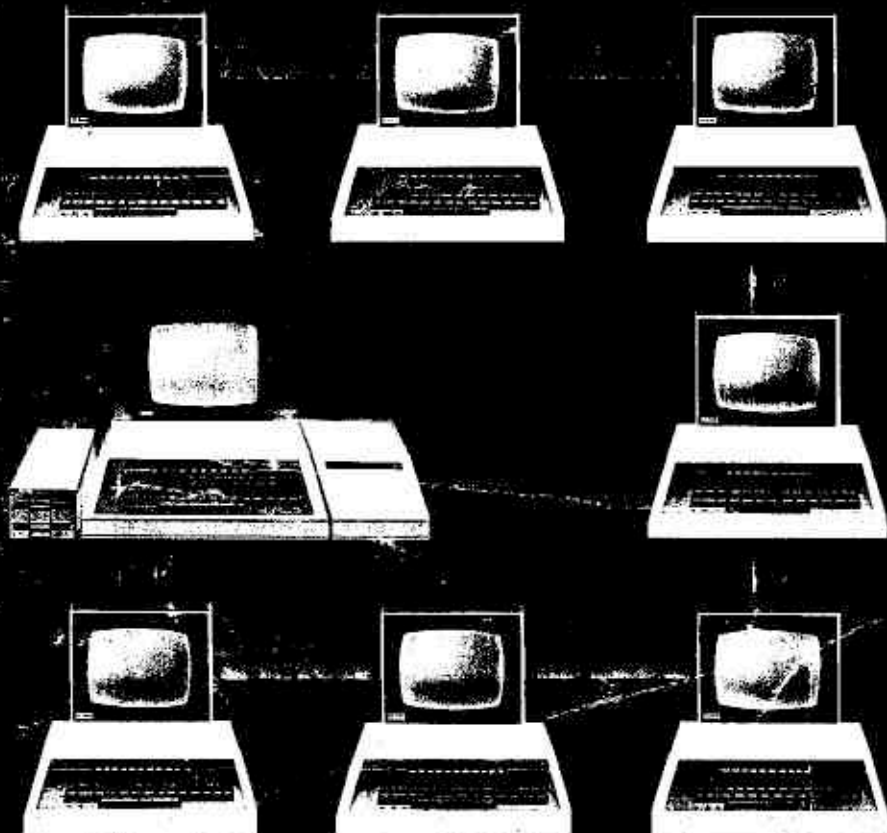


MACORN COMPUTER

Econet

level 2 file server

MANAGER'S GUIDE



Notes

Acorn Econet



Level 2 File Server manager's guide

Within this publication the term "BBC" is used as an abbreviation for "British Broadcasting Corporation"

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Introduction



This guide describes how to set up and run the Econet Level 2 File Server. It has been written for the network manager — the person responsible for the administration and maintenance of the network, who will answer users' queries and help sort out problems.

The guide will give you the information you need in your role as network manager, and includes

- all the necessary instructions for installing and operating the file server
- advice on the day to day running and administration of a multi-user network
- advice on what to do if the file server or the network fails to operate properly.

It is essential that you understand how the file service is used in order to manage it effectively. Station users have their own Level 2 File Server user guide (referred to as user guide in this manual) which you should read carefully. There is also an *Econet advanced user guide* containing more technical information on the Econet.

You may also refer to the other manuals which came with your Econet system:

- the installation leaflet
- the *BBC Microcomputer System User Guide*
- the sections on disc handling in the *BBC Microcomputer Disc System User Guide*.

Conventions used in the guide

Throughout this guide there are instructions for typing in commands and data, to which the following rules apply:

- if a word is shown in square brackets it is the name of a single key
EXAMPLE: [RETURN] means the RETURN key
- descriptions in angle brackets should be replaced by the information required
EXAMPLE: <filename> means type the name of a file
- characters not in brackets should be typed in exactly as they are shown.

Installing the file server

The Level 2 File Server is a Model B BBC Microcomputer running a file server program, which is loaded from disc. The computer is fitted with Econet and disc interfaces, connected to a 6502 second processor in a separate box, and a disc drive unit.

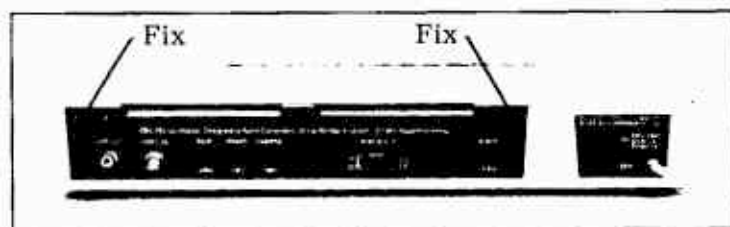
This section tells you how to set up the file server for the first time: setting the station number, plugging the equipment together, getting the program running and testing the user stations.

Setting the file server station number

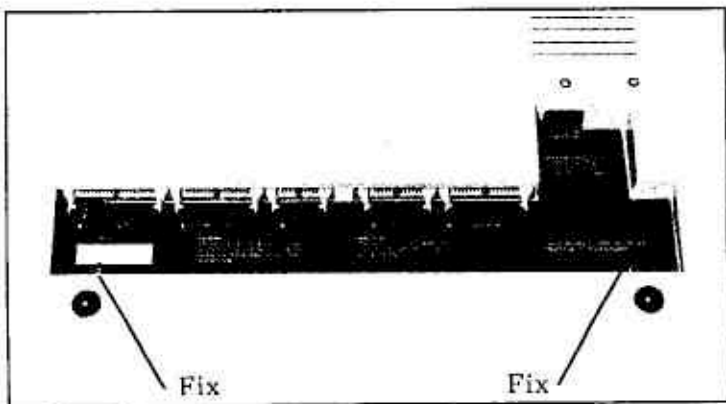
Before you can use any station in an Econet you must set its station number so that the network can identify it. It is recommended that the file server is set to the default number 254. If you have more than one file server, set one to 254 and select different numbers for the others.

To set the file server station number go through the following steps carefully.

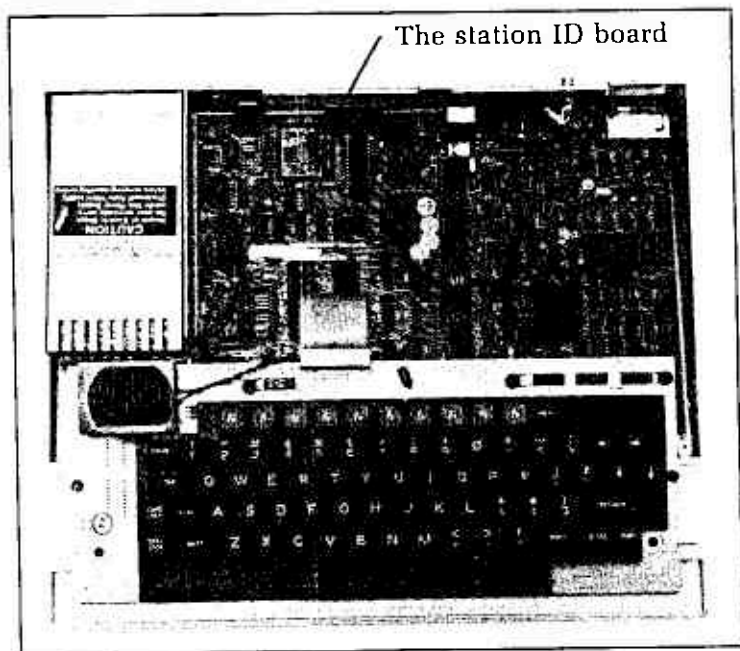
1. Make sure the computer is not connected to the mains power.



