Dell Online Diagnostics
Version 2.21

User's Guide

Notes and Cautions

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

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

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Introduction

Dell Online Diagnostics, a stand-alone diagnostic program, that allows you to run diagnostic tests on various hardware components of Dell systems in a production environment, and helps you ensure maximum uptime of your Dell systems.

You can use the graphical user interface (GUI) or the command line interface (CLI) to run diagnostic tests on the hardware that Online Diagnostics discovers on your system.

What's New in this Release

Support added for the Express Flash PCIe SSD device(s).

Supported Operating Systems

For supported operating systems, see the *Dell Online Diagnostics Version 2.21 Readme*. To access the *Readme* at **support.dell.com/manuals**, click **Software→ Serviceability Tools→ Dell Online Diagnostics.**

Devices Supported by Online Diagnostics

The following hardware devices are supported by Online Diagnostics:

- CD drives
- DVD drives
- CD/DVD RW combination drives
- Diskette drives
- Hard drives
- Network Interface Cards (NICs)
- Internal modems
- SCSI controllers
- RAID controllers
- Fibre Channel Controllers
- Dell Remote Access Controllers (DRAC 4 and DRAC 5)
- USB controllers
- SAS controllers

    NOTE: For more information, see Diagnostics for RAID Controllers, SAS Controllers, SCSI Controllers, and Attached Hard Drives.

- Serial ports
- Tape drives
- Tape autoloaders and libraries

    NOTE: For more information, see Diagnostics for Tape Drives, Autoloaders, and Libraries.

    NOTE: Diagnostic tests for Tape autoloaders and libraries are unavailable on Windows 2008 operating systems.

- DIMMs
- External storage enclosures

Diagnostics Features

Online Diagnostics offers the following features:

- **Discovering Devices**

  Enables Online Diagnostics to enumerate and discover all testable devices on your Dell system. Enumeration occurs when the application is launched. If your system hardware has changed, restart the application to re-enumerate the devices on the system.

- **Device and Test Selection**

  Enables you to select the devices and the diagnostics tests you want to run on the selected devices. See Running Diagnostic Tests.

- **Diagnostic Test Review**

  Enables you to review the selected diagnostic tests.
  See Running Diagnostic Tests.

- **Diagnostic Test Status**

  Enables you to view the status of the diagnostic tests that are running. See Running Diagnostic Tests.

- **Diagnostic Test Results**

  Enables you to view the results of the diagnostic tests that have run. See Running Diagnostic Tests.

- **Help**

  Allows you to view the help information for the various devices and diagnostic tests.
  To view a description of a device or a diagnostic test, select the device or the test and select **Help** in the GUI or run the `pediags --help` command.

- **Quick Test**

  Enables you to perform a quick test. This feature is applicable on selected tests and the option displays in the GUI only for those tests.
  See Configuring the Test Execution Settings.

- **Saving System Configuration and Results**

  Enables you to save the system configuration and test results. See Using Dell Online Diagnostics.

- **Number of Passes**

  Enables you to run the selected tests for a specified number of iterations. In both the GUI and the CLI modes, the minimum number of passes is 1. In the GUI mode, the maximum number of passes is 20 and in the CLI mode, it is 999.

- **Run Time**

  Allows you to specify the duration (in minutes) for which a diagnostic test should run.

  > **NOTE:** This feature is available only in the CLI version of Online Diagnostics.

  > **NOTE:** Tests stop executing after they complete 72 hours or 999 passes, whichever occurs first.

- **Auto Logging**

  Online Diagnostics saves the diagnostic test results in XML format, in an auto-generated file (**result.xml**). The file is available in the **x:\<***install_directory***>\dell\diagnostics\log** directory (where **x:** is the drive where the application installs) for Windows operating systems and in **/var/ log/dell/diagnostics/log** for Linux operating systems. The maximum size of the log file is 512 KB. Online Diagnostics removes the log entries in a first-in-first-out (FIFO) fashion when the size of the log file reaches the upper limit.
  Online Diagnostics also saves the hardware configuration in an auto-generated file (**config.xml**), which is available in the same location as **result.xml**.

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Setting Up Dell Online Diagnostics

This section describes the process for setting up Dell Online Diagnostics.

Before You Begin

- Read the setup requirements and ensure that your system meets or exceeds the minimum system requirements. See Minimum System Requirements.

- Read the Online Diagnostics *ReadMe* provided with this application. The readme contains the latest information about Online Diagnostics in addition to information about known issues.

Things to Remember

- Online Diagnostics is engineered to diagnose hardware problems on individual systems.

- Hard drive diagnostic tests are designed to run as low-priority background tasks to limit their effect on other hard drive input/output activity.

- Online Diagnostics is a comprehensive diagnostics tool that exercises all testable components in your system. While these tests are running, your system may experience performance degradation which may impact your product environments performance.

  NOTE: It is recommended that diagnostics not be run during peak load hours/ high demand times and all non-essential applications closed to ensure your system performance is not negatively impacted.

- Online Diagnostics does not address problems that arise at the network level, unless the problem resides with the NIC on the system running the diagnostics.

- Hard drive diagnostic tests may run slowly or even stop when other hard drive input/output activity is running simultaneously.

