Exemplar Diagnostics V3.1 Release Notice

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Release Notes

Utility Documentation

Installing Exemplar Diagnostics V3.1

Release Notes

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1. Overview

This document is intended to enhance and clarify the existing permanent documentation for this product with information that is up-to-the minute, or was developed too late for inclusion in the permanent documentation. Always refer to this release notice before reporting problems with the Exemplar Diagnostics V3.1. Fixes and workarounds are listed here that may save you time in rediscovering known problems.

The remaining sections in this document describe the contents of this release:

- Section 2 describes the contents of this distribution.
- Section 3 contains notes and warnings about the use of the software.
- Section 4 contains enhancements to the previous functionality.
- Section 5 describes fixes for previously reported problems.
- Section 6 describes known software problems.
- Section 7 describes known hardware problems.
- Section 8 describes known documentation problems.
- Section 9 contains descriptions of the new documentation.
- Section 10 in chapter 2 contains the documentation for software products that are still missing their manpages.

Appendix A contains instructions for installing this diagnostic release on the Test Station.

2. Contents of this Distribution

The distribution package for this release of Exemplar Diagnostics V3.1 consists of this document and the software. The specific contents of the software and documentation distribution are described in the following tables:

Table 1: Exemplar Diagnostics Software

Item	Quantity	Part Number	Description
1.	1	B5655-10029	Exemplar Diagnostics V3.1

Table 2: Exemplar Diagnostics Documentation

Item	Quantity	Part Number	Description
1.	1	B5655-90034	Exemplar Diagnostics Release Notice

3. Notes and Warnings

This release requires that HP-UX 10.20 OS be running on the test station. Supports the S-class production, X-class EA, and X-class FT systems.

(1) The diagnostic portion of the LIF header maintained by OBP is now released as part of the diagnostic package. This change requires the new 3.1 version of OBP to function correctly.

(2) The setup procedure for the test station is different. Please refer to Appendix A for further details.

WARNING:

(3) Do NOT perform any ETAC CSR scan operations while the system is running. Doing so may casue HPMCs and crash the system.

All products in the following /spp subdirectories are overwritten when the Exemplar Diagnostics are installed: bin, data, est, etc, firmware, man, scripts, and unsupported. If any files in this directory have been customized they must first be saved and then restored after completion of the install.

4. Enhancements

This is the S-Class production/X-class EA release of the Exemplar Diagnostics V3.1. Enhancements to the software provided by this release are broken down into two categories: test station utilities and test software. The following subsections identify the enhancements to the two groups of software.

4.1 Test Station Utilities

4.1.1 DB_RING_FILE/part_ids

Added support for the EMAC5 and EPAC4 gate arrays.

Added support for the EPVB boards.

4.1.2 do_dimm_reset

A new script that forces the reinitialization of the DIMMs. This is the work-around for the POST hardware DIMM deconfiguration problem following a power-up event.

4.1.3 event_logger

Updated for the OS putting the CPU number into the log_event structure. Supports both this new format as well as the old format.

Modified code to determine the timezone information and generate the correct time.

4.1.4 est

The following changes have been made to this product:

- o supports EMAC5 and EPAC4 gate arrays
- o fixed all memory leak problems
- o greatly improved the load and run times

4.1.5 fw_init

This is a new script that is used to configure the firmware and NVRAM. It performs the following functions:

- o downloads JTAG firmware
- o downloads the new diagnostic LIF header, **diaglifhdr.fw**
- o runs the **tc_init** utility

4.1.6 load_eprom

Added supported to download the new diagnostic LIF header to flash memory on the ECUB. This uses the -l option.

4.1.7 soft_decode

This new script decodes single-bit memory ECC errors to the actual failing SDRAM/bit/pin. This information can be input into the quasar database. This script prompts the user for all required information: SDRAM size, syndrome code, row number, and the address.

4.1.8 stop_on_hard

Now supports the "all" option.

4.1.9 tc_interactive

This is a new script that enables the "Interactive" mode for the test_controller. After executing this script, a **do_reset** is required.

4.1.10 manpages

Generated manpages for the following products: **tc_interactive, set_nvram_clk, sppconsole, inter3000,** and **test_controller.**

4.2.1 /spp/firmware/diaglifhdr.fw

This is the new diagnostic LIF header that is loaded into flash memory for OBP to use. Use of this header requires the latest versions of all firmware including OBP, POST, test_controller, and all the tests.

4.2.2 /spp/scripts/dl-diags

This has been updated to use the new diagnostic LIF header information.

4.2.3 arch3000

Modified all subtests so they would run on multiple CPUs.

Value of parameter #0 was changed from 0x200000 to 0x40000.

4.2.4 inter3000

Added auto-configuration so the user is not required to select CPUs or EMBs.