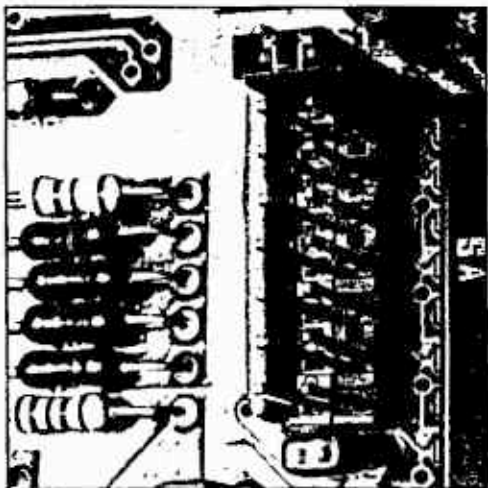
2. Unscrew the two screws in the back panel.



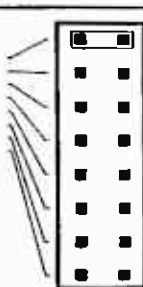
3. Unscrew the two screws on the underside of the computer near the front, and remove the lid carefully.



4. Pull off the links at the back left-hand corner of the printed circuit board and position them, as shown below. (See also the leaflet supplied with your clock and terminator boxes). Save the links in case you need to change the number at a future date.



Binary 254 = 11111110



Note: the least significant digit is at the top of the board

5. When you have finished setting the station number, refit the lid and replace the screws.

Then set the numbers of all the other stations in the network, bearing in mind that you cannot have two stations on the network with the same station number.

Setting up the file server

Your file server comes with two floppy discs: the network utilities disc and the file server master disc, referred to in this guide as the utilities disc and the master disc.

The utilities disc is a Disc Filing System (DFS) disc containing:

- the file server program
- the disc initialisation program which prepares discs for use in the network
- other utilities useful when running the Econet.

You will use this each time you start the file server program running.

Discs you use with the file server have to be specially prepared to hold files produced by a number of users on the network. The master disc is one of these file server discs and contains:

- several useful utilities that users can load into their stations
- some demonstration programs
- a file in which users will record their passwords, called the password file.

Instructions for installing the Econet and checking it are contained in the installation leaflet supplied with the clock and terminator boxes.

The 6502 Second Processor User Guide contains instructions on attaching the second processor and, if necessary, replacing the disc filing system (DFS) and network EPROMs in your file server microcomputer with a combined network and DFS EPROM.

When you set up the file server in the network:

1. Plug the 6502 second processor, monitor and disc drive unit into the file server microcomputer.
2. Plug the second processor, microcomputer, and monitor into the mains and switch them on in this order.

Screen: **Acorn TUBE 6502 64K**
Acorn DFS
BASIC
>

The message **Acorn TUBE 6502 64K** means that the second processor is functioning properly. If it is missing, check that the ribbon cable between the two units is plugged in correctly.

Acorn DFS means that the computer is operating under the disc filing system.

3. Make a back-up copy of your utilities disc.

Insert the utilities disc into drive 0 and a formatted disc into drive 1.

Type: *ENABLE[RETURN]
 *BACKUP 0 1[RETURN]

Put the original disc safely away, in case you need to copy it again at a future date, and label the new working copy.

For extra information on making back-up copies, see the *Disc System User Guide*.

4. Check that all the microcomputers in the Econet are correctly plugged into the network sockets.
5. Switch on the mains supplies to the rest of the network and check that the red lights on the clock and terminator units are lit.

Starting the file server

This section describes how to start up the file server the first time you use it. You can do this using the utilities disc and the master disc provided with your system, without having to prepare any new discs. Follow the steps described here so that you can practise using the network.

Put your copy of the utilities disc into drive 0.

Type: *FS[RETURN]

Screen: Acorn File Server Level 2 <number>
 Testing Memory
 Last free location = F7FF

If, instead of this message, your screen displays one or more lines like

Fails at: 8FED

the memory test has failed. The display will list all the memory locations followed by

**Memory fault found
File server unable to start
Ended**

If there is a long list of failed memory locations, check that your second processor is plugged in correctly and try again. If the file server will not start you have a hardware fault and should contact your dealer.

Normally you will now see the date prompt

Date (DD/MM/YY) =

Type: <today's date>[RETURN]

NOTE: the date you enter is recorded on every file saved until you exit from the file server program by pressing Q.

Prompt: **No. of drives:**

The first time you set up the file server you have only one disc prepared for use in the network — the master disc. The file server will only work if you insert a file server disc into as many drives as you specify here. For this reason, enter 1 at this stage. You will enter 2 when you want to use both disc drives.

NOTE: the number of drives refers to the number of physical disc drives (1 or 2) not the number of disc sides.

Type: 1[RETURN]

Prompt: **Command:**

Type: S

to start the file server program running.

Prompt: **Stations=**

Remove the utilities disc from drive 0 and replace it with the master disc.

Decide how many stations are going to be using the file server during this session.

Type: <number>[RETURN]

where <number> is the maximum number you expect to use the file server, and can be up to 40.

NOTE: although several hundred people can use the file server you cannot have more than 40 logged on at a time.

The disc drive red light now comes on.

Example screen:

Cache size - 42AF objects - 42

The numbers in this message are hexadecimal and will vary with the number of stations you have keyed in and the number of discs being used. The cache is an area of memory which is used to hold files which users will frequently access, to save having to take them from disc each time.

Screen: **Starting - Ready**

The file server is now ready for use.

While the file server is running most of the commands received from user stations are displayed on its screen, with the number of the station at which each was typed in.

EXAMPLE

Screen: 123: *I AM ROBERT
123: LOAD MYPROG
123: *ACCESS MYPROG L
150: *I AM JAMES

You can turn off this display by pressing M on the file server keyboard and turn it on by pressing M again.

If at any stage you want to return to the **Command:** prompt

press: Q

This stops the file server session and allows you to enter C, for converting to a DFS disc, A to return to the date prompt, or to press [CTRL][BREAK] to reset the file server machine. (The use of A and C is explained later in this guide.)

Testing the user stations

Next, you need to test the user stations to make sure they are working properly.