  🖉 **NOTE:** Limit drive activity while running hard drive diagnostic tests

- Running Online Diagnostics simultaneously in graphical user interface (GUI) and command line interface (CLI) modes is not supported.

Setup and Diagnostic Requirements

Set Online Diagnostics to run diagnostics locally.

Minimum System Requirements

- A minimum of 256 MB RAM.

- A minimum of 40 MB free space on the system drive (**C:** on Windows operating systems or **/opt** on Linux operating systems.)

- A supported operating system installed on your Dell system. See Supported Operating Systems.

- The latest device drivers and firmware installed, so as to run diagnostics on RAID controllers, RAID-attached hard drives, tape drives, tape autoloaders, and tape libraries.

  🖉 **NOTE:** See the documentation that accompanied your device for more information or access the latest drivers and firmware from **support.dell.com**.

  🖉 **NOTE:** For a list of the latest drivers and firmware versions for RAID controllers, see Diagnostics for RAID Controllers, SAS Controllers, SCSI Controllers, and Attached Hard Drives.

Diagnostic Requirements

To run Online Diagnostics you require:

- Administrator privileges
- Devices that are required for each operating system to run Online Diagnostics.

Table 2-1 lists the devices and the dependencies that are required for each operating system to run Online Diagnostics. If these device dependencies are not met, Online Diagnostics exhibits the default behavior.

Table 2-1. Device Dependencies

Device	Operating System	Dependency	Default Behavior (if dependency is not met)
Intel NIC	Windows	Intel PROSet management agent or Intel PROSet utility for Microsoft Device Manager. These are installed as an option when Intel Driver is installed. You can download Intel Driver from **support.dell.com**. For **Drivers & Downloads**, this appears under the Network category of the selected product.	Intel vendor network tests are not available.

NOTE: For systems that have a PCIe Intel network interface card (NIC), Intel PROSet Utility for Microsoft Device Manager is required for the Intel network adapter diagnostics in Windows operating system. If you have a PCI-X Intel NIC, install either the Intel PROSet utility for Microsoft Device Manager or the Intel PROSet management agent to enable Intel network adapter diagnostics. If you have any other Dell-supported Intel NIC, you must install the Intel PROSet management agent. If these requirements are not met, the Intel vendor tests are not available (only the default network diagnostics will be available).

Table 2-1. Device Dependencies *(continued)*

Device	Operating System	Dependency	Default Behavior (if dependency is not met)
DRAC 4	Windows, SUSE Linux Enterprise Server, and Red Hat Enterprise Linux	Dell Remote Access Controller (DRAC) component on Windows operating systems and Remote Access Core component on SUSE Linux Enterprise Server, and Red Hat Enterprise Linux. You can install the DRAC components using the *Dell Systems Management Tools and Documentation* DVD or download from **support.dell.com**.	All tests fail with an internal warning indicating that the drivers and services are not installed.
USB Controllers	Red Hat Enterprise Linux and SUSE Linux Enterprise	usbutils package (version 0.11 or later)	Diagnostics tests are not available for USB devices.
All supported devices	Red Hat Enterprise Linux and SUSE Linux Enterprise Server	pciutils package (version 2.1.11 or later)	Online Diagnostics installation fails.
Broadcom NIC	Windows	Broadcom Advanced Controller Suite (BACS). BACS is installed as an option when Broadcom Driver is installed. You can download Broadcom Driver from **support.dell.com**. For **Drivers & Downloads**, this appears under the Network category of the selected product.	Enumerated Broadcom tests fail.

Table 2-1. Device Dependencies *(continued)*

Device	Operating System	Dependency	Default Behavior (if dependency is not met)
Broadcom NIC	Red Hat Enterprise Linux and SUSE Linux Enterprise	bnx2 driver version 1.4.51 or greater. tg3 driver version 3.71 or greater. **NOTE:** Broadcom NIC Test, NIC Communication Test, and NIC Team Test are not supported on Red Hat Enterprise Linux 6 server (64-bit).	Online Diagnostics GUI may not function properly.
Emulex Fibre Channel Controller	Red Hat Enterprise Linux and SUSE Linux Enterprise	Install the HBAnywhere utility from Emulex. To download this utility: **1** Go to the Emulex website at **emulex.com**. **2** Click **Downloads→ Dell**. **3** Click the adapter model number. **4** Click **Linux** from the Current Drivers section and download the **Applications Kit**.\ **5** Install libhbaapi rpm available in the operating system DVD.	Fibre Channel Controllers are not enumerated and diagnostics tests are not available.
QLogic Fibre Channel Controller	Red Hat Enterprise Linux and SUSE Linux Enterprise	Install the SNIA API for Linux drivers. To do this: **1** Go to the QLogic website at **qlogic.com**. **2** Click **Downloads→ Fibre Channel Adapters**. **3** Select a model and an operating system and click **Go**. **4** Install libhbaapi rpm available in the operating system DVD.	Fibre Channel Controllers are not enumerated and diagnostics tests are not available.

