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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'tnftp.1'***

**\$ man tnftp.1**

TNFTP(1) BSD General Commands Manual

TNFTP(1)

#### **NAME**

tnftp ? Internet file transfer program

#### **SYNOPSIS**

tnftp [-46AadefginpRtVv?] [-N netrc] [-o output] [-P port] [-q quittime] [-r retry]

[-s srcaddr] [-T dir,max[,inc]] [-x xfersize] [[user@]host [port]]

[[user@]host:[path][/] [file://path]

[ftp://[user[:password]@]host[:port]/path[/][;type=type]]

[http://[user[:password]@]host[:port]/path]

[https://[user[:password]@]host[:port]/path] ...

tnftp -u url file ...

#### **DESCRIPTION**

tnftp is the user interface to the Internet standard File Transfer Protocol. The program allows a user to transfer files to and from a remote network site.

The last five arguments will fetch a file using the FTP or HTTP protocols, or by direct copying, into the current directory. This is ideal for scripts. Refer to AUTO-FETCHING FILES below for more information.

Options may be specified at the command line, or to the command interpreter.

- 4 Forces tnftp to only use IPv4 addresses.
- 6 Forces tnftp to only use IPv6 addresses.
- A Force active mode FTP. By default, tnftp will try to use passive mode FTP and fall back to active mode if passive is not supported by the server. This option causes tnftp to always use an active connection. It is only useful for connect?

ing to very old servers that do not implement passive mode properly.

- a Causes tnftp to bypass normal login procedure, and use an anonymous login instead.
- d Enables debugging.
- e Disables command line editing. This is useful for Emacs ange-ftp mode.
- f Forces a cache reload for transfers that go through the FTP or HTTP proxies.
- g Disables file name globbing.
- i Turns off interactive prompting during multiple file transfers.
- N netrc Use netrc instead of ~/.netrc. Refer to THE .netrc FILE for more information.
- n Restrains tnftp from attempting ?auto-login? upon initial connection for non auto-fetch transfers. If auto-login is enabled, tnftp will check the .netrc (see below) file in the user's home directory for an entry describing an account on the remote machine. If no entry exists, tnftp will prompt for the remote machine login name (default is the user identity on the local machine), and, if necessary, prompt for a password and an account with which to login. To override the auto-login for auto-fetch transfers, specify the username (and optionally, password) as appropriate.
- o output When auto-fetching files, save the contents in output. output is parsed according to the FILE NAMING CONVENTIONS below. If output is not ?-? or doesn't start with ?|?, then only the first file specified will be retrieved into output; all other files will be retrieved into the basename of their remote name.
- P port Sets the port number to port.
- p Enable passive mode operation for use behind connection filtering firewalls. This option has been deprecated as tnftp now tries to use passive mode by default, falling back to active mode if the server does not support passive connections.
- q quittime Quit if the connection has stalled for quittime seconds.
- R Restart all non-proxied auto-fetched.
- r wait Retry the connection attempt if it failed, pausing for wait seconds.
- s srcaddr Uses srcaddr as the local IP address for all connections.
- t Enables packet tracing.
- T direction,maximum[,increment]

Set the maximum transfer rate for direction to maximum bytes/second, and if specified, the increment to increment bytes/second. Refer to rate for more information.

**-u url file ...**

Upload files on the command line to url where url is one of the ?ftp://? URL types as supported by auto-fetch (with an optional target filename for single file uploads), and file is one or more local files to be uploaded.

**-V** Disable verbose and progress, overriding the default of enabled when output is to a terminal.

**-v** Enable verbose and progress. This is the default if output is to a terminal (and in the case of progress, tnftp is the foreground process). Forces tnftp to show all responses from the remote server, as well as report on data transfer statistics.

**-x xfersize**

Set the size of the socket send and receive buffers to xfersize. Refer to xferbuf for more information.

**-?** Display help to stdout, and exit.

The client host with which tnftp is to communicate may be specified on the command line. If this is done, tnftp will immediately attempt to establish a connection to an FTP server on that host; otherwise, tnftp will enter its command interpreter and await instructions from the user. When tnftp is awaiting commands from the user the prompt ?ftp>? is provided to the user. The following commands are recognized by tnftp:

**! [command [args]]**

Invoke an interactive shell on the local machine. If there are arguments, the first is taken to be a command to execute directly, with the rest of the arguments as its arguments.

**\$ macro-name [args]**

Execute the macro macro-name that was defined with the macdef command. Arguments are passed to the macro unglobbed.

