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## Contents of this issue:

1. SPP1000/1200 Ethernet
  2. SPP1000/1200 SCSI Disk Automatic Bad Sector Re-allocation
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7.2.1 SPP1000/1200 Ethernet  
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The SPP1000/1200 ethernet adapter has been released and is shipping. SPP-UX 3.1 or higher is required for this product.

This adapter supports AUI or thinnet connections via switches on the board. To configure for AUI, set the switches towards the AUI connector. To configure for thinnet set the switches towards the thinnet connector.

FRU# 220-000029-201  
  
-----7.2.2 SPP1000/1200 SCSI Disk Automatic Bad Sector Re-allocation  
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## SPP1000/1200 SCSI Disk Automatic Bad Sector Re-allocation

Most SCSI disks have the capability to automatically re-allocate bad sectors. This feature can be enabled and disabled. All 4gig disks (Seagate), shipped with SPP, systems have this feature enabled. All 2gig disks (DEC), shipped with SPP systems, have this feature disabled. SPP-UX 3.1 includes a utility (scsiutil) that, among other things, will allow you to enable Automatic Bad Sector Re-allocation.

It is highly recommended that Automatic Bad Sector Re-allocation be enabled on all SCSI disks attached to a SPP1000/1200 system. Below is an example of how to use "scsiutil" to do this.

## Example

As root:

```
cd /etc/scsiutil_scr/generic
scsiutil
su 1> open 0 0 2 0      # Open node 0 scsi 0 unit 2
su 2> open 0 0 3 0      # Open node 0 scsi 0 unit 3
su 3> open 1 0 2 0      # Open node 1 scsi 0 unit 2
.
.
.
.
.
# Repeat until all desired disks are open
.
su 7> select -o         # Select all open devices
su 8> script auto_realloc # Run the Automatic Bad Sector Re-allocation
                           # script on all selected devices
su 9> close -o          # Close all open devices
su 10> quit
```

If you have additional questions about "scsiutil" please see the man page. Additional scripts, such as "format", are available in /etc/scsiutil\_scr/

generic.



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3. QSC v1.1 Driver available
4. QSC supported SCSI cable lengths
5. Scsiutil Verify Scripts
6. C-Series errlog problem (reminder)
7. Preliminary SPP2000 Power and Environmental Specs

7.3.1 C4600/C3800 CCU slot warnings

The following CCU protocol should be observed when adding CCU's to C4's, or 3800's:

A TLI, or QSC should only reside in a Pbus with another CCU, such as an IDC, or VIOP. They should not exist in the same Pbus, with each other.

Only VIOP's should be installed in CCU slot 20, on C4's. This requirement does not exist on 3800's.

All VIOP's, on C4's, must be installed in slots 20-23. They should not be installed in slots 36-39.

7.3.2 C4600 CCU diagnostic Warning

Due to a library parsing problem, most CCU diagnostics (i.e. idc4010, itc4000, idcfmt and hpi4000) will not function if the CCU is installed in slot 20.

The exception to this is the VIOP, or RTIOP, which uses a different parser. Therefore, it is highly recommended that only VIOP's, or RTIOP's be installed in slot 20.

The failure seen, if an IDC, TLI, ITC, or HiPPI are installed in slot 20, is as follows:

```
startup: WARNING: parsedb: no IDCs installed!
```

```
Error 0x143: Error from parsedb(): (null)
verify that "scn_util -b > /mnt/boot_db" has been run
r_parms:ERROR: ccu out of range! ul: 39 ll: 0 ccu: 40
```

Again, this is only a diagnostic problem and does not effect booting, or operation under ConvexOS.

As the convention, here, appears to be to place VIOP's in slot 20, this should be of minimal impact, in the field.

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7.3.3 QSC v1.1 Driver available

The QSC sw v1.1 is available and should be loaded on all v1.0 and x1.1 systems.

The x1.1 driver was ftp'd as the CCU driver. It did not include the JP driver and utilities. The source for this has been misplaced, making a crashdump unusable.

In addition, the v1.1 sw has many bug fixes as well as support for root/swap and redundant drives, under VVM.

Product tape part numbers are as follows:

- 081-010415-003 Quad SCSI Channel
- 081-010415-004 QSC OS Util Patch

7.3.4 QSC supported SCSI cable lengths

Below are the supported SCSI cable lengths. The 1 1/2 ft. cable is used as a daisy chain and loopback cable.

Notice that the absolute maximum cable length is a 60 ft. cable. This will only work with 6, or fewer disks installed on a single channel. Once installing more than 6 disks, it will be necessary to use a shorter cable.

- 1 1/2 ft. SCSI cable.....604-680003-200
- 10 ft. SCSI cable.....604-680003-201
- 30 ft. SCSI cable.....604-680003-202
- 60 ft. SCSI cable.....604-680003-203

7.3.5 Scsiutil Verify Scripts

The following two scripts can be loaded on a C-series, with QSC, or a SPP system, for execution under scsiutil.

These scripts, verify and verify.pl, should be installed at the OS level in directory /etc/scsiutil/scsiutil\_scr/generic.

To run on specific partitions, the "sho part" command can be executed in scsiutil. This will display the offset and size, by block size. The return will be based on 1K block size, so 512 byte systems will require a x2 multiplier.

The offset and length are used as arguments for the verify command.

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7.3.5 Scsiutil Verify Scripts (continued)

This is a non-destructive test.

New Scsiutil release, for C-Series and SppOS releases, will have this utility included. But, for releases below 1.3 and 3.2 respectively, it will be necessary to manually enter.

The scripts are as follow:

```
-----verify-----
#
# MODE SELECT interface script
#
# usage: verify logical_block_address verification_length
#
# Examples:
#   To verify the first 256 blocks:
#     verify 00000000 00ff
#
#   To verify the block at address 0x1234:
#     verify 00001234 0001
#
scsi \
 \
 \ # CDB
 \
 2f \ # op code
 00 \ # DPO, BytChk, RelAdr
 $1 \ # logical block address
 00 \ # reserved
 $2 \ # verification length
 00 \ # control
 \
 \ # Driver data transfer parameters
 \
 00000000 \ # data transfer length, not including CDB
 01 \ # data direction (read)
```

7.3.5 Scsiutil Verify Scripts (continued)

```
-----verify.pl-----
#!/usr/bin/perl
#####
#
# Usage: verify.pl device logical_block_address verification_length
#
# Example: verify.pl *0 0 3 0* 0 65535
#           This will verify 65535 logical blocks, starting at block 0, on
#           the drive c207d0s0.
```

```
#
#####
$| = 1;

if ($#ARGV != 2) {
    die "usage: verify.pl device logical_block_address
    verification_length\n";
}

# process command line args.
while (@ARGV) {
    $dev = shift;
    $lba = sprintf("%d", shift);
    $len = sprintf("%d", shift);
}

for (; $len>0; $len-=65535, $lba += 65535)
{
    if ($len > 65535)
    {
        $scsiLen = sprintf("%.4x", 65535);
    }
    else
    {
        $scsiLen = sprintf("%.4x", $len);
    }
    $scsiLba = sprintf("%8.8x", $lba);

    system("scsiutil -d $dev -c script verify $scsiLba $scsiLen
    -c \"dsb -1\"");
}
```

7.3.6 C-Series errlog problem (reminder)

As reported in tech bulletin v5w48, a problem exists with 11.x ConvexOS, which may cause the date/time stamps to disappear from the errlog. This can happen on any C-Series system and is very intermittent. This causes no other ill-effects and no loss of information. Only the time stamp is effected.

The only effective solution is to reboot the system. It is not necessary to do anything to the SPU.

7.3.7 Preliminary SPP2000 Power and Environmental Specs

The following are preliminary specs for the two most common SPP2000 configurations. The power estimates are not to exceed values and will likely be reduced after proper system characterization.

node dimensions 36" wide, 34" tall, 27" deep

noise level: 62db  
operating temp: 5C-35C

CD-8 398 lbs. (181kg)

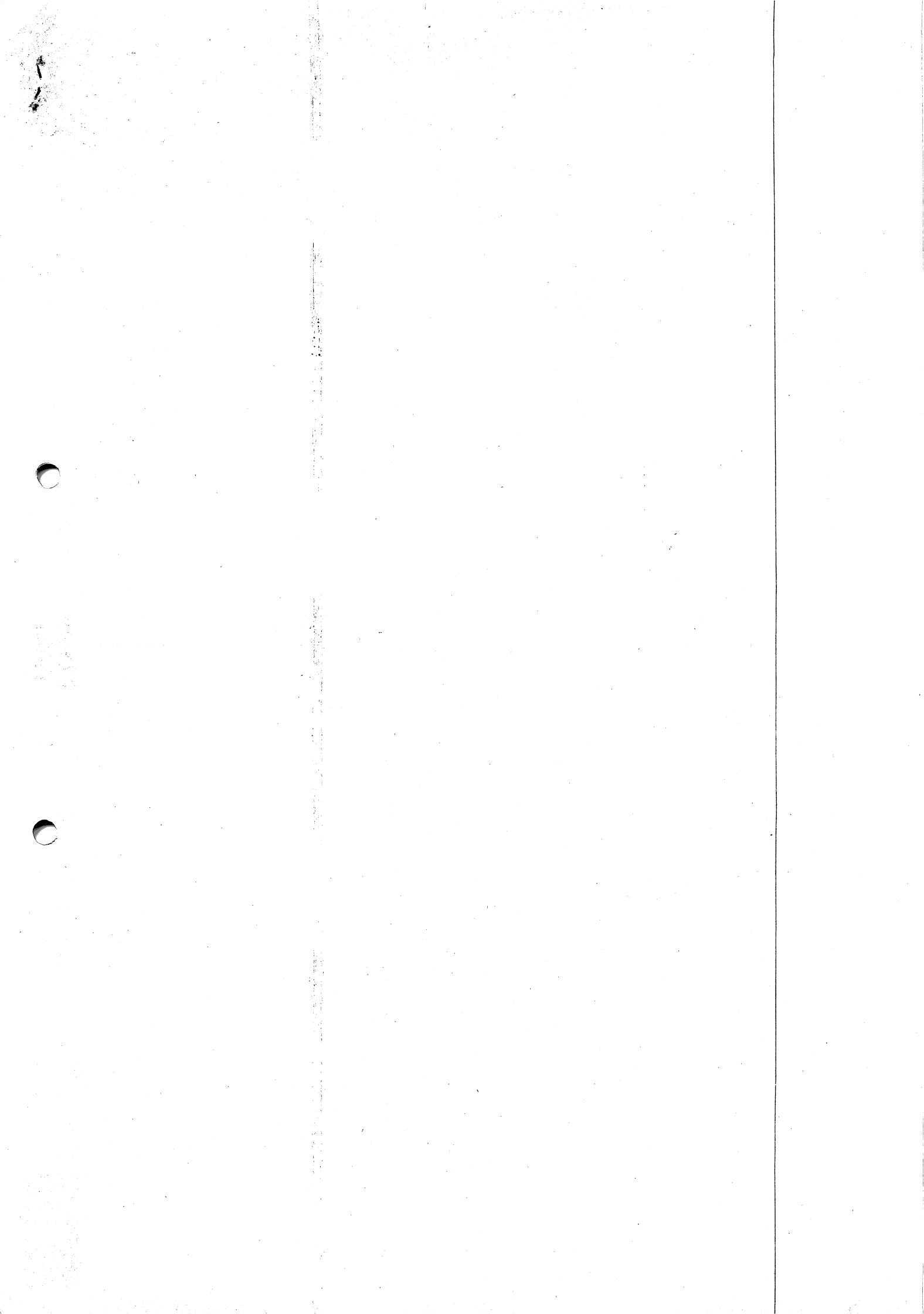
Includes:  
8 processors  
4 MB's  
4 EIOB's  
10 peripherals

Environment:  
BTU's 14000  
Watts 4000  
200v/far east 26 Amps  
208v/US 25 Amps  
220v/US 24 Amps  
230v/Europe 23 Amps

CD-16

includes:  
16 processors  
8 MB's  
4 EIOB's  
19 peripherals

Environment:  
BTU's 24000  
Watts 6900  
200v/Far east 44 Amps  
208v/US 42 Amps  
220v/US 40 Amps  
230v/Europe 38 Amps



