    Unmount    Statistics     Utilities     Help     º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄº
º                  ³  Show                    ³                                º
º                  ³  A File System           ³                                º
º                  ³  A Configuration         ³                                º
º                 ÉÍÍÍÍÍÍÍÍÍ Load Configuration File ÍÍÍÍÍÍÍÍ»                 º
º                 º                                          º                 º
º                 º   File         : SALES.CNF...........    º                 º
º                 º  ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿                   º                 º
º                 º  ³REMOTE.CNF..... [] ³                   º                 º
º                 º  ³SALES.CNF......    ³ [    F2 : Ok    ] º                 º
º                 º  ³SERVICE.CNF....    ³                   º                 º
º                 º  ³Tun.CNF........ <> ³ [ F10 : Cancel  ] º                 º
º                 º  ³...............    ³                   º                 º
º                 º  ³...............    ³                   º                 º
º                 º  ³................[] ³                   º                 º
º                 º  ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                   º                 º
º                 ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼                 º
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```

Use the mouse or the <Up> and <Down> arrows to select a **Configuration file** from above window; then click on <Mount> or press <F2> to mount the configuration. You may click on <Cancel> or press <F10> to return to the previous window.

A message will be displayed on the screen indicating the success (or failure) of the mount.

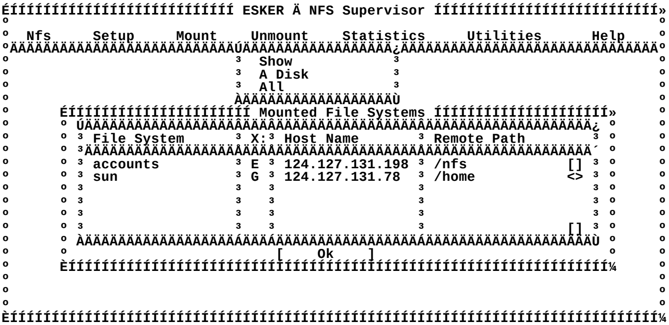
UNMOUNTING NFS FILESYSTEMS

"Unmounting" drives is the process of deactivating virtual DOS drive assignments. The **Unmount** option in the NFS Supervisor may be used to perform this action.

To view currently mounted drives (in order to see what you may unload), you may use the **Show** option. For example, the figure below shows that two virtual drives are currently active:

1. The **E:** drive called **Accounts** using the **/nfs** directory on host 124.127.131.198,

2. The **G:** drive called **Sun** using the **/home** directory on host 124.127.131.78.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER Ä NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
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º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄº
º                           ³  Show            ³                               º
º                           ³  A Disk          ³                               º
º                           ³  All             ³                               º
º                           ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ                               º
º      ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Mounted File Systems ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»     º
º      º ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÂÄÄÄÂÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÂÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ º     º
º      º ³ File System      ³ X:³ Host Name       ³ Remote Path        ³ º     º
º      º ³ÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÅÄÄÄÅÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÅÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ´ º     º
º      º ³ accounts         ³ E ³ 124.127.131.198 ³ /nfs           []  ³ º     º
º      º ³ sun              ³ G ³ 124.127.131.78  ³ /home          <>  ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                    ³ º     º
º      º ³                  ³   ³                 ³                []  ³ º     º
º      º ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÁÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º     º
º      º                         [    Ok    ]                            º     º
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```

A Disk

To remove a single virtual drive, select **Unmount**, then select **A Disk**. A window presenting the available drives will be displayed, as shown above.

Use the mouse or <Up> and <Down> arrows to select the drive you wish to unmount. When the line containing the drive is highlighted, click on Unmount or press <F2>.

All

To remove all mounted drives at once, select **Unmount**, then **All**. The Supervisor program will scroll through and remove all mounted NFS drives.

NFS UTILITIES

Information regarding the NFS environment may be obtained by running utilities from the **Utilities** menu.

Export FS

Used for checking remote filesystems, this option is described in the preceding section entitled **Testing the NFS resident**.

Show Mount

Show Mount lists the current users on an NFS server. The DOS program SHOWMNT.EXE provides the same function as this menu option.

After selecting **Show Mount**, enter the name of the host you wish to query into the **Host Name** field.

The figure below shows an example for a host named **scounix**; the column on the left shows the PCs' names or IP addresses, the column on the right shows the NFS filesystems (remote directories).

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿º
º                                                     ³  Export FS            ³º
º                                                     ³  Show Mount           ³º
º         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ Exported File Systems ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»Table    ³º
º         º                                                         ºÄÄÄÄÄÄÄÄÄÙº
º         º     Host Name                : scounix.............     º          º
º         º    ÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿    º          º
º         º    ³  /                   (everyone)            [] ³    º          º
º         º    ³  /u                  (everyone)            <> ³    º          º
º         º    ³  /u2/scdoc           (everyone)               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                               ³    º          º
º         º    ³                                            [] ³    º          º
º         º    ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ    º          º
º         º  [  F1 : Hosts   ] [    F2 : Ok    ] [ F10 : Cancel  ]  º          º
º         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼          º
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```
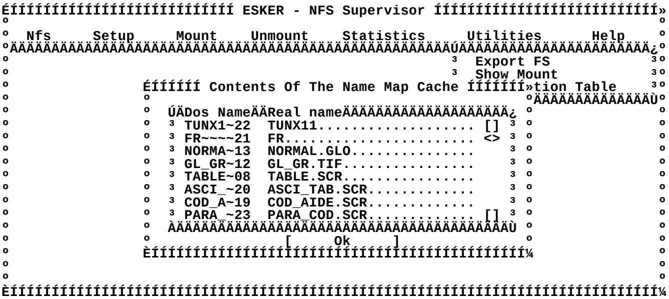

Viewing filename translation

As explained earlier in this chapter, **Name translation** is used to resolve filename differences between DOS and UNIX. When TUNNFS encounters UNIX filenames whose syntax does not correspond to that used by DOS (longer than 8 characters with a 3-character extension), it generates a DOS-compatible file name, and stores the association in the**name map cache**.

