

uCPE Networking DIAG OS Guide

February 2019

Notes, cautions, and warnings

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

 **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 Dell EMC diagnostics operating system (DIAG OS) step-by-step procedures for setup, configuration and restores for the VEP4600 platform.

Notices

- ⚠ **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 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.

Related documents

For more information about your Open Networking (-ON) platform, see the following documents:

- *Dell EMC Getting Started Guide or Dell EMC Setup Guide*
- *Dell EMC Installation Guide*
- *Dell EMC Release Notes*

BIOS setup and configuration

This section describes how to access the BIOS setup and configuration screen on your system.

Access the BIOS setup and configuration screen from the command prompt. Ensure that your TFTP server is reachable over your network.

NOTE: The following output examples are for reference only; your output may vary.

NOTE: The management port IP, FTP server IP address, MAC address, and user-id shown are for illustration purpose only. Use your system's applicable values.

Topics:

- [Power on VEP4600](#)
- [Create a serial console connection](#)
- [BIOS access process](#)

Power on VEP4600

Plug in a power cord to the back of VEP4600 platform. The platform starts to power up immediately.

Create a serial console connection

To establish a console connection use a universal serial bus (USB)-to-RS-232 connection from a USB port to a VEP4600 console port.

NOTE: Use a 115200 baud rate.

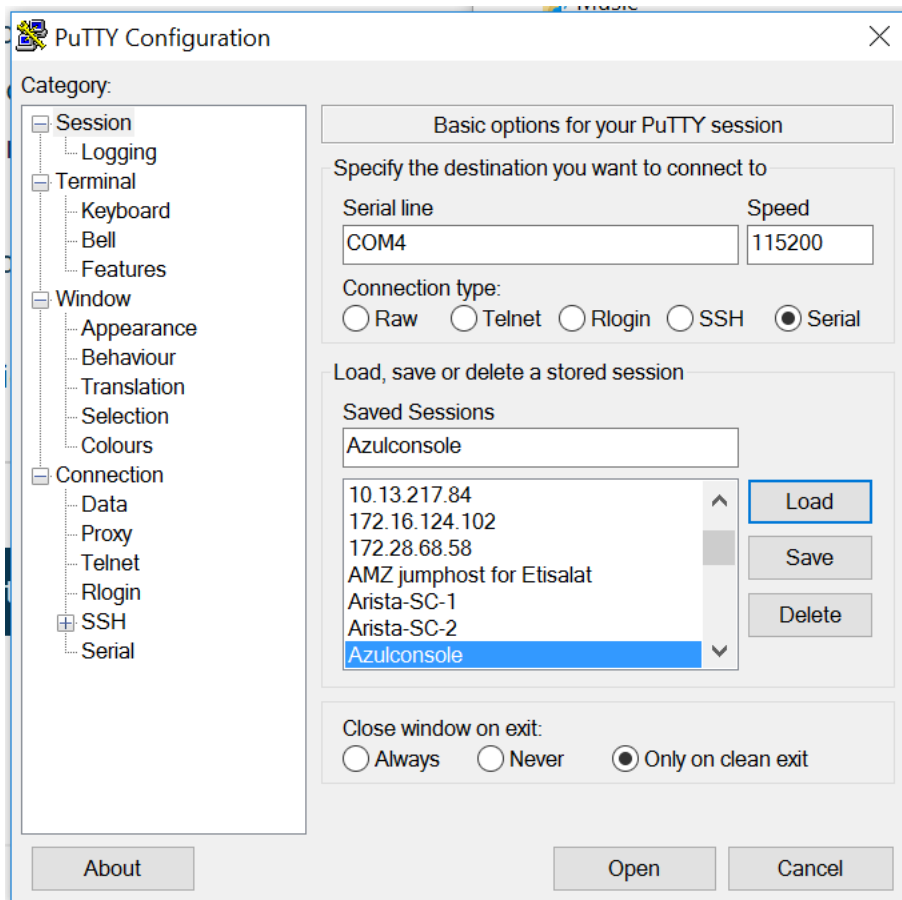


Figure 2. puTTY 115200 baud rate setup

BIOS access process

1 Press the **delete** button after the POST Lower DRAM Memory test appears on the screen.

Continue pressing the **delete** button to progress to the BIOS setup and configuration screen.

NOTE: If the BIOS setup and configuration screen window passes, power off and power on the platform again to restart the boot up process.

```
CPLD Reset Source=0x44

POST Configuration
CPU Signature 50654
CPU FamilyID=6, Model=55, SteppingId=4, Processor=0
Microcode Revision 2000043
Platform ID: 0x1000000000000000
PKG_CST_CFG_CTL: 0x3
Misc_EN: 0x4000840088
Gen PM Con1: 0x0
Therm Status: 0x8000000
POST Control=0xEA000303, Status=0xE6008500

BIOS initializations...

POST:
RTC Battery OK at last cold boot
RTC date 5/4/2018 3:02:03

POST SPD test ..... PASS

POST Lower DRAM Memory test
...█
```

Figure 3. Initial boot up screen

```
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
BIOS Date: 04/11/2018 02:44:05 Ver: 0ACJF020
Press <DEL> or <F2> to enter setup.
```

Figure 4. Boot up screen

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
Main  Advanced  Platform Configuration  Socket Configuration  Server Mgmt  >
-----+-----
BIOS Information                                     ^|Choose the system
BIOS Vendor           American Megatrends          *|default language
Core Version          5.14                          *|
Compliancy            UEFI 2.6; PI 1.4             *|
Project Version       0ACJF 0.20 x64               *|
Build Date and Time   04/11/2018 02:44:05          *|
Access Level          Administrator                *|
                                                             *|
Platform Information                                   *|
Platform              TypeYubaCityRP              *|-----+-----
Processor             50654 - SKX M0                               *|><: Select Screen
PCH                   - B2-D                          *|^v: Select Item
RC Revision            05D81                           *|Enter: Select
                                                             *|+/-: Change Opt.
Memory Information    *|F1: General Help
Total Memory          16384 MB                       +|F2: Previous Values
                                                             +|F3: Optimized Defaults
System Language       [English]                       v|F4: Save & Exit
                                                             |ESC: Exit
-----+-----
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.

```

Figure 5. BIOS setup and configuration screen

Dell Embedded DIAGS

This section describes how to access the Dell embedded diagnostics in BIOS.

Topics:

- Dell embedded diagnostics
- PSU (Power Supply Units) diagnostics
- Fan diagnostics
- I2C diagnostics
- RTC/CMOS diagnostics
- PCI diagnostics
- DIMM diagnostics
- IPMI (BMC) diagnostics
- Storage diagnostics
- Critical Device diagnostics
- Temperature diagnostics

Dell embedded diagnostics

The embedded Dell embedded diagnostics are a new feature that can be used when the Dell embedded diagnostics OS partition on the internal SSD has been deleted.

Entering Dell embedded diagnostics

 **NOTE:** For a more exhaustive set of diagnostic routines please refer to the [Dell EMC DIAG OS operating system](#).

The **Dell embedded diagnostics tab** is available from the BIOS setup menu.

To enter the BIOS setup, press the **delete** key during the BIOS boot up.

By default, to enter the BIOS setup, you have three seconds to press the **delete** key during the BIOS boot up. To increase the time allowed, from the **BIOS setup** screen, select the **Boot** tab, then change the **Setup Prompt Timeout** number. The maximum prompt timeout is 10 seconds.

Dell embedded diagnostics parameters

Tab to **Test Option**.

Tab to **[No Action]** and cycle to **[Run Test]** to start the test.

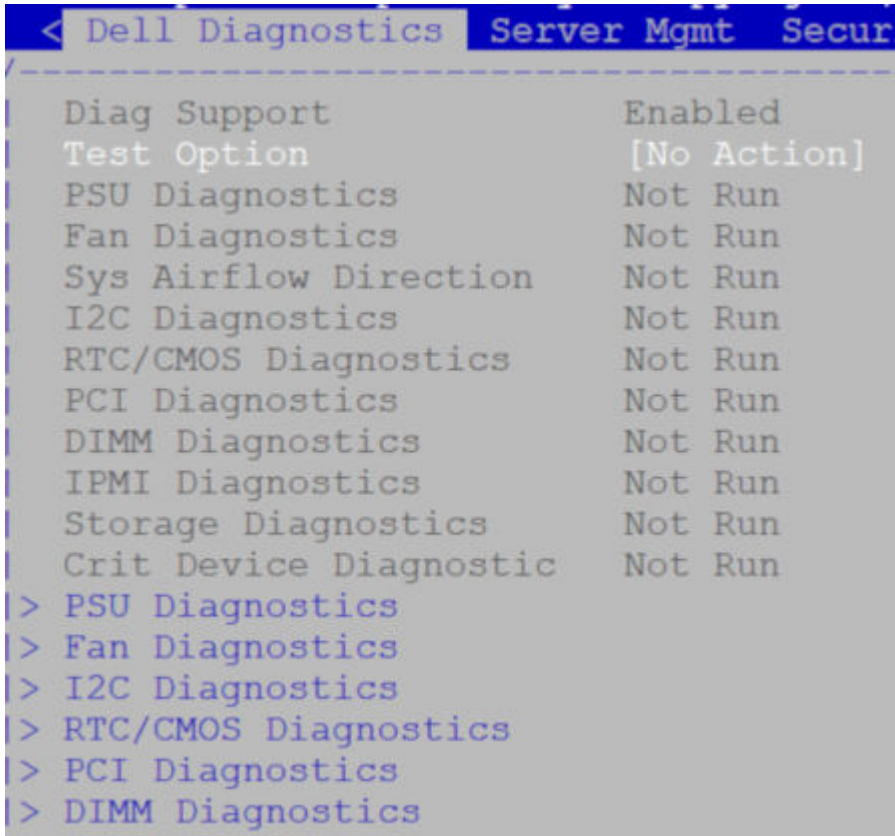
Once the tests are complete, the results are displayed in the Dell embedded diagnostics Test status.

To rerun the tests, cycle to **Clear Status** and then select **[Run Test]**

to re-start the test.

Alternatively, to re-run, Select **No Action** and then select **[Run Test]** to re-start the test.

Each component's detailed test result pages can be accessed by the goto links in the Dell embedded diagnostics top level menu.



Dell embedded diagnostics components menu

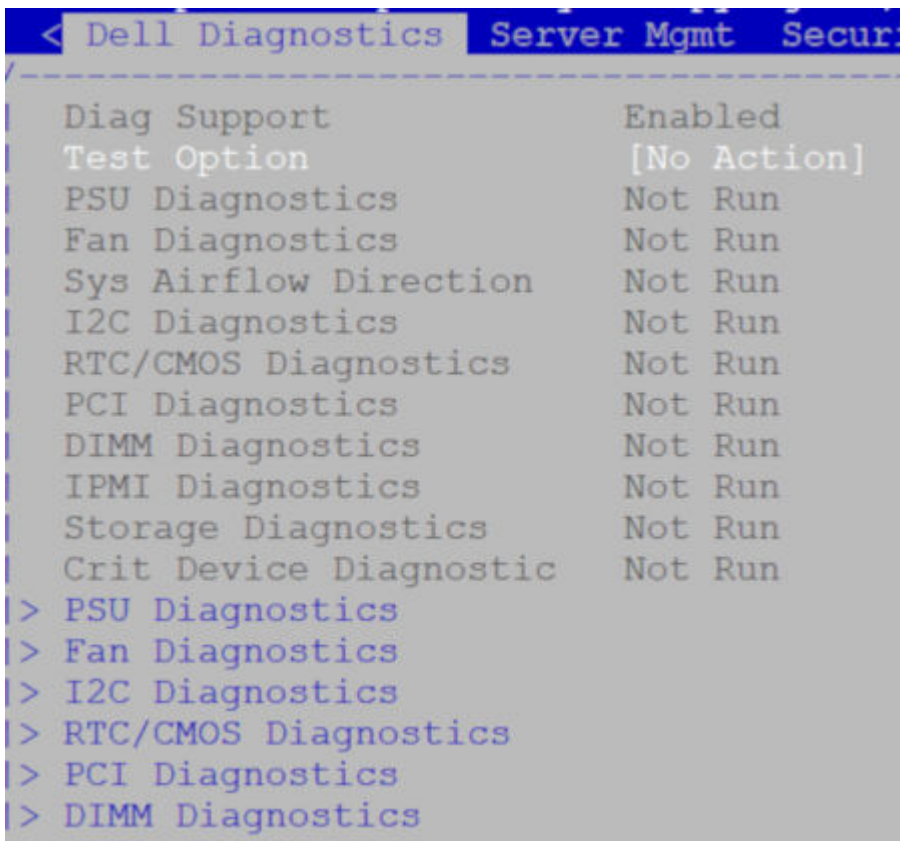
PSU (Power Supply Units) diagnostics

PSU diagnostics configuration.

Entering PSU diagnostics

The **PSU diagnostic** tab is available from the Dell diagnostics menu.

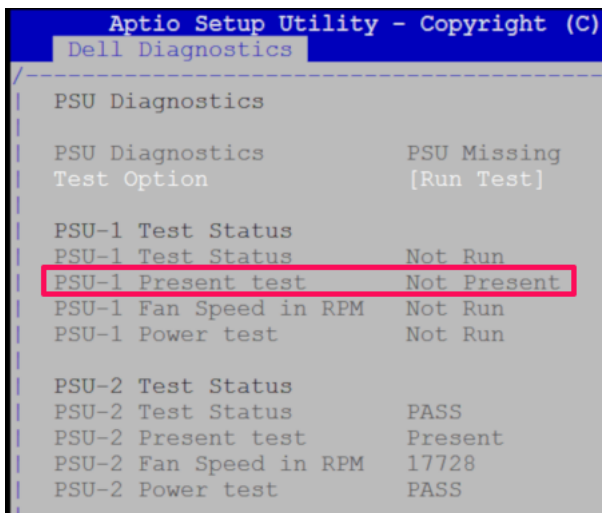
To enter the PSU Diagnostics, select **PSU Diagnostics** from the Dell diagnostics menu.



PSU diagnostics component

PSU diagnostic parameters

PSU diagnostics measure fan speed and voltage output ranges.



PSU diagnostics menu

NOTE: One of the PSU-1 units is removed, Not Present, to show a PSU missing scenario.

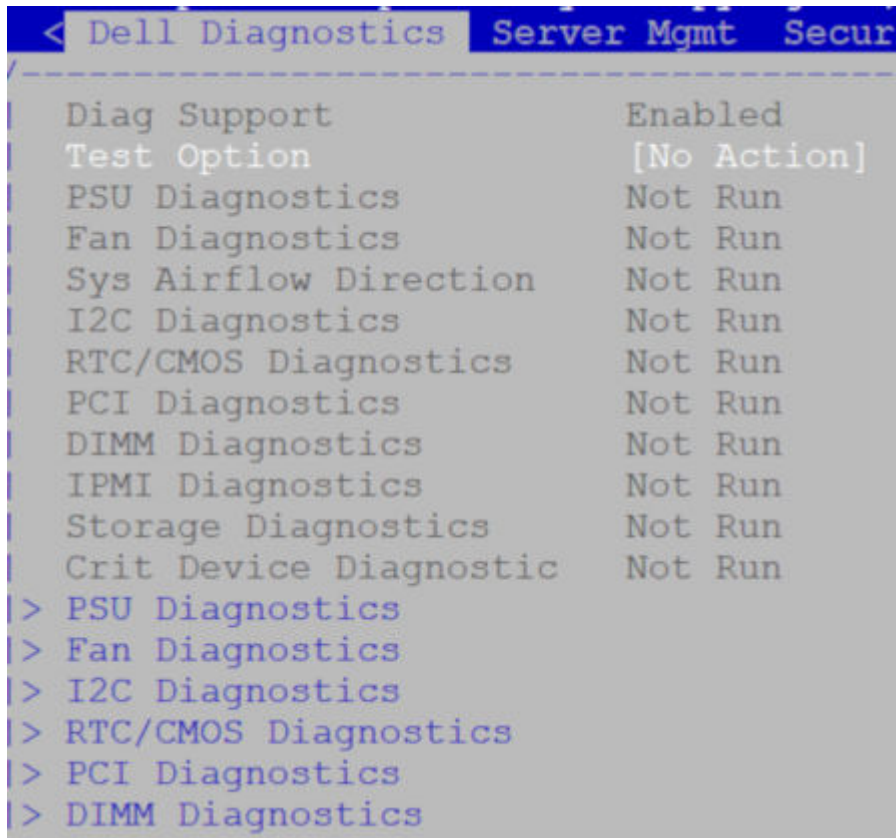
Fan diagnostics

Fan component embedded DIAG configuration.

Entering Fan diagnostics

The **Fan diagnostic** tab is available from the Dell diagnostics menu.

To enter the Fan Diagnostics, select **Fan Diagnostics** from the Dell diagnostics menu.



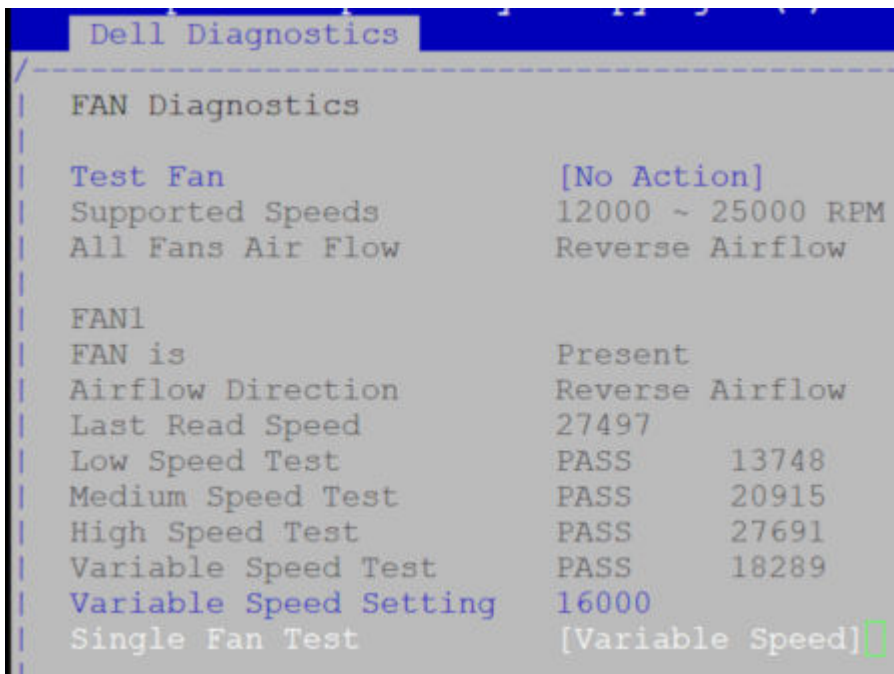
Fan diagnostics component

Fan diagnostic parameters

Fan diagnostics measure:

- 1 FAN is **Present**
- 2 Airflow Direction
- 3 Last Read Speed
- 4 Low Speed Test
- 5 Medium Speed Test
- 6 High speed Test
- 7 Variable Speed Test

- 8 Variable speed Setting
- 9 Single Fan Test



Fan diagnostics menu

① | **NOTE:** The Low, Medium and High Speed Test parameters verifies if the RPMs are within tolerance when set to various speeds.

① | **NOTE:** The Last Read Speed verifies if the RPM are within tolerance when they are set to various speeds.

I2C diagnostics

I2C embedded DIAG configuration.

Entering I2C diagnostics

The **I2C diagnostic** tab is available from the Dell diagnostics menu.

To enter the I2C Diagnostics, select **I2C Diagnostics** from the Dell diagnostics menu.

```
< Dell Diagnostics Server Mgmt Secur
-----
Diag Support           Enabled
Test Option           [No Action]
PSU Diagnostics       Not Run
Fan Diagnostics       Not Run
Sys Airflow Direction Not Run
I2C Diagnostics       Not Run
RTC/CMOS Diagnostics Not Run
PCI Diagnostics       Not Run
DIMM Diagnostics      Not Run
IPMI Diagnostics      Not Run
Storage Diagnostics   Not Run
Crit Device Diagnostic Not Run
> PSU Diagnostics
> Fan Diagnostics
> I2C Diagnostics
> RTC/CMOS Diagnostics
> PCI Diagnostics
> DIMM Diagnostics
```

I2C diagnostics component

I2C diagnostic parameters

I2C diagnostics verifies access to:

- 1 CPLD
- 2 EEPROM
- 3 MAX6699
- 4 EMC2305t
- 5 PSU1
- 6 PSU2
- 7 Fan1
- 8 Fan2

```
Aptio Setup Utility - Copyright (C)
Dell Diagnostics
-----
I2C Diagnostics

I2C Diagnostics          FAIL
Test Option              [No Action]

I2C test system CPLD    PASS
I2C test System EEPROM PASS
I2C test MAX6699 dev    PASS
I2C test EMC2305 dev    PASS
I2C PSU1 access         FAIL
I2C PSU2 access         PASS
I2C Fan1 access         PASS
I2C Fan2 access         PASS
I2C Fan3 access         PASS
I2C Fan4 access         PASS
I2C Fan5 access         PASS

> IDEEPROM HEXDump
```

I2C diagnostics menu

① **NOTE:** One of the I2C PSU-1 units is removed FAIL to show a missing I2C PSU scenario.

```
Aptio Setup Utility - Copyright (C)
Dell Diagnostics
-----
I2C PSU1 access         FAIL
I2C PSU2 access         PASS
I2C Fan1 access         PASS
I2C Fan2 access         PASS
I2C Fan3 access         PASS
I2C Fan4 access         PASS
I2C Fan5 access         PASS

> IDEEPROM HEXDump
```

① **NOTE:** IDEEPROM HEXDump parameter displays the contents of the system EEPROM in hexadecimal format.

```
Aptio Setup Utility
Dell Diagnostics
-----
|
| C0 : 20 20 20 20
| C4 : 20 20 20 20
| C8 : 20 20 20 20
| CC : 20 20 20 FF
| D0 : 20 20 20 20
| D4 : 20 20 20 20
| D8 : 20 20 20 20
```

IDEEPROM HEXDump FRU content output

RTC/CMOS diagnostics

RTC/CMOS component embedded DIAG configuration. This page displays RTC (Real Time Clock), CMOS (Complementary metal-oxide semiconductor), accessible valid values.

Entering RTC/CMOS diagnostics

The **RTC/CMOS diagnostic** tab is available from the Dell diagnostics menu.

To enter the RTC/CMOS Diagnostics, select **RTC/CMOS Diagnostics** from the Dell diagnostics menu.

```

< Dell Diagnostics Server Mgmt Secur
-----
Diag Support                Enabled
Test Option                 [No Action]
PSU Diagnostics            Not Run
Fan Diagnostics            Not Run
Sys Airflow Direction      Not Run
I2C Diagnostics            Not Run
RTC/CMOS Diagnostics       Not Run
PCI Diagnostics            Not Run
DIMM Diagnostics           Not Run
IPMI Diagnostics           Not Run
Storage Diagnostics        Not Run
Crit Device Diagnostic     Not Run
> PSU Diagnostics
> Fan Diagnostics
> I2C Diagnostics
> RTC/CMOS Diagnostics
> PCI Diagnostics
> DIMM Diagnostics

```

RTC/CMOS diagnostics component

RTC/CMOS diagnostic parameters

NOTE: The user has an option to run RTC rollover test.

RTC/CMOS diagnostics measure:

- 1 Status of Boot Tests
 - a RTC Battery Test
 - b CMOS Magic Test
- 2 RTC/CMOS configurations
 - a Bios Verbosity

NOTE: This parameter mode runs only in the current boot and is disabled in the next boot.
It displays the current status based on the CMOS BIOS Verbose control bit.

- b BIOS POST

NOTE: Tests can be enabled/disabled in subsequent boots with this BIOS POST parameter. Test status of the POST will be SKIP if POST is disabled.

- 3 RTC Test Last Log Entries
 - a RTC Last Error Log
 - b RTC Last Trace Log

```
Aptio Setup Utility - Copyright (C) 2018 Ame
Dell Diagnostics
-----
RTC/CMOS Diagnostics

RTC Rollover Test          PASS
Test Option                [Run Test]

Status of Boot Tests
RTC Battery Test          PASS
CMOS Magic Test          PASS

RTC/CMOS Configurations
Bios Verbosity            [Disabled]
BIOS POST                 [Enabled]

RTC Test Last Log Entries
RTC Last Error Log       No log entry
RTC Last Trace Log      Callback Key (10017) █
```

RTC/CMOS diagnostics menu

PCI diagnostics

PCI component embedded DIAG configuration.

Entering PCI diagnostics

The **PCI diagnostic** tab is available from the Dell diagnostics menu.

To enter the PCI Diagnostics, select **PCI Diagnostics** from the Dell diagnostics menu.