Table 2-1.   Device Dependencies *(continued)*

Device	Operating System	Dependency	Default Behavior (if dependency is not met)
Brocade Fibre Channel/ Fibre Channel over Ethernet (FCoE) card	Windows	Install drivers and HCM utility. To download the utility: **1** Go to the Brocade website at **brocade.com**. **2** Click **Services & Support→ Drivers & Downloads**. **3** Click the **Download Now** hyperlink. **4** Under OEM Models, click **Dell**. **5** Download the required Windows Adapter Software Installer.	Brocade cards are not enumerated and diagnostics tests are not available.

📝 **NOTE:** Fibre Channel Controller enumeration and tests are not supported on 64-bit Linux operating systems.

📝 **NOTE:** Memory diagnostics are not supported on the following Dell systems as they do not support IPMI: SC420, SC430, SC440, SC1420, SC1430, and T105.

📝 **NOTE:** For supported operating systems, see the *Dell Online Diagnostics Version 2.21 Readme*. To access the *Readme*, on **support.dell.com/manuals**, click **Software→ Serviceability Tools→ Dell Online Diagnostics.**

Setting Up Diagnostics

The Online Diagnostics installation files, for Windows and Linux operating systems, are available at **support.dell.com**.

📝 **NOTE:** On Windows Server 2008 (Core) operating systems, Dell Online Diagnostics functions only if Microsoft Visual C++ 2005 Redistributable Package (32-bit) is installed. The Visual C++ Redistributable Package is available at the Microsoft website **microsoft.com**.

📝 **NOTE:** Ensure that you accept the End-User License Agreement (EULA) while installing Online Diagnostics.

Installing Online Diagnostics on Windows Operating System

Perform the following steps to install Online Diagnostics on systems running supported Windows operating systems:

1   Run the **.exe** file to start the installer.

    The **Welcome to the Dell Online Diagnostics 2.x.y Setup Wizard** screen appears.

2   Click **Next**.

    The **Dell Software License Agreement** displays.

3   Click **I Agree** to accept the terms of the agreement.

4   Click **Install** to accept the default directory path or, click **Browse** and navigate to the directory where you want to install Online Diagnostics, and click **Install**.

5   Click **Finish**.

Installing Online Diagnostics on Linux and ESX Operating System

Perform the following steps to install Online Diagnostics on systems running supported Linux or ESX operating systems:

1   Extract the **tar.gz** file to a desired location. The extracted files contain an install script (**install.sh**) and the required installation packages.

2   Run **install.sh** to install these packages.
    The **Dell Software License Agreement** displays.

3   Type Y to accept the terms of the agreement.

    All the files needed to run the application are extracted to the default install directory, **/opt/dell/onlinediags**.

Running Online Diagnostics on Windows Operating System

To run Online Diagnostics on Windows operating systems, do the following:

1   Click **Start**→ **Programs**→ **Online Diagnostics 2.x.y** and select **Online Diagnostics GUI** to run in GUI mode or select **Online Diagnostics CLI** to run in CLI mode.
    For the GUI mode, use the user interface.

For the CLI mode, run the **pediags** program from **x:\\<*install_directory*>\\ online diagnostics\\oldiags\\bin** (where **x** is the drive where the application installs.)

> 📝 **NOTE:** The option to run Online Diagnostics from the **Start** menu is available only to the Administrator who installed the application. All other Administrators must use the **StartDiags** shortcut inside the installation folder to run the application.

> 📝 **NOTE:** To run Online Diagnostics on Windows Server 2008 (Core) operating systems, run the **StartDiags.exe** program to run the GUI or **pediags.exe** to run the CLI, from **x:\\<*install_directory*>\\online diagnostics\\oldiags\\bin** where **x** is the drive where the application installs.

> 📝 **NOTE:** On Windows Server 2008 R2 edition or later, a user with administrator privileges cannot directly run the Dell Online Diagnostics application. On Windows Small Business Server system, Network Administrators do not have full privileges to run Dell Online Diagnostics application. To run Online Diagnostics application, click **Start→ Programs→ Online Diagnostics 2.x.y** and right click the **Online Diagnostic GUI** or the **Online Diagnostic CLI** and select **Run as administrator.**

Running Online Diagnostics on Linux and ESX Operating Systems

To launch Online Diagnostics on Linux and ESX operating systems, run **startDiags.sh** in the
/opt/dell/onlinediags directory.

> 📝 **NOTE:** Do not extract or copy **startDiags.sh** to another directory and attempt running the application.

> 📝 **NOTE:** Running Online Diagnostics on a read-only file system is not supported.

RedHat Enterprise Linux System

The Online Diagnostics GUI, which is a 32-bit application, does not function on Red Hat Enterprise Linux (64-bit) systems if **Compatibility Arch Support** packages are missing.

When you launch Online Diagnostics on supported Red Hat Enterprise Linux (64-bit) where **Compatibility Arch Support** packages are not installed, the following error message is displayed:

```
Compatibility Arch Support package(s) [gtk, pango,
and redhat-artwork] is not installed on this
system. For details on installing the package(s)
please refer to the README file.
```

To resolve the issue, perform the following steps:

1 Run the **Red Hat Package Management Utility** (**redhat-config-packages**.)

2 Select the **Compatibility Arch Support** check box in the **Package Management** window and click **Details**.
The **Compatibility Arch Support Details** window is displayed.

