

File Transfer

This chapter discusses the various features NCSA Telnet for the Macintosh® provides for transferring Macintosh-specific and other files. It also describes the most common File Transfer Protocol (FTP) commands.

Terminology

The following terms are frequently used in this chapter's discussions concerning file transfer procedures.

ASCII File

An *ASCII*, or *text*, file is one that you can read. You can use it with standard editors on the Macintosh or host. When text files are transferred, they are translated to a format appropriate for the receiving machine.

Binary File

A *binary*, or *image*, file cannot be read by standard text editors. Unlike ASCII text files, binary files are not changed in any way when transferred.

Client/Server

The *client* is the computer system that requests services, and the *server* is the system that provides services. The client is not always your Macintosh, despite appearances. When you use NCSA Telnet for the Mac to connect to a host, your Macintosh is the telnet client. When you request a file transfer from your Macintosh, the transfer is actually initiated on the host, making the host the FTP client and your Macintosh the FTP server. So your Macintosh can be both a telnet client and an FTP server at the same time.

File Transfer

In a *file transfer*, the contents of a file are copied to a file on another computer.

MacBinary File

A *MacBinary file* is a file that has been encoded in the MacBinary file format. This means that the file contains all of the information contained in a normal Macintosh file and therefore can be used for transferring applications and other Macintosh-specific files. MacBinary files are virtually useless on any other machine, but are in a format that allows them to be stored for downloading later to a Macintosh.

About File Transfer Protocol (FTP)

NCSA Telnet for the Mac has an internal FTP server that permits reliable file transfers between a Macintosh and any FTP host on the network. File transfers are initiated from the FTP host. With the NCSA Telnet implementation of FTP, you can:

- Stream transferring files in either text (ASCII) or binary (image) format.
- Change the directory.
- Show the name of the current directory.
- List files in the current directory (with wildcard specifications).
- Send and receive multiple files with one command (using wildcards).

NOTE: File transfers are processed in the background. Therefore, while a file transfer is in progress

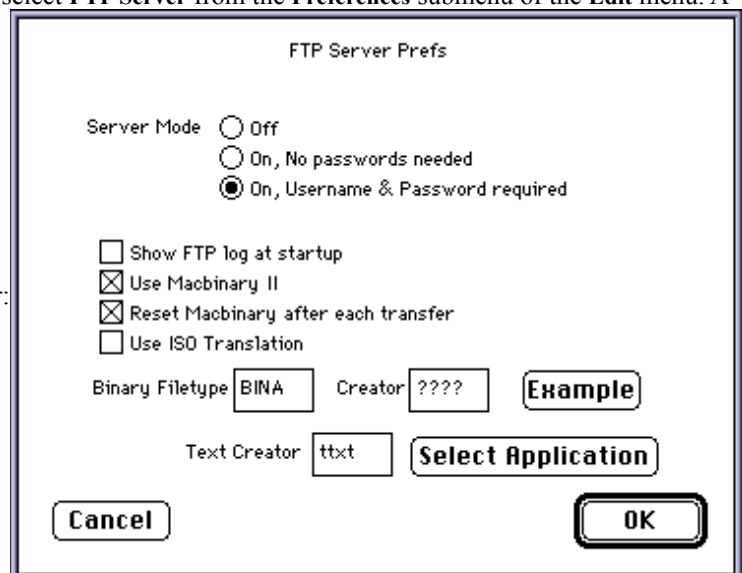
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you can perform other NCSA Telnet activities such as switching sessions, adding new sessions, or changing parameters. While one FTP connection is active, requests for another are ignored.

Configuring the FTP Server

To configure the FTP server, select **FTP Server** from the **Preferences** submenu of the **Edit** menu. A

modal dialog box will appear:

The image shows a modal dialog box titled "FTP Server Prefs". It contains several settings: "Server Mode" with three radio buttons (Off, On, No passwords needed, and On, Username & Password required, which is selected); "Show FTP log at startup" (unchecked); "Use Macbinary II" (checked); "Reset Macbinary after each transfer" (checked); "Use ISO Translation" (unchecked); "Binary Filetype" with a text field containing "BINA"; "Creator" with a text field containing "????"; an "Example" button; "Text Creator" with a text field containing "ttxt"; a "Select Application" button; and "Cancel" and "OK" buttons at the bottom.

