

Dell EMC Open Networking Troubleshooting Guide

May 2018

Notes, Cautions, and Warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your computer.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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About this guide

This guide provides site preparation recommendations, step-by-step procedures for rack mounting and desk mounting, inserting optional modules, and connecting to a power source.

⚠ CAUTION: To avoid electrostatic discharge (ESD) damage, wear grounding wrist straps when handling this equipment.

⚠ WARNING: Only trained and qualified personnel can install this equipment. Read this guide before you install and power up this equipment. This equipment contains two power cords. Disconnect both power cords before servicing.

⚠ WARNING: This equipment contains optical transceivers, which comply with the limits of Class 1 laser radiation.



Figure 1. Class 1 Laser Product ID Tag

⚠ WARNING: When no cable is connected, visible and invisible laser radiation may be emitted from the aperture of the optical transceiver ports. Avoid exposure to laser radiation and do not stare into open apertures.

Topics:

- [Information symbols](#)
- [Related documents](#)

Information symbols

This book uses the following information symbols:

ⓘ NOTE: The Note icon signals important operational information.

⚠ CAUTION: The Caution icon signals information about situations that could result in equipment damage or loss of data.

⚠ WARNING: The Warning icon signals information about hardware handling that could result in injury.

⚠ WARNING: The ESD Warning icon requires that you take electrostatic precautions when handling the device.

Related documents

For more information about the Open Networking (-ON) platforms, see the following documents.

- *Dell EMC Open Networking (ON) Command Line Reference Guide*
- *Dell EMC Open Networking (ON) Configuration Guide*
- *Dell EMC Open Networking (ON) Getting Started Guide*

- *Dell EMC Open Networking (ON) Installation Guide*
- *Dell EMC Open Networking (ON) Release Notes*

ONIE diagnostics

This chapter describes system diagnostics and troubleshooting. After running the diagnostic tools, your system displays pass or fail test results. If all tests pass, the diagnostic tools exit normally. If a test fails, each diagnostic tool offers a different result.

NOTE: The troubleshooting package includes a README file that lists the tools version and the overall troubleshooting package version. For more information, refer to this README file.

NOTE: To download the Release Notes, go to <http://www.dell.com/support>.

This system uses the following troubleshooting tools:

- **Power-On Self Test (POST) diagnostic** — Automatically runs during the system startup at the BIOS or U-boot level. This tool tests for catastrophic hardware failures that prevent booting the system. The error code is saved in CMOS for the next boot. There is no physical alarm indication.
- **Extended diagnostic application (EDA)** — Tests the hardware for system failures. This is an on-demand diagnostic tool. EDA verifies platform-specific hardware. There are options to perform diagnostics from a Quick Test to a thorough Intrusive test. If a test fails, you can stop or continue boot-up. If you select the `halt-on failure` option, EDA testing does not continue. If you do not select the `halt-on failure` option, EDA testing continues. Test results are saved in a user-defined storage area. There is no physical alarm indication.

NOTE: To test your hardware, Dell EMC strongly recommends using the EDA tool.

NOTE: EDA runs in the ONIE environment, not in the networking operating system. You must be at the ONIE prompt to run EDA.

ONIE expansion

To view all the ONIE commands available, from the ONIE prompt, enter `onie-` and click **<tab>** twice.

```
ONIE:/ # onie- <TAB><TAB>
onie-boot-mode          onie-fwpkg              onie-syseeprom
onie-console            onie-nos-install        onie-sysinfo
onie-discovery-start    onie-self-update        onie-uninstaller
onie-discovery-stop     onie-support
```

Command line interface options

Each diagnostic tool has the following options:

Command	Description
<code>-h</code>	Help topics. Use help to find software-specific tools.
<code>test</code>	Tests against the preconfigured test file.

Topics:

- [S4810-ON system information](#)
- [Boot processes](#)
- [S4810-ON or S6000-ON diagnostic package](#)
- [Troubleshooting issues](#)

S4810-ON system information

To view your system information; for example, the model, part number, serial number, and service tag, follow these steps.

- 1 Reboot your system and enter U-Boot mode.
- 2 Enter the `sys_eeprom` command.

Example of the `sys_eeprom` Command

```
dell_s4810_on-> sys_eeprom
TlvInfo Header:
  Id String:      TlvInfo
  Version:       1
  Total Length:  73
TLV Name          Code Len Value
-----
MAC Addresses     0x2A  2  65
Base MAC Address  0x24  6  00:E0:0C:02:01:FD
Vendor Name       0x2D  4  Dell
Product Name     0x21  8  S4810-ON
Part Number      0x22 10  7590009602
Serial Number    0x23 13  HADL127B20077
Manufacturer      0x2B  1  1
Service Tag      0x2F  2  123A1B2
Label Revision   0x27  3  A00
CRC-32           0xFE  4  0x4AF6A929
Checksum is valid.
```

Boot processes

After the BIOS or U-Boot hardware verifications, POST tests run to verify the CPU and memory prior to booting the system software.

After POST testing, there are three additional types of diagnostic tools you can use for testing your system.

- Manual diagnostic boot process — To run additional testing, manually download and run the EDA tool. The EDA tool reports and logs pass/fail results.
- ONIE with EDA — EDA is installed; you do not have to manually download the tool. Select the diagnostic option at boot-up. You can run this tool without a management interface.
- Autorun EDA — EDA is installed; you do not have to manually download the tool. Select the diagnostic option at boot-up. You can run this tool without a management interface. The system always launches EDA in Quick Test mode to verify the hardware components before loading the software. If there is a failure at boot-up, based on the EDA configuration, the software may or may not continue the boot process.

POST

POST diagnostics verifies system memory before the software loads. Test configuration parameters are saved in CMOS for the next boot-up.

EDA, Quick Test Mode

Quick Test mode runs basic device access tests for the system hardware to verify that the device is active and responding.

In Quick Test mode, the EDA tool quickly tests if the hardware components are accessible. It confirms that the components respond to read access and in some cases, simple write access. Tests are read-only and non-destructive (except the `memtool` command, which does allow read/write operations).

Capturing Support Data from ONIE

To capture support data from ONIE, use the following commands.

- 1 Capture support data to the screen.
`ONIE:/ # dmesg`
- 2 Capture support data to the `onie-support.tar.bz2` gzip file.
`ONIE:/ # onie-support <output_directory>`

The ONIE support file includes the following:

- `kernel_cmdline`
- `runtime-export-env`
- `runtime-process`
- `runtime-set-env`
- `log/messages`
- `log/onie.log`

Changing the Default Grub Boot Entry

To view or set the default Grub boot entry, use the following command.

The `onie-boot-mode` command has two options `-l` (the default) and `-o`. The Grub boot default is to show the current default entry.

View or set the default Grub boot entry.

```
ONIE:/ # onie-boot-mode [-o <onie_mode>]
```

The `-o` command options include:

- `install` — ONIE OS Installer mode
- `rescue` — ONIE Rescue mode
- `uninstall` — ONIE OS Uninstall mode
- `update` — ONIE Self Update mode
- `embed` — ONIE Self Update mode and Embed ONIE
- `diag` — ONIE Self Update mode and Embed ONIE
- `none` — Uses System Default Boot mode. This mode uses the first ONIE boot menu entry.

The `-l` command option is:

- Lists the current default entry. This is the default.

Restoring the S4810-ON Factory Defaults

If you need to restore the S4810-ON factory defaults, reboot the system to ONIE Rescue using the `run onie-rescue` or `run onie-diag` commands. If it is not possible to do this with the operating system you installed, reboot the system and hit any key to stop autoboot.

⚠ CAUTION: Restoring factory defaults erases any installed operating system and requires a long time to erase storage.

