Field Testing BIG-IP® Hardware

VIPRION® B4300/B4400 Blades

Table of Contents

The End-User Diagnostic (EUD)

About the End-User Diagnostic (EUD)

The End-User Diagnostic (EUD) is a compilation of tests for checking the integrity of F5® hardware. The EUD exists independently from the host software and is available as a separate download. You should run the EUD only when you are advised to by your F5 Support representative.

End-User Diagnostic Notes

Caution: *You should not run these test tools on a system that is actively processing traffic in a production environment. These tests stop the unit and prevent it from processing traffic. Run this tool only if you are instructed to by an F5® Support representative or if you are verifying a hardware issue with a unit that is already removed from production.*

Caution: *Before you run these tests, you should disconnect all network cables from the system. Any cables connected to the system during the tests could cause false-positive results.*

Caution: *On the VIPRION® platform, you can only run one instance of the EUD at a time. You cannot start multiple instances in the chassis.*

Caution: *On the VIPRION platform, you must only run the EUD from the local console of the blade being tested.*

Supported platforms

This table includes the platforms supported by this version of the EUD.

Platform name	Platform ID
VIPRION® B4300 Blade	A108
VIPRION B4340N Blade	A110
VIPRION B4450 Blade	A114
VIPRION 4480 Chassis	J102, J103
VIPRION 4800 Chassis	S100, S101

Downloading the EUD Files

Deciding which files to download

There are several file types available from the F5® download site `http://downloads.f5.com` for the EUD.

File Name	Description
IM file	The IM file is a self-extracting installation file. You can `scp` this file directly to the VIPRION® system and use it to upgrade the EUD on the system or load a USB flash drive.
MD5 file	There is a corresponding MD5 file for each IM file that you download. Use the MD5 file to verify the integrity of the file you download.
Readme-EUD.txt	This file includes details about the release, such as supported platforms.

Determining the EUD version installed on the system

Perform this task before you download update files to determine the EUD version installed on your system, or to verify that the installation of a new version was successful.

To run the `eud_info` command and determine the EUD version installed on your system:

1. Log on to the command line of the system using an account with root access.
2. Verify the EUD version installed on your system.
   `eud_info`

The version number of the EUD installed on the system displays.

Downloading the EUD IM file from F5 Networks

We recommend that you obtain the latest version of the EUD that is supported on your platform from the F5® download site (`http://downloads.f5.com`) before you run these tests.

1. Log on to `http://downloads.f5.com/` and click **Find a Download**.
2. In the **Hardware-Specific** area, click **Platform / EUD**.
3. Select your platform from the list.
4. Click the name of the release with the most recent date.
   You must accept the software terms and conditions before you can proceed.
5. Click the file name `<file_name>.im` to start the download.
   The `<file_name>` consists of the platform family and the build number.

Note: You should copy the IM file to `/var/tmp` on the system you intend to update.

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6. Download the corresponding checksum file.

The corresponding checksum file has the same name as the IM file, except that `.md5` is the file extension.

After the download is complete, you should verify the integrity of the file by checking the MD5 checksum.

Verifying, Installing, and Loading the EUD Files

After you download the EUD files

There are several actions you can take after you download the EUD files.

Task	Description
Use the MD5 checksum to verify the files	Use the MD5 file to verify the integrity of the file you download.
Install the EUD from the IM installation package	Use secure copy (`scp`) to copy the IM file directly to the BIG-IP system and use the IM file to upgrade the EUD on the system.
Load the EUD onto a USB flash drive	Load the EUD onto a USB flash drive and run the EUD from the flash drive.

Using the MD5 checksum to check the integrity of the download

You can perform this task after you download update files and their corresponding `.md5` files from the F5® downloads site (`http://downloads.f5.com`).

Verify the MD5 checksum on each file you download using the `md5sum` command. Use the output to verify the integrity of the downloaded file.

1. Log on to the command line of the system using an account with root access.
2. Verify the integrity of the downloaded file, where *<file_name>*.md5 is the name of the `.md5` file you downloaded.
   md5sum -c <file_name>.md5

If the output is OK, the download was successful. If not, you should download the file again and repeat the process.