**account [passwd]**

Supply a supplemental password required by a remote system for access to resources once a login has been successfully completed. If no argument is included, the user will be prompted for an account password in a non-echoing input

mode.

append local-file [remote-file]

Append a local file to a file on the remote machine. If remote-file is left un? specified, the local file name is used in naming the remote file after being al? tered by any ntrans or nmap setting. File transfer uses the current settings for type, format, mode, and structure.

ascii Set the file transfer type to network ASCII. This is the default type.

bell Arrange that a bell be sounded after each file transfer command is completed.

binary Set the file transfer type to support binary image transfer.

bye Terminate the FTP session with the remote server and exit tnftp. An end of file will also terminate the session and exit.

case Toggle remote computer file name case mapping during get, mget and mput com? mands. When case is on (default is off), remote computer file names with all letters in upper case are written in the local directory with the letters mapped to lower case.

cd remote-directory

Change the working directory on the remote machine to remote-directory.

cdup Change the remote machine working directory to the parent of the current remote machine working directory.

chmod mode remote-file

Change the permission modes of the file remote-file on the remote system to mode.

close Terminate the FTP session with the remote server, and return to the command in? terpreter. Any defined macros are erased.

cr Toggle carriage return stripping during ascii type file retrieval. Records are denoted by a carriage return/linefeed sequence during ascii type file transfer. When cr is on (the default), carriage returns are stripped from this sequence to conform with the UNIX single linefeed record delimiter. Records on non-UNIX re? mote systems may contain single linefeeds; when an ascii type transfer is made, these linefeeds may be distinguished from a record delimiter only when cr is off.

debug [debug-value]

Toggle debugging mode. If an optional debug-value is specified it is used to

set the debugging level. When debugging is on, tnftp prints each command sent to the remote machine, preceded by the string ?--?.

delete remote-file

Delete the file remote-file on the remote machine.

dir [remote-path [local-file]]

Print a listing of the contents of a directory on the remote machine. The list? ing includes any system-dependent information that the server chooses to in? clude; for example, most UNIX systems will produce output from the command ?ls -l?. If remote-path is left unspecified, the current working directory is used.

If interactive prompting is on, tnftp will prompt the user to verify that the last argument is indeed the target local file for receiving dir output. If no local file is specified, or if local-file is ?-?, the output is sent to the ter? minal.

disconnect A synonym for close.

edit Toggle command line editing, and context sensitive command and file completion. This is automatically enabled if input is from a terminal, and disabled other? wise.

epsv, epsv4, epsv6

Toggle the use of the extended EPSV and EPRT commands on all IP, IPv4, and IPv6 connections respectively. First try EPSV/EPRT, and then PASV/PORT. This is en? abled by default. If an extended command fails then this option will be tempo? rarily disabled for the duration of the current connection, or until epsv, epsv4, or epsv6 is executed again.

exit A synonym for bye.

features Display what features the remote server supports (using the FEAT command).

fget localfile

Retrieve the files listed in localfile, which has one line per filename.

form format

Set the file transfer form to format. The default (and only supported) format is ?non-print?.

ftp host [port]

A synonym for open.

gate [host [port]]

Toggle gate-ftp mode, which used to connect through the TIS FWTK and Gauntlet FTP proxies. This will not be permitted if the gate-ftp server hasn't been set (either explicitly by the user, or from the **FTPSERVER** environment variable). If host is given, then gate-ftp mode will be enabled, and the gate-ftp server will be set to host. If port is also given, that will be used as the port to connect to on the gate-ftp server.

**get** *remote-file* [*local-file*]

Retrieve the *remote-file* and store it on the local machine. If the local file name is not specified, it is given the same name it has on the remote machine, subject to alteration by the current case, ntrans, and nmap settings. The current settings for type, form, mode, and structure are used while transferring the file.

**glob** Toggle filename expansion for mdelete, mget, mput, and mreget. If globbing is turned off with glob, the file name arguments are taken literally and not expanded. Globbing for mput is done as in csh(1). For mdelete, mget, and mreget, each remote file name is expanded separately on the remote machine and the lists are not merged. Expansion of a directory name is likely to be different from expansion of the name of an ordinary file: the exact result depends on the foreign operating system and FTP server, and can be previewed by doing ?mls *remote-files* -?. Note: mget, mput and mreget are not meant to transfer entire directory subtrees of files. That can be done by transferring a tar(1) archive of the subtree (in binary mode).

**hash** [*size*]

Toggle hash-sign (?#?) printing for each data block transferred. The size of a data block defaults to 1024 bytes. This can be changed by specifying size in bytes. Enabling hash disables progress.

**help** [*command*]

Print an informative message about the meaning of *command*. If no argument is given, tnftp prints a list of the known commands.

**idle** [*seconds*]

Set the inactivity timer on the remote server to *seconds* seconds. If *seconds* is omitted, the current inactivity timer is printed.

**image** A synonym for binary.

## lcd [directory]

Change the working directory on the local machine. If no directory is specified, the user's home directory is used.

## less file

A synonym for page.

Display local-file with the program specified by the set pager option.

## lpwd

Print the working directory on the local machine.

## ls [remote-path [local-file]]

A synonym for dir.

