F A C T F L A S H

Options Affected: Lion Enclosures
Submitted By: Jim Egginton
Date: 27-OCT-1993
Filing Instructions: Chapter 27 VES

Lion Enclosures - 50 Watt power supplies

The following is edited from an article by Steve Kirby. It applies to Lion Boxes, but any non Digital enclosure could suffer this (see my previous factflashes). We need to be careful about recommending non Digital products to customers, it can sound as if the customer fits this then we will support it. We do not support non digital options, we have no control over them, we only service them.

LION 520C, 520WC, and 510C all contain a 50 Watt power supply (Autec UPS50-2002), and have problems meeting the load and with cooling for the newer drives over 800 Mbyte which take more +12v current at spin up and during seeking.

Typical symptoms (with little in errorlogs):

Intermittent "mount verifications" of disks
Disks going off-line then re-appearing later
Disks going away permanently.

Typical physical failures are:-

D.C. wiring harness failure (intermittent/burned connector at PSU end)
D.C. power supply failure (looks physically distressed too!)
All caused by over-load and heat combined!

The symptoms are usually intermittent in their initial stages, so we often end up replacing the disk drive first which "appears" to cure the fault for a while as disturbing the D.C. connections and allowing everything to cool works wonders!

Therefore on removing the enclosure cover immediately measure the D.C.supplies at the drive. Anything less than +11.8v (yellow wire) and +4.9v (red wire) will be indicative of the problem, but note that there is a voltage adjustment pot on the PSU. The most common connector fault is the +12v (yellow) connection at the PSU.

Eventually the power supply will fail altogether.

The 520WC has small distribution board behind each drive, the Min Load jumper can be cut to disconnect the 10 ohm (0.5 amp) load on the +5v line, but if the power supply is left without a disk connected it may well self destruct.

Future sales

Lion have been manufacturing 65 Watt power supplies for these modern disks for some time (e.g. 521C). Unfortunately some third party suppliers still use the wrong (50W) enclosure. Lion have decided to discontinue 50W P.S.

Installed units

There is NO repair solution. Replacement may make a temporary fix for about one year.

To UPGRADE the enclosure is not as easy as it sounds because of the many variations (revisions). It may be possible to upgrade some enclosures however.

The customer may need some convincing of the need to upgrade his enclosure, so involve the UM.

Digitals strategy on non digital enclosures is normally complete enclosure replacement so upgrading is not as drastic as it may sound.

F A C T F L A S H

Options Affected: Non-DEC SCSI disks.
Submitted By: Richard Penn for J Northam
Date: 1-NOV-1993
Filing Instructions: File at the end of Chapter 7 (VMS) or Chapter 27 (VES).

Compatibility Issues, Non-DEC SCSI disks - V5.5-2H4.

Symptom:

After upgrading to VMS V5.5-2H4 third party SCSI disk drives that use PK*DRIVER and DKDRIVER may fail to mount or initialise with a fatal drive error.

Digital Response:

The customer should call the vendor where they bought their 3rd party SCSI disks from, to report the problem.

Analysis:

V5.5-2H4 introduces Tag Command Queuing (TCQ) in it's SCSI device drivers. This is to support a new hardware option called "StorageWorks RAID Array 110". TCQ is basically the seek ordering of I/O requests on SCSI disk drives that support it. The 3rd party SCSI drives may not be following SCSI specification all the way and return invalid mode sense data to a SCSI "MODE SENSE" command from the new SCSI device drivers.

Workaround:

If the customer doesn't have a "StorageWorks RAID Array 110" and they don't need TCQ. They can use the old PK*DRIVER, DKDRIVER and MKDRIVER from V5.5-2. If this is done, it is recommend that the drivers be copied to SYS$SYSROOT:[SYS$LDR]. That way it will easier to keep track of whats been done.

Please note that this is a temporary workaround. The customer still needs to call their drive vendor for permanent fix. Once they go to V6.1 of OpenVMS Vax they will no longer be able to use the V5.5-2 SCSI device drivers. Also any other SCSI disk drives that support TCQ might run slower without the TCQ drivers loaded.

F A C T F L A S H

Options Affected: CMD Controllers
Submitted By: Jim Egginton
Date: 22-DEC-1993
Filing Instructions: Chapter 27

Firmware problems with CMD controllers

From Graham Archer

A Firmware matrix of all the currently supported CMD Controllers is located in the TIMA STARS VES database, (Query Word= "CMD").

If you believe the problem with the CMD controller may be due to firmware which needs to be upgraded, please follow the process below.

Contact Eurologic Systems Ltd at the address below.

```
Eurologic Systems Ltd.
49 Bracken Road
Sandyford Industrial Estate
Dublin 18
Ireland

Tel: +353-1-2958366       Fax +353-1-2958433
```

Explain the nature of the problem to the Eurologic CMD specialist. Ask the specialist to confirm whether the problem is a firmware one. If not, ask the specialist to provide a suitable action plan to resolve the issue.

If it is confirmed that the problem is firmware related then the firmware will have to be purchased, by the customer, from Eurologic. Currently the purchase price is $250 a set.

NOTE: FIRMWARE UPGRADES ARE CHARGEABLE TO THE CUSTOMER. THE CUSTOMER SHOULD BE ADVISED THAT THE WORK TO UPGRADE THE FIRMWARE WILL BE CHARGED ON A TIME AND MATERIALS BASIS.

Do not replace the CMD controller in order to "upgrade" the firmware. If you do this the controller will be sent back to Eurologic for repair. Digital will then be charged the cost of the new firmware PLUS a hefty repair charge, (even though the controller is not broken!), PLUS the cost of distribution. It also means that the controller is taken out of Logistics which could have been used for a call where the controller was actually defective.