Installing the EUD from an IM installation package

You should copy the IM file to `/var/tmp` on the system you intend to update before you begin this procedure.

Installing the EUD from an IM file is one method that you can use to get the latest EUD installed on your hardware.

1. Log on to the command line of the system using an account with root access.
2. Install the EUD, where *<file_name>*.im is the name of the file you downloaded.
   im <file_name>.im

The latest EUD is installed on your hardware.

Loading the EUD onto a USB flash drive

You can run the EUD by booting the system from a USB flash drive loaded with the EUD software. Use this procedure to load the EUD onto a USB flash drive.

1. Log on to the command line of the system using an account with root access.
2. Download the IM file to `/tmp/eud`.
3. Loopback mount the IM file, where `<file_name>` is the name of the file you downloaded.
   ```
   mkdir /tmp/eud; mount -o ro,loop <file_name>.im /tmp/eud
   ```
4. Insert a USB mass storage device into the platform on which you mounted the IM file.
5. Run the `mkdisk` utility.
   ```
   cd /tmp/eud; ./mkdisk
   ```
   Follow the prompts to loads the EUD onto the USB flash drive.

After the installation is complete, remove the USB flash drive from the VIPRION® system.

Running the EUD Tests

Running the EUD tests

There are several options for running the EUD tests.

Task	Description
Boot the EUD from a USB flash drive	Plug your EUD USB flash drive into the VIPRION® system and boot to the EUD.
Boot the EUD from a USB DVD drive	Plug your USB DVD drive into the BIG-IP system and boot to the EUD.
Run the EUD from the system boot menu	As the system is booting, select the EUD option from the boot menu. *Important: On VIPRION systems, the boot menu no longer displays by default. You must press the Esc key during the countdown to display the boot menu.*

Booting the EUD from a USB flash drive

You must load the EUD image onto the USB flash drive to run the EUD from the drive. You must have a console connected to the blade you want to test. You can only run one instance of EUD at a time.

You can use this method to boot the EUD from a USB flash drive.

1. If the blade that you want to test is powered on, shut it down.

2. Plug in the USB flash drive that holds the EUD image into the USB port on the blade you want to test.

3. Power on the blade to boot the EUD.
   When the EUD starts, the EUD menu displays on the console.

Booting the EUD from a USB CD/DVD drive

You must create a disk using the EUD ISO image before you can boot the EUD from a USB CD/DVD drive. You must have a console connected to the blade you want to test. You can only run one instance of the EUD at a time.

You can use this method to boot the EUD from an externally-powered USB CD/DVD drive.

1. If the blade you want to test is powered on, shut it down.

2. Plug the USB CD/DVD drive into the USB port on the blade you want to test and insert the EUD CD/DVD.

3. Power on the blade to boot the EUD.
   When the EUD starts, the EUD menu displays on the console.

Starting the EUD from the boot menu

You should install the latest version of the EUD before you boot the EUD from the boot (grub) menu. You must have a console connected to the blade that you want to test.

Important: *On VIPRION® systems, the boot menu no longer displays by default. You must press the Esc key during the countdown to display the boot menu.*

You can use this method to boot the EUD installed on a blade.

1. If the blade that you want to test is powered on, halt it.
2. Power on the blade.
3. As the blade boots, press Esc when you see the countdown.
   The boot menu displays.

4. Use the arrow keys to highlight **End User Diagnostics** and press Enter.
   When the EUD starts, the EUD menu displays on the console.