```
< Dell Diagnostics Server Mgmt Secur
-----
Diag Support           Enabled
Test Option           [No Action]
PSU Diagnostics       Not Run
Fan Diagnostics        Not Run
Sys Airflow Direction Not Run
I2C Diagnostics        Not Run
RTC/CMOS Diagnostics  Not Run
PCI Diagnostics        Not Run
DIMM Diagnostics       Not Run
IPMI Diagnostics       Not Run
Storage Diagnostics   Not Run
Crit Device Diagnostic Not Run
> PSU Diagnostics
> Fan Diagnostics
> I2C Diagnostics
> RTC/CMOS Diagnostics
> PCI Diagnostics
> DIMM Diagnostics
```

PCI diagnostics component

PCI diagnostic parameters

This page displays the status of the PCI tests with an expanding list of all the available PCI devices in the system.

```
Aptio Setup Utility - Copyright (C) 2018 A
Dell Diagnostics
-----
PCI Diagnostics
PCI Diagnostics          PASS
Test Option              [No Action]
Status of Boot Tests
PCI Diagnostics          PASS
> List of Available Devices

PCI Test Last Log Entries
PCI Last Error Log      No log entry
PCI Last Trace Log     Callback Key (10000)
```

PCI diagnostics menu

Expanding the list of available devices sections displays the bus:dev.fn and the vendor and device IDs of the devices.

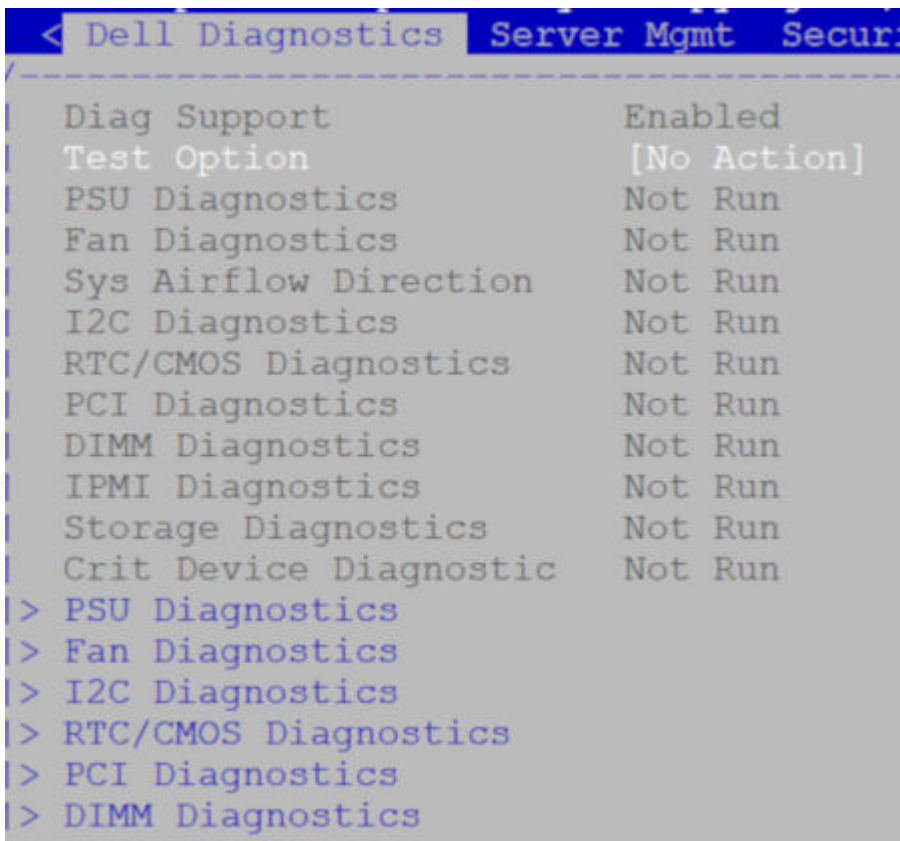
DIMM diagnostics

DIMM component embedded DIAG configuration.

Entering DIMM diagnostics

The **DIMM diagnostic** tab is available from the Dell diagnostics menu.

To enter the DIMM Diagnostics, select **DIMM Diagnostics** from the Dell diagnostics menu.



DIMM diagnostics component

DIMM diagnostic parameters

DRAM test results provide next boot configuration options and methods to run tests from the setup menu.

DIMM diagnostics test:

- 1 DRAM DIMM (0/1) SPD (for each channel)
- 2 Status of Boot Tests
 - a Memory Test Lo Range
 - b Memory Test Hi Range
- 3 ECC Test
- 4 SPD EEPROM Test
- 5 Next Boot Configuration
 - a Lower Mem Extended Test
 - b Upper Mem Extended Test
 - c SPD LOOP TEST Enable
 - d SPD TEST loop count
- 6 Extended Memor Test Flags
 - a Addr in Addr Test
 - b Inverse Addr in Addr
 - c Test
 - d March B Test

- e March C Test
- f NPSF Test

```
Aptio Setup Utility - Copyright (C)
Dell Diagnostics
-----
| DIMM Diagnostics
|
| Upper DRAM Extended      Not Run
| Test Status
| Test Option              [No Action]
|
| Channel 0
| DRAM DIMM0 SPD          Present
| DRAM DIMM1 SPD          Not Present
| Channel 1
| DRAM DIMM0 SPD          Not Present
| DRAM DIMM1 SPD          Not Present
| Channel 3
| DRAM DIMM0 SPD          Not Present
| DRAM DIMM1 SPD          Not Present
| Channel 4
| DRAM DIMM0 SPD          Not Present
| DRAM DIMM1 SPD          Not Present
```

DIMM diagnostics menu

```
Aptio Setup Utility - Copyright (
Dell Diagnostics
/-----
| Channel 4
| DRAM DIMM0 SPD           Not Present
| DRAM DIMM1 SPD           Not Present
|
| Status of Boot Tests
| Memory Test Lo Range     PASS
| Memory Test Hi Range     PASS
| ECC Test                  PASS
| SPD EEPROM Test          PASS
|
| Next Boot Configuration
| Lower Mem Extended       [Disabled]
| Test
| Upper Mem Extended       [Disabled]
| Test
| SPD LOOP TEST Enable     [Enabled]
| SPD TEST loop count      [5]
```

DIMM Boot test status and Next boot configuration parameters

Status of Boot Tests

The status of the **SPD EEPROM Test** will be **SKIP** after first boot following BIOS setup.

NOTE: Enable BIOS Verbosity in the [RTC/CMOS Diagnostics](#) to examine the SPD contents and CRC values.

Next Boot Configuration

Upper Mem Extended Test can be run interactively from the setup menu. Test results will be updated in the text above the parameter.

```
Aptio Setup Utility - Copyright (C) 2007 Dell Diagnostics
/-----
| SPD LOOP TEST Enable      [Enabled]
| SPD TEST loop count      [5]
|
| Extended Memory Test Flags
| Addr in Addr Test        [Enabled]
| Inverse Addr in Addr     [Enabled]
| Test
| March B Test              [Disabled]
| March C Test              [Disabled]
| NPSF Test                  [Disabled]
|
```

DIMM Extended Memory Test Flags parameters

The Upper and Lower Memory tests are scheduled to run in the following boot and only in that next boot. SPD Loop test can be enabled/disabled with counts 2 to 6.

SPD TEST loop count verifies the spd checksum for count times at boot time.

The Extended Memory Test flags configure what tests run in the BOTH Extended Memory tests at boot.

Extended flags are consistent with the CMOS control bits

NOTE: .A progress bar displays what test is running and how many tests are completed.

IPMI (BMC) diagnostics

IPMI component embedded DIAG configuration.

Entering IPMI diagnostics

The **IPMI diagnostic** tab is available from the Dell diagnostics menu.

To enter the IPMI Diagnostics, select **IPMI Diagnostics** from the Dell diagnostics menu.

```
< Dell Diagnostics Server Mgmt Security
-----
Diag Support                Enabled
Test Option                 [No Action]
PSU Diagnostics             Not Run
Fan Diagnostics             Not Run
Sys Airflow Direction       Not Run
I2C Diagnostics             Not Run
RTC/CMOS Diagnostics        Not Run
PCI Diagnostics             Not Run
DIMM Diagnostics            Not Run
IPMI Diagnostics            Not Run
Storage Diagnostics         Not Run
Crit Device Diagnostic      Not Run
> PSU Diagnostics
> Fan Diagnostics
> I2C Diagnostics
> RTC/CMOS Diagnostics
> PCI Diagnostics
> DIMM Diagnostics
```

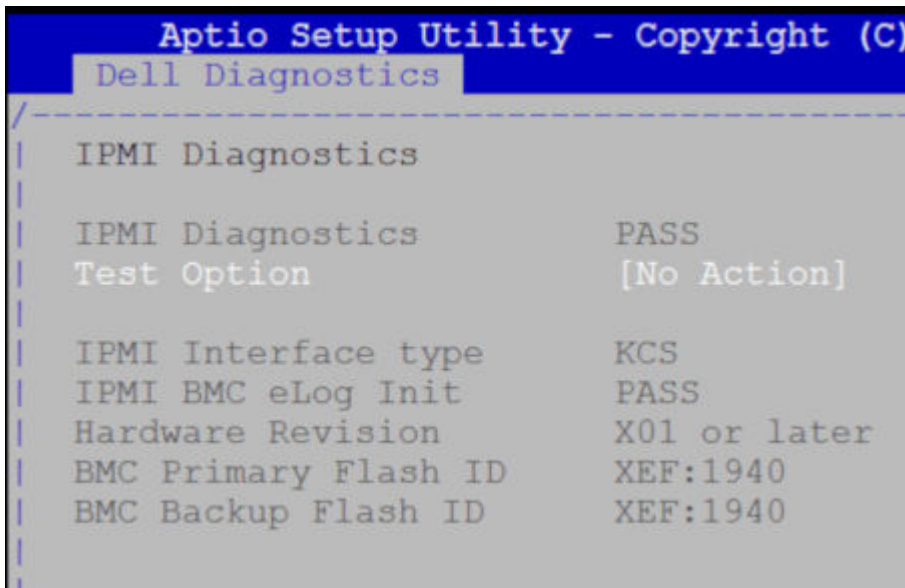
IPMI diagnostics component

IPMI diagnostic parameters

IPMI diagnostics display Baseboard Management Controller(BMC) relevant parameters.

IPMI diagnostics verifies/reads:

- 1 IPMI Interface type
- 2 IPMI BMC eLog Init
- 3 Hardware Revision
- 4 BMC Primary Flash ID
- 5 BMC Backup Flash ID



IPMI diagnostics menu

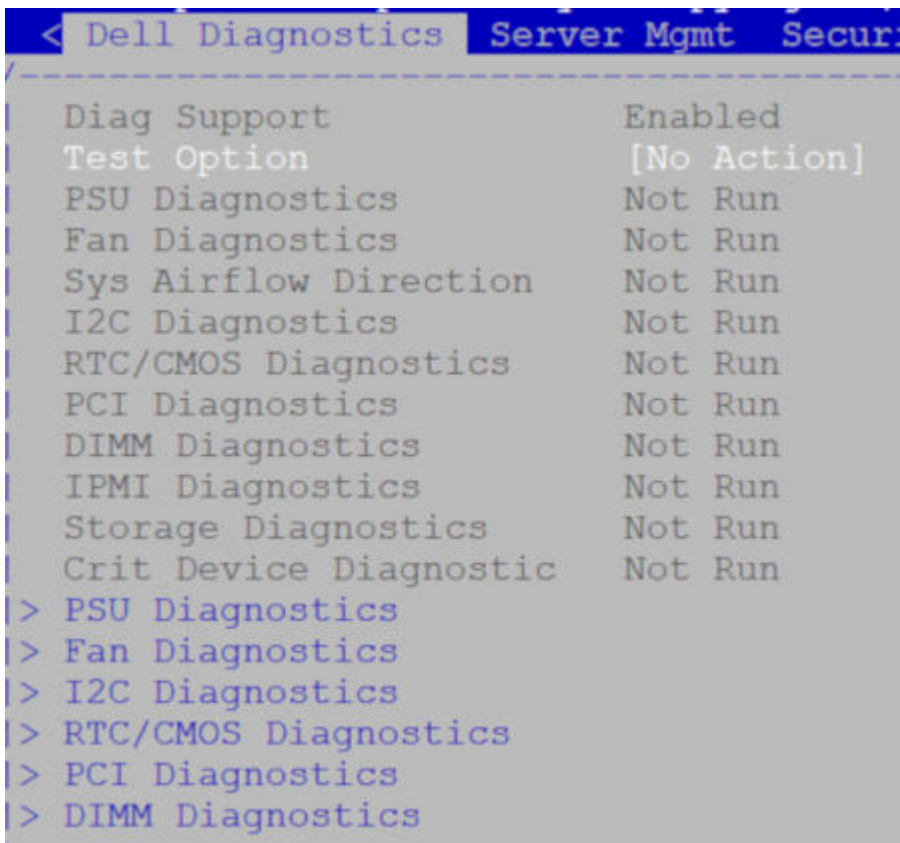
Storage diagnostics

Storage embedded DIAG configuration.

Entering Storage diagnostics

The **Storage diagnostic** tab is available from the Dell diagnostics menu.

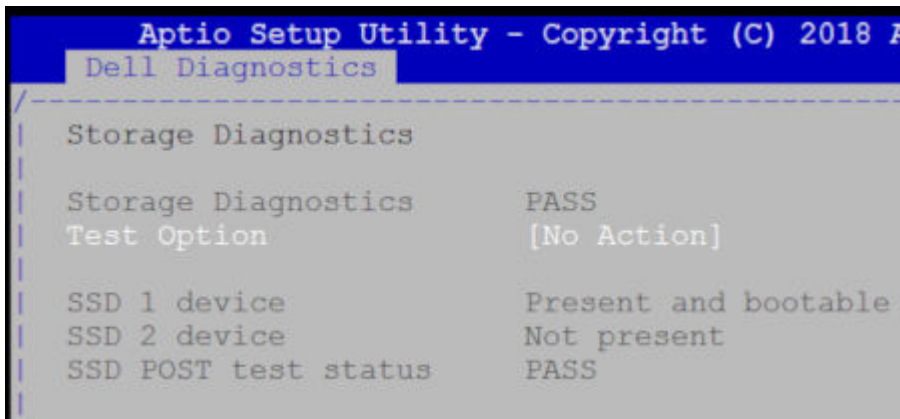
To enter the Storage Diagnostics, select **Storage Diagnostics** from the Dell diagnostics menu.



Storage diagnostics component

Storage diagnostic parameters

Storage diagnostics component displays valid storage devices is available in the system for boot-up.



Storage diagnostics menu

Storage diagnostics menu

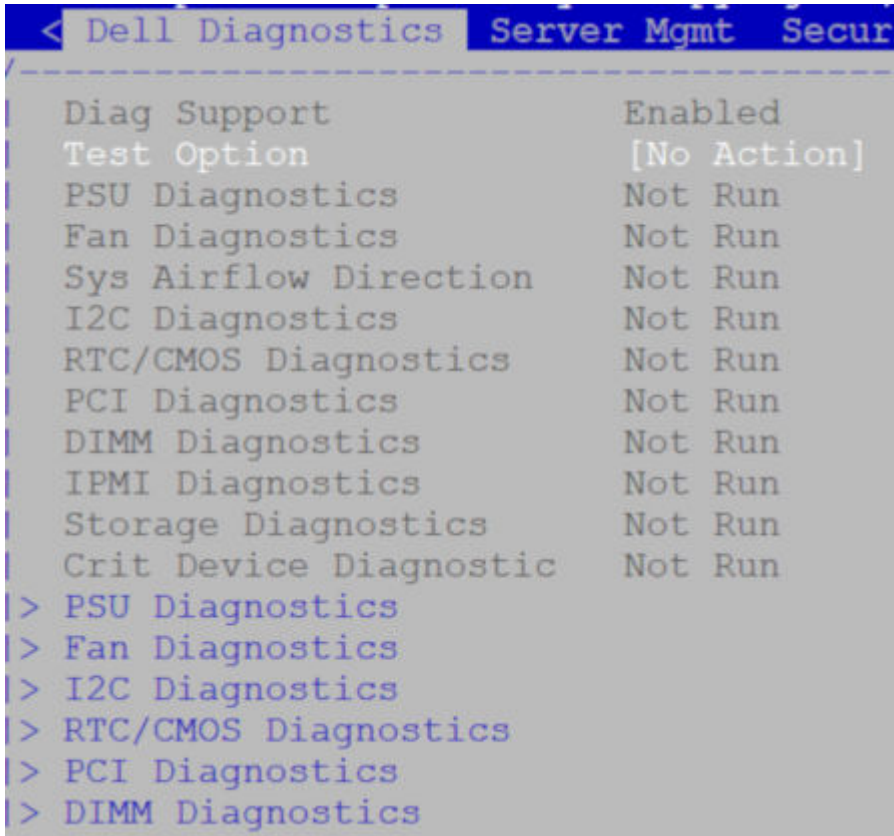
Critical Device diagnostics

Critical Device embedded DIAG configuration.

Entering Critical Device diagnostics

The **Critical Device diagnostic** tab is available from the Dell diagnostics menu.

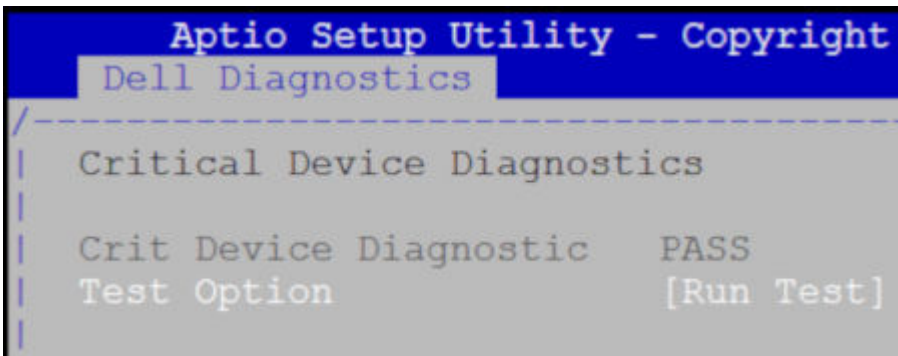
To enter the Critical Device Diagnostics, select **Critical Device Diagnostics** from the Dell diagnostics menu.



Critical Device diagnostics component

Critical Device diagnostics

Displays Critical Device error log and trace log.



Critical Device diagnostics menu

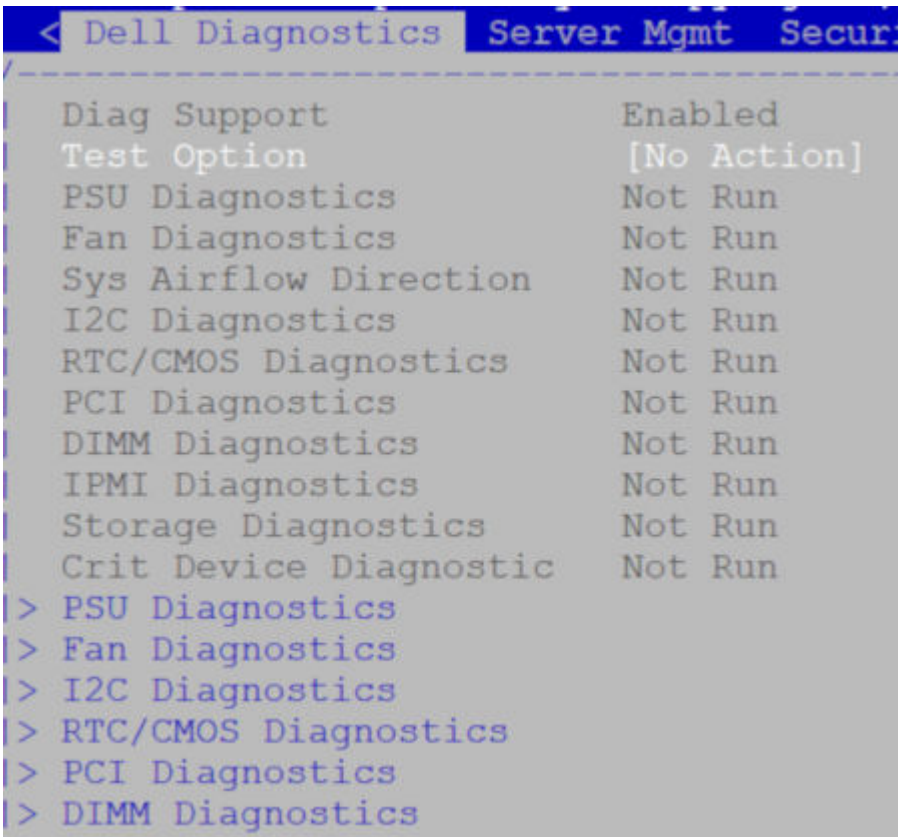
Temperature diagnostics

Temperature embedded DIAG configuration.

Entering Temperature diagnostics

The **Temperature diagnostic** tab is available from the Dell diagnostics menu.

To enter the Temperature Diagnostics, select **Temperature Diagnostics** from the Dell diagnostics menu.



Temperature diagnostics component

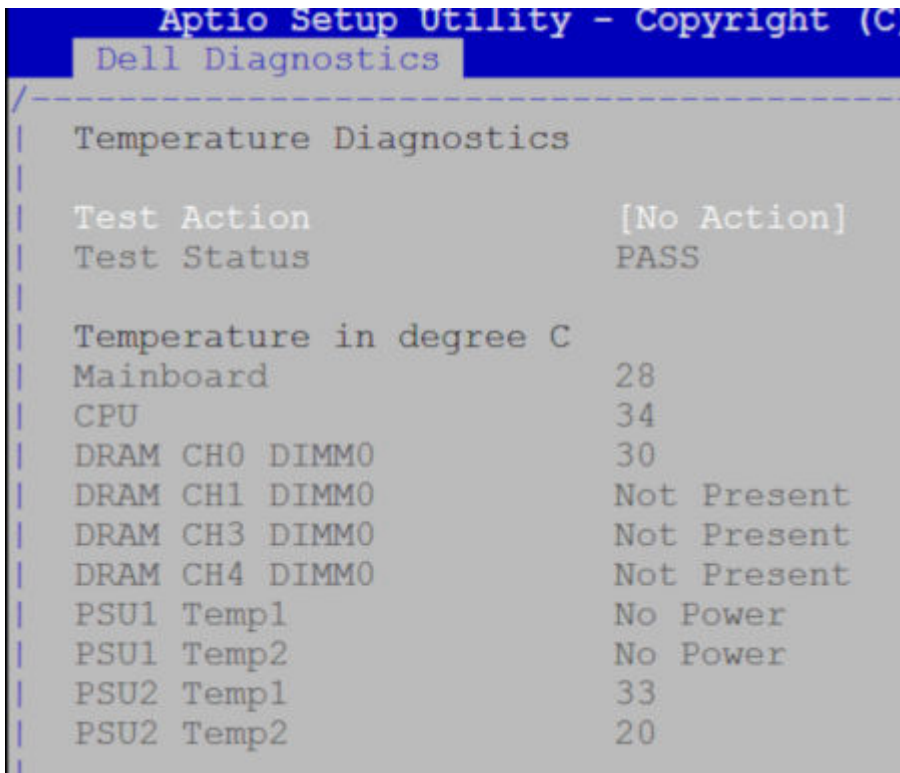
Temperature diagnostic read values

Displays temperature from the system devices.

Temperature diagnostics measure:

NOTE: Temperature in Celsius.

- 1 Mainboard
- 2 CPU
- 3 DRAM CH0
- 4 PSU1 Temp1



Temperature diagnostics menu

Dell EMC DIAG OS

The following describes the Dell EMC diagnostics operating system (DIAG OS).

View DIAG versions

To display the DIAG version installed in the DIAG OS, use the `dpkg -l | grep dn-diags` command at the `root@dell-diag-os:~` prompt.