3 Select **gtk, pango**, and **redhat-artwork** packages for installation and click **Close.**

4 Click **Update** in the **Package Management** window.

   NOTE: Running multiple instances of Online Diagnostics is not supported.

In the CLI mode, run the **pediags** program from **x:\<**_install_directory_**>\online diagnostics\oldiags\bin** (where **x** is the drive where the application installs.)

   NOTE: Do not install and run the **pediags** program from a network-mapped drive. Some network diagnostic tests disconnect the network.

Uninstalling Online Diagnostics on Windows Operating System

To uninstall Online Diagnostics, click **Start**→ **Programs**→ **Online Diagnostics 2.x.y**→ **Uninstall** or run the **uninst.exe** file from the **x:\<**_install_directory_**>\online diagnostics**, where **x** is the drive where the application installs.

Uninstalling Online Diagnostics leaves behind 40 KB of files. Browse to the installation folder and delete these.

Uninstalling Online Diagnostics on Linux and ESX Operating System

To uninstall Online Diagnostics, run **uninstall.sh**. This file is located in the installation directory.

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Using Dell Online Diagnostics

You can access Dell Online Diagnostics in two ways: from a graphical user interface (GUI) and from a command line interface (CLI). This section describes both the interfaces.

Using the GUI

When you launch Online Diagnostics in the GUI mode, the splash screen appears indicating the progress of device-discovery, until enumeration is complete. The splash screen also provides important information related to running Online Diagnostics. Discovery or enumeration of the devices occurs only when the application is launched. If your system hardware has changed, restart the application to re-enumerate the devices on your system.

⚠️ **CAUTION: Connecting or removing a USB or a CD/DVD device from a Red Hat Enterprise Linux or SUSE Linux Enterprise Server while the enumeration is in progress may cause the system to hang.**

📝 **NOTE:** If the system fails to discover USB controllers, ensure that the USB Controllers are enabled in the BIOS and USB Controller support is set to **ON with BIOS support** in the BIOS Setup menu.

📝 **NOTE:** GUI mode is not supported on VMware ESX. Only CLI mode is supported.

Menu Options

The **File** menu provides the following options:

- **Exit:** Use this option to exit the application.
- **Save Configuration:** Use this option to save the configuration details of the devices detected by Online Diagnostics. The configuration details are saved to **config.html**, which is contained in an archive file. You can specify any name for this archive file, for example, **config.zip**. This option is available only when Online Diagnostics is not running any tests. If you have any system or device problems, you can save the configuration details in the **config.zip** file and provide the file when contacting technical support.

- **Save Results:** Use this option to save the test result details. The test result details are saved to an HTML file (**results.html**), which is contained in an archive file. You can specify any name for this archive file, for example, **results.zip**. You can use this option only after all the tests that are running are complete. When contacting technical support for any system or device problem, you can save the result details and send the file to technical support.

The **Help** menu provides the following option:

- **About:** This option provides the version information of Dell Online Diagnostics running on your system.

Diagnostics Interface

The Online Diagnostics GUI is divided into two sections:

- Diagnostic Selection
- Diagnostic Information

Diagnostic Selection

Use this section to select and organize how devices and tests are displayed.

Selection Options

Use this list box to organize how tests and detected devices are displayed. You can select any of the three options from this list box.

Group by connection	Use this option to organize the **Select Test(s) to Run** pane display as a tree structure with the connection as the nodes and with the applicable devices and the tests listed under them.
Group by device	Use this option to organize the **Select Test(s) to Run** pane display as a tree structure with the devices as the nodes and the tests applicable to each device listed under them. If the device is grayed out, it implies that there are no tests available for the device. However, you can still view the configuration details of the device.
Group by tests	Use this option to organize the **Select Test(s) to Run** pane display as a tree structure with the tests as the nodes and the applicable devices listed under them.

The following table describes the icons in the **Select Test(s) to Run** pane.

	Indicates a device
	Indicates a device with a non-critical error or associated warning
	Indicates a test
	Indicates a test with a non-critical error or warning associated. A test warning message is displayed on mouseover

Select All: Click to select all the devices and tests displayed in the **Select Test(s) to Run** pane.

Remove All: Click to remove all the selected devices and tests in the **Select Test(s) to Run** pane.

Select Test(s) to Run

Use this section to select devices and execute tests. The section is organized according to the option you selected in the **Selection Options** list box.

If the display is grouped by devices:

- Select the check box next to the device, to select all the tests listed for the device.
- You can also expand the device node and select individual tests that you want to run.

If the display is grouped by tests:

- Select the check box next to the test, to select all the devices listed for the test.
- You can also expand the test node and select the individual devices on which you want to run the tests.

NOTE: You can select a device in the Diagnostic Information section, and view its corresponding configuration details highlighted in the **Configuration** tab.

Diagnostic Information

Use this section to view the system configuration and operational status information. In addition, you can run selected tests and view the results of these tests.

Configuration

Use this tab to view the operational status of the detected devices and their configuration details. To view the configuration details for a device, select the device from the **Select Test(s) to Run** pane. The configuration details of the selected device are highlighted in this page and are listed under the following headings:

Device Name: The name of the device.