F A C T F L A S H

Options Affected: Emulex controllers
Submitted By: Jim Egginton
Date: 22-OCT-1993
Filing Instructions: Chapter 27 VES

Support for Emulex controllers with VMS V6.0

Digital does not support any Non Digital devices on our own or on other manufacturers platforms. It is up to other companies to provide the support, though we do service many Non Digital Options. The difference between Support and Service costs a lot of money. Whether Emulex Controllers will work with VMS Ver 6.0 is therefore not up to us as Digital to say, however please note the following.

1. EMULEX is no longer in the Storage Subsystem Business, and **do NOT support any disk and/or tape products on any NEW Digital system** (CPU), or any new Version of software for any Digital System.
2. Digital will help customers find a replacement product, which the customer will be required to buy. Our first choice would be a Digital controller/subsystem but this would require the customer to buy a whole new subsystem. Using NON DIGITAL suppliers they will need only a new controller/adapter. Therefore in most cases we will recommend using other vendors controllers. The three vendors that have controllers which will replace Emulex controllers are CMD, T D Systems (Viking) and EXSYS, others may be added to the list.
3. CMD and T D Systems have controllers which will replace most of the Emulex controllers that support MSCP emulated products (UDA, QDA, KDA Digital controllers) for both tape and disk.
4. Exsys has controllers to replace most of the Emulex adapters used to connect disk and/or tape drives to Digital HSC, QDA, UDA, KDA, KDB Digital controllers.
5. Older Emulex products may not have a replacement product. These are all of the SCxxx, TCxxx Emulex Controllers. (i.e. SC03 or TC03) If your customer is running an SCxxx or TCxxx controller there is a every good chance that it will not work under VMS 6.0.

For an up to date list of what may work under Ver 6.0. and what a customer may do if it will not work (replacement options), apply to support.

F A C T F L A S H

Options Affected: Cipher Tape M990
Submitted By: Jim Egginton
Date: 20-APR-1990
Filing Instructions: At end of Chap 2 MVE

Cipher M990 New Rev 11 Firmware and compatibility of different series code PCBs

Rev 11 Firmware

Cipher has now brought out yet new firmware Rev 11. Operational improvements have been included in this new firmware, but I do not consider them enough to warrant updating all machines. However it should be considered for troublesome tape drives.

Note that the write current values do not now (since rev 9) have to be put in separately, test 513 runs automatically (like it used to Pre Rev 7)

There are two new messages:-
CUR FAIL - Saturation current is outside allowable limits when using test 513
JMP FAIL - U1H pin 1 has not been grounded when running test 513

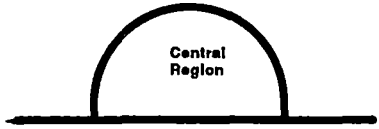
Operational improvements include better bad tape spot handling, and better procedures for unloading tapes.

Part numbers for new firmware are

1. Cipher Part No..Location
2. 962666-011.....U20K
3. 962669-011.....U22K
4. 962672-011.....U23K
5. 966675-011.....U25K

Compatibility of different series code PCBs

We are now up to series code E PCBs. Each series code PCB has a different Cipher part number. All series code modules from A to E are compatible and usable with the following exceptions:-
CPU/MMU PCB series code C and above will only work with Rev 9 and above firmware.
CPU/MMU series code D+ (966052-001 and 966052-002) must have CIF/WRITE PCB series code D+ (966051-001)



F A C T F L A S H

Options Affected: CDC 9762/6
Submitted By: Richard Young
Date: 20-SEP-1990
Filing Instructions: File at the end of chapter 2, MVE.

Apparent DOA option swaps.

There are two different ways of configuring a CDC 9762/6 disk drive.
1. Index and sector pulse signals on the 'A' cable (original).
2. Index and sector pulse signals on the 'B' cable.

If this configured the wrong way round the drive will not work. Many of our VES controllers require index and sector on the 'B' cable. The symptom when it is wrong, is that the drive appears to hang the SMD bus when it comes ready.

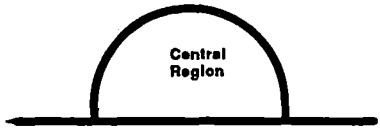
Later drives have a jumper on the backplane at location B07, but early drives have to have the backplane rewired as follows;

Remove	Add
B01-06B to JA82-18B	B01-06B to JA82-43B
B01-06A to JA82-18A	B01-06A to JA82-44A
B01-05B to JA82-25B	B01-05B to JA82-45B
B01-05A to JA82-25A	B01-05A to JA82-45A

If channel 2 is also used, as above but substitute B03 for B01 and JA83 for JA82.

NB. From serial number 78989 drives have a jumper at location B07 and removal has the same effect.

Also rework transmit card FTVV in location B01 (CH1) and B03 (CH2). Locate jumper at bottom of module with connector to the right and move down one hole. Remark modules to be GTVV.



F A C T F L A S H

Options Affected: BI BASED MACHINES
Submitted By: Jim Burnley, 21-FEB-1990
Re-issued: 20-Sep-1990
Filing Instructions: File at end of Appendix C, and throw away previous flash dated 30-Mar-1990

DEBNA'S AND DEBNI'S

There is now a new version of the DEBNA ethernet controller being shipped to customers. The module number is T1034-YA and its name is the DEC LAN controller 200 or DEBNI. This YA version gives increased performance and also a console facility to enable the DEBNI and also network performance to be monitored. This module is a rom upgrade of the old DEBNA and can be field installed. If you are changing faulty T1034 modules then do order the right one (-YA or -00) as you may be down grading the customers network performance. Please also note that the DEBNI does not support the TK50 tape drive.