EUD Tests for B4300 Series Blades

1 Blade Report

The Blade Report provides comprehensive details about all blade hardware components, including:

- Serial number
- F5® part number
- Host information
- BIOS version
- Firmware version
- Bootloader version
- Processor, processor version
- Memory in each socket
- Total memory
- Storage drives

When you start the test, you see this message:

```
Executing System Report .....
Test Begin: Blade Report
```

After the report completes successfully, a summary of blade information displays, and you see this message:

```
Test Complete: Blade Report: PASSED
```

2 Sensor Report

This sensor report performs the hardware sensor test on both the motherboard and the switchboard, if applicable, and displays this information:

- Host temperatures
- Host voltages
- Mezzanine temperature
- Mezzanine voltages
- CPU temperature
- CPU fan speeds
- SuperIO temperatures

When you start the test, you see this message:

```
Executing Sensor Report .....
Test Begin: Sensor Report
Test Begin: CCC I2C Sensor Test
```

After the report completes successfully, you see this message:

```
Test Complete: Host I2C Sensor Test: PASSED
Test Complete: Sensor Report: PASSED
```

3 SFP/SFP+ Report

This test checks for interface modules installed in the system and reports this information about those modules:

- Vendor name
- Part number
- Revision
- Media type

When you start the test, you see this message:

```
Executing SFP/SFP+ Report ..........
Test Begin: SFP/SFP+ Report
```

After the report completes successfully, you see this message:

```
Test Complete: SFP/SFP+ Report: PASSED
```

4 Verify I2C

This test verifies any Inter-Integrated Circuit (I2C) Bus protocol devices in the system.

When you start the test, you see this message:

```
Executing Verify I2C ...
Test Begin: I2C Test
Test Begin: Host I2C Test
```

After the test completes successfully, you see this message:

```
Test Complete: I2C Test: PASSED
```

5 Verify PCIe Test

The Verify PCIe test reports about and verifies the PCI/PCIe devices on the PCI bus.

This test verifies these devices:

- Host PCIe devices

- PCIe device widths
- PIC
- SATA controller
- Host bridge
- System peripheral
- ISA bridge
- SMBus controller
- Network and computing encryption device
- MIPS
- USB controller
- PCI bridge
- Ethernet controller

When you start the test, you see this message:

```
Executing Verify PCIe Devices ...
Test Begin: PCI Test
Test Begin: PCIe Test
Test Begin: verify Host PCIe
```

After the test completes successfully, you see the following message:

```
Test Complete: verify PCIe device bus widths: PASSED
Test Complete: PCI Test: PASSED
```

6 ECC Status Test

This test checks the ECC memory for error correction codes and reports single-bit or multi-bit errors.

When you start the test, you see this message:

```
Executing ECC Status Test ...
Test Begin: ECC Status Test
```

After the test completes successfully, you see this message:

```
Test Complete: ECC Status Test: PASSED
```

7 Internal Packet Path Test

This test uses the internal packet path to test the Ethernet interfaces in the system. This test sends known payload packets from the mainboard Ethernet interface back to the mezzanine Ethernet interface. The test checks for the correct receive order and payload. The test then checks the statistics at the switchboard and HSB. It takes approximately two minutes to run the internal packet path test.

When you start the test, you see this message:

```
Executing Internal Packet Path Test .......................................
Test Begin: Internal Packet Path Test
Test Begin: Front To Rear Switch Test
```

After the test completes successfully, you see this message:

```
Test Complete: Internal Packet Path Test: PASSED
```

8 Internal Loopback Test

This test sets the front interfaces into PHY or MAC loopback mode and runs packets through the path from the switch chips.

When you start the test, you see this message:

```
Executing Internal Loopback Test .....................
    Placing HSB at 0xfbb00004 in eDAG loopback mode
    Placing HSB at 0xf7a00004 in eDAG loopback mode
Test Begin: Internal Loopback Test
```

After the test completes successfully, you see this message:

```
Test Complete: Internal Loopback Test: PASSED
```

9 SSL Test

This test verifies the integrity of the SSL hardware installed in the system.

When you start the test, you see this message:

```
Executing SSL Test ..................
```

After the test completes successfully, you see this message:

```
Test Complete: SSL Test: PASSED
```

10 SMART Test

The Self-Monitoring Analysis and Reporting Technology (SMART) test verifies the internal status of a storage drive, including this information:

• Read error rate

- Start/Stop count
- Re-allocated sector count
- Power on hours count
- Spin-up retry count
- Drive calibration retry count
- Drive power cycle count
- Offline scan uncorrectable sector count
- Ultra ATA CRC error rate and multi-zone error rate

When you start the test, you see this message:

```
Executing SMART Test ...
Test Begin: SMART Test
```

After the test completes successfully, you see this message:

```
Test Complete: SMART Test: PASSED
```

11 Mezzanine RAM Report

This test reports information about the RAM installed on the mezzanine.