Switch on one user station microcomputer and its video monitor.

```
Screen:  BBC Computer 32K
          Econet station <number>
          BASIC
          >
```

If "Econet station <number>" is missing, the Econet software is not activated. Hold down [BREAK] and N, then release [BREAK], followed by N. The correct message should be displayed. If not, read the section on filing system ROMs later in the guide. If the message "No Clock" appears after the station number, refer to the list of error messages at the back of this guide.

To test the station

```
type:      *I AM WELCOME[RETURN]
```

to log on, then

```
type:      *CAT[RETURN]
```

to display a catalogue of the Welcome directory on the master disc. Try this on all your stations. These demonstration programs are described in the Welcome pack which comes with each station and you can load them by typing **CHAIN"WELCOME"**.

If an error message appears, see the section on *Error messages*.

NOTE: before you start using the file server you should set a password for a user already on the master disc called SYST. SYST is a system user and can perform several management functions which you may not want your station users to have access to. Details of how to do this are on page 18.

Using the file server



This section gives some background information on using the file server from a station, to help put the tasks you have to perform as network manager into context. Make sure you are familiar with the information in the user guide as this gives full details on how the file service is used.

The password file

Identifiers and passwords for those using the file server are kept in the password file, which is a file in the root directory. The user identifiers — strings of up to 10 characters starting with a letter — are put into the password file when you first prepare the disc. New users can then be added later by a system user. (See page 19.)

Users set up their own passwords from stations and these are entered in the password file.

For the file server to run there must be a password file on a disc in one of the drives. How to organise the password file and keep it up to date is explained in the section *Managing the password file*.

Ownership and public access

A very important concept behind the file server is that of who owns which files and to what extent other people can access them.

The **owner** of a directory has complete control over it and can do the following

- save, delete and rename files in that directory
- create sub-directories of that directory
- change the access status of files in that directory.

Users who only have **public** access to files have their access controlled by the status set by the owner and they cannot delete files or create new ones.

As the manager you need to own the root directory so that you can create new user directories and set up libraries of useful files in the root directory. To carry out these functions you log on as a system user, with ownership of the root directory, and hence every other directory on the disc. This is explained in the section *Running the file server*.

Logging on to the file server

When a user logs on the file server searches for their identifier in the password file and checks the password if one has been set up. It then looks for a directory of the same name within the root directory.

If it finds such a directory, the user is automatically given that as the currently selected directory and it will be displayed on typing *CAT.

If users don't have directories of their own they are given the root directory, \$, as their currently selected directory with public access only.

As manager you will be responsible for creating users and their directories. You can do both together, using a utility called NETMGR, or you can create them separately using *NEWUSER and *CDIR. How to use these utilities is explained later.

The role of the network manager



Once the file server is installed, the network manager's tasks fall into two groups. There are those you carry out from a user station while the file server is running, such as

- adding new users and deleting those which are no longer using the network
- creating directories in the root directory in which users can store their own files
- saving useful files in the root directory or library for users to load and run at their stations.

Secondly there are several routine administrative tasks which can only be done when the file server is not running and are carried out at the file server machine, such as

- preparing new file server discs
- backing up file server discs each day to safeguard the work stored on them
- transferring files from DFS discs by converting them to a file server format.

Your role as network manager and how to perform these, and other, routine tasks is explained in the next two sections.

To operate the file server you need to be familiar with the use of the disc drive unit. If you have not used discs before, practise with the Welcome Disc supplied with your system and refer to the *Disc System User Guide*.

Running the file server

This section explains the tasks you need to carry out while the file server is running. To do this you have to log on as a system user — a user who has ownership of the root directory, and therefore all the directories on a file server disc.

System users can

- create and delete users in the password file
- grant system privilege to other users
- create and delete user directories in the root directory
- save and delete files in any directory.

The user SYST

Since only a system user can grant system privilege to another, there is one system user already on the password file of the master disc which came with your file server. This user, called SYST, is put on to every password file you create when you initialise your discs.

To carry out the administrative tasks described here you can log on as SYST or, if you prefer to, create another system user for this purpose.

In either case, you should allocate a password to SYST as soon as possible, to avoid users logging on as SYST and having access to other people's files. Change the password frequently, in case users get to know it.

From any station

```
type:      *I AM SYST[RETURN]
           *PASS "" <password>[RETURN]
```

where <password> is up to 6 numbers or letters or a combination of both.

Record the password safely so that you can log on as SYST again when you next need to.

Creating system users

In addition to SYST, you can grant system privilege to other users, giving them the same facilities. To make a user into a system user, log on as a system user and

type: *PRIV <user id> S[RETURN]

where <user id> is the name of the user you wish to become a system user. This name must already exist. This takes effect the next time the user logs on.

EXAMPLE

To make AJK a system user

type: *PRIV AJK S[RETURN]

To stop someone being a system user

type: *PRIV <user id>[RETURN]

EXAMPLE

To make AJK an ordinary user again

type: *PRIV AJK[RETURN]

Checking who is using the file server

To find out who is logged on to the file server and whether they are system users, use the command *USERS from any station.

Type: *USERS[RETURN]

Example screen:

Stn.	User Id.	Privilege
020	JOE	
021	MAX	
100	SYST	System

This network has three users logged on at stations 20, 21 and 100. Of these, only SYST is a system user.

Managing the root directory and libraries

As manager, you can log on as a system user and create files and directories in the root directory. You therefore need to be responsible for managing the root directories of your file server discs and for making files available in it for users to load.

In the root directory you may have:

- a password file
- users' main directories
- a directory of utilities called LIBRARY
- a utility called NETMGR to help you manage the file server
- directories containing groups of related files, such as games.

The catalogue of a root directory might look like:

\$	(117)	Owner	
MASTER DISC		Option 00 (Off)	
Dir. \$		Lib. LIBRARY	
BOOT	DL/	EDITOR	LR/
GAMES	DL/	JMB	DL/
LIBRARY	DL/	PASSWORDS	/
RPJ	DL/	TEXT	WR/

In this catalogue the disc title is "master disc", you have owner access to the directory, your currently selected directory is \$, and the option number indicates whether an automatic start will take place, as explained later.

Another important part of the service you provide as network manager is making sure that utilities which users need are put into the libraries in the root directory and that these are kept up to date. If, for example, a user writes a program which would be useful for others to load and run, you would save this in the library.

An example of a catalogue of LIBRARY is:

LIBRARY	(094)	Owner	
MASTER DISC		Option 03 (Exec)	
Dir. LIBRARY		Lib. LIBRARY	
CLOCKREAD	WR/R	DISCS	LR/R
NOTIFY	LR/R	PROT	LR/R
PS	LR/R	REMOTE	LR/R
UNPROT	LR/R	USERS	LR/R

The NETMGR utility

This utility has been written to help you perform many of the tasks you need to do to keep the file service running smoothly. Some of these functions can be done using other file server commands included elsewhere in the guide, but these have been grouped together into one program to make them easier to use.