With the **Translation table** option, users can view the cache list, to see how UNIX filenames have been translated into DOS filenames. The cache is common to all active mounts.



```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - NFS Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  Nfs     Setup     Mount    Unmount    Statistics     Utilities      Help    º
ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿º
º                                                        ³  Export FS         ³º
º                                                        ³  Show Mount        ³º
º                ÉÍÍÍÍÍÍ Contents Of The Name Map Cache ÍÍÍÍÍÍÍ»tion Table    ³º
º                º                                             ºÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙº
º                º  ÚÄDos NameÄÄReal nameÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ º               º
º                º  ³ TUNX1~22  TUNX11................... [] ³ º               º
º                º  ³ FR~~~~21  FR....................... <> ³ º               º
º                º  ³ NORMA~13  NORMAL.GLO...............    ³ º               º
º                º  ³ GL_GR~12  GL_GR.TIF................    ³ º               º
º                º  ³ TABLE~08  TABLE.SCR................    ³ º               º
º                º  ³ ASCI_~20  ASCI_TAB.SCR.............    ³ º               º
º                º  ³ COD_A~19  COD_AIDE.SCR.............    ³ º               º
º                º  ³ PARA_~23  PARA_COD.SCR............. [] ³ º               º
º                º  ÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙ º               º
º                º                [     Ok     ]               º               º
º                ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼               º
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```

CHAPTER 4 - PRINTER SHARING

OVERVIEW OF PRINTER SHARING

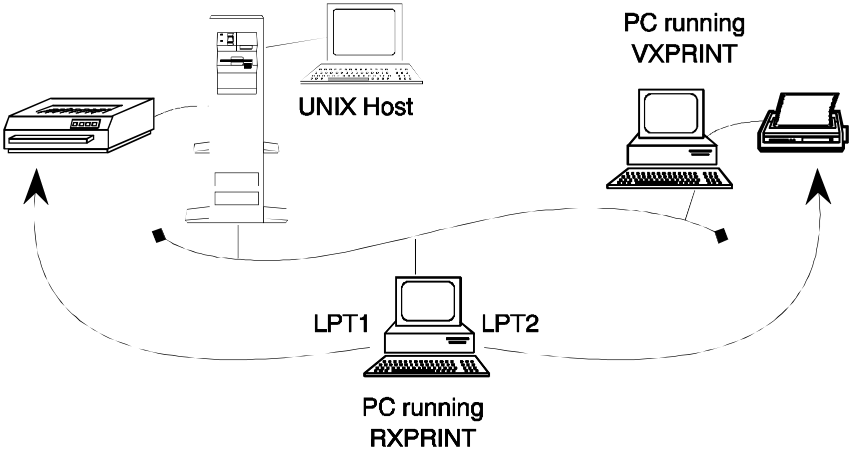
In addition to NFS, Tun TCP also offers complete PC/UNIX printer sharing across TCP/IP networks.

Tun TCP provides two types of resident modules:

Remote Printing DOS and Microsoft Windows applications (i.e. Word, Excel, AutoCad) can print on printers attached to UNIX hosts, usually via a standard**lp** command.

Virtual Printing UNIX applications (i.e. management, accounting, inventory) can use printers attached to DOS PCs.

PC users can combine both **Remote** and **Virtual** printing in order to print on another PC's printer.



REMOTE PRINTING

Remote printing in Tun TCP is handled by the resident program **RXPRINT.EXE**. This program redirects the output to the PC's parallel ports by re-routing BIOS interrupt 0x17 and DOS interrupt 0x21.

Characters that are normally sent through these ports are taken by RXPRINT and given as standard input to a UNIX command (usually **lp**). Data transmission takes place as if a UNIX "pipe" were established between the DOS program and the UNIX print command.

When a DOS program first sends a character to a redirected parallel port, RXPRINT establishes an **RSH** connection with the UNIX machine. Every character sent by DOS is then sent across this connection. If the program stops sending characters for a specified period of time (*timeout*), RXPRINT considers that the print job is complete, and closes the connection. The UNIX command is then executed.

RXPRINT also considers that a print job is complete if the program that sent the job has been exited, or if the parallel port has been closed (**close (LPT1)**).

Notes:

1. Because RXPRINT uses the RSH protocol, TCP/IP on the UNIX server must be configured correctly (see **TCP/IP CONFIGURATION ON THE UNIX HOST** in this manual).

2. RXPRINT 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.

3. RXPRINT can also run on *any* UNIX server. All UNIX machines equipped with TCP/IP contain an RSH server.

VIRTUAL PRINTING

Printers on DOS PCs may also be made**public**, thereby becoming available to other network users. A PC with a public printer loads the resident program **VXPRINT.EXE**. This program is actually a "reduced"**RSH** server that is capable of executing only the commands**LPT1**, **LPT2**, **LPT3**, and **LPTS**.

When a UNIX machine wants to print on a DOS PC's printer, it opens an RSH connection with the PC, and specifies the number of the parallel port to use (LPT1, LPT2, or LPT3). Characters are then sent across the connection towards the PC. After receiving data, VXPRINT sends it to the appropriate port, trying to slow the PC down as little as possible.

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

Notes:

1. VXPRINT 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.

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

3. UNIX machines can query the PC's VXPRINT server to find out which public ports are available by having it (the PC) execute the command LPTS.

SETTING UP PRINTER SHARING

Network printer configuration is managed through the option**Printer sharing** in the Tun TCP Supervisor.

To set up printers, select **Printer sharing ⇨ TSR Startup Parameters**. The figure below shows the printer configuration screen:

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ ESKER - Printers/Sharing Supervisor ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                              º
º  PrinÉÍÍÍÍÍÍÍÍÍÍÍÍÍ Printer Sharing Setting Parameters ÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»p      º
ºÚÄÄÄÄÄºÚÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ¿ºÄÄÄÄÄÄÄº
º³  Staº³LPT1:     ( ) Local      ( ) Remote       (X) Public         ³º       º
ºÃÄÄÄÄÄº³          Priority                     : 20                  ³º       º
º³  Quiº³          CR/LF Conversion             : No                  ³º       º
ºÀÄÄÄÄÄº³          Data Conversion              : None                ³º       º
º      º³          Timeout                      : 10                  ³º       º
º      ºÃÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ´º       º
º      º³LPT2:     ( ) Local      (X) Remote                          ³º       º
º      º³                                                             ³º       º
º      º³          Remote Host Name             : esker...............³º       º
º      º³          Unix Command                 : lp..................³º       º
º      º³          Timeout                      : 20                  ³º       º
º      ºÃÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄ´º       º
º      º³LPT3:     (X) Local      ( ) Remote                          ³º       º
º      º³                                                             ³º       º
º      º³                                                             ³º       º
º      º³                                                             ³º       º
º      º³                                                             ³º       º
º      ºÀÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÄÙº       º
º      º                                                               º       º
º      º   [    F2 : Ok    ]                       [ F10 : Cancel  ]   º       º
ÈÍÍÍÍÍÍÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼ÍÍÍÍÍÍÍ¼
```

The above screen is divided into three parts, each corresponding to a parallel port on the PC.

Each port can have one of the following settings:

Local The port remains unaffected for normal use under DOS.

Remote The port is redirected towards a UNIX command (Remote printing).

Public The port becomes available for other machines on the network (Virtual printing).

> **Note**: If a port is not physically present in the PC, it will not appear as an option for a public printer.

To change port settings, use the arrow keys to navigate within the screen, then select an option using the space bar or by clicking with the mouse. The fields you will need to fill in will depend on your choice.

Local Printers

There are no fields to fill in if the printer remains local and is not shared.

Remote Printers

There are three fields to fill in:

Remote Host Name

Indicates the name of the server towards which output will be redirected.

Unix Command

Indicates the name of the UNIX command that will take the received data as standard input. An **lp** command is most frequently used in this field.

Timeout

Expressed in seconds, the value given for **timeout** determines the length of time after which, if RXPRINT has not received characters on the port, a print job is considered complete. The default is 10 seconds. If a DOS or Windows program is slow to print, this value may need to be increased to between 20 and 50.

Example

For example, print jobs could be sent to a server named **xenix**, which then executes an **lp** command. Each time a DOS or Windows program sends a print job, connection is established on the UNIX machine, and all the characters sent to the redirected port on the PC are then routed to the **lp** command on the server.

Public Printers

Four fields need to be filled in when printers are declared as **public**.

Priority

The value given in this field represents the percentage of time allocated by the CPU to the resident **VXPRINT** program with respect to other network services. For example, this value could be altered to give priority to incoming print jobs. Click with the mouse or use the space bar to select a value. Usually 20% is sufficient.

CR/LF Conversion

The field **CR/LF** contains the options "**Yes**" or "**No**". If the field "**Yes**" is marked (using the space bar or the mouse), all LF characters received from a remote machine will be converted into CR+LF. This option enables files sent by UNIX machines to be printed correctly.

Data Conversion

This field indicates whether or not VXPRINT should use an ISO8859 conversion filter. If your UNIX system uses ISO8859 character tables, you should use this option in order to print correctly on a DOS printer.

Timeout

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

By default the value is 10 seconds, but if your UNIX machine or spooler is particularly slow, you may need to increase it.

Saving your changes

At any time, the changes you made may be saved by pressing <F2> or by clicking on <OK> with the mouse. Changes are saved in the file AUTOLPT.BAT. To cancel without saving your changes, press <F10> or click on <Cancel>. You will need to re-run AUTOLPT.BAT for any changes to take effect in your computer.

LOADING PRINT MODULES

The AUTOLPT.BAT batch file is used to load the printer sharing modules from the AUTOEXEC.BAT file or directly from the DOS prompt. To have access to other functions available in the Supervisor, this batch file needs to be run beforehand.

Notes:

1. The TCP/IP kernel must be loaded before AUTOLPT can run successfully.

2. To unload the printer redirection modules, execute AUTOLPT with the option "stop" (autolpt stop)

3. The batch file always loads the two resident programs into memory, in order to be able to change their settings without having to reboot the PC (Dynamic Settings).

4. When RXPRINT is loaded, it verifies the validity of the command given in the configuration screen. If an error is displayed during startup, check the syntax of the command and the TCP/IP configuration on the UNIX machine.

Here are the relevant lines in a sample AUTOLPT.BAT file:

```
.
.
C:\TUN\TCPD\VXPRINT -LPTS
C:\TUN\TCPD\RXPRINT -LPTS
C:\TUN\TCPD\VXPRINT -LPT1 on
C:\TUN\TCPD\RXPRINT LPT2 xenix "lp" 20
.
.
.
C:\TUN\TCPD\VXPRINT -u
C:\TUN\TCPD\RXPRINT -u
:end
```

For more details on using the resident programs RXPRINT and VXPRINT, see **Command Syntax** in this manual.

USING REMOTE PRINTERS

Totally transparent to DOS and Windows applications, using remote printers is just like using normal LPT ports.

Notes:

1. When printing from Microsoft Windows, it is best to use the Windows Print Manager, rather than letting programs spool their print jobs directly.

2. Use ports LPTn.DOS or LPTn.OS2 to print from Windows, and deselect the option "Access port directly".

3. On the UNIX side, it is best to use an**lp** command that uses a print queue to spool print jobs before sending them to a printer, rather than a command like **cat>/dev/lp0**, which may block printing if the printer is out of paper or turned off.

