

Dell Precision 3930 Rack

Setup and Specifications



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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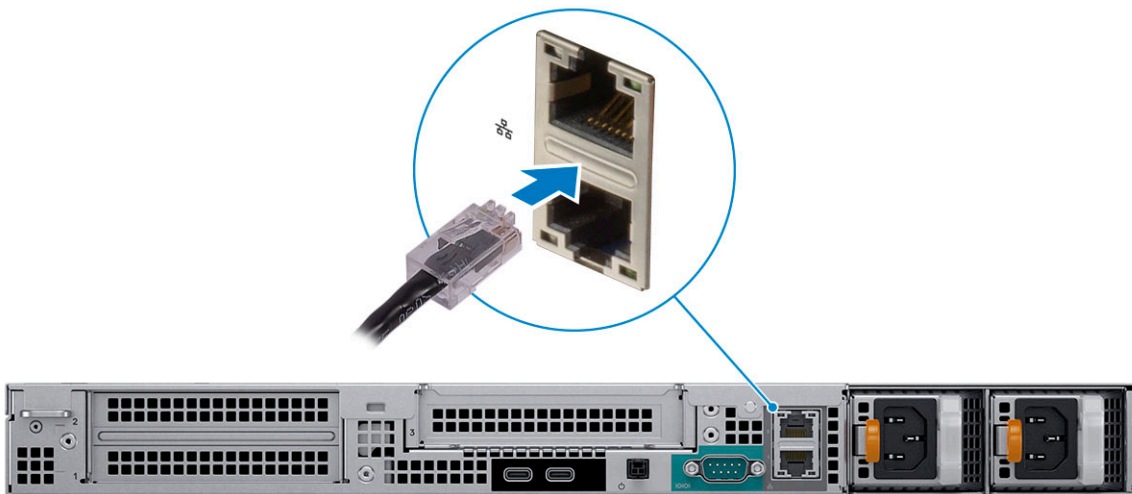
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Set up your computer

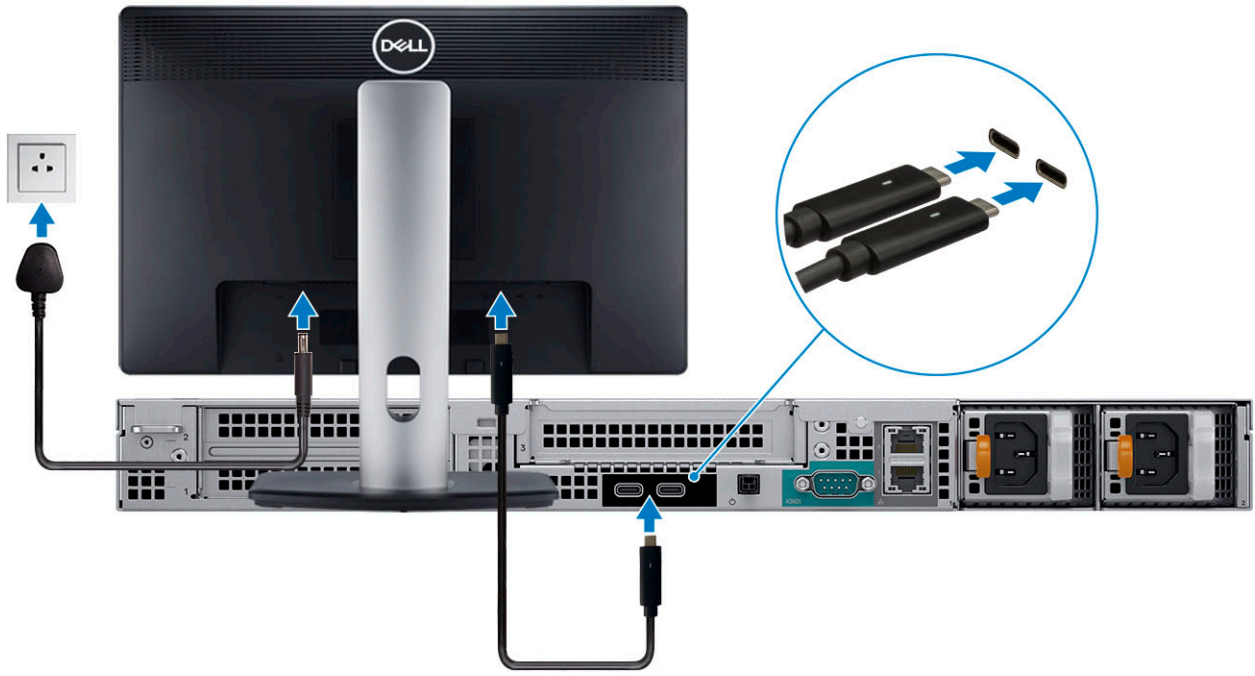
- 1 Connect the keyboard and mouse.