Log on, select the root directory, and
type: **CHAIN"NETMGR"[RETURN]**

Screen: **Econet Network Management**

C to copy a directory
W to wipe a directory
T to print a directory tree
N to create a new user
R to remove a user
Q to quit

Your choice:

To select an option, type the relevant letter followed by [RETURN].

You can also enter the usual file server commands after the prompt, for example *CAT, and return to the menu after they have been executed.

Where the program is copying or deleting directories and files, these are displayed with the directories marked Dir. and their files indented beneath them. The length of the files is given in hexadecimal to the right of the filename.

Copying a directory

You can copy the entire contents of a directory to another directory, which may be on another disc. If you are copying on to a new disc the program also reorganises the files in the directory so that they are stored in sequence and can be accessed more quickly.

It will copy the directory even if one of the files contains a disc error, so that it is useful for salvaging everything which is not corrupted on a damaged disc.

Screen: **File server logical copy**

**Copies all files and sub-directories
to a new directory.**

**Full pathname, source directory
:**

Type: **<pathname>[RETURN]**

where **<pathname>** is the full pathname of the directory you want to copy, for example, \$.LIBRARY or \$.MATHS.ALGEBRA.

Prompt: **Full pathname, destination directory
:**

Type: **<pathname>[RETURN]**

where **<pathname>** is the full pathname of the directory you want the copy to be put into. If the directory already exists the new entries will be added to it. Any files of the same name will be overwritten.

To copy on to a new disc, type a colon followed by the destination disc name in front of the pathname of the destination directory.

EXAMPLE

To copy the directory *ALGEBRA* in the root directory to a disc called *MATHS*

prompt: Full pathname, destination directory
:

type: *:\MATHS\$.ALGEBRA*

Copying will now start. The screen displays the file and directory names as they are copied. If the directory is very large it may take some time to be copied. When copying is complete you see the message

Copied directory <name> to <name>

Press SPACE to return to menu

Wiping a directory

Using this option you can delete a directory and all its contents.

Screen: **Directory Wiper**

**Wipes entire directory
and sub-directories**

Full pathname of dir for deletion
:

Type: **<pathname>[RETURN]**

Deletion starts immediately and finishes with the directory you've named. You will see the names of all the files and directories displayed as they are deleted.

Message: **Directory <pathname> deleted**
Press SPACE to return to menu

EXAMPLE

You have a user called *ROBERT* with directories *TUNES* and *GAMES*, each containing several files. If you enter the pathname as *\$.ROBERT* you will delete both *TUNES* and *GAMES* and all their files, and the main user directory *ROBERT* in the root.

If you enter the pathname \$.ROBERT.TUNES you will only delete the directory TUNES and all its files.

Take care when you use this program that there is nothing in the directory you still need. This program unlocks the directory so it is not possible to protect it from deletion. If you delete your currently selected directory, channel errors will occur.

Printing a directory tree

To check what is in that directory, you can print out the filenames and directory names of a whole directory tree.

Screen: **Tree Printer**

**This program prints out
the tree structure of a directory**

**Full pathname of start directory
:**

Type: **<pathname>[RETURN]**

where **<pathname>** is the name of the directory you are interested in.

Prompt: **Printer (Y/N):**

If you type **Y[RETURN]**, the program will start the printer (via VDU 2) before displaying the tree print. When printing is finished, the printer carries out a form-feed and stops automatically. Typing **N[RETURN]** displays the tree print on the screen only.

The display is set out in the same way as before, with the files arranged under their directories, and the file length given in hexadecimal.

When this is finished you will see the message

Press SPACE to return to menu

Creating a new user

You can add a new user into the password file and create a user directory in the root directory.

Screen: **Create new user**

Name of new user
:

Type: **<user id>[RETURN]**

where **<user id>** is not more than 10 characters starting with a letter, for example, the person's initials. This is then recorded in the password file.

Screen: **<user id> is now a user**
Press SPACE to return to menu

*CAT will now show an entry in the ROOT directory for the new user.

Removing a user

You can remove a user from the password file and wipe out that user's directories and files.

Screen: **Remove user**

Name of user to be removed
:

Type: **<user id>[RETURN]**

Screen: **Removing <user id>**

The directory tree of the user is displayed as it is deleted.

Screen: **Directory \$.<user id> deleted.**
Press SPACE to return to menu

Take care that you do not remove a user who has directories and files which are still needed as these will be wiped out.

Quit

This option leaves the program.

Other ways of creating and deleting users and directories

As well as NETMGR there are also separate commands for creating users and their directories.

When you are logged on as a system user you can add a new user to the password file using the command *NEWUSER.

Type: *NEWUSER <user id>[RETURN]

and the identifier is recorded in the password file.

This command doesn't create a directory for the user, who will have only public access to \$.

To remove a user from the password file

type: *REMUSER <user id>[RETURN]

If a user forgets his or her password you need to enter a new one. You can do this as a system user by deleting and creating the user again, using *REMUSER and *NEWUSER. The user then enters a password in the usual way. This doesn't affect the user's main directory.

If new users need their own main directories, they can be created in the root directory by logging on as a system user and using the command *CDIR.

How to do this is explained in the user guide.

Disc management

The key to running an efficient network is careful disc management and handling. This section covers the disc operations you need, and contains advice on how to keep the network running smoothly. Several of these tasks are carried out when the file server is not running.

These include

- ensuring that there is always a password file present in one of the drives
- making sure you always have file server discs prepared for use since you cannot prepare new ones without stopping the file service
- backing up file server discs daily
- making sure the files users are likely to need are always present
- using the correct procedure for changing discs while the file server is running
- transferring files from DFS to file server discs.

Managing the password file

Each time a user logs on to the file server a check is made to see that their user identifier is present on the password file in use and that the password keyed in is correct. So you must have a password file in one of the file server disc drives to enable people to log on.

Usually you will be able to have one disc in drive 0 all the time the file server is running. This disc will have one password file containing all your users. Then you can change the disc in drive 1 to make different files available for different groups of users.

If you have more than about 300 users in the password file your root directory becomes very large, which takes up a lot of disc space and slows down logging on. In this case it is better to split the password file, possibly having one for each group of users.

If you try to start the file server with more than about 500 user directories in the root directory you will get an error message. (See the section on *Error messages* at the end of the guide.)

If you try to start the file server without a password file on the disc in either drive you will get the message "PW file not found" at the file server.

Each time you change discs the file server re-selects the password file. (See the section on *Changing Discs*).

Preparing discs for use in the Econet

Utility: DSCMGR

The discs you use with the file server have to be formatted so that they can each support many users. DFS discs will not be recognised by the file server program, so that you cannot just use the format command, FORM40 or FORM80.

A utility called DSCMGR has been included on your utilities disc, to be used for initialising discs; and making back-up copies as explained in the next section.

DSCMGR can only be run on a machine with a second processor attached.