```
root@dell-diag-os:/# dpkg -l | grep dn-diags
ii  dn-diags-<platform>-on.deb  1.10 amd64  Dell Diagnostics
root@dell-diag-os:/#
```



```

----- Boot Option #1 -----
UEFI: Dell Dell USB PMAP, Partition 1
UEFI: Generic Flash Disk 8.07
UEFI: Generic Flash Disk 8.07, Partition 1
Disable

```

Figure 7. DIAG OS USB to boot UEFI

```

----- Boot Option #1 -----
Hard Disk:UEFI OS (P3: M.2 (S80) 3ME4)
USB Device:UEFI: Generic Flash Disk 8.07, Partition 1
Network
UEFI AP
Disabled

```

Figure 8. DIAG OS USB to boot USB device

- 3 Verify that **Boot Option #1** lists the DIAG OS USB as the boot option.

```

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
< Security Boot Save & Exit
-----
Boot Configuration                               ^|Sets the system boot
Setup Prompt Timeout                             5          *|order
Bootup NumLock State                             [On]        *|
Quiet Boot                                       [Disabled]  *|
                                                *|
Boot mode select                                 [UEFI]      *|
                                                *|
FIXED BOOT ORDER Priorities                     *|
Boot Option #1                                  [USB Device:UEFI:
Generic Flash Disk
8.07, Partition 1] *|
Boot Option #2                                  [Hard Disk:UEFI OS
(P3: M.2 (S80) 3ME4)] *|
Boot Option #3                                  [Network]   *|
Boot Option #4                                  [UEFI AP]   *|
-----
> UEFI Hard Disk Drive BBS Priorities           *|<: Select Screen
> UEFI USB Drive BBS Priorities                 *|^v: Select Item
                                                *|Enter: Select
                                                *|+/-: Change Opt.
                                                *|F1: General Help
                                                *|F2: Previous Values
+|F3: Optimized Defaults
v|F4: Save & Exit
|ESC: Exit
-----
Version 2.20.1271; Copyright (C) 2018 American Megatrends, Inc.

```

Figure 9. Boot Option #1

- 4 Press **F4** to save and exit the utility and to start the installation.

DIAG OS installation failure and resolution

ESXi may create a different disk partition that is not compatible with the DIAG OS. This causes the DIAG OS installation to fail and display this error message:

```

ONIE: Rescue Mode ...
Platform : x86_64-dellemc_vep4600_d21xyt-r0
Version : x.xx.x.xx-x
Build Date: 2018-04-24T03:20-0700
[ 13.793445] ata4.00: failed to set xfermode (err_mask=0x40)
Info: Mounting kernel filesystems... done.
Info: Using eth0 MAC address: d8:9e:f3:bc:6a:a0
Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0
Warning: Unable to configure interface using DHCPv4: eth0
ONIE: Using link-local IPv4 addr: eth0: xxx.xxx.x.xxx/xx
+ cat /DiagOS_version.cfg
+ version_packed=x.xx.x.xx-x
+ ls

```

```

+ grep x.xx.x.xx-x
+ image_packed=diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin
+ [ -z diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin ]
+ echo starting to install vep4600 DiagOS
starting to install vep4600 DiagOS
+ onie-nos-install /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin
discover: Rescue mode detected. No discover stopped.
ONIE: Executing installer: /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-
x-2018-04-24.bin
Ignoring Verifying image checksum ... OK.
cur_dir / archive_path /var/tmp/installer tmp_dir /tmp/tmp.XeWxoj
Preparing image archive ...sed -e '1,/^exit_marker$/d' /var/tmp/installer | tar xf - OK.
Diag-OS Installer: platform: x86_64-dellemc_vep4600_d21xyt-r0

EDA-DIAG Partiton not found.
Diag OS Installer Mode : INSTALL

Deleting partition at /dev/sdc1...
The operation has completed successfully.
Deleting partition at /dev/sdc2...
The operation has completed successfully.
Deleting partition at /dev/sdc3...
The operation has completed successfully.
Deleting partition at /dev/sdc4...
Partition number 4 out of range!
Error 0 deleting partition!
Error encountered; not saving changes.
Error: Unable to delete partition 4 on /dev/sdc
Removing /tmp/tmp.XeWxoj
Failure: Unable to install image: /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-
x-2018-04-24.bin
+ echo This should be not reachable unless something wrong is there!!!!
This should be not reachable unless something wrong is there!!!!
Starting: dropbear ssh daemon... done.
Starting: telnetd... done.
discover: Rescue mode detected.  Installer disabled.

Please press Enter to activate this console.
To check the install status inspect /var/log/onie.log.
Try this: tail -f /var/log/onie.log

```

To resolve this issue, delete the partition completely and restart the DIAG OS installation.

- 1 Press **Enter** from the error message to get to ONIE Recovery mode.

 **NOTE: WARNING: Deleting the partition causes all data and the OS to be lost.**

- 2 Type the following then click **Enter**.

```

gdisk /dev/sdc

** Rescue Mode Enabled **
DIAG-OS-RECOVERY:/ #

gdisk /dev/sdc
GPT fdisk (gdisk) version 0.8.8
Partition table scan:
  MBR: protective
  BSD: not present
  APM: not present
  GPT: present
Found valid GPT with protective MBR; using GPT.

```

- 3 Type **o** to delete the partition.

```

Command (? for help):

Command (? for help): o
This option deletes all partitions and creates a new protective MBR.
Proceed? (Y/N): y

```

Type w to write the new partition into the disk

Command (? for help): w

Final checks complete. About to write GPT data. THIS WILL OVERWRITE EXISTING PARTITIONS!!

Do you want to proceed? (Y/N): y

OK; writing new GUID partition table (GPT) to /dev/sdc.

The operation has completed successfully.

DIAG-OS-RECOVERY:/ #

- 4 Type `reboot` at the command prompt and restart the DIAG OS installation. A successful installation displays the following:

ONIE: Rescue Mode ...

Platform : x86_64-dellemc_vep4600_d21xyt-r0

Version : x.xx.x.xx-x

Build Date: 2018-04-24T03:20-0700

[12.771519] ata4.00: failed to set xfermode (err_mask=0x40)

Info: Mounting kernel filesystems... done.

Info: Using eth0 MAC address: d8:9e:f3:bc:6a:a0

Info: eth0: Checking link... up.

Info: Trying DHCPv4 on interface: eth0

Warning: Unable to configure interface using DHCPv4: eth0

ONIE: Using link-local IPv4 addr: eth0: 169.254.195.48/16

+ cat /DiagOS_version.cfg

+ version_packed=x.xx.x.xx-x

+ ls

+ grep x.xx.x.xx-x

+ image_packed=diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin

+ [-z diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin]

+ echo starting to install vep4600 DiagOS

starting to install vep4600 DiagOS

+ onie-nos-install /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin

discover: Rescue mode detected. No discover stopped.

ONIE: Executing installer: /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin

Ignoring Verifying image checksum ... OK.

cur_dir / archive_path /var/tmp/installer tmp_dir /tmp/tmp.yb6fIB

Preparing image archive ...sed -e '1,/^exit_marker\$/d' /var/tmp/installer | tar xf - OK.

Diag-OS Installer: platform: x86_64-dellemc_vep4600_d21xyt-r0

EDA-DIAG Partiton not found.

Diag OS Installer Mode : INSTALL

partprobe in remove all partitions

GPT data structures destroyed! You may now partition the disk using fdisk or other utilities.

Creating new GPT entries.

GPT data structures destroyed! You may now partition the disk using fdisk or other utilities.

Creating new GPT entries.

The operation has completed successfully.

The operation has completed successfully.

mkfs.fat 3.0.26 (2014-03-07)

create_grub_boot_partition finished !

Creating new diag-os partition /dev/sdc2 ...

Warning: The kernel is still using the old partition table.

The new table will be used at the next reboot.

The operation has completed successfully.

EDA-DIAG dev is /dev/sdc2

mke2fs 1.42.13 (17-May-2015)

Discarding device blocks: done

Creating filesystem with 262144 4k blocks and 65536 inodes

Filesystem UUID: c7971d6a-acb1-46be-84a2-a8d2d758139b

Superblock backups stored on blocks:

32768, 98304, 163840, 229376

```

Allocating group tables: done
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done

Created filesystem on /dev/sdc2 with label EDA-DIAG

Mounted /dev/sdc2 on /tmp/tmp.iK7Bg3

Preparing /dev/sdc2 EDA-DIAG for rootfs install
untaring into /tmp/tmp.iK7Bg3

rootfs copy done
Success: Support tarball created: /tmp/tmp.iK7Bg3/onie-support.tar.bz2
Updating Grub Cfg /dev/sdc2 EDA-DIAG

```

Example Installation Log

Example of an install and boot log captured from a VEP4600 platform.

```

GNU GRUB version 2.02~beta2+e4a1fe391

+-----+
|*VEP4600 DiagOS Install|
|                         |
|                         |
|                         |
|                         |
|                         |
+-----+

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands
before booting or `c' for a command-line.

ONIE: Rescue Mode ...
Platform : x86_64-dellemc_vep4600_d21xyt-r0
Version  : x.xx.x.xx-x
Build Date: 2018-04-24T03:20-0700
ÿ[ 9.712168] sd 5:0:0:0: [sda] No Caching mode page found
[ 9.717475] sd 5:0:0:0: [sda] Assuming drive cache: write through
[ 12.772776] ata4.00: failed to set xfermode (err_mask=0x40)
Info: Mounting kernel filesystems... done.
[ 15.170913] random: crng init done
Info: Using eth0 MAC address: d8:9e:f3:bc:61:20
Info: eth0: Checking link... down.
ONIE: eth0: link down. Skipping configuration.
ONIE: Failed to configure eth0 interface
+ cat /DiagOS_version.cfg
+ version_packed=x.xx.x.xx-x
+ ls
+ grep x.xx.x.xx-x
+ image_packed=diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin
+ [ -z diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin ]
+ echo starting to install vep4600 DiagOS
starting to install vep4600 DiagOS
+ onie-nos-install /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin
discover: Rescue mode detected. No discover stopped.
ONIE: Executing installer: /diag-installer-x86_64-dellemc_vep4600_d21xyt-r0-x.xx.x.xx-x-2018-04-24.bin
Ignoring Verifying image checksum ... OK.
cur_dir / archive_path /var/tmp/installer tmp_dir /tmp/tmp.Sm6aE9
Preparing image archive ...sed -e '1,/^exit_marker$/d' /var/tmp/installer | tar xf - OK.
Diag-OS Installer: platform: x86_64-dellemc_vep4600_d21xyt-r0

```

```

Found EDA-DIAG partition at (/dev/sdb2)
File /tmp/diag_os_install_mode exists, forcing install mode
Diag OS Installer Mode : INSTALL

Deleting partition at /dev/sdb1...
The operation has completed successfully.
Deleting partition at /dev/sdb2...
The operation has completed successfully.
partprobe in remove all partitions
GPT data structures destroyed! You may now partition the disk using fdisk or
other utilities.
Creating new GPT entries.
GPT data structures destroyed! You may now partition the disk using fdisk or
other utilities.
Creating new GPT entries.
The operation has completed successfully.
The operation has completed successfully.
mkfs.fat 3.0.26 (2014-03-07)
create_grub_boot_partition finished !
Creating new diag-os partition /dev/sdb2 ...
Warning: The kernel is still using the old partition table.
The new table will be used at the next reboot.
The operation has completed successfully.

EDA-DIAG dev is /dev/sdb2
mke2fs 1.42.13 (17-May-2015)
Discarding device blocks: done
Creating filesystem with 262144 4k blocks and 65536 inodes
Filesystem UUID: 938c653f-79ce-4686-821d-47838f6105c8
Superblock backups stored on blocks:
    32768, 98304, 163840, 229376

Allocating group tables: done
Writing inode tables: done
Creating journal (8192 blocks): done
Writing superblocks and filesystem accounting information: done

Created filesystem on /dev/sdb2 with label EDA-DIAG

Mounted /dev/sdb2 on /tmp/tmp.aDlzlG

Preparing /dev/sdb2 EDA-DIAG for rootfs install
untaring into /tmp/tmp.aDlzlG

rootfs copy done
Success: Support tarball created: /tmp/tmp.aDlzlG/onie-support.tar.bz2

Updating Grub Cfg /dev/sdb2 EDA-DIAG

INSTALLER DONE...
Please uninstall your USB disk out of box, wait 2 sec
Removing /tmp/tmp.Sm6aE9
ONIE: NOS install successful: /diag-installer-x86_64-dellemc_vep4600_d2lxyt-r0-x.xx.x.xx-
x-2018-04-24.bin
ONIE: Rebooting...
+ echo This should be not reachable unless something wrong is there!!!!
This should be not reachable unless something wrong is there!!!!
discover: Rescue mode detected. No discover stopped.
Stopping: dropbear ssh daemon... done.
Stopping: telnetd... done.
Stopping: syslogd... done.
Info: Unmounting kernel filesystems
umount: can't umount /: Invalid argument
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system reboot
[ 67.317964] sd 3:0:0:0: [sdb] Synchronizing SCSI cache

```

```
[ 67.357643] ACPI Warning: \_SB.PC00.RP12._PRT: Return Package has no elements (empty)
(20160831/nsprepkg-130)
[ 67.742021] reboot: Restarting system
[ 67.745678] reboot: machine restart
```

```
BIOS Boot Selector for VEP4600
Primary BIOS Version x.xx.x.x-xx
```

```
CPLD Version:xx
CPLD Reset Source=0x44
```

```
POST Configuration
CPU Signature 50654
CPU FamilyID=6, Model=55, SteppingId=4, Processor=0
Microcode Revision 2000043
Platform ID: 0x1000000000000000
PKG_CST_CFG_CTL: 0x3
Misc EN: 0x4000840088
Gen PM Con1: 0x0
Therm Status: 0x8000000
POST Control=0xEA000303, Status=0xE6009D00
```

```
BIOS initializations...
```

```
POST:
RTC Battery OK at last cold boot
RTC date 11/1/2018 5:33:17
```

```
POST SPD test ..... PASS
```

```
POST Lower DRAM Memory test
.... Perf cnt (curr,fixed): 0x4D20F7685,0x4DC23F918
```

```
POST Lower DRAM Memory test ..... PASS
```

```
[SL] Register Error Listener..Success
DxE POST
```

```
POST Upper DRAM Memory test
Short memory cell test
....
POST Upper DRAM Memory test ..... PASS
CPU Signature 0x50654
POST PCI test ..... PASS
POST NVRAM check ..... PASS
POST overall test results ..... PASS
```

```
NVRAM: 00 9D 00 E6 03 03 00 EA
```

```
Version 2.20.1271. Copyright (C) 2018 American Megatrends, Inc.
BIOS Date: 04/10/2018 16:24:11 Ver: 0ACJF020
Press <DEL> or <F2> to enter setup.Welcome to GRUB!
```

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

```
+-----+
|*EDA-DIAG|
|         |
```

```
-----+-----
Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands
before booting or `c' for a command-line.
The highlighted entry will be executed automatically in 0s.
Booting `EDA-DIAG'
```

```
Loading DIAG-OS ...
[ 5.242428] sd 5:0:0:0: [sda] No Caching mode page found
[ 5.247752] sd 5:0:0:0: [sda] Assuming drive cache: write through
[ 7.153596] ata4.00: failed to set xfermode (err_mask=0x40)
[FAILED] Failed to start LSB: Raise network interfaces..
See 'systemctl status networking.service' for details.
Starting ifup for eth0...
[ OK ] Started ifup for eth0.
[ OK ] Reached target Network.
[ OK ] Reached target System Initialization.
[ OK ] Reached target Timers.
[ OK ] Reached target Basic System.
Starting Regular background program processing daemon...
[ OK ] Started Regular background program processing daemon.
Starting OpenBSD Secure Shell server...
[ OK ] Started OpenBSD Secure Shell server.
Starting /etc/rc.local Compatibility...
Starting getty on tty2-tty6 if dbus and logind are not available...
Starting System Logging Service...
Starting Permit User Sessions...
[ OK ] Started /etc/rc.local Compatibility.
[ OK ] Started Permit User Sessions.
[ OK ] Started System Logging Service.
Starting Getty on tty2...
[ OK ] Started Getty on tty2.
Starting Getty on tty1...
[ OK ] Started Getty on tty1.
Starting Serial Getty on ttyS0...
[ OK ] Started Serial Getty on ttyS0.
Starting Getty on tty3...
[ OK ] Started Getty on tty3.
Starting Getty on tty4...
[ OK ] Started Getty on tty4.
Starting Getty on tty5...
[ OK ] Started Getty on tty5.
Starting Getty on tty6...
[ OK ] Started Getty on tty6.
[ OK ] Started getty on tty2-tty6 if dbus and logind are not available.
[ OK ] Reached target Login Prompts.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target Graphical Interface.
Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.

Debian GNU/Linux 8 dellemc-diag-os ttyS0

dellemc-diag-os login: root
Password: calvin
Linux dellemc-diag-os 4.9.30 #1 SMP PREEMPT Tue Apr 24 00:12:19 PDT 2018 x86_64

The programs included with the Debian GNU/Linux system are free software;
```



```

Starting Getty on tty2...
[ OK ] Started Getty on tty2.
Starting Getty on tty1...
[ OK ] Started Getty on tty1.
Starting Serial Getty on ttyS0...
[ OK ] Started Serial Getty on ttyS0.
Starting Getty on tty3...
[ OK ] Started Getty on tty3.
Starting Getty on tty4...
[ OK ] Started Getty on tty4.
Starting Getty on tty5...
[ OK ] Started Getty on tty5.
Starting Getty on tty6...
[ OK ] Started Getty on tty6.
[ OK ] Started getty on tty2-tty6 if dbus and logind are not available.
[ OK ] Reached target Login Prompts.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target Graphical Interface.
Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.

Debian GNU/Linux 8 dellemc-diag-os ttyS0
dellemc-diag-os login: █

```

Figure 12. Log in command prompt

- 5 Type to log in.

```
root/calvin
```

DIAG OS Verification

After DIAG OS installation, to verify the DIAG OS version, boot into boot into the DIAG OS by the following commands.

- 1 Log in into the DIAG OS using root as the username and calvin as the password.
- 2 Enter the sh_ver command.

```

root@dellemc-diag-os:~#sh_ver
Diag OS version VEP4600_DIAG_OS x.xx.x.xx-x
Build date/time Tue Apr 24 00:15:20 PDT 2018
Build server netLogin-eqx-03
Build by cwang3
Kernel Info:
Linux 4.9.30 #1 SMP PREEMPT Tue Apr 24 00:12:19 PDT 2018 x86_64 GNU/Linux
Debian GNU/Linux 8 \n \l
root@dellemc-diag-os:~#

```

NOTE: The system shows the current version.

Install diag tools

After the DIAG OS installs, run the diagnostic Debian tools package. The root directory of the DIAG OS contains the diagnostic tools package.

- 1 Run the following command at the root directory to install the diagnostic package:

```

root@dellemc-diag-os:~# dpkg -i dn-diags-VEP4600-DiagOS-3.41.4.81-2-2018-03-29.deb
Selecting previously unselected package dn-diags-vep4600.deb.
(Reading database ... 19769 files and directories currently installed.)
Preparing to unpack dn-diags-VEP4600-DiagOS-3.41.4.81-2-2018-03-29.deb ...
Unpacking dn-diags-vep4600.deb (3.41.4.81-2) ...
Setting up dn-diags-vep4600.deb (3.41.4.81-2) ...
root@dellemc-diag-os:~#

```

- 2 Delete the diagnostic package after installation to preserve drive space.

```
rm (package file name)
```

See Dell EMC DIAG OS tools

Dell EMC DIAG OS tools

This section describes how to use the Dell EMC diagnostics operating system (DIAG OS). The DIAG OS provides a suite of tools to help diagnose issues seen on the system, or to run a health check to ensure that the hardware is operating properly.

Diagnostic tools

The DIAG OS uses standard Linux drivers and contains the following tools you can use to evaluate the health of your system. The tools are packaged for both the DIAG OS, which is a simple OS of the same kernel version, and small `rootfs` to support the tools and drivers.

Topics:

- [edatool](#)
- [cputool](#)
- [eepromtool](#)
- [ethtool](#)
- [fantool](#)
- [flashrom](#)
- [gpiotool](#)
- [i2ctool](#)
- [ledtool](#)
- [lpctool](#)
- [memtool](#)
- [nvramtool](#)
- [optictool](#)
- [pcitool](#)
- [phytool](#)
- [pltool](#)
- [psutool](#)
- [rtctool](#)
- [storagetool](#)
- [temptool](#)
- [updatetool](#)
- [Diagnostic package](#)

edatool

The `edatool` is included in the diagnostic tools. Use the tool to test the basic functionality of the system.

The `edatool` executes a script of simple commands, similar to commands in the CLI. Usually, the diagnostics tools run these types of tests. The success or failure of these tools is reported, and at the end of the `edatool` run, reports the PASSED or FAILED results in a standard format the test scripts can easily parse.

Tests

The edatool does not have a test command, but instead runs all the tests that are scripted.

CLI options

```
DellEmc Diag - Extended Diagnostics Application
version 1.4, x.xx.x.x-x
build, 2017/05/23,

Syntax: edatool <option>
Show the Help-text:=
    edatool --h                                     (or)
    edatool -h
Lists tests in config files:=
    edatool --list                                   (or)
    edatool -l
Config file to use for tests:=
    edatool --config=<config_file>                   (or)
    edatool -f <config_file>
Config file to use for extended tests:=
    edatool --extended-config=<config_file>          (or)
    edatool -X <config_file>
Display test list or test result or modify test item status:=
    edatool --testlist=show/result/<on/off,<test_id>,<test_id>...> (or)
    edatool -L show/result/<on/off,<test_id>,<test_id>...>
Run all or selected test item in test list:=
    edatool --testrun=all/<test_id>                   (or)
    edatool --R all/<test_id>
Execute repeatedly command by count:=
    edatool --iteration=max/<count> [option1] [option2]... (or)
    edatool -I max/<count> [option1] [option2]...