- 2 Connect to your network using a cable.



- 3 Connect the display.



NOTE: If you ordered your computer with discrete graphics card, the card will be the primary driver for video. Connect the display to the discrete graphics card.

4 Connect the power cable.

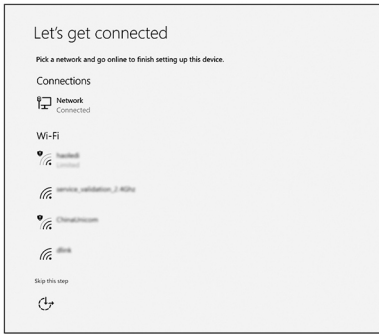


5 Press the power button.

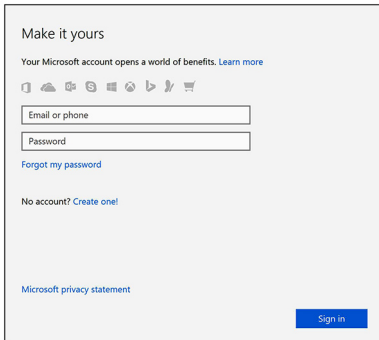


6 Follow the instructions on the screen to finish Windows setup:
a Connect to a network.

6 Set up your computer



b Sign-in to your Microsoft account or create a new account.



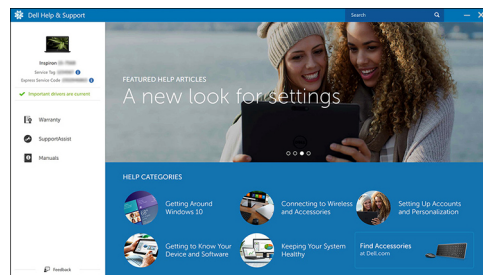
7 Locate Dell apps.

