

**XFS32 Version 1.0**  
Network File System (NFS) Client  
September 21, 1994

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# Introduction

XFS32 is a Network File System (NFS) Client implementation for PC's running *Microsoft Windows for Workgroups 3.11* and *Microsoft TCP/IP-32*. It uses the network-wide file sharing of other systems and provides in this way the enormous disk resources of modern workstations. Because the file sharing mechanism is transparent, you can manipulate remote files by traditional PC software like file managers, word processors etc.



# Installing XFS32

The XFS32 distribution contains following files:

SETUP.EXE	Windows Setup application
SETUP.INF	Setup info
XFS32.EXE	The redirector
VXFS.386	Virtual device (version 1.2)
XFSTOOL.EXE	DOS command line user interface
XFSINIT.EXE	The 'automounter'
XFS32FMX.DLL	File Manager Extension (version 1.45)
XFS32.HLP	Help file
ORDER.FRM	Order form

If you're using SETUP.EXE, the files are copied into the Windows directory (VXFS.386 is placed into the System directory). A PATH modification is not required. SETUP modifies the following files (see also \*.INI):

- WIN.INI: new printer interfaces,
  - SYSTEM.INI: entry for VXFS.386
  - WINFILE.INI: entry for XFS32FMX.DLL, the file manager extension.

AUTOEXEC.BAT and CONFIG.SYS are not touched: please add the LASTDRIVE=Z directive to your CONFIG.SYS and run, if you wish, XFS32.EXE from your AUTOEXEC.BAT. XFS32.EXE can also be started by a batch file which also starts Windows.

*Microsoft TCP/IP-32* must be installed at the moment you begin with the XFS32 setup.



## (PC)NFSD

Because a PC running MS-DOS (usually) doesn't provide any security mechanism, there must be other possibilities to authenticate a MS-DOS user before using network-wide NFS resources. *Sun Microsystems, Inc.* has developed an UNIX RPC program that allows a simple user authentication for PCs: pcnfsd. The pcnfsd daemon is not part of the XFS distribution but can be obtained from several places (see [ftp sites](#)).

Installing rpc.pcnfsd





# Mounting

Before you begin to mount the drives, you have to config your NFS-server(s) to export the directories you want to mount with XFS. Please consult the Administration Manuals of your Operating System to find out how to export file systems.

[Mount a Drive](#)

[Mount a Printer](#)

[Unmounting Drives/Printers](#)

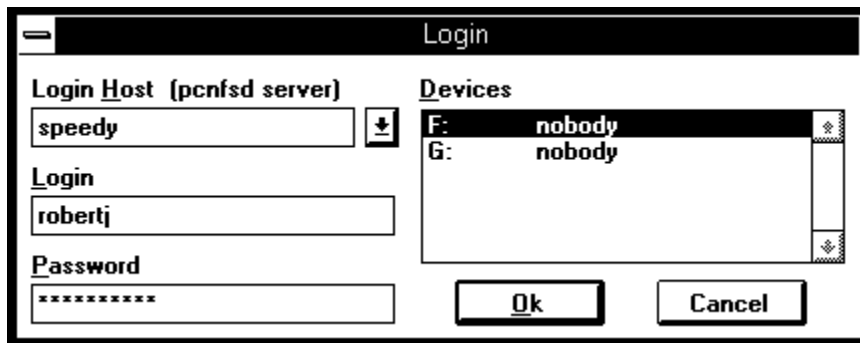


# Authentication

Mounting drives/printers without an user authentication presets the access rights of the user nobody, uid = gid = -2. The login dialog of the file manager extension authenticates the user by exchanging username and password against new uid/gid values obtained over pcnfsd. These values can be used for

- re-authenticating already mounted drives/printers and/or
- mounting new drives/printers.

The authentication is valid during one dialog instance only: when the user leaves the mount dialog or the login dialog, the uid/gid are preset to nobody. Because the mount dialog allows multiple mounts during one instance, the user can reuse the authentication values until closing the dialog.



