

Appendix B: System errors

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B.1 General Information

Errors generated by the file server fall into 3 classes:

- a) 'Warnings' which do not inhibit further operation of the File Server
- b) Fatal errors which put the File Server 'Offline' (usually accompanied by the System Error LED)
- c) Errors caused by failure to read or write one of the discs in the Fileserver.

When On line, error messages are sent to one of the printer ports on the MDFFS. Which one it is is set up by **EDITPRINT**. It is wise therefore to always keep a printer connected to the system even if no print output is anticipated. In Utility Mode, error messages are only sent to the screen of the BBC microcomputer running ***FAST**.

There is another error condition on the MDFFS, which can occur at power-up and is denoted by a flashing System Error LED.

IMPORTANT NOTICE:

- 1) It is wise to keep a permanent copy of any error messages printed by the File Server. This is very important in the case of errors other than disc errors, and you should try and record all the information printed. It may be valuable information at a later date when sorting out a particular problem.
- 2) Try to ascertain who was using the File Server at the time, and what they were doing.
- 3) Ring SJ Research as soon as possible (on 0223 69927).

B.1.1 Disc & Tape Error Examples

The general form is:

```
Wini|Floppy|Tape [read|write] error [on drive <letter>], block <hhhh>
```

For example:

```
Drive 01 read error 81 at block 0002
Floppy read error 08 on drive B, block 02F5
Wini read error 91 on drive E, block 3001
Floppy write error 10 on drive A, block 0001 ** SERIOUS ERROR **
```

Write errors are considered 'serious' because they indicate that a disc crash will probably occur if the disc is used for very much longer. The best course of action is to recover any vital files and save them somewhere else, and then avoid using that disc again.

```
Wini error 92 on drive F, addr=00A69B
```

This example would only be printed when running the MDFS Utility Mode. In this case the 00A69B refers to a 'SCSI logical block number' and not a File Server block number. The block number is printed in this format because it is more useful when *reallocating* bad sectors on a winchester (see section 7.3.5). You can recognise this format because there will always be 6 digits as opposed to 4.

Note the drive *number* which indicates a logical drive (the first logical drive is drive 00). If you had a single winchester and some floppy drives connected, **Drive 01** would refer to the first floppy drive. This error probably indicates that someone had removed the disc or the drive itself from the MDFS without pressing the **Release Discs** button first. This form of error message is due to be phased out.

B.2 File Server Messages & Internal Errors

B.2.1 Non-fatal Errors

These are errors are caused by some malfunction in the File Server or on one of its discs. Possibilities are:

Errors caused by some software problem in the File Server Code:

```
Task <nn> Error <letter> at address nnnn Bank bb
Task <nn> killed by timeout
```

Errors caused by corrupted discs, printed as each disc is booted:

```
Block 0 corrupt on Drive <drive_letter>
```

```
Block allocated twice, Drive <drive_letter>, block nnnn
Bad block number, Drive <drive_letter>, block nnnn
```

```
Bad backpointer on drive <drive_letter> in ....
Wrong no. of files in Dir. in ....
```

(These last two will cause the disc to go Drive read only)

```
2nd disc called <discname> in drive <drive_letter>
```

Printed while the File Server is On line:

```
Block deallocated twice, Drive <drive_letter>, block nnnn
```

B.2.2 Errors accompanied by the System Error LED.

These are accompanied by the message File Server internal error:.

```
ABEND 0B01    Bad SCSI bus status from a SCSI interrupt. Can be caused by a bad SCSI data cable.
ABEND 0B03    Non-zero MESSAGE IN byte
ABEND 0B04    Unrecognised STATUS byte
ABEND 0B05    STATUS byte = 8 (BUSY)
ABEND 0B06    Error zero in non-extended SENSE DATA
ABEND 0B07    MESSAGE OUT status
ABEND 0B08    Bad DEVICE/LUN in an IDENTIFY during RESELECT
```

ABEND 0B09	Received a MESSAGE REJECT byte!
ABEND 0B10	Bad SCSI ptr
ABEND 0B11	SCSI_N <> 0 during RESELECT (loss of BSY?)
ABEND 0C01	Cache entry valid, clean and on disc chain!
ABEND 0C02	Bad logical disc number
ABEND 0C03	Writing to non-valid cache entry
ABEND 0C04	Cache entry corrupt
ABEND 0C05	Cache entry matched in TSCOMP
ABEND 0Fxx	Bad status during SCSI interrupt (xx = bus status)
ABEND 1101	Logical block no out of range in F_BLK

B.2.3 Flashing SYSTEM ERROR LED after powering on an MDFS.

