

# Field Testing BIG-IP<sup>®</sup> Hardware

VIPRION<sup>®</sup> B4100/B4200 Blades





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# Legal Notices

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## Legal Notices

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This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Any modifications to this device, unless expressly approved by the manufacturer, can void the user's authority to operate this equipment under part 15 of the FCC rules.

### Canadian Regulatory Compliance

This Class A digital apparatus complies with Canadian ICES-003.

### Standards Compliance

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### VCCI Class A Compliance

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective actions. VCCI-A

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VCCI-A

# The End-User Diagnostic (EUD)

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## About the End-User Diagnostic (EUD)

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The End-User Diagnostic (EUD) is a compilation of tests for checking the integrity of F5<sup>®</sup> Networks 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 Networks support representative.

## End-User Diagnostic Notes

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**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 a 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.

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

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

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## Supported platforms

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

Platform name	Platform ID
VIPRION <sup>®</sup> B4100 Blade	A100, A105
VIPRION B4200 Blade	A107, A111
VIPRION 4400 Chassis	J100, J101





# Downloading the EUD Files

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## Deciding which files to download

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

File Name	Description
ISO image	The ISO image is provided for burning a CD or DVD of the EUD. You can boot the CD/DVD from a powered USB CD/DVD drive plugged in to the VIPRION <sup>®</sup> system.
IM file	The IM file is a self-extracting installation file. You can <code>scp</code> this file directly to the VIPRION <sup>®</sup> 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 ISO image and 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<sup>®</sup> Networks 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.

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*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.

## Downloading the EUD ISO file from F5 Networks

We recommend that you obtain the latest version of the EUD that is supported on your platform from the F5® Networks 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 have to accept the software terms and conditions before you can proceed.
5. Click the file name `<file_name>.iso` to start the download.  
The `<file_name>` consists of the platform family and the build number.
6. Download the corresponding checksum file.  
The corresponding checksum file has the same name as the ISO file, except that `.md5` is the file extension.

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

# Verifying, Installing, and Loading the EUD Files

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## After you download the EUD files

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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 ( <code>scp</code> ) 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<sup>®</sup> Networks 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 load the EUD onto the USB flash drive.

After the installation is complete, remove the USB flash drive from the VIPRION<sup>®</sup> system.

# Running the EUD Tests

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## 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 <sup>®</sup> 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.  <i><b>Important:</b> 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.</i>

### 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<sup>®</sup> 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

---

## 1 System Report

---

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

- Serial number
- F5<sup>®</sup> part number
- Host information
- BIOS version
- Firmware version
- Bootloader version
- Processor, processor version
- Power supply firmware version
- Memory in each socket
- Total memory

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

After the report completes successfully, you see this message:

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

### 3 SFP/XFP Report

---

This report verifies the SFP and XFP modules installed in the system and provides this information about those modules:

- Vendor name
- Part number
- Revision
- Media type

After the report completes successfully, you see this message:

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

### 4 LCD Test

---

The LCD Test verifies the functionality of the LCD panel. To successfully perform these tests, you need access to the LCD panel on the unit you want to test.

This test verifies the functionality of these LCD panel components: LCD serial communications, pixels, and keys.

The first part of this test lists the firmware version of the LCD panel. This part of the test also displays the LCD panel voltage tests. After the voltage test, the interactive part of the LCD panel test begins. We recommend that you use the LCD panel to view the interactive results. Certain tests, such as the keypad backlight, LCD backlight, and LCD pixel tests begin immediately after you press a key to start the test.

The first two tests check 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.

```
Is LCD and keypad backlight On-Dim-Off..?(y/n)
Did the key pad backlight toggle correctly? (y/n)
Verify LCD backlight toggles On and Off...press any key to start.
Did the LCD backlight toggle correctly? (y/n)
```

After you complete the backlight tests, you are prompted to test the pixels and contrast changes for the LCD.

```
Verify all LCD pixels go On?...press any key to start.
Did all LCD pixels go ON? (y/n)
Verify LCD contrast changes smoothly...press any key to start
Did LCD contrast change smoothly?
```

Next, you can test the keys on the LCD keypad. For these tests, you must press the correct key on the LCD keypad.

```
LCD keypad test
Press the [UP] key on the LCD Panel...[UP]
Press the [LEFT] key on the LCD Panel...[LEFT]
Press the [ENTER] key on the LCD Panel...[ENTER]
Press the [RIGHT] key on the LCD Panel...[RIGHT]
```



```
Press the [CANCEL] key on the LCD Panel...[CANCEL]
Press the [DOWN] key on the LCD Panel...[DOWN]
```

After the test completes successfully, you see this message:

```
Test Complete: LCD Test: PASSED
```

## 5 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.

**Important:** Some LED questions time out after a minute. If a question times out, the LED test fails.

After the test completes successfully, you see this message:

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

## 6 I2C Test

---

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

When you start the test, you see this message:

```
Test Begin: I2C Test
```

After the test completes successfully, you see this message:

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

## 7 PCI Test

---

This test reports about and verifies the PCI devices on the PCI bus.

This test verifies these devices:

- Host PCI devices
- Host bridge
- System peripheral
- Communication controller
- ISA bridge
- RAID bus controller
- SMBus controller
- Signal processing controller

- Network and computing encryption device
- MIPS
- USB controller
- PCI bridge
- Ethernet controller
- Switch controller

When you start the test, you see this message:

```
Test Begin: PCI Test
Test Begin: Verify HOST PCI:
HOST PCI devices found
```

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

```
Test Complete: PCI Test: PASSED
```

## 8 Quick System RAM Test

---

The Quick 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

This test reserves a 15 MB block of available system RAM.

---

*Note:* This test might take between 10 and 15 minutes to complete.

---

After the test completes successfully, you see this message:

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

## 9 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.*

---

After the test completes successfully, you see this message:

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

## 10 ECC Status Test

---

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

After the test completes successfully, you see this message:

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

## 11 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.

After the test completes successfully, you see this message:

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

## 12 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.

After the test completes successfully, you see this message:

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

### 13 SSL Test

---

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

After the test completes successfully, you see this message:

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

### 14 SMART Test

---

The Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) test verifies the internal status of the hard 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

After the test completes successfully, you see this message:

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

### 20 HSB Packet Test

---

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

After the test completes successfully, you see this message:

```
Test Complete: HSB Packet Test: PASSED
```

## 23 HSB Register Test

---

The High-Speed Bridge (HSB) Register Test verifies that the HSB is present and communicating properly. After the test completes successfully, you see this message:

```
Test Complete: HSB Register Test: PASSED
```

## 24 DAG24 Register Test

---

The DAG24 Register Test verifies that the proprietary DAG component is present and communicating properly.

After the test completes successfully, you see this message:

```
Test Complete: DAG24 Register Test: PASSED
```

## A Run all tests (Requires User Interaction, Quick RAM Test)

---

This option runs all EUD tests that are applicable to the system. User interaction is required. This option also runs the Quick RAM Test.

## F Run all except 4 and 5 (User Interaction Not Required, Quick RAM Test)

---

This option runs all EUD tests that are applicable to the system and do not require user interaction. This option also runs the Quick Ram Test.

## N Run all except 4 and 5 (User Interaction Not Required, Full RAM Test)

---

This option runs all EUD tests that are applicable to the system and do not require user interaction. This option also runs the Full RAM Test.

## 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.

---

## 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.

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