- 1 To restore the S4810-ON factory defaults, run one of the following commands.
U-boot mode

```
run onie_rescue OR run onie_diag
```


ONIE Rescue bypasses the installed operating system and boots the system into ONIE until you reboot the system.

- 2 Press ENTER to activate the console.

Example of the Optional ONIE-uninstaller Command

After ONIE Rescue completes, the system resets and boots to the ONIE console.

NOTE: Only use the optional `onie-uninstaller` command if you want to remove all the network operating software on your system except for ONIE. This command removes any installed network operating system.

```
ONIE:/ # onie-uninstaller
Erasing unused NOR flash region
Erasing 128 Kibyte @ 20000 - 100% complete.
Erasing internal mass storage device: /dev/mmcblk0 (7832MB)
Percent complete: 100%
```

S4810-ON or S6000-ON diagnostic package

To download the diagnostic package on an S4810-ON or S6000-ON platform, follow these steps.

NOTE: Before you begin, go to <http://www.dell.com/support> and download the diagnostic package. You will need your Dell EMC support access account to download the package.

NOTE: These steps only apply to the S4810-ON and S6000-ON platforms.

- 1 Enter the `onie-discovery-stop` command to stop the ONIE discovery mode.
- 2 Assign an ip address to the management interface and verify the network connectivity.

```
ONIE:/ # ifconfig eth0 xx.xx.xx.xx/x
ONIE:/ #
ONIE:/ #
ONIE:/ # ifconfig eth0
eth0      Link encap:Ethernet  HWaddr 90:B1:1C:F4:9C:76
          inet addr:xx.xx.xx.xx  Bcast:xx.xx.xx.xx  Mask:xx.x.x.x
          inet6 addr: fe80::92b1:1cff:fef4:9c76/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:18 errors:0 dropped:0 overruns:0 frame:0
          TX packets:24 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:1152 (1.1 KiB)  TX bytes:6864 (6.7 KiB)
          Interrupt:21 Memory:ff300000-ff320000

ONIE:/ # ping xx.xx.xx.xx
PING xx.xx.xx.xx (xx.xx.xx.xx): 56 data bytes
64 bytes from xx.xx.xx.xx: seq=0 ttl=62 time=1.357 ms
64 bytes from xx.xx.xx.xx: seq=1 ttl=62 time=0.577 ms
^C
```

- 3 Upgrade the DIAG Installer. Again, boot to ONIE Rescue mode and install onie diag installer

NOTE: The command `onie-nos-install`, shown in bold, is not available in S4810-ON ONIE version 1.0.0.1; instead use the `install_url ONIE:/bin # install_url` command.

```
ONIE:/ # onie-nos-install tftp://xx.xx.xx.xx/ON-DIAG/S4810/JUL-08-2014/diag-installer-
powerpc-dell_s4810_on_p2020-r0.bin
Stopping: discover... done.
Info: Fetching tftp://xx.xx.xx.xx/ON-DIAG/S4810/JUL-08-2014/diag-installer-powerpc-
dell_s4810_on_p2020-r0.bin ...
ON-DIAG/S4810/JUL-08 100% |*****| 1361k 0:00:00 ETA
ONIE: Executing installer: tftp://xx.xx.xx.xx/ON-DIAG/S4810/JUL-08-2014/diag-installer-
powerpc-dell_s4810_on_p2020-r0.bin
Verifying image checksum ... OK.
Preparing image archive ...
Preparing image archive ...sed -e '1,/^exit_marker$/d' /installer | tar xf - OK.
Diag Installer: platform: powerpc-dell_s4810_on_p2020-r0
```

```
Erasing block: 128/128 (100%)
Writing kb: 16376/16384 (99%)
Verifying kb: 16376/16384 (99%)
ONIE:/ # umount: can't remount rootfs read-only
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL toRestarting system.
Reset via the platform CPLD
```

- 4 Start ONIE diagnostics. To start the ONIE diagnostics for the S6000-ON, use the `onie-diag` option from the ONIE menu. To start the ONIE diagnostics for the S4810-ON, use the following procedure:
 - a Set the u-boot environment `onie_boot_reason` using `ONIE:/ # onie-set-env onie_boot_reason diag` from the ONIE # prompt or using `dell_s4810_on > setenv onie_boot_reason diag` from the u-boot prompt.
 - b Reboot the system to launch and run the ONIE diagnostics.

```
Platform specific diag found and launching....
*****
* Diagnostics Application *
*****
Dell Diag ./edatool version x.x, package x.x 2014/7/23
Dell Diag ./fantool - version x.x package x.x 2014/7/23
Dell Diag ./gpiotool - version x.x package x.x 2014/7/23
Dell Diag ./i2ctool - version x.x package x.x 2014/7/23
Dell Diag ./mementool - version x.x package x.x 2014/7/23
Dell Diag ./nvramtool - version x.x package x.x 2014/7/23
Dell Diag ./pcitool - version x.x package x.x 2014/7/23
Dell Diag ./pltool - version x.x package x.x 2014/7/23
Dell Diag ./psutool - version x.x package x.x 2014/7/23
Dell Diag ./temptool - version x.x package x.x 2014/7/23
Testing PCI devices:
+ Checking PCI 00:00.0, ID=57197000 ..... Passed
+ Checking PCI 01:00.0, ID=e41445b8 ..... Passed
PCI devices: Overall test results ----- >>> Passed
Testing I2C devices:
Checking I2C devices on bus 0:
+ Checking Dev found @ 0x52 ... ----- 0x52 ..... Passed
+ Checking Dev found @ 0x54 ... ----- 0x54 ..... Passed
+ Checking Dev found @ 0x55 ... ----- 0x55 ..... Passed
+ Checking Dev found @ 0x56 ... ----- 0x56 ..... Passed
+ Checking Dev found @ 0x57 ... ----- 0x57 ..... Passed
+ Checking Dev found @ 0x68 ... ----- 0x68 ..... Passed
Checking I2C devices on bus 1:
+ Checking Dev found @ 0x40 ... ----- 0x40 ..... Passed
+ Checking Dev found @ 0x42 ... ----- 0x42 ..... Passed
+ Checking Dev found @ 0x49 ... ----- 0x49 ..... Passed
+ Checking Dev found @ 0x4a ... ----- 0x4a ..... Passed
+ Checking Dev found @ 0x4c ... ----- 0x4c ..... Passed
+ Checking Dev found @ 0x4d ... ----- 0x4d ..... Passed
Checking I2C devices on bus 2:
I2C Devices: Overall test results ----- >>> Passed
Testing Programmable Devices:
PL Tool test:
+ Checking System CPLD 0xffdf0000 Reg: 0x10 ..... Passed
+ Checking System CPLD 0xffdf0000 Reg: 0xa0 ..... Passed
PL Tool: Overall test results ----- >>> Passed
Power Supply Test all
Power Supply 1 ..... Passed
Power Supply 2 is not present
Power Supply Test ..... Passed
Testing Temp sensor devices:
+ Checking [CPU sensor] = 38.0 C ..... Passed
+ Checking [MAC sensor] = 43.0 C ..... Passed
+ Checking [Phy Right sensor] = 39.0 C ..... Passed
+ Checking [Phy Left sensor] = 40.0 C ..... Passed
Temp Sensors: Overall test results ----- >>> Passed
Fan Controller Short Test ..... Passed
Fan 1 speed is 12240 RPM
Fan 2 speed is 12240 RPM
```

```

Fan 3 speed is 12240 RPM
Fan 4 speed is 12240 RPM
Testing Memory Regions:
Testing Memory Region 0:
Address Read Test ..... Passed
Address Write Test ..... Passed
Address Walking 1's Test ..... Passed
Address Walking 0's Test ..... Passed
Data Read Test ..... Passed
Data Write Test ..... Passed
Data Walking 1's Test ..... Passed
Data Walking 0's Test .... v ..... Passed
Data Sliding 1's Test ..... Passed
Data Sliding 0's Test ..... Passed
Data Pattern Test ..... Passed
Memory: Overall test results ----- >>> Passed

EDA: Overall test results ----- >>> PASSED.