When you start the test, you see this message:

```
Executing Mezzanine RAM Report ...
Test Begin: Mezzanine RAM Report
```

After the report completes successfully, you see this message:

```
Test Complete: Mezzanine RAM Report: PASSED
```

12 Mezzanine RAM Test

This test verifies the integrity of the RAM installed on the mezzanine. This test takes approximately 15 minutes to complete.

When you start the test, you see this message:

```
Executing Mezzanine RAM Test (15 min)
......................................................................
.......................................................
.......................................................
Test Begin: Mezzanine RAM Test
```

After the test completes successfully, you see this message:

```
Test Complete: Mezzanine RAM Test: PASSED
```

13 Mezzanine Packet Test

The Mezzanine Packet Test treats the High-Speed Bridge (HSB) as a standard Ethernet NIC card. When the NIC module/driver is loaded, a loop test is performed by sending and receiving network packets over the HSB network interface. The number of packets is sent to and from one HiGig interface to another HiGig interface.

When you start the test, you see this message:

```
Executing Mezzanine Packet Test .............
Test Begin: Mezzanine Packet test
```

After the test completes successfully, you see the following message:

```
Test Complete: Mezzanine Packet Test: PASSED
```

14 System RAM Test

The System RAM Test performs these SDRAM data bus and address bus tests:

- Stuck address test
- Random value test
- XOR comparison test
- SUB comparison test
- MUL comparison test
- DIV comparison test
- OR comparison test
- AND comparison test
- Sequential increment test

All available Linux user RAM is tested.

Caution: *This test might take several hours to complete depending on the amount of memory available to test.*

When you start the test, you see this message:

```
Executing System RAM Test (1.5 hrs) ..To quit test, type 'q [Enter]'
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```

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Test Begin: System RAM Test
```

After the test completes successfully, you see this message:

```
Test Complete: System RAM Test: PASSED
```

20 Chassis Report

This report provides comprehensive details about chassis components, including this information:

- Chassis type
- Chassis revision
- Chassis serial number
- 400 level part number
- Fan tray firmware version
- Fan tray bootloader version
- Fan tray serial number
- LCD firmware version
- System ID firmware version
- System ID bootloader
- System ID serial number
- System ID board version
- BIG-IP® registration key

When you start the test, you see this message:

```
Executing Chassis Report .........
Test Begin: Chassis Report
```

After the report completes successfully, a summary of chassis information displays, and you see this message:

```
Test Complete: Chassis Report: PASSED
```

21 Power Supply Test

This test reports the status of the power supplies installed in the system.

When you start the test, you see this message:

```
Executing Power Supply Test ...
Test Begin: Power Supply Test
```

After the test completes successfully, you see this message:

```
Test Complete: Power Supply Test: PASSED
```

22 Fan Tray Report

This report describes the status of the fans in the system.

When you start the test, you see this message:

```
Executing Fan Tray Report ...
Test Begin: Fan Tray Report
```

After the report completes successfully, you see this message:

```
Test Complete: Fan Tray Report: PASSED
```

23 Chassis Sensor Report

The Chassis Sensor report performs the hardware sensor test on the chassis, including this information:

- Type of chassis
- Internal PIC temperature
- External PIC temperature
- PIC voltage

When you start the test, you see this message:

```
Executing Chassis Sensor Report ...
Test Begin: Chassis Sensor Report
```

After the report completes successfully, you see this message:

```
Test Complete: Chassis Sensor Report: PASSED
```

24 Chassis Data Plane Test (30 min)

The chassis data plane test validates the chassis backplane by sending Ethernet frames from blade to blade across the backplane.

Important: *F5® recommends running chassis-level tests on only one blade at a time; otherwise, these tests might fail if other blades are running chassis-level tests or passing traffic.*

Before you can run this test on the chassis:

- At least two blades are required (the test scales up to 8 blades).
- All blades installed in the chassis must be booted into EUD and sitting idle at the EUD menu.