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- 1. SPP1000/1200 MU Status Codes

7.6.1 SPP1000/1200 MU Status Codes

Below is the list of MU status codes for the 7.2.1 release and 7.2.128 patch.

```
# define MU_REQUEST_DONE(status)      status & MU_STATUS_DONE_MASK)
# define MU_STATUS_DONE_MASK          0x0000
# define MU_STATUS_CXC_TIMEOUT_0      0x1001
# define MU_STATUS_CXC_TIMEOUT_1      0x1000
# define MU_STATUS_CONSOLE_MAX_OPEN   0x0004
# define MU_STATUS_CONSOLE_WR_OVERFLOW 0x0003
# define MU_STATUS_CONSOLE_OPEN_ID    0x0002
# define MU_STATUS_CONSOLE_RD_OVERFLOW 0x0001
# define MU_STATUS_CONSOLE_BAD_ID     0x0000
# define MU_STATUS_MALLOC_NO_MEM      0x0000
# define MU_STATUS_TRACE_BAD_PAGE     0x0001
# define MU_STATUS_TRACE_BAD_TYPE     0x0000
# define MU_STATUS_RESET_BUSY          0x0000 + MU_STATUS_BUSY)
# define MU_STATUS_RESET_BAD_LEVEL    0x0000
# define MU_STATUS_COP_BUSY            0x0000 + MU_STATUS_BUSY)
# define MU_STATUS_COP_BAD_ID         0x0001
# define MU_STATUS_COP_TIMEOUT        0x0000
# define MU_STATUS_CLOCKS_SCI_ENABLED 0x00a0
# define MU_STATUS_CLOCKS_BAD_CSE_TYPE 0x00a0
# define MU_STATUS_CLOCKS_MODEL_SET   0x00a0
# define MU_STATUS_CLOCKS_BAD_MODE    0x00a0
# define MU_STATUS_CLOCKS_SOURCE_SET  0x00a0
# define MU_STATUS_CLOCKS_BAD_SOURCE  0x00a0
# define MU_STATUS_CLOCKS_ENABLED     0x00a0
# define MU_STATUS_CLOCKS_DISABLED   0x00a0
# define MU_STATUS_PNE_BUSY            0x0000 + MU_STATUS_BUSY)
# define MU_STATUS_PNE_PWR_VHC_HF_AND_TCHIFF 0x00b0
# define MU_STATUS_PNE_PWR_VDH_AND_TCHIFF 0x00b0
# define MU_STATUS_PNE_PWR_BAD_CONFIG  0x00b1
# define MU_STATUS_PNE_PWR_VDL_AND_TCHIFF 0x00b0
# define MU_STATUS_PNE_WEAR_10V       0x009a
# define MU_STATUS_PNE_PWR_SHUTDOWN_HI 0x0099
# define MU_STATUS_PNE_PWR_SHUTDOWN_LO 0x0099
# define MU_STATUS_PNE_PWR_NO_SUPPLY   0x0097
# define MU_STATUS_PNE_PWR_OFF_ABORT   0x0096
# define MU_STATUS_PNE_PWR_ADJUST_TIMEOUT 0x0095
# define MU_STATUS_PNE_PWR_BAD_CALIBRATE 0x0094
# define MU_STATUS_PNE_PWR_MEASURE_TIMEOUT 0x0093
# define MU_STATUS_PNE_PWR_ON_TIMEOUT  0x0092
# define MU_STATUS_PNE_TRIM_TIMEOUT    0x0091
# define MU_STATUS_PNE_BAD_CHANNEL     0x0090
# define MU_STATUS_SCRIPT_BUSY         0x0000 + MU_STATUS_BUSY)
# define MU_STATUS_SCRIPT_BAD_OPCODE  0x0092
# define MU_STATUS_SCRIPT_STACK_UNDERFLOW 0x0091
# define MU_STATUS_SCRIPT_STACK_OVERFLOW 0x0090
# define MU_STATUS_CONFIG_BAD_VALUE   0x0792
# define MU_STATUS_NODE_ID_CONFLICT   0x0791
```

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7.6.1 SPP1000/1200 MU Status Codes (continued)

```
# define MU_STATUS_IIFRAM_BAD_SL_CHECKSUM 0x0695
# define MU_STATUS_IIFRAM_BAD_FL_CHECKSUM 0x0694
# define MU_STATUS_IIFRAM_BAD_FW_CHECKSUM 0x0693
# define MU_STATUS_IIFRAM_BAD_KEY      0x0692
# define MU_STATUS_IIFRAM_FULL         0x0691
# define MU_STATUS_IIFRAM_VAR_NOT_FOUND 0x0690
# define MU_STATUS_EEPROM_BUSY         0x0500 + MU_STATUS_BUSY)
# define MU_STATUS_EEPROM_WRITE_FAILED 0x0592
# define MU_STATUS_EEPROM_NOT_IN_USE   0x0591
# define MU_STATUS_EEPROM_IN_USE      0x0590
# define MU_STATUS_SCAN_BUSY           0x0400 + MU_STATUS_BUSY)
# define MU_STATUS_SCAN_BAD_ID        0x0496
# define MU_STATUS_SCAN_IN_USE        0x0495
# define MU_STATUS_SCAN_NOT_OWNER     0x0494
# define MU_STATUS_SCAN_ERROR         0x0493
# define MU_STATUS_SCAN_BAD_RING     0x0492
# define MU_STATUS_SCAN_BAD_END_STATE 0x0491
# define MU_STATUS_SCAN_BAD_COMMAND   0x0490
# define MU_STATUS_SCAN_RW_SHORT      0x0483
# define MU_STATUS_SCAN_RW            0x0482
# define MU_STATUS_SCAN_RW_START      0x0481
# define MU_STATUS_SCAN_WRITE         0x0421
# define MU_STATUS_SCAN_READ          0x0412
# define MU_STATUS_SCAN_READ_START    0x0411
# define MU_STATUS_SCAN_START         0x0401
# define MU_STATUS_MAVI_BUSY           0x0300 + MU_STATUS_BUSY)
# define MU_STATUS_MAVI_REMOTE_MASK   0x1000
# define MU_STATUS_MAVI_UNAVAILABLE   0x03a6
# define MU_STATUS_MAVI_MSG_TIMEOUT   0x03a5
# define MU_STATUS_MAVI_MSG_TOO_LARGE 0x03a4
# define MU_STATUS_MAVI_NO_STATUS     0x03a3
# define MU_STATUS_MAVI_BAD_CHANNEL   0x03a2
# define MU_STATUS_MAVI_CHANNEL_IN_USE 0x03a1
# define MU_STATUS_MAVI_NO_CHANNELS   0x03a0
# define MU_STATUS_MAVI_TIMEOUT       0x0391
# define MU_STATUS_MAVI_CXBAR_ERROR   0x0390
# define MU_STATUS_MAVI_AWAIT_CCH_FLUSH_G_RES 0x0320
# define MU_STATUS_MAVI_INCOMING_MSG  0x0310
# define MU_STATUS_MAVI_AWAIT_SCRUB_TAG_RES 0x0307
# define MU_STATUS_MAVI_AWAIT_SCRUB_DATA_RES 0x0306
# define MU_STATUS_MAVI_AWAIT_CXBAR_RES 0x0305
# define MU_STATUS_MAVI_AWAIT_NWR_RES 0x0304
# define MU_STATUS_MAVI_AWAIT_HRD_RES_64 0x0303
# define MU_STATUS_MAVI_AWAIT_HRD_RES_SB 0x0302
# define MU_STATUS_MAVI_UNUSED        0x0301
# define MU_STATUS_DART_BUSY          0x0200 + MU_STATUS_BUSY)
# define MU_STATUS_DART_UNAVAILABLE   0x0293
# define MU_STATUS_DART_BAD_NODE     0x0292
# define MU_STATUS_DART_TIMEOUT       0x0291
```

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```
# define MU_STATUS_DART_TRUNCATED      0x0290
# define MU_STATUS_SONIC_SEND_QUEUE    0x0103
# define MU_STATUS_SONIC_RECEIVED      0x0102
# define MU_STATUS_SONIC_UNUSED       0x0101
# define MU_STATUS_BAD_ADDR            0x00ff
# define MU_STATUS_BAD_SIZE            0x00fe
# define MU_STATUS_ZERO_SIZE           0x00fd
```

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7.6.1 SPP1000-1200 MU Status Codes (continued)