Table 1. Locate Dell apps



Register your computer

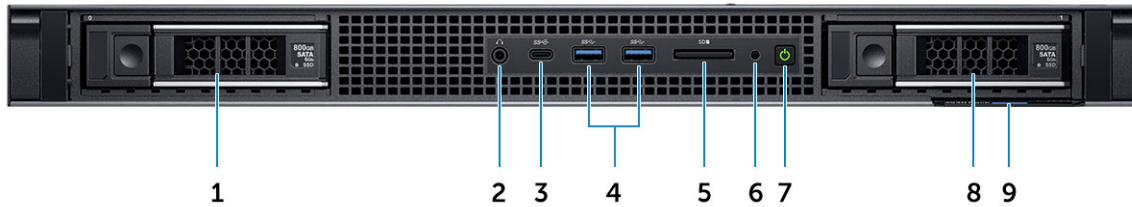
Dell Help & Support



SupportAssist — Check and update your computer

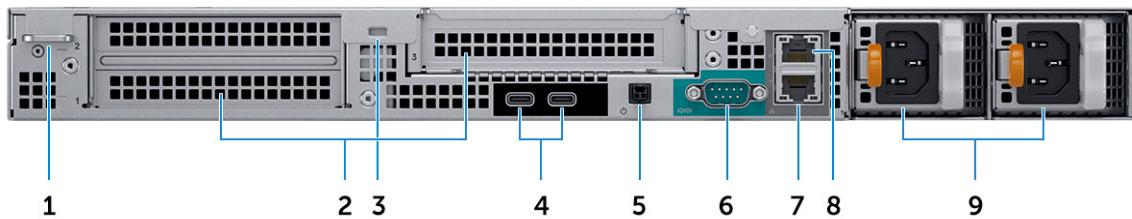
Chassis overview

Front view



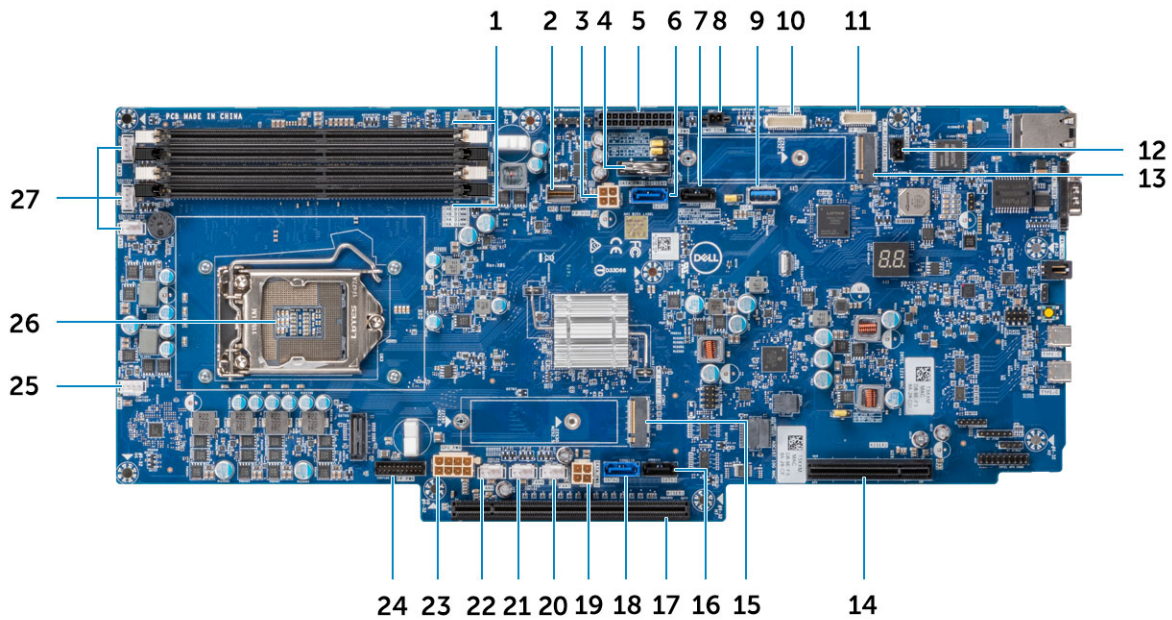
- | | | | |
|---|--------------------------|---|--------------------------|
| 1 | Hard drive slot 0 | 2 | Audio port |
| 3 | USB Type-C 3.1 Gen2 port | 4 | USB Type-A 3.1 Gen1 Port |
| 5 | SD card reader slot | 6 | Drive activity light |
| 7 | Power button | 8 | Hard drive slot 1 |
| 9 | Service tag | | |

Back view



- | | | | |
|---|---------------------|---|--|
| 1 | Padlock ring | 2 | Expansion card slots |
| 3 | Security cable slot | 4 | USB Type-C 3.1 Gen2 (with UMA video support) |
| 5 | Remote power switch | 6 | Serial port |
| 7 | 10 GB Network port | 8 | 1 GB Network port |
| 9 | Power supply units | | |

