

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

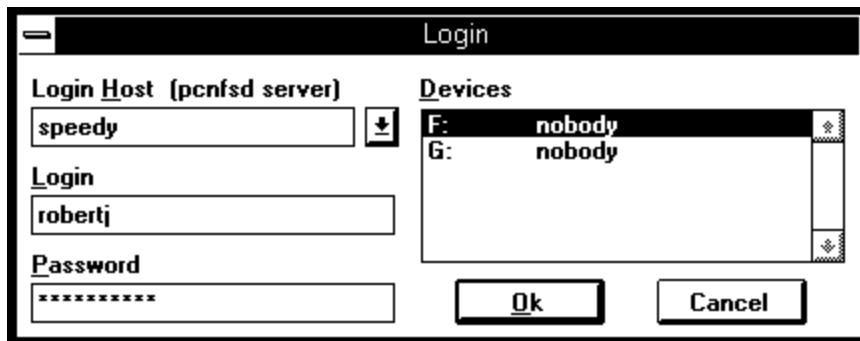
Unmounting Drives/Printers

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.



Other Commands

XFSTOOL

Setting the Time Zone

Unloading XFS32.EXE

Appendix

[Error Messages](#)

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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.

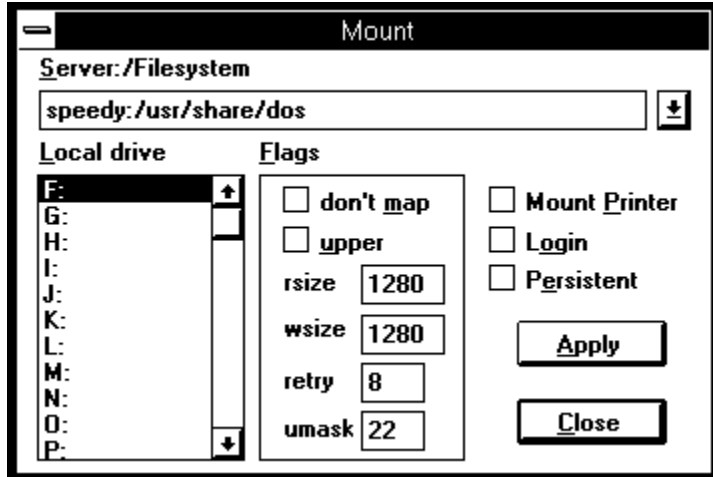
The spool directory is a command line argument of `rpc.pcnfsd`. Note, that this directory must also be exported to your XFS clients.

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](#)

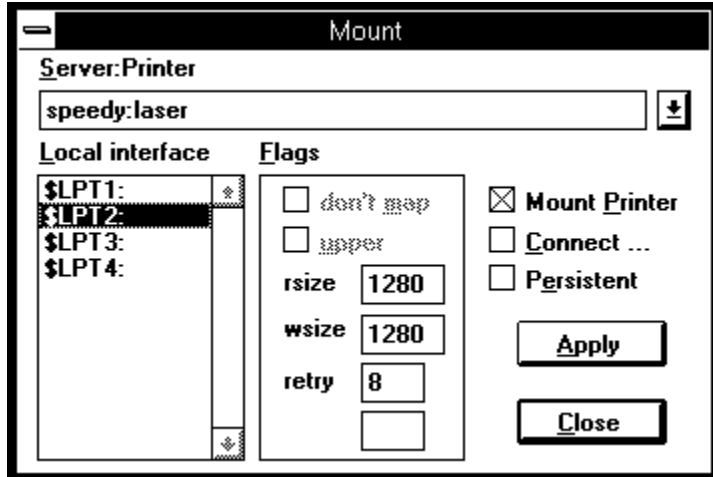
[Flags](#)

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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](#)

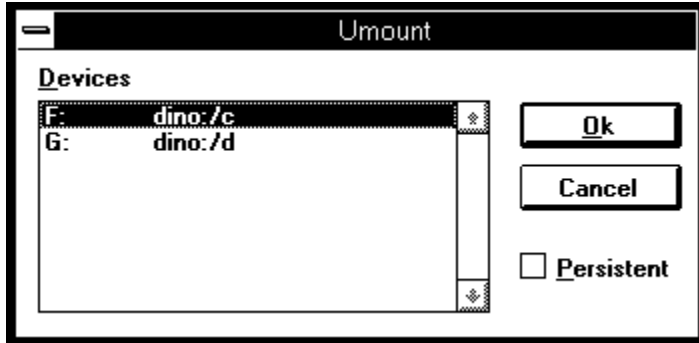
[Other Options](#)

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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>[+ .]<value></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 interrupt`0x2f`.

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.

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, rsize, wsize, retry,
;   umask, flags, pcnfsd_server, user
; printer=server:printer, rsize, wsize, 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)

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	lwfws1.uni- paderborn.de: /pub/xf
(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
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- Ueberweisung
Sparkasse Paderborn - BLZ 472 501 01 - Kto 12001202

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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 _____

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

- rsize* The amount of data transferred 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).
- wsize* The amount of data transferred 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.
- retry* 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