```
# define MU_STATUS_BAD_TYPE            0x00fc
# define MU_STATUS_SHORT_MSG           0x00fb
# define MU_STATUS_BUSY                 0x00fa
# define MU_STATUS_PANIC                0x00f9
# define MU_STATUS_SUBTEST_FAIL         0x00f8
# define MU_STATUS_BUS_ERROR            0x00f7
# define MU_STATUS_NO_BUS_ERROR         0x00f6
# define MU_STATUS_LIMIT_EXCEEDED       0x00f5
# define MU_STATUS_REQ_IGNORED          0x00f4
# define MU_STATUS_ST_COP_ERROR         0x00d6
# define MU_STATUS_ST_TIMEOUT           0x00d5
# define MU_STATUS_ST_BYTE_SELECT_ERROR 0x00d4
# define MU_STATUS_ST_ACCESS_ERROR      0x00d3
# define MU_STATUS_ST_PARITY_ERROR      0x00d2
# define MU_STATUS_ST_ADDRESS_ERROR     0x00d1
# define MU_STATUS_ST_PATTERN_ERROR     0x00d0
# define MU_STATUS_OK                   0x0080
# define MU_STATUS_WRITE                0x0004
# define MU_STATUS_READ                 0x0003
# define MU_STATUS_IN_USE               0x0002
# define MU_STATUS_UNUSED               0x0001
```

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1. New MAKEDEV with OS 4.x
2. DLT Drive connection to an SPP
3. SPP FMI's 115, 116 and 117 Released

7.7.1 New MAKEDEV with SPP OS 4.x

Starting with the release of the SPP OS version 4.0.6.6, a new MAKEDEV utility will be available that will make entries for many of our newly supported I/O devices.

The following information shows some of the entries that will be created for the "tmid" type devices.

MAKEDEV type	major	minor	file
dev tmid			
dat	13	0x000002	rdat0
Control flavor	13	0x000003	rdat0n
	13	0x000001	rdat0i
	13	0x000007	rdat0ni
	13	0x000103	dat0cp
bc	13	0x001002	rt00
1490	13	0x001003	rt00n
3490	13	0x001001	rt00i
3490E	13	0x001007	rt00ni
3490	13	0x001103	tc0cp
	13	0x001203	tr0eth
dlt	13	0x002002	rdlt0_3.0
	13	0x002003	rdlt0_3.0n
	13	0x002042	rdlt0_3.0
	13	0x002043	rdlt0_3.0n
	13	0x002002	rdlt0_10.0i
	13	0x002003	rdlt0_10.0ni
	13	0x0020c2	rdlt0_10.0
	13	0x0020c3	rdlt0_10.0n
	13	0x002103	dlt0cp
ctp	13	0x003002	rectp0
C590 (HTP)	13	0x003003	rectp0n
	13	0x0030c2	rectp0i
	13	0x0030c3	rectp0ni
	13	0x003103	ctp0cp
rdw	13	0x004002	rrdw0
D3	13	0x004003	rrdw0n
	13	0x0040c2	rrdw0i
	13	0x0040c3	rrdw0ni
	13	0x004103	rdw0cp

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7.7.1 New MAKEDEV with SPP OS 4.x (continued)

MAKEDEV type	major	minor	file
dev tmid			
mt	13	0x007002	rmt0_000
mag tape	13	0x007003	rmt0_000n
2 track	13	0x007042	rmt0_1600
	13	0x007043	rmt0_1600n
	13	0x007002	rmt0_6250
	13	0x007003	rmt0_6250n
	13	0x0070c2	rmt0_3200
	13	0x0070c3	rmt0_3200n
	13	0x007103	mt0cp
generic	13	0x00f002	generic0
	13	0x00f003	generic0n
dev rmt			
st	9	0x000002	0m
dat-HP flavor	9	0x000003	0mn
	9	0x0000c2	0c
	9	0x0000c3	0cn

unit number

- cp = control port
- stk = changer device
- n = no rewind on close
- i = c = compression device -GCR format, 3000 BPI

7.7.2 DLT Drive connection to an SPP

Currently, DLT drives are connected to the SPP S-BUS SCSI controllers using some combination of the following cables and connector adapter:-

- Cable, DIFF/SCSI. (20ft.)..... 604-500006-200
- Cable, DIFF/SCSI. (50ft.)..... 604-500006-201
- Cable, DIFF/SCSI. (10ft.)..... 604-500006-202

SPP SBUS-SCSI Cable adapter 68 pos - 50 pos ( M/M )... 301-000151-002

Until new cables are sourced and tested, this combination will be used.

Unless care is taken, it is possible to connect one end of the SCSI cable incorrectly in the S\_BUS controller connector adapter, which results in device failures during boot.

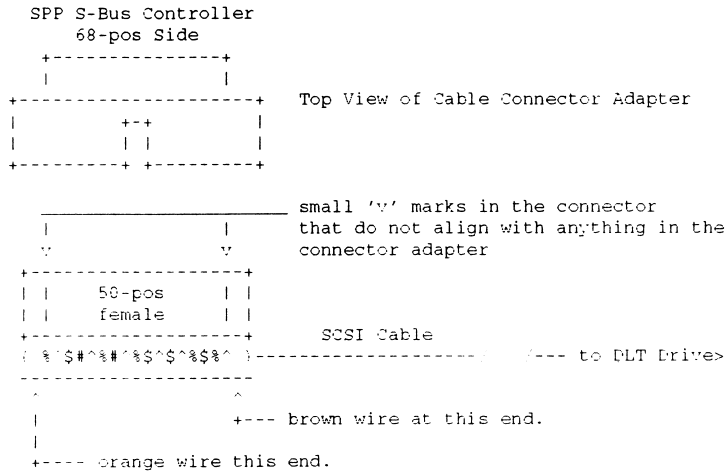
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## 7.7.2 DLT Drive connection to an SPP (continued)

The following drawing is provided to help eliminate these types of errors:-



## 7.7.3 SPP FMI's 115, 116 and 117 Released

FMI's 115, 116 and 117 have been released. A copy of these FMI's will be sent to each field location in the next few weeks.

-----  
FM0115

Title: SPP1000 XBAR2 Upgrade for Confirmed plr\_hangs

Purpose of Change: Help alleviate plr\_hangs caused by buffer overruns.

Priority: Install as soon as possible after plr\_hangs are confirmed with the methods described in Technical Bulletin 6.25.2

Pre-requisites: SPP Diags. 7.2.128 or higher and SPP-UX 3.2 or higher.

Co-requisites: None

Post-requisites: None

System Down Time Requirements:

1.0 hour for the first node.  
0.5 hour for each additional node.

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## 7.7.3 SPP FMI's 115, 116 and 117 Released (continued)

FM0116

Title: SPP1000/1200 CCMC2 Upgrade for Confirmed plr\_hangs

Purpose of Change: Alleviate plr\_hangs caused by buffer overruns.

Priority: Install as soon as possible after plr\_hangs are confirmed with the methods described in Technical Bulletin 6.25.2

Pre-requisites: SPP Diags. 7.2.128 or higher and SPP-UX 3.2 or higher. SPP1000's require that FM0110 or FM0115 is installed before ordering this FMI.

Co-requisites: None

Post-requisites: None

System Down Time Requirements: 1.0 hour per node.

-----  
FM0117

Title: SPP1000/1200 SCI2 to SCI2 Rev.D

Purpose of Change: Provide relief from SCI\_OD\_SPIN invalids causing intermittent system hangs. See Introduction page.

Priority: Install as soon as possible after approval from TACHWSUP.

Pre-requisites: SPP-UX 3.2 or higher and Diags 7.2.128 or higher.

Co-requisites: None

Post-requisites: None

System Down Time Requirements: 1.0 hour per node.

Introduction:  
An OD\_SPIN\_INV is a SCI protocol problem that leads to a particular node getting live-locked. This is a race condition between 2 nodes which are flushing the same cache line. The signature of this situation is a hung SCI ring. This can be (and is) worked around in MU firmware. The work around takes advantage of the fact that the ring can be un-hung by doing a store access to the line that is hung. The MU periodically polls a register in the SCI chip. If the access times out the MU assumes that the ring is hung and systematically begins a clean up process that walks through the memory which is physically attached to that ring.

In applications that encounter this situation frequently, the application or system may experience a hang for 5 to 30 seconds. If this occurs on a regular basis, it might cause the users some distress and then this FMI may be considered, with approval from the TAC.

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Contents of this issue:

1. FMI's 116-A and 117-A Released

-----  
7.8.1 FMI's 116-A and 117-A Released

-----  
FMI's 116-A and 117-A Released

FMI's 116 and 117 have been released.

A copy of these FMI's will be sent to each field location in the next few weeks.

-----  
Differences FMC116 - FMC116-A

Added HW\_CONFIG setting.

Differences FMC117 - FMC117-A

Added HW\_CONFIG setting.

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Contents of this issue:

1. HP-Kittyhawk and ATL 3/264 Robots

-----  
7.11.1 HP-Kittyhawk and ATL Robots

-----  
ATL 3/264 robots, and DLT drives can and are being connected to HP-Kittyhawk host systems.

A problem with the differential controller in the Kittyhawk, causes the Multi Unit Controller(MUC), in the ATL robot, to be incorrectly addressed, and not probed by the host system at boot time.

To overcome this problem, the MUC is being connected, via a converter, to the Kittyhawk's S/E controller, while the DLT drives remain connected to a differential controller.

The converter being used for this purpose is made by Paralan and is a stand-alone version. The model number is SD10B.

The EXTC p/n is 218-000004-200 for the converter, and 900-000791-001 for the power supply.

Contents of this issue:

1. New Metrum Shipping Container

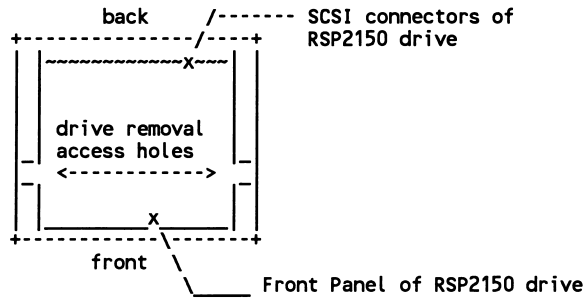
7.19.1 New Metrum Shipping Container

In an attempt to reduce the shipping damage to Metrum RSP-2150 drives, a new shipping container has been introduced.

When removing the Metrum drive from the case, lift it at the sides, using the cut-outs in the foam packing. DO NOT lift the unit by any part of the drive's front panel.

When shipping a drive in this new container please ensure that the RSP-2150 front panel is placed towards the front of the case.

Shipping Container Plan View



Contents of this issue:

1. FM0118 Released, QSC Assembly Revision C to E.
2. SPP1200 ECC reporting problem on CCMC2's
- 3.
- 4.

-----  
7.20.1 FM0118 Released, QSC Assembly Revision C to E.  
-----

Title:  
QSC (411-002447-200) Assembly Revision C to E.

Purpose of Change:  
To eliminate potential Pbus hangs, caused by a channel being unable to abort a xfer without hanging the pbi.

Priority:  
Problem represents a risk for all QSC's, but particularly with Tapes.  
Implement immediately.

Pre-requisites:  
None

Co-requisites:  
None

Post-requisites:  
None

System Down Time Requirements:  
2.0 Hours

Introduction:  
This FMI addresses the problem of a device failing to disconnect, causing the QSC to abort a queued pbus transfer request, thus resulting in a pbi\_err. With rev E, the transfer is allowed to complete without writing data to the FIFO and discards data in the FIFO.

Diagnostic qsc4000 subtests 3x71 will fail, with an abort, as a result of this upgrade.

CAUTION: It should be understood that, for multiple QSC's, that all installed boards must be at rev E. After installing the new database and driver, it will not be possible to install any revision lower than rev E.

-----

7.20.2 SPP1200 ECC reporting problem on CCMC2's  
-----

It has been discovered that in some instances the ccmc2's are reporting the incorrect address for an ecc error. The problem is a bug and is the result of the memory controller assuming that the address from which it is working is 32 byte aligned. The controller uses the starting address and increments it as the words of data are returned from memory. If there is an error the newly calculated address is stored in the ECC\_ADDR register. If the address is not 32 byte aligned, the address of the error will point to the wrong simm.

The program ecc\_help (version 7.7) has been modified to point out an alternate simm to check/swap. This version of ecc\_help is available in /common/tachwbul. The new version will be included in the next release of diags.

This problem has not been seen in SPP1000 systems.

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Contents of this issue:

1. SPP1600 APA CST Failure at Upper Margins
2. SPP1000 or SPP1200 to SPP1600 Upgrade

7.21.1 SPP1600 APA CST Failure at Upper Margins

SPP1600 systems use the latest revision APA(REV D).

This APA has been found to fail CST, intermittently, at upper margins.

Not every APA will fail.

The problem was traced to some scan ring terminations on the MU.

A new revision MU(rev F) has been released to correct this problem.

All new SPP1600's will be built with the new revision MU.

Because of MU availability problems, SPP1200 to SPP1600 upgrades will not receive an uprev'd MU.

If you find a SPP1600 upper margin APA failure, every effort will be made to get a rev F MU to the site.

7.21.2 SPP1000 or SPP1200 to SPP1600 Upgrade

Before a SPP1000 or SPP1200 system can be upgraded to a SPP1600, SPP-UX must be upgraded to 4.x. Although SPP-UX 4.x will not be supported on a SPP1000, it can be loaded and booted on a SPP1000 prior to upgrading the system to a SPP1600.

Contents of this issue:

1. SPP1000/1200/1600 "hw\_config" Parameters

SPP1000/1200/1600 "hw\_config" Parameters

Here are the "hw\_config" parameters for systems running SPP-UX 4.x and Diags 8.0. "ccmd/ccmu" with Diags 8.0 should set these correctly.

SPP1000/1200

SCI2 REV C	SCI2 REV D (SCI4)
CMC2 REV B	CMC2 REV B
hw_config = 0xXX11	hw_config = 0xXX19

SCI2 REV C	SCI2 REV D (SCI4)
CMC2 REV C (CMC4)	CMC2 REV C (CMC4)
hw_config = 0xXX41	hw_config = 0xXX49

SPP1600

Must have:  
SCI2 REV D (SCI4)  
CMC2 REV C (CMC4)  
APA REV D (APA4)  
hw\_config = 0xXX49

Contents of this issue:

1. RSP2150 (Metrum now MountainGate) shipping recommendations
2. QSC Tacpatch 1.2.128
3. Exabyte 8505 Drive Failures

7.24.1 RSP2150 (Metrum now MountainGate) shipping recommendations

Meetings with MountainGate have revealed that shipping damage was a major component in DOAs in the field. Due to this fact, the following recommendations are:

- 1) Use MountainGate approved shipping containers which just passed their shipping/drop tests. These shipping containers will be available in a few weeks from MountainGate. Contact Chris Singer. All repairs will get the new shipping containers when they are available.
- 2) Use current MountainGate shipping and/or Convex containers only if they are strapped to a pallet. We need to ensure our carriers are not unbundling the drives from the pallet.

7.24.2 QSC Tacpatch 1.2.128

This tacpatch, for the new v1.2 qsc driver has been released:

REASON TO INSTALL PATCH:

Dump process hangs on QSC disk striped filesystem.  
Devices failing to attach at boot time.  
Panic during read from raw QSC disk or stripe that is not an even multiple of 2k.  
Process hangs while reading from QSC raw devices.

TECHNICAL DETAIL:

Rewrite code that deals with raw device reads that are not a multiple of 2k sectors in length. Allocate internal kernel buffer for these odd reads, and make the command synchronous, while allowing other accesses to same device asynchronous. Only use raw read semaphore when disk is at max requests or when the MBS system is stressed. Allocate proper scatter/gather list rounded up to even sector sizes. Fix range checking so that raw reads must start on a sector boundary, but can be any length.  
Add retries on attach time for check conditions.

7.24.3 Exabyte 8505 Drive Failures

It has recently been found that single-ended version of the Exabyte 8505 drive has been found to be incompatible with the Ciprico VME SCSI single ended controller we use on our C-Series systems. Apparently, there is a firmware bug in the Single-ended Ciprico boards, and there are no plans to get this problem resolved.

The only solution currently available is to swap the 8505 S/E drive for a differential version, and use it with a differential VME SCSI controller.

## Contents of this issue:

1. New C4 SPU Disk
2. Interim SPU Disk for C3800
3. Most Common SCSI Disk Errors

## 7.25.1 New C4 SPU Disk

A new 2GB SPU disk will now be used on the C4 SPU. This drive is the DEC DSP3210, with 3691 cyl, 2 alt, 14 hds and 80 sectors. This drive is a direct replacement for the 2GB Seagate drive, used previously.

It is a DEC 2GB SCSI single-ended Fast/Wide disk drive, p/n 204-000028-200.

Drive specific information, for installation of the Sparc SPU, is as follows:

Disk type: 13  
 Data Cylinders: 3609  
 Alternate Cylinders: 2  
 Physical Cylinders: 3611  
 Heads: 14  
 Data sectors/track: 53  
 Drive RPM: 5400  
 Disk Type Name: "DEC DSP3210W"

## Partition information:

```
partition> a
starting cylinder [0]: 0
# blocks [0, 0/0/0]: 40/0/0
```

```
partition> b
starting cylinder [0]: 40
# blocks [0, 0/0/0]: 200/0/0
```

```
partition> c
starting cylinder [0]: 0
# blocks [0, 0/0/0]: 3609/0/0
```

```
partition> d
starting cylinder [0]: 240
# blocks [0, 0/0/0]: 2110/0/0
```

```
partition> e
starting cylinder [0]: 2350
# blocks [0, 0/0/0]: 120/0/0
```

```
partition> f
starting cylinder [0]: 2470
# blocks [0, 0/0/0]: 540/0/0
```

```
partition> g
starting cylinder [0]: 3010
# blocks [0, 0/0/0]: 303/0/0
```

```
partition> h
starting cylinder [0]: 3313
# blocks [0, 0/0/0]: 296/0/0
```

## 7.25.2 Interim SPU Disk for C3800

An interim Maxtor SCSI 540MB disk could be used in place of the current 535MB disk, on the C3800 SPU. This drive is a MXT-540SL, part number 204-000022-201.

Again, this drive is only an interim replacement and may not become the final replacement, for the 535MB, which has been obsoleted. Very few of the 535's are still available, so it should be understood that a 540MB replacement could be received. If this should become the case and one of the 540's should be received, the information below, will be invaluable.

When the final replacement is determined, the field will be informed.

Drive specific information, for installation on the Sparc SPU, is as follows:

Disk type: 13  
 Data Cylinders: 2232  
 Alternate Cylinders: 2  
 Physical Cylinders: 2234  
 Heads: 7  
 Data sectors/track: 60  
 Drive RPM: 3600  
 Disk Type Name: "Maxtor MXT-540SL"

## Partition information:

```
partition> a
starting cylinder [0]: 0
# blocks [0, 0/0/0]: 56/0/0
```

```
partition> b
starting cylinder [0]: 56
# blocks [0, 0/0/0]: 280/0/0
```

```
partition> c
starting cylinder [0]: 0
# blocks [0, 0/0/0]: 2232/0/0
```

```
partition> e
starting cylinder [0]: 336
# blocks [0, 0/0/0]: 170/0/0
```

```
partition> f
starting cylinder [0]: 506
# blocks [0, 0/0/0]: 760/0/0
```

```
partition> g
starting cylinder [0]: 1266
# blocks [0, 0/0/0]: 430/0/0
```

```
partition> h
starting cylinder [0]: 1700
# blocks [0, 0/0/0]: 530/0/0
```

## 7.25.3 Most Common SCSI Disk Errors

This includes a list of the most commonly encountered scsi disk errors, on QSC, or SPP systems. Included with the error, is a definition and recommended action.

[CPU00a05:14:40] process\_rtn: sd03 RECOVERED ERROR status = 2 sense= 1  
[CPU00a05:14:40] code= 18 qualifier= 1 information= 460221

Recovered disk error with error correction and retries utilized.  
Recommend slipping the physical address, which is information entry, using scsiutil.

[CPU01a05:15:49] process\_rtn: sd02 RECOVERED ERROR status = 2 sense= 1  
[CPU01a05:15:49] code= 10 qualifier= 0 information= 420084

Disk ECC error.  
Recommend slipping physical block.

[CPU00a05:18:23] process\_rtn: sd89 RECOVERED ERROR status = 2 sense= 1  
[CPU00a05:18:23] code= 17 qualifier= 1 information= 48220c

Recovered data after retries.  
Recommend slipping physical block.

[CPU00a05:18:54] process\_rtn: sd02 status = 2 sense= 3  
[CPU00a05:18:55] code= 11 qualifier= 0 information= 486b19  
[CPU00a05:18:55] stfail: STRIPE DEVICE: major: 12 minor: 26  
[CPU00a05:18:55] stfail: FAILED DEVICE: major: 63 minor: 426  
[CPU00a05:18:55] stfail: NOTIFIED vmdaemon for automatic reconstruction

Unrecovered read error.  
Try slipping location, but may require replacement.

[CPU00a11:17:24] process\_rtn: sd16 RECOVERED ERROR status = 2 sense= 1  
[CPU00a11:17:24] code= 12 qualifier= 0 information= 495f5b

Address mark not found for ID field.  
Likely defective drive, but could be cabling problem.

[CPU01a11:01:02] process\_rtn: sd01 status = 2 sense= 7  
[CPU01a11:01:02] code= 27 qualifier= 0 information= fffffd0  
[CPU00a11:01:05] unit attention

(continued)

## 7.25.3 Most Common SCSI Disk Errors (continued)

Drive write protected.

[CPU00a14:34:51] unit attention

Typically caused by a power problem, or power cabling with disk.

[CPU00a20:35:07] process\_rtn: sd06 RECOVERED ERROR status = 2 sense= 1  
[CPU00a20:35:07] code= 14 qualifier= 1 information= 533021

Record not found  
Try slipping physical location.

[CPU00a08:23:51] process\_rtn: sd04 status = 2 sense= b  
[CPU00a08:23:51] code= 47 qualifier= 0

SCSI parity error. Typically a cabling, or termination failure. Includes drive internal cables.

Contents of this issue:

1. SPP1200/1600 Diags. 8.0 inst.services Correction.
2. Field Modification Instructions Now Available on the Web.
3. FMI119-B Released, SPP Seagate 4 GB Disk Drive Firmware Upgrade.

7.26.1 SPP1200/1600 Diags. 8.0 inst.services Correction

When doing an "initial install"(running ts.install) of SPP Diags. 8.0, the /etc/services file will be set up incorrectly. "ts.install" should only be run the first time a workstation is set up as a SPP teststation. To correct this problem make the following change to the /spp/scripts/inst/inst.services file prior to executing the ts.install script.

```
change:
print TMP "mu_base_port 675/udpi # SPP Diagnostic DaRT messaging\n";
to:
print TMP "mu_base_port 675/udp # SPP Diagnostic DaRT messaging\n";
```

The ts.install script will now modify /etc/services correctly.

Failure to make the correction will result in error messages similar to the following:

```
<Tue Jun 25 08:19:37 1996> warning:0x656a0448
ccmu:8.0.0.0:../broadcast.c:180
assign_node_to_mu: no entry for mu_base_port in /etc/services
****
```

If you have already executed the ts.install script you will also need to correct the /etc/services file.