The initialising program also allows you to set up a password file on the disc if you need one.

To initialise a disc:

put the utilities disc into drive 0.

Type: **CHAIN"DSCMGR"[RETURN]**

Screen: **FILE SERVER DISC MANAGEMENT**

PRESS I TO INITIALISE A DISC

PRESS C TO COPY A DISC

PRESS Q TO QUIT

Your Choice:

Type: 1

Screen: File Server disc initialiser

Drive number:

Type: 1[RETURN]

Prompt: Insert disc into drive and press RETURN

Put a blank unformatted disc into drive 1.

Press: [RETURN]

Screen: Formatting...

The screen shows the tracks being formatted on both sides of the disc.

Prompt: Disc name:

Type: <name>

where <name> is the name of the disc in up to 16 characters without spaces. Choose the name carefully to indicate what is on the disc. This is the name users will type in when they want to select different discs.

Prompt: Date (dd/mm/yy):

Type: <today's date>

Screen: Please wait....

Prompt: Password File (Y/N):

If you don't want a password file on this disc

type: N[RETURN]

This produces a file server disc without a password file, ready for use in the network.

If you do want a password file on the disc

type: Y[RETURN]

after the prompt.

**Prompt: Enter up to 13 user names
finishing with just a RETURN...**

Next you have to enter the identifiers of the users who will be using the file server with this password file. You can enter up to 13 at this stage. If you want to add more users later on, you can do so while the file server is running using NETMGR. Passwords are recorded in the password file by users from their stations.

Prompt: User name 1:

Type: <user id>[RETURN]

The prompt is then repeated with a different number.

When you have entered all the users

press: [RETURN]

Screen: ** Disc initialised **

When you have finished, press Q to leave the program.

Backing up discs

Utility: DSCMGR

In any system where work is stored on a floppy disc it is vital to keep regular back-ups in case a disc is corrupted or damaged. This is particularly important on a network, where the discs are accessed very frequently and a disc fault may affect a large number of users.

To safeguard against losing a lot of hard work, back up all your file server discs regularly, ideally keeping three copies of each one.

We recommend that you use the following routine.

Copy the one you have been working with at the end of each day. Use the new working copy on the following day and copy this on to a new disc at the end of the day. On the third day copy your working disc on to the one you were using on day 1. Then repeat the cycle.

After a few months, discard the old discs and make your copies on to new ones.

To copy a file server disc:
put the utilities disc into drive 0.

Type: **CHAIN"DSCMGR"[RETURN]**

Screen: **File Server Disc Management**

PRESS I TO INITIALISE A DISC

PRESS C TO COPY A DISC

PRESS Q TO QUIT

Your Choice:

Press: **C**

Screen: **File server disc copier**

Drive to copy from:

Take out the utilities disc and put the disc you want to copy into drive 0.

Type: **0[RETURN]**

Prompt: **Drive to copy to:**

Put the disc you want to copy on to in drive 1.

Prompt: **Format backup disc (Y/N):**

If the disc you are copying on to doesn't need formatting type **N[RETURN]** if it does type **Y[RETURN]**

Prompt: **To start format, press RETURN**

Press: **[RETURN]**

Screen: **Formatting...**

When formatting is complete

Prompt: **Backup disc name:**

Type: **<name of back-up disc>[RETURN]**

If you just press [RETURN] after this prompt, the disc will be given the same name as the original.

Prompt: To start copy, press RETURN

Press: [RETURN]

Copying starts and the screen displays the track numbers as they are copied. When copying is complete, you will see the message

**** Disc Copied ****

and will return to the menu.

To leave the program type Q.

Inserting and removing discs

So that it can respond quickly to commands, the file server keeps a lot of information about its discs in memory when it is running. Because of this you cannot simply remove and swap discs while it is running. If you do, the file server will assume it is still working with the old disc and may corrupt the new one.

When you come to change discs remember that you cannot run the file server with two discs of the same name loaded at the same time.

To change a disc while the file server is running

press: [ESCAPE]

until the file server responds.

If you are using both drives, you will see

Prompt: Drive:

Type: <number>

where <number> is the number of the drive in which you wish to change discs, that is 0 or 1.

If you are using only one drive, you will go straight to

Prompt: **Changing drive - <number>**
Load new disc

Load the new disc.

Press: **[SPACE]**

Prompt: **Restarting - ready**

Before you change a file server disc make sure none of the station users are still working with files on it. If they are, they will get the message

Disc changed

when next they try to access the disc.

Finding out information about discs

To find out the title of a disc from a station and the amount of space free on it, use the command *FREE.

With the master disc in drive 0

type: ***FREE[RETURN]**

Example Screen:

Disc name	free blocks
Master-disc	0004DB

The disc name, which users will need to know if they want to change the disc they are logged on to, is "Master-disc". The number of blocks of space free on it is given in hex. Each block is 256 bytes.

To find out about space used in specific directories on a disc use *INFO, as explained in the user guide, or NETMGR.

Disc labelling

Label your file server discs carefully with the disc title (given to the discs when you initialised them). Users have to enter this when they want to access a different disc. Indicate how up-to-date your back-up copies are.

Copying from disc filing system discs

You may also want to use files stored on DFS discs in the file server. To do this you need to convert them and copy them on to file server discs which have been initialised.

Load the utilities disc into drive 0.

Type: ***FS[RETURN]**

Prompt: **Date: DD/MM/YY**

Type: <today's date>

Prompt: **No of drives:**

Type: **1[RETURN]**

Remove the utilities disc and load the file server disc you wish to copy on to, the destination disc, into drive 0.

Prompt: **Command:**

Type: **C**

for converting a DFS disc.

Prompt: **Converting...**
 Cache size - 42AF objects - 42

Load the DFS disc you wish to copy from, the source disc, into drive 1.

Prompt: **Drive:**

Type: **1[RETURN]**

the number of the source drive.

Prompt: **Side:**

Type: <1 or 2>**[RETURN]**

for the disc side you are going to copy from.

Example screen:

Drive: 1	
Side: 1	
UTILITIES (4) (52)	
Drive 1	Option 3 (Exec)
Directory : 0.\$	Library : 0.\$
!BOOT	!BOOT
DCONY L	FORM40 L
FORM80 L	VERIFY L
W.ALPHA	W.BATBALL
W.BIORTHIM	W.BPART2
W.CALC	W.CLOCK
W.HELP	W.INDEX
W.KEYBD	W.KINGDOM
W.PATTERN	W.MUSIC
W.PHOTO	W.PHONE

Destination for DFS dir. "\$":

This is the screen you would see if you wanted to copy programs from a DFS utilities disc on to a file server disc.

The important feature is the letter displayed before each filename, which is the DFS directory letter.

NOTE: the filenames displayed without a DFS directory letter in front are in the selected directory. This is shown in the screen heading as 0.\$

The program now asks which destination directory on the file server disc you want the files put into.