## macdef macro-name

Define a macro. Subsequent lines are stored as the macro macro-name; a null line (consecutive newline characters in a file or carriage returns from the terminal) terminates macro input mode. There is a limit of 16 macros and 4096 total characters in all defined macros. Macro names can be a maximum of 8 characters. Macros are only applicable to the current session they are defined within (or if defined outside a session, to the session invoked with the next open command), and remain defined until a close command is executed. To invoke a macro, use the \$ command (see above).

The macro processor interprets ?\$? and ?\? as special characters. A ?\$? followed by a number (or numbers) is replaced by the corresponding argument on the macro invocation command line. A ?\$? followed by an ?i? signals the macro processor that the executing macro is to be looped. On the first pass ?\$i? is replaced by the first argument on the macro invocation command line, on the second pass it is replaced by the second argument, and so on. A ?\? followed by any character is replaced by that character. Use the ?\? to prevent special treatment of the ?\$?.

## mdelete [remote-files]

Delete the remote-files on the remote machine.

## mdir remote-files local-file

Like dir, except multiple remote files may be specified. If interactive prompting is on, tnftp will prompt the user to verify that the last argument is indeed the target local file for receiving mdir output.

## mget remote-files

Expand the remote-files on the remote machine and do a get for each file name thus produced. See glob for details on the filename expansion. Resulting file names will then be processed according to case, ntrans, and nmap settings.

Files are transferred into the local working directory, which can be changed with ?lcd directory?; new local directories can be created with ?! mkdir directory?.

mkdir directory-name

Make a directory on the remote machine.

mls remote-files local-file

Like ls, except multiple remote files may be specified, and the local-file must be specified. If interactive prompting is on, tnftp will prompt the user to verify that the last argument is indeed the target local file for receiving mls output.

mlsd [remote-path]

Display the contents of remote-path (which should default to the current directory if not given) in a machine-parsable form, using MLSD. The format of display can be changed with ?remopts mlst ...?.

mlst [remote-path]

Display the details about remote-path (which should default to the current directory if not given) in a machine-parsable form, using MLST. The format of display can be changed with ?remopts mlst ...?.

mode mode-name

Set the file transfer mode to mode-name. The default (and only supported) mode is ?stream?.

modtime remote-file

Show the last modification time of the file on the remote machine, in RFC 2822 format.

more file A synonym for page.

mput local-files

Expand wild cards in the list of local files given as arguments and do a put for each file in the resulting list. See glob for details of filename expansion. Resulting file names will then be processed according to ntrans and nmap set? tings.

## mreget remote-files

As per mget, but performs a reget instead of get.

## msend local-files

A synonym for mput.

## newer remote-file [local-file]

Get the file only if the modification time of the remote file is more recent than the file on the current system. If the file does not exist on the current system, the remote file is considered newer. Otherwise, this command is identical to get.

## nlist [remote-path [local-file]]

A synonym for ls.

## nmap [inpattern outpattern]

Set or unset the filename mapping mechanism. If no arguments are specified, the filename mapping mechanism is unset. If arguments are specified, remote filenames are mapped during mput commands and put commands issued without a specified remote target filename. If arguments are specified, local filenames are mapped during mget commands and get commands issued without a specified local target filename. This command is useful when connecting to a non-UNIX remote computer with different file naming conventions or practices. The mapping follows the pattern set by inpattern and outpattern.

inpattern is a template for incoming filenames (which may have already been processed according to the ntrans and case settings). Variable templating is accomplished by including the sequences ?\$1?, ?\$2?, ..., ?\$9? in inpattern. Use ?\\? to prevent this special treatment of the ?\$? character. All other characters are treated literally, and are used to determine the nmap [inpattern] variable values. For example, given inpattern ?\$1.\$2? and the remote file name ?mydata.data?, ?\$1? would have the value ?mydata?, and ?\$2? would have the value ?data?.

The outpattern determines the resulting mapped filename. The sequences ?\$1?, ?\$2?, ..., ?\$9? are replaced by any value resulting from the inpattern template. The sequence ?\$0? is replaced by the original filename. Additionally, the sequence ?[seq1, seq2]? is replaced by seq1 if seq1 is not a null string; otherwise it is replaced by seq2. For example, the command

`nmap $1.$2.$3 [$1,$2].[$2,file]`

would yield the output filename ?myfile.data? for input filenames ?myfile.data?  
and ?myfile.data.old?, ?myfile.file? for the input filename ?myfile?, and  
?myfile myfile? for the input filename ?.myfile?. Spaces may be included in  
outpattern, as in the example:

`nmap $1 sed s/ *$// > $1`

Use the ?\? character to prevent special treatment of the ?\$?, ?[?, ?]?, and ?,?  
characters.

`ntrans [inchars [outchars]]`

Set or unset the filename character translation mechanism. If no arguments are specified, the filename character translation mechanism is unset. If arguments are specified, characters in remote filenames are translated during mput com? mands and put commands issued without a specified remote target filename. If arguments are specified, characters in local filenames are translated during mget commands and get commands issued without a specified local target filename.