```
change:
mu_base_port 675/udpi # SPP Diagnostic DaRT messaging
to:
mu_base_port 675/udp # SPP Diagnostic DaRT messaging
```

Again, this should only cause a problem if ts.install has been executed or needs to be executed.

This will be corrected in the next release of SPP1200/1600 Diags.

7.26.2 Field Modification Instructions Now Available on the Web

FMI's #100 and higher are now available on the internal web.

The URL is:  
<http://info.convex.com/tac/fmi/> on the 130.168 net.  
or  
<http://info.rsn.hp.com/tac/fmi/> on the 15 net.

(continued)

7.26.2 Filed Modification Instructions Now Available on the Web

FMI's are available in the following formats:

HTML: Just click on FMI number.

Postscript:

These are Postscript images of the original Framemaker documents. You can view these online, if you have a postscript viewer filter set up for your web browser. You can also download and save these for printing. With Netscape do a <shift>left button to save the file.

Test Only:

Currently under construction. Should be ready in about 2 weeks.

Because the number of people we support is growing and most of the Convex offices are relocating, the mailing list for hard copy FMI's is getting un-manageable. We will no longer be sending hard copys of FMI's, to each office as, they are released. We will continue to send a hard copy of each FMI when FMI required parts are shipped. FMI's will also be available via fax on request.

7.26.3 FMI119-B Released, SPP Seagate 4 GB Disk Drive Firmware Upgrade

A copy of this FMI is available on the internal web at:  
<http://info.convex.com/tac/fmi/> on the 130.168 net.  
or  
<http://info.rsn.hp.com/tac/fmi/> on the 15 net.

Revision Info:

Revision	Date	Change Information
FM0119	960418	Initial Release
FM0119-A	960509	Modify step 10 for ASA-1 Drives.
FM0119-A	960509	Modify steps to get to SPP-UX single user mode
FM0119-B	960628	Added "sel -o<cr>" command in ASA-2 section of step 6.

Title:

Seagate 4 Gigabyte Single Ended (550-000064-210,-211,-213,-214) and Differential (550-000064-212) Disk Drive Firmware Upgrade

Purpose of Change:

Correct some instances of bio\_reap\_status errors, read\_capacity failures and intermittent drive disconnects.

Priority:

Required on SPP1200's prior to loading SPP-UX 4.x or Higher. Can be installed on SPP1000 systems.

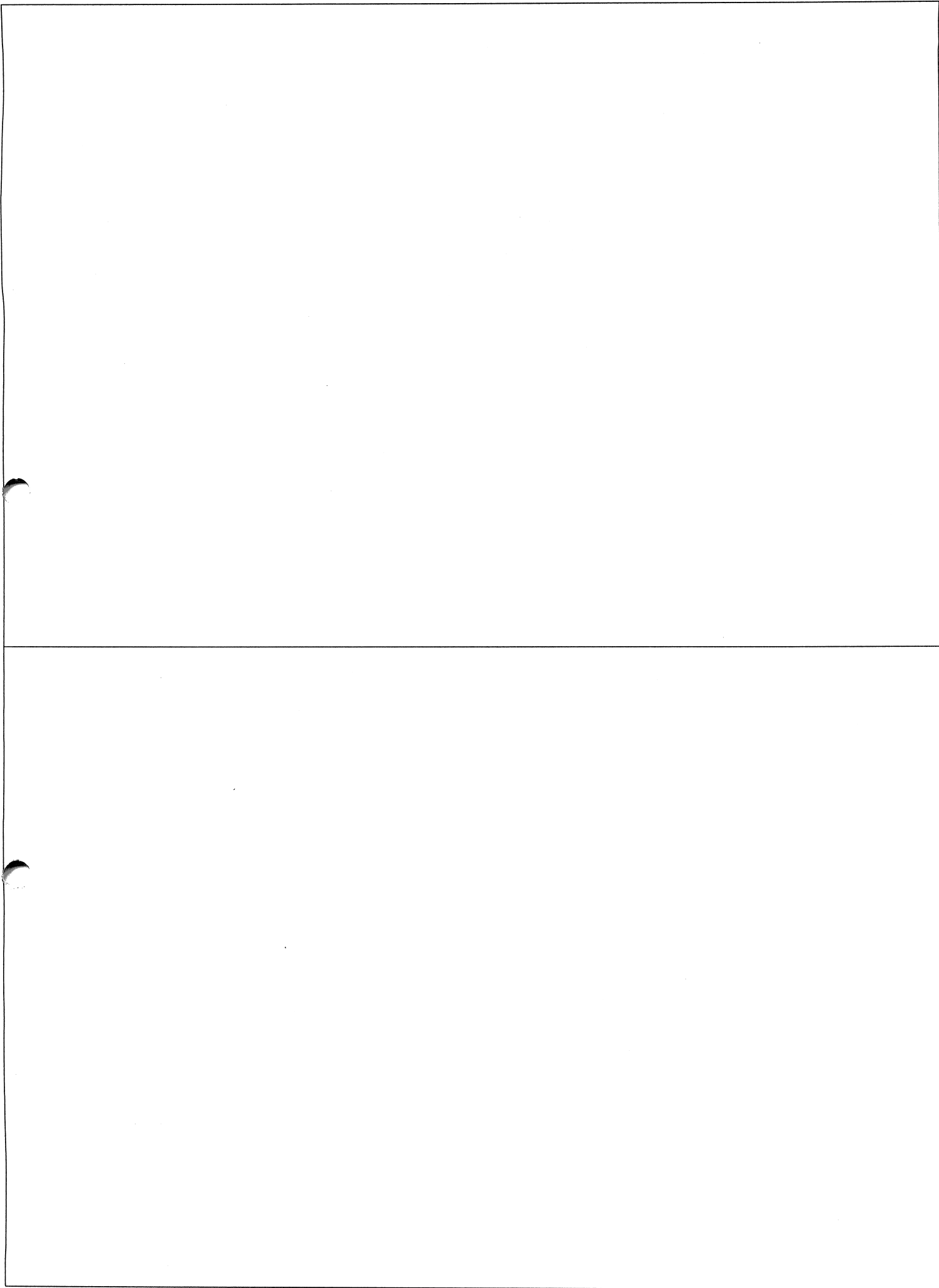
Pre-requisites: None

Co-requisites: None

Post-requisites: None

System Down Time Requirements:

0.5 hrs. first drive. 0.1 hrs. each additional drive. These times DO NOT include time required for a full system backup prior to installing this FMI.



Contents of this issue:

1. DAT Tape support

7.28.1 DAT Tape Support

Only DAT tapes of the 60 and 90 meter length are supported on the C-Series, SPP Series, and HP Series DAT drives. These tapes must be digital quality.

It is NOT recommended that you or your customers use the 120 meter tapes on any HP/CXD DAT drive, or that audio quality 4mm tapes of the 60/90 meter size are used.

Most DAT drives can also use the DDS series of DAT tapes.

In some cases the DAT drive will eject the 120 meter tape, while some other drives will load them without any problems.

Because of the thinner tape in a 120 cartridge, any data written to one using our DAT drives cannot be guaranteed to be retrievable at a later date, or that the tape will not break during usage.

Contents of this issue:

1. FMI120 Released, SPP1000/1200/1600 XA Power Concentrator Card
2. New C-Series SCSI Controller

7.29.1 FMI120 Released

Title: SPP1000/1200/1600 XA Power Concentrator Card

A copy of this FMI is available on the internal web at:  
<http://info.convex.com/tac/fmi/> on the 130.168 net.  
 or  
<http://info.rsn.hp.com/tac/fmi/> on the 15 net.

Revision Info:

Revision	Date	Change Information
FM0120	960715	Initial Release

Purpose of Change:

Allow more than 2 cabinets to be connected to the remote keyswitch cable.

Priority:

May need to be installed, in center cabinets, before more than 2 XA cabinets will power up with the remote keyswitch cable installed.

Pre-requisites: None

Co-requisites: None

Post-requisites: None

System Down Time Requirements: 0.5 hrs. per cabinet.

7.29.2 New C-Series SCSI Controller

Due to changes by the board manufacturer, Ciprico, we are now unable to obtain any more of the RF3516 VME SCSI controller.

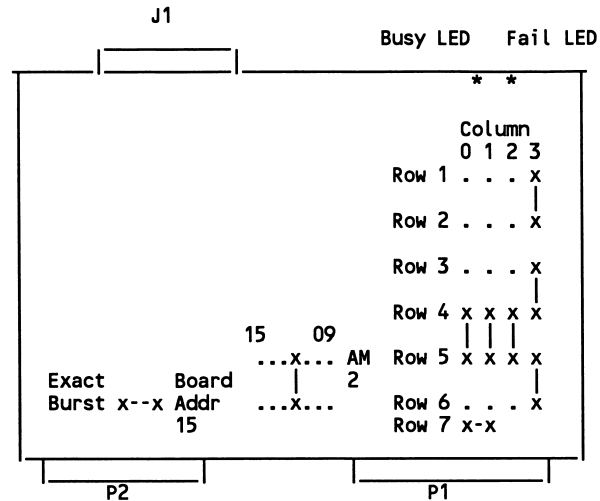
Ciprico are producing a replacement controller, called the 3576, and testing of this controller in Dallas has just been completed.

The following information is provided to assist with controller configuration.

Product Type: VME/SCSI differential host adapter  
 Product Name: Ciprico Rimfire 3576 VME/SCSI DIFF adapter  
 Convex Model Number: RF3576  
 Convex Part Number: 220-000055-200

(continued)

7.29.2 New C-Series SCSI Controller(continued)



NOTE:- x-x or x indicate the presence of a jumper.

Normal Usage

Base Address of 1st controller in the VMEBus is normally "EE00".  
 The Bus Request Priority must always be strapped for "3".  
 The Interrupt Level is software configured from the contents of the SPU file, /ioconfig.

Jumper and Switch Setting Options

BUS Request Priority Level

The Bus Request Priority level is always jumpered for a value of "3".

BUS Priority Level "3"  
 Strapping

From Column	From Row	To Column	To Row
0	4	0	5
1	4	1	5
2	4	2	5
3	1	3	2
3	3	3	4
3	5	3	6
1	7	2	7

The Sysfail Jumper at Row-7 (Col 0-Col 1) is jumpered by default.

(continued)

## 7.29.2 New C-Series SCSI Controller(continued)

## Base Address Jumper Settings

CONVEX normally uses Controller Base Addresses "EE00," "EA00," "EC00," and "E600" for the 1st through 4th Controllers, respectively, in the VMEBus. Jumpers 9 through 15 of BRD Add Jumpers are used to define the Base Address as shown below.

## Base Address Jumper Settings

Base Address	15	14	13	12	11	10	9
EE00	OFF	OFF	OFF	ON	OFF	OFF	OFF
EC00	OFF	OFF	OFF	ON	OFF	OFF	ON
EA00	OFF	OFF	OFF	ON	OFF	ON	OFF
E600	OFF	OFF	OFF	ON	ON	OFF	OFF

NOTE: "AM" (Address Modifier) of the BOARD ADDR jumpers must always be "OFF," and the "EXT BST" (Exact Burst) jumper must always be "ON".

If you install one of these new controllers on a C-series system, either through an upgrade or controller replacement, you will need to obtain one of the following patches to allow this new type controller to function correctly

/tac/patch/os/10.1.252.2	(C2, C34)
/tac/patch/os/10.2.193.3	(C38)
/tac/patch/os/11.0.193.3	(C2, C34, C38)
/tac/patch/os/11.1.147.3	(C4)

## Contents of this issue:

## 1. SPP1X00 ATM Explanation

## 7.32.1 SPP1X00 ATM Explanation

It should be understood that two versions of firmware are available for the ATM. These can be located in /spp/data/io/sbus\_atm and are labeled and are labeled ia.fc ia\_min.fc.

The differences are that the ia.fc firmware module contains obp level diagnostic support, while the ia\_min.fc has had diag support removed in order to support more than 2 ATM controllers in the same complex.

It is recommended that the ia\_min.fc firmware be used as the OS level firmware, which means that it will be necessary to download the other firmware to execute the board-test feature, found in obp version 2.0.1 and higher. If ia.fc is not downloaded, the board-test command will return no response, when executed.

In order to execute the obp level diagnostic, the following procedure should be followed:

- 1) ccmu
  - 2) up
  - 3) get INITWHAT
  - 4) turn PLLADOBP off, in ccmu. This is bit 23. To do this put INITWHAT 0x5800cf0f. This value is an example. The actual value should be confirmed above.
  - 5) down
  - 6) quit
  - 7) do\_reset
- 1) cd /spp/scripts/io/sbus\_atm
  - 2) lf /spp/data/io/sbus\_atm
  - 3) atm fw <node> <unit> <slot> <filename> size serial\_num
    - a) filename, first ia.fc
    - b) example: sppdsh\$ atm fw 0 0 0 /spp/data/io/sbus\_atm/ia.fc 25252 299084
  - 4) execute 'board-test' at obp prompt.

After completing board-test, load the minimal firmware, as follows:

```
sppdsh$ atm_fw 0 0 0 /spp/data/io/sbus_atm/ia_min.fc 1556 299084 (example)
```

The parameters and arguments are the same as item 3 above, for atm\_fw.

The PLLADOBP bit can be restore by a do\_reset 1.

Now set the ATM in the device tree.

This will look something like /mbus@0,ffec0000/sbus@f,ffffff00/ia@1,0

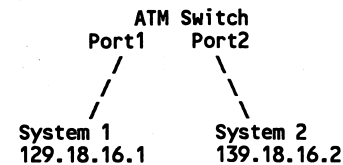
(continued)

## 7.32.1 SPP1X00 ATM Explanation (continued)

The ATM prerequisites are as follow:

SPP1200, or 1600  
 SIOP2 or SIOP3  
 SPP-UX 4.1 or greater

It is necessary to manually set up the vc entry in artmaps, as the ATM does not synchrone with anything, on the network. All vc entries for each system, on the network, must be entered.



If the switch were set up so that cells received on port 1 with VC 100 were directed to port 2 and so that cells received on port 2 with VC 100 were sent to port 1, you would want to make the following pvcarp entries on the two systems:

```
system 1:
pvcarp -s 139.18.16.2 100

system 2:
pvcarp -s 129.18.16.1 100
```

The ATM only supports PVC traffic running on AAL5. The ATM only supports ip traffic on pvc's. No other protocols are supported.

The connector is a SC-Duplex and consists of multi-mode fiber.

The FRU part number, for the controller, is 220-000049-200

More information can be obtained through the internal web page at:

[http://info.convex.com/io\\_doc/atm/contents.html](http://info.convex.com/io_doc/atm/contents.html)

Contents of this issue:

1. SPP1200/1600 MU3
2. SPP1000 or SPP1200 to SPP1600 Upgrade (Revised)

7.37.1 SPP1200/1600 MU3

A new MU has been released for the SPP1200 and 1600 nodes.  
410-001504-200    BD ASSY, MU3    SPP1200/1600 only

The 410-002375-200 BD ASSY, MU2 and 410-001504-200 BD ASSY, MU3 are interchangeable.

The MU3 HAS NOT been tested in a 1000 node and thus is not supported in SPP1000 systems.

The current release of Diags does not have support for the MU3.  
You will need to add the following 3 lines to the /spp/data/DB\_cop file.

```
1504 MU
      0-99 1 1 1
      a-zz 1 1 1
```

This will be included in the /spp/data/DB\_cop file on the next release of the Diags.

7.37.2 SPP1000 or SPP1200 to SPP1600 Upgrade (Revised)

Software

Before a SPP1000 or SPP1200 system can be upgraded to a SPP1600, SPP-UX must be upgraded to 4.0. Although SPP-UX 4.0 will not be supported on a SPP1000, it can be loaded and booted on a SPP1000 prior to upgrading the system to a SPP1600.

Hardware

When upgrading from a 1000 to 1600, you may have to move the MAUI and Xbar2's, if you already have an Xbar2 in your 1000 node, to the 1600 node you are installing.  
Be sure to check your 1600 upgrade nodes for missing MAUI and Xbar2s.

Contents of this issue:

1. ATL Robot Connection to an SPP  
-----

7.38.1 ATL Robot Connection to an SPP  
-----

ATL robotics, and DLT drives can be attached to an SPP1200, or 1600 series systems, if a few rules are followed.

ATL robots shipped from CXD in Dallas, are for the most part the ATL2640 model. This model consists of a 264 cartridge storage area, and three DLT2000 series tape drives. Robotic control via scsi commands are achieved via a MUC control unit located inside the robotics cabinet.

The minimum firmware levels that are shipped from Dallas, are as follows:-

Robotics firmware	4F
MUC firmware	1F
DLT drive code	V33

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## Contents of this issue:

1. SPP1200/1600 MU3 (revised)
2. SPP1000 Upgrade to SPP1600: Complex Serial Numbers

## 7.39.1 SPP1200/1600 MU3 (revised)

A new MU has been released for the SPP1200 and 1600 nodes.  
410-001504-200 BD ASSY, MU3 SPP1200/1600 only

If a system complex has a mixture of MU3s and MU2s, the MU3s must be in the lowest numbered nodes. Failure to follow this configuration rule will result in OBP failing to synchronize.

If the above configuration rule is followed, the 410-002375-200 BD ASSY(MU2) and 410-001504-200 BD ASSY(MU3) are interchangeable.

The MU3 HAS NOT been tested in a 1000 node and thus is not supported in SPP1000 systems.

The current release of Diags does not have support for the MU3.  
You will need to add the following 3 lines to the /spp/data/DB\_cop file.