```

📘 **NOTE:** To return to your networking operating software, enter the `reboot` command.

Troubleshooting issues

To help you solve an issue, use the following troubleshooting solutions.

📘 **NOTE:** The following troubleshooting solutions do not apply to the S4048-ON and S3048-ON platforms.

Table 1. Troubleshooting Issues and Solutions

Problem	Description and Solution
<ul style="list-style-type: none"> A tool indicates a device as failing, but I do not believe this is correct. A tool indicates a device as passing, but I do not believe this is correct. 	<ul style="list-style-type: none"> If the configuration file for the particular tool was somehow corrupted, the results may be non-deterministic or inaccurate. Download the diagnostic package again; this ensures a clean copy of the configuration files. Then, re-run the tool.
I need to verify the version of a specific EDA tool.	<ul style="list-style-type: none"> All versions of the tools loaded from the diagnostic package are listed in the <code>/diag/README</code> file. When you run <code>edatool</code>, the output from the README file is output to the console and the logfile <code>/mnt/diag.log</code> file. Any updates to tools are in the form of a new diagnostic package, which contains the corresponding README file.
The <code>storagetool</code> command runs and indicates a failure, but I do not believe this is correct.	<ul style="list-style-type: none"> To run tests, the storage tool requires that you mount the storage device. To verify that there are mounted devices, use the <code>mount</code> command. If the device is mounted, the results indicate a problem with the physical device.
The <code>pltool</code> command ran, reports a failure, and refers to a "mismatch". What does that mean?	<ul style="list-style-type: none"> The <code>pltool</code> command compares the firmware versions of the device(s) to the expected latest revision. This message indicates that the firmware is not the most current. Contact your Dell EMC support representative.
The system is not allowing OS installation.	<p>Run the following command:</p> <pre>ONIE#onie-boot-mode -o rescue</pre> <p>then follow the normal installation instructions.</p>
For the S6000-ON platform only.	<ul style="list-style-type: none"> This is a bug in <code>fantool</code> in the current S6000-ON EDA. The <code>fantool</code> reads the fan information and compares it to values expected when the fan is initialized and is in the power-up state.

The `Fantool` reports a failure, but the fans seem to be working correctly.

Troubleshooting tools

This section describes the diagnostic tools that provide debug and hardware tests.

NOTE: The following ONIE diagnostic tools do not apply to the S4048-ON and S3048-ON systems.

To use the troubleshooting tools manually, you must be at the ONIE prompt and navigate to `/mnt/diag/`. If you are not already at the ONIE prompt, reboot your system to Rescue mode. Refer to your network operating software documentation for the procedure to reboot your system to Rescue mode.

NOTE: EDA Quick Test mode only uses the tools in Access Only method for minimal system verification. EDA Extended mode uses the full system for debugging and verification.

The EDA tool is a script-based execution of the other troubleshooting tools. The configuration file is a command-line execution for all tools to run in order.

NOTE: After running the troubleshooting tools, the system reboots to the ONIE prompt. To return to your network operating software prompt, issue the `reboot` command.

edatool

The EDA tool (`edatool`) executes all of the other tools for testing and troubleshooting.

NOTE: For troubleshooting your system, Dell EMC strongly recommends using the EDA tool and not individual tool commands.

The `edatool` is script-based and is easily extended or narrowed to meet your requirements.

Example of the `edatool` Output

```
ONIE:/diag # ./edatool
*****
* Diagnostics Application *
*****
Dell Diag ./edatool version x.x, package x.x 2014/7/23
Dell Diag ./fantool - version x.x package x.x 2014/7/23
Dell Diag ./gpitool - version x.x package x.x 2014/7/23
Dell Diag ./i2ctool - version x.x package x.x 2014/7/23
Dell Diag ./memtool - version x.x package x.x 2014/7/23
Dell Diag ./nvramtool - version x.x package x.x 2014/7/23
Dell Diag ./pcitool - version x.x package x.x 2014/7/23
Dell Diag ./pltool - version x.x package x.x 2014/7/23
Dell Diag ./psutool - version x.x package x.x 2014/7/23
Dell Diag ./temptool - version x.x package x.x 2014/7/23
Testing PCI devices:
+ Checking PCI 00:00.0, ID=57197000 ..... Passed
+ Checking PCI 01:00.0, ID=e41445b8 ..... Passed
PCI devices: Overall test results ----- >>> Passed
Testing I2C devices:
Checking I2C devices on bus 0:
+ Checking Dev found @ 0x52 ... ----- 0x52 ..... Passed
+ Checking Dev found @ 0x54 ... ----- 0x54 ..... Passed
+ Checking Dev found @ 0x55 ... ----- 0x55 ..... Passed
+ Checking Dev found @ 0x56 ... ----- 0x56 ..... Passed
+ Checking Dev found @ 0x57 ... ----- 0x57 ..... Passed
+ Checking Dev found @ 0x68 ... ----- 0x68 ..... Passed
Checking I2C devices on bus 1:
+ Checking Dev found @ 0x40 ... ----- 0x40 ..... Passed
+ Checking Dev found @ 0x42 ... ----- 0x42 ..... Passed
```

```

+ Checking Dev found @ 0x49 ... ----- 0x49 ..... Passed
+ Checking Dev found @ 0x4a ... ----- 0x4a ..... Passed
+ Checking Dev found @ 0x4c ... ----- 0x4c ..... Passed
+ Checking Dev found @ 0x4d ... ----- 0x4d ..... Passed
Checking I2C devices on bus 2:
I2C Devices: Overall test results ----- >>> Passed
Testing Programmable Devices:
PL Tool test:
+ Checking System CPLD 0xffdf0000 Reg: 0x10 ..... Passed
+ Checking System CPLD 0xffdf0000 Reg: 0xa0 ..... Passed
PL Tool: Overall test results ----- >>> Passed
Power Supply Test all
Power Supply 1 ..... Passed
Power Supply 2 is not present
Power Supply Test ..... Passed
Testing Temp sensor devices:
+ Checking [CPU sensor] = 31.0 C ..... Passed
+ Checking [MAC sensor] = 38.0 C ..... Passed
+ Checking [Phy Right sensor] = 40.0 C ..... Passed
+ Checking [Phy Left sensor] = 38.0 C ..... Passed
Temp Sensors: Overall test results ----- >>> Passed
Fan Controller Short Test ..... Passed
Fan 1 speed is 12240 RPM
Fan 2 speed is 12240 RPM
Fan 3 speed is 12240 RPM
Fan 4 speed is 12240 RPM
Testing Memory Regions:
Testing Memory Region 0:
Address Read Test ..... Passed
Address Write Test ..... Passed
Address Walking 1's Test ..... Passed
Address Walking 0's Test ..... Passed
Data Read Test ..... Passed
Data Write Test ..... Passed
Data Walking 1's Test ..... Passed
Data Walking 0's Test ..... Passed
Data Sliding 1's Test ..... Passed
Data Sliding 0's Test ..... Passed
Data Pattern Test ..... Passed
Memory: Overall test results ----- >>> Passed

EDA: Overall test results ----- >>> PASSED.