This command is useful when connecting to a non-UNIX remote computer with dif? ferent file naming conventions or practices. Characters in a filename matching a character in inchars are replaced with the corresponding character in outchars. If the character's position in inchars is longer than the length of outchars, the character is deleted from the file name.

`open host [port]`

Establish a connection to the specified host FTP server. An optional port num? ber may be supplied, in which case, tnftp will attempt to contact an FTP server at that port. If the set auto-login option is on (default), tnftp will also at? tempt to automatically log the user in to the FTP server (see below).

`page file` Retrieve file and display with the program specified by the set pager option.

`passive [auto]`

Toggle passive mode (if no arguments are given). If auto is given, act as if FTPMODE is set to ?auto?. If passive mode is turned on (default), tnftp will send a PASV command for all data connections instead of a PORT command. The PASV command requests that the remote server open a port for the data connection and return the address of that port. The remote server listens on that port and the client connects to it. When using the more traditional PORT command, the

client listens on a port and sends that address to the remote server, who connects back to it. Passive mode is useful when using tftp through a gateway router or host that controls the directionality of traffic. (Note that though FTP servers are required to support the PASV command by RFC 1123, some do not.)

**pdir** [remote-path]

Perform `dir` [remote-path], and display the result with the program specified by the set pager option.

**pls** [remote-path]

Perform `ls` [remote-path], and display the result with the program specified by the set pager option.

**pmlsd** [remote-path]

Perform `mlsd` [remote-path], and display the result with the program specified by the set pager option.

**preserve** Toggle preservation of modification times on retrieved files.

**progress** Toggle display of transfer progress bar. The progress bar will be disabled for a transfer that has local-file as `?-?` or a command that starts with `?|?`. Refer to FILE NAMING CONVENTIONS for more information. Enabling progress disables hash.

**prompt** Toggle interactive prompting. Interactive prompting occurs during multiple file transfers to allow the user to selectively retrieve or store files. If `prompt?` is turned off (default is on), any `mget` or `mput` will transfer all files, and any `mdelete` will delete all files.

When prompting is on, the following commands are available at a prompt:

- a Answer `?yes?` to the current file, and automatically answer `?yes?` to any remaining files for the current command.
- n Answer `?no?`, and do not transfer the file.
- p Answer `?yes?` to the current file, and turn off prompt mode (as is `?prompt off?` had been given).
- q Terminate the current operation.
- y Answer `?yes?`, and transfer the file.
- ? Display a help message.

Any other response will answer `?yes?` to the current file.

Execute an FTP command on a secondary control connection. This command allows simultaneous connection to two remote FTP servers for transferring files between the two servers. The first proxy command should be an open, to establish the secondary control connection. Enter the command ?proxy ?? to see other FTP commands executable on the secondary connection. The following commands behave differently when prefaced by proxy: open will not define new macros during the auto-login process, close will not erase existing macro definitions, get and mget transfer files from the host on the primary control connection to the host on the secondary control connection, and put, mput, and append transfer files from the host on the secondary control connection to the host on the primary control connection. Third party file transfers depend upon support of the FTP protocol PASV command by the server on the secondary control connection.

**put local-file [remote-file]**

Store a local file on the remote machine. If remote-file is left unspecified, the local file name is used after processing according to any ntrans or nmap settings in naming the remote file. File transfer uses the current settings for type, format, mode, and structure.

**pwd** Print the name of the current working directory on the remote machine.

**quit** A synonym for bye.

**quote [arg ...]**

The arguments specified are sent, verbatim, to the remote FTP server.

**rate direction [maximum [increment]]**

Throttle the maximum transfer rate to maximum bytes/second. If maximum is 0, disable the throttle.

direction may be one of:

all Both directions.

get Incoming transfers.

put Outgoing transfers.

maximum can be modified on the fly by increment bytes (default: 1024) each time a given signal is received:

SIGUSR1 Increment maximum by increment bytes.

SIGUSR2 Decrement maximum by increment bytes. The result must be a positive number.

If maximum is not supplied, the current throttle rates are displayed.

Note: rate is not yet implemented for ascii mode transfers.

rcvbuf size

Set the size of the socket receive buffer to size.

recv remote-file [local-file]

A synonym for get.

reget remote-file [local-file]

reget acts like get, except that if local-file exists and is smaller than remote-file, local-file is presumed to be a partially transferred copy of remote-file and the transfer is continued from the apparent point of failure.