```
1504 MU
    0-99 1 1 1
    a-zz 1 1 1
```

This will be included in the /spp/data/DB\_cop file on the next release of the Diags.

## 7.39.2 SPP1000 Upgrade to SPP1600: Complex Serial Numbers

Due to the volume of 1000 to 1600 upgrades, manufacturing has been pre-building SPP1600 nodes and placing them in stock. At the time the nodes are built, manufacturing does not know to which system they will be shipped. Because of this, they are unable to assign the correct complex serial number to the nodes before shipment.

When upgrading from a 1000 to a 1600 you will need to use ccmu to assign the complex serial number to each node.

```
ccmu assign <node#> <node serial #> <complex serial #> <key>
```

The <key>, for each node being upgraded, should be in the READ-ME-FIRST package shipped with each upgrade.

## Contents of this issue:

## 1. Building a Recovery Tape on a HP Workstation - revisited

## 7.40.1 Building a Recovery Tape on a HP Workstation - revisited

It has come to light that the tape created by the "mkrs" command is meant for recovery/repair purposes and not as a scratch install utility for a disk with blank media.

One method for a complete restore was described in a earlier Tech. Bulletin Vol.4 Week 27, and is being updated here to reflect changes for the Test Stations that shipped with the SPP 1X00 series. See this previous bulletin for details.

- 1) Attach DAT Tape Drive to Workstation and load blank tape.
- 2) Login as root.
- 3) # dd if=/usr/lib/uxbootlf.700 of=/dev/rmt/0mn bs=2k
- 4) # dd if=/dev/rdisk/c201d6s0 of=/dev/rmt/0m bs=64k

The creation of the tape will take from 1 to 2 hours. If it needs to be restored, perform the following steps.

- 1) Reboot system with DAT Tape Drive attached and tape in drive.
- 2) Depress ESCAPE when "Selecting a system to boot" message appears.
- 3) Once at the BOOT\_ADMIN> prompt type:  
BOOT\_ADMIN> b scsi.#.0 isl  
(where # is scsi id of the tape drive, usually "3").
- 4) Once at the ISL level, type the following:  
ISL> hpux restore disk(scsi.6;0);

The restore may take from 1 to 2 hours. Once restored, reboot the system.

Contents of this issue:

1. SPU Backups, IMPORTANT

7.42.1 SPU Backups, IMPORTANT

Please understand that it is the responsibility of the SSE/FE to ensure a current backup exists for any system front end, i.e. SPU, SPARC, or teststation.

Disks on the devices do fail and without a backup may require a new OS installation to recover. Thus, possibly, losing customer files and certainly extending a system outage.

Procedures for dump/restore can be obtained in Tech Bulletin, as well as Troubleshooting Hints Docs.

It may also be wise to tar off customer and OS specific files, for a quick reload. These would include things like the hosts file, or /mnt/os, or /ioconfig which would require some effort to reaccomplish.

Contents of this issue:

1. Additional QSC FSC Code.

7.43.1 Additional QSC FSC Code

The following FSC code should be added to your list for the QSC, Quad Scsi Channel controller.

QSC FSC 0x6001 The NCR chip has detected a host bus fault while it was bus master.

The original list of QSC FSC codes appeared in the HW Tech Bulletin 6.31.2.

- Contents of this issue:
1. C590 Tape Hint
  2. Tape entries for QSC

7.45.1 C590 Tape Hint

For C590 drives, installed on a QSC subsystem, the following error could be an indication of a dirty drive:

```
[CPU00@00:09:45] MTD-500:1 -> <read>-0x71010017-0x03703600
                                Retry cmd after DUC.
```

These drives use SCSI-3 ASC/ASCQ codes. A 0x71010017 code is a deferred recovered error showing that a drive needs cleaning. In the above message, Unit 1 of the C590 drives needs to be cleaned. Users can look for the 0x71010017 code in the errlog.

7.45.2 Tape entries for QSC

The following drive entries are used for the supported drives, when installed on a QSC subsystem:

Tape Drive	/ioconfig entry	device name
C590 Magstar	MTD-500	ctp
STK D-3 (Redwood)	MTD-502	rdw
STK 9490 (Timberline)	MTD-503	tc

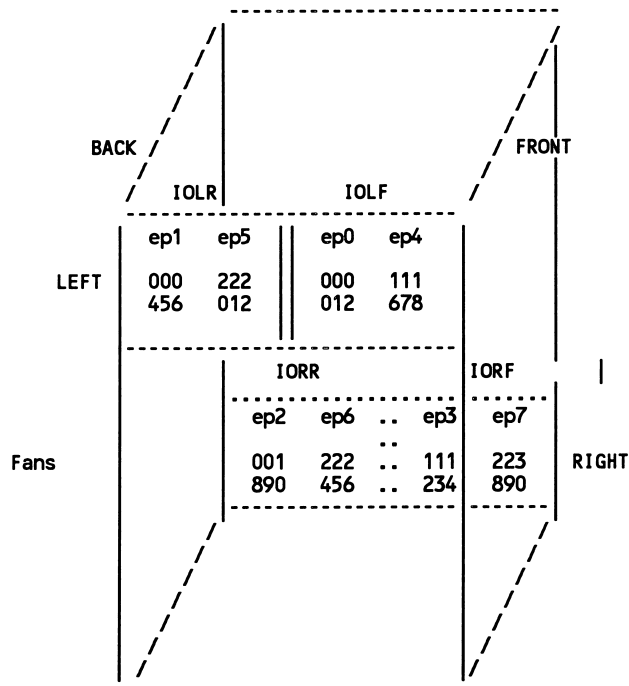
Contents of this issue:

1. SPP2000 PCI Explanation
2. SPP2000 SCSI Disk Controller Limitation
3. SPP2000 Potential EIOB Problem
4. SPP2000 Disk Configuration

7.51.1 SPP2000 PCI Explanation

The system supports up to 4 PCI card chassis', called EIOB's. Each card cage supports 6 slots, which are divided between two controllers called EPIC's (Exemplar Peripheral Interface Controller), which are nothing more than an ASIC. So each EPIC supports 3 PCI slots. This is a total of 8 controllers and 24 total slots.

The EPIC and slot orientation are shown below:



Each EPIC is connected to a PAC. Therefore, there can only be as many EPIC's installed, as there are PAC's. For example, a full config, of 16 processors will have 8 PAC's installed and so, will support all 8 EPIC's. A 4 processor system will only have 2 PAC's installed, which means only 2 EPIC's (1 EIOB) installed.

(continued)

7.51.1 SPP2000 PCI Explanation (continued)

The EPIC's are configured as follows:

			slots
IOLF:	PAC0 EPIC0	PAC4 EPIC4	0,1,2 16,17,18
IOLR:	PAC1 EPIC1	PAC5 EPIC5	4,5,6 20,21,22
IORR:	PAC2 EPIC2	PAC6 EPIC6	8,9,10 24,25,26
IORF:	PAC3 EPIC3	PAC7 EPIC7	12,13,14 28,29,30

\*\*\*NOTE\*\*\*

Logically laid out as 4 slots per EPIC. Physically laid out as 3 slots per EPIC. But when mapping drives must count by PAC and 4 slots per EPIC. So, second slot on EPIC5 is slot 21, as seen above.

7.51.2 SPP2000 SCSI Disk Controller Limitation

It should be understood that although the system supports up to 17 internally mounted disk drives, it is only possible to install 5 SCSI controllers to support them. This is 4 for the two disk trays and one more for the embedded drive.

This is a physical design limitation and cannot be waived.

Each disk tray supports 8 drives, but the tray is divided in half, with a SCSI cable to support each half, meaning that each controller can support between 1 and 4 disk drives.

If only one disk tray is ordered then only two controllers may be installed.

It is possible to utilize more controllers by using externally mounted drives, mounted in the I/O expansion bay.

7.51.3 SPP2000 Potential EIOB Problem

It has been discovered that some EIOB's will not power up in the IORR position. This problem will not be seen on systems configured this way from the factory, as this is tested for before shipment.

The problem could arise during troubleshooting, when another EIOB is moved into this position, for test, or if a system is upgraded in the field.

The problem is that the IORR position is the last quadrant to power up during boot. Because of this, it is possible for the CUB to check power before the EIOB is able to stabilize.

The solution will involve a fix to the CUB. But, in the meantime, it is important to keep this in mind, if a problem is seen in this area.

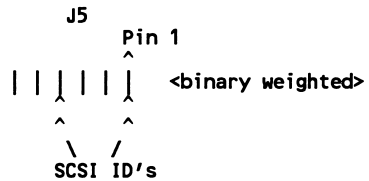
7.51.4 SPP2000 Disk Configuration

There are two internal disk trays supported in the system. Each of these trays will support 8 drives. Both trays are identical, except that the one on the right side is installed at the top of the node and upside down and flipped backwards.

The drives, for both trays are configured as follows, keeping in mind that they will be mirror images. The following will be referenced to the left disk tray:

	TOP			
disk:	sd1	sd3	sd5	sd7
scsi id:	0x4	0x6	0x9	0xB
	BOTTOM			
disk:	sd2	sd4	sd6	sd8
scsi id:	0x5	0x8	0xA	0xC

disk addressing:



## Contents of this issue:

1. Running SX in Command Line Mode on SPP2000
2. SPP2000 FRU's
3. EST User's Guide
4. CXTEST User's Guide
5. Downloading RAID controller firmware to Clariion/HP Nike disk array

## 7.52.1 Running SX in Command Line Mode on SPP2000

SX is system exerciser, to be run at the multi-user level. Normally, this is run in an X environment, using a GUI, but this requires an active network. In some cases this will not be feasible.

In this situation, or when wanting to execute SX remotely, it will be necessary to initiate these from the command line.

To run SX without a GUI, use the -v (short for vt100) option. There is no interactive interface, so you'll have to specify the test and devices on the command line. For instance, `sx -vt diskstress -d /io_diag3` would execute the diskstress suite on the /io\_diag3 filesystem. You can specify multiple devices, but not multiple tests. Below are some common examples of command line options. Some of these aren't limited to the non-GUI interface, but I've included them for completeness.

Examples	Function
<code>sx -t</code>	List the available tests and exit
<code>sx -d</code>	List the available devices and exit
<code>sx -vt diskstress -d /sd1a,/sd2a</code>	Execute diskstress on /sd1a,/sd2a
<code>sx -vt diskstress -l 'fsys*'</code>	Execute diskstress on all file systems.
<code>sx -vt diskstress -d /sd1a -r 30</code>	Same as above, but update status every 30 seconds
<code>sx -R</code>	Print the SX revision
<code>sx -c</code>	Cleanup the execution,
<code>sx -X '-foreground black -background white'</code>	Specify the GUI colors.

## Aborting a command line invoked SX run

When running on an SPP, you'll notice that the process automatically forks and returns, giving your prompt back. This is to force the process onto a known subcomplex to be compatible with builtin subcomplex management functions. One side effect is that you can then no longer CNTRL-C the process and have it clean up appropriately. So, if you want to stop a command line invoked SX run, you'll need to find the PID and send an interrupt signal:

```
puff% ps -e | grep sx
8630 ttys1 0:05 sx
```

(continued)

## 7.52.1 Running SX in Command Line Mode on SPP2000 (continued)

Don't send -9 unless -2 doesn't work. The interrupt single, signal 2, allows SX to clean up and exit gracefully.

## Obtaining a list of selectable tests

To obtain a list of selectable tests, use: `sx -t`  
Test suites

```
fdisksuite: Factory Disk Suite
netsuite: Network Suite
iostress: IO Stress Suite
sppioct: SPP IO Chassis Test
diskstress: Disk Stress Suite
newfsutilsuite: Selected Newfs-mount Suite
```

## External tests

```
unixexec: Unix executable
tpstress: Tape stress test
lrcptest: TCP/IP Client
rtcptest: TCP/IP Server
newfsutil: newfs utility
unmount: Unmount filesystems
diskx: Disk
diskfw: Disk Firmware Revision Check
```

## Internal tests

The argument that you use to select the test is the keyword preceding the ':'.

To obtain a list of selected devices, use: `sx -d`

## Obtaining a list of selectable devices

```
puff% sx -d
disk
/dev/rdisk/c201d4s0
/dev/rdisk/c207d0s0
/dev/rdisk/c207d5s0
diskpaddr
/dev/rdisk/c201d4s0
/dev/rdisk/c207d0s0
/dev/rdisk/c207d5s0
fsys
/io_diag3
/Q3
/dmwork
tape
net
/dev/diag/fddi209
```

## 7.52.2 SPP2000 FRU's

Assembly	Part Number
ENRB.....	410-001465-200
ENRB2.....	410-002465-200
ENRBPB.....	410-002471-200
ENRBPB2.....	410-003471-200
ECUB.....	410-001463-200
ECUB2.....	410-002463-200
EEDPB.....	410-001464-200
CB Panel.....	525-000016-200
AC Filter.....	525-000022-200
AC Filter.....	525-000022-201
AC Filter.....	525-000022-202
AC Filter.....	525-000022-203
AC Filter.....	525-000022-204
MOV Panel.....	525-000023-200
E48VB.....	410-001483-200
E48VB2.....	410-002483-200
NPS.....	200-001061-001
Blower, 48VDC.....	500-001489-200
ECCB.....	410-001492-200
EPB.....	410-002468-200
EPB3 w/180M PCXU.....	550-010226-200
EPAC Kit.....	550-010220-200
ERAC Kit.....	550-010221-200
EMAC Kit.....	550-010222-200
ETAC Kit.....	550-010223-200
EMB.....	410-001469-200
EMBPB.....	410-001484-200
EPMB (80 bit).....	410-002472-200
EPMB (88 bit).....	410-004472-200
Cable/AC.....	605-030020-200
Cable/AC.....	605-030020-201
Cable/AC.....	605-030021-200
Cable/AC.....	605-030022-200
PCI cardcage.....	525-000013-200
EIOB.....	410-001466-200
EIOB2.....	410-002466-200
EIOBPB.....	410-001482-200
Disk Tray.....	525-000012-200
Disk Tray (new).....	550-001018-200
Test Station.....	550-000082-200
LCD Assy.....	550-001496-200
Ultra SCSI.....	220-000058-200
Fast Ethernet.....	220-000057-200
PCI-SCSI3 Adapter.....	220-000058-201
FDDI Duplex splitter cable.....	606-000007-001
CONV, DC/DC 48V/5/12V 70W.....	200-001059-201
CABLE, 12/5V Power, DISK.....	603-040045-200

## 7.52.3 EST User's Guide

EST stands for Excalibur Scan Test. It's job is to allow the user to run different types of scan based test on an Excalibur node.

Path: /spp/bin/est

Current Version: 0.18.1.0

## New features:

- o sci cable test
- o external ram test
- o clear\_log\_file command
- o fixed some bugs related to missing files

## Usage:

```
est [options] [ecub_name] node_number
where
options:
v = print version number, then quit.
f script = run this script file.
l = no log file
o filename = redirect log info to filename
ecub_name = e.g. mu_0000
node_number = what you think it is.
```

## Examples:

```
est 0          # will test node 0
est -v        # print the version number & quit
est -f my_script 0 # will run my_script & then
                 give you the est prompt
```

## Running est:

The main est commands are (in the order they are normally run):

```
r = ring test
d = dc connectivity
a = ac connectivity
g = gate array test
q = quit
```

## Usage:

```
r [ring [mode]]
mode = bypass, id, boundary, or internal
The default is to run all rings in all modes
d [-s -p pat]
-s = step through the test (debug mode)
```

(continued)

## 7.52.3 EST User's Guide (continued)

- p pat = just run pat #  
 g [options] [pattern file]  
 There are a number of options that control how the gate array tests are executed:
- o -r refdes = test arrays with a matching refdes value
  - o -b board = test arrays on that board. board can be either a name or a number
  - o -j jtag\_id = test arrays with a matching jtag\_id
  - o -t type = test an array type (e.g. erac)
  - o -s start = starting pattern number
  - o -e end = ending pattern number
  - o -m max = max number of patterns to run per pattern file
  - o -o level = optimization level, choice of 0, 1, or 2 (2's the best).

By default, the g command will test all arrays. The optimization level controls how much parallelism is used. There are 3 level:

- 0 = no optimization
- 1 = same parts on the same ring are tested together
- 2 = identical rings are tested in parallel

If when doing a parallel test and an error is encountered, the following message may appear:

\*\*\*\* errors found - must switch to serial testing \*\*\*\*

When an error happens, parallel scans into the parts may result in bus conflicts on TDO pins; therefore, est automatically stops using parallel scans when errors are encountered.

## Other Commands

There are additional commands. Some of these include:

clear\_log\_file

Restarts the log file. Previous data sitting in the log file is lost.

print jtag id's.

m [-c | -p [supply] [value]

Margin command for clocks (-c) and power (-p).

When a value is not supplied, the current states are shown. Examples:

m show all margins

(continued)

## 7.52.3 EST User's Guide (continued)

- m -c high go to upper clock
- m -p 1 nom go to nominal on supply 1

There are 4 power supplies. Here's some info pulled from the ecub spec:

Group	Board	Voltage	Name
1	EPB,EMB,EIOB	3.3V	VDD
2	EPB	1.5V	VDDQ
3	ENRB	3.3V	VDD
4	EIOB	5.0V	VCC

ms

Stands for Make Safe. Puts all the parts into a safe state - no bus conflicts.

ram driver receiver file

External ram test

where

driver, receiver = node board refdes

file = path to pattern file

example:

ram 0 pb0l U039P7 0 pb0l U022M5 /path/to/pattern/file

sci driver receiver ring test

SCI cable test

where

driver, receiver = node board

ring = x or y

test = dc, dc\_clk, or ac

example:

sci 0 mb0l 1 mb0l y dc\_clk

script <file>

Runs a file containing est commands.

Print the version info.

## EST Flags

There are a number of flags or options that will control how the above tests operate. To set these options, one should enter 'F' at the est prompt. That will bring up the flags sub menu. To get out, just hit return at the flags prompt and you will return to the main est prompt.

Here are some of the more useful (supported :-), flags stolen right out of the flags menu (note the default settings):

l ... limit patterns is enabled

(continued)

7.52.3 EST User's Guide (continued)

s ... stop on errors is disabled  
A ... limit AC connectivity tests - no limit set  
D ... limit DC connectivity tests - no limit set  
E ... show libcst data is disabled  
P ... pattern p/f data is disabled  
<ret> return to main menu

Some explanations:

l ..... Limits the number of internal array patterns that get executed by the g command. The has the affect of decreasing coverage to approximately 90%. The  
s ..... stops testing when an error is found.  
A # ... Limits ac connectivity testing.  
D # ... Limits dc connectivity testing.  
      Providing a limit <= 0 will result in all patterns being run.  
E ..... shows sdp packets that go across the ethernet. Very useful when debugging est problems.  
P ..... Controls whether or not the pass/fail status of individual patterns are displayed.

EST Output:

All output goes to the screen \*and\* to a log file. The default log file is /spp/data/est.log. Each time est is run, the previous log file is moved to est.log.old.

Using script files:

There are two ways of running script files, either from the command line (-f file) or at the est prompt. When run at the command line, est will execute the est instructions listed and when finished, give the user the est prompt.

The script command will read a file (ascii) for est commands and run those commands. The commands should be:  
1. one per line.  
2. same syntax as when entered at the est prompt.  
3. start with a '#' for comments

To handle the setting of options ('F'), the syntax is  
F option [value]

Example file:

```
# check the rings  
r  
# show pattern pass/fail steps  
F P  
# limit dc testing to 3 patterns  
F D 3  
# do dc testing  
d
```

7.52.4 CXTEST User's Guide

1.0

CxTest is a utility that allows the user to run tests loaded into the Test Controller. Tests can be specified on the command line or a Graphic User Interface can be started to simplify test selection. This help file is split into sections that deal with these two different modes of operation. Cxtest allows use of the Test Controller without being at the system console.

2.0 Command line

The advantage of using the command line over the graphics user interface is that there is a little greater control over the order tests are run and the ability to run the tests from a script. The disadvantage is that the user must be more aware of what tests are installed and how to run them.

The CxTest attempts to be as independent from the contents of the FLASH rom as possible and this has an initial start up penalty. However, CxTest can be invoked in such away that the contents of the FLASH can be saved into a file and that file read at start up. This prevents the FLASH from being read to get all the test information and results in a much faster startup.

To force CxTest to read the FLASH rom at startup, the -r option is needed.

The CxTest by default will try to load the test information needed from a file. The name of the file used is cxtest.load located in the same directory a s the test. A different file can be specified by using the -f option on the command line. See section (4.0) for more details on the details of this file.

When using the command line interface to Cxtest, the command line should be build around the following model.

```
cxtest [loading options] <test> [parameters]  
      [looping/pausing/control] [class/subtest selections] <test>  
      [parameters] [looping/pausing/control] [class/subtest  
      selections] ...etc.
```

each of these part are described below.

2.1 Command Line Test selections

The command line interface understands the following switches to select tests.

```
-mem   : memory diagnostic.  
-io    : io diagnostic.
```

(continued)

7.52.4 CXTEST User's Guide (continued)

- inter : inter node coherency diagnostic.
- intra : intra node coherency diagnostic.
- arch : architectural features diagnostic.
- cpu : cpu diagnostic.

All the arguments between two test selections apply only to first test specified .

As an example if the command line was the following,

```
"cxtest -mem -lt 3 -c 4 -io -c 2"
```

The looping specification only applies to the memory test, which will run the class 4 tests 3 times. The IO test will run the class 2 test only once.

2.2 Command Line looping and pausing

A number of different pausing options are available. Tests can be paused at the beginning of a subtest, end of a subtest, beginning of a class and at the end of a class.

Below is a table of the different pausing options.

- Pause at beginning of subtest -pb
- Pause at end of subtest -pe
- Pause at test start -ps
- Pause at test end -pt

To set the number of times a test is looped on use the -lt <number> option.