Prompt: Destination for DFS dir. "\$":

If you want to copy files in this directory

type: <destination directory>[RETURN]

If you don't want to copy files in this directory press [RETURN] and the next directory will be displayed in the prompt.

You must give the full pathname for the directory you want to copy to.

EXAMPLE

To put the files in the DFS directory \$ into the file server directory LIBRARY, which is in the root directory

type: \$.LIBRARY[RETURN]

You can copy up to 7 directories at a time. Once this has been reached, or all the DFS directories have been matched to file server directories, copying will start.

If you do not want to copy files in a directory

press: [RETURN]

The names of the files being copied are displayed on the screen.

When copying is complete you will see the prompt
Again?

If you wish to convert another DFS disc insert it now in drive 1 and repeat the procedure.

Type: Y[RETURN]

to restart the program.

If not type N[RETURN] to return to the Command: prompt.

If an error occurs during the copying you will see the message

Continue?

Type: Y[RETURN]

to continue with the next file.

Type: N[RETURN]

to go the Again? prompt.

NOTE: the rules for naming DFS files differ from those for file server files. If you wish to copy a file with a name which will be illegal under the file server rules, you must rename it before copying.

Autostart facilities

It is possible to make all the machines on the network follow an identical start-up procedure automatically on power-up or after [SHIFT][BREAK] is pressed. You can set this up using the autostart facility. This works similarly to the autostart at log on, described in the user guide.

For example, you could arrange for every machine to produce automatically a menu of programs for users to choose from as soon as they press [SHIFT][BREAK]. In this way users do not need to know anything about the file server or the Econet, or even how to log on, but can treat the station as if it were an individual microcomputer.

Whenever a user resets a machine by pressing [SHIFT][BREAK], the file server automatically tries to log on as user BOOT. User BOOT can have a directory and !BOOT file like any other user and this can be set up to contain the starting routine you want all the stations to follow.

To set up an autostart that works whenever a user resets a machine:

1. Create a main directory and a user called BOOT (the file server master disc already has one).
2. Create a file called !BOOT in BOOT's directory. Put in it the commands you want the file server to carry out each time a user resets.
3. Change the autostart setting of BOOT's main directory by

typing: ***OPT4,<number>[RETURN]**

The number you type can be 0, 1, 2 or 3.

- 0 switches the autostart off
- 1 makes the file server *LOAD and *RUN the file !BOOT each time a user resets
- 2 makes it *RUN your file !BOOT each time a user resets

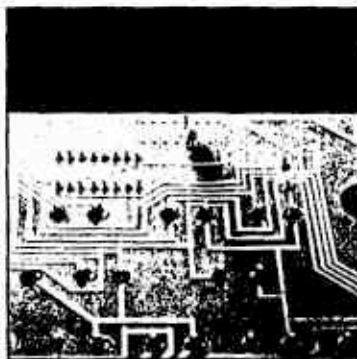
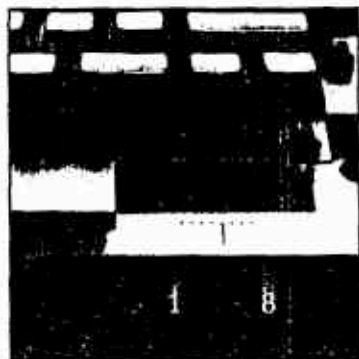
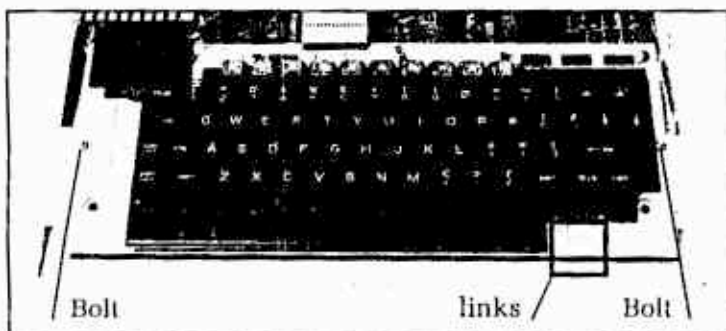
- 3 makes it *EXEC your file !BOOT each time a user resets.

If there is no main directory BOOT, the file server will treat \$ as its currently selected directory. It will check \$'s autostart option. If it is 1, 2 or 3, it will look for a file called !BOOT in \$ and try to *LOAD, *RUN or *EXEC it.

Then if there is no file !BOOT in BOOT's main directory, users will get the error message "File not found", when they press [SHIFT][BREAK].

Having set up the autostart, every machine on the network will follow your instructions on reset or power-up.

If you want stations to autostart every time [BREAK] is pressed, remove the keyboard and solder link 5 in the set of 8 links at the right-hand front of their keyboards. This makes [BREAK] act as [SHIFT][BREAK] and vice versa.



Communicating with other stations

On the master disc there are programs in the library which allow communication between stations.

These are explained here, rather than in the user guide, since their use can affect the security of the network.

Copying another station's screen *VIEW

Type: ***VIEW <station number>[RETURN]**

to copy the screen of the station number specified on to your screen.

If the screen of the station you wish to view is in a screen mode with a higher number than your own, it will change the mode of your screen to that of the other station.

If the number is lower you will get an error message, "Mode <number>". This is to prevent the change of mode overwriting your BASIC workspace. You can read the remote machine's mode after such an error using OSWORD &13, which is described in the Econet advanced user guide.

EXAMPLE

If you want to view a screen in mode 3 while yours is in mode 7 you will see the error message "Mode 3" on your screen.

You can also view another user by specifying the user identifier.

Type: ***VIEW JPB[RETURN]**

to copy JPB's screen on to yours, if JPB is logged on to the file server. If he is logged on at more than one station you will copy the screen of the station at which he logged on first.

You can include ***VIEW** in programs. For example, if you want to stop your own prompt appearing on your screen in the middle of the one you have copied, write the following short BASIC program to prevent the prompt appearing until you press [ESCAPE].

To view station 100

```
10 *VIEW 100
20 REPEAT:UNTIL0:REM LOOP FOREVER
```

Taking over
another station

***REMOTE** and ***ROFF**

This takes over the other machine completely and disables its keyboard.

Type: ***REMOTE <station number>[RETURN]**

EXAMPLE

To take over the user *JOE* at station 200, if you are at station 100

type: ***REMOTE 200[RETURN]**

or ***REMOTE JOE[RETURN]**

If you now type **RUN** at station 100, whatever instructions you type will be carried out at *JOE*'s station and he will have no control over it.

To sever the connection

type: ***ROFF[RETURN]**

Pressing [BREAK] at the station which has been taken over, or switching it off, does not break the remote link. Pressing [BREAK] on your machine may cause "Not Listening" or "No Reply" messages on the remote machine, if it tries to communicate with you after the link is broken.

Sending short messages

*NOTIFY

You can send a one-line message to another station using *NOTIFY.