Usage:=
-h, --h                Show the help text
-l, --list              List the understood TLV codes and names
-I, --iteration=        Iteration command execution
-L, --testlist=        Test list status
-R, --testrun=         Run test item
-f, --config=          To specify the location of the config file e.g. /etc/dn/diag/
<file_name>
-X, --extended-config= Config file to use for extended tests
```

Output

```
root@dell-diag-os:~# edatool
*****
*   Diagnostics Application   *
*****
Dell-EMC Diag edatool version 1.4, package x.xx.x.x 2016/11/21
Dell-EMC Diag cputool - version 1.1 package x.xx.x.x 2016/11/21
Dell-EMC Diag fantool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag gpiotool - version 1.4 package x.xx.x.x 2016/11/21
Dell-EMC Diag i2ctool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag ledtool - version 1.0 package x.xx.x.x 2016/11/21
Dell-EMC Diag lpctool - version 1.0 package x.xx.x.x 2016/11/21
Dell-EMC Diag memtool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag nputool - version 1.0 sdk-6.5.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag nvramtool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag opticstool - version 1.0 package x.xx.x.x 2016/11/21
```

Dell-EMC Diag pcitool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag pltool - version 1.5 package x.xx.x.x 2016/11/21
Dell-EMC Diag psutool - version 1.4 package x.xx.x.x 2016/11/21
Dell-EMC Diag rtctool - version 1.1 package x.xx.x.x 2016/11/21
Dell-EMC Diag smbiostool - version 1.2 package x.xx.x.x 2016/11/21
Dell-EMC Diag storagetool - version 1.1 package x.xx.x.x 2016/11/21
Dell-EMC Diag temptool - version 1.4 package x.xx.x.x 2016/11/21

Testing PCI devices:

+ Checking PCI 00:00.0, ID=1f0c8086 Passed
+ Checking PCI 00:01.0, ID=1f108086 Passed
+ Checking PCI 00:02.0, ID=1f118086 Passed
+ Checking PCI 00:03.0, ID=1f128086 Passed
+ Checking PCI 00:0e.0, ID=1f148086 Passed
+ Checking PCI 00:0f.0, ID=1f168086 Passed
+ Checking PCI 00:13.0, ID=1f158086 Passed
+ Checking PCI 00:14.0, ID=1f418086 Passed
+ Checking PCI 00:14.1, ID=1f418086 Passed
+ Checking PCI 00:14.2, ID=1f418086 Passed
+ Checking PCI 00:16.0, ID=1f2c8086 Passed
+ Checking PCI 00:17.0, ID=1f228086 Passed
+ Checking PCI 00:18.0, ID=1f328086 Passed
+ Checking PCI 00:1f.0, ID=1f388086 Passed
+ Checking PCI 00:1f.3, ID=1f3c8086 Passed
+ Checking PCI 01:00.0, ID=837514e4 Passed
+ Checking PCI 01:00.1, ID=837514e4 Passed

PCI devices: Overall test results ----- >>> Passed

Testing I2C devices:

Checking I2C devices on bus 0:

+ Checking Clock GEN 0x69 Passed
+ Checking SPD0 0x50 Passed

Checking I2C devices on bus 1:

+ Checking CPU Board I2C Mux 0x70 Passed
+ Checking CPU Board EEPROM1 0x53 Passed
+ Checking CPU Board EEPROM2 0x57 Passed
+ Checking Switch Brd EEPROM 0x50 Passed
+ Checking CPLD2 0x3e Passed
+ Checking CPLD3 0x3e Passed
+ Checking CPLD4 0x3e Passed
+ Checking SFP+ 1 0x50 Passed
+ Checking SFP+ 2 0x50 Passed
+ Checking SFP+ 3 0x50 Passed
+ Checking SFP+ 4 0x50 Passed
+ Checking SFP+ 5 0x50 Passed
+ Checking SFP+ 6 0x50 Passed
+ Checking SFP+ 7 0x50 Passed
+ Checking SFP+ 8 0x50 Passed
+ Checking SFP+ 9 0x50 Passed

```

+ Checking SFP+ 10          0x50 ..... Passed
+ Checking SFP+ 11          0x50 ..... Passed
+ Checking SFP+ 12          0x50 ..... Passed
+ Checking SFP+ 13          0x50 ..... Passed
+ Checking SFP+ 14          0x50 ..... Passed
+ Checking SFP+ 15          0x50 ..... Passed
+ Checking SFP+ 16          0x50 ..... Passed
+ Checking SFP+ 17          0x50 ..... Passed
+ Checking SFP+ 18          0x50 ..... Passed
+ Checking SFP+ 19          0x50 ..... Passed
+ Checking SFP+ 20          0x50 ..... Passed
+ Checking SFP+ 21          0x50 ..... Passed
+ Checking SFP+ 22          0x50 ..... Passed
+ Checking SFP+ 23          0x50 ..... Passed
+ Checking SFP+ 24          0x50 ..... Passed
+ Checking SFP+ 25          0x50 ..... Passed
+ Checking SFP+ 26          0x50 ..... Passed
+ Checking SFP+ 27          0x50 ..... Passed
+ Checking SFP+ 28          0x50 ..... Passed
+ Checking SFP+ 29          0x50 ..... Passed
+ Checking SFP+ 30          0x50 ..... Passed
+ Checking SFP+ 31          0x50 ..... Passed
+ Checking SFP+ 32          0x50 ..... Passed
+ Checking SFP+ 33          0x50 ..... Passed
+ Checking SFP+ 34          0x50 ..... Passed
+ Checking SFP+ 35          0x50 .....

```

Verbose mode

Use the following steps to enable and set the verbose level.

- 1 Set the Verbose level with a value of 0 to 3 using bits 4 and 5 of the EDA control reg (0x55).
For example, to set the verbose level to 2, set bit 5 to 1 (5=1) and bit 4 to 0 (4=0).

```
root@dellemc-diag-os:~# nvramtool --write --reg=0x55 --val=0x25
```

The value is written in hexadecimal. The xx10x1xx shows the bit positions of 2, 4&5, and bit 0 on the right.

- 2 Enable Verbose mode by setting bit 2 of the same reg to 1.

NOTE: If you disable Verbose mode, or bit 2 of reg 0x55 is set to 0, the default verbosity level is 0/zero.

EDA control reg (0x55):

- 5:4—EDA Verbose Level = 0/1/2/3 or verbosity level 0, 1, 2, or 3.
- 3—EDA Extended Tests
- 2—EDA Verbose Mode = 0/1 (0=disabled; 1=enabled)
- 1—EDA Stop on Error
- 0—EDA Enable

NOTE: If you do not need the Verbose mode settings to persist through reboots, you can use the environment variable method to enable Verbose Mode.

```
export VERB_LEVEL=<setting 0,1,2 or 3>
```

To clear the environment variable, use the `unset VERB_LEVEL` command.

cputool

The `cputool` displays the CPU information, reads and writes of the MSR and the LPC bus.

Tests

There are no defined tests with the `cputool`.

CLI options

```
root@dell EMC-diag-os:~# cputool
DellEmc Diag - Cpu Tool
version 1.1, x.xx.x.x-x
build, 2017/05/23,
```

Syntax: `cputool <option>`

Show the help-text:=

```
cputool --h (or)
cputool -h
```

Display the CPU info using CPU-ID:

```
cputool --cpuid[=--option] (or)
cputool -i [option]
```

Display the CPU info using x86info:=

```
cputool --x86info[=--option] (or)
cputool -x [option]
```

Read CPU register:=

```
cputool --readmsr --cpu=<cpuNumber> --reg=<regOffset> (or)
cputool -r -n <cpuNumber> -R <regOffset>
```

Write CPU register:=

```
cputool --writemsr --cpu=<cpuNumber> --reg=<regOffset> --val=<value> (or)
cputool -w <cpuNumber> -R <regOffset> -V <value>
```

Execute repeatedly command by count:=

```
cputool --iteration=max/<count> [option1] [option2]... (or)
cputool -I max/<count> [option1] [option2]...
```

Read the specified register in LPC bus:=

```
cputool --readlpc --reg=<reg> --size=<size> (or)
cputool -d -R <reg> -Z <size>
```

Write the specified register in LPC bus:=

```
cputool --writelpc --reg=<reg> --val=<value> --size=<size> (or)
cputool -W -R <reg> -V <value> -Z <size>
```

Usage:=

```

-h, --h          Show the help text
-i, --cpuid     CPU-Id
-x, --x86info   x86 info
-r, --readmsr   Read operation
-w, --writemsr  Write operation
-n, --cpu=      CPU
-R, --reg=      Register
-V, --val=      Value to be set
-Z, --size=     Size
-I, --iteration= Iteration command execution
-d, --readlpc   Read from LPC bus
-W, --writelpc  Write to LPC bus

```

Output

```

root@dell-diag-os:/# cputool --h
Dell Diag - Cpu Tool
version 1.1, x.xx.x.x
build, 2016/08/12,
Syntax: cputool <option>
  Show the help-text:=
  cputool --h          (or)
  cputool -h
  Display the CPU info using CPU-ID:
  cputool --cpuid[=--option] (or)
  cputool -i [option]
  Display the CPU info using x86info:=
  cputool --x86info[=--option] (or)
  cputool -x [option]
  Read CPU register:=
  cputool --readmsr --cpu=<cpuNumber> --reg=<regOffset> (or)
  cputool -r -n <cpuNumber> -R <regOffset>
  Write CPU register:=
  cputool --writemsr --cpu=<cpuNumber> --reg=<regOffset> --val=<value> (or)
  cputool -w <cpuNumber> -R <regOffset> -V <value>
  Read the specified register in LPC bus:=
  cputool --readlpc --reg=<reg> --size=<size> (or)
  cputool -d -R <reg> -Z <size>
  Write the specified register in LPC bus:=
  cputool --writelpc --reg=<reg> --val=<value> --size=<size> (or)
  cputool -W -R <reg> -V <value> -Z <size>
Usage:=
-h, --h          Show the help text
-i, --cpuid     CPU-Id
-x, --x86info   x86 info
-r, --readmsr   Read operation
-w, --writemsr  Write operation
-n, --cpu=      CPU
-R, --reg=      Register
-V, --val=      Value to be set
-Z, --size=     Size
-d, --readlpc   Read from LPC bus
-W, --writelpc  Write to LPC bus
root@dell-diag-os:/#

root@dell-diag-os:/# cputool --x86info
x86info v1.30. Dave Jones 2001-2011
Feedback to <davej@redhat.com>.
Found 4 identical CPUs
Extended Family: 0 Extended Model: 4 Family: 6 Model: 77 Stepping: 8
Type: 0 (Original OEM)
CPU Model (x86info's best guess): Unknown model.
Processor name string (BIOS programmed): Intel(R) Atom(TM) CPU C2538 @ 2.40GHz
Total processor threads: 4
This system has 1 dual-core processor with hyper-threading (2 threads per core) running at an
estimated 2.40GHz
root@dell-diag-os:/#

```

EEPROMTool

To program FRU format EEPROMS, use the `EEPROMTool`. You can also use the `EEPROMTool` to show all the FRU-formatted EEPROM contents or show specific EEPROM content by specifying the EEPROM type.

Tests

NOTE: The `EEPROMTool` tool is used during manufacturing to program FRU data.

CAUTION: The `EEPROMTool` tool should only be used to read an EEPROM device.

The following command line options are valid cases for running `EEPROMTool` in Azul.

- 1 To list the supported eeprom devices type `EEPROMTool -L`

```
root@dell EMC-diag-os:~# EEPROMTool -L
MC1EEPROM
MC2EEPROM
PSU1EEPROM
PSU2EEPROM
FAN1EEPROM
FAN2EEPROM
FAN3EEPROM
FAN4EEPROM
FAN5EEPROM
IDEEPROM
root@dell EMC-diag-os:~#
```

- 2 To show a device content type `EEPROMTool -P <EEPROM_DEVICE> -x`

```
root@dell EMC-diag-os:~# EEPROMTool -P PSU1EEPROM -x
Board Mfg Date      : Mon Mar 19 03:40:00 2018
Board Mfg           : DELL
Board Product       : PWR SPLY, 495W, RDNT, DELTA
Board Serial        : CNDED0083H0T94
Board Part Number   : 0GRTNKA02
root@dell EMC-diag-os:~#
```

a

The test option in EEPROM devices allows you to verify the MAC address. Use this test for MAC address consistency.

CLI options

```
DellEmc Diag - Eeprom Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23,
```

Syntax:= `EEPROMTool <option>`

Display help-text:=

```
EEPROMTool --help           (or)
EEPROMTool -h
```

List the understood TLV codes and names:=

```
EEPROMTool --list           (or)
EEPROMTool -l
```

List all eeprom devices:=

```
EEPROMTool --listdevices    (or)
EEPROMTool -L
```

Dump the PSU eeprom:=

```
EEPROMTool --psueepromdump  (or)
EEPROMTool -m
```

Dump the FAN eeprom:=

```
EEPROMTool --faneepromdump  (or)
```

```

eepromtool -F
Show the EEPROM data:=
  eepromtool --eeprom=<eepromtype> --show          (or)
  eepromtool -P <eepromtype> -x
Reset the EEPROM data:=
  eepromtool --eeprom=<eepromtype> --erase          (or)
  eepromtool -P <eepromtype> -e
Verify the MAC address in system-eeprom and mac-eeprom:=
  eepromtool --eeprom=<eepromtype> --test          (or)
  eepromtool -P <eepromtype> -t
Look up a TLV by code and write the value to stdout:=
  eepromtool --eeprom=<eepromtype> --get <code>      (or)
  eepromtool -P <eepromtype> -g <code>
Execute repeatedly command by count:=
  eepromtool --iteration=max/<count> [option1] [option2]... (or)
  eepromtool -I max/<count> [option1] [option2]...
Set a TLV code to a value:=
  eepromtool --eeprom=<eepromtype> --set <code>=<value>,<code>=<value>... (or)
  eepromtool -P <eepromtype> -s <code>=<value>,<code>=<value>...

```

```

Usage:=
-h, --h                Show the help text
-l, --list             List the understood TLV codes and names
-L, --listdevices     List all EEPROM devices
-m, --psueepromdump  Dump the PSU EEPROM
-F, --faneepromdump  Dump the FAN EEPROM
-P, --eeprom=        EEPROM type
-x, --show            Show operation
-e, --erase           Erase operation
-t, --test            Test using the pre-programmed configuration or use supplied config
-I, --iteration=      Iteration command execution
-g, --get             Get operation
-s, --set             Set operation

```

Output

```

root@dell-diag-os:/opt/ngos/bin# eepromtool --list
TLV Code TLV Name
=====
0x21 Product Name
0x22 Part Number
0x23 Serial Number
0x24 Base MAC Address
0x25 Manufacture Date
0x26 Device Version
0x27 Label Revision
0x28 Platform Name
0x29 Loader Version
0x2a MAC Addresses
0x2b Manufacturer
0x2c Country Code
0x2d Vendor Name
0x2e Diag Version
0x2f Service Tag
0xfd Vendor Extension
0xfe CRC-32
root@dell-diag-os:/opt/ngos/bin# eepromtool --listdevices
CPUEEPROM1
CPUEEPROM2
CPUEEPROM3
CPUEEPROM4
CPUEEPROM5
CPUEEPROM6
CPUEEPROM7
CPUEEPROM8
FAN1EEPROM
FAN2EEPROM

```

```

FAN3EEPROM
FAN4EEPROM
FAN5EEPROM
SwitchEEPROM
root@dell-diag-os:/# eepromtool --psueepromdump
*****PSU1_CountryCode*****
Registers 0x24a - 0x24b
CN
*****PSU1_DellPartNumber*****
Registers 0x24c - 0x251
02RPHX
*****PSU1_MfgID*****
Registers 0x252 - 0x256
17972
*****PSU1_MfgDate*****
Registers 0x257 - 0x25e
151117
*****PSU1_SerialNo*****
Registers 0x25f - 0x262
01CG
*****PSU1_ServiceTag*****
Registers 0x263 - 0x269
*****PSU1_LabelRevision*****
Registers 0x26a - 0x26c
A00
*****PSU2_CountryCode*****
Registers 0x283 - 0x284
CN
*****PSU2_DellPartNumber*****
Registers 0x285 - 0x28a
02RPHX
*****PSU2_MfgID*****
Registers 0x28b - 0x28f
17972
*****PSU2_MfgDate*****
Registers 0x290 - 0x297
151117
*****PSU2_SerialNo*****
Registers 0x298 - 0x29b
015F
*****PSU2_ServiceTag*****
Registers 0x29c - 0x2a2
*****PSU2_LabelRevision*****
Registers 0x2a3 - 0x2a5
A00
root@dell-diag-os:/#

root@dell-diag-os:/opt/ngos/bin#
root@dell-diag-os:/opt/ngos/bin# eepromtool --eeprom=cpueeprom2 --set 0x21='cpu2'
Notice: Invalid TLV checksum found. Using default contents.
Adding TLV 0x21: Product Name
Programming passed.
TlvInfo Header:
Id String: TlvInfo
Version: 1
Total Length: 12
TLV Name Code Len Value
-----
Product Name 0x21 4 cpu2
CRC-32 0xFE 4 0x338B2B86
Checksum is valid.
root@dell-diag-os:/opt/ngos/bin#
root@dell-diag-os:/opt/ngos/bin# eepromtool --eeprom=cpueeprom2 --get 0x21
cpu2
root@dell-diag-os:/opt/ngos/bin#
root@dell-diag-os:/opt/ngos/bin# eepromtool --eeprom=cpueeprom2 --show
TlvInfo Header:
Id String: TlvInfo
Version: 1

```

```

Total Length: 12
TLV Name Code Len Value
-----
Product Name 0x21 4 cpu2
CRC-32 0xFE 4 0x338B2B86
Checksum is valid.
root@dell-diag-os:/opt/ngos/bin#
root@dell-diag-os:/opt/ngos/bin# eepromtool --eeprom=cpueeprom1 --erase
Programming passed.
EEPROM does not contain data in a valid TlvInfo format.
root@dell-diag-os:/opt/ngos/bin# eepromtool --eeprom=cpueeprom1 --show
Notice: Invalid TLV header found. Using default contents.
Notice: Invalid TLV checksum found. Using default contents.
TlvInfo Header:
Id String: TlvInfo
Version: 1
Total Length: 6
TLV Name Code Len Value
-----
CRC-32 0xFE 4 0xD4431C18
Checksum is valid.
root@dell-diag-os:/opt/ngos/bin#

```

ethtool

To control and query network drivers and hardware use the `ethtool`.

Tests

```
root@dellemc-diag-os:/opt/dellemc/diag/bin# ethtool -t ethx
```

CLI options

```

ethtool -h|--help
ethtool --version
ethtool -a|--show-pause devname
ethtool -A|--pause devname [autoneg on|off] [rx on|off] [tx on|off]
ethtool -c|--show-coalesce devname
ethtool -C|--coalesce devname [adaptive-rx on|off] [adaptive-tx on|off] [rx-usecs N] [rx-frames
N] [rx-usecs-irq N] [rx-frames-irq N] [tx-usecs N] [tx-frames N] [tx-usecs-irq N] [tx-frames-
irq N] [stats-block-usecs N] [pkt-rate-low N] [rx-usecs-low N] [rx-frames-low N] [tx-usecs-low
N] [tx-frames-low N] [pkt-rate-high N] [rx-usecs-high N] [rx-frames-high N] [tx-usecs-high N]
[tx-frames-high N] [sample-interval N]
ethtool -g|--show-ring devname
ethtool -G|--set-ring devname [rx N] [rx-mini N] [rx-jumbo N] [tx N]
ethtool -i|--driver devname
ethtool -d|--register-dump devname [raw on|off] [hex on|off] [file name]
ethtool -e|--eeprom-dump devname [raw on|off] [offset N] [length N]
ethtool -E|--change-eeprom devname [magic N] [offset N] [length N] [value N]
ethtool -k|--show-features|--show-offload devname
ethtool -K|--features|--offload devname feature on|off ...
ethtool -p|--identify devname [N]
ethtool -P|--show-permaddr devname
ethtool -r|--negotiate devname
ethtool -S|--statistics devname
ethtool -t|--test devname [offline|online|external_lb]
ethtool -s devname speed N [duplex half|full] [port tp|au|bnc|mii] [autoneg on|off] [advertise
N] [phyad N] [xcvr internal|external] [wol p|u|m|b|a|g|s|d...] [sopass xx:yy:zz:aa:bb:cc]
[msglvl N | msglvl type on|off ...]
ethtool -n|-u|--show-nfc|--show-ntuple devname [ rx-flow-hash tcp4|udp4|ah4|esp4|sctp4|tcp6|
udp6|ah6|esp6|sctp6 |
rule N ]

```

```

ethtool -N|-U|--config-nfc|--config-ntuple devname rx-flow-hash tcp4|udp4|ah4|esp4|sctp4|tcp6|
udp6|ah6|esp6|sctp6 m|v|t|s|d|f|n|r... |
flow-type ether|ip4|tcp4|udp4|sctp4|ah4|esp4 [src xx:yy:zz:aa:bb:cc [m xx:yy:zz:aa:bb:cc]] [dst
xx:yy:zz:aa:bb:cc [m xx:yy:zz:aa:bb:cc]] [proto N [m N]] [src-ip x.x.x.x [m x.x.x.x]] [dst-ip
x.x.x.x [m x.x.x.x]] [tos N [m N]] [l4proto N [m N]] [src-port N [m N]] [dst-port N [m N]] [spi
N [m N]] [l4data N [m N]] [vlan-etype N [m N]] [vlan N [m N]] [user-def N [m N]] [action N]
[loc N] |
delete N
ethtool -w|--get-dump devname [data filename]
ethtool -W|--set-dump devname N
ethtool -T|--show-time-stamping devname
ethtool -x|--show-rxfh-indir devname
ethtool -X|--set-rxfh-indir devname [ equal N | weight W0 W1 ... ]
ethtool -f|--flash devname FILE [N]
ethtool -l|--show-channels devname
ethtool -L|--set-channels devname [rx N] [tx N] [other N] [combined N]
ethtool -m|--dump-module-EEPROM devname [raw on|off] [hex on|off] [offset N] [length N]
ethtool --show-priv-flags devname
ethtool --set-priv-flags devname flag on|off ...
ethtool --show-eee devname
ethtool --set-eee devname [eee on|off] [tx-lpi on|off] [tx-timer N] [advertise N]

```

Output

```

The test result is PASS
The test extra info:
Register test (offline) 0
EEPROM test (offline) 0
Interrupt test (offline) 0
Loopback test (offline) 0
Link test (on/offline) 0

```

fantool

The `fantool` tests the fans in the system, sets and reports the fan speeds and the fan tray field replaceable unit (FRU) registers.

The `fantool` also reports the airflow direction of the fans. The `psutool` command controls the PSU fans.

Tests

The `fantool` tests the fans by setting them to different speeds and then verifying the configured fan speeds.

Registers and values pass as hexadecimal values with or without the preceding 0x. Fans display from 1 to Max System Fans.

CLI options

```

DellEmc Diag - Fan Controller Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23

```

Syntax: `fantool <option>`

Show the help-text:=

```

fantool --h (or)
fantool -h

```

Initialize the fans to the default state:=

```

fantool --init (or)
fantool -i

```

Test using the Fan Controller config file:=

```

fantool --test [--fan=<fan>] [--lpc] (or)

```

```

    fantool -t [-F <fan>] [-l]
Get the speed of the specified fan or all fans in RPM:=
    fantool --get --fan=<fan | all> [--lpc]                (or)
    fantool -g -F <fan | all> [-l]
Set the fan(s) to the speed:=
    fantool --set --fan=<fan | all> --speed=<speed in RPM>  (or)
    fantool -s -F <fan | all> -S <speed in RPM>
Execute repeatedly command by count:=
    fantool --iteration=max/<count> [option1] [option2]...  (or)
    fantool -I max/<count> [option1] [option2]...
Read the Register from the fan controller:=
    fantool --read --fan=<fan | all> --reg=<register | all>  (or)
    fantool -r -F <fan | all> -R <register | all>
Write the Register in the Fan Controller:=
    fantool --write --fan=<fan | all> --reg=<register> --val=<value> (or)
    fantool -w -F <fan | all> -R <register> -V <value>

```

Usage:=