USING PUBLIC PRINTERS

The only constraint in declaring PC printers as "public" is that VXPRINT is not able to load if the intended parallel port is not physically present in the PC. If VXPRINT detects a problem with the printer when it is loaded (paper out, power off), an error message is displayed, but the resident loads anyway.

However, as VXPRINT turns a PC into a print server for multiple users, some attention needs to be paid to the use of a public PC printer from the UNIX side.

As indicated earlier, VXPRINT is a reduced RSH server. For this reason, using a public printer from a UNIX machine requires access to a client command of the RSH protocol. This command is usually called**rsh**, but on some systems (such as SCO UNIX), it is called**rcmd**, or **remsh**.

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

```
cat file | rsh pc_name lpt1
```

In the preceding command:

file is the name of a file (i.e.**/etc/passwd**).

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 VXPRINT).

lpt1 is the port name for the public printer (LPT1, LPT2, or LPT3).

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

In order to find out which parallel ports have been made public, execute the following command from UNIX:

```
rsh pc_name lpts
```

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 VXPRINT).

lpts is a command recognized by VXPRINT that returns the list of available ports.

The message displayed by this command might be:

```
000 Available commands are: LPT1 LPTS
```

Print options from the UNIX side

With VXPRINT already resident on a PC, it is still possible to set print parameters from the UNIX side. In order to do this, add one of the following options to the remote shell command as explained above, just after the port name. For example:

-c Forces CR/LF conversion

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

-T Prints without converting extended characters (>128)

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

For example, the following command would request CR/LF conversion and use the ISO8859 filter.

```
cat /etc/passwd | rsh pc_name LPT1 -c -ISO8859
```

CONNECTING A SPOOLER TO PUBLIC PRINTERS

Connecting to a System V spooler

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 send characters and files to a virtual printer through VXPRINT, 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 an SCO UNIX system:

```
#    lp model for vxprint on Tun TCP
while true
do
   A=`echo "\007" | rcmd pc lpt1`
   if echo $A | grep "001"
   then
      break
   fi
   sleep 5
   echo "Printer Problem PC ${A}" >/dev/console
done
(
copies=$4
echo "\014\c"
shift; shift;shift;shift;shift
files="$*"
i=1
while [ $i -le $copies ]
do
       for file in $files
       do
               cat $file
               echo "\014\c"
       done
       i=`expr $i + 1`
done
) | rcmd pc lpt1
```

Note: In the **rcmd** command on the last line, **pc** refers to the name or IP address of the PC with **vxprint**, and **lpt1** is the port to which the printer is attached.

Adding the new print queue

The easiest way to add a print queue using the above model to an SCO UNIX system is to use the commands given below rather than using **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	name of the print queue to create
model	name of the file containing the model shown above
/dev/null	device driver assigned to the printer port

Creating a print queue on an AIX host

The procedure for declaring a print queue on an AIX host (RS6000) is very different from that used with System V UNIX.

1. Create a printer model file such as **/usr/bin/tunmodel** with the following instructions:

```
while true
do
   A=`echo "\007" | rsh pc lpt1`
   if echo $A | grep "001"
   then
      break
   fi
   sleep 5
   echo "Printer Problem PC ${A}" >/dev/console
done
cat $1 |rsh pc lpt1
```

2. Assign **execute** rights to the above file

```
chmod +x /usr/bin/tunmodel
```

3. Edit the file **/etc/qconfig** and add the following lines:

```
lptun:
   device=lptun
lptun:
   backend=/usr/bin/ksk /usr/bin/tunmodel
```

4. Allow the system to use the new printer

```
enable lptun
```

5. Try printing, using the following command

```
cat /etc/passwd |qprt -dp -Plptun
```

Adding a print queue on SUN Solaris 1.1 or SUN OS 4.1.3

Declaring print queue on SUN systems is different from System V and AIX. Follow the steps given below rather than using system administration menus:

1. Create a printer model file such as**/usr/lib/tunmodel** as shown here:

```
#! /bin/sh
while true
do
   A=`echo "\007" | rsh pc lpt1`
   if echo $A | grep "001"
   then
      break
   fi
   sleep 5
   echo "Printer Problem PC ${A}" >/dev/console
done
   cat -  |rsh pc lpt1
```

2. Assign **execute** rights to the above file:

```
chmod 755 /usr/lib/tunmodel
```

3. Make a spool directory

```
cd /var/spool
mkdir tun
touch tun/log
touch tun/acct
chmod 775 tun
chown -R daemon.daemon tun
```

4. Add the following paragraph in**/etc/printcap** to declare the new printer:

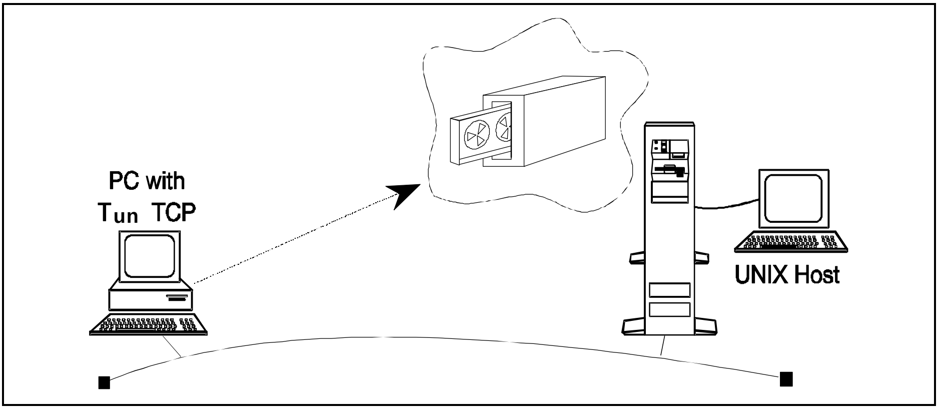
```
tun: Tun TCP vxprint Printer on dos_1:\
   :lp=/dev/null:\
   :sd=/var/spool/tun:\
   :lf=/var/spool/tun/log:\
   :af=/var/spool/tun/acct:\
   :mx#0:sf:sb:sh:tr=\f:\
   :if=/usr/lib/tunmodel:of=/usr/lib/tunmodel:
```

5. You may then print to this printer with the command:

```
lpr -Ptun /etc/passwd
```

CHAPTER 5 - SHARED BACKUP

Tun TCP makes PC/UNIX resource sharing complete by giving DOS users the ability to use remote UNIX backup devices (tape drives, streamers, DAT...).



DESCRIPTION

The **TAR** (Tape ARchive) command is used to access remote backup peripherals from the PC. Native to UNIX, this command has been adapted for PCs.

TAR backs up or restores files sequentially on remote backup devices, including tape cartridges, floppy drives, and hard disks.

TAR may also be used to backup and restore files locally on the PC.

TAR CONFIGURATION

When accessing remote peripherals, TAR uses a protocol identical to that used by **RSH.EXE**: in order to function, the PC needs to be declared in the same configuration files as described for printer redirection (**RXPRINT**).

TAR SYNTAX

```
TAR c|x|t [vfTb] [tarfile] [filename1] [files]
```

The action carried out by the TAR command is determined by the parameter given on the command line, either "**c**", "**x**", or "**t**":

c	**C**reate new archive file
x	restore from a remote archive file (e**X**tract)
t	list contents of a remote archive file

The **files** parameter gives the names of the files or directories to be backed up or restored.

Other parameters to the TAR command are:

v By default, TAR does not display messages on the screen. Adding the letter **v** (verbose) after **c**, **x**, or **t** will display the action executed by the current command.

f tarfile The letter **f** indicates to TAR that the parameter that follows is the name of the backup device (or file). If this option is not used, TAR looks for the destination in the file **DEFAULT.TAR** located in the Tun TCP directory.

If the **destination** parameter is given in the format **hostname:dest**, TAR will use the peripheral **dest** on host **hostname**. In all other cases, TAR assumes that the destination is a local file.