This command is useful when transferring very large files over networks that are prone to dropping connections.

remopts command [command-options]

Set options on the remote FTP server for command to command-options (whose absence is handled on a command-specific basis). Remote FTP commands known to support options include: MLST (used for MLSD and MLST).

rename [from [to]]

Rename the file from on the remote machine, to the file to.

reset Clear reply queue. This command re-synchronizes command/reply sequencing with the remote FTP server. Resynchronization may be necessary following a violation of the FTP protocol by the remote server.

restart marker

Restart the immediately following get or put at the indicated marker. On UNIX systems, marker is usually a byte offset into the file.

rhelp [command-name]

Request help from the remote FTP server. If a command-name is specified it is supplied to the server as well.

rmdir directory-name

Delete a directory on the remote machine.

rstatus [remote-file]

With no arguments, show status of remote machine. If remote-file is specified, show status of remote-file on remote machine.

runique Toggle storing of files on the local system with unique filenames. If a file

already exists with a name equal to the target local filename for a get or mget command, a ?.1? is appended to the name. If the resulting name matches another existing file, a ?.2? is appended to the original name. If this process continues up to ?.99?, an error message is printed, and the transfer does not take place. The generated unique filename will be reported. Note that runique will not affect local files generated from a shell command (see below). The default value is off.

send local-file [remote-file]

A synonym for put.

sendport Toggle the use of PORT commands. By default, tnftp will attempt to use a PORT command when establishing a connection for each data transfer. The use of PORT commands can prevent delays when performing multiple file transfers. If the PORT command fails, tnftp will use the default data port. When the use of PORT commands is disabled, no attempt will be made to use PORT commands for each data transfer. This is useful for certain FTP implementations which do ignore PORT commands but, incorrectly, indicate they've been accepted.

set [option value]

Set option to value. If option and value are not given, display all of the options and their values. The currently supported options are:

anonpass Defaults to \$FTPANONPASS  
ftp\_proxy Defaults to \$ftp\_proxy.  
http\_proxy Defaults to \$http\_proxy.  
https\_proxy Defaults to \$https\_proxy.  
no\_proxy Defaults to \$no\_proxy.  
pager Defaults to \$PAGER.  
prompt Defaults to \$FTPPROMPT.  
rprompt Defaults to \$FTPRPROMPT.

site [arg ...]

The arguments specified are sent, verbatim, to the remote FTP server as a SITE command.

size remote-file

Return size of remote-file on remote machine.

sndbuf size

Set the size of the socket send buffer to size.

status Show the current status of tnftp.

struct struct-name

Set the file transfer structure to struct-name. The default (and only supported) structure is ?file?.

sunique Toggle storing of files on remote machine under unique file names. The remote

FTP server must support FTP protocol STOU command for successful completion.

The remote server will report unique name. Default value is off.

system Show the type of operating system running on the remote machine.

tenex Set the file transfer type to that needed to talk to TENEX machines.

throttle A synonym for rate.

trace Toggle packet tracing.

type [type-name]

Set the file transfer type to type-name. If no type is specified, the current type is printed. The default type is network ASCII.

umask [newmask]

Set the default umask on the remote server to newmask. If newmask is omitted, the current umask is printed.

unset option

Unset option. Refer to set for more information.

usage command

Print the usage message for command.

user user-name [password [account]]

Identify yourself to the remote FTP server. If the password is not specified and the server requires it, tnftp will prompt the user for it (after disabling local echo). If an account field is not specified, and the FTP server requires it, the user will be prompted for it. If an account field is specified, an account command will be relayed to the remote server after the login sequence is completed if the remote server did not require it for logging in. Unless tnftp is invoked with ?auto-login? disabled, this process is done automatically on initial connection to the FTP server.

verbose Toggle verbose mode. In verbose mode, all responses from the FTP server are displayed to the user. In addition, if verbose is on, when a file transfer com?

plete, statistics regarding the efficiency of the transfer are reported. By default, verbose is on.

#### xferbuf size

Set the size of the socket send and receive buffers to size.

#### ? [command]

A synonym for help.

Command arguments which have embedded spaces may be quoted with quote ?"? marks.

Commands which toggle settings can take an explicit on or off argument to force the setting appropriately.

Commands which take a byte count as an argument (e.g., hash, rate, and xferbuf) support an optional suffix on the argument which changes the interpretation of the argument. Supported suffixes are:

- b Causes no modification. (Optional)
- k Kilo; multiply the argument by 1024
- m Mega; multiply the argument by 1048576
- g Giga; multiply the argument by 1073741824

If tnftp receives a SIGINFO (see the status argument of stty(1)) or SIGQUIT signal whilst a transfer is in progress, the current transfer rate statistics will be written to the standard error output, in the same format as the standard completion message.

#### AUTO-FETCHING FILES

In addition to standard commands, this version of tnftp supports an auto-fetch feature. To enable auto-fetch, simply pass the list of hostnames/files on the command line.

The following formats are valid syntax for an auto-fetch element:

[user@]host:[path][/]

?Classic? FTP format.

If path contains a glob character and globbing is enabled, (see glob), then the equivalent of ?mget path? is performed.

If the directory component of path contains no globbing characters, it is stored locally with the name basename (see basename(1)) of path, in the current directory.