Device Attribute: Lists the device attributes. The following are the device attributes.

Status	Specifies the operational status of the device.
Description	Specifies a brief description.
Class	Specifies the class to which the device belongs. For example, the device COM1 belongs to the class Serial Port.
Location	Specifies the location of the device in the system. For example, system board.
Additional Information	Specifies any additional information. For example, if the device is embedded on the system board, the value **Embedded** is displayed against this field.

Value: Specifies a value against each attribute of a device.

Additional Device Information: Provides additional information of a device, if available, under the **Configuration** tab. When an additional device is available, the information icon ⓘ appears next to the device name in the **Configuration** tab. Double-click the row to view additional information for the device. For more information, see Table A-1.

Tests Selected

Use this tab to run the tests you selected in the **Select Test(s) to Run** pane. This tab contains the following sections:

- **Diagnostic Tests Selected:** This list box displays all the tests selected in the **Select Test(s) to Run** pane.

- **Diagnostic Options:** Use this section of the **Tests Selected** tab to run the selected tests. This section contains the following controls:

Run Tests	Starts the selected tests. You can run multiple tests at the same time.
Quick Test	Uses a faster algorithm to conduct a specific test. If no errors are reported after running in **Quick Test** mode and you still suspect that the tested hardware has problems, it is recommended that you clear (deselect) **Quick Test** mode and run the same test again.
Number of Passes	Specifies the number of iterations for the selected test. The minimum value is 1 and the maximum is 20.

NOTE: Double-click the row of a particular test in the **Status** tab, to view detailed information.

Status

Use this tab to view the status of the tests that are currently running or have completed execution. **Elapsed Time** and **Overall Progress** appear as part of **Status. Elapsed Time** is displayed in the hh:mm:ss format and is the amount of time that elapsed, since the job group of tests started to run. **Overall Progress** is the cumulative progress of all the tests in the current job group.

The status of each test is displayed under the following column headings:

- **ID**: Auto-generated test ID.

- **Device:** The device on which the test is running.

- **Test:** The test being executed.

- **Progress:** Test progress indicated in percentage.

- **Cur. Pass:** Indicates the current pass that is running if you selected the **Number of Passes** option for the test.

- **Total Pass:** Indicates the total number of passes that you specified to run if you selected the **Number of Passes** option for the test.
- **Status:** Indicates the current status of a test. Double-click on a test item to view details that include device name, device description, device location, test name, and test description. The following text indicators specify the test status:

Completed	Specifies that the test has completed.
Suspended	Specifies that the test was suspended. You can suspend a test manually. Not all diagnostic tests support the **Suspend** feature.
Aborted	Specifies that the test was aborted. You can abort a test manually. Not all diagnostic tests support the **Abort** feature.
Executing	Specifies that the test is running.
Ready	Specifies that the test has not started but is queued up for execution. You can abort any test when it is in the **Ready** state.

- **Result:** Specifies the result of a test in the form of symbols. For example, the **Status** column of a test might display **Completed**, but the **Result** column specifies whether the test completed successfully. Double-click a result item to view details such as device name, device description, device location, test name, test description, and the overall result of the test.

  The following table describes the various icons and the test result indicators they represent:

✔	The test completed successfully.
▥▶	The test is being executed.
⊘	The test was aborted.
⚠	Non-critical errors were encountered during the execution of the test.
✖	The test failed.
⚙	The test was suspended.

Result

Use this tab to view the results of the tests executed along with a brief description about the outcome of each test.

The **Result** column in this tab briefly describes the test outcome. In addition, you can double-click anywhere in the row to view the corresponding result message. For example, if a test failed, the **Result** column will display the problem encountered and any actions you must take.

Right-click to bring up the **Delete/Delete All Completed** menu. Select **Delete** to remove the test results of an individual test and **Delete All Completed** to remove all test results of all completed tests from the **Status** tab and the **Results** tab.

Running Diagnostic Tests

To run diagnostic tests, perform the following steps:

1 Launch the application.

2 In the **Diagnostic Selection** section on the left, select the appropriate option from the **Selection Options** drop-down menu.

 • Select the **Group by connection** option to view the connections as nodes with the corresponding devices and tests displayed under each connection.

 • Select the **Group by device** option to list the system devices. All available tests for each device are displayed under the device.

 NOTE: If a device is grayed out, the device does not have any tests available. Configuration information for this device is displayed in the **Configuration** tab.

 • Select the **Group by test** option to list all the available tests with the corresponding devices displayed under each test.

3 Select the check boxes corresponding to the tests that you want to run.

In the **Diagnostic Information** section on the right, the **Tests Selected** tab lists the currently selected diagnostic tests. Click **Run Tests** to execute the selected tests**.**

NOTE: The **Warning** row displays the non-critical icon to indicate that tests with possible non-critical errors have been selected. Double-click the icon to view the test warning.

NOTE: The tests are queued for execution in the order in which they were selected. To stop tests from queuing, click **Stop** on the **Queuing Diagnostic Tests** window.

4 Click the **Status** tab to monitor the status of the test execution.

- To abort a running test, right-click the test and select **Abort**. Select **Abort All** to stop all the queued tests.