EXAMPLES USING THE TAR COMMAND

1. This command backs up the entire **\WINDOWS** directory (including subdirectories) into a file called**\TMP** on the PC.

```
TAR cvf \TMP \WINDOWS
```

2. This command sequentially and recursively (including subdirectories) backs up the entire **\WINDOWS** and **\C700** directories onto a tape device on a remote machine called**bluecheese**.

```
TAR cvf bluecheese:/dev/rct0 \WINDOWS \C700
```

3. This command lists the contents of the tape cartridge in device**/dev/rctO** on the remote machine**camembert**.

```
TAR tvf camembert:/dev/rct0
```

4. This command restores the contents of a tape cartridge in the remote machine **munster** onto the PC's local hard disk.

```
TAR xvf munster:/dev/rct0
```

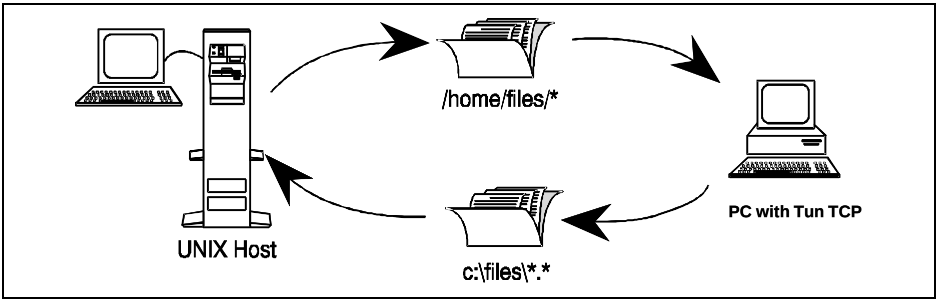
5. This command displays the contents of the**default destination**, given in the **DEFAULT.TAR** file located in the TUNTCP default directory.

```
TAR tv
```

CHAPTER 6 - FILE TRANSFER WITH FTP

INTRODUCTION TO FILE TRANSFER

FTP (File Transfer Protocol) is a Tun TCP program that is used to transfer files between DOS PCs and UNIX hosts over TCP/IP.**FTP** is an interactive program which requires users to log in to a host in order to use a variety of different file transfer commands.



This section describes the**FTP** (file transfer protocol) command language used to transfer files between a local PC and another machine on the TCP/IP network.

USING FTP

In order to use the **FTP** program, you must be able connect your local machine with the host machine via TCP/IP. To activate**FTP** from your PC, enter the following command:

```
C:\TUN\TCPD>FTP
```

The program will prompt you for the name of the host machine:

```
host :
```

Enter the alias name or the IP addressof the UNIX machine with which you want to exchange files. During connection, several messages will be displayed:

```
C:\TUN\TCPD>ftp
host: scounix

File Transfer Program V 1.00a - (C) Copyright
1991-92 ESKER

FTP Trying...Open
220 scosysv.default.com FTP server (Version 5.60
#1) ready.

Userid: root
331 Password required for root.
Password:

230 User root logged in.
ftp:scounix>
```

After you enter your user name and password, the**FTP** prompt is displayed, followed by the name or the IP address of the host machine (i.e**ftp:scounix>**).

The PC is then connected with the host machine.

FTP COMMAND-LINE OPTIONS

The command FTP can be used with the following options and parameters:

```
ftp   [-d]   [-u   userid   password]   [ -p   port]   [ host]
    [command]
```

-d This option activates **debug mode**. When used, all the messages sent by FTP to the host machine are displayed on the screen. If this option is not used, no information will be displayed.

-u This option corresponds to the **user** and **login** commands that enable user identification to be given on the command line (in a batch file, for example). Enter the user name and the corresponding password.

-p This option indicates the software communication**port** used for the FTP connection (the standard port used by this protocol is 21).

host The **host** parameter corresponds to the name of the host machine with which you want to be connected.

command The **command** parameter issues an FTP command (with its arguments) that will be called once connection has been established.

FTP COMMAND SYNTAX

The commands described in this section are used at the **FTP** prompt; FTP commands are followed by <Enter>. When the command has been executed, the prompt is displayed again.

It is not always necessary to enter the complete name of a command. In most cases it is enough to enter either the first or the first two characters.

! !

This command interrupts the use of **FTP** and opens an MS-DOS session on the local machine. To switch back to **FTP**, you can use the **EXIT** command.

ATTENTION: resident applications should not be started from this MS-DOS session.

If an MS-DOS command follows the **!** character, then only this command will be activated. The **FTP** program will switch back to command mode as soon as the MS-DOS command has been executed. For example:

```
FTP:host_machine>  ! dir a:
```

? ?

The **?** command is equivalent to the **help** command, used to display information about using **FTP**. You can obtain information about any command by entering its name after **?**. If only **?** is used, a list of **FTP** commands is displayed, as shown here:

```
ftp:scounix> ?
Commands may be abbreviated. Available commands are:
!               ?               acct            aget            append
aput            ascii           bget            binary          bput
bye             cd              debug           delete          dir
drive           fcd             fdir            fpwd            get
help            lcd             ldir            local           login
lpwd            ls              mdelete         mget            mkdir
mput            option          parent          passive         put
pwd             quit            quote           remotehelp      rename
rmdir           show            stat            take            tenex
tget            tput            type            user            verbose

ftp:scounix> ? aget
help on aget:
        get file from remote host in ascii mode
usage: aget [remote_file [local_file]]
```

ACCT ACCT

The **acct** command enables you to specify the name of the default user account.

AGET AGET

The **aget** command initiates file transfer from the host machine towards the micro computer in ASCII mode. You may specify:

1. The name of the remote file to be copied
2. The name of the local file into which the remote file will be copied:

```
FTP:host_machine>  aget remote_file local_file
```

You can also activate the command followed only by the name of the file to be copied. The program then creates a local file on your PC with the same name as the original file:

```
FTP:host_machine>  aget remote_file
```

If used without any parameters, the program will prompt you to enter the file names:

```
FTP:host_machine>  aget
remote file :  remote_file
local file (default remote_file) :   local_file
```

If no local file name is given, a local file on your PC will be generated with the same name as the original file.

APPEND APPEND

The **append** command enables you to add the contents of a local file to the end of an existing file located on a remote host. You can specify the name of the files as parameters:

```
FTP:host_machine>  append local_file remote_file
```

If you use the command **append** without giving the file names, the program will prompt you for them:

```
FTP:host_machine>  append
local file :  local_file
remote file (default local_file) :   remote_file
```

APUT APUT

The command **aput** (ASCII put) enables you to transfer files from the local machine to the host machine in ASCII mode. You can specify the name of the file to be copied:

```
FTP:host-machine>  aput local_file
```

or

```
FTP:host-machine>  aput local_file remote_file
```

You can also use **aput** without any options; the program will then prompt you for the file names:

```
FTP:host-machine>  aput
local file :  local_file
remote file (default local_file) :   remote_file
```

If you do not enter a name for the remote file, a file with the same name as the original local file will be created.

ASCII

ASCII

The **ASCII** command changes the default transfer mode into text (ASCII) mode. When transferring in ASCII mode, there is a conversion of CR (0x0d) and LF (0x0a) characters in order to take into account the text file differences between the DOS and UNIX operating systems.

BINARY

BINARY

This command changes the default transfer mode into binary. In this case there is no conversion of the CR and LF characters.

BGET

BGET

The command **bget** (**binary get**) enables you to copy a file from the host machine towards the local machine in binary mode. You can specify:

1. the name of the file to be copied
2. the name of a local destination file:

```
FTP:host_machine>  bget remote_file local_file
```

If you specify only the remote file name, a new local file with the same name will be created:

```
FTP:host_machine>  bget remote_file
```

If you activate **bget** without giving the file names, the program will prompt you to enter them:

```
FTP:host_machine>  bget
remote file :  remote_file
local file (default remote_file) :   local_file
```

If you do not specify the name of the local file with the **bget** command, a local file with the same name as the original file will be generated.

BPUT BPUT

The command **bput** enables the transfer of a file from the local machine to the host machine in binary mode.

You can specify the name of the file to be copied:

```
FTP:host_machine>  bput local_file
```

or

```
FTP:host_machine>  bput local_file remote_file
```

If you activate **bput** without parameters, you will be prompted to enter the names of the files to be copied:

```
FTP:host_machine>  bput
local file :  local_file
remote file (default local_file) :   remote_file
```

If you do not specify the name of the remote file, a file with the same name as the local original file will be created.

BYE BYE

This command ends the **FTP** session and exits **FTP**, closing all connections.

CD CD

The **cd** command enables you to change the current directory on the host machine. You can specify the name of the new directory:

```
FTP:host_machine>  cd /usr/bin
```

If you enter **cd** without parameters, the **FTP** program will ask you to specify the name of the new directory:

```
FTP:host_machine>  cd
remote directory :  /usr/bin
```

DEBUG DEBUG

The command **debug** activates and deactivates **debug mode**. If this mode is activated, all messages sent by **FTP** to the host machine will be displayed on the screen:

```
FTP:host_machine>  debug on
```

If this mode is deactivated, messages are not displayed.

```
FTP:host_machine>  debug off
```

DELETE DELETE

The **delete** command erases a file located on the host machine. You can specify the name of the file to be erased on the command line:

```
FTP:host_machine>  delete remote_file
```

If you activate **delete** without parameters, you will be prompted to enter the names of the files to be deleted:

```
FTP:host_machine>  delete
remote file :  remote_file
```

DIR DIR

The **dir** command displays a detailed list of the contents of a directory located on the host machine. You can specify the directory name on the command line:

```
FTP:host_machine>  dir /usr/bin
```

If you do not enter any directory name, the contents of the current directory of the host machine are displayed.