Each of these options are described in the following sections.

Server Mode

NCSA Telnet's FTP server can operate in three modes. When **Off** is selected, NCSA Telnet will refuse all FTP connections to your Macintosh. When **On, No passwords needed** is selected, NCSA Telnet will allow anyone to connect to your Macintosh through FTP. When **On, Username & Password required** is selected, NCSA Telnet requires connecting users to supply a valid username and password before gaining access to your Macintosh through FTP. (For information regarding the configuration of usernames and passwords for FTP, see the section "Controlling Access" in this chapter.)

WARNING: NCSA recommends that you do **NOT** leave the FTP server in the **On, No passwords needed** mode. This mode allows **ANYONE** access to your entire filesystem. This mode is included in NCSA Telnet for quick and simple file transfers. It is not included to be used as a part of a permanent configuration setup.

Show FTP log at start-up

When this option is checked, NCSA Telnet will display the FTP log when NCSA Telnet is launched.

Use Macbinary II

When this option is selected, NCSA Telnet will use Macbinary transfer mode when in binary mode. This can be turned off or on from this dialog, or by sending quote mach enable or quote mach disable to the FTP server.

Reset Macbinary after each transfer

NCSA Telnet can save you the trouble of tracking whether Macbinary transfer mode is enabled each time you want to transfer files. When **Reset Macbinary for each transfer** is enabled, the status of MacBinary transfer mode returns to the default of your preference, enabled or disabled, whenever you begin a new FTP session. This ensures that MacBinary mode is set to your preferred default each time you open a new FTP session, regardless of how you set the mode in a previous FTP session.

NOTE: Each FTP corresponds not to the individual file transfer but to the opening of each FTP

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command connection.

Binary Filetype and Creator

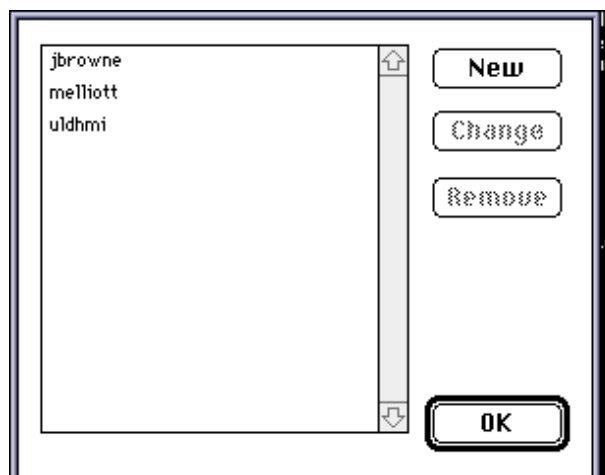
Using the **Binary Filetype** and **Creator** fields, you can specify the filetype and file creator type for files transferred in binary mode when Macbinary transfer mode is disabled. Selecting the **Example** button allows you to select a file using the standard file dialog box and determine the filetype and file creator type for that file. For more information regarding filetypes and file creator types, refer to the subsection "Creator File Type" in the section "Global Preferences" in Chapter 2, "Configuration."

Text Creator

Using the **Text Creator** field and **Select Application** button you can select the four letter file creator type given to files transferred to your Macintosh using the ASCII transfer mode. For more information regarding filetypes and file creator types, refer to the subsection "Creator File Type" in the section "Global Preferences" in Chapter 2, "Configuration."

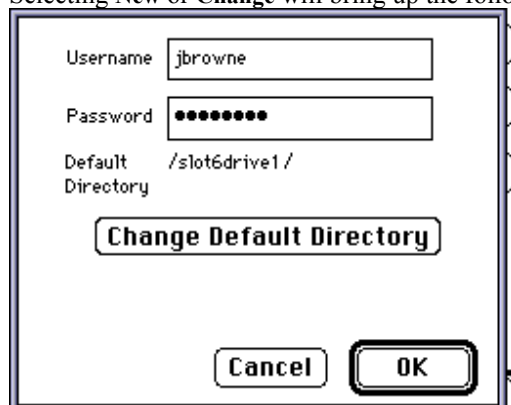
Controlling Access

To configure who has access to your Macintosh via FTP, select **FTP Users** from the **Preferences** submenu of the **Edit** menu. A modal dialog box similar to the following will appear:



Using this dialog box, you may add new users, change an existing user's information, or remove a user's access privileges. In this case, there are three users: jbrowne, melliott, and uldhmi.