F A C T F L A S H

Options Affected: 62xx/TK50/DEBNA
Submitted By: Dave Bazley, 30-Mar-1990
Re-issued: 20-Sep-1990
Filing Instructions: File at the end of Appendix C, and throw away previous flash dated 30-Mar-1990

FCO 62XMX-F002 .vs. DEBNA/DEBNI

This FCO upgrades the DEBNA (T1034 module) firmware to fix a compatibility problem on the console TK50. Since most 62xx have two DEBNAs, one for the TK50 and one for the NI, the recommendation is that both be upgraded. Therefore two EQ kits (EQ-01552-01) will be required per system.

This is fine unless the NI interface is a DEBNI (see Jim Burnley's factflash) The DEBNI module is a T1034-YA and should not have this FCO!

NOTE: There is no FCO to upgrade DEBNAs to DEBNIs. However there is an FCO to the DEBNI to fix various bugs - see DEBNI-0001 in the FCO chapter.

NL
District

F A C T F L A S H

Options Affected: 88/87/8500/8530 SYSTEMS
Submitted By: Frank McAndrew
Date: 13-MAR-1989
Filing Instructions:

POWER PROBLEMS ON NAUTILUS

On Nautilus CPUs we have begun to see a spate of problems where the EMM initiates a power standby shutdown with a DM CODE 19 MOD OK NOT ASSERTED reporting MOD H(or F) as bad.

This failure is caused by the cabling of the load resisters on regulators F and H (H only on 85XX). The black wires are badly supported and can come in contact with the resisters. The sheath then melts and as a result short circuits causing intermittent faults which are difficult to isolate.

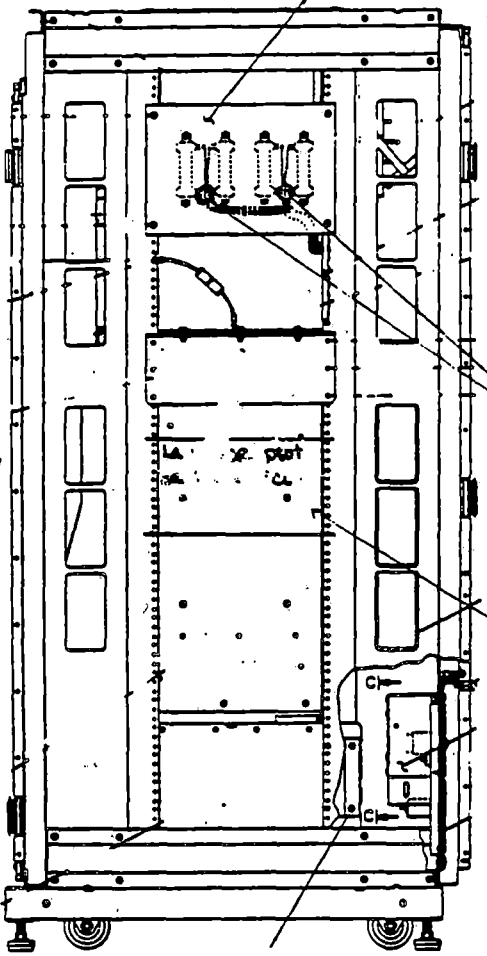
ALL SYSTEMS INSTALLED SHOULD BE CHECKED AS SOON AS POSSIBLE

The load resisters are situated on the right hand side of the cpu chassis. This means the right hand side cab panel must be removed. If the system is against a wall it will mean it will have to be moved in order to do the verification. In any case, *IT MUST BE DONE.*

If the wires are not melted then add a wire wrap to tie the black wires to the red and purple wires. If the sheath is too badly damaged then change the wires p/n 70-23417-01 for 8700/8800 and 70-23417-02 for 85X0 systems. Add the tie-wraps before reassembling.

Refer to the attached print for location.

PN to-23417-01 = 8700/8800
-02 = 85xp



add a tie-wrap in both places and tighten up black wires

the platen could be here.

F A C T F L A S H

Options Affected: Vax 82XX,Vax 83XX
Submitted By: Richard Penn
Date: 17-JAN-1991
Filing Instructions: File at the end of chapter 20.

82xx/83xx Issues.

Self Test Failure

The 82xx/83xx systems have four terminal ports connected to the primary processor module in slot K1J1, one is dedicated to the console. The self-test of the module can intermittently fail thus

#ABC

?4C

if a customer has connected a terminal or a modem to one of the other three ports. This is due to the fact that test (D) is the MChip Self-test and the MChip is where all four UART's reside, part of test (D) is to do a loopback test on all 4 UART's. The use of these 3 extra terminal ports is to be highly discouraged.

Memory Configuration Guidelines

The rules are stated clearly on page 20-2 of Datadoc but below is a reminder.

MS820-CA.....Populate from the left K2J6,K2J5 .....

MS820-BA.....Populate from the left after any MS820-CA modules K2J6,K2J5...

MS820-AA.....Populate from the left after any MS820-CA/BA modules K2J6 etc.

KA820/825.....Second processor is left justified after MS820-**.

The configuration rules above are due to both physical and electrical restraints ,the MS820-CA/BA have components mounted on both sides of the module which could interfere with other BI interfaces.

F A C T F L A S H

Options Affected: 8200 / 8300 series
Submitted By: Pete Griffin
Date: 29-MAR-1990
Filing Instructions: At the end of Chapter 20, 82xx/83xx/VAXBI.

KA0029.PAT CPU ucode is now available.

We are going thru another seasonal ucode update to fix anything and everything. Last season we had a lot of "finger-trouble" with this exercise - EBUCA itself is supposed to be easy to drive, but you MUST read all the menu questions carefully, there are more choices of toppings than at your local pizza parlour.

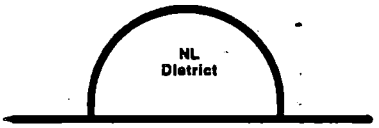
Remember, the ucode patches start in the EEPROM and only gets transfered to the Control Store RAM when the CPU is initialised. So it is no good using EBUCA to update the EEPROM from a file on the disk and then comparing that disk file against the Control Store RAM, you would get an error and think the update had failed.