The image shows a 'Login' dialog box with a title bar. It contains three input fields on the left: 'Login Host (pcnfsd server)' with the value 'speedy', 'Login' with the value 'robertj', and 'Password' with masked characters '\*\*\*\*\*'. To the right of these fields is a 'Devices' list box containing two entries: 'F: nobody' and 'G: nobody'. At the bottom right are 'Ok' and 'Cancel' buttons.

Login	
<b>Login Host (pcnfsd server)</b>	<b>Devices</b>
speedy	F: nobody
	G: nobody
<b>Login</b>	
robertj	
<b>Password</b>	
*****	
Ok Cancel	



## Other Commands

XFSTOOL

Setting the Time Zone

Unloading XFS32.EXE



# Appendix

Error Messages

Changes to \*.INI Files

Format of XFS32.INI

Compatibility

Trademarks

Some FTP Sites





# Registration

The XFS Network File System Client is distributed as shareware. You can test this software as long you want, but if you decide to work with it, you must pay the registration fee.

The current registration prices are:

Educational users: US \$ 15 / CPU  
Business users: US \$ 25 / CPU

Site license:

Quantity	Discount
3--10	10%
11--20	20%
21--200	30%
201+	50%

If you are a reseller, and you would like to redistribute XFS32, please contact the author.

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Order Form



# Warranty

This software is distributed in the hope that it will be useful but WITHOUT ANY WARRANTY. If you choose to use XFS32, you assume all risk.

IN NO EVENT SHALL Robert Juhasz BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, OR ANY DAMAGES RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER OR NOT ADVISED OF THE POSSIBILITY OF DAMAGE, AND ON ANY THEORY OF LIABILITY, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.



## Installing rpc.pcnfsd

Actually there are 2 versions of rpc.pcnfsd available. XFS uses only features of the 1st version (which are also included in the 2nd version).

The 1st version of rpc.pcnfsd needs:

- a spool directory for pending print jobs,
- a printer utility (lpr on 4.3BSD or lp on SYSV),
- valid /etc/printcap entries for printers used by XFS or something equivalent on SYSV.

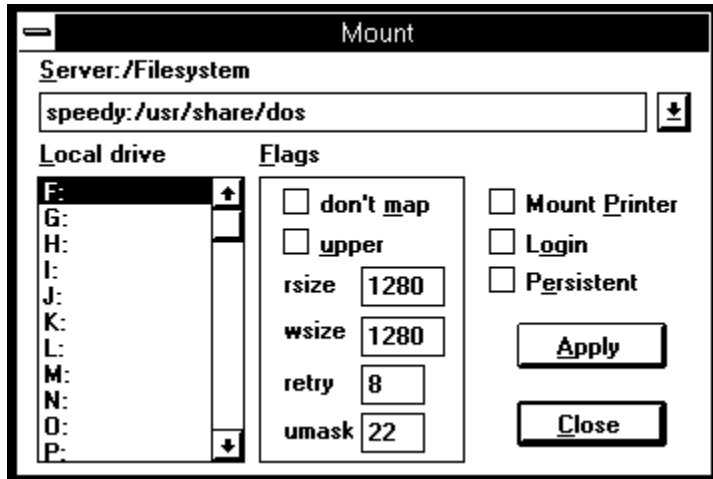
The spool directory is a command line argument of rpc.pcnfsd. Note, that this directory must also be exported to your XFS clients.

The printer utility can be choose in the Makefile or can be directly inserted in the source code (pcnfsd.c).

### Example

## Mount a Drive

Drives are mounted interactively by the file manager. The mount dialog, called by the XFS32 menu, provides a lot of options which are described in the next sections.