Look at the flashing carefully: it is repetitively a long flash followed by a number of short flashes. Count the number of short flashes and consult the table below:

1 flash	CMOS battery-backed RAM inconsistent. Follow the procedure for setting the station number to 254 to cure this problem (section 7.4).
2 flashes	RAM fault
3 flashes	SIO fault
4 flashes	WD1793 fault
5 flashes	CTC fault
6 flashes	SCSI bus fault

Make sure your winchester drive is plugged in correctly and powered. If you power-up the MDFS before the winchester you will get this error.

Two, three, four or five flashes indicate a fault which is not user-repairable. Please inform SJ Research.

B.3 Winchester Disc Errors

B.3.1 RODIME RO752/652 Winchester Disc Error Codes

Code	Sense Key	Meaning
03	4	Write fault. Power supply voltage out-of-limits?
04	4	Not ready (FATAL)
06	4	Track 000 not found
10	3	ID ECC error
11	3	Uncorrectable data error
12	3	No ID address mark
13	3	No data address mark
14	3	Sector not found
15	3	Seek error
17	1	Recovered read error by retries
18	1	Recovered read error by ECC
1A	5	Parameter overrun
1C	3	Error while accessing defect list
20	5	Invalid command
21	5	Illegal disc address
22	5	Illegal function
24	5	Illegal bit or byte in CDB. Can be caused by bad ribbon cable.
25	5	Invalid LUN
26	5	Illegal bit or byte in parameter list. Causes as Error 24.
31	3	Format operation failed
32	3	No spare location available
40	4	RAM diagnostic failure
44	4	ROM diagnostic failure
80	4	DC motor failed to start
81	4	DC motor speed error +/-1%
82	4	DC motor speed error +/-5%
83	4	Index calibration failed
Ex	x	Sense key = x, error code = 0
FD	-	Unknown status byte
FE	-	Device busy (i.e. executing command)
FF	-	Either RSS error or Bus jammed or No BSY.

B.3.2 ADAPTEC ACB 4000A/4070 Winchester Disc Controller Error Codes

N.B. The Adaptec controller puts a 'Address Valid' bit in bit 7 of the error code. Hence error 91 = 80 + 11 which means error 11 with the address valid condition set to true. The Adaptec controller does not support Sense Keys.

Code Error

- 01 No index or sector signal found during read, write or format.
- 02 Seek complete signal not received from drive.
- 03 Write fault. Drive detected failure which disallows writes.
Can be caused by power supply fault.
- 04 Drive not ready. Drive not connected or no power to drive.
- 06 Track 000 signal not received from drive.
- 10 ID field CRC error. Formatting information gone corrupt.
- 11 Uncorrectable data error. Data could not be recovered by retry or correction.
- 12 ID address mark not found. See error 10.
- 14 Record not found. Could not seek to track with correct ID.
- 18 Data check in no retry mode. See send diagnostic command.
- 19 ECC error during verify. Sector had bad data CRC.
- 1A Interleave error. Interleave is greater than the number of sectors per track on disk.
- 1C Unformatted disc or corrupt disc descriptor sector. The disc drive parameters (number of heads etc) will have to be re-entered when re-formatting the drive. (Z option in FORMAT)
- 20 Illegal Command. Command code is invalid or not implemented.
- 21 Illegal Block Address. Sector number out of range. Corrupt directory?
- 23 Volume overflow. Silly parameters to FORMAT, or number of blocks fields too large.
- 24 Bad Argument. Reserved bit not zero, invalid parameter or bad block list in the wrong order. Can be caused by bad ribbon cable.
- 25 Invalid LUN. Drive number greater than 1 addressed.
- 28 Cartridge changed. A disk drive cartridge was installed since the last time a command was executed. Can't see how this should happen!
- 2C Error count overflow. Posted when error count exceeds specified threshold.