Otherwise, the full remote name is used as the local name, relative to the local root directory.

ftp://[user[:password]@]host[:port]/path[/][;type=type]

An FTP URL, retrieved using the FTP protocol if set ftp\_proxy isn't defined. Other?

wise, transfer the URL using HTTP via the proxy defined in set ftp\_proxy. If set ftp\_proxy isn't defined and user is given, login as user. In this case, use password if supplied, otherwise prompt the user for one.

If a suffix of ?;type=A? or ?;type=I? is supplied, then the transfer type will take place as ascii or binary (respectively). The default transfer type is binary.

In order to be compliant with RFC 3986, tnftp interprets the path part of an ?ftp://? auto-fetch URL as follows:

- ? The ?/? immediately after the host[:port] is interpreted as a separator before the path, and not as part of the path itself.
- ? The path is interpreted as a ?/?-separated list of name components. For all but the last such component, tnftp performs the equivalent of a cd command. For the last path component, tnftp performs the equivalent of a get command.
- ? Empty name components, which result from ?//? within the path, or from an extra ?/? at the beginning of the path, will cause the equivalent of a cd command with? out a directory name. This is unlikely to be useful.
- ? Any ?%XX? codes (per RFC 3986) within the path components are decoded, with XX representing a character code in hexadecimal. This decoding takes place after the path has been split into components, but before each component is used in the equivalent of a cd or get command. Some often-used codes are ?%2F? (which repre? sents ?/?) and ?%7E? (which represents ?~?).

The above interpretation has the following consequences:

- ? The path is interpreted relative to the default login directory of the specified user or of the ?anonymous? user. If the / directory is required, use a leading path of ?%2F?. If a user's home directory is required (and the remote server sup? ports the syntax), use a leading path of ?%7Euser/? . For example, to retrieve /etc/motd from ?localhost? as the user ?myname? with the password ?mypass?, use ?ftp://myname:mypass@localhost/%2fetc/motd?
- ? The exact cd and get commands can be controlled by careful choice of where to use ?/? and where to use ?%2F? (or ?%2f?). For example, the following URLs correspond to the equivalents of the indicated commands:

ftp://host/dir1/dir2/file ?cd dir1?, ?cd dir2?, ?get file?.

ftp://host/%2Fdir1/dir2/file ?cd /dir1?, ?cd dir2?, ?get file?.

ftp://host/dir1%2Fdir2/file ?cd dir1/dir2?, ?get file?.

ftp://host/%2Fdir1%2Fdir2/file ?cd /dir1/dir2?, ?get file?.

ftp://host/dir1%2Fdir2%2Ffile ?get dir1/dir2/file?.

ftp://host/%2Fdir1%2Fdir2%2Ffile ?get /dir1/dir2/file?.

? You must have appropriate access permission for each of the intermediate directories that is used in the equivalent of a cd command.

**http://[user[:password]@]host[:port]/path**

An HTTP URL, retrieved using the HTTP protocol. If set `http_proxy` is defined, it is used as a URL to an HTTP proxy server. If HTTP authorization is required to retrieve path, and user (and optionally password) is in the URL, use them for the first attempt to authenticate.

**https://[user[:password]@]host[:port]/path**

An HTTPS URL, retrieved using the HTTPS protocol. If set `https_proxy` is defined, it is used as a URL to an HTTPS proxy server. If HTTPS authorization is required to retrieve path, and user (and optionally password) is in the URL, use them for the first attempt to authenticate. There is currently no certificate validation and verification.

**file:///path**

A local URL, copied from `/path` on the local host.

**about:topic**

Display information regarding topic; no file is retrieved for this auto-fetched element. Supported values include:

`about:ftp` Information about tftp.

`about:version` The version of tftp. Useful to provide when reporting problems.

Unless noted otherwise above, and `-o` output is not given, the file is stored in the current directory as the basename(1) of path. Note that if a HTTP redirect is received, the fetch is retried using the new target URL supplied by the server, with a corresponding new path.

Using an explicit `-o` output is recommended, to avoid writing to unexpected file names.

If a classic format or an FTP URL format has a trailing `/?` or an empty path component, then tftp will connect to the site and cd to the directory given as the path, and leave the user in interactive mode ready for further input. This will not work if set `ftp_proxy` is being used.

Direct HTTP transfers use HTTP 1.1. Proxied FTP and HTTP transfers use HTTP 1.0.

If `-R` is given, all auto-fetches that don't go via the FTP or HTTP proxies will be

restarted. For FTP, this is implemented by using reget instead of get. For HTTP, this is implemented by using the ?Range: bytes=? HTTP/1.1 directive.

If WWW or proxy WWW authentication is required, you will be prompted to enter a username and password to authenticate with.

When specifying IPv6 numeric addresses in a URL, you need to surround the address in square brackets. E.g.: ?ftp://[::1]:21/?. This is because colons are used in IPv6 numeric address as well as being the separator for the port number.