System board layout



- | | | | |
|----|--|----|------------------------------------|
| 1 | Memory Slots | 2 | Front panel HSD |
| 3 | Left SATA power connector | 4 | Coin cell battery |
| 5 | Power distribution board power connector | 6 | SATA 0 connector |
| 7 | SATA 1 connector | 8 | Power connector 1 |
| 9 | USB Type-A 3.1 Gen1 | 10 | Power distribution board connector |
| 11 | Front panel connector | 12 | Intrusion switch connector |
| 13 | M.2 PCIe connector (SSD0) | 14 | PCIe slot |
| 15 | M.2 PCIe connector (SSD1) | 16 | SATA 3 connector |
| 17 | PCIe slot | 18 | SATA 2 connector |
| 19 | Right SATA power connector 2 | 20 | Fan 7 power connector |
| 21 | Fan 8 power connector | 22 | Fan 9 power connector |
| 23 | GPU power connector | 24 | Front panel power connector |
| 25 | Fan 6 power connector | 26 | Processor |
| 27 | Fan 5/4/3 power connector | | |

System Information

Technical specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

System dimensions - physical

NOTE: System Weight and Shipping Weight is based on a typical configuration and may vary based on PC configuration. A typical configuration includes: integrated graphics, two hard drives.

Table 2. System dimensions (Physical)

	Tower
Chassis Weight (lb / kg)	27.38 / 12.42
Chassis Dimensions (H x W x D)	
Height (inch / cm)	1.68 / 4.28
Width (inch / cm)	18.97 / 48.2
Depth (inch / cm)	22.73 / 57.75
	23.19 / 58.91 (With Bezel)
Shipping Weight (lb / kg – includes packaging materials)	42.63 / 19.34
Packaging Dimensions (H x W x D)	
Height (inch / cm)	8.38 / 21.3
Width (inch / cm)	23.42 / 59.5
Depth (inch / cm)	31.61 / 80.3

System information

Table 3. System information

Chipset	Intel C246 chipset
DRAM bus width	64-bit
FLASH EPROM	SPI 256 MB

PCIe bus	100 Mhz
External bus frequency	DMI 3.0-8GT/s

Power supply unit

This topic lists the power supply units information.

Table 4. 550 Watts

Feature	Specifications
Power Supply Wattage	550W (Dual PSUs provide redundancy not increased power)
AC input Voltage Range	100 - 240 VAC
AC input current (low AC range/high AC range)	7.4 A / 3.7 A
AC input Frequency	50 Hz / 60 Hz

Table 5. 3.0V CMOS Battery

Brand	Type	Voltage	Composition	Life
PANASONIC	CR-2302L/BN	3V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage: 1000 hours or longer
Varta	6032-101-501	3V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage: 1000 hours or longer
Duracell	DL2032	3V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage: 1000 hours or longer
Maxell	CR2032	3V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage: 1000 hours or longer

Processor

NOTE: Processor numbers are not a measure of performance. Processor availability is subject to change and may vary by region/country.