Server:/filesystem

Local Drives

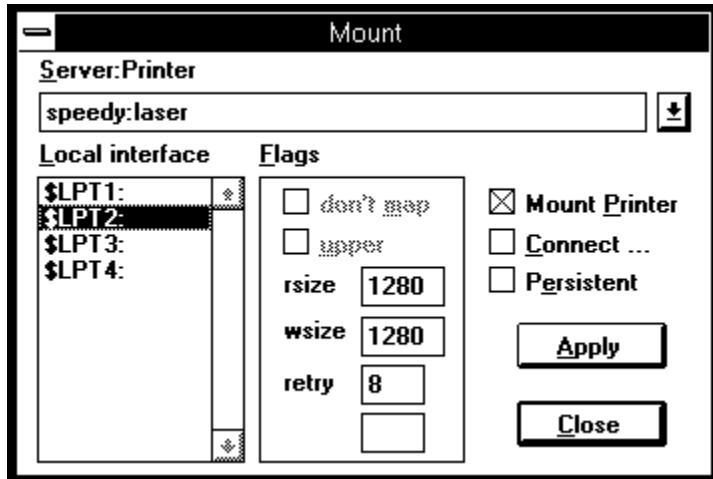
Flags

Other Options

XFSTOOL Command Line Syntax

## Mount a Printer

Printers are mounted with the same file manager dialog as used for drives. The options *Mount Printer* switches the dialog into the printer mode.



Server:printer

Local Interface

Flags

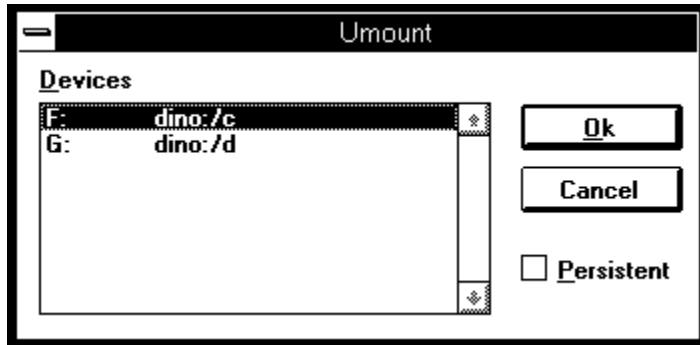
Other Options

Connecting a Printer to a XFS32 Device

XFSTOOL Command Line Syntax

## Unmounting Drives/Printers

The *Unmount* menu command of XFS32's file manager extension allows selective disconnecting of Drives/Printers. Please note that the *Devices* list box supports multiple selections.



The *Persistent* option will suppress reusing the connection(s) when Windows starts again.

XFSTOOL Command Line Syntax



## XFSTOOL

XFSTOOL offers the same operations as the file manager extension, but from within a DOS window. The user can

- mount/unmount drives/printers,
  - login/logout,
  - get status informations (xfstool stat),
  - get help by xfstool help <command>,
  - unload XFS32.EXE by xfstool unload.

*Note:* Later XFS32 versions will probably don't include XFSTOOL.

## Setting the Time Zone

The time zone is set by the environment variable TZ or XTZ. The format of the TZ/XTZ variable is:

`XTZ=xxx[+|-]<value>`

where

<code>xxx</code>	Time zone name (semantically not evaluated by XFS).
<code>[+ -]&lt;value&gt;</code>	Time offset from GMT/UCT in hours.

Note that XFS doesn't support any daylight savings, but you can obtain this by incrementing or decrementing the time offset of the XTZ variable.

## Unloading XFS32.EXE

`xfstool unload`

shuts down the XFS kernel by unmounting all drives/devices and unloading XFS from the DOS memory. The unloading will fail if a TSR blocks the interrupt0x2f.

## Error Messages

*Host not found* The specified hostname was not found.

*Operation would block* Timeout error. The server is probably not responding.

*Can't mount/umount filesystem* The server denies mounting.

*Unregistered RPC service* XFS32 tries to connect to an unexisting RPC service like MOUNTD, NFS or PCNFSD. A `rpcinfo -p` of your server should list this services.

*Invalid login* What could it be?

*Duplicate redirection* You're trying to overload a DOS drive letter

*Invalid drive/printer* Not a valid DOS device (drive letter or printer interface).