You may redirect the output of the**dir** command to a DOS text file by entering the command followed by the name of the DOS file:

```
FTP:host_machine>  dir /usr/bin file
```

When redirecting output to a DOS file, it is necessary to enter the name of the directory being listed. To see a listing of the current directory, enter the command using "**.**" :

```
FTP:host_machine>   dir . file
```

DRIVE DRIVE

The command **drive** is used to change the current drive on the PC. Specify the name of the new drive on the command line:

```
FTP:host_machine>  drive a:
```

Activated without parameters, the**drive** command will prompt you to enter name of the new drive:

```
FTP:host_machine>  drive
local drive to change to :   a:
```

FCD FCD

The command **fcd** is the same as the **cd** command. (See **cd**).

FDIR FDIR

This command **fdir** is the same as the **dir** command. (See **dir**).

FPWD FPWD

This command displays the name of the current directory on the host machine.

GET GET

The command **get** is used to copy a file from the host machine to the local machine. If you wish to copy several files at the same time, you can use the **mget** command. With **get** you can specify:

1. the name of the file to be copied
2. the name of a local destination file:

```
FTP:host_machine>  get remote_file local_file
```

You can also enter the command followed only by the name of the remote file to be copied. The program will generate a local file on your PC with the same name:

```
FTP:host_machine>  get remote-file
```

If you activate the command without parameters, the program will ask you to specify the name of the file to be copied as well as the name of the local file:

```
FTP:host_machine>  get
remote file :  remote_file
local file :  local_file
```

If you do not specify the name of the local file, a file with the same name as the original file will be created on the PC.

HELP HELP

The command **help** gives information concerning the use of**FTP**. If you specify a command name after **help**, information concerning that command will be displayed. If the command is used alone, a list of FTP commands is displayed.

LCD LCD

The command **lcd** (local change directory) changes the current directory on the PC:

```
FTP:host_machine>  lcd \dos
```

If you activate the **lcd** command without parameters, the**FTP** program will ask you to specify the name of the new directory.

LDIR LDIR

The command **ldir** (local directory) displays a detailed list of the contents of a directory located on the local machine. You can specify the name of the directory:

```
FTP:host-machine>  ldir \dos
```

If you do not specify a directory name, the contents of the current directory of the local machine are displayed.

You may redirect the output from the**ldir** command to a DOS file rather than the screen by entering the file name on the command line. The file will contain the directory listing.

```
FTP:host-machine>  ldir \dos file
```

It is necessary to specify the name of a directory to list when redirecting output to a file. If you wish to obtain a listing of the current directory, use a period (full stop) ".":

```
FTP:host-machine>  ldir . file
```

LOCAL LOCAL

The **local** command gives the byte size used on the local machine.**bytesize** is usually eight (8):

```
FTP:host-machine>  local bytesize
```

LOGIN LOGIN

The **login** command allows a user to identify himself for a new connection.

Two entries are required for user identification: a use**name** and **password**.

You can type the user name and the password when entering the command:

```
FTP:host-machine>  login name passwd
```

If you enter the command without any parameters, the program will ask you to specify the user name and the password:

```
FTP:host-machine>  login
User id :  esker
Password:  *******
```

The password is not displayed on the screen.

LPWD LPWD

The **lpwd** (**L**ocal **P**rint **W**orking **D**irectory) command displays the name of the current directory on the local machine.

LS LS

The **ls** command displays a simplified list of the contents of a directory on the host machine. You may enter the name of the directory:

```
FTP:host-machine>  ls /usr/bin
```

If the **ls** command is used without any options, the contents of the current directory is displayed.

You may redirect the output from the**ls** command to a DOS file rather than the screen by entering a file name on the command line. The file will contain the directory listing.

FTP:host-machine>**ls /usr/bin file**

It is necessary to specify the name of a directory when redirecting output to a file. If you wish to obtain a listing of the current directory, use**.**"' :

```
FTP:host-machine>  ls . file
```

MDELETE MDELETE

This command deletes files on the host machine:

```
FTP:host-machine>  mdelete remote_file
```

Note: wildcard characters (* and ?) may be used.

MGET MGET

The command **mget** copies one or more files from the host machine onto the local machine. Copied files have the same names as the original files.

```
FTP:host-machine> mget remote_file
```

You may also use wildcard characters (* and ?).

MKDIR MKDIR

The **mkdir** command creates a directory on the host machine. You can enter the directory name:

```
FTP:host-machine>  mkdir /us/expl
```

If you activate the command without parameters, the program will prompt you to enter the directory name:

```
FTP:host-machine>  mkdir
directory-name :  /us/expl
```

MPUT MPUT

The **mput** command copies one or more files from the PC onto the host machine. The names of the copied files are the same as the original files.

FTP:host-machine>**mput local_file**

You may also use wildcard characters (* and ?) to copy files.

OPTION OPTION

This command enables you to modify certain FTP options. The syntax of this command is the following :

```
FTP:host-machine>  option value
```

The parameter *value* can be either **on** or **off**, depending on whether you activate or deactivate an option.

The parameter *option* can have the following values:

HASH

The **hash** option displays a # sign after sending or receiving each file block. The default block size is 1460 bytes.

CASEHACK

This option activates a file name conversion from MS-DOS to UNIX and vice versa. When the mode is **on**, UNIX file names are written in lower case letters. When the mode is **off**, file names are given in upper case letters. The default for this option is **on**.

ASK

The **ask** option defines whether or not user confirmation is necessary whenever commands are used that affect more than one file. The default value is **off**.

PATHHACK

This option prevents the commands **get** and **put** from transferring the access path to the target machine. For example:

```
FTP:host-machine>  get /usr/jean/expl
```

will copy the file *expl* into the current directory of the target machine.

If the option is deactivated, the file *expl* will be copied into the directory **\usr\jean** of the local machine. If this directory does not exist, the file will not be copied. The default value of this option is **on**.

PARENT PARENT

The command **parent** enables access to the parent directory on the host machine.

PASSIVE PASSIVE

This command enables you to switch the host to passive mode (waiting status). Once the **passive** command is executed, followed directly by the command to be activated in passive mode, passive mode is deactivated.

PUT PUT

The command **put** enables you to transfer a file from the local machine onto the host machine.

You can specify the name of the file to be transferred by entering the command:

```
FTP:host-machine>  put local-file
```

or

```
FTP:host-machine>  put local_file remote_file
```

If you activate the command without any parameters, the program will prompt you to enter the name of the file to be transferred:

```
FTP:host-machine>  put
local file :  local_file
remote file :  remote_file
```

If you do not specify a remote file name, a file with the same name as the original file will be created.

PWD PWD

This command is the same as the**FPWD** command. (See **FPWD**).

QUIT QUIT

This command is the same as the**bye** command. (See **bye**).

QUOTE QUOTE

The command **quote** enables you to execute the specified commands in the**FTP** protocol directly. When entering the command **quote**, you can specify the command to be executed :

```
FTP:host-machine>  quote remote_command
```

REMOTEHELP REMOTEHELP

The command **remotehelp** gives a list of the commands that can be used on the host_machine.

RENAME RENAME

The command **rename** allows you to rename a file on the host machine. You may specify the name of the files in the command line:

```
FTP:host-machine>  rename remote1_file remote2_file
```

If you activate the command without any parameters, the program will prompt you for the name of the file to be renamed:

```
FTP:host-machine>  rename
original name :  remote1_file
new name :  remote2_file
```

RMDIR RMDIR

The command **rmdir** is used to delete directories on the host machine. You can enter the directory name:

```
FTP:host-machine>  rmdir /us/expl
```

If used without parameters, the program will prompt you to enter the name of the directory to be deleted:

```
FTP:host-machine>  rmdir
directory name :  /us/expl
```

SHOW SHOW

This command displays the contents of a remote file on the screen, like the UNIX command "cat". You can enter the name of the file:

```
FTP:host-machine>  show /us/expl
```

If you enter the command without any parameters, the program will prompt you to enter a file name:

```
FTP:host-machine>  show
remote file :  /us/expl
```

STAT STAT

This command displays the status of the host machine.