Start the test on only one of the blades running EUD; the duration of the test is approximately two minutes per blade. Once the test has started, do not attempt to initiate tests from any other blades installed in the chassis.

When you start the test, you see this message:

```
Executing Chassis Data Plane Test (30 min) ..

Please make sure all the other blades running EUD
in the chassis are sitting idle.
Otherwise unexpected results may occur.
............................................
Test Begin: Chassis Data Plane Test
```

After the test completes successfully, you see this message:

```
Test Complete: Chassis Data Plane Test: PASSED
```

26 LED Test (Interactive)

This test sets each of the possible LED status levels and prompts you to verify the corresponding color and operation. You can perform this test from the console or LCD panel.

When you start the test, you see this message:

```
Test Begin: LED Test
```

After the test completes successfully, you see this message:

```
Test Complete: Port LED Test: PASSED
```

27 Front Bezel LED/LCD Test (Interactive)

This test verifies the functionality of the front panel. The functionality tested includes Status LED, Alarm LED, LCD serial communications, pixels, and keys. To successfully perform these tests you need access to the LCD panel on the chassis you want to test.

The first part of this test prompts you to observe the color of the Status and Alarm LEDs.

```
Test Begin: Front Bezel LCD/LED Test
Test Begin: Front Bezel LED Test
Front Bezel LEDs:
   Is Front Bezel STATUS LED Orange? (y/n)
   Is Front Bezel STATUS LED Green? (y/n)
   Is Front Bezel STATUS LED Off? (y/n)
   Is Front Bezel ALARM LED Orange? (y/n)
   Is Front Bezel ALARM LED Red? (y/n)
   Is Front Bezel ALARM LED Off? (y/n)
Test Complete: Front Bezel LED Test: PASSED
```

The second part of this test prompts you to interact with the front panel LCD. Use the LCD panel to view the interactive results. Some tests, such as the LCD pixel tests, begin immediately after you press a key to begin the test. The first test checks the viability of the key pad backlight and the LCD backlight. To complete these tests successfully, you must be watching the LCD panel while you press any key to start the test.

```
Test Begin: Front Bezel LCD Test
   LCD Firmware Version: CFA635:h2.2,f2.2
   Are LCD and keypad backlights On-Dim-Off..? (y/n)
   Verify all LCD pixels go On....press any key to start
   Did    all LCD pixels go On? (y/n)
   Verify all LCD pixels go Dim....press any key to start
   Did    all LCD pixels go Dim? (y/n)
   Verify all LCD pixels go Off....press any key to start
   Did    all LCD pixels go Off? (y/n)
   Verify LCD contrast changes smoothly...press any key to start
   Did    LCD contrast change  smoothly? (y/n)
   LCD Keypad Test...press any key to start
   Press the [UP] key on the LCD Panel...
   Press the [LEFT] key on the LCD Panel...
   Press the [ENTER] key on the LCD Panel...
   Press the [RIGHT] key on the LCD Panel...
   Press the [CANCEL] key on the LCD Panel...
   Press the [DOWN] key on the LCD Panel...
```

After the tests complete successfully, you see these messages:

```
Test Complete: Front Bezel LCD Test: PASSED
Test Complete: Front Bezel LCD/LED Test: PASSED
```

A Run all Blade (Non-Interactive) Tests

This option runs all EUD tests that are applicable to the blade and do not require user interaction.

B Run tests in [A] but exclude test 14 (System RAM Test)

This option runs all tests that are applicable to the system, excluding the interactive tests and the System RAM test.

C Run all Chassis (Non-Interactive) Tests

This option runs all EUD tests that are applicable to the chassis and do not require user interaction. This process takes approximately 20 minutes to complete.

I Run All Interactive Tests

This option runs all interactive tests. This process takes approximately 10 minutes to complete.

D Display Test Report Log

This option displays a test report. A report log is stored as the text file `/shared/log/eud.log` in the host file system.

Important: *You must run* `eud_log` *from the command line to create output for this report.*

S Display Test Summary

This option displays a test summary report that contains the results of all tests run during a test session.