## ABORTING A FILE TRANSFER

To abort a file transfer, use the terminal interrupt key (usually Ctrl-C). Sending transfers will be immediately halted. Receiving transfers will be halted by sending an FTP protocol ABOR command to the remote server, and discarding any further data received. The speed at which this is accomplished depends upon the remote server's support for ABOR processing. If the remote server does not support the ABOR command, the prompt will not appear until the remote server has completed sending the requested file.

If the terminal interrupt key sequence is used whilst tnftp is awaiting a reply from the remote server for the ABOR processing, then the connection will be closed. This is different from the traditional behaviour (which ignores the terminal interrupt during this phase), but is considered more useful.

## FILE NAMING CONVENTIONS

Files specified as arguments to tnftp commands are processed according to the following rules.

1. If the file name ?-? is specified, the stdin (for reading) or stdout (for writing) is used.
2. If the first character of the file name is ?|?, the remainder of the argument is interpreted as a shell command. tnftp then forks a shell, using popen(3) with the argument supplied, and reads (writes) from the stdout (stdin). If the shell command includes spaces, the argument must be quoted; e.g. ?"|" ls -lt"?". A particularly useful example of this mechanism is: ?dir "" |more?.
3. Failing the above checks, if globbing is enabled, local file names are expanded according to the rules used in the csh(1); see the glob command. If the tnftp command expects a single local file (e.g. put), only the first filename generated by the globbing operation is used.
4. For mget commands and get commands with unspecified local file names, the local file?

name is the remote filename, which may be altered by a case, ntrans, or nmap setting.

The resulting filename may then be altered if runique is on.

5. For mput commands and put commands with unspecified remote file names, the remote file?

name is the local filename, which may be altered by a ntrans or nmap setting. The resulting filename may then be altered by the remote server if sunique is on.

## FILE TRANSFER PARAMETERS

The FTP specification specifies many parameters which may affect a file transfer. The type may be one of ?ascii?, ?image? (binary), ?ebcdic?, and ?local byte size? (for PDP-10's and PDP-20's mostly). tnftp supports the ascii and image types of file transfer, plus local byte size 8 for tenex mode transfers.

tnftp supports only the default values for the remaining file transfer parameters: mode, form, and struct.

## THE .netrc FILE

The .netrc file contains login and initialization information used by the auto-login process. It resides in the user's home directory, unless overridden with the -N netrc option, or specified in the NETRC environment variable. The following tokens are recognized; they may be separated by spaces, tabs, or new-lines:

machine name

Identify a remote machine name. The auto-login process searches the .netrc file for a machine token that matches the remote machine specified on the tnftp command line or as an open command argument. Once a match is made, the subsequent .netrc tokens are processed, stopping when the end of file is reached or another machine or a default token is encountered.

default This is the same as machine name except that default matches any name. There can be only one default token, and it must be after all machine tokens. This is normally used as:

```
default login anonymous password user@site
```

thereby giving the user an automatic anonymous FTP login to machines not specified in .netrc. This can be overridden by using the -n flag to disable auto-login.

login name

Identify a user on the remote machine. If this token is present, the auto-login process will initiate a login using the specified name.

password string

Supply a password. If this token is present, the auto-login process will supply the specified string if the remote server requires a password as part of the login process. Note that if this token is present in the .netrc file for any user other than anonymous, tnftp will abort the auto-login process if the .netrc is readable by anyone besides the user.

#### account string

Supply an additional account password. If this token is present, the auto-login process will supply the specified string if the remote server requires an additional account password, or the auto-login process will initiate an ACCT command if it does not.

#### macdef name

Define a macro. This token functions like the tnftp macdef command functions. A macro is defined with the specified name; its contents begin with the next .netrc line and continue until a blank line (consecutive new-line characters) is encountered. Like the other tokens in the .netrc file, a macdef is applicable only to the machine definition preceding it. A macdef entry cannot be used by multiple machine definitions; rather, it must be defined following each machine it is intended to be used with. If a macro named init is defined, it is automatically executed as the last step in the auto-login process. For example,

```
default
macdef init
epsv4 off
```

followed by a blank line.

## COMMAND LINE EDITING

Tnftp supports interactive command line editing, via the editline(3) library. It is enabled with the edit command, and is enabled by default if input is from a tty. Previous lines can be recalled and edited with the arrow keys, and other GNU Emacs-style editing keys may be used as well.

The editline(3) library is configured with a .editrc file ? refer to editrc(5) for more information.

An extra key binding is available to tnftp to provide context sensitive command and filename completion (including remote file completion). To use this, bind a key to the editline(3) command ftp-complete. By default, this is bound to the TAB key.

## COMMAND LINE PROMPT

By default, tnftp displays a command line prompt of ?ftp> ? to the user. This can be changed with the set prompt command.

A prompt can be displayed on the right side of the screen (after the command input) with the set rprompt command.