Table 6. Processor specifications

Type	UMA Graphics
Intel Xeon E Processor E-2186G (6 Core HT 3.8 Ghz, 4.7 GHz Turbo, 8 MB)	Integrated Intel UHD P630
Intel Xeon E Processor E-2176G (6 Core HT 3.7 Ghz, 4.7 GHz Turbo, 8 MB)	Integrated Intel UHD P630
Intel Xeon E Processor E-2174G (4 Core HT 3.8 Ghz, 4.7 GHz Turbo, 8 MB)	Integrated Intel UHD P630
Intel Xeon E Processor E-2146G (6 Core HT 3.5 GHz, 4.5 Ghz Turbo, 8 MB)	Integrated Intel UHD P630
Intel Xeon E Processor E-2136 (6 Core HT 3.3 Ghz, 4.5 Ghz Turbo, 8 MB)	Not Supported
Intel Xeon E Processor E-2134 (4 Core HT 3.5 Ghz, 4.5 Ghz Turbo, 8 MB)	Not Supported
Intel Xeon E Processor E-2124G (4 Core, 8 MB Cache, 3.4 GHz, 4.5 Ghz Turbo)	Integrated Intel UHD P630
Intel Xeon E Processor E-2124 (4 Core 3.4 GHz, 4.5 Ghz Turbo, 8 MB)	Not Supported
Intel Core i3-8100 Processor (4 Core, 6 MB Cache, 3.6 GHz)	Integrated Intel UHD 630
Intel Core Processor i5-8500 (6 Core, 9 MB Cache, 3.0 GHz up to 4.1 GHz Turbo)	Integrated Intel UHD 630
Intel Core i5-8600 Processor (6 Core, 9 MB Cache, 3.1 GHz up to 4.3 GHz Turbo)	Integrated Intel UHD 630
Intel Core i5-8600K Processor (6 Core, 9 MB Cache, 3.6 GHz up to 4.3 GHz Turbo)	Integrated Intel UHD 630
Intel Core i7-8700 Processor (6 Core, 12 MB Cache, 3.2 GHz up to 4.6 GHz Turbo)	Integrated Intel UHD 630
Intel Core i7-8700K Processor (6 Core, 12 MB Cache, 3.7 GHz up to 4.7 GHz Turbo)	Integrated Intel UHD 630

Memory

Table 7. Memory specifications

Minimum memory configuration	4 GB
Maximum memory configuration	64 GB
Number of slots	4
DIMM type	UDIMM

Maximum memory supported per slot

16 GB

Memory options

- 4 GB - 1 x 4 GB (Non-ECC)
- 8 GB - 2 x 4 GB (Non-ECC)
- 8 GB - 1 x 8 GB (ECC)
- 16 GB - 2 x 8 GB (Non-ECC)
- 16 GB - 2 x 8 GB (ECC)
- 32 GB - 4 x 8 GB (Non-ECC)
- 32 GB - 4 x 8 GB (ECC)
- 64 GB - 4 x 16 GB (Non-ECC)
- 64 GB - 4 x 16 GB (ECC)

NOTE: ECC memory is only supported with Xeon E Processor and Core i3 Processor SKUs.

Type

DDR4 UDIMM Non-ECC / ECC memory

Speed

2666 MHz

Precision 3930 rack memory matrix

The Precision 3930 rack memory matrix outlines an order by Channel/DIMM-number in which DIMMs are populated in the memory slots

Main Memory					CHB		CHA		CPU
Config	ECC/non-ECC	Total	DPC	Frequency	DIMM1	DIMM0	DIMM1	DIMM0	
1x8GB	ECC	8GB	1	2667			8GB		
1x16GB	ECC	16GB	1	2667			16GB		
2x8GB	ECC	16GB	1	2667	8GB		8GB		
4x8GB	ECC	32GB	2	2667	8GB	8GB	8GB	8GB	
4x16GB	ECC	64GB	2	2667	16GB	16GB	16GB	16GB	
1x4GB	non-ECC	4GB	1	2667			4GB		
1x8GB	non-ECC	8GB	1	2667			8GB		
2x4GB	non-ECC	8GB	1	2667	4GB		4GB		
1x16GB	non-ECC	16GB	1	2667			16GB		
2x8GB	non-ECC	16GB	1	2667	8GB		8GB		
4x8GB	non-ECC	32GB	2	2667	8GB	8GB	8GB	8GB	
4x16GB	non-ECC	64GB	2	2667	16GB	16GB	16GB	16GB	
Population order:					2nd	4th	1st	3rd	
DIMM Connector latch color:					W	B	W	B	
					CHB		CHA		

NOTE: To achieve optimized memory performance a single DIMM needs to be populated in both Channels A and Channel B regardless of the DIMM-number. Mixing of memory DIMM sizes is not supported.