```

The EDA tool tests the platforms using the **default_eda_script.cfg configuration** file. This script dictates how EDA runs and which test runs first or multiple times. Each line of the script is the actual prompt command line including parameters.

pcitool

The PCI tool (`pcitool`) allows testing of the PCI devices.

In EDA Quick Test mode, `pcitool` completes a simple check on the PCI bus. The tool scans the PCI bus for all drivers and functions and writes the configuration registers to the configuration file.

Example of the `pcitool` Output

```

Syntax: ./pcitool <option>
                -h := show this help
                scan := scan all PCI devices
                all := scan and show all config data
                test := test using the default PCI test config file
                show <bus# dev# func#> := show config data for a specific bus:dev.func
                read <bus# dev# func# offset count> := read 8-bit config register for bus:dev.func
                write <bus# dev# func# offset data> := write 8-bit config register for bus:dev.func

```

Example of the `pci tool` Configuration File Output

```
# more default_pci_list.cfg
Bus:Dev.Fn=00:00.0 ID=0c738086 NOT LISTED
 0c738086 00000007 06000002 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00008086 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
00000000 00000000 00000000 00000000 01080000 00000000 00020fb1 00000000
Bus:Dev.Fn=00:01.0 ID=0c468086 PCIe port
 0c468086 00100147 06040002 00010010 ff760004 00000000 00010100 000000f0
...
```

i2ctool

The `i2ctool` allows testing of the devices on the i2c bus.

In EDA Quick Test mode, `i2ctool` scans busses and identifies all of the devices. If a device is behind a MUX, `i2ctool` looks for devices through the MUX and, if present, a second-level MUX as well.

Example of the `i2ctool` Output

```
Syntax: ./i2ctool <option>
-h := show this help
test := test <user_i2c_file.cfg> the pre-programmed configuration
      # ./i2ctool test userI2cFile.cfg
read := read I2C device with <bus> <dev> <address> <bytecount>
      # ./i2ctool read /dev/i2c-0 0x50 0x00 10
write := write I2C device with <bus> <dev> <address> <data0> ... <dataN>
      # ./i2ctool write /dev/i2c-0 0x50 0x00 0x0a 0x0b 0x0c
scan := scan <bus_prefix> the I2C devices on the specified bus prefix
      # ./i2ctool scan /dev/i2c-
```

Example of the `i2ctool` Configuration File Output

```
# more gpio_00_i2c_devices.cfg
I2C devices found on bus #0: 10
Dev found @ 0x18,/dev/i2c-0,-,0x18,0x00,1
Dev found @ 0x30,/dev/i2c-0,-,0x30,0x00,1
Dev found @ 0x31,/dev/i2c-0,-,0x31,0x00,1
Dev found @ 0x32,/dev/i2c-0,-,0x32,0x00,1
Dev found @ 0x33,/dev/i2c-0,-,0x33,0x00,1
Dev found @ 0x3e,/dev/i2c-0,-,0x3e,0x00,1
Dev found @ 0x4d,/dev/i2c-0,-,0x4d,0x00,1
Dev found @ 0x50,/dev/i2c-0,-,0x50,0x00,1
Dev found @ 0x53,/dev/i2c-0,-,0x53,0x00,1
Dev found @ 0x69,/dev/i2c-0,-,0x69,0x00,1
I2C devices found on bus #1: 0
I2C devices found on bus #2: 2
Dev found @ 0x51,/dev/i2c-2,-,0x51,0x00,1
Dev found @ 0x59,/dev/i2c-2,-,0x59,0x00,1
```

memtool

The memory tool (`memtool`) tests system memory.

EDA Quick Test mode only completes simple access (read) tests. You can use `memtool` to test static memory areas, such as L2Cache mapped as SRAM or DRAM on a memory mapped device.

The memory configuration file consists of lines that describe a region of memory and the tests performed on that memory region. Therefore, you can have multiple entries for a region of memory. All parameters are separated by a : character. The following describes the configuration file parameters.

Parameter	Description
Region Name:	The region name referred to in all output.
Start Address:	The starting address for the region of memory in hexadecimal format (without the preceding 0x). If the operating software is defining how to manage memory, this is dynamic and you can use "-" for the start address and the memory uses malloc'd from the available system memory.
Size:	The size of the contiguous memory area (in bytes) in hexadecimal (without the preceding 0x). If memory is dynamic, use "-" for size and the tests use the maximum system memory.
Access:	The letter that describes how this memory is accessed: b — byte (8 bits) h — halfword (16 bits) w — word (32 bits) d — double-word (64 bits)
Increment:	How many bytes to increment to the next cell.
ECC:	Describes if ECC is supported — 0 or 1.
Chunk:	Describes how many kilo bytes (1024 bytes) are tested in one chunk. Tests multiple chunks across the memory region.
Max Cache:	The maximum cache size for this memory.
Cacheline:	The size of a cacheline.
Iterations:	The number of times to perform the tests.
Test:	The collection of bits that tell which test to perform on this region. The tests are performed in bit order. Some tests may not be performed due to time limitations and the purpose of the test (for example, <i>dim cache memory test</i> which is time consuming and destructive to data). To run an excluded test, you must specifically request the test. For example, to run all tests including the <i>dim cache memory test</i> , which is a 0x800, set the tests to <code>fff</code> . A-1 — run all available tests.
Descriptive Device:	The descriptive device (for example, SPD in the case of a dimm), is described in one comma-separated field of four parameters: address, type, start, and bytes.
Device Path:	The path to the device driver (for example, <code>/dev/i2c-0</code> for a PD on the i2c bus 0).
Address of Memory Description device (SPD):	Describes the memory organization (for example, dimm memory which has an SPD device) and the address of the device. For i2c devices, the address is presented in 7-bit hexadecimal format.
Type:	SPD
Range of bytes in the Description Device:	These two fields list the start and end registers to read descriptive entries for the device.

Example of the memtool Output

```
Syntax: ./memtool <option>
                -h := show this help
                test [[all]|list|region#] := test using the MEM test config file
                info := display configuration info of device
```

```
read [b|h|w] address := read the specified physical address
write [b|h|w] address data [length] := write at the specified physical address
```

Example of the memtool Configuration File Output

```
// Memory Configuration File
//
// Example:
// SystemRam:--:w:4:1:2800:0:0:1:-1:SPD:/dev/i2c-0:50:0,ff:
// This describes the SystemRam which is dynamic in location and size. It is accessed by
words // and incremented addresses of 4 bytes. It is ECC covered, and has a max chunk of
10KB max
// cache and cacheline size (unused at this time) are 0. The tests will be performed once
on this
// region, and the -1 denotes to run all tests, excluding dim cache memory test. The
Descriptive
// device is a SPD on /dev/i2c-0 at address 0x50, and we read registers 0-255.
//
// Note: a '-' address and size denotes a dynamic ram allocation
// =====Tests=====
// -1 : all Tests Run
// 0h : No Address Test
// 1h : Address Read Test (Access)
// 2h : Address Read|Modify|Write|Verify
// 4h : Address walking 1's
// 8h : Address walking 0's
// 00h : No Data Test
// 10h : Data Read Test (Access)
// 20h : Data Read|Modify|Write|Verify
// 40h : Data walking 1's
// 80h : Data walking 0's
// 100h : Data walking 1's
// 200h : Data walking 0's
// 400h : patterns (00ff, ff00, 55aa, aa55)
// 800h : Cache (cacheKiller - Not Part of ALL Tests)

SystemRam:--:d:8:1:2800:-1:-1:1:-1:i2c:0x52,SPD,0,255
```

pltool

The programmable logic tool (pltool) verifies access to the complex programmable logic devices (CPLD) and field programmable gate array (FPGA) and verifies versions.