*Out of memory in redirector* XFS32.EXE is running out of memory. Reduce the actual mounted drives.

---

If you got strange error messages or have detected bugs, please send

- an XFSTOOL STAT output,
  - an `rpcinfo -p` output of your server and
  - a brief description of the bug

to [robertj@lwfws1.uni-paderborn.de](mailto:robertj@lwfws1.uni-paderborn.de).

## Changes to \*.INI Files

The setup application makes the following changes to Windows's .INI files:

- **WIN.INI**  
; XFS32 printer ports  
[ports]  
\$LPT1:=  
...  
\$LPT4:=
- **SYSTEM.INI**  
; XFS32 VxD  
[386Enh]  
device=vxfs.386
- **WINFILE.INI**  
; The file manager extension  
[AddOns]  
Xfs32=xfs32fmx.dll

## Format of XFS32.INI

The file manager extension saves the persistent drives into XFS32.INI. When Windows starts again, XFSINIT reads this file, authenticates the user and connects the drives/printers:

### XFS32.INI

```
[Automount]
; drive=server:/filesystem,rsiz,wsiz,retry,
;   umask,flags,pcnfsd_server,user
; printer=server:printer,rsiz,wsiz,retry
;
; Eg.:
D:=speedy:/usr/share/dos,1024,1024,4,077,4,speedy,guest
$LPT1:=speedy:laser,1024,1024,4
```

The only undocumented option at this moment is flags. All other were described in this document. flags can be set to:

- |   |                                  |
|---|----------------------------------|
| 0 | supress 8+3 file name mapping    |
| 2 | 8+3 file name mapping (standard) |
| 4 | uppercased filesystems           |

Other values are undefined.

## Compatibility

**Tested** MS-DOS 5.0, 6.0, 6.2, MS Windows 3.11 for Workgroups, MS TCP/IP-32 1.0

**Not tested** DR-DOS 6.0, Novell DOS 7 (it seems to work ok)

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Think about: THERE IS NO WARRANTY

## Trademarks

*NFS* is a Trademark of Sun Microsystems, Inc

*MS-DOS* is a Registered Trademark of Microsoft, Inc

*Microsoft Windows* is a Trademark of Microsoft, Inc

*UNIX* is a Trademark of AT&T



## Some FTP Sites

XFS	lwfwsl.uni- paderborn.de: /pub/xfs
(PC)NFSD	ftp.uni-paderborn.de: /unix/network/ daemon/pcnfsd.tar.Z
MS TCP/IP-32	ftp.microsoft.com

# Order Form

## PAYMENT

=====

1. Overseas    Cheque
  2. Europe     Cheque    EuroCheque
  3. Germany    Cheque    EuroCheque
- Ueberweisung  
Sparkasse Paderborn - BLZ 472 501 01 - Kto 12001202

Please send your order to:

## AUTHOR

=====

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CIS:    100045,2433  
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## ORDER FORM

=====

Number of licenses \_\_\_\_\_ X US \$15 / US \$25

Subtotal        \_\_\_\_\_ X

Discount        0. \_\_\_\_\_

Total            =====

## SENDER

-----

Company \_\_\_\_\_

Person        \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Country \_\_\_\_\_

Phone        \_\_\_\_\_ Fax    \_\_\_\_\_

Email        \_\_\_\_\_

Send bill by   email [   ]   smail [   ]   fax [   ]

Date   \_\_\_\_\_



## Example

Following example loads `rpc.pcnfsd`:

```
rpc.pcnfsd /var/spool/xfs
```

`/var/spool/xfs` must be exported in this example.

When `rpc.pcnfsd` is loading, it creates the spool directory and, when a PC `pc1` is attempting to mount a printer, it creates the directory `/var/spool/xfs/pc1`. All pending jobs of this PC are stored in this directory.