TAKE TAKE

The command **take** may be used to execute a command sequence in batch mode. The name of the file containing the instructions is given as a parameter to **take**.

```
FTP:host-machine>  take expl
```

TYPE TYPE

The command **type** enables you to define the file transfer mode. The possible values are ASCII and BINARY. The default value is ASCII.

```
FTP:host-machine>type ASCII
```

If you enter the command **type** without a parameter, the program will echo the current file transfer mode.

USER USER

The command **user** is the same as the **login** command (see **login**).

VERBOSE VERBOSE

The command **verbose** activates and deactivates verbose mode. When this mode is on, FTP messages coming from the host machine are displayed on the screen (including statistics following a file transfer):

```
FTP:host-machine>  verbose value
```

The parameter *value* can be either **on** or **off**.

CHAPTER 7 - REFERENCE GUIDE

INDEX OF FILES AND PROGRAMS

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NFSUTIL.EXE	NFS statistics
RCOPY.EXE	File transfer from the DOS command line
REXEC.EXE	Executes a command on a remote server, requires a password
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TNVT52.EXE	Telnet utility for basic terminal emulation
TUNNFS.EXE	NFS TSR program
TUNTCP.EXE	Tun TCP Supervisor / Configuration
UMOUNT.EXE	Unmounts a remote disk
VXPRINT.EXE	Resident print server (for PC)

EXPORTFS EXPORTFS

Polls a server to find out what filesystems have been exported (declared public).

Syntax

```
exportfs hostname
```

Description

The EXPORTFS command may be used to poll a server whose name or IP address is given a parameter in order to find out which filesystems may be mounted as DOS drives by the PC. It is especially useful for testing NFS connections.

See also

SHOWMNT

FTP FTP

ARPA utility for file transfer.

Syntax

```
FTP [-d] [-u user passwd] [-p port] [host]
     [command]
```

Description

The FTP program is a complete implementation of the standard ARPA utility for file transfer. The TCP/IP kernel must be loaded before using FTP.

The syntax and options for this command are described in the**File Transfer** chapter of this manual.

The command-line options for FTP are:

-d Execution in DEBUG mode, causing the display of more messages on the screen.

-u user passwd User identification may be given to avoid having to enter a login name and password after starting the program.

-p port Indicates a different **service number** for FTP connections (default is 21).

host Specifies the name or IP address of the host with which file transfer will take place.

command A command which is to be executed upon connection may be given as a parameter to the program.

See also

RCOPY

MOUNT MOUNT

Mounts a remote directory as a virtual DOS disk.

Syntax

```
MOUNT filesys hostname netpath drive USER
                         [username] [passwd]
MOUNT filesystem
MOUNT -c confname
```

Description

The **MOUNT** command is used to mount remote NFS filesystems as virtual DOS drives. As a TCP/IP application, **MOUNT** can only function if the resident program **TUNNFS.EXE** has been loaded.

If used without options, the mount command displays the status of any active virtual drives. The options that may be used with this command are as follows:

filesys The disk's volume name once it has been mounted.

hostname The name of the remote NFS file server containing the filesystem to mount.

netpath The complete (UNIX) pathname of the remote filesystem to mount. This directory must be listed in the**/etc/exports** file on the NFS file server.

drive The DOS drive letter assigned to the remote filesystem (D:, E:, F:, etc.).

USER Mandatory key for NFS identification.

username The User's name, under which access will be opened on the remote server. This is an optional parameter. If it is absent, the user is prompted to enter the**username** and **password**.

Even when the username is given, a password will be requested, unless it has already been given or the user name is "nobody".

passwd The password of the **username**'s account. This parameter is completely optional, and may be given after the user's name. If a password is not given, the user will be prompted to enter one when the mount is requested.

filesystem The name of an entry in the file**FILESYS.NFS**, located in the directory where Tun TCP was installed. The entry contains all the parameters described in this section.

-c confname The name of a file with a .CNF extension located in the directory where Tun TCP was installed. This option may be used to mount several disks simultaneously, with their current parameters.

Example

```
MOUNT NFS scounix /usr/mike e: USER mike
```

This command will mount the remote filesystem**/usr/mike** on a host system called **scounix**, with a volume label NFS, and with the access rights of the user **mike**.

See also

UMOUNT.EXE, TUNNFS.EXE

NFSCHMOD NFSCHMOD

Modifies the attributes of a remote file.

Syntax

NFSCHMOD octal_value filename

Description

This command is used to change the attributes (access rights) of a file located on an NFS filesystem. **NFSCHMOD** may only be used after **TUNNFS** has been loaded into memory, and at least one filesystem has been mounted.

octal_value

Expressed in octal notation, this is a numerical value that represents the new rights to be attributed to the file. The syntax for this notation is the same as that used in UNIX:

0	No read rights, or hidden file
1	Execution allowed
2	Write allowed
3	Execution and write allowed
4	Read allowed
5	Read and write allowed
6	Read and write allowed
7	Read, write, and execution allowed

filename

The name of the file to which new rights should be assigned.

Example

The command:

```
NFSCHMOD 777 file
```

assigns read, write, and execution rights for all users of the file**file**".

See also

NFSLS.EXE

NFSLS NFSLS

Listing of a remote directory in UNIX format.

Syntax

```
NFSLS [path]
```

Description

NFSLS (NFS list) is used to list the files on a remote volume in UNIX format. This command can only work if**TUNNFS** has been loaded into memory.

path is an optional character string that represents either the name of a file or a directory on a remote filesystem. The string is given in DOS format.

If this parameter is not given, the contents of the current directory will be listed.

See also

NFCHMOD.EXE

NFSUTIL NFSUTIL

NFS statistics and utilities.

Syntax

```
NFSUTIL -d
NFSUTIL -p index
NFSUTIL -n index
NFSUTIL -m name
NFSUTIL -f
NFSUTIL -t
NFSUTIL -q
NFSUTIL -b
NFSUTIL -l drive
NFSUTIL -u
NFSUTIL -v
```

Description

This command may be used to obtain statistical information about the NFS TSR. (Therefore, TUNNFS.EXE must be loaded into memory).

The options available for this command are as follows:

-d Display the name map cache, the internal table used to associate DOS and UNIX file names when there is a conflict between the naming structure between the two systems.

-p index The name map cache table is a circular queue, with a limited number of stored *associations*. If the available number of entries is exceeded, the program will re-use entries starting at the beginning of the queue. The -p option may be used to make name mapping permanent by reserving certain positions in the table.

The parameter index specifies the position in the table to be reserved.

-n index Has the opposite effect of the -p option.

-m name Used to read the UNIX name in the name map cache of a file by giving the DOS/NFS file name, and vice-versa.

-f Displays statistics regarding the utilization of all of the currently mounted filesystems.

-t Displays statistics regarding the utilization of the **TUNNFS** (.EXE) resident program.

-q Displays statistics regarding the utilization of circular queues and buffers within the**TUNNFS** (.EXE) resident program.

-b Switches between activation or deactivation of the right to delete UNIX symbolic links.

-l drive Switches between activation or deactivation of file and record lock on remote volumes.

-u Unloads the resident TUNNFS.EXE from memory.

-v Displays the version number of**TUNNFS** (.EXE) resident in memory.

See also

TUNNFS.EXE, NFSCFG.EXE

RCOPY RCOPY

Transfers files between DOS and UNIX systems from the command line.

Syntax

From a Unix server to your PC:

```
RCOPY [/a][/p][/r][/v] [user@]host:directory/* \directory

RCOPY [/a][/p][/v]    [user@]host:directory/file \directory\file
```

From your PC to a Unix server:

```
RCOPY [/a][/p][/r][/v] \directory\*.* [user@]host:directory

RCOPY [/a][/p][/v]    \directory\file [user@]host:directory/file
```

Between two Unix servers:

```
RCOPY [/r][/p][/v] [user@]host1:/directory/* [user@]host2:directory
RCOPY [/p][/v] [user@]host1:/directory/file [user@]host2:directory/file
```

Description

The **RCOPY** command may be used to transfer files from a PC to a UNIX server, and vice-versa, directly from the DOS command prompt. Closely resembling the UNIX command **rcp**, this program requires the UNIX host to be correctly configured (in the **.rhosts** file).

The parameters **source** and **target** use the following syntax:

```
path
host:path
user@host:path
```

In which:

host is the name or IP address of a remote UNIX system
path represents the file name (with the possibility of using wildcard characters).
user is the name of a valid user account on the UNIX server

Note: If you do not specify a host name, files will be copied on the local machine (like the DOS **copy** command)
By default, the user name assigned in the current TCP/IP configuration will be used for **user**, so you may not always need to specify this parameter;

The command-line options available with RCOPY are:

/a: Does a CRLF conversion (binary transfer by default).