The pltool generates its configuration file based on the platform database. The configuration file is generated with a specific version of devices in order to detect manufacturing misleads. The database holds all the versions and is updated when new versions are released.

The configuration file displays in tree format. The base is the chip that can have multiple registers and may or may not have bit descriptions and bit collection information. Each parameter in the tree is on an individual line separated by the “|” character.

Example of the pltool Output

```
Syntax: ./pltool <option>
                -h := show this help
                test := test using the test config file
                list := list devices and registers
read [b|h|w] device offset [length] := read the specified register
write [b|h|w] device offset data [length] := write at the specified register
```

The configuration file displays in tree format. The base is the chip that can have multiple registers and may or may not have bit descriptions and bit collection information. Each parameter in the tree is on an individual line separated by the “|” character.

The following describes the C-row configuration file tree output.

C-Row Parameter	Description
C	The row identifier.
Type	CPLD, FPGA, or TPM.
Address	The address of the device. For CPLD on an I2C bus, this is an 8-bit address. For PCI, this is the bus:dev:function in a packed 32-bit word, 8-bits each. For memory, this is the address. LPC is unknown.
Name	The text name for the device.
Interface	i2c, pci, mem, io, or lpc.
Bus	For devices on multiple busses, this indicates the bus number (for example, 0 for i2c indicates /dev/i2c-0. For PCI, this holds the bus-dev-func in a 32-bit value with each byte representing bus, device and functions in that order (for example, 0x020304 represents bus 02, device 03, and function 04).
Version Reg	The register that contains the version for the device.
Version Mask	The bits to use to check the version.

The following describes the R-row configuration file tree output.

R-Row Parameter	Description
R	The register identifier.
Address	The register addresses (offset) in the device.
Register Size	Describes how many bits the register contains (for example, 8, 16, or 32).
Register Mask	Lists the valid bits in this register.
Name	The text name of this register.
Access Perm	Access permissions: RO — Read only RW — Read/Write RC — Clear on Read WO — Write only
Default Value	The default value of this register.
Testable	1 — The register can be tested against the default value. 0 — The register is not testable.
Version	The version of the register. There can be multiple definitions of a register based on the version. When the test creates a configuration file from a device list with several versions, a specific version is requested and if the version requested is the last version prior to or equal to the requested version, it is put into the configuration file.

The following describes the B-row configuration file tree output.

B-Row Parameter	Description
B	The bit row identifier.

B-Row Parameter	Description
Bit Number(s)	This can be either a single bit number or a range starting with the highest bit number (for example, 7 or 7:3).
Name	The name of the bit.
Access	The access type of the bit; the same as the register definition.
Default Value	The default value of the bits.

The following describes the I-row configuration file tree output.

I-Row Parameter	Description
I	The identifier row descriptor.
Value	The value of the collection of bits.
Meaning	The meaning of the collection of bits.

Example of the `pltool` Configuration File Output

```
# ./pltool
Programmable Logic Tool
Syntax: ./pltool <option>

                -h := show this help
                test := test using the test config file
                list := list devices and registers
    read [b|h|w] device offset [length] := read the specified register
    write [b|h|w] device offset data [length] := write at the specified register
```

Example of the `pltool` Configuration File Tree Output

```
# C - CHIP (Master | Slave - Cpld or FPGA), Address, Name, Access
# R - Register, Offset, Mask, Name, RW, Default Val
# B - Bit(s), bitnum(s), Name, RW, Default Val
# I - Information on the bits
=====
C | CPLD | 0x31 | System CPLD | i2c | 0 | 0x00 | 0xf
R | 0x00 | 8 | 0xFF | Board Revision Reg | RO | 0x4A | 1 | 0x0
B | 7:4 | Board Stage | RO | 0x0
B | 3:0 | CPLD Revision | RO | 0x0
R | 0x01 | 8 | 0xFF | Software Reset Reg | RW | 0xFF | 0 | 0x0
B | 7 | Reserved | RW | 0x1
B | 6 | CFast Card Pres | RO | 0x1
B | 5 | CPU HRSTn | RW | 0x1
B | 4 | Super IO RST | RW | 0x1
B | 3 | PE_SATA_RST | RW | 0x1
B | 2 | PE_USB_RST | RW | 0x1
B | 1 | FORCE_RST | RW | 0x1
B | 0 | CPU_RST | RW | 0x1
=====
C | CPLD | 0x32 | Master CPLD | i2c | 0 | 0x01 | 0xf
R | 0x01 | 8 | 0xFF | Board Revision Reg | RW | 0x4C | 1 | 0x0
B | 7:4 | Board Stage | RO | 0x0
I | 4 | P2B-P2C Stage
I | 3 | P2A Stage
I | 2 | P1 Stage
I | 1 | P0 Stage
I | 0 | Testing Code
B | 3:0 | CPLD Revision | RW | 0x0
R | 0x02 | 8 | 0xFF | Power Enable Reg 1/2 | RO | 0x0 | 0 | 0x0
```

gpiotool

The `gpiotool` verifies the state of the GPIO signals.

This test is more commonly used in ODA Offline and Online modes. `gpiotool` can also change the GPIO values for I/O devices and internal CPU GPIOs.

Example of the `gpiotool` Output

```
Syntax: ./gpiotool <option>
-h := show this help
set := set GPIO pin
      # set pin# value
get := get GPIO pin value
      # get pin#
```

storagetool

The storage tool (`storagetool`) tests the physical media and SMART status media, if supported.

`storagetool` is commonly used with ODA Offline testing.

Example of the `storagetool` Output

```
Syntax: ./storagetool <option>
-h := show this help
list := list devices
test <device> := test devices (empty for all)
smart <device> := get the smart status for a device (empty for all)
```

psutool

The power supply tool (`psutool`) reports information about the power supplies. It can read and write the power supply parameters.

NOTE: If you are missing a power supply unit, the `psutool` test reports a failure.

Example of the `psutool` Output (Preliminary Syntax)

```
Syntax: ./psutool <option>
-h := show this help
test [[all] | power supply] := test using the default config file
read <psu> <register> := read the register on the Power Supply
write <psu> <register> <value> := write the value into the Power Supply Register
```

fantool

The fan tool (`fantool`) reports information about fan availability and fan speed. `fantool` also allows control of the fan speeds.

NOTE: If you are missing a fan, the `fantool` test reports a failure.

Example of the `fantool` Output

```
Syntax: ./fantool <option>
-h := show this help
test [[all] | fan controller] := test using the Fan Controller config file
init := Initialize the fans to the default state
set <fan | all> [speed in RPM | low | mid | high] := sets the fan(s) to the speed
fans in RPM
get <fan | all> := gets the speed of the specified fan or all
```

In the `fantool` configuration output, the first six rows describe the six fans in your system and the devices that control the fans. The second portion lists the speeds for the fans: low, medium, high, and default.

The first portion of the output lists the fan IDs, name, the device that controls the fan, the fan address on the I2C bus, and the instance of the fan control within the chip. Also included is a description of which fan tray the fan is located in. The last two values in the configuration file output are the speed resolution and the number of pulses per second.

Example of the `fantool` Configuration File Output

```
0 | Fan 1 | MAX6620 | 0x2a | 0 | Fan Tray 0 | 4 | 2
1 | Fan 2 | MAX6620 | 0x2a | 1 | Fan Tray 0 | 4 | 2
2 | Fan 3 | MAX6620 | 0x29 | 0 | Fan Tray 1 | 4 | 2
3 | Fan 4 | MAX6620 | 0x29 | 1 | Fan Tray 1 | 4 | 2
4 | Fan 5 | MAX6620 | 0x29 | 2 | Fan Tray 2 | 4 | 2
5 | Fan 6 | MAX6620 | 0x29 | 3 | Fan Tray 2 | 4 | 2
====
0 | 5 | 2000 | 9000 | 19000 | 18000
```

temptool

The temperature tool (`temptool`) allows access to the thermal sensors on the boards and devices.