The incumbant ucode patch need not be at revision 28 before you start, as ALL the patches are included. Use E/I 3E to look at the SID, Bits <18:9> give the patch revision (you have to convert this to decimal).
eg1. On a 8200, a SID of 05283914 shows patches at 000 0011 100, which is revision 28, and this would change to 05283B14 when updated to revision 29.
eg2. On a 8300, a SID of 05903914 would change to 05903B14.

I have made up some new floppies based on the ones from the previous (KA0028) exercise. These have been observed to work (FOMOCO Dagenham). I have put some in the DATADOC media cupboard, and in the 8200/VAXBI swap kit at logistics.

If you need to make your own, you can either use BACKUP/PHYSICAL to copy an existing one, or build one from scratch.

To build one from scratch. INITIALIZE a floppy (any old name) and CREATE/DIR [SYSMAINT] on it. Then COPY a KA0029.PAT as well as the latest versions of EBSAA.EXE and EBUCA.EXE to it. Finally do a MCR WRITEBOOT to point the boot procedure to EBSAA.EXE using a VBN of 2, and a LOAD ADDRESS of 10000.



F A C T F L A S H

Options Affected: Decserver 200, CXA16, DHT32, DHV11, DHQ11, Decserver 500
Submitted By: Barry Lowry
Date: 31-JAN-1989
Filing Instructions: File this factflash with your other comms flashes.

DEC423 Problems Part 2.

This is a follow up of my factflash of SEP 88 about DEC423 devices. Please discard the older factflash.

There are problems with all DEC423 device receive circuits.

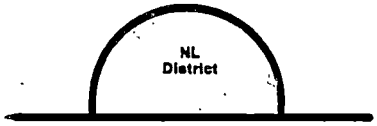
The problems are:

1. Phantom logins from powered off terminals.
2. Autobaud hunting from powered off terminals.
3. Sluggish terminal server response times caused by excessive login attempts.
4. High rate of framing and overrun errors.
5. Decserver 500 crashes caused by too many logins.

The problem is fixed by resistor added to each receive circuit.

Until the fco's are available, there are unofficial fco's which can be used to solve customer's problems, copies of which have been added to the North London Database.

A Decserver 200 rev. C4 or later will already be modified. A CXA16 rev. E4 or later will already be modified.



F A C T F L A S H

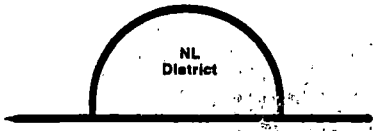
Options Affected: DEMSA, DSV11, DMB32
Submitted By: Barry Lowry
Date: 31-JAN-1989
Filing Instructions: File this factflash with your other comms. flashes

X.21 cable problems

The Microserver (DEMSA) SPD's mention a cable for X.21 networks. This is the BC19C-02. This will NOT work with BT's Kilostream service, at the 64 Kb/s data rate.

The correct cables are the BC22X-02 (two foot adapter cable) AND the BC22Z-xx (-25, -50, -75 and -A0).

The BC22X-02 and BC22Z-xx are supported on the following devices:
DEMSA, DSV11, DMB32.



F A C T F L A S H

Options Affected: DSV11
Submitted By: Barry Lowry
Date: 28-MAR-1989
Filing Instructions: File with other comms. flashes

DSV11 Bad DMA chip.

The DSV11 is a q-bus synchronous interface. Module number is M3108.

Some of these modules have been shipped with the incorrect DMA chip. The DMA chip is E49 which is a 40 pin chip and is the ninth chip up directly over backplane connector B, just below another 40 pin chip marked SCC 8530A.

The correct chips are marked:

iP8237A-5 or D8237A-5 or SAB8237A-5P.

The incorrect chips are marked:

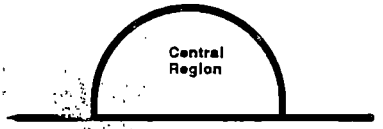
iP8237A

The intermittent symptoms caused by a bad chip are:

1. Self test may fail with error 099x or 0bbx
2. MDM diagnostic may fail tests 7,8,9 or 10.
3. The customers application may fail with DSV11 offline or system crash.
4. There may be DAP-CRC errors.
5. THERE MAY BE UNDETECTED CORRUPTION OF THE CUSTOMERS DATA.

There is a 6 switch switchpack (E89) on the module. Make sure that switches 1 to 4 are closed, (on). Also switches 5 and 6 should be closed (on) for a DSV11 in a Q/Q slot and should be open (off) for a DSV11 in a Q/CD slot.

Please check the part number of this chip if you see one of these modules.



F A C T F L A S H

Options Affected: Dranetz Mains Analysers
Submitted By: Brian Hailstone
Date: 7-JUN-1989
Filing Instructions: File at the end of Appendix C

Using and Installing the Dranetz.

1 The Dranetz

This article by Brian Hailstone...

1.1 Dranetz overview

The Dranetz Power Line Disturbance Analyser model 606 is the "mains monitor" commonly used by field service when we suspect that the mains supply is causing problems. The Dranetz is basically three recording volt meters which will printout when a disturbance occurs on any of the inputs, and a clock to record the time that the disturbance took place.

Disturbances are classified into three categories ;

1. Slow average changed
2. Sag/surge occurred
3. An impulse occurred

The Dranetz 606 has three independent measurement channels for monitoring up to three voltage inputs whose RMS values may range from 60 to 600 volts. The three channels are designated A, B and C, and each have their own inputs via two terminals designated A1, A2, B1, B2, C1 and C2 respectively.