/p: Preserves the modification time of the source files.

/r: When a directory name is given as the source, this copies files and subdirectories from the source directory into the destination directory.

/v: Displays information during copying.

Example

The following command will copy all the **.bat** files in the directory **c:\tuntcp** into the directory **/tmp** on a machine called **scounix**.

```
rcopy c:\tun\tcpd\*.bat scounix:/tmp
```

See also

FTP.EXE

REXEC

REXEC

Execution of a remote command, with a prompt for a password.

Syntax

```
REXEC hostname [-l userid] [-p passwd] command
```

Description

This command is used to execute a command on a remote server, with the results displayed on the PC's screen. As opposed to the**RSH** command, **REXEC** always prompts the user for a password before executing a command. The advantage to using **REXEC** is that it is not necessary to declare the PC in the TCP/IP configuration files on the remote machine.**REXEC** can only function after the TCP/IP kernel has been loaded.

The command options are as follows:

hostname Name or IP address of the server on which the command will be executed.

-l userid Name of the UNIX user whose account will be used to specify access rights for the command. If **userid** is not given, **REXEC** will look for it in the configuration files of the TCP/IP kernel.

-p passwd Password of the UNIX user whose account name is given. If not used, **REXEC** will prompt the user to enter it before executing the command.

command The exact UNIX command to execute. To avoid any ambiguity, the command may be enclosed in double quotes(").
The instruction separator (;) is supported.

See also

RSH.EXE

RSH RSH

Execution of a remote command without entering a password.

Syntax

```
RSH hostname [-l userid] command
```

Description

This command is used to execute a command on a remote server, with the results displayed on the PC's screen. Unlike**REXEC**, **RSH** does not prompt the user for a password. However, the PC must be declared in the configuration files on the UNIX host. Declare the PC by following these steps:

1. Declare the PC in the file**/etc/hosts** on the UNIX host (the name of the PC is contained in the TCP/IP startup parameters on the PC).

2. Declare a user on the UNIX machine whose name is identical to that assigned in the TCP/IP startup parameters, or to the name passed as a parameter to the**RSH** command.

3. Create or edit the file **rhosts** in the user's home directory. The file contains the name or IP address of the PC; those of any other PCs that are authorized to connect under the same user account are also listed in .**rhosts**.

> **Note**: This command will only work if the TCP/IP kernel has been loaded.

The options available for**RSH.EXE** are as follows:

hostname Name or IP address of the server on which to execute the command.

-l userid Name of the UNIX user whose account will determine access rights for the command. If**userid** is not given,**RSH** will look for it in the configuration files of the TCP/IP kernel.

command Exact syntax of the UNIX command to execute. To avoid ambiguity, it is best to enclose the command in double quotes (").

See also

REXEC.EXE

RXPRINT RXPRINT

TSR for Printer redirection.

Syntax

```
RXPRINT -LPTn hostname command [timeout]
RXPRINT -LPTn off
RXPRINT -LPTS
RXPRINT -s
RXPRINT -u
```

Description

This Terminate-and-Stay-Resident program is used to redirect output from the PC's parallel ports towards standard input for a UNIX command.

Internally, the program uses a protocol identical to that used by **RSH.EXE**: in order to function, the PC needs to be declared in the same configuration files as mentioned for **RSH.EXE**.

When first executed, **RXPRINT** loads itself into memory as a TSR. If the program is executed again, the memory-resident configuration is updated, rather than unloaded or reloaded.

RXPRINT checks the validity of the specified UNIX command by executing it without sending any data.

The available parameters for **RXPRINT** are as follows:

-LPTn Specifies the parallel port to redirect. The value for **n** may be either 1, 2, or 3.

hostname Name or IP address of the server onto which port output is redirected.

command The exact syntax of the UNIX command that receives the characters. To avoid any ambiguity, it is best to enclose the command in double quotes (").

timeout Integer value used to specify the amount of time after which an absence of characters on the port can be considered as the end of a print job. Some DOS and Microsoft Windows programs neither explicitly open nor close parallel ports after using them. If the PC is slow, or if the program sends data sporadically, it is best to increase the **timeout** value. The default is 10 seconds.

-u Unloads the TSR from memory.

-LPTS Loads the TSR into memory without assigning it a parallel port number.

-s Displays the current status of the PC's parallel ports.

Notes:

1. **RXPRINT** can only function if the TCP/IP kernel has already been loaded into memory.
2. When printing from Microsoft Windows, it is best to use the Print Manager.

Example

```
RXPRINT -LPT2 unix "lp -dhpjet"
```

The above command redirects parallel port LPT2 to the UNIX command**lp -dhpjet** on the server **unix**.

See also

VXPRINT.EXE, RSH.EXE

SHOWMNT SHOWMNT

Polls a server to find out which machines are currently connected via NFS.

Syntax

```
showmnt hostname
```

Description

The **EXPORTFS** command may be used to poll a server, whose name or IP address is given a parameter, in order to find out which filesystems may be mounted as DOS drives by the PC. It is especially useful for testing NFS connections.

See also

EXPORTFS

TAR TAR

Backup utility which uses remote peripherals.

Syntax

```
TAR c|x|t [vfTb] [tarfile] [filename1] [files]
```

Description

TAR may be used to backup and restore files on remote backup peripherals. Tape cartridges, floppy drives, and ordinary files may be used on a remote host.

TAR may also be used to backup and restore files locally on the PC.

When accessing remote peripherals,**TAR** uses a protocol identical to that used by **RSH.EXE**: in order to function, the PC needs to be declared in the same configuration files as mentioned for**RSH.EXE**.

The action carried out by the**TAR** command is determined by the parameter given on the command line, either**c**, **x**, or **t**:

c create new archive file
x restore from a remote archive file (eXtract)
t list to contents of a remote archive file

The **files** parameter gives the names of the files or directories to be backed up or restored.

Other parameters to the**TAR** command are as follows:

v By default, **TAR** does not display messages on the screen. Adding the letter **v** (verbose) after **c**, **x**, or **t** will display the action executed by the current command.

f tarfile The letter **f** indicates to **TAR** that the parameter that follows is the name of the backup device (or file). If this option is not used, **TAR** looks for the destination in the file **DEFAULT.TAR** in the Tun TCP directory.

If the **destination** parameter is given in the format **hostname:dest**, **TAR** will use the peripheral **dest** on host **hostname**. If it is omitted, **TAR** assumes that the destination is a local file.

T filename1 The letter **T** indicates to **TAR** that the parameter that follows gives the name of a file that contains the names of the files to backup.

b value The letter **b** indicates that the parameter that follows specifies the archive record lock factor. The default value is **1**; the maximum is **20**.

Examples

1. The following command sequentially and recursively (including subdirectories) backs up the entire **\WINDOWS** directory into a file called **\TMP** on the PC.

```
TAR cvf \TMP \WINDOWS
```

2. This command sequentially and recursively (including subdirectories) backs up the entire **\WINDOWS** and **\C700** directories onto a tape device on a remote machine called **scounix**.

```
TAR cvf scounix:/dev/rct0 \WINDOWS \C700
```

3. This command lists the contents of the tape cartridge in device **/dev/rctO** on the remote machine **scounix**.

```
TAR tvf scounix:/dev/rct0
```

4. This command restores the contents of tape cartridge in the remote machine **scounix** onto the PC's local hard disk.

```
TAR xvf scounix:/dev/rct0
```

See also

RSH.EXE

TNVT52 TNVT52

VT 52 terminal emulation over TCP/IP.

Syntax

TNVT52 hostname

Description

TNVT52 (Telnet VT52) turns a PC into a vt52terminal over a TCP/IP network. For the terminal emulation module to work, the TCP/IP kernel must be loaded in memory.

The **hostname** parameter gives either the alias name or IP address of the desired host.

Closing the UNIX session exits the program.

TUNNFS TUNNFS

NFS Terminate-and-Stay-Resident program.

Syntax

```
TUNNFS
TUNNFS -min
TUNNFS [-m mounts] [-s smallbuf] [-l largebuf]
       [-t transbuf] [-c cachebuf] [-d size]
```

Description

TUNNFS completely implements the PC-NFS protocol, and must be loaded before remote filesystems may be mounted as virtual DOS drives. (The TCP/IP kernel must currently be resident).

To unload **TUNNFS** from memory, run the command:**NFSUTIL -u**

If executed without any parameters,**TUNNFS** will load with default values. The following options may also be used to load**TUNNFS**:

-min Forces the resident program to use the minimum parameters in order to take up the least amount of space in memory. Only one remote filesystem may be mounted if**-min** is used.