```

-h, --h                Show the help text
-i, --init             Initilize to default
-t, --test             Test using the pre-programmed configuration or use supplied config
-g, --get              Get operation
-s, --set              Set operation
-r, --read             Read operation
-w, --write            Write operation
-I, --iteration=      Iteration command execution
-F, --fan=            Fan Id
-R, --register=        Register
-V, --val=            Value to be set
-S, --speed=          Speed of the fan
-q, --lpc              Test by reading or modifying SmartFusion registers.
                       When this flag is used, it must be clubbed with one of above flags

```

*Registers and Values are passed as Hexadecimal values with or without the preceding 0x.
 *Fans are from 1 to Max System Fans.

The `fantool` uses long options which requires two hyphens in front of the options. Options are required, optional, or none. If you require a parameter, specify it and include an equal sign. If a parameter is optional, enclose it with square brackets to show that it is optional, but do not type the brackets at the CLI. For example, `--fan` is optional and enter it as `--fan=1` or `--fan=all`, and so forth. Parameters with angle brackets are required but have multiple options for the input. Do not type the angle brackets or the vertical line character in the CLI. Only use one option per command; for example, `--fan=1` or `--fan=all`.

- `test` — Runs through the speeds for the fan, from highest to lowest, and checks that the fan can run at the speeds of the test. If a single fan is listed on the CLI, that fan is tested. If you use the `all` option, all fans are tested. The number in the parentheses during the test is the speed the system tries to reach during the test. If a fan cannot reach the desired speed within an acceptable range after 10 checks, the fan fails for that speed and the system moves on to the next fan.
- `get` — Gets the speed of the fan and returns it in the rate process module (RPM).
- `set` — Sets the speed of the fan in the RPM.

NOTE: Commonly, fan speeds are in two registers and must be written in a specific order. The `write` command cannot change the fan speeds; use the `set` command.

Output

test output

```

root@dell-diag-os:~# fantool --test --lpc
Fan Controller Test LPC.....
Max number of Fan Trays in the System : 5
Number of fans per tray : 2
Max Fan Speed set (PWM): 255
Getting Details for Fan 1

```

```

Fan 1 is Present
Fan 1 Air flow type is Front To Rear
Fan 1 status Normal
Fan 1 speed is 8420 RPM
Getting Details for Fan 2
Fan 2 is Present
Fan 2 Air flow type is Front To Rear
Fan 2 status Normal
Fan 2 speed is 8738 RPM
Getting Details for Fan 3
Fan 3 is Present
Fan 3 Air flow type is Front To Rear
Fan 3 status Normal
Fan 3 speed is 8474 RPM
Getting Details for Fan 4
Fan 4 is Present
Fan 4 Air flow type is Front To Rear
Fan 4 status Normal
Fan 4 speed is 8757 RPM
Getting Details for Fan 5
Fan 5 is Present
Fan 5 Air flow type is Front To Rear
Fan 5 status Normal
Fan 5 speed is 8492 RPM
Getting Details for Fan 6
Fan 6 is Present
Fan 6 Air flow type is Front To Rear
Fan 6 status Normal
Fan 6 speed is 8777 RPM
Getting Details for Fan 7
Fan 7 is Present
Fan 7 Air flow type is Front To Rear
Fan 7 status Normal
Fan 7 speed is 8348 RPM
Getting Details for Fan 8
Fan 8 is Present
Fan 8 Air flow type is Front To Rear
Fan 8 status Normal
Fan 8 speed is 8585 RPM
Getting Details for Fan 9
Fan 9 is Present
Fan 9 Air flow type is Front To Rear
Fan 9 status Normal
Fan 9 speed is 8420 RPM
Getting Details for Fan 10
Fan 10 is Present
Fan 10 Air flow type is Front To Rear
Fan 10 status Normal
Fan 10 speed is 8566 RPM
Fan Controller Test LPC..... Passed
root@dell-diag-os:~#

root@dell-diag-os:~# fantool --get --lpc
Fan 1 speed is 8420 RPM
Fan 2 speed is 8757 RPM
Fan 3 speed is 8474 RPM
Fan 4 speed is 8738 RPM
Fan 5 speed is 8474 RPM
Fan 6 speed is 8757 RPM
Fan 7 speed is 8366 RPM
Fan 8 speed is 8604 RPM
Fan 9 speed is 8420 RPM
Fan 10 speed is 8566 RPM
[2]+ Done          dhclient -q eth0
root@dell-diag-os:~#

root@dell-diag-os:~# fantool --get --fan=2 --lpc
Fan 2 speed is 8738 RPM
root@dell-diag-os:~#

```

flashrom

To update or erase the BIOS flash memory, the `smbiostool` uses `flashrom`.

gpiotool

The `gpiotool` controls the state of the GPIO lines from the CPU or any other device that drives the GPIO lines.

The CPU GPIO aligns the map in Linux to `/sys/class/gpio` entries, which are manipulated through the standard read/write interfaces. There is chip numbering to support multiple GPIO chips, or chips at an offset. For devices such as the complex programmable logic device (CPLD) or field programmable gate arrays (FPGA), `gpiotool` accesses those devices to drive the GPIO lines using the standard bus interfaces such as `i2c`, `mem`, or `pci`.

CLI options

```
DellEmc Diag - GPIO Tool
version 1.4, x.xx.x.x-x
build, 2017/05/23,

Syntax: gpiotool <option>
Show the help-text:=
    gpiotool --h                (or)
    gpiotool -h
List available gpio chips and pins:=
    gpiotool --list            (or)
    gpiotool -l
Set GPIO pin:=
    gpiotool --set [--chip=<chip>] --pin=<pin> --val=<value> (or)
    gpiotool -s [-c <chip>] -H <pin> -V <value>
Get GPIO pins value:=
    gpiotool --get [--chip=<chip>] [--pin=<pin>]            (or)
    gpiotool -g [-c <chip>] [-H <pin>]
Execute repeatedly command by count:=
    gpiotool --iteration=max/<count> [option1] [option2]... (or)
    gpiotool -I max/<count> [option1] [option2]...

Usage:=
-h, --h                Show the help text
-l, --list             List the understood TLV codes and names
-s, --set              Set operation
-g, --get              Get operation
-c, --chip=           GPIO chip
-I, --iteration=       Iteration command execution
-H, --pin=            GPIO pin number
-V, --val=            Value to be set
```

Output

list output

```
root@dell-diag-os:~# gpiotool --list
Chip 0 Core Gpio bits: 60 CORE gpiochip196
=====
Bit          Name      Dir  AC  Value
=====
15          SATA_GPO    IN   LOW  0
16          SATA_LEDN    OUT  LOW  0
```

```

17      SATA3_GP0      IN    LOW    0
19      FLEX_CLK_SE0   IN    LOW    0
20      FLEX_CLK_SE1   IN    LOW    0
32      GPIO_SUS1     IN    LOW    0
33      GPIO_SUS2     OUT   LOW    0
34      CPU_RESET_B   OUT   LOW    0
36      PMU_SUSCLK    OUT   LOW    0
37      PMU_SLP_DDRVTT_B IN    LOW    0
38      PMU_SLP_LAN_B  IN    LOW    0
39      PMU_WAKE_B    OUT   LOW    0
40      PMU_PWRBTN_B  IN    LOW    0
49      GBE_SDP0_1    IN    LOW    0
50      GBE_LED0      IN    LOW    0
51      GBE_LED1      IN    LOW    0
52      GBE_LED2      IN    LOW    0
53      GBE_LED3      IN    LOW    0
54      NCSI_RXD1     OUT   LOW    0
55      GBE_MDIO0_I2C_CLK OUT   LOW    0
58      GBE_MDIO1_I2C_DATA IN    LOW    0
59      JTAG_TRST     OUT   LOW    0
root@dell-diag-os:~#

```

get output

```

root@dell-diag-os:~# gpiotool --get --pin=1
Chip 0 Core Gpio bits: 60 CORE gpiochip196
=====
Bit          Name      Dir  Value
=====

```

set output

```

root@amazon:/opt/ngos/bin# ./gpiotool --set --pin=1 --val=1

```

i2ctool

The `i2ctool` allows for scanning, reading, and writing of the I2C bus devices.

To read and write to devices on the i2c bus, use the `i2ctool`. The `i2ctool` also scans the i2c busses and reports what devices are found. The scan reads address 0x0 from all the devices in the address range of 0x0 to 0x7f on all i2c busses present. The `i2ctool` does not automatically traverse MUXes along the i2c bus. Other tools use this tool to read i2c device information and pass the results back through a named pipe.

Tests

To test, the `i2ctool` has a configuration file that lists all the devices on the busses. The tool runs through the list and tries to reach the devices. The `i2ctool` reports when a device is not returning data.

CLI options

```

DellEmc Diag - I2C Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23,

```

```

Syntax: i2ctool <option>
To Scan the (Specific) I2C devices:=

```

```

    i2ctool --scan [--bus=/dev/i2c-
<bus_number>]
                (or)
    i2ctool -n [-b /dev/i2c-<bus_number>]
To Test the pre-programmed configuration or from config file:=
    i2ctool --test [--
config=<config_file_name>]
                (or)
    i2ctool -t [-f <config_file_name>]
Execute repeatedly command by count:=
    i2ctool --iteration=max/<count> [option1]
[option2]...
    (or)
    i2ctool -I max/<count> [option1] [option2]...
Read:=
    i2ctool --read --bus=/dev/i2c-<bus_number> --addr=<address> --reg=<register> --
count=<count> --width=<width> --display_size=<display_size> (or)
    i2ctool -r -b /dev/i2c-<bus_number> -a <address> -R <register> -C <count> -W <width> -D
<display_size>
Read(16 bit addressing):=
    i2ctool --read --bus=/dev/i2c-<bus_number> --addr=<address> --reg16=<register(16bit)>
[--reg_le] --count=<count> --width=<width> --display_size=<display_size> (or)
    i2ctool -r -b /dev/i2c-<bus_number> -a <address> -o <register(16bit)> [-L] -C <count> -
W <width> -D <display_size>
Write:=
    i2ctool --write --bus=/dev/i2c-<bus_number> --addr=<address> --reg=<register> --
width=<width> --val=<value> (or)
    i2ctool -w -b /dev/i2c-<bus_number> -a <address> -R <register> -W <width> -V <value>
Write(16 bit addressing):=
    i2ctool --write --bus=/dev/i2c-<bus_number> --addr=<address> --reg16=<register(16bit)>
[--reg_le] --val=<value> (or)
    i2ctool -w -b /dev/i2c-<bus_number> -a <address> -o <register(16bit)> [-L] -V <value>

Usage:
-h, --h                Show the help text
-n, --scan             Scan operation
-t, --test             Test using the pre-programmed configuration or use supplied config
-r, --read             Read operation
-w, --write           Write operation
-f, --config=         To specify the location of the config file e.g. /etc/dn/diag/<file_name>
-C, --count=         Count
-R, --reg=            Register
-o, --reg16=          Register(16 bit addressing)
-V, --val=            Value to be set
-W, --width=          Width {8,16}
-b, --buspath=        To specify the i2c bus e.g.: /dev/i2c-<bus number>
-a, --addr=           Address
-D, --display_size=   Display size, {1,2,4} of bytesDisplay size, {1,2,4} of bytes
-I, --iteration=      Iteration command execution

```

Output

NOTE: The `i2ctool` does not automatically scan multiple MUXed segments. Before scanning, you MUST set the MUXes to select the devices you want to see on the busses. By default, the `i2ctool` scans the i2c devices from the root MUX where it sees the list of devices directly connected to the CPU MUX. The default scan function scans all connected busses. By specifying a bus, you can limit the scan to one bus. In the scan data, RR indicates a reserved address which is not used for any devices and UU indicates that the device is busy or mapped to the OS.

scan Output

```

root@dell-diag-os:/etc/dn/diag# i2ctool --scan
 0 1 2 3 4 5 6 7 8 9 a b c d e f

```

```

00: RR RR RR RR RR RR RR RR -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- 18 -- 1a -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- 2e --
30: 30 -- 32 -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: 50 -- 52 -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- -- RR RR RR RR RR RR RR RR
    0 1 2 3 4 5 6 7 8 9 a b c d e f
00: RR RR RR RR RR RR RR RR -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- 3e --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: 50 51 52 53 54 55 56 57 -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: 70 -- -- -- -- -- -- -- -- RR RR RR RR RR RR RR RR
I2C devices found on bus #0: 8
 0x18 0x1a 0x2e 0x30 0x32 0x50 0x52 0x69
I2C devices found on bus #1: 10
 0x3e 0x50 0x51 0x52 0x53 0x54 0x55 0x56
 0x57 0x70
root@dell-diag-os:/etc/dn/diag#

```

test Output

```

root@dell-diag-os:/etc/dn/diag# i2ctool --test
Testing I2C devices:
Checking I2C devices on bus 0:
+ Checking Clock GEN          0x69 ..... Passed
+ Checking SPD0                0x50 ..... Passed
Checking I2C devices on bus 1:
+ Checking CPU Board I2C Mux   0x70 ..... Passed
+ Checking CPU Board EEPROM1   0x53 ..... Passed
+ Checking CPU Board EEPROM2   0x57 ..... Passed
+ Checking Switch Brd EEPROM   0x50 ..... Passed
+ Checking CPLD2                0x3e ..... Passed
+ Checking CPLD3                0x3e ..... Passed
+ Checking CPLD4                0x3e ..... Passed
+ Checking SFP+ 1               0x50 ..... Passed
+ Checking SFP+ 2               0x50 ..... Passed
+ Checking SFP+ 3               0x50 ..... Passed
+ Checking SFP+ 4               0x50 ..... Passed
+ Checking SFP+ 5               0x50 ..... Passed
+ Checking SFP+ 6               0x50 ..... Passed
+ Checking SFP+ 7               0x50 ..... Passed
+ Checking SFP+ 8               0x50 ..... Passed
+ Checking SFP+ 9               0x50 ..... Passed
+ Checking SFP+ 10              0x50 ..... Passed
+ Checking SFP+ 11              0x50 ..... Passed
+ Checking SFP+ 12              0x50 ..... Passed
+ Checking SFP+ 13              0x50 ..... Passed
+ Checking SFP+ 14              0x50 ..... Passed
+ Checking SFP+ 15              0x50 ..... Passed
+ Checking SFP+ 16              0x50 ..... Passed
+ Checking SFP+ 17              0x50 ..... Passed
+ Checking SFP+ 18              0x50 ..... Passed
+ Checking SFP+ 19              0x50 ..... Passed
+ Checking SFP+ 20              0x50 ..... Passed
+ Checking SFP+ 21              0x50 ..... Passed
+ Checking SFP+ 22              0x50 ..... Passed
+ Checking SFP+ 23              0x50 ..... Passed
+ Checking SFP+ 24              0x50 ..... Passed
+ Checking SFP+ 25              0x50 ..... Passed
+ Checking SFP+ 26              0x50 ..... Passed
+ Checking SFP+ 27              0x50 ..... Passed
+ Checking SFP+ 28              0x50 ..... Passed

```

```

+ Checking SFP+ 29          0x50      ..... Passed
+ Checking SFP+ 30          0x50      ..... Passed
+ Checking SFP+ 31          0x50      ..... Passed
+ Checking SFP+ 32          0x50      ..... Passed
+ Checking SFP+ 33          0x50      ..... Passed
+ Checking SFP+ 34          0x50      ..... Passed
+ Checking SFP+ 35          0x50      ..... Passed
+ Checking SFP+ 36          0x50      ..... Passed
+ Checking SFP+ 37          0x50      ..... Passed
+ Checking SFP+ 38          0x50      ..... Passed
+ Checking SFP+ 39          0x50      ..... Passed
+ Checking SFP+ 40          0x50      ..... Passed
+ Checking QSFP+ 41         0x50      ..... Passed
+ Checking QSFP+ 42         0x50      ..... Passed
+ Checking QSFP28 43        0x50      ..... Passed
+ Checking QSFP28 44        0x50      ..... Passed
+ Checking QSFP28 45        0x50      ..... Passed
+ Checking QSFP28 46        0x50      ..... Passed
+ Checking QSFP28 47        0x50      ..... Passed
+ Checking QSFP28 48        0x50      ..... Passed
I2C Devices: Overall test results ----- >>> Passed
root@dell-diag-os:/etc/dn/diag#

```

read Output

```

/opt/ngos/bin# ./i2ctool --read --bus=/dev/i2c-1 --addr=0x50 --reg=0 --count=256
0x92 0x13 0x0b 0x08 0x04 0x21 0x02 0x09 0x0b 0x11 0x01 0x08 0x0c 0x00 0x7e 0x00
0x69 0x78 0x69 0x30 0x69 0x11 0x20 0x89 0x20 0x08 0x3c 0x3c 0x00 0xf0 0x83 0x05
0x80 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x85 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x0f 0x11 0x23 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x80 0x2c 0x0f 0x13 0x35 0xe9 0x8d 0xe0 0xbb 0x80 0x50
0x31 0x38 0x4b 0x53 0x46 0x31 0x47 0x37 0x32 0x48 0x5a 0x2d 0x31 0x47 0x34 0x45
0x32 0x20 0x45 0x32 0x80 0x2c 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff
0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff
0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff
0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff
0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff 0xff

```

write Output

```

/opt/dell/diag/bin# ./i2ctool --write --bus=/dev/i2c-2 --addr=0x48 --reg=0x14 --val=1

```

ledtool

The `ledtool` allows you to control the state of the front and back panel light emitting diodes (LEDs). ASIC and Phys control the port LEDs and are beyond the scope of this tool.

You can manually control the front and back panel LEDs normally controlled through the CPLD or FPGA access. When set, bits in these registers control the state of the LED.

Tests

To test the LEDs, use the `ledtool --test` command.

```
root@dell-diag-os:/opt/ngos/bin# ./ledtool --test
LED Test Started... Will take few mins to complete.
LED Tool: Overall test results ----- >>> Passed
```

CLI options

DellEmc Diag - Led Tool
version 1.0, x.xx.x.x-x
build, 2017/05/23,

Usage:

```
List the LEDs:=
    ledtool --list                               (or)
    ledtool -l
Get the state of (specific) LED(s):=
    ledtool --get [--led=<led>]                 (or)
    ledtool -g [-D <led>]
Set the state of specific LED(color and blink):=
    ledtool --set --led=<led> [--instance=<instance>] [--state=<state> | --val=<value>] (or)
    ledtool -s -D <led> [-I <instance>] {-T <state> | -V <value>}
Execute repeatedly command by count:=
    ledtool --iteration=max/<count> [option1] [option2]... (or)
    ledtool -I max/<count> [option1] [option2]...
Test using config file:=
    ledtool --test [--config=<config_file>]     (or)
    ledtool -t [-f <config_file>]
```

Syntax: ledtool <option>

```
-h, --h                Show the help text
-l, --list             List the LEDs
-g, --get              Get operation
-s, --set              Set operation
-t, --test             Test using the pre-programmed configuration or use supplied config
-D, --led=            LED
-I, --iteration=      Iteration command execution
-S, --instance=,      Instance
-T, --state=,         State of the LED
-V, --val=,           Value to be set
-f, --config=,        To specify the location of the config file e.g. /etc/dn/diag/<file_name>
```

[led] selections are:

```
Power
States: green amber flashing-amber off
System
States: amber flashing-green flashing-amber green
Fan
States: green flashing-amber off
Beacon
States: flashing-blue off
CPLD2-Mode
States: normal-mode test-mode
Port#1-18-Amber
States: off flashing-amber-fast amber flashing-amber
Port#1-18-Green
States: off flashing-green-fast green flashing-green
CPLD3-Mode
States: normal-mode test-mode
Port#19-36-Amber
```

```
States: off flashing-amber-fast amber flashing-amber
Port#19-36-Green
States: off flashing-green-fast green flashing-green
CPLD4-Mode
States: normal-mode test-mode
Port#37-48-Amber
States: off flashing-amber-fast amber flashing-amber
Port#37-48-Green
States: off flashing-green-fast green flashing-green
```

Output

list output

```
root@dell-diag-os:/etc/dn/diag# ledtool --list
Power Led : options
    green amber flashing-amber off
System Led : options
    amber flashing-green flashing-amber green
Fan Led : options
    green flashing-amber off
Beacon LED : options
    flashing-blue off
Ports 1-18 PortLED Mode : options
    normal-mode test-mode
Ports 1-18 FrontEnd AmberLed : options
    off flashing-amber-fast amber flashing-amber
Ports 1-18 FrontEnd GreenLed : options
    off flashing-green-fast green flashing-green
Ports 19-36 PortLED Mode : options
    normal-mode test-mode
Ports 19-36 FrontEnd AmberLed : options
    off flashing-amber-fast amber flashing-amber
Ports 19-36 FrontEnd GreenLed : options
    off flashing-green-fast green flashing-green
Ports 37-48 PortLED Mode : options
    normal-mode test-mode
Ports 37-48 FrontEnd AmberLed : options
    off flashing-amber-fast amber flashing-amber
Ports 37-48 FrontEnd GreenLed : options
    off flashing-green-fast green flashing-green
root@dell-diag-os:/etc/dn/diag#
```

get Output

```
root@dell-diag-os:/etc/dn/diag# ledtool --get
Power Led : flashing-amber
System Led : flashing-green
Fan Led : green
Beacon LED : off
Ports 1-18 PortLED Mode : normal-mode
Ports 1-18 FrontEnd AmberLed : off
Ports 1-18 FrontEnd GreenLed : off
Ports 19-36 PortLED Mode : normal-mode
Ports 19-36 FrontEnd AmberLed : off
Ports 19-36 FrontEnd GreenLed : off
Ports 37-48 PortLED Mode : normal-mode
Ports 37-48 FrontEnd AmberLed : off
Ports 37-48 FrontEnd GreenLed : off
root@dell-diag-os:/etc/dn/diag#
```

lpctool

To access devices on the LPC bus, use the `lpctool`.

The `lpctool` allow access on the LPC bus by using I/O transactions at the processor level. This access does not include LPC interfaces in other devices. Other DiagOS tools use `lpctool` to read LPC-connected registers.

CLI options

```
DellEmc Diag - LPC Tool
version 1.0, x.xx.x.x-x
build, 2017/05/23,

Syntax: lpctool <option>
  Show the help-text:=
    lpctool --h
    lpctool -h
  Read the specified address:=
    lpctool --read --addr=<address> --count=<number_of_bytes> [--size=<b,w or l>] (or)
    lpctool -r -a <address> -C <number_of_bytes> [-z <b,w or l>]
  Write data at the specified address:=
    lpctool --write --addr=address --val=data [--size=b,w or l] (or)
    lpctool -w -a <address> -V <data> [-z <b,w or l>]
  Execute repeatedly command by count:=
    lpctool --iteration=max/<count> [option1] [option2]... (or)
    lpctool -I max/<count> [option1] [option2]...