## Server:/filesystem

A NFS resource is defined by the server and by one of its exported filesystem (directory).

server can be

- an IP address: 131.238.192.3
- a real host name or an alias, both found in the HOSTS file of your *MS TCP/IP-32*

package

- a real host name or an alias resolved by DNS

filesystem can include the variable \$user or \$hostname which are substituted by the current user name or PC host name. \$user can be used to mount a home directory (if the user name coincides with a part of the home directory). \$hostname is useful when mounting specific directories for the PC.

### Examples:

speedy:/usr/share/dos

speedy:/homes/\$user

speedy:/usr/share/dos/\$hostname

## Local Drives

XFS32 will show only valid drives in the *Local Drives* list box. If the list appears to be too short, you've probably omitted the LASTDRIVE statement in CONFIG.SYS.

## Flags

<i>don't map</i>	Suppress 8+3 name mapping, useful when mounting a filesystem with DOS compatible file names.
<i>upper</i>	Useful for CD-ROMs with uppercased file names, unuseful for "normal" filesystems.
<i>rsize</i>	The amount of data transfered within one read command. The default size is 1280 but XFS32 accepts sizes up to 8192.
<i>wsiz</i>	The amount of data transfered within one write command. The default size is 1280 but XFS32 accepts sizes up to 8192. Small data transfers are cached and flushed on demand.
<i>retry</i>	Retransmit counter, useful for congested or slow LANs.
<i>umask</i>	File creation mask (octal value).

---



## Other Options

*Login*                Authenticate before mounting the filesystem.

*Persistent*        Remount the filesystem when Windows starts again. XFSINIT.EXE will do this work automatically when it will be loaded by the AUTOSTART group. If you're planing to mount several filesystems from the same server under the same login, you'll need only one authentication. In this case, click the *Login* options for the first filesystem only.

---

See also XFS32.INI

## **XFSTOOL Command Line Syntax**

The command line syntax for mounting drives is

```
xfstool mount <drive> <server>:<directory> [[option] [option] ... ]
```

*Note:* XFSTOOL does not support DNS (nameserver), because it can not access this service from within DOS.

See also XFSTOOL

## **Server:printer**

A XFS printer is defined by the server and by one of server's printer queues listed in /etc/printcap. Because the printer access is managed by pcnfsd the server must provide this service.

## **Local Interface**

XFS32 will show up to 4 valid (not already mounted) printers in the *Local Devices* list box.

## Flags

<i>rsize</i>	The amount of data transfered within one read command. The default size is 1280 but XFS32 accepts sizes up to 8192. However, reading from a printer spool file will never occur (from the DOS side, of course).
<i>wsiz</i> e	The amount of data transfered within one write command. The default size is 1280 but XFS32 accepts sizes up to 8192 (printers should get 4096 only. They'll never use more). Small data transfers are cached and flushed on demand.
<i>retry</i>	Retransmit counter, useful for congested or slow LANs.

## Other Options

*Connect...*      Show the *Windows Printer Control Dialog*.

*Persistent*      Remount the printer when Windows starts again. XFSINIT.EXE will do this work automatically when it will be loaded by the AUTOSTART group.

---

## Connecting a Printer to a XFS32 Device

The *Connect...* option shows the *Windows Printer Control Dialog* (or the *Windows System Control Application*, if your Windows version isn't "native english" [like me:]). Within the *Printer Control*, please connect your printer (eg. HP LaserJet 4) to one of the 4 `$LPTn` devices that you've previously mounted. The connection will remain persistent.

## **XFSTOOL Command Line Syntax**

The command line syntax for mounting printers is

```
xfstool mount $LPTn: <server>:<printer> [[option] [option] ... ]
```

*Note:* XFSTOOL does not support DNS (nameserver), because it can not access this service from within DOS.

See also XFSTOOL



## **XFSTOOL Command Line Syntax**

The command line syntax for unmounting resources is

```
xfstool umount { <drive> | $LPTn: | all }
```

See also XFSTOOL



This help file was generated using Julian Smart's **TeX2RTF** LaTeX to RTF converter.

The exported directories are usually part of `/etc/exports` and are exported with the `exportfs` command.

Domain Name Server; nameserver