The following formatting sequences are replaced by the given information:

%/ The current remote working directory.

%c[[0]n], %.[[0]n]

The trailing component of the current remote working directory, or n trailing components if a digit n is given. If n begins with ?0?, the number of skipped components precede the trailing component(s) in the format ?<number>trailing? (for ?%c?) or ?...trailing? (for ?%.?).

%M The remote host name.

%m The remote host name, up to the first dot ?.?.

%n The remote user name.

%% A single percent character ?%?.

## ENVIRONMENT

tnftp uses the following environment variables.

FTPANONPASS Password to send in an anonymous FTP transfer. Defaults to ?`whoami`@?.

FTPMODE Overrides the default operation mode. Support values are:

active active mode FTP only

auto automatic determination of passive or active (this is the default)

gate gate-ftp mode

passive passive mode FTP only

FTPPROMPT Command-line prompt to use. Defaults to ?ftp> ?. Refer to COMMAND LINE PROMPT for more information.

FTPRPROMPT Command-line right side prompt to use. Defaults to empty string. Refer to COMMAND LINE PROMPT for more information.

FTPSERVER Host to use as gate-ftp server when gate is enabled.

FTPSERVERPORT Port to use when connecting to gate-ftp server when gate is enabled. Default is port returned by a getservbyname(3) lookup of ?ftpgate/tcp?.

FTPUSERAGENT The value to send for the HTTP User-Agent header.

HOME For default location of a .netrc file, if one exists.

NETRC An alternate location of the .netrc file.

PAGER Used by various commands to display files. Defaults to more(1) if empty or not set.

SHELL For default shell.

ftp\_proxy URL of FTP proxy to use when making FTP URL requests (if not defined, use the standard FTP protocol).

See http\_proxy for further notes about proxy use.

http\_proxy URL of HTTP proxy to use when making HTTP URL requests. If proxy authentication is required and there is a username and password in this URL, they will automatically be used in the first attempt to authenticate to the proxy.

If ?unsafe? URL characters are required in the username or password (for example ?@? or ?/?), encode them with RFC 3986 ?%XX? encoding.

Note that the use of a username and password in ftp\_proxy and http\_proxy may be incompatible with other programs that use it (such as lynx(1)).

NOTE: this is not used for interactive sessions, only for command-line fetches.

https\_proxy URL of HTTPS proxy to use when making HTTPS URL requests.

See http\_proxy for further notes about proxy use.

no\_proxy A space or comma separated list of hosts (or domains) for which proxying is not to be used. Each entry may have an optional trailing ?:port?, which restricts the matching to connections to that port.

## EXTENDED PASSIVE MODE AND FIREWALLS

Some firewall configurations do not allow tnftp to use extended passive mode. If you find that even a simple ls appears to hang after printing a message such as this:

229 Entering Extended Passive Mode (|||58551|)

then you will need to disable extended passive mode with epsv4 off. See the above section

The .netrc File for an example of how to make this automatic.

## SEE ALSO

getservbyname(3), editrc(5), services(5), ftpd(8)

## STANDARDS

tnftp attempts to be compliant with:

RFC 959 File Transfer Protocol

RFC 1123 Requirements for Internet Hosts - Application and Support

RFC 1635 How to Use Anonymous FTP

RFC 2389 Feature negotiation mechanism for the File Transfer Protocol

RFC 2428 FTP Extensions for IPv6 and NATs

RFC 2616 Hypertext Transfer Protocol -- HTTP/1.1

RFC 2822 Internet Message Format

RFC 3659 Extensions to FTP

RFC 3986 Uniform Resource Identifier (URI)

## HISTORY

The tnftp command appeared in 4.2BSD.

Various features such as command line editing, context sensitive command and file completion, dynamic progress bar, automatic fetching of files and URLs, modification time preservation, transfer rate throttling, configurable command line prompt, and other enhancements over the standard BSD tnftp were implemented in NetBSD 1.3 and later releases by Luke Mewburn ?lukem@NetBSD.org?.

IPv6 support was added by the WIDE/KAME project (but may not be present in all non-NetBSD versions of this program, depending if the operating system supports IPv6 in a similar manner to KAME).

## BUGS

Correct execution of many commands depends upon proper behavior by the remote server. An error in the treatment of carriage returns in the 4.2BSD ascii-mode transfer code has been corrected. This correction may result in incorrect transfers of binary files to and from 4.2BSD servers using the ascii type. Avoid this problem by using the binary image type.

tnftp assumes that all IPv4 mapped addresses (IPv6 addresses with a form like ::ffff:10.1.1.1) indicate IPv4 destinations which can be handled by AF\_INET sockets. However, in certain IPv6 network configurations, this assumption is not true. In such an environment, IPv4 mapped addresses must be passed to AF\_INET6 sockets directly. For example, if your site uses a SIIT translator for IPv6-to-IPv4 translation, tnftp is unable to support your configuration.