Ex,FD,FE,FF as RODIME (see section B.3.1).

B.4 SCSI Sense Key Definitions

SENSE KEYS apply to most SCSI devices, and are an attempt to give an idea as to what sort of error a particular error number refers to. Actual error numbers are technically vendor unique, although there are many conventional error numbers already in use. Currently, SENSE KEY information is only printed in Utility Mode with the debug mode enabled.

Sense Key	Definition
00	NO SENSE
01	RECOVERED ERROR
02	NOT READY
03	MEDIUM ERROR
04	HARDWARE ERROR
05	ILLEGAL REQUEST
06	UNIT ATTENTION
07	DATA PROTECT
08	BLANK CHECK
09	Vendor unique
0A	COPY ABORTED
0B	ABORTED COMMAND
0C	EQUAL
0D	VOLUME OVERFLOW
0E	MISCOMPARE
0F	Reserved
FF	SENSE KEY facility not supported (Adaptecs will give this)

B.5 Tape errors

Code	Sense Key	Meaning
08	4	Drive Communication Error. Can be caused if the tape is removed while it is being accessed.
10	3	ID CRC error. Badly Formatted tape, excessive tape dropout, or high external noise (RFI).
11	3	Unrecoverable Read error. Causes as Tape error 10.
15	3	Seek error. Causes as Tape error 10.
19	3	Defect List error. Tape might require de-gaussing and re-formatting.
21	5	Illegal Logical Block Address.
24	5	Illegal Bit or Byte in Command Block. Can be caused by bad ribbon cable.
27	7	Write protected. Remove tape and move the black tab.
28	6	New Cartridge Ready for Use.
29	6	SCSI RESET has occurred.
42	4	Power-on Diagnostic failure
A0	4	Background Noise error.
A7	4	Autoload failure. Try reinserting the tape.
A8	2	Cartridge autoloading. Wait for the drive to stop winding.
B0	2	No Cartridge in the drive.

Ex,FD,FE,FF as RODIME (see section B.3.1).

Flashing red LED after *autoload*: this is much the same as tape error A7.

Errors generated by MDFS in relation to Tapes and Winchesterstors:

No BSY Drive failed to select within the given time.

Drive either not connected or still winding tape while operation attempted.

RSS error Error during the 'get last error code' command. Can be caused by bad ribbon cable.

Bus jammed One of the eight control signals on the SCSI bus was being driven while the MDFS was trying to take control of the bus. Try powering off the system.

Other errors not specific to tapes but which may occur during Tape Backup:

TOO MANY ERRORS More than about 20 errors of one sort or another have occurred.

Data fail @ nnnn Indicates that the data read from the tape did not match the corresponding data on the disc. This is caused by either a software bug or a hardware failure, or by a method described under *Check tape* in section 8.2.5 (Other operations). This error does not

indicate that there is necessarily anything wrong with the tape drive or winchester, or that there is a bad sector on either of them. It can be caused by a faulty ribbon cable, or faulty bus termination (see section C.3).

Leading/Trailing error Indicates that the tape has got out of sync. with the disc. This has been caused by running *FAST on a version of ANFS pre 4.25.

B.6 Floppy Disc Errors

Errors 08, 10 and 18 indicate that there is some problem in reading or writing the data on the disc. There are many causes of this. You can find that some discs will only read in some drives, or that a disc formatted in one particular drive will only work in that drive. Otherwise the disc may have developed a bad spot on one of its surfaces, or the drive read/write head may have become dirty. We recommend that if you get these sort of errors you try using the **Verify disc** option in Utility Mode in order to get a better picture of what is wrong.

Code	Error	Meaning
08	Data CRC error	Can't read the data off the disc. Try using another drive.
10	Sector not found	Can be caused by a step-rate which is too fast. Otherwise the disc may need re-formatting before re-use.
18	ID CRC error	Disc probably needs reformatting.
40	Write protected	You have added a write protect tab or changed discs without telling the File Server.
80	Not Ready	Hardware problem in the MDFS.
81	Disc timeout	Usually caused by someone 'illegally' removing a disc.
82	Trk 00 not found	Probably caused by a step-rate which is too fast.