```
"cxtest -mem -lt 3 -c 4 -io -c 2"
```

The looping specification only applies to the memory test, which will run the class 4 tests 3 times. The IO test will run the class 2 test only once.

2.3 Command Line Error counts

The error count is used to allow the test to proceed after an error has occurred. If the user want the test to run after a failure, then the error count must be set. To set the error count use the -mt <number> option.

2.4 Command Line Class Selections.

To select an entire class of subtests use the -c <number> option. The user can specify a range of classes by using a hyphen between the numbers. As an example -c 2-4, would run classes 2,3 and 4.

(continued)

7.52.4 CXTEST User's Guide (continued)

The user can also specify a list of classes by placing a "," between the numbers. An example would be -c 5,7,2. This would run class 5 then class 7 and finally class 2.

2.5 Command Line Subtest Selections.

To select a subtests use the -s <number> option. The user can specify a range of subtests by using a hyphen between the numbers. As an example -s 100-150, would run subtests 100 through 150.

The user can also specify a list of subtests by placing a "," between the numbers. An example would be -s 100,150,140. This would run subtest 100 then subtest 150 and finally subtest 140.

2.6 Command Line Parameter Specifications

The user can specify the value of a parameter for a test by using the -pa# <val> option. These options must be placed before the tests which will use them on the command line. As an example

```
cxtest -mem -c 1 -pa4 4 -pa5 2 -c 2
```

would run class one before changing the value of the parameters 4 and 5 and then run class two. The parameters only have effect for the test specified. That is to say if the memory test had been followed by -io -c 1 the value of parameters 4 and 5 would be the defaults for the io tests.

There are twenty parameters in all -pa0 through -pa19.

2.7 Changing Test Controller

The -t <proc\_num> option can be used to change the processor that is running the test controller. This must happen before the test selections ( i.e. -c xx or -s yy). Note also that when doing this there is a 10 second delay to invoke the change. The <proc\_num> must be a valid processor (0-15) and it must be present and available in the system.

3.0 Graphics User Interface.

The Graphics User Interface (GUI) attempts to provide an easy and flexible way to select and run tests. The main screen has six drop down menus. The six menus are, File Menu, Test Menu, Global Parm Menu, Command Menu, System Config Menu, and Help Menu. The menus

contents are present in the sections below.

After the sections on the menus a section on some implementation notes and command line options is presented.

(continued)

## 7.52.4 CXTEST User's Guide (continued)

## 3.1 File Menu

3.1.1 Save Selections. This option allows the select on that have been made for hardware configuration, test selections and parameter settings to be saved and re called later.

3.1.2 Restore Selections. This option allows the selections which have been saved into a file to be restored. This will restore the hardware, test and parameter settings.

3.1.3 Clear Display. Clears the browser of all text. This option has no effect on the log, i.e it does not clear the log file.

3.1.4 Log to File/Close Log File. This option starts logging the information to the following file /spp/data/cxtest.log. The previous file is not saved. No information present on the screen prior to this option being enabled is saved.

3.1.5 Exit This will terminate the CxTest application and return the machine to whatever mode of operation has been selected in the system config menu. The choices are OBP, Test controller interactive, Test controller standalone, Loader and Spin. The OBP is default selection if it has not been changed.

## 3.2 Test Menu

## 3.2.1 Selections

This menu is constructed from the tests that are programmed into the FLASH rom on the ECUB. If a test is not present in the FLASH rom, it will be replaced with a "-" in the menu. The selections presented are based on whether the Test Controller has built a Subtest table and Class table in its tc test\_info\_struct structure. Select the test that you wish to use from this menu. More than one selection can be made. That is to say you can select the memory test first and later select the IO tests, and have each of these executed on the go command. Selection of which test to run within the tests are made via the Class and Subtest menus.

## 3.2.2 Class Menus

In this menu, each of the classes of tests are presented. There are three rows of buttons, one on the left and two on the right. The buttons on the left will select/de-select all the tests in the class. The two rows of buttons on the right are labeled "Selected Subtests" and "Show Parameters".

If the "Show Parameters button is pushed, another screen with the parameters for that class of test is presented and the user has the opportunity to change the value of the parameters.

(continued)

## 7.52.4 CXTEST User's Guide (continued)

If the "Selected Subtests" button is pushed, then a screen with the Subtests for that class is presented. The button will be yellow if a subtest is selected from the subtest menu. The user will also notice that the button on the left hand side will also be yellow. If the button on the left is selected ( yellow) , and the "Subtests Selected" button is not yellow, this means the entire class (all the subtests for that class) have been selected. If both the buttons are yellow it means that a portion of the subtests in that class have been selected.

## 3.2.3 Subtest Menus

The subtests for the selected class are presented in this screen. The buttons on the left hand side of the screen can be toggled with the mouse. If the button is yellow in color, it means the subtest has been selected to run.

## 3.3 Global Parm Menu

## 3.3.1 Looping

CxTest provides the ability to loop on a number of tests by setting the Loop Enable count. The looping parameter is applied on a per test basis and is applied to all the tests. As an example if the user selects two subtests from the intra node test and one class from the memory test, and sets the loop parameter to 3, then the two subtests from the intra node test are done three times , then the class of tests from the memory test are done 3 times.

## 3.3.2 Pausing

A number of different pausing options are selectable. The pause can be selected before a class, after a class, before a subtest and after a subtest. Setting any of these options will cause them to be in effect

for all the selected tests.

## 3.4 Command Menu

## 3.4.1 Go

This selections will cause the application to start the test controller working on the subtest selections that have been made. The subtests are sent to the test controller one at a time so that the application can detect the completion of each subtest. When this selection is made, an large Abort button will appear at the bottom of the screen. Clicking on this while the test is in progress will terminate all test selections, not just the subtest currently running.

The Abort button will disappear while control is returned.

(continued)

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3.4.2 Reset Machine. This option will attempt to reset the machine. This function should be used to regain control of the test controller on the off chance it is not behaving as expected.

3.5 System Config Menu

This menu will have all the nodes that are available as a separate menu item. By selecting a node the user is presented with a screen that displays the hardware on that node as well as the boot selection. Buttons along the left hand side of the screen will toggle all the hardware associated with the button, to the on/off state. If the user wants to select an individual piece of hardware ( say cpu 8 ) then this can be done by clicking on that button. There is a color code associated with the buttons. The code is presented in the legend on the lower left hand side of the screen. The differences reflect the availability of the hardware on the node selected and the other nodes present in the system. By clicking on a item of hardware that is not available, the button will display a different color, than if the hardware is available.

3.6 Help Menu

3.6.1 About. This option will display the version and date stamp of the program.

3.6.2 Contents. This selection will display the help file.

4.0 Command line options and Implementation Notes

The -d option must be used on the command line to start the GUI interface to CxTest.

The CxTest attempts to be as independent from the contents of the FLASH rom as possible and this does have an initial start up penalty. However, CxTest can be invoked in such away that the contents of the FLASH can be saved into a file and that file read at start up. This prevents the FLASH from being read to get all the test information and results in a much faster startup.

To force CxTest to read the FLASH rom at startup, the -r option is needed.

The CxTest by default will try to load the test information needed from a file. The name of the file used is cxtest.load located in the same directory as the test. A different file can be specified by using the -f option on the command line.

```
cxtest.load or a similar file should look like the following.  
intra.class  
intra.subtest  
mem.subtest  
mem.class  
end.
```

(continued)

7.52.4 CXTEST User's Guide (continued)

In order to facilitate creating these files, a perl script was written to make this task less error prone. The script is called struct.pl and requires 4 parameters. The parameters are the test name ( say mem ), the file name of the subtest.s file, the file name of the class.s file, and the name of the file that contains the load MAP for the test. The script will produce both the test.class file and the test.subtest file that is required for the cxtest.load file.

Note that for each test there is a subtest file and class file. These must be consecutive in the file and it is an error to have only one ( i.e. the subtest entry without the class entry).

The following notes are for the implementor.

The subtest file contains the following  
Subtests 0xf01b0130  
100 1 0xf01b2838 1 0 0xf01b06cc Dflush Test  
110 1 0xf01b28ec 30 0 0xf01b06d8 Data/Tag Test I (EMAC 0)

The first line is an identifier and also lets the GUI know where to look for the information in the FLASH. The remainder of the lines in the file are in the following format.

Subtest number; Class number; Entrypoint; Timeout value; Parameter Mask; Text string address; Test name.

Notes

- 1) There should be no blank line at the end of the file.
- 2) These entries must be in the same order as the tests in the FLASH rom.

The class file contains the following.

```
Classes 0xf01b0044  
Entrypoint 0xf01b0000  
Hardware 0xf01b003c 2 1 1 0 0 1 0 0  
0xf01b0010 INTRA3000 - intranode coherency tests  
1 0xf01b006c Intra-Node Coherency subtests  
2 0xf01b008c Parallel Intra-Node Coherency subtests
```

The first 4 lines are catch all, they list the addresses for the class table, the entrypoint, the minimum hardware for the test and its address and finally the address of the test name. The subsequent lines have the following format.

Class number; Address of Class name text string; Class name.

## 7.52.5 Downloading RAID controller firmware to Clariion/HP Nike disk array

1. Verify that at least two of the following slots in the disk array contain a functioning disk module: A0, B0, C0, A3 (marked with \* below)

A		*		x power
B		*		x service
C	1	*	0	
D				
E				

A	*		
B			
C	3	2	
D			
E			

2. Copy the firmware file to your working directory on the disk array's host

3. Download the firmware file using scsiutil

```
% scsiutil
su 1> open <node>:<controller>:<target>:<lun>
su 2> download_firmware <microcode file>
su 3> quit
```

You will need to substitute the correct node, controller, target and lun numbers. If the disk array contains two SPs you should be able to use either SP's target ID. The lun number is ignored by the disk array, but you should use a target/lun combination that actually exists. For example, if the disk array is connected to node 0, controller 3, and has an SP with a target ID of 2 which has a lun 0, you could use the following open command: open 0:3:2:0.

4. Bring up the disk array with the new microcode

- i) Observe the "busy" indicator LEDs on the disk array disk modules and verify that the disk array has stopped activity
- ii) Shutdown the os
- iii) Power cycle the disk array
- iv) When the disk array comes back up, use GridMgr to verify that the new firmware version is present



System log files  
Memory log files

\* several options ; some very useful commands are:

```
MEMRPT      Display contents of Memory Log File.
MEMCLR      Clears MEMLOGP log file.
SUMMARIZE   Summarize contents of a system log file
DISPLAYLOG  Display I/O entries as information is logged
PURGESYSLOG Delete from disc the specified system error logs
STATUS      Report on status of all system log files
```

```
borgers@ucn01(7) csh>su
Password:
```

```
# sysdiag
*****
***** ONLINE DIAGNOSTIC SYSTEM *****
*****
***** (C) Copyright Hewlett Packard Co. 1987, 1989, 1990 *****
***** All Rights Reserved *****
*****
***** DUI Version A.02.18 *****
***** Diagnostic Monitor Version A.02.19 *****
*****
*****
```

Type "HELP" for assistance.

```
DUI >logtool
*****
***** LOGTOOL *****
*****
***** (C) Copyright Hewlett Packard Co. 1989,90 *****
***** All Rights Reserved. *****
*****
***** HP shall not be liable for any damages resulting *****
***** from the use of this program. *****
*****
***** Version A.02.05 *****
*****
*****
```

Welcome, Today is TUE, FEB 21, 1995 at 11:24 AM

LOGTOOL initializing, please wait ...

```
LOGTOOL>memrpt
MEMORY ERROR LOGGING REPORT
```

```
SYSTEM START TIME -- FRI, FEB 10, 1995, 3:54 PM
LAST ERROR CHECK TIME -- TUE, FEB 21, 1995, 10:58 AM
LOGGING TIME INTERVAL -- 3600 seconds
```

MEMORY CONTROLLER on mother board:

```
-----
|SLOT| CHIP | BIT | 1 ST ERROR | LAST ERROR | ERROR | LOG BY
|
| NUM| ID | NUM | DETECTED AT | DETECTED AT | COUNT | PROCESS
|
-----
```

\*\*\* NO SINGLE BIT ERRORS HAVE BEEN DETECTED \*\*\*

\*\*\* NO MULTI BIT ERRORS HAVE BEEN DETECTED \*\*\*

\*\*\* NO FATAL ERRORS HAVE BEEN DETECTED \*\*\*

\*\*\* NO UNKNOWN ERRORS HAVE BEEN DETECTED \*\*\*

LOGTOOL>status

System Log Files:

=====

LOG0239 LOG0240\*

LOGTOOL>summarize log=239/240

SUMMARY SYSTEM ERROR LOG REPORT

=====

Report Date/Time: TUE, FEB 21, 1995 - 11:26 AM

TYPE	DESCRIPTION	COUNT
=====	=====	=====
150	DIAGNOSTICS	6
=====	=====	=====

Total records checked = 6. Records selected = 6.

\*\*\*\*\*

LOGTOOL>displaylog pdev=2.0.7.5.0.0

Reading log file layout formats - Please wait ...

\*\*\*\*\*

to purge old syslog files, that are listed with the "status" command, type:

purgesyslog log=xxx/yyy noverify

```
xxx= starting log file i.e. 000 (ommit leading 0)
yyy= ending log file i.e. 238 ( , , )
```