- To suspend a running test, right-click the test and select **Suspend**.

- To resume a suspended test, right-click the test and select **Resume**.

The icons in the **Result** column indicate the status of each test.

- The **In Progress** icon ( ) indicates that the test is currently being executed.

- The **Aborted** icon ( ) indicates that the test was aborted.

NOTE: Not all diagnostic tests support the **Abort** option. If a test's status is **Ready**, it can be aborted. Only tests that support the **Abort** option can be aborted when in the **Executing** state.

- The **Suspended** icon ( ) indicates that the test was suspended and may be restarted again at a later time.

NOTE: Not all diagnostic tests support the **Suspend** feature.

- The **OK** icon ( ) indicates that the test executed successfully and no errors were encountered.

NOTE: The **Abort/Suspend/Abort All** options are not available until a few seconds after queuing is complete. All queued tests must have the **Status** column filled in the table for the **Abort/Suspend/Abort All** option to be available.

- The non-critical icon (⚠)indicates that non-critical errors were encountered during the execution of the test.

- The **Critical** icon (✖) indicates that the test has failed.

5 Click the **Results** tab to see a brief description of the test execution result. The **Results** column contains a brief description of the results of the tests. You can also double-click anywhere in the row to see the details of a particular test, which is displayed as a pop-up window. For example, if the application encountered a non-critical error while executing a test, the **Results** column displays a brief description of the nature of the error and any actions to take.

Configuring the Test Execution Settings

To configure the test execution setting to use a faster algorithm to conduct the test:

1 Select the tests you want to run in the **Diagnostic Selection** section.

2 Click the **Tests Selected** tab in the **Diagnostic Information** section. All the selected tests are displayed.

3 Select the **Quick Test** check box in the **Diagnostic Options** section at the bottom. If this option is available for one of the selected tests, the test is run in this mode.

> **NOTE:** The Quick Test feature is not a supported test mode for all tests. Only a few tests support this feature.

> **NOTE:** If no errors are reported after running in Quick Test mode and you suspect that the hardware still has problems, it is recommended that you deselect Quick Test and run the test again.

4 Use the **Number of Passes** option to specify the number of times you want the tests to run. The minimum value is 1 and the maximum is 20.

> **NOTE:** The Dell Remote Access Controller (DRAC) diagnostic tests require the RAC software components to be present on your system. For more information, see your DRAC User's Guide.

> **NOTE:** Tape Media Test does not support the Abort option on LTO-4 drives.

Using the Command Line Interface

To run the application in CLI mode, run **pediags** from
x:\<*install_directory***>\oldiags\bin**, where **x** is the drive where the application
installs. In Windows operating system, you can also click **Start**→ **Programs**→
Online Diagnostics 2.x.y→ **Online Diagnostics CLI** to run the application
in CLI mode.

⚠ **CAUTION: Connecting or removing a USB or a CD/DVD device from a Red Hat
Enterprise Linux, SUSE Linux Enterprise Server, or VMware ESX while the
enumeration is in progress may cause the system to hang.**

Primary CLI Commands

The following commands carry out the functions of Online Diagnostics:

- `pediags --help`

  Displays short text help for CLI commands.

- `pediags --show all`

  Lists all device classes and tests available.

- `pediags <DEVICECLASS> --help`

  Displays text help for the **<***DEVICECLASS***>** you specify. For example,
  the command `pediags modem --help` displays help information for
  the devices listed as modems and the different tests associated with the
  modems. **<***DEVICECLASS***>** is the package name of the device,
  for example, network and cddvd.

- `pediags <DEVICECLASS> --show [device|test|all]`
  `[<Index Options>] [<Details Option>]`
  `[fmt=lst|tbl|xml]`

  Displays the list of device classes, tests, or both. The default option is **all.**
  The option displays both device classes and tests. You can specify index
  options and choose the format in which you want the output displayed.
  The parameters should follow the particular order in which they are listed
  and format options are always the last parameter.

  For example, the command `pediags network --show test test-`
  `index=1,2,3 fmt=tbl`, displays the tests whose index numbers are 1,
  2, and 3 in a table format.

If you type the following command, `pediags network --show device device-index=1,2,3 fmt=tbl`, it displays the device classes whose index numbers are 1, 2, and 3 in a table format.

Use `pediags <DEVICECLASS> --show device details` to view additional device information, if available.

The `details=true` option works only with `--show device`. For example, to see additional device information for the SCSI devices, enter `pediags Scsidevdiag --show device details=true`.

- `pediags <DEVICECLASS> --run [<Index Options>] [<Test Settings>] [fmt=lst|tbl|xml]`

  Runs tests on the device class you select. You can specify index options, test settings, and choose the format in which you want the results displayed. The parameters should follow the particular order in which they are listed and format options are always the last parameter.

  In the *<Test Settings>* parameter, you can specify **quicktest** as **true** or **false.** You can also specify the number of iterations or passes for the selected test. Passes specifies the number of passes to execute.

  For example, the command `pediags network --run test-index=1,2,3 quicktest=true passes=6 fmt=tbl`, runs six iterations of the tests whose index numbers are 1, 2, and 3 on the network device class. The results are displayed in a table format.