Selecting **New** or **Change** will bring up the following modal dialog box:



The **Username** field specifies the name that will be recognized by NCSA Telnet's FTP server at the username prompt.

You may type in the user's password in the **Password** field. When entering new passwords, they are displayed in normal text. When changing records, the password field always displays eight bullets (•)

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regardless of the length of the actual password. Passwords are kept in the preferences file in an encrypted format. **NOTE:** The encryption method used on the passwords is quite simple. It will prevent the casual user from discovering your passwords, but you should never give anyone a copy of your preferences file.

NCSA Telnet's FTP server places each user in a default directory when that user logs in using the correct username and password. The **Default Directory** field displays the default directory for this user. The **Change Default Directory** button allows you to change the default directory for the user.

In this case, the user is "jbrowne". His password is not displayed, and his current directory after logging in via FTP will be "/slot6drive1/."

Transferring Files

Before you attempt to transfer files using FTP, make sure the following conditions are met:

Your host system supports FTP file transfer. If you do not know whether it does, see your system administrator.

You have not disabled the file transfer capability of NCSA Telnet for the Mac. Two conditions inform you that the FTP capability is disabled: (1) the **Server Mode** is set to Off in the FTP Server Preferences modal dialog box and (2) your machine does not respond to the FTP command when you attempt to start up FTP. See the section "Configuring the FTP Server" in this chapter for more information.

Invoking FTP on the Host Computer

Since FTP is initiated by the remote host, the FTP commands vary depending on the host system. For full documentation of FTP and commands within FTP, refer to the manuals for the host computer. On UNIX systems you can read online documentation by entering:

```
% man ftp
```

Issuing the FTP Command

On most systems, at the prompt you enter the FTP command and the IP name or IP address of the target machine. You can enter the FTP command in one of three ways. For example, if your Macintosh is named *mymachine* and your IP address is 192.17.20.22, any of the following procedures invokes FTP.

Enter either the machine name or IP address and then press RETURN:

```
% ftp mymachine    or    % ftp 192.17.20.22
```

Select **Send FTP Command** from the **Network** menu or press ☐-F. Either one causes NCSA Telnet to enter the FTP command and issue a RETURN.

Enter ftp-SPACEBAR, select **Send IP Number** from the **Network** menu, and press RETURN. The **Send IP Number** command enters your IP address for you.

Use whichever method you are comfortable with to invoke FTP. Your host computer may not accept FTP commands as described here, so you may have to try some variations to find the easiest method for your site.


Regardless of how you invoke FTP, most FTP clients generate a response like this:

```
Connected to 192.17.20.22.
```

```
220 Macintosh Resident FTP server, ready
```

```
Name (192.17.20.22:uldhmi):
```

Most FTP clients prompt for your username and password. If NCSA Telnet for the Mac is configured for passwords (see "Configuring the FTP Server" in this chapter), then you must enter a password. Otherwise, just press RETURN to bypass the prompts. If you are not prompted for a username and password, assume that you are logged on and enter your FTP commands at the FTP prompt.

NOTE: When an FTP connection is active, the cursor changes to a small file icon: 

When the FTP connection terminates, the small file icon changes back to the standard I-beam cursor.

FTP Commands

After FTP is invoked and passwords are checked, most FTP clients prompt you for individual FTP commands. These commands are documented in the manuals for the host computer. Most FTP implementations have similar commands because they are modeled after the Berkeley UNIX version of FTP.