This test should only be run via the **cxtest** interface as this makes the setup and start procedures much simpler.

4.2.5 io3000

Added EPIC3 and EIOB4 support.

4.2.6 mem3000

Modified the class 3 subtest so multiple CPUs can be used in the testing. Total execution time for all subtests on a 16-CPU/4GB system is 81 minutes.

4.2.7 POST

Added support for EMAC5. EPAC4, and EVPBs.

Added the parallel initialization of the memory. Each EMB is initialized by a single CPU in parallel with the other EMBs.

Added code that optionally functionally verifies the entire dcache plus the first few lines of the icache (those used by the idle loop and main memory initialization).

Added code to use the selftest status bytes in NVRAM.

This version also supports Lancelot systems.

Now reads the node id from the ENRB cop chip.

Now prints the locations of any 80-bit DIMMs found in a node if both 80-bit and 88--bit DIMMs are detected.

4.2.8 tc_init

This utility was modified to initialize all of the node information data structure in NVRAM.

4.2.9 test_controller

Added to determine whether 64MB DIMMs are present in the system and adjust the test timeouts accordingly.

Modified code so that ECC and tag information can be displayed for other nodes by prompting for a 40-bit address.

The monarch is now displayed with the banner.

Now defaults the node selections to all available nodes as set up by the **tc_init** in NVRAM. Makes the setup of the inter3000 test simple a case of selected which subtests to run.

5. Fixes

This is the initial release of the Exemplar Diagnostics V3.1. Problem corrections to the software provided by this release is broken down into two categories: test station utilities and test software. The following subsections identify the problems fixed to the two groups of software.

5.1 Test Station Utility Fixes

5.1.1 ccmd

Modified code so that if POST does not complete initialization within 3 minutes, an error message is displayed and scan processing continues. Prevents scan from being hung because POST didn't complete.

Prints a warning message if a corrupted scan ring is detected.

5.1.2 cxtest

Fixed problem with the screen still being black when the screen saver is deactivated. This was a bug brought on by HP-UX 10.20.

5.1.3 fix_boot_vector

This script now accepts a node number (default is 0).

5.1.4 load_eprom

The problem using EPAC 0 has been fixed.

5.1.5 pce_util

Fixed the temperature start problem.

5.1.6 scan related problems

Added a check during the scan connect operation so that if the scan engine is locked and the previous "owner" does not exist, then the connect operation continues.

Added initialization of the IR (instruction ring) for all core logic scan accesses. This prevents some data corruption problems.

Modified code to repeat the broadcast message to a node if the first one failed.

Decreased the occurrence of the JTAG -3 error.

5.1.7 xconfig

Modified code so this utility starts correctly when node 0 is not present.

Fixed the problems with the wrong EPIC(s) being deconfigured.

Fixed problem with the screen still being black when the screen saver is deactivated. This was a bug brought on by HP-UX 10.20.

5.1.8 /spp/scripts/inst scripts

Modified the **inst.nfsconf** script so the test station will always come up in standalone mode.

Modified the **inst.hosts** file so that only LAN1 (the Dart bus) entries are initialized. All global net entries are not modified.

Modified the **ts.install** script so that only LAN1 (the Dart bus) information is initialized. Also removed all interactive prompts to simplify the setup for manufacturing and field service.

Modified the **inst.sppconsole** script to allow arguments to be passed to the sppconsole program.

5.1.9 /users/sppuser/.cshrc

Fixed the initialization of the MANPATH environment variable.

5.1.10 /users/sppuser/.kshrc

Fixed the initialization of the MANPATH environment variable.

5.2 Test Software Fixes

5.2.1 arch3000

Fixed some minor problems that prevented 3 subtests from being executed via the **cxtest** GUI.

5.2.2 intra3000

Modified so no subtests run on the monarch.

5.2.3 mem3000

Modified the code so that all 64-bits of data are compared and verified. Previously only the lower 32-bits were being verified.

5.2.4 POST

Sets the global error enable bit in the ETAC ring configuration CSR only if a multi-node system is detected.

Increased the multi-node timeout value from 15 to 45 seconds.

Now set bits 58 and 59 in the EMAC error configuration 0 CSR to zero.

Fixed the problem of software deconfiguring 64-Mbit DIMMs to 16-Mbit.

Fixed the problem where 64-Mbit DIMMs hardware deconfigured to 16-Mbits were incorrectly marked as software deconfigured.

If the number of nodes value (in the nodemap structure in NVRAM) is either 0 or 1, then multi-node initialization is skipped.

The ETAC3_QSIZE_LIM field is now set to 0x107 instead of 0x120.

The ETAC_CHIP_CONFIG_CSR table entry is now set to 0x54 instead of 0x21.