Usage:=
-h, --h          Show the help text
-w, --write      Write operation
-r, --read       Read operation
-z, --size=      Size
-I, --iteration= Iteration command execution
-C, --count=     Count
-a, --addr=      Address
```

Output

read Output

```
root@dell-diag-os:/opt/ngos/bin# ./lpctool --read --addr=102
Byte Port 0x102 : 0xde
```

write Output

```
root@dell-diag-os:/opt/ngos/bin# ./lpctool --write --addr=102 --val=10
```

memtool

The `memtool` tests the physical memories in the system.

The `memtool` performs address bus and data tests that moves 1s or 0s through the bus lines to detect stuck, missing, bridged, or other issues found during board tests. The tool also places hamming values or addresses into memory to test and report failing bits. All tests are similar to the `memtest86` application but are available through the CLI.

In addition, the `memtool` reads the types and locations of memory in the system. The memory may be physical RAMs connected to the CPU covered by caches, or memory attached or embedded in other devices or across buses. The tool must know the addressable location of the memory, the memory address, data bus sizes, and any addressing constraints; for example, byte or word addressable boundaries.

The `memtool` allocates a memory region to tests in, which is either `malloc` space or opens a memory map to the memory, and passes the pointer to access the memory.

Tests

- **Address Read**—Causes read transactions on the memory bus. `Address read` can loop for several iterations, checking for any changes in the data between iterations. You can specify patterns on the address bus for the bits to allow the testing for stuck address bits.
- **Address Write**—Creates write transactions on the memory bus. `Address write` can loop for several iterations, and works similar to the `Address Read` test.
- **Address Walking 1**—Walks a 1 through the provided address space in memory for the available address bits. `Address Walking 1` writes the address of the cell in the location it is referencing. After it is done writing all the locations, it walks back through and verifies that the data is correct.
- **Address Walking 0**—Walks a 0 address bit through the memory area available to it. `Address walking 0` writes the additive inverse of the address to the location. After writing all addressed locations, it walks back through and verifies the locations data.
- **Data Read**—Reads transactions similar to the `Address Read` test, but focuses on the data bits. Patterns are placed on the data bus to test for stuck data bits.
- **Data Write**—Places data patterns on the bus for testing the bus and looks for stuck data bits.
- **Data Walking 1**—Walks a 1 through the data bits within an address location and verifies that the values are valid before overwriting.
- **Data Walking 0**—Walks a 0 through the data bits and verifies the value as it is testing.
- **Data Sliding 1**—Slides a 1 through the data testing for stuck bits. By `xor` of each shift to the data, when finished, the cell holds all the 1s.
- **Data Sliding 0**—Slides a 0 through the data bits set to 1. By `xor` of each shift of the data, when finished, the cell holds all the 1s.
- **Data Pattern**—Writes different patterns to memory locations within the specified region. The patterns are `0xFFFF`, `0xFF00`, `0xF0F0`, `0xAAAA`, `0xAA55` and `0x5555`. The patterns are written as repeated portions of these patterns in the memory to fill the memory and as Hamming patterns (such as Hamming [8,4], Hamming[16,11], Hamming[32,26] or Hamming[64,57]) encoding with the additional most significant byte (MSB) parity bit to cover the parity bits in the Hamming code. This pattern allows for detecting multiple bit errors.
- **Data Cache**—Performs a rotation of a 16MB array in four clockwise rotations for 16 iterations of the complete rotation. The 16MB size ensures that memory is not within the cache lines and causes cache ejections through each of the rotations.

CLI options

```
DellEmc Diag - Memory Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23,

Syntax: memtool <option>
Show the Help-text:=
    memtool --h                               (or)
    memtool -h
Display the configuration info of the device:=
    memtool --info                             (or)
    memtool -i
List all of the memory regions in the config file:=
    memtool --list                             (or)
    memtool -l
Test using the MEM test config file:=
    memtool --test --region=<region/'ALL'> [--testlist=<test0>,<test1>...] (or)
    memtool -t -G <region/ALL> [-T <test0>,<test1>,...]
Read the specified physical address:=
    memtool --read --addr=<address> --count=<bytes> [--width=<8/16/32>] (or)
```

```

memtool -r -a <address> -C <bytes> [-W <#8,16,32>]
Write at the specified physical address:=
memtool --write --addr=<address> --val=<data0>,<data1>, ... ,<dataN> [--width=<8/16/32>]
(or)
memtool -w -a <address> -V <data0>,<data1>...,<dataN> [-W <8/16/32>]
Execute repeatedly command by count:=
memtool --iteration=max/<count> [option1] [option2]...
memtool -I max/<count> [option1] [option2]... (or)

```

Usage:=

```

-h, --h          Show the help text
-t, --test       Test using the pre-programmed configuration or use supplied config
-i, --info       Configuration information
-l, --list       List the understood TLV codes and names
-G, --region     Region
-T, --testlist  List of tests
-I, --iteration= Iteration command execution
-C, --count=    Count
-a, --addr=     Address
-r, --read      Read operation
-w, --write     Write operation
-V, --val=     Value to be set
-W, --width    Width {8,16}

```

Available Tests are:

```

ALL_TESTS, ADDRESS_READ, ADDRESS_WRITE, ADDRESS_WALKING1, ADDRESS_WALKING0, DATA_READ,
DATA_WRITE, DATA_WALKING1, DATA_WALKING0, DATA_SLIDING1, DATA_SLIDING0, DATA_PATTERN,
DATA_CACHE

```

e.g. ADDRESS_WALKING1, DATA_WALKING1

The memtool uses long options for the parameters that requires two hyphens in front of the options. Options are required, optional, or none. You use a parameter, it is specified as such and must include an equal sign; if an option is optional, it is enclosed with square brackets. However, do not type the brackets at the CLI. For example, the `-region` and `-testlist` options are optional and you must enter them as `-region=0` and `-testlist=0`.

- **List**—Lists the memory regions SDI knows. The tool queries SDI for the regions and prints a list of the regions with a region number that you can use for the subsequent options requiring a region number.
- **Info**—Lists the SPD information for the specified regions. Specifying a region allows the tool to read SPD from different DIMM modules, each specified in its own region. The output lists the actual data read and completes some parsing of the parameters so you do not have to decode the values. Decoding is based on the SPD standard definition for DDR3 and DDR4 DIMM memory.
- **Test**—Runs tests that include: Address Read/Write, Address Walking 1/0, Data Read/Write, Data Walking 1/0, Data Sliding 1/0, and Data Patterns (that writes Hamming patterns that you can use to detect multiple bit errors and identify single bit errors). These tests run during the normal memory tests. In extended memory tests, the data cache memory test runs. This test is lengthy and causes multiple ejections of data from the cache and tests the caches.

In Verbosity 0, only the pass/fail message prints for all the tests. In Verbosity 1, each test prints its own pass/fail and other information; for example, what failed in the test. Higher verbosity show where each pass of the test performs and has verbose output. All output, regardless of verbosity, is in the log. You can see every level of detail by referring to the log.

- **Read**—Reads physical memory locations. You can loop over address read cycles to look for data that is volatile or read physical devices on the memory bus (`localbus` for Power-PC processors). You can specify a region, address, and count of successive bytes to read.
- **Write**—Writes to a physical memory address to test write cycles and memory. Similar to the `Read` command, this command takes a region, address in that region, and a comma-separated list of values to write.

Output

list Output

```

root@dell-diag-os:~# memtool --list
=====
Region ID: 0
Region Name: DDR3-0
Address: dynamically allocated, Chunk: 0x2800 KB

```

```

Largest Cache Size: 0, Cache Line Size : 0
Access: d Increment: 8 Ecc: Y Iterations: 1
Configuration device: SPD (/dev/i2c-0) at 0x50, Regs 0 to 255
Tests:
Address Read Test
Address Write Test
Address Walking 1's Test
Address Walking 0's Test
Data Read Test
Data Write Test
Data Walking 1's Test
Data Walking 0's Test
Data Sliding 1's Test
Data Sliding 0's Test
Data Pattern Tests
Data Cache Test
root@dell-diag-os:~#

```

info Output

```

root@dell-diag-os:~# memtool --info
==== SPD Data ====
Density 8192 MB, Rows: 16, Cols: 10
Bus Width: 64 bits, ECC: yes
Manufacturer: Unknown
Part Number : AW48M7228BNK0M
[00000000]: 0x92 0x13 0x0b 0x08 0x05 0x22 0x00 0x09 0x0b 0x11 0x01 0x08 0x0a 0x00 0xfe 0x00
  || .....".
[00000010]: 0x69 0x78 0x69 0x3c 0x69 0x11 0x18 0x81 0xf0 0x0a 0x3c 0x3c 0x01 0x40 0x83 0x05
  || |xi<i.....<<.@..
[00000020]: 0x80 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x88 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[00000030]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x0f 0x11 0x5f 0x00
  || .....
[00000040]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[00000050]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[00000060]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[00000070]: 0x00 0x00 0x00 0x00 0x00 0x86 0xe3 0x05 0x16 0x04 0xb3 0xd1 0x0d 0x05 0xec 0x10
  || .....
[00000080]: 0x41 0x57 0x34 0x38 0x4d 0x37 0x32 0x32 0x38 0x42 0x4e 0x4b 0x30 0x4d 0x00 0x00
  || AW48M7228BNK0M..
[00000090]: 0x00 0x00 0x00 0x00 0x00 0x00 0x41 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....A.....
[000000a0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[000000b0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[000000c0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[000000d0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[000000e0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
[000000f0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
  || .....
root@dell-diag-os:~#

```

test Output

```

root@dell-diag-os:~# memtool --test
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
root@dell-diag-os:~#

```

read Output

```

root@dell-diag-os:~# memtool --read --addr=200
[00000200]: 0x00 || .

```

write Output

```

root@dell-diag-os:~# memtool --write --addr=200 --val=0x50

```

Constraints

You cannot perform memory tests while other tests that allocate and use memory within the region are performing. However, you can perform the Read tests concurrently with other processes. You cannot run multiple memory tests at the same time as they may collide within the memory spaces.

Memory tests cannot test all the memory, and without cache flushes, memory tests may not get out of the caches. The SDI must ensure the memory accessed is accessing the physical memory. This check slows down the tests.

Data flow

The `memtool` is not part of the data path and does not participate in the data flow.

nvrantool

To read and write the NVRAM bits that the BIOS uses to control testing and the bits for the EDA tools, use the `nvrantool`.

The NVRAM is an area, usually in a battery backed-up device such as an RTC chip, that allows the writing of bits that do not change across reboots or power cycles. These bits are used to control how devices boot and how the tests are performed. The `nvrantool` controls both the BIOS and EDA for testing. The bits are not common across platforms and are defined in the configuration file. When using this tool, you must write the correct bits because the tool does not know the details of the registers it is writing. The `nvrantool` can display the bit-level detail in the NVRAM registers, depending on how you define it in the configuration file.

Tests

There are no tests of the NVRAM. This tool only controls the bits.

CLI option

DellEmc Diag - NVRAM Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23,

Syntax: nvramtool <option>
Show this help:=
nvramtool --h (or)
nvramtool -h
Read all or specific register NVRAM values:=
nvramtool --read [--reg=<register>] (or)
nvramtool -r [-R <register>]
Write NVRAM value:=
nvramtool --write [--reg=<register> --val=<value>] (or)
nvramtool -w [-R <register> -V <value>]
Execute repeatedly command by count:=
nvramtool --iteration=max/<count> [option1] [option2]... (or)
nvramtool -I max/<count> [option1] [option2]...

Usage:
-h, --h Show the help text
-r, --read Read operation
-w, --write Write operation
-I, --iteration= Iteration command execution
-R, --reg= Register
-V, --val= Value to be set

Output

read output

```
root@dell-diag-os:~# nvramtool --read
NVRAM Values:
0x00 0x9f 0x00 0xe6 0x03 0x03 0x00 0xea
Test Status Fail Bits : offset 0x50 = 0x0
 7 NVRAM test = 0
 6 SSD test = 0
 5 COLD/SMF Reg check = 0
 4 PCI test = 0
 3 Upper DRAM test = 0
 2 Lower DRAM test = 0
 1 ECC test = 0
 0 SPD test = 0
Test Status Pass Bits : offset 0x51 = 0x9f
 7 NVRAM test = 1
 6 SSD test = 0
 5 CPLD/SMF Reg check = 0
 4 PCI test = 1
 3 Upper DRAM test = 1
 2 Lower DRAM test = 1
 1 ECC test = 1
 0 SPD test = 1
RMT Control : offset 0x52 = 0x0
 7: 4 Undefined = 0
 3 RMT Test Enable = 0
 2: 0 RMT Test Reboot Count = 0
Status ID Byte : offset 0x53 = 0xe6
POST Control Bits : offset 0x54 = 0x3
 7 Force Cold Boot = 0
```

```

6 POST Extended Upper DRAM test = 0
5 POST Extended Lower DRAM test = 0
4 POST Extended tests = 0
3 Reserved = 0
2 POST Verbose Mode = 0
1 POST Stop on Error = 1
0 POST Enable = 1
EDA Control Bits : offset 0x55 = 0x3
5: 4 EDA Verbose Level = 0
3 EDA Extended Tests = 0
2 EDA Verbose Mode = 0
1 EDA Stop on Error = 1
0 EDA Enable = 1
EDA Extra Bits : offset 0x56 = 0x0
Control ID Byte : offset 0x57 = 0xea
root@dell-diag-os:~#

```

write output

```
./nvramtool --write --reg=0x54 --val=0x1
```

opticstool

To check the presence or absence of optic devices, link status, and to read data from the optic devices' EEPROM, use the `opticstool`.

Tests

There are no tests on the optic devices. You can run a brief report that displays the optic presence or shows simple data, such as the serial number and device type. For more detailed information, use a device report.

CLI options

```

DellEmc Diag - Optics Tool
version 1.0, x.xx.x.x-x
build, 2017/05/23,

Syntax: opticstool <option>
  Show the help-text:=
    opticstool --h
    opticstool -h
  Show port and optics status:=
    opticstool --show[=brief] [--int=<interface>]
    opticstool -x[=brief] [-I <interface>]
  Execute repeatedly command by count:=
    opticstool --iteration=max/<count> [option1] [option2]...
    opticstool -I max/<count> [option1] [option2]...
  opticstool --read --int=<interface> [--page=<page #>] [--index=<offset>] [--cnt=<length>] (or)
  opticstool -r -I <interface> [-p <page #>] [-i <offset>] [-C <length>]
  opticstool --write --int=<interface> --page=<page #> --index=<offset> --val=<value>
  opticstool -w -i <interface> -p <page #> -i <offset> -V <value>
Usage:
  -h, --h          Show the help text
  -x, --show=     Show operation
  -F, --int       Interface ID
  -I, --iteration= Iteration command execution
  -r, --read      Read operation
  -w, --write     Write operation

```

- `show` —Shows information about the optic devices. With the `brief` option, only the ID and presence displays. Without the `brief` option, more details display, such as the serial number and device type. If you specify an interface, more detail displays about that device by reading the EEPROM.

Output

show=brief output

```
root@dell-diag-os:~# opticstool --show=brief
Show Optics in System (brief)
Port #   Name           Status
-----
 1      SFP+ 1         PRESENT
 2      SFP+ 2         PRESENT
 3      SFP+ 3         PRESENT
 4      SFP+ 4         PRESENT
 5      SFP+ 5         PRESENT
 6      SFP+ 6         PRESENT
 7      SFP+ 7         PRESENT
 8      SFP+ 8         PRESENT
 9      SFP+ 9         PRESENT
10      SFP+ 10        PRESENT
11      SFP+ 11        PRESENT
12      SFP+ 12        PRESENT
13      SFP+ 13        PRESENT
14      SFP+ 14        PRESENT
15      SFP+ 15        PRESENT
16      SFP+ 16        PRESENT
17      SFP+ 17        PRESENT
18      SFP+ 18        PRESENT
19      SFP+ 19        PRESENT
20      SFP+ 20        PRESENT
21      SFP+ 21        PRESENT
22      SFP+ 22        PRESENT
23      SFP+ 23        PRESENT
24      SFP+ 24        PRESENT
25      SFP+ 25        PRESENT
26      SFP+ 26        PRESENT
27      SFP+ 27        PRESENT
28      SFP+ 28        PRESENT
29      SFP+ 29        PRESENT
30      SFP+ 30        PRESENT
31      SFP+ 31        PRESENT
32      SFP+ 32        PRESENT
33      SFP+ 33        PRESENT
34      SFP+ 34        PRESENT
35      SFP+ 35        PRESENT
36      SFP+ 36        PRESENT
37      SFP+ 37        PRESENT
38      SFP+ 38        PRESENT
39      SFP+ 39        PRESENT
40      SFP+ 40        PRESENT
41      QSFP+ 41       PRESENT
42      QSFP+ 42       PRESENT
43      QSFP28 43      PRESENT
44      QSFP28 44      PRESENT
45      QSFP28 45      PRESENT
46      QSFP28 46      PRESENT
47      QSFP28 47      PRESENT
48      QSFP28 48      PRESENT
root@dell-diag-os:~#
```

show output

```
root@dell-diag-os:~# opticstool --show
```

```
Show Optics in System
```

Port #	Name	Status	Type	Part Number	Rev	Serial Number
1	SFP+ 1	PRESENT	SFP	616740000	B	CNOC6Y7M41A0
2	SFP+ 2	PRESENT	SFP	616740000	B	CNOC6Y7M41A0
3	SFP+ 3	PRESENT	SFP	616740000	C	CNOC6Y7M01I4
4	SFP+ 4	PRESENT	SFP	616740000	C	CNOC6Y7M01I4
5	SFP+ 5	PRESENT	SFP	616740000	C	CNOC6Y7M490B@
6	SFP+ 6	PRESENT	SFP	616740000	C	CNOC6Y7M490B@
7	SFP+ 7	PRESENT	SFP	616740000	C	CNOC6Y7M490BDD
8	SFP+ 8	PRESENT	SFP	616740000	C	CNOC6Y7M490BDD
9	SFP+ 9	PRESENT	SFP	616740000	C	CNOC6Y7M482HV@
10	SFP+ 10	PRESENT	SFP	616740000	C	CNOC6Y7M482HV@
11	SFP+ 11	PRESENT	SFP	616740000	C	CNOC6Y7M490BEL
12	SFP+ 12	PRESENT	SFP	616740000	C	CNOC6Y7M490BEL
13	SFP+ 13	PRESENT	SFP	616740000	C	CNOC6Y7M490BD
14	SFP+ 14	PRESENT	SFP	616740000	C	CNOC6Y7M490BD
15	SFP+ 15	PRESENT	SFP	616740000	C	CNOC6Y7M490BDD
16	SFP+ 16	PRESENT	SFP	616740000	C	CNOC6Y7M490BDD
17	SFP+ 17	PRESENT	SFP	616740000	C	CNOC6Y7M48A2E@
18	SFP+ 18	PRESENT	SFP	616740000	C	CNOC6Y7M48A2E@
19	SFP+ 19	PRESENT	SFP	616740000	C	CNOC6Y7M482@#@
20	SFP+ 20	PRESENT	SFP	616740000	C	CNOC6Y7M482@#@
21	SFP+ 21	PRESENT	SFP	616740000	C	CNOC6Y7M48C2MP@
22	SFP+ 22	PRESENT	SFP	616740000	C	CNOC6Y7M48C2MP@
23	SFP+ 23	PRESENT	SFP	616740000	C	CNOC6Y7M40A0HB
24	SFP+ 24	PRESENT	SFP	616740000	C	CNOC6Y7M40A0HB
25	SFP+ 25	PRESENT	SFP	616740000	C	CNOC6Y7M41A0BP
26	SFP+ 26	PRESENT	SFP	616740000	C	CNOC6Y7M41A0BP
27	SFP+ 27	PRESENT	SFP	616740000	C	CNOC6Y7M411J
28	SFP+ 28	PRESENT	SFP	616740000	C	CNOC6Y7M411J
29	SFP+ 29	PRESENT	SFP	616740000	C	CNOC6Y7M41A0BR
30	SFP+ 30	PRESENT	SFP	616740000	C	CNOC6Y7M41A0BR
31	SFP+ 31	PRESENT	SFP	616740000	C	CNOC6Y7M40A0HB
32	SFP+ 32	PRESENT	SFP	616740000	C	CNOC6Y7M40A0HB
33	SFP+ 33	PRESENT	SFP	616740000	C	CNOC6Y7M49M4BG5
34	SFP+ 34	PRESENT	SFP	616740000	C	CNOC6Y7M49M4BG5
35	SFP+ 35	PRESENT	SFP	616740000	C	CNOC6Y7M49M4BEJ
36	SFP+ 36	PRESENT	SFP	616740000	C	CNOC6Y7M49M4BEJ
37	SFP+ 37	PRESENT	SFP	599700001	A	APF11370018C9V
38	SFP+ 38	PRESENT	SFP	599700001	A	APF11370018C9V
39	SFP+ 39	PRESENT	SFP	616740000	C	CNOC6Y7M48C2MUP
40	SFP+ 40	PRESENT	SFP	616740000	C	CNOC6Y7M48C2MUP
41	QSFP+ 41	PRESENT	QSFP+	599690001	D	APF11510011VRR
42	QSFP+ 42	PRESENT	QSFP+	AFBR-79E4Z-D-FT1	01	QB382231
43	QSFP28 43	PRESENT	QSFP28	1002971101	1	504020274
44	QSFP28 44	PRESENT	QSFP28	1002971101	1	504020274
45	QSFP28 45	PRESENT	QSFP28	1002971051	1	506220006
46	QSFP28 46	PRESENT	QSFP28	1002971051	1	506220006
47	QSFP28 47	PRESENT	QSFP28	1002971101	1	504120586
48	QSFP28 48	PRESENT	QSFP28	1002971101	1	504120586

```
root@dell-diag-os:~#
```

show --int=interface # output

```
root@dell-diag-os:~# opticstool --show --int=48
```

```
Show Optics in System
```

```
=====
QSFP28 48 Detailed Display
=====
```

Link Status

Port Status

Loss of Signal :
RX Signal Lock Error :
PCS Link State :
Link Faults :
Remote :
Local :
Idle Error :
Illegal Symbol :
Error Symbol :
Present : Present

Device Data:

[00000000]: 0x11 0x05 0x06 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000010]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000020]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000030]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000040]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000050]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000060]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x38 0x00
||8.
[00000070]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[00000080]: 0x11 0x00 0x23 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| ..#.....
[00000090]: 0x00 0x00 0x01 0xa0 0x4d 0x6f 0x6c 0x65 0x78 0x20 0x49 0x6e 0x63 0x2e 0x20 0x20
|| ...Molex Inc.
[000000a0]: 0x20 0x20 0x20 0x00 0x00 0x09 0x3a 0x31 0x30 0x30 0x32 0x39 0x37 0x31 0x31
|| ...:10029711
[000000b0]: 0x30 0x31 0x20 0x20 0x20 0x20 0x20 0x20 0x31 0x20 0x00 0x00 0x00 0x00 0x00 0x4c
|| 01 1L
[000000c0]: 0x00 0x00 0x00 0x00 0x35 0x30 0x34 0x31 0x32 0x30 0x35 0x38 0x36 0x20 0x20 0x20
||504120586
[000000d0]: 0x20 0x20 0x20 0x20 0x31 0x35 0x30 0x32 0x31 0x30 0x20 0x20 0x00 0x00 0x00 0x18
|| 150210
[000000e0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||
[000000f0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
||

Vendor: Molex Inc.
Part No: 1002971101
Revision: 1
Serial Num: 504120586

ID : 0x11
Extended ID : 0x00
Connector : 0x23
Specification : 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
Encoding : 0x00
BR Nominal : 0x00
Length (9um) Km : 0x00
Length (9um) 100m : 0x00
Length (50um) 10m : 0x00
Length (62.5um) 10m : 0x00
Length (copper) 10m : 0x01
Cable Attenuation : 0x00 (2.5 Ghz) 0x00 (5.0 Ghz)
CheckCodeBase : 0x4c (0x4c)

Extended ID Fields

Options :
BR Max :
BR Min :