1.2 How to connect the Dranetz

The Dranetz has a screw terminal strip on its underside. Connections to the supply that is to be monitored are made using terminals A1 thru C1.

1.2.1 Single phase supplies

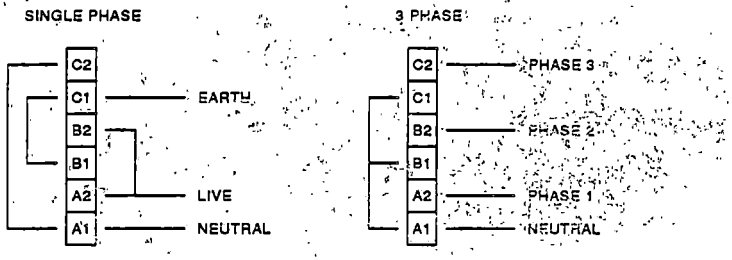
- Live to A2 and B2
- Neutral to A1 and C2
- Earth to C1 and B1

This configuration will monitor any disturbance between live and neutral on channel A, live and earth on channel B, neutral and earth on channel C.

1.2.2 Three phase supplies (star or wye only)

- Phase 1 to A2
- Phase 2 to B2
- Phase 3 to C2
- Neutral to A1, B1 and C1

Figure 1: Connection diagram



1.3 Where to connect the Dranetz

The connections to the supply to be monitored should be made at the mains input to the Digital system/option. This will typically be a junction box to which the mains lead supplied with the system/option is connected. Never connect to the output of power controllers (861, 872 etc.) as these have some mains filtering built in.

The Dranetz also needs its own mains power which should be a continuous supply. This can come from any source, the output from an 861 or 13A socket is suitable, but make sure it will not be switched off by the customer (it has its own batteries to keep it going for a short period if the mains supply fails).

1.4 How to set it up

1.4.1 Switch settings

The switches at the top of the Dranetz should be set as follows (using the black figures only);

- Nominal input - 230
- Slow average - 10
- Sag / surge - 10
- Impulse - 100

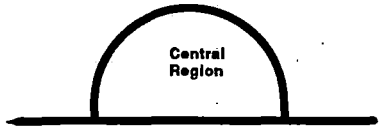
1.4.2 Setting it going

1. Connect the Dranetz to the supplies (both for the Dranetz own power and for the monitoring).
2. Turn on the mains supplies.
3. Move the key switch to SET.
4. Wait for about a minute then check that the LED shows green (it shows red when running on internal batteries).

5. Check that there is enough paper (this is thermal paper and must be installed the correct way up). Part number for the paper is +L-12700.
6. Check that the [PRINT] button is in, and the [ALARM] button is out.
7. Press [RESET] wait for the print to finish. This puts day count and statistics to zero.
8. Press [CLOCK FAST] or [CLOCK SLOW] to set time of day. [FAST] advances time approximately 1 hour per second, [SLOW] approximately 1 minute per second. The [HOLD] button can be used to hold the time at its current value and can be used to set up the clock to within a few seconds. Please set this clock as accurately as possible.
9. Turn the key switch to the [OPER] position. This disables the clock and reset buttons.
10. Press [TEST] and it should print out the supply values etc.
11. Write on the printout the date, method of connection (which channels go where) and your name. Use the [FEED] button to feed out the paper to make enough room for you to write.

1.5 Disconnecting

When it is time to remove the Dranetz write the date, time and your name on the printout, turn the key switch to [OFF], remove power from the Dranetz, remove power so that you can remove the monitor wiring. Tear off the printout and return it to the office for analysis.



F A C T F L A S H

Options Affected: All
Submitted By: Brian Hailstone
Date: 6-SEP-1990
Filing Instructions: Keep in appendix C.

1 Fuse part numbers

Here is a list of fuse part numbers that I have put together. I don't know how complete or correct it is. Any additions/corrections welcomed.

Table 1: 1¼ x ¼inch size fuses

Rating	Speed	Volts	Case	Part Number
125 mAmp	S/B	250	Glass	90-08527
200 mAmp	S/B	250	Glass	90-09039
250 mAmp	S/B	250	Glass	90-07206
375 mAmp	S/B	250	Glass	90-07207
0.5 Amp	S/B	250	Glass	90-07209
0.75 Amp	S/B	250	Glass	12-11237
0.8 Amp	S/B	250	Glass	29-11978
1 Amp	S/B	250	Glass	90-07212
1.5 Amp	S/B	250	Glass	90-07213
1.6 Amp	S/B	250	Glass	90-07214
2 Amp	S/B	250	Glass	90-07216
2.5 Amp	S/B	32	Glass	90-07879
3 Amp	S/B	250	Glass	90-07218
4 Amp	S/B	250	Glass	90-07220
4 Amp	S/B	250	Ceramic	90-09699
5 Amp	S/B	250	Glass	90-07222
5 Amp	S/B	125	Glass	90-09791
6 Amp	S/B	32	Glass	90-09320
6.25 Amp	S/B	250	Glass	90-07223
7 Amp	S/B	250	Glass	90-07224
8 Amp	S/B	250	Ceramic	90-09698
10 Amp	S/B	32	Glass	90-07225
12 Amp	S/B	32	Glass	90-08290
12 Amp	S/B	250	Ceramic	90-08290-01
15 Amp	S/B	32	Glass	90-07227
20 Amp	S/B	32	Glass	29-23422
30 Amp	S/B	32	Glass	29-26488
62.5 mAmp	F/B	250	Glass	90-08174