Q Quit EUD and Reboot the System

This option quits the EUD and reboot the system. Using other methods, such as the `reboot` command or the command menu option can destabilize the system.

EUD Tests for B4400 Series Blades

1 System Report

The Blade Report provides comprehensive details about all system hardware components, including:

- Serial number
- F5® part number
- Host information
- BIOS version
- Firmware version
- Bootloader version
- Processor, processor version
- Memory in each socket
- Total memory
- Storage drives

When you start the test, you see this message:

```
Executing Blade Report .....
Test Begin: System Report
```

After the report completes successfully, a summary of system information displays, and you see this message:

```
Test Complete: System Report: PASSED
```

2 Sensor Report

This sensor report performs the hardware sensor test on both the motherboard and the switchboard, if applicable, and displays this information:

- Host temperatures
- Host voltages
- Mezzanine temperature
- Mezzanine voltages
- CPU temperature
- CPU fan speeds
- SuperIO temperatures

When you start the test, you see this message:

```
Executing Sensor Report .....
Test Begin: Sensor Report
Test Begin: CCC I2C Sensor Test
```

After the report completes successfully, you see this message:

```
Test Complete: Host I2C Sensor Test: PASSED
Test Complete: Sensor Report: PASSED
```

3 QSFP+ Report

This test checks for QSFP+ interface modules installed in the system and reports this information about those modules:

- Vendor name
- Part number
- Revision
- Media type

When you start the test, you see this message:

```
Executing QSFP Report .....
port Mode in config 0
Config set :0
portmode=0
Test Begin: QSFP28/QSFP Report
```

After the report completes successfully, you see this message:

```
Test Complete: QSFP28/QSFP Report: PASSED
```

4 Verify Host I2C

This test verifies any Inter-Integrated Circuit (I2C) Bus protocol devices in the system.

When you start the test, you see this message:

After the test completes successfully, you see this message:

```
Test Complete: I2C Verify: PASSED
```

5 Verify PCIe Devices

The PCIe Devices Test reports about and verifies the PCI/PCIe devices on the PCIe bus.

This test verifies these devices:

- Host PCIe devices
- PCIe device widths
- PIC

- SATA controller
- Host bridge
- System peripheral
- ISA bridge
- SMBus controller
- Network and computing encryption device
- MIPS
- USB controller
- PCI bridge
- Ethernet controller

When you start the test, you see this message:

```
Executing Verify PCIe Devices ...
Test Begin: Verify PCIe Devices
```

After the test completes successfully, you see the following message:

```
Test Complete: Verify PCIe Devices: PASSED
```

6 Internal Packet Path Test

This test uses the internal packet path to test the Ethernet interfaces in the system. This test sends known payload packets from the mainboard Ethernet interface back to the mezzanine Ethernet interface. The test checks for the correct receive order and payload. The test then checks the statistics at the switchboard and HSBe. It takes approximately two minutes to run the internal packet path test.

When you start the test, you see this message:

```
Executing Internal Packet Path Test ...............................
Test Begin: Internal Packet Path Test
Test Begin: Packet Overlay NIC to Backplane Switch Test
```

After the test completes successfully, you see this message:

```
Test Complete: Internal Loopback Test: PASSED
Test Complete: Internal Packet Path Test: PASSED
```

7 SSL Test

This test verifies the SSL hardware installed in the system.

When you start the test, you see this message:

```
Executing SSL Test ..................
```

After the test completes successfully, you see this message:

```
Test Complete: System QAT RSA Test: PASSED
```

8 SMART Test

The Self-Monitoring Analysis and Reporting Technology (SMART) test verifies the internal status of a storage drive, including this information:

- Read error rate
- Start/Stop count
- Re-allocated sector count
- Power on hours count
- Spin-up retry count
- Drive calibration retry count
- Drive power cycle count
- Offline scan uncorrectable sector count
- Ultra ATA CRC error rate and multi-zone error rate

When you start the test, you see this message:

```
Executing SMART Test ...
Test Begin: SMART Test
```

After the test completes successfully, you see this message:

```
Test Complete: SMART Test: PASSED
```

9 System RAM Report

The System RAM report displays this information about each DIMM installed in the system:

- Part number
- Size in Megabytes (MB)
- Speed in Megahertz (MHz)
- SUB comparison test
- Serial number

When you start the test, you see this message:

```
Executing System RAM Report ...
Test Begin: System Memory Config Verify
```

After the test completes successfully, you see this message:

```
Test Complete: System Memory Config Verify: PASSED
```

10 System RAM Test

The System RAM Test performs an SDRAM data bus and address bus test. All available Linux user RAM is tested.