```

Date Code           : 2015-02-10
CheckCodeExt       : 0x18 (0x18)
TX Output Disable  : Not Disabled
-----
Diagnostics Information
-----
Module Monitoring Values:
Current Temp:      0.000 (Celsius)
Supply Volts:     0.000 (Volts)
Channel Monitoring Values:
Recv:             0.000      0.000      0.000      0.000 (dBm)
Bias:             0.000      0.000      0.000      0.000 (mA)
root@dell-diag-os:~#

```

pcitool

To scan and access devices on the PCI bus, use the `pcitool`. The `pcitool` checks for missing devices and that the present devices are the proper type.

The `pcitool` scans the PCI bus for present devices and displays them and the BAR information it decodes. The tool does not handle endianness.

The `pcitool` reads the configuration file and then iterates across all devices in the configuration file. It checks the vendor/product ID to see that the correct device is at the correct address. The tool does not compare all the configuration space. The tool reads all 256 bytes of the configuration file.

Tests

The `pcitool` reads from the configuration file the devices it expects to find and reports any devices that it cannot find or if the device is not correct. The tool supports second-source parts; therefore, they are not flagged as false errors. If a mismatch occurs, the device lists with the expected value and the read value. Populate the configuration file with `-u` numbers so the device can quickly identify the failing device.

CLI options

```

DellEmc Diag - PCI Tool
version 1.5, x.xx.x.x-x
build, 2017/05/23,

```

Usage:

```

To scan all PCI drivers and optionally show all config data :=
    pcitool --
scan[=all]                                                    (or)
    pcitool -S[=all]
To test using default PCI config-file :=
    pcitool --
test                                                         (or)
    pcitool -t
Show config data for specific bus:dev.func:=
    pcitool --show [--bus=<bus># --dev=<dev># --
func=<func>#] (or)
    pcitool -x {-B <bus># -D <dev># -F <func>#}
Read 8-bit config register for bus:dev.func:=
    pcitool --read [--bus=<bus># --dev=<dev># --func=<func># --offset=<offset> --
count=<count>} (or)
    pcitool -r {-B <bus># -D <dev># -F <func># -O <offset> -C <count>}
Write 8-bit config register for bus:dev.func:=
    pcitool --write [--bus=<bus># --dev=<dev># --func=<func># --offset=<offset> --
val=<value>} (or)
    pcitool -w {-B <bus># -D <dev># -F <func># -O <offset> -V <value>}

```

```
Execute repeatedly command by count:=
  pcitool --iteration=max/<count> [option1]
[option2]... (or)
  pcitool -I max/<count> [option1] [option2]...
```

Syntax: pcitool <option>

```
-h, --h          Show the help text
-S, --scan       Scan operation
-t, --test       Test using the pre-programmed configuration or use supplied config
-x, --show       Show operation
-r, --read       Read operation
-w, --write      Write operation
-I, --iteration= Iteration command execution
-B, --bus=       To specify the i2c bus e.g.: /dev/i2c-<bus number>
-D, --dev=       Device
-F, --func=      Func
-O, --offset=    Set the Offset
-C, --count=     Count
-V, --val=       Value to be set
```

Output

scan output

```
root@dell-diag-os:~# pcitool --scan
Acquiring PCI device name database
Device#01: bus:dev.fn 00:00.0 - ID=0x1f0c8086, Intel Atom Processor SoC Transaction Router
Device#02: bus:dev.fn 00:01.0 - ID=0x1f108086, Intel Atom Processor PCIe Root Port 1
Device#03: bus:dev.fn 00:02.0 - ID=0x1f118086, Intel Atom Processor PCIe Root Port 2
Device#04: bus:dev.fn 00:03.0 - ID=0x1f128086, Intel Atom Processor PCIe Root Port 3
Device#05: bus:dev.fn 00:04.0 - ID=0x1f138086, Intel Atom Processor PCIe Root Port 4
Device#06: bus:dev.fn 00:0e.0 - ID=0x1f148086, Intel Atom Processor C2000 RAS
Device#07: bus:dev.fn 00:0f.0 - ID=0x1f168086, Intel Atom Processor C2000 RCEC
Device#08: bus:dev.fn 00:13.0 - ID=0x1f158086, Intel Atom processor C2000 SMBus 2.0
Device#09: bus:dev.fn 00:14.0 - ID=0x1f418086, Intel Ethernet Connection I354
Device#10: bus:dev.fn 00:14.1 - ID=0x1f418086, Intel Ethernet Connection I354
Device#11: bus:dev.fn 00:14.2 - ID=0x1f418086, Intel Ethernet Connection I354
Device#12: bus:dev.fn 00:16.0 - ID=0x1f2c8086, Intel USB Enhanced Host Controller
Device#13: bus:dev.fn 00:17.0 - ID=0x1f228086, Intel AHCI SATA2 Controller
Device#14: bus:dev.fn 00:18.0 - ID=0x1f328086, Intel AHCI SATA3 Controller
Device#15: bus:dev.fn 00:1f.0 - ID=0x1f388086, Intel ISA bridge
Device#16: bus:dev.fn 00:1f.3 - ID=0x1f3c8086, Intel PCU SMBus
Device#17: bus:dev.fn 01:00.0 - ID=0x837514e4, Broadcom Network Processor BCM88375
Device#18: bus:dev.fn 01:00.1 - ID=0x837514e4, Broadcom Network Processor BCM88375
root@dell-diag-os:~#
```

test output

```
root@dell-diag-os:~# pcitool --test
Testing PCI devices:
+ Checking PCI 00:00.0, ID=1f0c8086 ..... Passed
+ Checking PCI 00:01.0, ID=1f108086 ..... Passed
+ Checking PCI 00:02.0, ID=1f118086 ..... Passed
+ Checking PCI 00:03.0, ID=1f128086 ..... Passed
+ Checking PCI 00:0e.0, ID=1f148086 ..... Passed
+ Checking PCI 00:0f.0, ID=1f168086 ..... Passed
+ Checking PCI 00:13.0, ID=1f158086 ..... Passed
+ Checking PCI 00:14.0, ID=1f418086 ..... Passed
+ Checking PCI 00:14.1, ID=1f418086 ..... Passed
+ Checking PCI 00:14.2, ID=1f418086 ..... Passed
+ Checking PCI 00:16.0, ID=1f2c8086 ..... Passed
```

```

+ Checking PCI 00:17.0, ID=1f228086 ..... Passed
+ Checking PCI 00:18.0, ID=1f328086 ..... Passed
+ Checking PCI 00:1f.0, ID=1f388086 ..... Passed
+ Checking PCI 00:1f.3, ID=1f3c8086 ..... Passed
+ Checking PCI 01:00.0, ID=837514e4 ..... Passed
+ Checking PCI 01:00.1, ID=837514e4 ..... Passed
PCI devices: Overall test results ----- >>> Passed
root@dell-diag-os:~#

```

show output

```

root@dell-diag-os:/etc/dn/diag# pcitool --show --bus=0 --dev=4 --func=0bus
bus:dev.fn 00:04.3
[00000000]: 0x00 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[00000010]: 0x40 0x0e 0x40 0x00 0x00 0x00 0x00 0x00 0xe5 0xe2 0xdd 0x5b 0x47 0x7f 0x00 0x00
|| @.@.....[G...
[00000020]: 0xff 0xff 0xff 0xff 0x00 0x00 0x00 0x00 0x0c 0x00 0xad 0xfb 0x00 0x00 0x00 0x00
|| .....
[00000030]: 0xf0 0x30 0x5f 0x02 0x00 0x00 0x00 0x00 0x10 0x30 0x5f 0x02 0x00 0x00 0x00 0x00
|| .0.....0.....
[00000040]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x40 0x0e 0x40 0x00 0x00 0x00 0x00 0x00
|| .....@.@.....
[00000050]: 0x80 0xa0 0xa9 0x91 0xff 0x7f 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[00000060]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x35 0x37 0x86 0x5b 0x47 0x7f 0x00 0x00
|| .....57.[G...
[00000070]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x20 0x9f 0xa9 0x91 0xff 0x7f 0x00 0x00
|| .....
[00000080]: 0x40 0x0e 0x40 0x00 0x00 0x00 0x00 0x00 0xe4 0x1b 0x40 0x00 0x00 0x00 0x00 0x00
|| @.@.....@.....
[00000090]: 0x04 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x5c 0x9f 0xa9 0x91 0xff 0x7f 0x00 0x00
|| .....\.....
[000000a0]: 0xda 0x4e 0x40 0x00 0x00 0x00 0x00 0x00 0x20 0xbe 0xa9 0x91 0x00 0x7f 0x00 0x00
|| .N@.....
[000000b0]: 0xa0 0x9f 0xa9 0x91 0x00 0x00 0x00 0x00 0x10 0x30 0x5f 0x02 0x00 0x00 0x00 0x00
|| .....0.....
[000000c0]: 0x30 0x34 0x2e 0x30 0x00 0x74 0x65 0x73 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| 04.0.tes.....
[000000d0]: 0x2f 0x70 0x72 0x6f 0x63 0x2f 0x62 0x75 0x73 0x2f 0x70 0x63 0x69 0x2f 0x30 0x30
|| /proc/bus/pci/00
[000000e0]: 0x2f 0x30 0x34 0x2e 0x30 0x00 0x00 0x00 0x80 0xa0 0xa9 0x91 0xff 0x7f 0x00 0x00
|| /04.0.....
[000000f0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
Base Address 0: Memory at 0x00400e40.
Base Address 1: Memory at 0x00000000.
Base Address 2: I/O at 0x5bdde2e0.
Base Address 3: I/O at 0x00007f40.
Base Address 4: I/O at 0xffffffff0.
Base Address 5: Memory at 0x00000000.
CardBus CIS pointer 0xfbad000c (BAR 3), address 7f47.
root@dell-diag-os:/etc/dn/diag# pcitool --show --bus=0 --dev=4 --func=0
bus:dev.fn 00:04.0
[00000000]: 0x86 0x80 0x13 0x1f 0x07 0x04 0x10 0x00 0x02 0x00 0x04 0x06 0x10 0x00 0x01 0x00
|| .....
[00000010]: 0x04 0x00 0xf6 0xdf 0x00 0x00 0x00 0x00 0x00 0x04 0x04 0x00 0xf0 0x00 0x00 0x20
|| .....
[00000020]: 0xf0 0xff 0x00 0x00 0xf1 0xff 0x01 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[00000030]: 0x00 0x00 0x00 0x00 0x40 0x00 0x00 0x00 0x00 0x00 0x00 0x07 0x01 0x10 0x00
|| ....@.....
[00000040]: 0x10 0x80 0x42 0x01 0x21 0x80 0x00 0x00 0x0f 0x20 0x00 0x00 0x42 0x48 0x79 0x04
|| ..B.!......BH.
[00000050]: 0x40 0x00 0x01 0x10 0x00 0xfd 0x18 0x00 0xc0 0x03 0x00 0x00 0x08 0x00 0x00 0x00
|| @.....
[00000060]: 0x00 0x00 0x00 0x00 0xb7 0x03 0x00 0x00 0x00 0x00 0x00 0x00 0x06 0x00 0x00 0x00

```

```

|| .....
[00000070]: 0x02 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[00000080]: 0x01 0x88 0x03 0xc8 0x00 0x00 0x00 0x00 0x0d 0x90 0x00 0x00 0x86 0x80 0x86 0x80
|| .....
[00000090]: 0x05 0x00 0x01 0x01 0x0c 0xf0 0xe0 0xfe 0xa1 0x41 0x00 0x00 0x00 0x00 0x00 0x00
|| .....A.....
[000000a0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[000000b0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
[000000c0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x01 0x00 0x00 0x00
|| .....
[000000d0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x80 0x00 0x00 0x00 0x00
|| .....
[000000e0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x00
|| .....
[000000f0]: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x03 0x00 0x00 0x00 0x00 0x00 0x00 0x00
|| .....
Base Address 0: Memory at 0xdff60000.
Base Address 1: Memory at 0x00000000.
Base Address 2: Memory at 0x00040400.
Base Address 3: Memory at 0x200000f0.
Base Address 4: Memory at 0x0000fff0.
Base Address 5: I/O at 0x0001fff0.
Address 0 at 0xdff60000, 64 bit
Address 2 at 0x00040400, 32 bit
Address 3 at 0x200000f0, 32 bit
Address 4 at 0x0000fff0, 32 bit
Extended capabilities, first structure at offset 0x40.
Extended PCI capability type 16 at 0x40, next 128.
Extended PCI capability type 1 at 0x80, next 136.
Power management entry ver. 3: Capabilities c803, Ctrl 0000, Event 0000.
Power state D0.
Extended PCI capability type 13 at 0x88, next 144.
Extended PCI capability type 5 at 0x90, next 0.
root@dell-diag-os:/etc/dn/diag#

```

phytool

The phytool allows setting the management phy for management port for speed, duplex auto negotiation, and Loopback; as well as reading the MAC and MAC EEPROM in the phy.

Tests

CLI options

```

DellEmc Diag - PHY Tool
version 1.1, x.xx.x.x-x
build, 2017/05/23,

Syntax: phytool <option>
  Show the help-text:=
    phytool --h                                     (or)
    phytool -h
  Read the mac address of the interface:=
    phytool --read-mac                               (or)
    phytool -R
  Write the value to the specified offset:=
    phytool --write --offset=<offset> --val=<val>    (or)
    phytool -w -o <offset> -V <val>
  Dump the eeprom contents:=

```

```

    phytool --eeprom-dump                                     (or)
    phytool -x
Dump the register contents:=
    phytool --reg-dump                                       (or)
    phytool -d
Phy loopback test:=
    phytool --lb-test[=no of packets]                       (or)
    phytool -l[=no of packets]
Execute repeatedly command by count:=
    phytool --iteration=max/<count> [option1] [option2]...   (or)
    phytool -I max/<count> [option1] [option2]...
Set the interface with parameters:=
    phytool --set-intf --speed=<speed> --duplex=<mode> --autoneg (or)
    phytool -s -S <speed> -D <mode> -A
Show the interface settings:=
    phytool --show-intf                                     (or)
    phytool -a
Usage:=
    -h, --h                Show the help text
    -I, --iteration=       Iteration command execution
    -R, --read-mac        Read the MAC of the interface
    -w, --write            Write operation
    -o, --offset           Set the Offset
    -V, --val              Value to be set
    -x, --eeprom-dump     Dump the eeprom contents
    -d, --reg-dump        Dump the register contents
    -l, --lb-test=        Phy loopback test
    -s, --set-intf        Set the interface with parameters
    -S, --speed=          Speed
    -D, --duplex=         Duplex mode
    -A, --autoneg=        Auto-negotiation
    -a, --show-intf      Show the interface settings

```

Output

```

root@dellemc-diag-os:/etc/dn/diag# phytool --read-mac
34:17:eb:07:7c:00

```

```

root@dellemc-diag-os:/etc/dn/diag# phytool --eeprom-dump
Offset      Values
-----
0x0000:    34 17 eb 07 7c 00 00 08 ff ff 05 10 ff ff ff ff
0x0010:    18 00 00 00 2f 40 41 1f 86 80 41 1f 86 80 80 ba
0x0020:    ff ff ff ff 80 5c 47 00 00 00 40 00 00 4c ab 03
0x0030:    00 00 00 70 0e 1a 26 44 a3 07 42 1f 01 02 02 06
0x0040:    0c 00 47 21 00 00 ff ff ac 44 f6 00 44 1f 08 09
0x0050:    40 04 3c 00 00 00 04 14 00 00 00 00 10 ff ff
0x0060:    00 01 00 40 32 13 13 40 00 01 00 40 ff ff b0 03
0x0070:    00 01 00 40 00 01 00 40 d9 09 bc 03 ff ff b5 7e
0x0080:    ff ff ff ff a5 0b 00 80 ff ff ff ff ff ff ff ff
.....

```

```

root@dellemc-diag-os:/etc/dn/diag# phytool --reg-dump
0x00000: CTRL (Device control register)          0x08100241
    Invert Loss-Of-Signal:                        no
    Receive flow control:                         enabled
    Transmit flow control:                       disabled
    VLAN mode:                                    disabled
    Set link up:                                  1
    D3COLD WakeUp capability advertisement:       enabled
    Auto speed detect:                           disabled
    Speed select:                                 1000Mb/s
    Force speed:                                  no
    Force duplex:                                 no
0x00008: STATUS (Device status register)        0x00282383
    Duplex:                                       full
    Link up:                                     link config

```

```

Transmission:                on
DMA clock gating:            disabled
TBI mode:                    disabled
Link speed:                  1000Mb/s
Bus type:                     PCI Express
...

root@dellemc-diag-os:/etc/dn/diag# phytool --lb-test=100
TEST PASSED

NOTE: The loopback test and set-intf will terminate the ethernet driver. You need to reboot to
restart the driver cleanly.
[1]+  Terminated                  setsid /bin/kni -c 0x3 -n 2 -- -p 1 --config="(0,0,1)" >> /dev/
null

root@dellemc-diag-os:~# phytool --set-intf --speed=1000
[2]+  Done                          dhclient -q eth0
root@dellemc-diag-os:~# .....done
Port 0 Link Up - speed 1000 Mbps - full-duplex

root@dellemc-diag-os:~# root@dellemc-diag-os:~# phytool --show-intf
Settings for eth0:
  Supported ports: [ TP ]
  Supported link modes:   10baseT/Half 10baseT/Full
                        100baseT/Half 100baseT/Full
                        1000baseT/Full

  Supported pause frame use: Symmetric
  Supports auto-negotiation: Yes
  Advertised link modes:  10baseT/Half 10baseT/Full
                        100baseT/Half 100baseT/Full
                        1000baseT/Full

  Advertised pause frame use: No
  Advertised auto-negotiation: Yes
  Speed: 1000Mb/s
  Duplex: Full
  Port: Twisted Pair
  PHYAD: 3
  Transceiver: internal
  Auto-negotiation: on
  MDI-X: off (auto)
  Supports Wake-on: pumbg
  Wake-on: g
  Current message level: 0x00000007 (7)
                        drv probe link

  Link detected: yes

```

pltool

To test functionality of the CPLD and FPGA devices on the boards during startup, use the `pltool`.

The `pltool` also checks for the correct firmware loads. The tool uses the CLI to list the devices and their registers, and allows you to read and write registers in the device. The read functionality prints the details to the bit level and also any bit groupings and their meanings. The tool uses the SDI interface to get a list of devices and registers in the system, and then uses SDI to access the devices.

Tests

The `pltool` tests specified registers and values SDI identifies in the testable bits of the register. The tool reads the register using SDI interfaces and compares the testable bits from those bits the SDI database provides. If a mismatch occurs, an error displays.

CLI options

```
Syntax: pltool <option>
  Show this help text:=
    pltool --h
    pltool -h
  Test (RW) the scratchpad registers:=
    pltool --test
    pltool -t
  List devices and registers:=
    pltool --list [--lstype=<devicetype>]
    pltool -l [-T <devicetype>]
  List device names with address:=
    pltool --listdevicenames [--devname=<devicename>]
    pltool -L [-n <devicename>]
  Execute repeatedly command by count:=
    pltool --iteration=max/<count> [option1] [option2]...
    pltool -I max/<count> [option1] [option2]...
  Read the specified register of the device:=
    pltool --read --devname=<devicename> --dev=<deviceaddr> --reg=<register>
    pltool -r -n <devicename> -D <deviceaddr> -R <register>
  Write at the specified register of the device:=
    pltool --write --devname=<devicename> --dev=<deviceaddr> --reg=<register> --val=<value>
(or)
    pltool -w -n <devicename> -D <deviceaddr> -R <register> -V <value>
  Dump all of the registers in a device or all devices and their current values:=
    pltool --dump [--devname=<devicename>] [--dev=<deviceaddr>] (or)
    pltool -d [-n <devicename>] [-D <deviceaddr>]

Usage:=
-h, --h                Show the help text
-t, --test             Test using the pre-programmed configuration or use supplied config
-l, --list            List the understood TLV codes and names
-T, --lstype          Device type
-L, --listdevicenames List Device name
-r, --read            Read operation
-w, --write           Write operation
-I, --iteration=      Iteration command execution
-n, --devname=        Device name
-D, --dev=            Device
                     (should be assigned 0 for lpc access)
-R, --reg=            Register
-V, --val=            Value to be set
-d, --dump            Dump the values in the registers of a device
```

Output

list output

```
root@dell-diag-os:~# pltool --list
CPLD1 0 cpld lpc 0 (U5)
  0x100 CPLD_VERSION bits:8 RO val:0 mask:0xff test:0 ver:0x0
    7:4 MAJOR_VER RO 0
    3:0 MINOR_VER RO 0
  0x101 BOARD_TYPE bits:8 RO val:0xff mask:0xff test:0 ver:0x0
    7:0 BOARD_TYPE RO 0x1
      3 <platform> Board
  0x102 SW_SCRATCH bits:8 RW val:0xde mask:0xff test:1 ver:0x0
    7:0 SW_SCRATCH RW 0xde
  0x103 CPLD_ID bits:8 RO val:0xff mask:0xff test:0 ver:0x0
```

```

7:0 CPLD_ID RO 0x1
0x10f BOARD_REV bits:8 RO val:0xff mask:0xff test:0 ver:0x0
7:0 BOARD_REV RO 0
0x110 CPLD_SEP_RST0 bits:8 RO val:0xff mask:0xff test:0 ver:0x0
  7 Reset Extender CPLD 4 RW 0x1
    0 Reset
    1 Not Reset
  6 Reset Extender CPLD 3 RW 0x1
    0 Reset
    1 Not Reset
  5 Reset Extender CPLD 2 RW 0x1
    0 Reset
    1 Not Reset
  4 PCA9548_RST7 RW 0x1
    0 Reset
    1 Not Reset
  3 PCA9548_RST6 RW 0x1
    0 Reset
    1 Not Reset
  2 PCA9548_RST5 RW 0x1
    0 Reset
    1 Not Reset
  1 PCA9548_RST4 RW 0x1
    0 Reset
    1 Not Reset

```

listdevicenames output

Based from the output of `--devicenames`, you can decide if you need to use the `--devname=` option in the read or write functions. You can access CPLD1 being at `deviceaddress 0`, using the register value for the register you want, such as:

```

root@dell-diag-os:~# pltool -listdevicenames
0x0 : CPLD1
0x3e : CPLD2
0x3e : CPLD3
0x3e : CPLD4
0x0 : SMF_FPGA

```

read output

```

root@dell-diag-os:~# pltool --read --devname=CPLD4 --dev=0x3e --reg=0x2
SW_SCRATCH : offset 0x02 = 0xde
7: 0 SW_SCRATCH = de
root@dell-diag-os:~#

```

write output

```

root@dell-diag-os:~# pltool --write --devname=CPLD4 --dev=0x3e --reg=0x2 --val=0xff

```

test output

```

root@dell-diag-os:~# pltool --test
Testing Programmable Devices:
PL Tool test:
CPLD1 ..... Passed
CPLD2: SW_SCRATCH..... Passed
CPLD3: SW_SCRATCH..... Passed
CPLD4: SW_SCRATCH..... Passed

```

```
SMF_FPGA ..... Passed
PL Tool: Overall test results ---- >>> Passed
```

psutool

The `psutool` determines which PSUs are in the system, checks the Power Good setting, and reads the field replaceable unit (FRU) information. It does not look at the PSU fans and airflow direction of the fans.

Tests

The `psutool` looks for the presence of the PSU and if the PSU is present, it checks the Power Good setting in the CPLD. It does not read directly from the PSU but reads the CPLD information instead. If the PSU is present and it does not receive a Power Good signal, it does not know if the power plug is not installed or if the PSU is not operating correctly, so it displays a failure.

CLI options

```
DellEmc Diag - Power Supply Tool
version 1.4, x.xx.x.x-x
build, 2017/05/23,
```