Table 1 (Cont.): 1¼ x ¼inch size fuses

Rating	Speed	Volts	Case	Part Number
62.5 mAmp	F/B	250	Glass	90-08438
125 mAmp	F/B	250	Glass	90-08389
250 mAmp	F/B	250	Glass	90-07205
0.5 Amp	F/B	250	Glass	90-07208
0.75 Amp	F/B	250	Glass	90-07210
1 Amp	F/B	250	Glass	90-07211
1.5 Amp	F/B	250	Glass	90-08388
2 Amp	F/B	250	Glass	90-07215
2.5 Amp	F/B	250	Glass	90-08387
3 Amp	F/B	250	Glass	90-07217
4 Amp	F/B	32	Glass	90-07219
5 Amp	F/B	250	Glass	90-07221
6 Amp	F/B	250	Glass	90-07999
8 Amp	F/B	32	Glass	29-17912
10 Amp	F/B	250	Ceramic	90-08390
10 Amp	F/B	32	Glass	90-08838
12 Amp	F/B	32	Glass	90-08279
12 Amp	F/B	250	Ceramic	90-08279-01
15 Amp	F/B	32	Glass	90-07226
20 Amp	F/B	32	Glass	90-08835
25 Amp	F/B	250	Glass	29-21425
25 Amp	F/B	125	Ceramic	90-08386
25 Amp	F/B	32	Glass	90-08386-01
30 Amp	F/B	32	Glass	90-07240

Table 2: 5mm x 20mm size fuses

Rating	Speed	Volts	Part Number
50 mAmp	S/B	250	12-19283-09
63 mAmp	S/B	250	12-19283-10
80 mAmp	S/B	250	12-19283-11
100 mAmp	S/B	250	12-19283-12
125 mAmp	S/B	250	12-19283-13
160 mAmp	S/B	250	12-19283-14
200 mAmp	S/B	250	12-19283-15
250 mAmp	S/B	250	12-19283-16
315 mAmp	S/B	250	12-19283-17
400 mAmp	S/B	250	12-19283-18
0.5 Amp	S/B	250	12-19283-19
0.63 Amp	S/B	250	12-19283-20
0.8 Amp	S/B	250	12-19283-21
1 Amp	S/B	250	12-19283
1.25 Amp	S/B	250	12-19283-01
1.6 Amp	S/B	250	12-19283-02
2 Amp	S/B	250	12-19283-03
2.5 Amp	S/B	250	12-19283-04
3.15 Amp	S/B	250	12-19283-05
4 Amp	S/B	250	12-19283-06
5 Amp	S/B	250	12-19283-07
6.3 Amp	S/B	250	12-19283-08
0.5 Amp	F/B	250	12-31442-01
1 Amp	QA HB	250	12-19284
1.25 Amp	QA HB	250	12-19284-01

Table 2 (Cont.): 5mm x 20mm size fuses

Rating	Speed	Volts	Part Number
1.6 Amp	QA HB	250	12-19284-02
2 Amp	QA HB	250	12-19284-03
2.5 Amp	QA HB	250	12-19284-04
3.15 Amp	QA HB	250	12-19284-05
4 Amp	QA HB	250	12-19284-06
5 Amp	QA HB	250	12-19284-07
6.3 Amp	QA HB	250	12-19284-08
0.5 Amp	QA LB	250	12-19285-09
1 Amp	QA LB	250	12-19285
1.25 Amp	QA LB	250	12-19285-01
1.6 Amp	QA LB	250	12-19285-02
2 Amp	QA LB	250	12-19285-03
2.5 Amp	QA LB	250	12-19285-04
3.15 Amp	QA LB	250	12-19285-05
4 Amp	QA LB	250	12-19285-06
5 Amp	QA LB	250	12-19285-07
6.3 Amp	QA LB	250	12-19285-08

Table 3: PICO Fuses

Rating	Part Number
125 mAmp	12-10929-10
250 mAmp	12-10929-04
375 mAmp	12-10929-11
750 mAmp	12-10929-03
1 Amp	12-10929-02
1.5 Amp	12-10929-08
2 Amp	12-11751
2 Amp	12-10929-06
2.5 Amp	12-10929-05
3 Amp	12-10929-07
5 Amp	12-05747
7 Amp	12-10929-09
10 Amp	12-10929-01
15 Amp	12-10929

F A C T F L A S H

Options Affected: RA8x Disk Drives
Submitted By: Richard Penn
Date: 28-SEP-1990
Filing Instructions: File at the end of DSA chapter.

RA8x PM's

The RA8x Preventive Maintenance Procedure is now available (EK-ORA8X-PM-02), there is no intention for this to be implemented once a year on all drives in the Welwyn District the inconvenience, and risk would be too great. The PM should take place during, or after a fault call, and the PM procedure should be used as a guide to what to do. A separate log no. should be generated before or after the work is done so as not to colour the call stats.

Logistics hold PM kits :-

- RA81 rev 7 70-27494-01
- RA81 rev 8 70-27493-01
- RA82 70-27493-01

they contain the belts,ground springs etc. not the PSU fans.

Replacing HDA's

When replacing RA8x HDA's always try to ensure that the new HDA has an environment that is going to support it through its life. It is no good putting a HDA into a four year old diskdrive without changing the PSU fans and the drive belt, for even if the HDA lasts another 4 years it is almost certain the fans and belt will not.

The only two parameters we can affect in the life of a HDA are its temperature and the stress applied to the spindle. So at every HDA replacement change the PSU fans, clean the front filter, change the drive belt.

For RA82 and rev 8 RA81's there is a new cable spring assembly and a shorter drive belt hence the different PM kit no. Read note 7 of PM procedure.

F A C T F L A S H

Options Affected: Alpha AXP Systems
Submitted By: Dave Bazley
Date: 9-FEB-1994
Filing Instructions: File in appendix C

DEC 2000 AXP and DEC 4000 AXP systems

This factflash temporarily contains those bits of the old (and gone) Alpha chapter, which are not covered in the current DEC 3000 AXP and DEC/VAX 7xx0/10xx0 chapters. Future chapters will cover the systems described here.