- `pediags <DEVICECLASS> --run time= x` (where x is the number of minutes you want the test to run.)

  This command allows you to run a diagnostic test for a specified duration. For example, `pediags scsidevdiag --run device-index=1 test-index=1 time=30` runs the diagnostic test whose index is 1 on the SCSI device whose `device-index` is 1 for 30 minutes. Tests stop executing after they complete 72 hours or 999 passes, whichever occurs first.

  NOTE: Runtime of the `passes` parameter is limited to 3 days (72 hours). The minimum number of iterations supported is 1 and the maximum is 999.

  NOTE: Always specify the `time` parameter in minutes and enter the `time` parameter after the `--run` parameter.

Aborting Online Diagnostics in CLI Mode Using <Ctrl><C>

Using <Ctrl><C> to abort with the --show command does not cause the action to abort. When running tests, you may use <Ctrl><C> at any point of time during the execution sequence to stop the test. No output may be available and the test may exit with a blank message. This may occur if the execution of the pediags command is interrupted even before the diagnostic test has started. If you abort a test that has already started, the test may abort with a Test was aborted by the user result event if the **Abort** feature is supported by the particular test. For multiple passes, even if the test supports **Abort**, the test may not abort with the Test was aborted by the user result event. This might occur because the multiple pass test may have been aborted during the transition from one pass to another.

Tests that do not support the **Abort** feature always run to completion.

Scripting With the CLI

The Online Diagnostics CLI allows administrators to write batch programs or execute scripts using the operating system.

Scripting enables the user to automate the schedule diagnostic of a systems health.

In many cases, the CLI allows a user with a very well-defined task in mind to retrieve information about the system rapidly. You can redirect the diagnostic output to a file using the operating system's redirection feature.

You can also use the exit codes explained in the following table when writing scripts.

0	The test has a passed result.
1	The test has a warning result.
2	The test has a failed result.
3	The application failed because of dependency issues or runtime issues.

Exit codes **0**, **1**, and **2** are applicable for only test execution (irrespective of multiple or single pass). The exit code is the aggregate status of all the tests executed. For example, out of 20 tests, if there is one test with a warning

result and another test with a failed result while all other tests are successful, the final exit code displays as **2**. The exit code for a failed result takes precedence over an exit code for a warning result.

Scheduling Diagnostics

Using your operating system's task-scheduling features, you can schedule Online Diagnostics to run diagnostic tests on your system.

4

Supported Devices

This section lists the categories of devices that can be tested using Dell Online Diagnostics.

Diagnostics for Tape Drives, Autoloaders, and Libraries

For the list of devices supported by Online Diagnostics, see *Dell Online Diagnostics Version 2.21 Readme.*

NOTE: Install Dell-qualified device drivers to run diagnostic tests on tape drives, tape autoloaders, and tape libraries. See the documentation that accompanied your device. The latest device drivers are available at **support.dell.com**.

NOTE: On Linux operating systems, diagnostic tests for SATA hard-disks and controllers are not available.

NOTE: For a description of technical terms relating to Tape Drives, Autoloaders, and Libraries, see Additional Device Information for Storage Diagnostics.

Diagnostics for RAID Controllers, SAS Controllers, SCSI Controllers, and Attached Hard Drives

This section lists the diagnostics supported on systems running Windows operating systems, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, or VMware ESX.

Online Diagnostics supports diagnostics for RAID, SAS, and SCSI controllers as well as for the hard drives that are attached to RAID, SCSI, and IDE controllers, depending on the installed operating system.

✍ **NOTE:** Online Diagnostics does not run diagnostic tests on IDE controllers.

✍ **NOTE:** Online Diagnostics enumerates and displays the diagnostic tests for the hard drives that are connected to SAS 5/iR (Adapter and Integrated), SAS 5/i Integrated, and SAS 6/iR, S100, S110, S300, H200 (Adapter, Integrated, and Modular) controllers. However, diagnostic tests for these controllers themselves are unavailable.

✍ **NOTE:** For a list of firmware requirements for each controller, see Diagnostic Dependencies for Supported RAID Controllers.

✍ **NOTE:** For more information on controller-specific tests (for example, the Battery test for PERC 4e/DC, PERC 5/i, PERC 6/i, PERC H700, and PERC H800), see the online *Help*.

For the list of devices supported by Online Diagnostics, see *Dell Online Diagnostics Version 2.21 Readme.*

Diagnostics Supported on Systems Running Windows Operating System, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, and VMware ESX

On systems running Windows operating systems, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, and VMware ESX, Online Diagnostics supports diagnostics for a number of controllers and the hard drives that are attached to these controllers.

For a complete list of the controllers supported by Online Diagnostics, see the *Dell Online Diagnostics Version 2.21 Readme* at **support.dell.com**.

✍ **NOTE:** Windows Server 2008 and later does not support PERC 320/DC controllers.

✍ **NOTE:** The CERC ATA 100 4/CH is not supported on Linux operating systems. It is supported only on Windows operating systems.

✍ **NOTE:** The SAS 5/E Adapter and SAS 6Gbps HBA support diagnostics test only on connected tape drives.