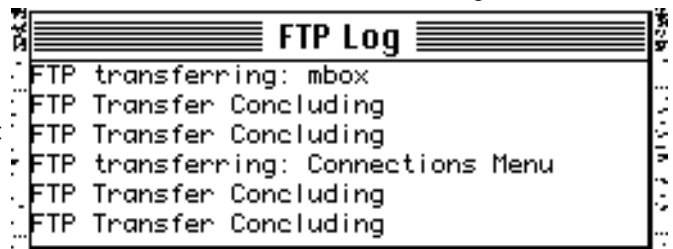
Once you are in FTP, you can access online help for a list of available commands. FTP commands that are common to most implementations are listed below (boldface type indicates user entries and *italics> type indicates variables) and are described in the following subsections:*

Command	Action
ascii	Sets mode to ASCII transfer mode (default)
binary	Sets mode to binary (image or I) transfer mode
cd	Changes the directory on your Macintosh
dir	Shows filenames in the Macintosh's default directory
<i>get filename</i>	Gets specified file from the Macintosh and sends it to the host
help	Shows an online list of FTP commands
<i>put filename</i>	Sends specified file from the host to the Macintosh
pwd	Shows the name of the current Macintosh directory

FTP Log

To help you keep track of file transactions, NCSA Telnet shows current and past transactions in the

FTP log, like the sample below:



To view the log, select **Show FTP Log** from the **File** menu.

Setting the Transfer Mode

The default mode for FTP transfers is ASCII format. To transfer graphic or binary data files, you must change the transfer mode to binary format before using the put or get commands. To set the transfer mode to binary, enter either binary or bin.

If you intend to use the file you are transferring with a Macintosh-specific application, you may also need to set MacBinary transfer mode. For more information, see the "Transferring MacBinary Files" subsection later in this section.

To set or reset the transfer mode to ASCII format, enter ascii.

Examples in the "Transferring Files to the Macintosh" section later in this chapter demonstrate FTP transactions with an ASCII file and with a binary file.

Changing the Current Directory

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FTP transfers files to the default directory on your local disk. To change the directory, enter `cd` at the FTP prompt (`ftp>`).

The `cd` command from FTP (shown in the list of common FTP commands) requires you to specify a directory by manually entering a path instead of using a dialog box. To specify a directory using the `cd` command, use the colon (`:`) or slash (`/`) to separate folder names (as the Macintosh requires).

For example, to change the default directory to a directory named *myfolder* on your local Macintosh disk named *hd20*, enter one of the following at the FTP prompt:

```
ftp> cd ":hd20:myfolder"    or    ftp> cd "/hd20/myfolder"
```

To find out which directory is set as your default transfer directory, enter `pwd` at the FTP prompt. For example, entering the `pwd` command after the sample `cd` command above results in the following:

```
ftp> pwd
```

`"/hd20/myfolder"` is the current directory

Transferring Files to the Macintosh

Even though you seem to be initiating the transfer from the Macintosh, the transaction actually operates from the host's side. The practical effect of this arrangement makes the commands seem backwards. For example, to transfer a file from the host to your Macintosh, do not use a `get` command as you might expect, but a `put` command in the form:

```
put filename.ext
```

The following example demonstrates how to use the `put` command to transfer the ASCII file `temp2` from a host to a local Macintosh. Boldface type represents user entries:

```
% ftp -n 192.17.20.124
Connected to 192.17.20.124.
220 Macintosh Resident FTP server, ready
ftp> put temp2
200 This space intentionally left blank < >
150 Opening connection
226 Transfer complete
262145 bytes sent in 32.61 seconds (7.8 Kbytes/s)
ftp> quit
221 Goodbye
%
```

NOTE: Do not exit the program while a file transfer is in progress or the file transfer will fail.

Transferring Files to the Host

To request that a file be sent from the Macintosh to the host, use a `get` command in the form:

```
get filename.ext
```

The following example demonstrates how to use the `get` command to transfer the binary file `bridge.pic` from a local Macintosh to a remote host. Note that the file is in the directory `/HD20/pictures`, and the `cd` command is used to locate that directory. Again, boldface type represents user entries:

```
% ftp -n 192.17.20.124
Connected to 192.17.20.124.
220 Macintosh Resident FTP server, ready
ftp> bin
200 Type set to I, binary transfer mode
ftp> cd "/hd20/pictures"
250 Chdir okay
ftp> get bridge.pic
200 This space intentionally left blank < >
150 Opening connection
```

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226 Transfer complete

262144 bytes received in 9.22 seconds (28 Kbytes/s)

ftp> quit

221 Goodbye

%

To send a text file after this transfer is complete, you must first enter `ascii` to reset the transfer mode to ASCII.