Caution: *This test might take several hours to complete depending on the amount of memory available to test.*

- Stuck address test
- Random value test
- XOR comparison test
- SUB comparison test
- MUL comparison test
- DIV comparison test
- OR comparison test
- AND comparison test
- Sequential increment test

When you start the test, you see this message:

```
Executing System RAM Test (30 mins) ..To quit test, type 'q [Enter]'
.............................................................
.............................................................
.............................................................
.............................................................
.............................................................
...............................................
Test Begin: System RAM Test
```

After the test completes successfully, you see this message:

```
Test Complete: System RAM Test: PASSED
```

11 HSB Interface Test

The High-Speed Bridge (HSB) Interface Test is a suite of tests targeting three HSB interface types. It performs Built-In Self Test (BIST) on the HSB SRAM interfaces and the HSB DRAM interface. It also checks packet traffic on the internal HSB-to-Switch 40Gbps Ethernet links.

When you start the test, you see this message:

```
Executing HSB Interface Test (15 mins)
........................................................................................
...................................................
Test Begin: HSB Interface Test
Test Begin: HSB to Switch Link Test
```

After the test completes successfully, you see this message:

```
Test Complete: HSB Interface Test: PASSED
```

20 Chassis Report

This report provides comprehensive details about chassis components, including this information:

- Chassis type
- Chassis revision
- Chassis serial number
- 400 level part number
- Fan tray firmware version
- Fan tray bootloader version
- Fan tray serial number
- LCD firmware version
- System ID firmware version
- System ID bootloader
- System ID serial number
- System ID board version
- BIG-IP® registration key

When you start the test, you see this message:

```
Executing Chassis Report .........
Test Begin: Chassis Report
```

After the report completes successfully, a summary of chassis information displays, and you see this message:

```
Test Complete: Chassis Report: PASSED
```

21 Power Supply Test

This test reports the status of the power supplies installed in the system.

When you start the test, you see this message:

```
Executing Power Supply Test ...
Test Begin: Power Supply Test
```

After the test completes successfully, you see this message:

```
Test Complete: Power Supply Test: PASSED
```

22 Fan Tray Report

This report describes the status of the fans in the system.

When you start the test, you see this message:

```
Executing Fan Tray Report ...
Test Begin: Fan Tray Report
```

After the report completes successfully, you see this message:

```
Test Complete: Fan Tray Report: PASSED
```

23 Chassis Sensor Report

The Chassis Sensor report performs the hardware sensor test on the chassis, including this information:

- Type of chassis
- Internal PIC temperature
- External PIC temperature
- PIC voltage

When you start the test, you see this message:

```
Executing Chassis Sensor Report ...
Test Begin: Chassis Sensor Report
```

After the report completes successfully, you see this message:

```
Test Complete: Chassis Sensor Report: PASSED
```

24 Chassis Overlay Ping

The Chassis Overlay Ping tests the communication between slots, using this sequence:

- Ping from slot 4 to slot 1
- Ping from slot 4 to slot 2
- Ping from slot 4 to slot 3

When you start the test, you see this message:

```
Executing Chassis Overlay Ping ....
Test Begin: Overlay Mgmt Ping Test
```

After the test completes successfully, you see this message:

```
Test Complete: Chassis Overlay Ping: PASSED
```

25 Chassis Data Plane Test

The Chassis Data Plane Test checks for active slots, identifies the platform, and checks the software installed before it can test the data plane on the blades.