Storage

Table 8. Storage specifications

Type	Form factor	Interface	Security option	Capacity
Four 2.5 inches Front load Hard-Disk Drives (HDD)	Approximately (2.76 x 3.959 x 0.276 inches)	Up to 6Gb/s (SATA 3.0)	OPAL /SED FIPS	Up to 8 TB
Two 3.5 inches Front load Hard-Disk Drives (HDD)	Approximately (5.79 x 4 x 1)	Up to 6Gb/s (SATA 3.0)	NA	Up to 16 TB
Two solid state drives (SSD)	M.2 2280	2x PCIe x4 NVMe on the system board (not in a bay), Up to 32 Gbps 2x M.2 PCIe x4 NVMe on Dell Ultraspeed Drive Duo Card (populated in PCIe slot 2 on Riser 1A)	SED/OPAL	Up to 4 TB

NOTE: Your computer will either support two 3.5 inch hard-drives or four 2.5 inch hard-drives, depending on the configuration.

NOTE: Front Load Hard-Disk Drives are not hot swappable.

Audio

Table 9. Audio specifications

Controller	Waves MaxxAudio Pro Support
Type	Two-channel high-definition audio
Interface	<ul style="list-style-type: none"> Universal audio jack Stereo headset

Onboard graphics

Table 10. Onboard Graphics specifications

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics 630	UMA	<ul style="list-style-type: none"> Intel Core i3 - 8100 Intel Core i5 - 8600/8500 Intel Core i7 - 8700 	Integrated	Shared system memory	DisplayPort supported through Rear USB Type-C port DP/HDMI/VGA/DVI supported through	4096x2304

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics P630	UMA	<ul style="list-style-type: none"> Intel Xeon G 	Integrated	Shared system memory	Rear USB Type-C port DP/HDMI/VGA/DVI supported through Rear USB Type-C port	4096×2304

NOTE: Please refer the processor specification section for Xeon G SKU.

NOTE: Xeon SKUs with "G" suffix support Intel UHD Graphics.

Communication

Table 11. Communication specifications

Network adapter	Integrated Intel 10/100/1000 Mb/s Ethernet (RJ-45) Integrated Aquantia 10 Gb/s Ethernet (RJ45)
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Media card-reader

Table 12. Media card-reader specifications

Type	One SD-card slot
Supported cards	<ul style="list-style-type: none"> SD SDHC SDXC

System board connectors

Table 13. System board connectors

M.2 Connectors	Two (2280 Key-M)
Serial ATA (SATA) connector	Four
Riser 1A	
PCIe X16 slot	Slot 1 (bottom): Full Height Double width PCIe16 Gen 3 or Single Width PCIe8 Gen 3
PCIe X8 slot	Slot 2 (top): Full Height Single Width PCIe8 Gen 3

Riser 1B

PCIe-32 bit

Slot 1 (bottom): Full Height PCI 32/33

Slot 2 (top): Full Height PCI 32/33

Riser 2

PCIe X4 slot

Fixed Riser for Slot 3 (on all chassis): Full Height Single Width PCIeX4 Gen 3

Ports and connectors

Table 14. Front ports and connectors

Memory card reader

SD 4.0 memory card reader

USB

- One USB 3.1 Gen2 Type-C port
- Two USB 3.1 Gen 1 Type-A ports

Audio

Universal audio jack

Table 15. Rear ports and connectors

USB

Two USB 3.1 Gen2 Type-C ports (with UMA video support)

Network adapter

- One 1 Gb RJ-45
- One 10 Gb RJ-45

Serial port

One serial port

Operating system specifications

Table 16. Operating system specifications

Operating systems supported

- Windows 10 Pro for Workstations (up to 4 cores)
- Windows 10 Pro for Workstations (4 cores plus)
- Windows 10 Pro Standard

NOTE: Red Hat Enterprise Linux and Ubuntu 16.04 will be released Post-RTS.

NOTE: Windows 10 Home Plus/Advanced factory installed support will be Post-RTS.