Type: ***NOTIFY <station> <message>[RETURN]**

or: ***NOTIFY <user id> <message>[RETURN]**

EXAMPLE

To send a message from station 100 to JOE at station 200

type: ***NOTIFY 200 HOW ARE YOU?[RETURN]**

The message will go into the keyboard buffer of JOE's machine, which will beep and print

-- 100: HOW ARE YOU? --

No carriage return is printed so JOE can delete the message before continuing.

Protecting your ***PROT and *UNPROT** station

You can stop other users using *REMOTE, *VIEW and *NOTIFY on your station by typing

***PROT[RETURN]**

and remove the protection by typing

***UNPROT[RETURN]**

Any station which tries to contact yours using *NOTIFY after it has been protected will get a "Not listening" message. If a user tries to use *REMOTE or *VIEW the keyboard will be disabled until [ESCAPE] is pressed.

NOTE: if you are using file server software version 3.34 station numbers 240-254 are known as privileged stations in the Econet, and are able to by-pass this protection. This means that that the use of these stations must be controlled.

Routine starting up and closing down procedures

This section sets out the steps you should follow each time you set up the file server after it has been switched off.

Make sure that the file server, user stations, clock and terminator boxes are plugged in correctly to the Econet and switched on.

Put the utilities disc into drive 0.

Type: *FS[RETURN]

Prompt: (DD/MM/YY) =

Type: <today's date>[RETURN]

Prompt: No. of drives =

Type: <number of drives>[RETURN]

Insert file server discs into as many drives as you've specified, making sure one has a password file. Ideally have the master disc in drive 0.

Prompt: **Command:**

Type: S

Prompt: **Stations=**

Type: <number of stations>[RETURN]

Example screen:

Cache size - 42AF objects - 42

Starting - Ready

The file server program is now running.

Closing down the file server

When you have finished with the file server at the end of the day

type: Q

to exit from the program.

Prompt: Command:

press: [CTRL][BREAK]

The file server machine now reverts to behaving like a normal Econet station with a local disc drive attached and you can carry out any of the DFS functions on it as explained in the *Disc Filing System User Guide*.

Command summary

This is a list of the commands mentioned in this guide. Elements of the syntax shown in square brackets are optional.

Commands typed at the file server

***BACKUP 0 1**
backs up a DFS disc

***ENABLE**
enables backing up to take place

***FS**
starts the file server program running

When starting up the file server you can enter the following commands after the prompt **Command:**

- A** to enter the date again
- C** to convert a DFS disc to a file server disc
- S** to start the file server program running.

Once the file server is running you will only use its keyboard for the following commands:

[ESCAPE] to change discs

M to start and stop the file server screen
displaying commands entered at stations

Q to stop the program and return to the
Command: prompt.

Commands typed at a user station

***CAT [<name>]**

displays a catalogue of files

***CDIR <directory name>**

creates a directory

***DELETE <filename>**

deletes a file

***FREE**

displays information about file server discs

***I AM <user id> [<password>]**

logs the user on

***NEWUSER <user id>**

puts a new user into the password file

***NOTIFY <station number> <message>**

sends a message to the station specified

***NOTIFY <user id> <message>**

sends a message to the user specified

***OPT4,<number>**

sets the autostart option

***PASS "" <password>**

sets the password specified

***PRIV <user id> [S]**

grants and removes privilege for the user specified

***PROT**

protects the station from *REMOTE, *VIEW and *NOTIFY

***REMOTE <station number>**

takes over the station specified

***REMOTE <user id>**

takes over the station of the user specified

***REMUSER <user id>**
removes the identifier from the password file

***ROFF**
breaks the link made by *REMOTE

***UNPROT**
removes the protection set by *PROT

***USERS**
displays information about who is logged on to the file server

***VIEW <station number>**
copies the screen of the station specified

***VIEW <user id>**
copies the screen of the user specified

Command abbreviations

You can abbreviate several of the commands listed above, as follows:

name	abbreviation	name	abbreviation
*CAT	*.	*CDIR	*CD.
*DELETE	*D.	*I AM	*I A.
*NEWUSER	*N.	*OPT	*O.
*PASS	*P.	*PRIV	*PR.
*REMUSER	*REM.		

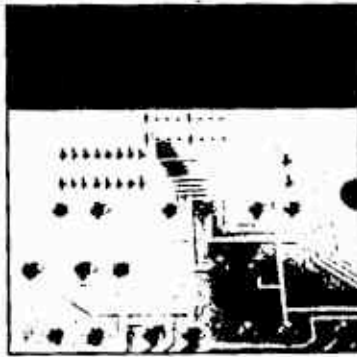
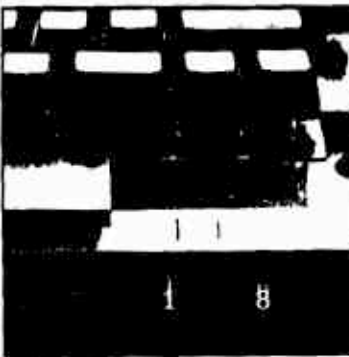
Setting your filing system ROMs

In earlier Econet stations (software version 3.34) you will have separate disc and network EPROMs. When the computer is switched on it reads the EPROMs you have plugged in from right to left. If the DFS EPROM is on the right it will power-up under the DFS and if the NFS EPROM is to the right it will power-up under the NFS.

Decide which filing system you want first and plug in the EPROMs accordingly.

In later machines (software versions 3.40 and above) you have a combined DFS/NFS EPROM and the computer will automatically power-up under the disc filing system.

To make your stations power-up under the network filing system remove the top of the keyboard as shown on page 38 and make the left-hand link (number 1) on the keyboard.



Contents of the master disc

The master disc you received with your file server contains the following directories and files in the root directory:

BOOT—the main directory for user BOOT, used in autostarts, which contains the file !BOOT

WELCOME—a directory of Welcome programs, useful for demonstration

LIBRARY—a directory of useful utilities including:

NOTIFY, REMOTE, VIEW, PROT, UNPROT,
which are explained in the section
Communicating with other stations

PS, which is used to select the printer server

DISCS for displaying the names of the discs currently in use

USERS for finding out who is logged on to the network

NETMONITOR a debugging utility for those writing programs on the network, explained in the Econet advanced user guide

NETMGR—a file of programs used in managing the network

PASSWORDS—the file which contains the user identifiers for those who are going to use the file server, and includes users BOOT, SYST and WELCOME.

Contents of the network utilities disc

Your network utilities disc contains the following programs:

FS – the file server program

DSCMGR – a set of utilities for disc management

FORM40 – utilities for formatting discs
FORM80

VERIFY – a program which checks that a disc is not
faulty.

Error messages

This section explains:

- error messages that you may get when carrying out network manager's tasks
- error messages that station users may ask you about.

Other messages which appear at user stations are given in the *user guide*.

The errors are listed in alphabetical order with the error numbers given in decimal on the right of each one.