```
Syntax: psutool <option>
Show the Help-text:=
    psutool --h                                (or)
    psutool -h
Test using the default config file:=
    psutool --test [--supply=<power_supply>]    (or)
    psutool -t [-S <power_supply>]
Read the register on the Power Supply:=
    psutool --read --supply=<power_supply> --reg=<register>    (or)
    psutool -r -S <power_supply> -r <register>
Write the value into the Power Supply Register:=
    psutool --write --supply=<power_supply> --reg=<register> --val=<value>    (or)
    psutool -w <power_supply> -R <register> -V <value>
Verify PSU by reading SMF registers:=
    psutool --lpc                                (or)
    psutool -q
Execute repeatedly command by count:=
    psutool --iteration=max/<count> [option1] [option2]...    (or)
    psutool -I max/<count> [option1] [option2]...
```

```
Usage:=
-h, --h          Show the help text
-t, --test       Test using the pre-programmed configuration or use supplied config
-S, --supply=    Power supply
-r, --read       Read operation
-w, --write      Write operation
-R, --register=  Register
-V, --value=     Value to be set
-I, --iteration= Iteration command execution
-q, --lpc       Verify PSU by reading SMF registers.
                This option must be used along with test flag
```

test option

```
root@dell-diag-os:~# psutool --test --lpc
Power Supply Test all
Getting details of Power Supply 1 using LPC interface
Power Supply 1 is Present
Power Supply 1 Input Type AC
```

```

Power Supply 1 Input Voltage(VIN) : 203.250000 V
Power Supply 1 Output Voltage(VOOUT) : 12.210000 V
Power Supply 1 Input Current(IIN) : 0.610000 A
Power Supply 1 Output Current(IOOUT) : 9.150000 A
Power Supply 1 Input Power(PIN) : 124.000000 W
Power Supply 1 Output Power(POUT) : 111.700000 W
Power Supply 1 Temperature : 30.000000 C
Power Supply 1 Fan Present
Power Supply 1 Fan Status is Normal
Power Supply 1 Fan Airflow Type is F2B
Power Supply 1 Fan Speed(RPM) : 9072
Getting details of Power Supply 2 using LPC interface
Power Supply 2 is Present
Power Supply 2 Input Type AC
Power Supply 2 Output Voltage Low
Power Supply 2 Input Voltage(VIN) : 0.000000 V
Power Supply 2 Output Voltage(VOOUT) : 0.000000 V
Power Supply 2 Input Current(IIN) : 0.000000 A
Power Supply 2 Output Current(IOOUT) : 0.000000 A
Power Supply 2 Input Power(PIN) : 0.000000 W
Power Supply 2 Output Power(POUT) : 0.000000 W
Power Supply 2 Temperature : 6553.100098 C
Power Supply 2 Fan Present
Power Supply 2 Fan Status is Normal
Power Supply 2 Fan Airflow Type is F2B
Power Supply 2 Fan Speed(RPM) : 9120
Power Supply Test ..... Passed
root@dell-diag-os:~#

```

rtctool

The rtctool allows setting and testing of the real time clock (RTC) in the system.

Tests

CLI options

```

DellEmc Diag - RTC Tool
version 1.1, x.xx.x.x-x
build, 2017/05/23,

Syntax: rtctool <option>
  Show the help-text:=
    rtctool --help                (or)
    rtctool -h

  Read the current RTC:=
    rtctool --readrtc            (or)
    rtctool -r

  Test RTC device with user interrupt:=
    rtctool --testuie           (or)
    rtctool -u

  Test RTC device with alarm interrupt:=
    rtctool --testaie           (or)
    rtctool -a

  Test RTC device with periodic interrupt:=
    rtctool --testpie           (or)
    rtctool -p

  Test the RTC device:=
    rtctool --test              (or)
    rtctool -t

  Set rtc to new time (input all params in same order):=
    rtctool --setrtc --year=<year>, --mon=<month> --day=<day> --hour=<hour> --min=<min> --

```

```
sec=<sec> --tz=<offset>
      (or)
      rtctool -s -y <year> -m <month> -D <day> -H <hour> -M <min> -S <sec> -Z <offset>
Execute repeatedly command by count:=
      rtctool --iteration=max/<count> [option1] [option2]... (or)
      rtctool -I max/<count> [option1] [option2]...
```

Usage:=

```
-h, --help          Show the help text
-r, --readrtc       Read operation
-s, --setrtc        Set operation
-u, --testuie       Test RTC device with user interrupt
-a, --testaie       Test RTC device with alarm interrupt
-p, --testpie       Test RTC device with periodic interrupt
-I, --iteration=    Iteration command execution
-y, --year=         Year
-m, --month=        Month
-D, --day=          Day
-H, --hour=         Hour
-M, --min=          Minute
-S, --sec=          Second
-Z, --offset=       +12.0 to -12.0 timezone offset
```

storagetool

The storagetool tests mounted storage media.

The tool searches for any device in /dev/hd*, sda, sdb, or sdc and tests using them. The tests are file-copy tests to the device in the mounted file system. The files are written, compared and removed, leaving the file system as it was before the test. You can run more tests using the bonnie++ tool and the tool reads SMART data from the device using the smart option.

Tests

The standard test creates a directory on the file system, opens a file for write, copies the file, compares the files, and reports errors. The test repeats 10 times. After the test completes successfully, storagetool removes all the test files.

CLI options

```
DellEmc Diag - Storage Tool
version 1.1, x.xx.x.x-x
build, 2017/05/23,
```

```
Syntax: storagetool <option>
Show the help-text:=
      storagetool --h          (or)
      storagetool -h
Mount usb device when inserted (mandatory):=
      storagetool --mountusb   (or)
      storagetool -m
Unmount usb device before removed (mandatory):=
      storagetool --unmountusb (or)
      storagetool -u
List devices:=
      storagetool --list       (or)
      storagetool -l
Test devices(empty for all):=
      storagetool --test [--dev=<device>] (or)
      storagetool -t [-D <device>]
Get the smart status for a device
      storagetool --smart --dev=<device> (or)
      storagetool -S -D <device>
```

```
Execute repeatedly command by count:=
    storagetool --iteration=max/<count> [option1] [option2]...(or)
    storagetool -I max/<count> [option1] [option2]...
Run the bonnie tools on the filesystems:=
    storagetool --bonnie                (or)
    storagetool -B
```

```
Usage:
-h, --h                Show the help text
-m, --mountusb        Mount usb device when inserted (mandatory)
-u, --unmountusb      Unmount usb device when inserted (mandatory)
-l, --list            List all storage devices
-S, --smart           Smart Status
-D, --dev=            Device
-T, --test            Test using the pre-programmed configuration or use supplied config
-I, --iteration=      Iteration command execution
-B, --bonnie          Run the bonnie tools on the filesystems
```

Output

list output

```
root@dell-diag-os:~# storagetool --list
Mounted Filesystem Devices:
/dev/sda3 / ext4
root@dell-diag-os:~#
```

test output

```
root@dell-diag-os:~# storagetool --test --dev=/dev/sda3
Testing Storage Devices ..... Passed
root@dell-diag-os:~#
```

smart output

```
root@dell-diag-os:~# storagetool --smart --dev=/dev/sda3
smartctl 6.2 2013-07-26 r3841 [x86_64-linux-3.15.10] (local build)
Copyright (C) 2002-13, Bruce Allen, Christian Franke, www.smartmontools.org

=== START OF INFORMATION SECTION ===
Device Model:          InnoDisk Corp. - mSATA 3IE
Serial Number:         20160119AA144700000F
Firmware Version:     S141002c
User Capacity:         32,017,047,552 bytes [32.0 GB]
Sector Size:           512 bytes logical/physical
Rotation Rate:         Solid State Device
Device is:              Not in smartctl database [for details use: -P showall]
ATA Version is:        ACS-2 (minor revision not indicated)
SATA Version is:       SATA 3.0, 6.0 Gb/s (current: 6.0 Gb/s)
Local Time is:         Mon Jan  1 20:45:44 2001 UTC
SMART support is:      Available - device has SMART capability.
SMART support is:      Enabled

=== START OF ENABLE/DISABLE COMMANDS SECTION ===
SMART Enabled.

=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED
```

```

General SMART Values:
Offline data collection status: (0x00) Offline data collection activity
was never started.
Auto Offline Data Collection: Disabled.

Total time to complete Offline
data collection: ( 32) seconds.
Offline data collection
capabilities: (0x00) Offline data collection not supported.
SMART capabilities: (0x0003) Saves SMART data before entering
power-saving mode.
Supports SMART auto save timer.
Error logging capability: (0x00) Error logging NOT supported.
General Purpose Logging supported.
SCT capabilities: (0x0039) SCT Status supported.
SCT Error Recovery Control supported.
SCT Feature Control supported.
SCT Data Table supported.

```

SMART Attributes Data Structure revision number: 16

Vendor Specific SMART Attributes with Thresholds:

ID#	ATTRIBUTE NAME	FLAG	VALUE	WORST	THRESH	TYPE	UPDATED	WHEN_FAILED	RAW_VALUE
1	Raw Read Error Rate	0x0000	000	000	000	Old_age	Offline	-	0
2	Throughput_Performance	0x0000	000	000	000	Old_age	Offline	-	0
3	Spin_Up_Time	0x0000	000	000	000	Old_age	Offline	-	0
5	Reallocated_Sector_Ct	0x0002	100	100	000	Old_age	Always	-	0
7	Unknown_SSD_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
8	Unknown_SSD_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
9	Power_On_Hours	0x0002	100	100	000	Old_age	Always	-	3289
10	Unknown_SSD_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
12	Power_Cycle_Count	0x0002	100	100	000	Old_age	Always	-	205
168	Unknown_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
169	Unknown_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
175	Program_Fail_Count_Chip	0x0000	000	000	000	Old_age	Offline	-	0
192	Power-Off_Retract_Count	0x0000	000	000	000	Old_age	Offline	-	0
1	Raw Read Error Rate	0x0000	000	000	000	Old_age	Offline	-	
2199023255552									
197	Current_Pending_Sector	0x0000	000	000	000	Old_age	Offline	-	0
240	Unknown_SSD_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
225	Unknown_SSD_Attribute	0x0000	000	000	000	Old_age	Offline	-	0
170	Unknown_Attribute	0x0003	100	100	---	Pre-fail	Always	-	1966080
173	Unknown_Attribute	0x0002	100	100	---	Old_age	Always	-	7602213
229	Unknown_Attribute	0x0002	100	100	---	Old_age	Always	-	
88470212370072									
236	Unknown_Attribute	0x0002	100	100	---	Old_age	Always	-	0
235	Unknown_Attribute	0x0002	100	000	---	Old_age	Always	-	0
176	Erase_Fail_Count_Chip	0x0000	100	000	---	Old_age	Offline	-	0

Read SMART Log Directory failed: scsi error aborted command

Read SMART Error Log failed: scsi error aborted command

Read SMART Self-test Log failed: scsi error aborted command

Selective Self-tests/Logging not supported

root@dell-diag-os:~#

bonnie output

```

root@dell-diag-os:~# storagetool --bonnie --dev=/dev/sda3
Using uid:0, gid:0.
Writing with putc()...done
Writing intelligently...done
Rewriting...done
Reading with getc()...done
Reading intelligently...done
start 'em...done...done...done...

```

```

Create files in sequential order...done.
Stat files in sequential order...done.
Delete files in sequential order...done.
Create files in random order...done.
Stat files in random order...done.
Delete files in random order...done.
Version 1.03          -----Sequential Output----- --Sequential Input- --Random-
                    -Per Chr- --Block-- -Rewrite- -Per Chr- --Block-- --Seeks--
Machine             Size K/sec %CP K/sec %CP K/sec %CP K/sec %CP K/sec %CP /sec %CP
dell-diag-os        250M 27664 96 245045 62 +++++ +++ 31064 100 +++++ +++ +++++ +++
                    -----Sequential Create----- -----Random Create-----
                    -Create-- --Read--- -Delete-- -Create-- --Read--- -Delete--
                    files /sec %CP /sec %CP /sec %CP /sec %CP /sec %CP /sec %CP
                    32 32494 97 +++++ +++ 31198 66 31739 92 +++++ +++ 26511 56
dell-diag-os,250M,27664,96,245045,62,+++++,+++,31064,100,+++++,+++,+++++,+++,32,32494,97,+++++,+
++,31198,66,31739,92,+++++,+++,26511,56

```

smartctl

To get a usage summary, use the `smartctl -h` command.

```

root@dell-diag-os:/opt/dell/diag/bin# smartctl -h
smartctl 6.2 2013-07-26 r3841 [x86_64-linux-3.15.10] (local build)
Copyright (C) 2002-13, Bruce Allen, Christian Franke, www.smartmontools.org

Usage: smartctl [options] device

===== SHOW INFORMATION OPTIONS =====

-h, --help, --usage
    Display this help and exit

-V, --version, --copyright, --license
    Print license, copyright, and version information and exit

-i, --info
    Show identity information for device

--identify[=[w][nvb]]
    Show words and bits from IDENTIFY DEVICE data                (ATA)

-g NAME, --get=NAME
    Get device setting: all, aam, apm, lookahead, security, wcache, rcache, wcreorder

-a, --all
    Show all SMART information for device

-x, --xall
    Show all information for device

--scan
    Scan for devices

--scan-open
    Scan for devices and try to open each device

===== SMARTCTL RUN-TIME BEHAVIOR OPTIONS =====

-q TYPE, --quietmode=TYPE
    Set smartctl quiet mode to one of: errorsonly, silent, noserial                (ATA)

-d TYPE, --device=TYPE
    Specify device type to one of: ata, scsi, sat[,auto][,N][+TYPE], usbcypress[,X],
usbmicron[,p][,x][,N], usbsunplus, marvell, areca,N/E, 3ware,N, hpt,L/M/N, megaraid,N,
cciss,N, auto, test

```

```

-T TYPE, --tolerance=TYPE (ATA)
    Tolerance: normal, conservative, permissive, verypermissive

-b TYPE, --badsum=TYPE (ATA)
    Set action on bad checksum to one of: warn, exit, ignore

-r TYPE, --report=TYPE
    Report transactions (see man page)

-n MODE, --nocheck=MODE (ATA)
    No check if: never, sleep, standby, idle (see man page)

```

===== DEVICE FEATURE ENABLE/DISABLE COMMANDS =====

```

-s VALUE, --smart=VALUE
    Enable/disable SMART on device (on/off)

-o VALUE, --offlineauto=VALUE (ATA)
    Enable/disable automatic offline testing on device (on/off)

-S VALUE, --saveauto=VALUE (ATA)
    Enable/disable Attribute autosave on device (on/off)

-s NAME[,VALUE], --set=NAME[,VALUE]
    Enable/disable/change device setting: aam,[N|off], apm,[N|off],
    lookahead,[on|off], security-freeze, standby,[N|off|now],
    wcache,[on|off], rcache,[on|off], wcreorder,[on|off]

```

===== READ AND DISPLAY DATA OPTIONS =====

```

-H, --health
    Show device SMART health status

-c, --capabilities (ATA)
    Show device SMART capabilities

-A, --attributes
    Show device SMART vendor-specific Attributes and values

-f FORMAT, --format=FORMAT (ATA)
    Set output format for attributes: old, brief, hex[,id|val]

-l TYPE, --log=TYPE
    Show device log. TYPE: error, selftest, selective, directory[,g|s],
    xerror[,N][,error], xselftest[,N][,selftest],
    background, sasphy[,reset], sataphy[,reset],
    scttemp[sts,hist], scttempint,N[,p],
    scterc[,N,M], devstat[,N], ssd,
    gplog,N[,RANGE], smartlog,N[,RANGE]

-v N,OPTION , --vendorattribute=N,OPTION (ATA)
    Set display OPTION for vendor Attribute N (see man page)

-F TYPE, --firmwarebug=TYPE (ATA)
    Use firmware bug workaround:
    none, nologdir, samsung, samsung2, samsung3, xerrorlba, swapid

-P TYPE, --presets=TYPE (ATA)
    Drive-specific presets: use, ignore, show, showall

-B [+]FILE, --drivedb=[+]FILE (ATA)
    Read and replace [add] drive database from FILE
    [default is +/usr/etc/smart_drivedb.h
    and then    /usr/share/smartmontools/drivedb.h]

```

===== DEVICE SELF-TEST OPTIONS =====

```

-t TEST, --test=TEST
    Run test. TEST: offline, short, long, conveyance, force, vendor,N,

```

```

        select,M-N, pending,N, afterselect,[on|off]

-C, --captive
    Do test in captive mode (along with -t)

-X, --abort
    Abort any non-captive test on device

===== SMARTCTL EXAMPLES =====

smartctl --all /dev/hda                (Prints all SMART information)

smartctl --smart=on --offlineauto=on --saveauto=on /dev/hda
                                         (Enables SMART on first disk)

smartctl --test=long /dev/hda          (Executes extended disk self-test)

smartctl --attributes --log=selftest --qu
MODE, --nocheck=MODE (ATA) No check if: never, sleep, standby, idle (see man page)
===== DEVICE FEATURE ENABLE/DISABLE COMMANDS =====

```

bonnie++

bonnie++ is a test suite for storage devices that runs more comprehensive tests than the standard file system tests using the storagetool. You can run bonnie++ outside of the storagetool, but for logging purposes, use bonnie++ within storagetool.

```

root@dell-diag-os:/opt/dell/diag/bin# bonnie++
You must use the "-u" switch when running as root.
usage: bonnie++ [-d scratch-dir] [-s size(Mb)[:chunk-size(b)]]
               [-n number-to-stat[:max-size[:min-size][:num-directories]]]
               [-m machine-name]
               [-r ram-size-in-Mb]
               [-x number-of-tests] [-u uid-to-use:gid-to-use] [-g gid-to-use]
               [-q] [-f] [-b] [-p processes] [-y]

Version: 1.03
root@dell-diag-os:/opt/dell/diag/bin#

```

temptool

The temptool reads from the temperature devices and reports back the temperatures.

The temperature sensors on the board are commonly connected through i2c busses. The configuration files specify the type of the device, the sensor name, the instance in that device, its location on the board, and the thresholds for reporting low, normal, and critical temperatures. To gather the information from the devices and report the values, the temptool uses the i2ctool.

Tests

The tool retrieves the data from the devices and validates that the temperatures are within the acceptable range.

CLI options

NOTE: Before using any commands, you must set the MUX settings to select the bus segments the temperature sensors are on.

```

DellEmc Diag - Temperature Tool
version 1.4, x.xx.x.x-x
build, 2017/05/23,

```

```

Syntax: temptool <option>
  Show the help-text:=
    temptool --h                                (or)
    temptool -h
  Test the pre-programmed configuration:=
    temptool --test --config=<config_file> [--lpc]    (or)
    temptool -t -f <config_file> [-l]
  Execute repeatedly command by count:=
    temptool --iteration=max/<count> [option1] [option2]... (or)
    temptool -I max/<count> [option1] [option2]...
  Show the current temperature-device values:=
    temptool --show --config=<config_file> [--lpc]    (or)
    temptool -x -f <config_file> [-l]

```

```

Usage:=
-h, --h                Show the help text
-t, --test             Test using the pre-programmed configuration or use supplied config
-x, --show            Show operation
-f, --config=         To specify the location of the config file e.g. /etc/dn/diag/<file_name>
-I, --iteration=      Iteration command execution
-q, --lpc             Use LPC interface for reading temperature
                    LPC option MUST be used with show/test flags

```

- test — Tests the sensors to make sure they are within the acceptable range.
- show — Shows the current temperature values.

Output

test output

```

root@dell-diag-os:/opt/dell/diag/bin# temptool --test --lpc
Testing Temp sensor devices:
Temperature Sensor 1 ..... Passed
Temperature Sensor 2 ..... Passed
Temperature Sensor 3 ..... Passed
Temperature Sensor 4 ..... Passed
Temperature Sensor 5 ..... Passed
Temperature Sensor 6 ..... Passed
Temperature Sensor 7 ..... Passed
Temperature Sensor 8 ..... Passed
Temperature Sensor 9 ..... Passed
Temp Sensors: Overall test results ---- >>> Passed
root@dell-diag-os:/opt/dell/diag/bin#

```

```

root@dell-diag-os:/opt/dell/diag/bin# temptool --show --lpc
Temperature Sensor 1 temperature value is 30.3 C
Temperature Sensor 2 temperature value is 23.1 C
Temperature Sensor 3 temperature value is 22.2 C
Temperature Sensor 4 temperature value is 26.0 C
Temperature Sensor 5 temperature value is 21.8 C
Temperature Sensor 6 temperature value is 22.0 C
Temperature Sensor 7 temperature value is 23.5 C
Temperature Sensor 8 temperature value is 31.0 C
Temperature Sensor 9 temperature value is 42.0 C
root@dell-diag-os:/opt/dell/diag/bin#

```

updatetool

Use this command to update CPLD:

```
# update --dev=CPLD --index=1 --update --file= </mnt/media/cpld_image.vme>
root@dellemc-diag-os:~# updatetool --dev=CPLD --index=1 --update --file= /mnt/media/xxxx-xxxx-xx_xxx_xxx.vme
00
Disable device protect

Disable CPLD protect operation success, wait HW reset
Write image to CPLD
INFO: Yafu INI Configuration File not found... Default options will not be applied...

Creating IPMI session via USB...Done

-----
YAFUFlash - Firmware Upgrade Utility (Version 5.0.0)
-----
(C)Copyright 2016, American Megatrends Inc.
Beginning CPLD Update...
Uploading Image : 100%... done
Flashing Firmware Image : 100%... done
Verifying Firmware Image : 100%... done
write CPLD image success
Enable device protect

Update CPLD image success
root@dellemc-diag-os:~# shutdown -h now
[ xxx.xxxxxx] reboot: Power down
```

(UNPLUGGED POWER CABLES)

```
BIOS Boot Selector for VEP4600
Primary BIOS Version x.xx.x.x-xx

CPLD Version:x.x
CPLD Reset Source=0x44

root@dellemc-diag-os:~# updatetool --dev=ALL --device_version
BIOS version:
x.xx.x.x-xx

CPLD version:
CPLD_VERSION : offset 0x600 = 0x9
7: 4 MAJOR_VER = x
3: 0 MINOR_VER = x

MAIN-BMC version:
x.xx

BACKUP-BMC version:
x.xx
```

ⓘ | NOTE: When the update is complete, you must unplug and replug power cables to update the version.

Diagnostic package

The diagnostic applications, libraries, and configurations are packaged in a debian package called `dn-diags-{PLATFORM}-{PACKAGE_VERSION}.deb`.

Executables are placed in `/opt/ngos/bin`, libraries are placed in `/opt/ngos/lib`, and configurations are placed in `/etc/dn/diag`. To install the package on the switch, use the `dpkg --install <package_name>` command.

Dell EMC support

The Dell EMC support site provides documents and tools to help you effectively use Dell EMC equipment and mitigate network outages. Through the support site you can obtain technical information, access software upgrades and patches, download available management software, and manage your open cases. The Dell EMC support site provides integrated, secure access to these services.

To access the Dell EMC support site, go to www.dell.com/support/. To display information in your language, scroll down to the bottom of the web page and select your country from the drop-down menu.

- To obtain product-specific information, enter the 7-character service tag, or the 11-digit express service code of your platform and click **submit**.

To view the platform service tag or express service code, pull out the luggage tag on the upper-right side of the platform or retrieve it remotely using the `ipmitool -H <bmc ip address> -I lanplus -U <user name> -P <password> fru` command.

- To receive more technical support, click **Contact Us**. On the Contact Information web page, click **Technical Support**.

To access platform documentation, go to www.dell.com/manuals/.

To search for drivers and downloads, go to www.dell.com/drivers/.

To participate in Dell EMC community blogs and forums, go to www.dell.com/community.