1 Jensen - DEC 2000 Model 300 and DECpc AXP/150

Jensen is a high performance Alpha PC. It is designed for both client and server applications and will be a combination of a high performance Alpha cpu and high volume, low cost, commodity PC components. This product has appeared very recently, so the following information is only provisional.

Main features:

- CPU based on EV4 chip, rated at 75-100 MIPs
- 1MB cache and 16 to 256 MB main memory
- EISA controller with support for 6 option cards
- 16450 compatible serial ports, 8742 compatible keyboard controller and centronics compatible printer port
- SCSI support and 3.5" or 2.5" disks internal to enclosure
- PC Mini-Tower enclosure
- Software: Windows-NT, Alpha VMS and OSF/1

2 Cobra - DEC 4000 Model xxx

Cobra is an open office system designed to house as much SCSI based storage as can be powered from a normal mains socket. Comes in two flavours: One for the technical market where CPU performance and I/O bandwidth are most important. One for the commercial market where availability is most important. Storage configuration is flexible so customer can optimise for bulk capacity ($/MB) or performance (QIOs/sec). Cobra is intended to provide an upgrade path for VAX 4000 users, and is thus termed "VAX 4000 style".

Main features:

- 1 or 2 CPUs based on EV4 chip, rated at 135-270 SPECmarks
- 2MB Cache (per CPU) and 32 to 512MB main memory (1GB later)
- 5 x SCSI or DSSI
- 16 x 3.5" or 4 x 5.25" drives internal to enclosure

- 2 x 1/2 height or 1 full height tape and CDROM in enclosure
- 2 x Ethernet
- Futurebus+ (6 slots)
- Software: Alpha VMS and OSF/1

3 Alpha Architecture

The Alpha architecture is a 64 bit RISC architecture designed with emphasis on speed, multiple instruction issue, and multiple processors.

Alpha is open. The architecture is not designed for a particular Operating System. It is designed to last well into the next century and will be licensed so that other manufacturers can use it.

Alpha architecture summary:

64 bit virtual address space.
64 bits wide data paths (minimum).
32 64-bit integer registers.
32 64-bit floating point registers.
32 bit (longword) and 64-bit (quadword) integers.
32-bit and 64-bit IEEE and VAX floating point data types.
RISC instruction set (approx 150 instructions).
Fixed 32 bit instruction length.
Variable page size (8K, 16K, 32K or 64K bytes).
Privileged Architecture Library Code (PALcode).

Alpha does not have microcode. The PALcode, which runs in memory, is used instead, to perform such functions as servicing of interrupts, exceptions and TB misses etc. PALcode knows the hardware and the Operating System and provides an interface between them.

4 Alpha Chip

The first implementation of the Alpha architecture is the EV4 chip (DIGITAL 21064-AA). It is a 150 - 200 MHz, 64 bit, CMOS-4 based microprocessor. The microprocessor is super-scalar and super-pipelined (this means up to two instructions can be issued every clock tick). The chips are being manufactured at plants in Hudson, Ma. and South Queensferry, Scotland, and anyone can buy one.

Alpha chip features:

Implements advanced Alpha RISC Architecture. Optimized multiprocessor support. IEEE single and double precision, VAX F_floating and G_floating, longword, and quadword data types. Cycle counter for code optimization.
Single chip implementation. On-chip write buffer with four 32 byte entries. On-chip pipelined floating point unit. On-chip 8KB data cache. On-chip 8KB instruction cache. On- chip demand paged MMU (12 entry I-stream pages, 32 entry D- stream pages). On-chip parity and ECC generators and checkers. On-chip internal clock. Programmable on-chip performance counters.
Dual-pipelined architecture. 200MHz cycle time, 400 mips peak instruction execution.
Privileged Architecture Library Code (PALcode). Optimization for multiple OS. Flexible MMU. Multi-instruction atomic sequences.
External cache. On-chip external secondary cache control. Programmable cache size and speed.
Selectable data bus width/speed, 64 or 128 bits, 75 MHz to 18.75 MHz.
3.3 volt supply voltage. Power dissipation is 30 watts for 200MHz. 1.68 million transistors.
431 pin PGA package, 140 pins dedicated to VDD/VSS.

F A C T F L A S H

Options Affected: **Various**
Submitted By: **Dave Bazley**
Date: **09-Aug-1994**
Filing Instructions: **File in Appendix C**

End of Service Life - Products

There is a team in the US who look at old products to decide when MCS can no longer maintain them. When they decide a product has reached the end of it's service life (EOSL) they send out a warning, currently on TIMA, so that MCS can decide how to deal with any customers which still have the product on contract. After the EOSL date there will be NO parts, NO skills and NO support from outside the Service Centre.

Up to now only a few products have been declared at EOSL so this has not been a big issue. However, as you can see below, the list is starting to grow. If you have customers with any of this kit, please inform your manager, who will then be able to discuss alternatives with them.