5.2.5 test_controller

Modified to clear the current test name and error message fields before logging a new failure to prevent the information from being garbaged by the previous entry.

Modified code to save and restore the SAR value (shift count) when processing interrupts. Fixes mem3000 false error problems in subtest 110 and 130 (plus others most likely).

Made many fixes to the ethernet interface (SONIC) driver. These are needed for execution the inter3000 test.

Modified code so the console is MP safe, i.e. messages from multiple CPUs going to the console simultaneously are no longer interspersed with one another.

Modified code to print whether errors were detected or not with the "Execution Complete" message. The user no longer needs to use option 8 (CPU Summary Display) to determine if any errors occurred.

5.2.6 uscsi_rom.fw

Version 6 is now the default release for this firmware.

6. Known Software Problems

This section describes all the software problems that are known to exist in the Exemplar Diagnostics V3.1.

6.1 Test Station Utilities

6.1.1 sppconsole

The cut-and-paste operation will lose characters when more than one line is attempted to be pasted into the window.

6.2 Test Software

6.2.1 intra3000

This test can only be executed on node 0. It will fail if executed on any other node due to a software problem.

6.2.2 mem3000

There is only one known hardware test configuration requirements that must be met for this test to execute correctly, and this is:

- only 1 CPU per EPAC can be used for testing

7. Known Hardware Problems

None.

8. Known Documentation Problems

There are no known documentation problems.

9. New Documentation

There is no new documentation for this product.

Utility Documentation

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10. Overview

This chapter contains the documentation for those products that do not yet have manpage.

10.1 Test Station Utilities

10.1.1 cbus

This utility performs read, write, and erase operations on the core logic address space. All addresses are 32-bit addresses in hexadecimal format. The format of this command is shown below:

Usage: cbus -n <#> -p <#> [-r <addr> | -e <addr> | -w <addr> <data>}

where:

-n <#> is the node to use

-p <#> is the EPAC to use

-r <addr> reads and displays the data at the specified address

-e <addr> erases the sector at the specified address

-w <addr> <data> writes the 32-bit data value into the specified address

For example:

```
$ /spp/unsupported/cbus -n 0 -p 0 -r 0xf0d00000
0xfebfffc
```

10.1.2 ecc_calc

This ecc calculator will accept hex input and calculate the ecc value for that data. It is presently written to work on full 88-bit memory lines but can be used for single node (80-bit) data as well. All you have to do is enter 0s for the last byte of data and it will give you the correct single node value.

An example of the use of this script is shown below.

```
$ ecc_calc
```

```
enter data[8:87]: 0123456789
 ecc_low_out = 'h 2c
 ecc_high_out = 'h 69
 ecc_out data[0:7] = 'h 45
enter data[8:87]:
```

To exit this utility, type 'q'.

10.1.3 fix_boot_vector

This sppdsh script restores the four words at the beginning of NVRAM to point to POST. These four words are used by the ENTRY firmware to determine which process was executing last when an HPMC, TOC, or reset occurs.

Installing Exemplar Diagnostics V3.1 A

1. Installation procedure

Step 1: Installing diagnostics from tape to the Test Station

Login as root and shut down the test station to single-user mode via the following command:

```
# /etc/shutdown now
```

If not already running, start the *swagentd* daemon by entering the following command:

```
# /usr/sbin/swagentd
```

Insert the DAT cartridge into the DAT drive on the test station.

Use the *swinstall* command to install the Exemplar diagnostics on the test station. Enter the following command:

```
# /usr/sbin/swinstall -x reinstall=true -s /dev/rmt/0m 1-ExDiags 1-
OBP 1-PDC_ENTRY
```

This should take about 35 minutes to complete.

Now rewind the tape by entering the following command:

```
# /usr/bin/mt -t /dev/rmt/0m rew
```

Step 2: After diagnostics are installed on the Test Station

Execute these commands to setup up the diagnostic environment of the Test Station:

```
# cd /spp/scripts/inst
# ./ts.install
```

This *ts.install* script requires no user interaction and initializes the test station for diagnostic purposes (including LAN1).

Now reboot the Test Station using the following command:

```
# /etc/reboot
```

Step 3: After the Test Station is booted

Login in as *sppuser* to start up the diagnostic environment, and boot the system to the OBP "[...] ok " prompt.

Download the new OBP and ENTRY firmware (revision 3.1) into each node. The commands are in the **/spp/scripts/dl-diags** file on the test station.

Login as root in a test station window and execute the following script which downloads the JTAG firmware, new diagnostic LIF header, runs the **tc_init** utility, and all diagnostic firmware:

```
# /spp/scripts/fw_init
```

Now power cycle the node(s) to activate the new JTAG firmware and all firmware.

At this point the Test Station and the node(s) are ready for use.