Number 168 is a composite error number, which means that it can signify more than one error. These errors should be very rare and can be distinguished from one another by using an OSWORD call as explained in the *Econet advanced user guide*.

Already a user 177

You're trying to create a new user with the same name as an existing user. Use a different identifier.

Bad user name 172

The name you have given breaks the rules for user names. Use an identifier of up to 10 characters starting with a letter.

Broken dir 168

The file server cannot physically read part of the directory, or a disc fault occurred when the directory was being written out. You will not be able to use this directory again and so should use your back-up disc.

To salvage as much as possible of the directory in which the broken directory is kept, use the directory copier option in NETMGR which copies out the whole directory, ignoring the fault.

If this happens frequently, contact your dealer.

OSWORD &13 will return 66 to distinguish this from other 168-type errors.

Disc changed**200**

A user has tried to use the file server after you have changed discs. The user must either log on again, or use *SDISC to select a valid disc.

Disc fault**199**

The file server cannot physically read the disc, which is damaged, unformatted or the wrong type — for example, an 80 track disc in a 40 track drive.

Usually discs will last many months, but they do wear out, particularly when being accessed very frequently by a number of users. Always buy top quality discs and keep up-to-date back-ups. If you get frequent disc faults on new discs your drive may be faulty and you should contact your dealer.

Disc full**198**

You have tried to use more space than is left on the disc. Ask users to delete out-of-date files to make room. You can find out how much space is left using *FREE and can wipe out a whole directory using the directory wiper option of NETMGR.

Disc read only**201**

One of the discs in use has a write-protect patch, which you will need to remove if the disc really needs to be written to.

FS Errors**168**

There is a series of errors, all displayed as FS Error XX (where XX is a hexadecimal number), which should only happen very infrequently. These have composite error numbers: they are all given the same number (168) as there are insufficient numbers available for each to have its own.

The FS Errors are listed below, with the error string displayed on the left and the number returned from OSWORD &13 in decimal on the right.

Very rarely the message will be displayed at the file server as "FS internal error XX". This means that the error has made the file server stop running and you will have to start it again. The meaning of the error and recommended action is the same as that given below.

FS Error 27**39**

The password file has been corrupted, possibly by a system user SAVEing or using random access to it. Go to your back-up copy.

FS Error 29**41**

Someone has changed the access string of \$.PASSWORDS, then deleted it and created a directory called \$.PASSWORDS.

FS Error 32**50**

You have put in a badly, or incompletely, initialised disc, or a corrupted disc. Go to your back-up copy.

If persistent, you have a faulty file server program or machine and should contact your dealer.

FS Error 35**53**

You have tried to create a file bigger than 16M bytes.

FS Error 3C**60**

A directory has become too big to fit into the cache space, probably because you have too many users in the root directory. Temporarily — start the file server with less users to save a little space.

More permanently — delete some entries in the directory and use NETMGR to carry out a disc copy.

FS Error 53,55,57**83,85,87**

The disc is badly corrupted. This can happen if file server discs are used for other purposes, particularly in programs where the disc is written to directly. Use your back-up copy. If this happens persistently, contact your dealer.

FS Error 59**89**

You have tried to change to an 80 track disc from one which wasn't initialised for 80 track, double-sided use. Restart the file server.

FS Error 5A**90**

You are using two file server discs of the same name.

FS Error 64**100**

Too many files and directories are open. Temporarily — ask some users to close directories.

More permanently — start the file server with more users at the **Stations=** prompt.

FS Error 67**103**

A very large number of files is open. Action: as for FS Error 64.

If you get any other FS Errors, contact your dealer.

Insert a file server disc

Either your disc is not inserted properly, in which case put it in again, or you are not using an initialised file server disc. Insert an initialised file server disc in each drive you're using.

Insufficient privilege**186**

You are trying to create a new user without being a system user. Log on as a system user or use ***PRIV** to make a new system user.

Line jammed**160**

One of the interfaces is not working properly and is transmitting data continually on the network.

Go through the following steps, checking to see if the fault has disappeared at each stage:

- reset all stations connected to the network
- remove the stations from the network one by one, checking to see when the error message disappears: the last station removed was faulty
- check for faulty terminators
- check for crossed wires in the network cable
- check for a faulty local station.

If you cannot solve the problem contact your dealer.

Memory fault found

The file server memory test has failed. Check that everything is plugged in correctly. If you cannot start the file server, contact your dealer.

Mode <number> 173

someone has tried to *VIEW a remote machine in a lower mode. Change to the mode <number> and try again.

Net error 161

Check that:

- the clock speed is suitable (see the Econet installation leaflet)
- the terminators are connected to the power supply and the network
- there isn't a network fault such as a short circuit, open circuit or crossed wires.

No clock 163

The clock signal, which is generated by the clock unit and synchronises all stations on the network, is not reaching your machine.

Check that:

- the computer is correctly plugged into the network
- the clock unit is plugged into the network and is being supplied with power
- the cables connecting your computer and the clock box to the main network are not faulty.

No reply 165

A server operation has failed in the middle. For example, a disc is removed from the file server while a file is being loaded. Possibly someone has pressed [BREAK] at the file server during an operation.

Not listening 162

Your command has not been accepted by the file or printer server.

Check that:

- the file server program is running
- the station number of the file server you are trying to reach is 254. If it isn't, then you must first specify its number with the *I AM command (See the *Econet user guide*).

This message can also appear if the file server is very busy and the station cannot gain access within 15 seconds. Try the command again.

A user may also have corrupted the space below PAGE which the NFS uses to store the file server number it is trying to reach. Press [CTRL][BREAK] and log on again.

Not logged on 174

You are trying to *NOTIFY or *VIEW a user who isn't logged on.

PW file not found 168 and 33

Someone has tried to log on when neither disc in the file server has a password file. Put in a disc with a password file.

Too many users 184

One more user has tried to log on than you entered at the **Stations=** prompt when you started the file server. Type Q and enter a bigger number of users.

Service and support

If you have any problems with setting up or running the file server or need any advice, contact one of the following:

A dealer from the national network of approved dealers (see list).

Acorn Computers Limited, Technical Enquiries,
Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN.

Glossary

Clock unit

the unit that produces the clock signal supplied to all machines on the network

Default

a setting or value provided by the system, used unless an alternative is specified

Directory

a set of files and other directories in a filing system

Disc Filing System

the system used by the BBC Microcomputer to handle disc filing on a local floppy disc drive

EPROM

erasable, programmable read-only memory

Formatting discs

preparing discs for use with the disc filing system, using FORM40 or FORM80

Initialising discs

preparing discs for multi-user use on the file server

Password

a string of up to six alphanumeric characters which is recorded in the password file and is keyed in when a user logs on

Privileged or system user

a user who has owner access to the root directory, and so can create and delete users and directories

Root directory

the main disc directory of a file server disc, which contains users' main directories and files

User identifier

a string of up to ten characters starting with a letter recorded in the password file and keyed in when a user logs on

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