Temperatures are reported in degrees C. `temptool` also allows you to set the temperature thresholds for error and monitoring.

Example of the `temptool` Output

```
Syntax: ./temptool <option>
-h := show this help
test := test the pre-programmed configuration
      # test <temperature_cfg_filename>
show := show current temp device values for
      # show <temperature_cfg_filename>
```

nvrantool

The NVRAM tool (`nvrantool`) allows the setting of the control bits for POST testing.

Example of the `nvrantool` Output

```
Syntax: ./nvrantool <option>
              -h := show this help
              read := read nvrantool values at reg index
              write <reg> <value> := write nvrantool value
```

Dell EMC diagnostics

The following describes the Dell EMC diagnostics. These instructions apply to systems for which the ONIE diagnostics are not available.

ONIE expansion

To view all the ONIE commands available, from the ONIE prompt, enter `onie-` and click **<tab>** twice.

```
ONIE:/ # onie- <TAB><TAB>
onie-boot-mode      onie-fwpkg          onie-syseeprom
onie-console        onie-nos-install    onie-sysinfo
onie-discovery-start onie-self-update    onie-uninstaller
onie-discovery-stop onie-support
```

Topics:

- [S4048-ON or S3048-ON diagnostic package](#)
- [S6000-ON, S4048-ON, or S3048-ON system information](#)
- [CPLD versions](#)
- [S6000-ON, S4048-ON, or S3048-ON factory defaults restore](#)

S4048-ON or S3048-ON diagnostic package

To install the S4048-ON or S3048-ON diagnostic package on your system, follow these steps.

NOTE: Before you begin, go to <http://www.dell.com/support> and download the diagnostic package. You will need your Dell EMC support access account to download the package.

- 1 Boot your system to ONIE.
- 2 Enter the `onie-discovery-stop` command to stop the ONIE discovery mode (`ONIE:/ # onie-discovery-stop`).
- 3 Configure the management interface to download the image using `ONIE:/ # ifconfig eth0 xx.xx.xx.xx/xx up`. Also ping the server/network IP address.

```
ONIE:/ # ifconfig eth0 xx.xx.xx.xx/xx up
ONIE:/ # ping -c4 xx.xx.xx.xx
PING xx.xx.xx.xx (xx.xx.xx.xx): 56 data bytes
64 bytes from xx.xx.xx.xx: seq=0 ttl=64 time=0.446 ms
64 bytes from xx.xx.xx.xx: seq=1 ttl=64 time=0.198 ms
64 bytes from xx.xx.xx.xx: seq=2 ttl=64 time=0.183 ms
64 bytes from xx.xx.xx.xx: seq=3 ttl=64 time=0.163 ms

--- xx.xx.xx.xx ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.163/0.247/0.446 ms
ONIE:/ #
```

- 4 Install the image using the `onie-nos-install` command.

```
ONIE:/ # onie-nos-install tftp://xx.xx.xx.xx/INSTALLER-DND-SK-x.x.x.xx.bin
Stopping: discover... done.
ONIE: Executing installer: ./INSTALLER-DND-SK-x.x.x.x.BIN ...

INSTALLER-DND-SK-1.0  3% |*          | 878k  0:00:29 ETA
INSTALLER-DND-SK-1.0 12% |***       | 3477k 0:00:13 ETA
```

```

INSTALLER-DND-SK-1.0 22% |*****| 6050k 0:00:10 ETA
INSTALLER-DND-SK-1.0 31% |*****| 8625k 0:00:08 ETA
INSTALLER-DND-SK-1.0 40% |*****| 10986k 0:00:07 ETA
INSTALLER-DND-SK-1.0 48% |*****| 13062k 0:00:06 ETA
INSTALLER-DND-SK-1.0 56% |*****| 15268k 0:00:05 ETA
INSTALLER-DND-SK-1.0 66% |*****| 18026k 0:00:04 ETA
INSTALLER-DND-SK-1.0 75% |*****| 20535k 0:00:02 ETA
INSTALLER-DND-SK-1.0 84% |*****| 22803k 0:00:01 ETA
INSTALLER-DND-SK-1.0 92% |*****| 25063k 0:00:00 ETA
INSTALLER-DND-SK-1.0 100% |*****| 27115k 0:00:00 ETA
ONIE: Executing installer: tftp://172.27.1.176/INSTALLER-DND-SK-x.x.x.x.bin
Verifying image checksum ... OK.
Preparing image archive from /installer ... Done.
Mounting /dev/sda3...Done.
Copying Images ...Done.
Installing Menu Entry ...Done
All Done
ONIE:/ # umount: can't remount rootfs read-only

The system is going down NOW!

Sent SIGTERM to all processes

Sent SIGKILL tosd 4:0:0:0: [sda] Synchronizing SCSI cache
Restarting system.
machine restart

```

- 5 After installing the diagnostic image, a new entry (DELL EMC DIAG) is added to the ONIE boot menu.
- 6 Select the DELL EMC DIAG option to boot the Diagnostics image.

NOTE: When you update ONIE, the DELL EMC DIAG option is removed. To recreate the DELL EMC DIAG option in the menu, you must install the Dell Diag Entry updater, as shown in the following example.

```

ONIE:/ #
ONIE:/ #
ONIE:/ # onie-nos-install tftp://xx.xx.xxx.xx/DND-SK-DELL-DIAG-ENTRY-UPDATER
Stopping: discover... done.
Info: Fetching tftp://xx.xx.xxx.xx/DND-SK-DELL-DIAG-ENTRY-UPDATER ...
DND-SK-DELL-DIAG-ENT 100% |*****| 15371 0:00:00 ETA
ONIE: Executing installer: tftp://10.16.127.35/DND-SK-DELL-DIAG-ENTRY-UPDATER
Verifying image checksum ... OK.
Preparing image archive from /installer ... Done.
Installing Menu Entry ...Done.
ONIE:/ # umount: can't remount rootfs read-only
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL tosd 4:0:0:0: [sda] Synchronizing SCSI cache
Restarting system.
machine restart

```

Dell EMC diagnostic test suite

To run the Dell EMC diagnostic test suite, use the following command.
Use the following step after the system boots up.

- 1 To run the Dell EMC diagnostic test suite, select the DELL EMC DIAG option.

NOTE: Use the up and down arrow keys to select which entry is highlighted. Press Enter to select an operating software-selected OS or enter e to edit the commands before booting. Enter c for a command line. The highlighted entry (*) executes automatically in the operating system.

You will see a “Welcome to Grub” message at the beginning of the process and the DCLI-> prompt at the end of the process.

```
GNU GRUB version 2.02~beta2+e4a1fe391
+-----+
|ONIE: Install OS          |
|ONIE: Rescue              |
|ONIE: Uninstall OS       |
|ONIE: Update ONIE        |
|ONIE: Embed ONIE         |
|*DELL EMC DIAG           |
|                           |
|                           |
|                           |
```

NOTE: The following commands are available at the DCLI prompt.

2 At the DCLI> prompt, enter the `testall` command to run all the Dell EMC diagnostics.

You can enter any of the following commands to run a specific type of diagnostic. To run a specific test, use the `testall testlevel=<n>` command, where $n = 0, 1, \text{ or } 2$. The `testall` command runs all the Level tests.

- `testall` — Runs all levels of tests (Level0, Level1, and Level2).
 - Level0 — tests the presences of the devices.
 - Level1 — tests the read/write access of the devices.
 - Level2 — runs Loopback tests.