The following list of all products reckoned to be near EOSL is maintained by the above team. I have edited the list down to major products. The full version can be obtained from VTX thus:

1. From ALLIN1: VTX MCSPOL
2. Select: 10, MCS Policies
3. Select: 9, EOSL Reference Tables
4. Select: 1 or 2, for hardware or software products
5. Select: 99, to have it mailed to you

Table 1: EOSL list

Product Basic	Product Type	EOSL Date
10xx	DEC10/20	Dec-93
20xx	DEC10/20	Dec-93
Kx10	DEC10/20	Dec-93
AFC11	PDP 11	Feb-92
GT4x	PDP 11	Oct-95
GT6x	PDP 11	Oct-95
11/15	PDP 11/15	Sep-95
11/40	PDP 11/40	Dec-95
11/45	PDP 11/45	Jul-94
11/50	PDP 11/50	Jul-94
11/55	PDP 11/55	Jul-94
11/60	PDP 11/60	Oct-95
PDP1	PDP1	Jul-93
PDP12	PDP12	Jul-93
PDP14	PDP14	Jul-94
PDP15	PDP15	Jul-94

Table 1 (Cont.): EOSL list

Product Basic	Product Type	EOSL Date
PDP4	PDP4	Jul-93
PDP5	PDP5	Jul-93
PDP6	PDP6	Jul-93
PDP7	PDP7	Jul-93
PDP8	PDP8	Feb-92
PDP8A	PDP8A	Dec-95
PDP8E	PDP8E	Oct-95
PDP8I	PDP8I	Sep-95
PDP8L	PDP8I	Sep-95
PDP8S	PDP8S	Jul-94
PDP9	PDP9	Jul-93
111xx	PDT 11/150	Nov-93
RC25	RC25	Dec-95
RS03	RS03	Feb-92
RS04	RS04	Feb-92
RT80x	RT801	May-93
LK250	VIDEO	Jun-95
VT17x	VIDEO	Dec-92
VT6x	VIDEO	Dec-92
VT7x	VIDEO	Dec-92
VT5x	VT50	Jun-94

F A C T F L A S H

Options Affected: All
Submitted By: Dave Bazley
Date: 30-Jan-1995
Filing Instructions: File in Appendix C

Tools and General Part Numbers

These two tables list part numbers for tools and some general parts.

Table 1: Tools List

Tool	Part no.	Comment
TOOL CASE	+L14000	
FLUKE METER	+L14220	WITH LEADS (VOLTAGE METER)
SOLDER SUCKER	+L14004	
BALL PEIN HAMMER	+L14005	
SCREWDRIVER 6	+L14006	
SCREWDRIVER QUICKWEDGE	+L14008	
SCREWDRIVER NO. 0 PHILIPS	+L14009	
SCREWDRIVER INSTRUMENT	+L14010	
SCREWDVR NO2. STUBBY	+L14011	PHILLIPS
SCRWDVR NO.2 PHILIPS	+L14011	STUBBY
SCRDVR NO. 1 PHILIPS	+L10412	STUBBY
SCRWDVR FLAT STUBBY	+L10413	
SCREWDRIVER OFFSET	+L10414	
WRENCH 8 ADJUSTABLE	+L10415	
WRENCH 4 ADJUSTABLE	+L14007	
MOLE WRENCH 7	+L14017	
TRIMMING KNIFE	+L14019	
TAPE RULE	+L14020	
6 STEEL RULE	+L14021	
ALLEN KEY SET	+L14022	
HALF ROUND FILE	+L14023	
NEEDLE FILE SET	+L14024	
JUNOIR HACKSAW	+L14025	
JUNIOR HACKSAW BLADES	+L14099	
SIDE CUTTER 6 1/2	+L14026	
SIDE CUTTER 4 1/2	+L14027	
END CUTTER 4 1/2	+L14028	
SNIPE NOSE PLIER 6 1/2	+L14029	
SNIPE NOSE PLIER 4 1/2	+L14030	
SCISSORS 6	+L14031	
WIRE STRIPPER	+L14032	
TWEEZER,BENT NOSE	+L14061	
FEELER GUAGE	+L14062	
PLIER 6	+L14114	

Table 2 (Cont.): General Parts List

Part	Part no.	Comment
AERO DUSTER SPRAY	29-15198-00	
TELETYPE OIL	29-10568-00	
TAPE,3/4 ELECTRICAL	29-10116	
SPANNER SET OF 10	29-12577	SMALL IMPERIAL
MATE-N-LOCK PINS MALE	12-09378	
MATE-N-LOCK PINS FEMALE	12-09379	
CLOTHS	+L-12661	
TEXPADS PACKET OF 80	+L-10402	
SCOPE PROBE X10	+L-12675	
SOLDERING IRON TIPS(3)	+L-14222	
TYWRAP 4IN	+L-13033	
TYWRAP 10 IN WHITE	90-07032	
ZERO OHM LINKS	90-09185	
CAB DOOR KEY	12-26339-01	FOR LARGE ALLEN LOCK
ESD/MAINS LEAD KIT	+L-43969	FOR TERMINALS
SAFESLEEVES	+L-10371	PKT 100
LIGHT GREY PAINT	29-15203-00	FOR 8XXX SERIES
DARK GREY PAINT	29-15205-00	
FASTENER FOR CAB DOOR	12-12972-06	H9642
GROMMET FOR CAB DOOR	12-12972-03	H9642
RETAINER FOR CAB DOOR	90-08500-00	H9642
MKPLUG 9015 RED	VENDOR HUBBELL	3 PHASE FOR PDS
MKSOCKET 9115 RED	VENDOR HUBBELL	3 PHASE FOR PDS
MKSOCKET 0001 BLUE	VENDOR HUBBELL	SINGLE PHASE
MKPLUG 9101 BLUE	VENDOR HUBBELL	SINGLE PHASE
CRIMP TOOL FOR BC16E	H8241-00	FOR MMJ CONNECTORS
CABLE(BC16E)305 METRE	H8240-00	
MMJ PLUGS(50)	H8220-00	(12-23432-01)
DISKETTES FOR DECSTATIONS	RX23K-10	3.5IN FLOPPY(PACK OF 10)
SOLDERING IRON	+L-14221	240V 50W CONTROLLED
BAIL LOCK FOR MODULES	12-25069-02	METAL CLIP
MODULE CONTAINER CASE	99-08536-01	LARGE 99-08536-02 MEDIUM
FOOT FOR CABINET	12-16373-02	
50 PIN TERMINATOR MALE	12-37791-02	FITS ON FEMALE CONN RIBBON CABLE