Diagnostic Dependencies for Supported RAID Controllers

Dell Online Diagnostics requires Dell-qualified device drivers and firmware to run diagnostic tests on RAID controllers, SCSI controllers, and attached hard drives.

✍ **NOTE:** For the list of firmware, BIOS, and driver versions for supported RAID Controllers, see the *Dell Systems Software Support Matrix* for OpenManage 7.0. To access the *Dell Systems Software Support Matrix*, on **support.dell.com/ manuals**, click **Software→ Systems Management→ Dell OpenManage Releases**.

Diagnostics for Fibre Channel Controllers

For the list of devices supported by Online Diagnostics, see *Dell Online Diagnostics Version 2.21 Readme*.

A

Storage Diagnostics Device Information

Table A-1 lists detailed device information for storage diagnostics.

Table A-1.   Additional Device Information for Storage Diagnostics

Parameter	Description
Total Moves	Total number of AutoLoader moves.
Drive Loads	Number of loads to the drive from magazines and mail slot.
Mailslot Exports	Number of times a cartridge was exported from the system.
Mailslot Imports	Number of times a cartridge was imported into the system.
Magazine Moves	Number of moves between storage slots.
Magazine Loads	Number of times a cartridge was moved from a storage slot to the drive.
Servo Hard Error	Number of unrecoverable errors.
Drive Soft Error	Each field is a count of the number of times a high-level recoverable error was reported for that component.
Rotation Recovery Action	Each field is a count of the number of times recovery actions were required in that axis to perform an operation.
System Moves	Total system moves would include every point-to-point movement that was made regardless of slot.
System Pick Retries	Total pick-retries regardless of slot.
System Put Retries	Total put-retries regardless of slot.
Element Total Puts	Total number of cartridge-puts to the element location.
Element Total Picks	Total number of cartridge-picks from the element location.
Element Total Put Retries	Total number of retry-puts to the element indicated by the element address.
Element Total Pick Retries	Total number of retry-pick operations from the element address.
Firmware	Firmware version on the tape device.

Table A-1.   Additional Device Information for Storage Diagnostics *(continued)*

Parameter	Description
Last Clean	Number of hours since the last-clean was done.
Clean Required	Set to **Yes** if cleaning-required condition exists.
Replace Cleaning Tape	Set to **Yes** if cleaning tape needs replacement.
Number of Drive Cleans	Drive cleaning cycle count.
Number of Tape Cleans	Number of cleaning sessions per cartridge.
Power On Hours (POH)	Amount of time a tape drive has been turned on.
Tape Motion Hours/ Cylinder on Hours (COH)	Amount of time the tape drive has been used for backups and restores.
Load Count	Number of times a tape cartridge was loaded. Some drives increment this value when a tape cartridge is inserted and some increment this value when a tape drive is unloaded.
Number of Cleans	Number of cleaning sessions per cartridge.
Time in COH when Incompatible media was last loaded.	Time stamp in COH.
Time in POH when the Over temperature condition occurred – returns zeros	Time stamp in POH.
Time in POH when the Power issue condition occurred	Time stamp in POH.
Total Number of Cleaning	Total number of cleanings that are done using a cleaning tape.
Time since last cleaning	Time stamp in hours.
Time in COH of last emergency eject	Time stamp in COH.

Table A-1.   Additional Device Information for Storage Diagnostics _(continued)_

Parameter	Description
Media Type: total time in COH	Total COH for specified media type.
Sense codes (List of latest four Sense Codes)	Various codes and parameter are listed. For example, Sense Key, Additional Sense Code, and Additional Sense Code Qualifier.
Lifetime Meters of Tape Processed	Cumulative physical length of tape that has been written over its lifetime.
Time in MMH since Last Successful Cleaning	Media motion (head) hours since last successful cleaning operation.
Time in MMH since Second Last Successful Cleaning	Media motion (head) hours since second last, successful cleaning operation.
Time in MMH since Third Last Successful Cleaning	Media motion (head) hours since third last, successful cleaning operation.
Power On Hours when Force Reset and/or Emergency Eject occurred	Lifetime Power On Hours when the last operator initiated forced reset and/or emergency eject occurred.
MediaType	Type of media that is loaded at the time the command terminated with check condition status else 00h.
DensityCode	Density code of the medium loaded at the time the command terminated with check condition status else 00h.
MMHShort	Number of media motion hours at the time the command terminated with check condition status.
Repeat Bit	0 - indicates one occurrence of sense key and additional sense code information in the parameter entry. 1 - indicates multiple, consecutive occurrence of sense key and sense code information in the parameter entry.

Table A-1.   Additional Device Information for Storage Diagnostics *(continued)*

Parameter	Description
Firmware Version	Firmware version at the time the command terminated with check condition status.
MMH Since Last Clean	Media Motion hours since last successful cleaning at the time the command terminated with check condition status.
Opcode	Operation code at the time the command terminated with check condition status.
Medium ID Number	If the media is present at the time the command terminates with check condition status. MediumID Number contains the following values: 1. Barcode field value 2. Medium Serial Number 3. Vendor-specific value If media is not present MediumID Number contains 20h.