Transferring Multiple Files

Some versions of FTP let you transfer multiple files sequentially with one command, either `mput` or `mget`, and wildcard characters.

WARNING: If you transfer multiple binary files using a UNIX host, note that there is a bug in the `mget` command as implemented on some systems (especially 4.2 BSD UNIX systems). When used in binary mode, `mget` adds a carriage return to the filenames as they are transferred. The files themselves are not affected. Use a UNIX utility to remove the carriage return from the filename. When used in ASCII mode, the `mget` command causes no problems.

The trick to using wildcards in FTP `get` commands is to enclose the filename in quotation marks. For example, enter `get "*.image"`. Do not use quotation marks with `put` commands.

Transferring MacBinary Files

Sometimes you may need to upload Macintosh-only files to non-Macintosh hosts, then download them later without losing any Macintosh-specific data such as icons and creation date.

To transfer Macintosh-only files (such as applications and most data files) to an intermediate host while retaining all Macintosh-specific information in those files:

Enable the **MacBinary Enabled** item on the **File** menu. A checkmark appears next to the command when it is enabled. You can alternately enable and disable MacBinary by selecting this option. (The MacBinary transfer protocol is available only when FTP is in binary mode.) When MacBinary is enabled, all `get` and `put` commands transfer Macintosh files in MacBinary format.

Set the file transfer mode to binary by entering either `binary` or `bin` at the FTP prompt.

NOTE: If you are writing host-based scripts to download from or upload to a Macintosh in MacBinary mode, enter `quote MACB ENABLE` and `quote MACB DISABLE` from the host's FTP client to enable and disable MacBinary mode, respectively.

FTP Client

NCSA Telnet can connect directly to the FTP port of a host machine, allowing you to transfer a file directly between the remote host and Macintosh. To transfer a file from a remote machine to a Macintosh, you normally need to:

Log on to any UNIX account.

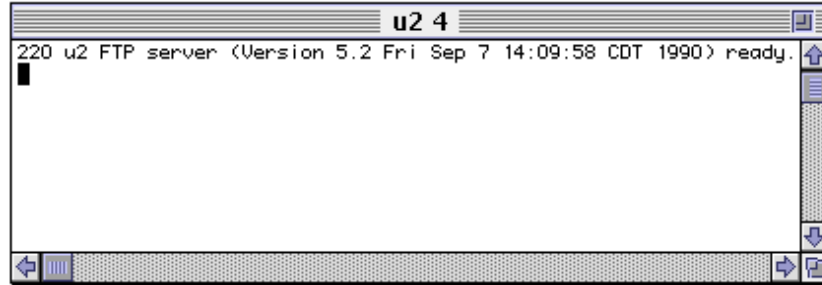
Transfer the file from the remote host to your UNIX account via FTP.

Transfer the file from your UNIX account to the Macintosh via FTP.

This procedure transfers files directly between a UNIX host and your Macintosh and removes the need to log on to a secondary UNIX account for FTP to use as a temporary go-between.

Logging on to the FTP Client

To start an FTP client session, click on the **FTP Session** button in the Open Connection dialog box. This opens a window displaying an FTP client connection message that is similar to the one below:



NOTE: Clicking on the **FTP Session** button is exactly the same as opening a connection to a UNIX machine on port 21, which is the FTP port. Therefore, if you set up an alias to a machine with port 21, all sessions opened to that alias are FTP clients. For more information about aliases and session configuration records, see "Session Configuration Records" in Chapter 2, "Configuration."

To use the FTP client:

You must first log on to the server.

Enter user followed by your login name and press RETURN. Example:

user *loginname* RETURN

The host sends a message prompting you to enter your password.

Enter your password and press RETURN.

If you are logged in, the host sends back a message saying that you are connected properly.

Once logged on, you can use the FTP client just as you would normally use an FTP session.