NOTE: For all the S4048–ON tests to be successful, you must connect the following to your system:

- a USB-A device connected in the USB port.
- b Forty-eight 10 Gbps ports for small form-factor pluggable plus (SFP+) transceiver connections (back to back). For example, PORT1->PORT2, PORT3->PORT4, ... PORT47->PORT48.
- c Six 40 Gbps ports for quad small form-factor pluggable plus (QSFP+) transceiver connections (back to back). For example, PORT49->PORT50, PORT51->PORT52, PORT53->PORT54.

For all the S3048–ON tests to be successful, you must connect the following to your system:

- a USB 2.0 device connected in the USB port.
- b Forty-eight 10/100/1000Base-T RJ-45 ports. For example, PORT1->PORT2, PORT3->PORT4, ... PORT47->PORT48.
- c Four 10 Gbps ports for small form-factor pluggable plus (SFP+) transceiver connections (back to back). For example, PORT49->PORT50, PORT51->PORT52, PORT53->PORT54.

The following is an S4048–ON output example.

```
DCLI-> testall

Dell EMC Networking OS S4048-ON BOARD DIAGNOSTIC [0]

PPId                : CN08YWFG282983AQ0026
PPId Revision       : A00
Board Service Tag   : 64X8VS1
System Cpld Rev     : xx.x
Master Cpld Rev     : xx
Slave Cpld Rev      : x
Image Build Version : x.x(x.xx)

Available free memory: 1752698880 bytes

LEVEL 0 DIAGNOSTIC

Starting test: BIOSVersionTest .....
```

The Booted Bios Version : x.xx.x.x

```
BIOSVersionTest ..... PASS
Starting test: BoardRevisionTest .....
System CPLD: Board Stage: 0x2, Cpld Rev: 0x7
BoardRevisionTest ..... PASS
CpldAccessTest ..... PASS
CpuSdramPresenceTest ..... PASS
CpuTypeDetectTest ..... PASS
FanAirFlowTypeTest ..... PASS
FanStatusMonitorTest ..... PASS
FanTrayPresenceTest ..... PASS
Starting test: I2cAccessTest .....
I2C Devices Scanned - 16
I2C Device PASS Count - 16
I2cAccessTest ..... PASS
MgmtPhyAccessTest ..... PASS
MgmtPhyPresenceTest ..... PASS
PowerRailStatusTest ..... PASS
PsuFanAirFlowTypeTest ..... PASS
Starting test: PsuFanSpeedMonitorTest .....
PsuFanSpeedMonitorTest ..... PASS
PsuFanStatusMonitorTest ..... PASS
PsuPresenceTest ..... PASS
PsuSourceTypeTest ..... PASS
PsuStatusMonitorTest ..... PASS
QsfpPlusModulePresenceTest ..... PASS
QsfpPlusPhyAccessTest ..... PASS
RtcPresenceTest ..... PASS
sfpPlusModulePresenceTest ..... PASS
sfpPlusPhyAccessTest ..... PASS
Starting test: ShowTemperatureTest .....temperature monitor 0: current= 51.4, peak= 53.1
temperature monitor 1: current= 54.1, peak= 55.2
temperature monitor 2: current= 54.1, peak= 55.2
temperature monitor 3: current= 50.3, peak= 52.0
temperature monitor 4: current= 50.9, peak= 52.0
temperature monitor 5: current= 52.0, peak= 53.1
temperature monitor 6: current= 51.4, peak= 52.5
temperature monitor 7: current= 52.0, peak= 53.6
temperature monitor 8: current= 50.9, peak= 52.0
average current temperature is 51.9
maximum peak temperature is 55.2
ShowTemperatureTest ..... PASS
SsdPresenceTest ..... PASS
UsbAAccessTest ..... PASS
UsbHostControllerAccessTest ..... PASS
```

LEVEL 1 DIAGNOSTIC

```
Starting test: DDR3MemTest .....
DDR3MemTest ..... PASS
Starting test: dimmCacheMemoryTest .....
dimmCacheMemoryTest ..... PASS
FanCntlrAccessTest ..... PASS
FanCntlrSpeedTest ..... PASS
FanTrayEepromAccessTest ..... PASS
HotSwapControllerAccessTest ..... PASS
I2cStressTest ..... PASS
MainBoardEepromAccessTest ..... PASS
PsuEepromAccessTest ..... PASS
QsfpPlusEepromAccessTest ..... PASS
QsfpPlusPhyExtLinkTest ..... PASS
QsfpPlusPhyLnkSpeedTest ..... PASS
RtcFunctionTest ..... PASS
RtcRolloverTest ..... PASS
sfpPlusPhyExtLinkTest ..... PASS
```



```

sfpPlusPhyLnkSpeedTest ..... PASS
SsdFileCopyTest ..... PASS
Trident2AccessTest ..... PASS
TSensorAccessTest ..... PASS
UsbFileCopyTest ..... PASS

```

LEVEL 2 DIAGNOSTIC

```

CpuSnakeQsfpPlusExtLpbkTest ..... PASS
CpuSnakeQsfpPlusMacLpbkTest ..... PASS
CpuSnakeQsfpPlusPhyLpbkTest ..... PASS
CpuSnakeSfpPlusExtLpbkTest ..... PASS
CpuSnakeSfpPlusMacLpbkTest ..... PASS
CpuSnakeSfpPlusPhyLpbkTest ..... PASS
MgmtPortMacLoopbackTest ..... PASS
MgmtPortPhyLoopbackTest ..... PASS

```

----- Group Test Statistics -----

```

Total      : 55
Passed     : 55
Failed     : 0
Not Appl   : 0
Elapsed time : 00H:06M:41S
Stop reason : after completion

```

The following is an S3048-ON output example.

DCLI-> testall

Dell EMC Networking OS S3048-ON BOARD DIAGNOSTIC [0]

```

PPIId                : CN123456DELLI2158989
PPIId Revision       : A00
Board Service Tag    : SERVTAG
MMC Rev              : XxX
SMC Rev              : XxX
Image Build Version  : x-x(x-x)

```

Available free memory: 1716424704 bytes

LEVEL 0 DIAGNOSTIC

```

B50282PhyAccessTest ..... PASS
Starting test: BiosVerGet .....
The Booted Bios Version      : x.xx.x.x-xx
BiosVerGet ..... PASS
CpuSdramPresenceTest ..... PASS
CpuSdramSizeTest ..... PASS
CpuTypeDetectTest ..... PASS
FanAirFlowTypeTest ..... PASS
FanCntlRAccessTest ..... PASS
FanStatusMonitorTest ..... PASS
FanTrayPresenceTest ..... PASS
Helix4AccessTest ..... PASS
Starting test: I2cAccessTest .....
I2C Devices Scanned - 10
I2C Device PASS Count - 10
I2cAccessTest ..... PASS
MgmtPhyAccessTest ..... PASS
MgmtPhyPresenceTest ..... PASS
MmcBoardRevisionTest ..... PASS
PsuFanAirFlowTypeTest ..... PASS
PsuFanSpeedMonitorTest ..... PASS

```

```

PsuFanStatusMonitorTest ..... PASS
PsuPresenceTest ..... PASS
PsuSourceTypeTest ..... PASS
PsuStatusMonitorTest ..... PASS
RtcPresenceTest ..... PASS
SfpPlusModulePresenceTest ..... PASS
ShowTemperatureTest ..... PASS
SmcBoardRevisionTest ..... PASS
SsdPresenceTest ..... PASS
UsbAAccessTest ..... PASS
UsbHostControllerAccessTest ..... PASS