Important: *Make sure all the other blades running EUD in the chassis are sitting idle with no external traffic flowing.*

When you start the test, you see this message:

```
Please make sure all the other blades running EUD
in the chassis are sitting idle with no external traffic flowing.
Otherwise unexpected results may occur.

Test Begin: Chassis Data Plane Test
   Detecting slots...
```

After the test completes successfully, you see this message:

```
Test Complete: Chassis Data Plane Test: PASSED
```

27 Blade LED Test (Interactive)

This test sets each of the possible LED status levels and prompts you to verify the corresponding color and operation. You can perform this test from the console or LCD panel.

When you start the test, you see this message:

```
Test Begin: LED Test
```

After the test completes successfully, you see this message:

```
Test Complete: Port LED Test: PASSED
Test Complete: LED Test: PASSED
```

28 Front Bezel LED/LCD Test (Interactive)

This test verifies the functionality of the front panel. The functionality tested includes Status LED, Alarm LED, LCD serial communications, pixels, and keys. To successfully perform these tests you need access to the LCD panel on the chassis you want to test.

The first part of this test prompts you to observe the color of the Status and Alarm LEDs.

```
Test Begin: Front Bezel LCD/LED Test
Test Begin: Front Bezel LED Test
Front Bezel LEDs:
   Is Front Bezel STATUS LED Orange? (y/n)
   Is Front Bezel STATUS LED Green? (y/n)
   Is Front Bezel STATUS LED Off? (y/n)
   Is Front Bezel ALARM LED Orange? (y/n)
   Is Front Bezel ALARM LED Red? (y/n)
   Is Front Bezel ALARM LED Off? (y/n)
Test Complete: Front Bezel LED Test: PASSED
```

The second part of this test prompts you to interact with the front panel LCD. Use the LCD panel to view the interactive results. Some tests, such as the LCD pixel tests, begin immediately after you press a key to begin the test. The first test checks the viability of the key pad backlight and the LCD backlight. To complete these tests successfully, you must be watching the LCD panel while you press any key to start the test.

```
Test Begin: Front Bezel LCD Test
   LCD Firmware Version: CFA635:h2.2,f2.2
   Are LCD and keypad backlights On-Dim-Off..? (y/n)
   Verify all LCD pixels go On....press any key to start
   Did    all LCD pixels go On? (y/n)
   Verify all LCD pixels go Dim....press any key to start
   Did    all LCD pixels go Dim? (y/n)
   Verify all LCD pixels go Off....press any key to start
   Did    all LCD pixels go Off? (y/n)
   Verify LCD contrast changes smoothly...press any key to start
   Did    LCD contrast change  smoothly? (y/n)
   LCD Keypad Test...press any key to start
   Press the [UP] key on the LCD Panel...
   Press the [LEFT] key on the LCD Panel...
   Press the [ENTER] key on the LCD Panel...
   Press the [RIGHT] key on the LCD Panel...
   Press the [CANCEL] key on the LCD Panel...
   Press the [DOWN] key on the LCD Panel...
```

After the tests complete successfully, you see these messages:

```
Test Complete: Front Bezel LCD Test: PASSED
Test Complete: Front Bezel LCD/LED Test: PASSED
```

A Run all Blade (Non-Interactive) Tests

This option runs all EUD tests that are applicable to the blade and do not require user interaction.

B Run tests in [A] but exclude test 14 (System RAM Test)

This option runs all tests that are applicable to the system, excluding the interactive tests and the System RAM test.

C Run all Chassis (Non-Interactive) Tests

This option runs all EUD tests that are applicable to the chassis and do not require user interaction. This process takes approximately 20 minutes to complete.

I Run All Interactive Tests

This option runs all interactive tests. This process takes approximately 10 minutes to complete.

D Display Test Report Log

This option displays a test report. A report log is stored as the text file `/shared/log/eud.log` in the host file system.

Important: *You must run* `eud_log` *from the command line to create output for this report.*

S Display Test Summary

This option displays a test summary report that contains the results of all tests run during a test session.

Q Quit EUD and Reboot the System

This option quits the EUD and reboot the system. Using other methods, such as the `reboot` command or the command menu option can destabilize the system.

Legal Notices

Legal Notices

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