-m mounts Specifies the maximum number of remote filesystems that can be mounted simultaneously. The default value is 2. The higher the number of mounts, the more memory used by the resident program. If you increase this value, you should also increase the other parameters proportionally.

-s smallbuf Specifies the number of small buffers used by the resident program to ensure communication. The default value is 8.

-l largebuf Specifies the number of large buffers used by the resident program for storing read-write information. The default value is 2.

-t transbuf Specifies the number of transaction buffers used by the resident program to write details regarding data transactions (RPC, XDR). The default value is 6.

-c cachebuf Specifies the number of cache buffers used by the resident program to memorize information, thereby reducing network requests. Cache buffers hold information concerning open files, directory information, and DOS/UNIX name translations (of incompatible file names between the two systems).

The default value is 32.

-d size Indicates the size of the large buffers (option -l). This parameter depends on the type of network, although it is generally increased for Token Ring

The default value is 8192.

See also

NFSUTIL.EXE

TUNTCP TUNTCP

Configuration menu for Tun TCP.

Syntax

```
TUNTCP
```

Description

TUNTCP is an interactive program that is used to configure, test, and launch the various functions offered by Tun TCP.

This program is described in detail in the first part of this manual.

UMOUNT UMOUNT

Unmounts a virtual network drive.

Syntax

```
UMOUNT drive:
```

Description

This command is used to unmount drives mounted on remote filesystems. The only parameter is the DOS drive letter of the drive you wish to unmount.

See also

TUNNFS.EXE, MOUNT.EXE

VXPRINT VXPRINT

Resident print server program for PC.

Syntax

```
VXPRINT -LPTn on|off [-b] [-ISO8859] [-Ttime]
                               [Ppriority]
VXPRINT -LPTS [-Ttime] [-Ppriority]
VXPRINT -s
VXPRINT -u
```

Description

The **VXPRINT** program makes locals printers **public**, giving other network users access to printers attached to a PC's local parallel ports.

Internally, **VXPRINT** is a simplified **RSH** server able to treat the following commands (with the above options):

LPT1 Redirects the standard input from **vxprint** to printer port LPT1.

LPT2 Redirects the standard input from **vxprint** to printer port LPT2.

LPT3 Redirects the standard input from **vxprint** to printer port LPT1.

LPTS Displays a list of the current public printers.

When first executed, **VXPRINT** loads as a Terminate-and-Stay-Resident program on the PC. Printer ports may be reassigned by executing **VXPRINT** again, but the program is not loaded into memory twice, or unloaded.

The parameters available for **VXPRINT** are as follows:

-LPTn The **n** parameter (1, 2, or 3) specifies the local LPT port affected by **VXPRINT**.

on Makes a configured printer **public**. Any UNIX machine may print using an **rsh** (or **rcmd**) command.

off Turns off **VXPRINT** for a particular printer.

-b No conversion. UNIX LF characters will not be converted into CR/LF by **VXPRINT.EXE**.

-ISO8859 **VXPRINT** will convert ISO8859 characters to CP850

-Ttime Sets a timeout after which client connections are closed.

-Ppriority Sets an execution priority for **VXPRINT.EXE** in percentage of CPU time. A value of 20 % is usually sufficient.

-u Unloads the resident program from memory.

-LPTS Loads the TSR into memory without specifying a parallel port.

-s Displays the current redirection status of the PC's parallel ports.

Example

The user on a PC named "star" (IP address 126.125.124.42) wants the printer on his parallel port LPT1 to be public. On his PC, the following command is executed:

```
VXPRINT -LPT1 on
```

A user on a UNIX machine wants to print the file **/etc/passswd** on the printer attached to "star". The command that he runs from his UNIX session is the following:

```
cat /etc/passwd | rsh star LPT1
```

> **Note**: On some UNIX systems (SCO UNIX, SCO XENIX), **rsh** is replaced by **rcmd**.

See also

RXPRINT.EXE

GLOSSARY

ARP (Address Resolution Protocol)
The Internet protocol that associates logical IP addresses with physical LAN card addresses.

ARPA (Advanced Research Projects Agency)
An agency of the Department of Defense (United States) whose research led to the development of the TCP/IP suite of protocols.

Bit
A "binary digit", either 0 or 1.

Bridge
Device used to link different Local Area Networks together to expand networks on different sites. Bridges operate at layer 2 of the OSI model.

Byte
8 bits, an octet.

Client
A user of network services.

Client/Server (architecture...)
This architecture uses the notion of distributed processing, and considers both the server and the client as intelligent units; the processing power of each system is maximized. Applications are therefore divided into two distinct parts: a front-end (client) and a back-end (server)

CSMA/CD (Carrier Sense Multiple Access with Collision Detection)
Access method using carrier and collision detection, standard 802.3, used in Ethernet, Starlan, and Arcnet networks.

Ethernet
Cabling system using coaxial (thick or thin), or twisted pair (TP) cable; access protocol developed by XEROX.

FTP (File Transfer Protocol)
"De Facto" protocol standard for file transfer over TCP/IP.

Gateway

Hardware and software used to link a local network to a central site, a mini-computer, or to other communications systems such as the telex network.

Host table
List that relates the IP address of a network host to an alias "name".

HUB
Central unit in some type of networks, used to link machines together.

ICMP (Internet Control Message Protocol)
ICMP (Internet Control Message Protocol) is used by IP for packet redirection, error detection, and other network management tasks. ICMP includes an "echo and response" utility used for testing the accessibility of TCP/IP hosts on the network.

IEEE 802.3 1Base5
IEEE specification concerning Starlan, with network transmission at 1 Mbit/s, in baseband, with cable segments of less than 500 meters.

IEEE 802.3 10Base2
IEEE specification concerning Ethernet running over coaxial cable, in baseband, with cable segments up to approximately 200 meters.

IEEE 802.3 10BaseT
IEEE specification concerning Ethernet running over twisted-pair, in baseband, requires the use of a HUB.

IEEE 802.5
IEEE specification concerning Token Ring

Internet Address
Internet addresses are used by IP to identify the hosts in a TCP/IP network. Composed of 32 bits, IP addresses are usually represented as having of (4) fields (*a.b.c.d*).

IP (Internet Protocol)
Protocol ensuring network interconnection (approximately network layer 3 in the OSI model).

IPX (Internetwork Packet Exchange)
Native Netware protocol for exchanging data between a file server and workstations. Information transmitted on the network is divided into IPX packets containing the hardware addresses of the sender and receiver.

NDIS (Network Driver Interface Specification)

Specification developed by Microsoft and 3Com concerning drivers for network cards.

Netbeui

Communications protocol used by Microsoft LAN Manager networks.

NFS (Network File System)

Application developed by SUN Microsystems that runs over TCP/IP, allowing a computer access to files and peripherals on a remote host on the same network.

ODI (Open Datalink Interface)

Interface standard for transport protocols, used in multi-protocol configurations.

OSI (Open Systems Interconnection)

Developed by the ISO (International Standards Organization), the OSI reference model for open systems interconnection contains seven layers: 1 - Physical, 2 - Link, 3 - Network, 4 - Transport, 5 - Session, 6 - Presentation, and 7 - Application. This model provides guidelines to ensure interconnection between heterogeneous systems.

Packet driver

Resident driver that manages the interface between an application and a network card.

PING (Packet InterNet Groper)

A utility that send an echo to a particular host, then waits for a response; used to test network accessibility of hosts on a network.

Serial port

Communications port allowing data transmission one bit at a time. On a PC, COM1, COM2, and COM3 are serial ports.

Twisted Pair (10BaseT)

Originally used as office telephone cabling, twisted pair has become one of the most frequently used media for network cabling.

Redirector

Resident program loaded on each network workstation, that intercepts program requests for shared resources (files, printers...), and redirects them towards the network.

Router

Device used to link different types of local networks so as to form a single logical network.

Server

A network device that provides services to clients (file server, etc...)

Stream

A "full duplex" connection between a user process and a network device.

TCP (Transmission Control Protocol)

Transport protocol offering connection-oriented services. This protocol allows the use of many network functions: virtual Telnet terminal management, file transfer with FTP, NFS resource management...

TCP/IP (Transmission Control Protocol/Internet Protocol)

Offers point-to-point communications services (streams or sockets), and interconnection of heterogeneous computing systems.

Telnet

Virtual terminal protocol over TCP/IP that allows users to connect to remote hosts.

X.25

Standard concerning the connection of computers to public data networks functioning in packet mode..

WAN (Wide Area Network)

Enterprise-wide network, or network covering a geographical region.

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