```

LEVEL 1 DIAGNOSTIC

```

B50282PhyExternalLinkTest ..... PASS
B50282PhyLinkSpeedTest ..... PASS
DDR3MemTest ..... PASS
FanCntlrSpeedTest ..... PASS
FanTrayEepromAccessTest ..... PASS
I2cStressTest ..... PASS
MainBoardEepromAccessTest ..... PASS
PsuEepromAccessTest ..... PASS
RtcFunctionTest ..... PASS
RtcRolloverTest ..... PASS
SfpPlusEepromAccessTest ..... PASS
Starting test: SsdFileCopyTest .....
ERROR:Dir /f10/slot0 already present on MS-DOS partition
SsdFileCopyTest ..... PASS
TSensorAccessTest ..... PASS
UsbFileCopyTest ..... PASS

```

LEVEL 2 DIAGNOSTIC

```

CpuSnakeIlgMacLpbkTest ..... PASS
CpuSnakeIlgPhyLpbkTest ..... PASS
CpuSnakeSfpPlusMacLpbkTest ..... PASS
CpuSnakeSfpPlusPhyLpbkTest ..... PASS
MgmtPortMacLoopbackTest ..... PASS
MgmtPortPhyLoopbackTest ..... PASS

```

```

----- Group Test Statistics -----
Total      : 47
Passed     : 47
Failed     : 0
Not Appl   : 0
Elapsed time : 00H:07M:27S
Stop reason  : after completion

```

DCLI->

NOTE: Entering the `reload` command at the DCLI prompt reloads the ONIE or OS installed on the system. It does not reload the Diagnostic tools.

S6000-ON, S4048-ON, or S3048-ON system information

To view your S6000-ON, S4048-ON, or S3048-ON system information; for example, the model, part number, serial number, and service tag, follow these steps.

- 1 Boot into ONIE.
- 2 Enter the `onie-syseeprom` command.

```
ONIE:/ # onie-syseeprom
```

Example of the onie-syseeprom Command

```
TlvInfo Header:
  Id String:   TlvInfo
  Version:    1
  Total Length: 78
TLV Name      Code Len Value
-----
MAC Addresses 0x2A  2 129
Base MAC Address 0x24  6 00:05:33:6A:BF:4D
Vendor Name    0x2D  4 Dell
Product Name   0x21  8 S6000-ON
Part Number    0x22  6 08YWFG
Serial Number  0x23 12 DLCN13980015
Label Revision 0x27  3 A00
Manufacturer   0x2B  1 1
Service Tag    0x2F  2 ABC1AB2
Loader Version 0x29  8 x.xx.x.x
CRC-32        0xFE  4 0xC1EB87D1
Checksum is valid.
```

CPLD versions

To view CPLD data, including the fan status, PSU status, current programmed version, and image packed version, use the `showSystemInfo` command at the DCLI prompt.

- Enter the `showSystemInfo` command to view the CPLD information.

```
DCLI-> showSystemInfo

***** S4048ON SYSTEM INFO *****

Software Info:
  SW Name           : Dell Networking OS
  SW Version        : x.x(x.xx)

Board Info:
  Board Revision    : 0x2
  Board Service Tag : 66D7VS1

CPLD Info:
  System CPLD Version: xx.x
  Master CPLD Version: xx
  Slave CPLD Version : x

Packed CPLD image Info:
  Packed System CPLD Version : xx.x
  Packed Master CPLD Version : xx
  Packed Slave CPLD Version  : x

PPId Info:
  PPId              : TW0J09D32829849Q0001
  PPId Revision     : X01

SysEeprom Info:
  Base MAC Address  : 34:17:eb:f2:23:c4
  Country Code      : TW
  Part Number       : 0J09D3
  Manufacturer      : 28298
  Manufacture Date  : 10/02/2014 18:49:28
  Product Name      : S4000ON

Power Supply Info:
  Power Supply      : 1
  AirFlow Direction : NORMAL
  Part Number       : 0T9FNW
```

```

Serial Number      : TW0T9FNW2829849Q0041
Sevice Tag        : AEIOU##

Fantray Info:
FanTray[1]
  AirFlow Direction : NORMAL
  Part Number       : 0MGDH8
  Serial Number     : TW0MGDH82829849Q0002
  Sevice Tag        : AEIOU##
FanTray[2]
  AirFlow Direction : NORMAL
  Part Number       : 0MGDH8
  Serial Number     : TW0MGDH82829849Q0003
  Sevice Tag        : AEIOU##
FanTray[3]
  AirFlow Direction : NORMAL
  Part Number       : 0MGDH8
  Serial Number     : TW0MGDH82829849Q0001
  Sevice Tag        : AEIOU##

```

S6000-ON, S4048-ON, or S3048-ON factory defaults restore

If you need to restore the S6000-ON, S4048-ON, or S3048-ON factory defaults, reboot the system to ONIE Rescue mode.

If it is not possible to do this with the operating system you installed, reboot the system and from Grub and select ONIE: Rescue.

⚠ CAUTION: Restoring factory defaults erases any installed operating system and requires a long time to erase storage.

ONIE Rescue bypasses the installed operating system and boots the system into ONIE until you reboot the system. After ONIE Rescue completes, the system resets and boots to the ONIE console.

- 1 Restore the S6000-ON, S4048-ON, or S3048-ON factory defaults from Grub using the ONIE: Rescue command.

Use the up and down arrow keys to select which entry is highlighted. Press Enter to select an operating software-selected OS or enter e to edit the commands before booting. Enter c for a command line. The highlighted entry (*) executes automatically in the operating system.

```
GNU GRUB version 2.02~beta2+e4a1fe391
```

```

+-----+
| ONIE: Install OS          |
| *ONIE: Rescue            |
| ONIE: Uninstall OS      |
| ONIE: Update ONIE       |
| ONIE: Embed ONIE        |
| DELL EMC DIAG           |
|                           |
|                           |
|                           |
|                           |
+-----+

```

- 2 Press ENTER to activate the console.
- 3 You can also use the onie-uninstaller command to return to the default ONIE settings.

```

ONIE:/ # onie-uninstaller
Erasing unused NOR flash region Erasing 128 Kibyte @ 20000 - 100% complete. Erasing internal
mass storage device: /dev/mmcblk0 (7832MB) Percent complete: 100%

```

Dell EMC support

Dell EMC Support provides a range of documents and tools to assist you with effectively using Dell EMC equipment and mitigating the impact of network outages.

Through Dell EMC Support you can obtain technical information regarding Dell EMC products, access to software upgrades and patches, and open and manage your Technical Assistance Center (TAC) cases. Dell EMC support provides integrated, secure access to these services.

Accessing support services

The URL for Dell EMC support is <http://www.dell.com/support>. You must have a userid and password to access support services. If you do not have a userid and password, you can request these at the website.

To request a userid, password, and Dell EMC support services:

- 1 On the Dell EMC support page, click the **Account Request** link.
- 2 Fill out the User Account Request form and click **Send**. You will receive your userid and password by email.
- 3 To access Dell EMC support services, click the **LOGIN** link and enter your userid and password.

Technical assistance center

How to contact Dell EMC TAC Log in to Dell EMC support at <http://www.dell.com/support> and select the Service Request tab.

Information to submit when opening a support case

- Your name, company name, phone number, and email address
- Preferred method of contact
- Model number
- Software version number
- Symptom description

Managing your case Log in to Dell EMC support and select the **Service Request** tab to view all open cases and Return Materials Authorizations (RMAs).

Technical documentation Log in to Dell EMC support and select the **Documents** tab. You can access this page without logging in using the **Documentation** link on the Support page.

Contact information Web: www.dell.com.

Email: Networking-Support@Dell.com