Operating conditions

For information on Product Safety, EMC and Environmental Data Sheets http://www.dell.com/content/topics/global.aspx/about_dell/values/regulatory_compliance/dec_conform?c=us&cs=04&l=en&s=bsd&redirect=1

Table 17. Operating conditions

Temperature range	<ul style="list-style-type: none">· Operating :10 °C to 35 °C (50 °F to 95 °F) for all system configurations.· Operating :10 °C to 45 °C (50 °F to 113 °F) for specific system configurations.· Storage: -40 °C to 65 °C (-40 °F to 149 °F)
Relative humidity	<ul style="list-style-type: none">· Operating : 10% to 85% (Max dew point temperature = 40 °C) (non-condensing)· Storage: 10% to 90% (Max dew point temperature = 60 °C) (non-condensing)
Airborne contaminant level	G1 as defined by ISA-S71.04-1985
Vibration	Vibration (maximum)*: operating=0.26 GRMS; Storage=2.0 GRMS
Shock	Shock (maximum): operating=10 G†; Storage=71 G‡

NOTE:

*Measured using a random vibration spectrum that simulates user environment.† Measured using a 2 ms half-sine pulse when the hard drive is in use.

‡ Measured using a 2 ms half-sine pulse when the hard-drive head is in parked position.

Support policy

For more information on support policy, see the knowledge base articles [13290](#), [18925](#), and [18955](#).

System setup

System setup enables you to manage your tablet/desktop/notebook hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- [BIOS overview](#)
- [Boot menu](#)
- [Navigation keys](#)
- [Boot sequence](#)
- [System setup options](#)
- [General options](#)
- [System information](#)
- [Video screen options](#)
- [Security](#)
- [Secure boot options](#)
- [Intel software guard extensions options](#)
- [Performance](#)
- [Power management](#)
- [Thermal configuration](#)
- [Post behavior](#)
- [Manageability](#)
- [Virtualization support](#)
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- [Updating the BIOS in Windows](#)
- [Updating BIOS on systems with BitLocker enabled](#)
- [Updating your system BIOS using a USB flash drive](#)
- [Updating the Dell BIOS in Linux and Ubuntu environments](#)
- [Flashing the BIOS from the F12 One-Time boot menu](#)
- [System and setup password](#)

BIOS overview

 **CAUTION:** Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

NOTE: Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

Boot menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system. Diagnostics and BIOS Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices in the system. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

The options are:

- UEFI Boot:
 - Windows Boot Manager
- Other Options:
 - BIOS Setup
 - BIOS Flash Update
 - Diagnostics
 - Change Boot Mode Settings

Navigation keys

NOTE: For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.

NOTE: For the standard graphics browser only.

Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.
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Boot sequence

Boot sequence allows you to bypass the system setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access system setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable drive (if available)
- STXXXX drive

① | **NOTE:** XXX denotes the SATA drive number.

- Optical drive (if available)
- SATA hard drive (if available)
- Diagnostics

① | **NOTE:** Choosing Diagnostics, will display the ePSA diagnostics screen.

The boot sequence screen also displays the option to access the system setup screen.

System setup options

① | **NOTE:** Depending on the tabletcomputernotebook and its installed devices, the items listed in this section may or may not appear.

General options

Table 18. General

Option	Description
System Information	<p>Displays the following information:</p> <ul style="list-style-type: none"> • System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code. • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM A Size, DIMM B Size, DIMM C Size, DIMM D Size. • PCI Information: Displays Slot1, Slot2, Slot3. • Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology. • Device Information: Displays SATA-0, SATA 1, SATA 2, SATA 3, M.2 PCIe SSD-0, M.2 PCIe SSD-1, LOM MAC Address, LOM2 MAC Address, Video Controller, Audio Controller.
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list.
Advanced Boot Options	<p>Allows you to select the Enable Legacy Option ROMs option, when in UEFI boot mode. By default, this option is selected.</p> <ul style="list-style-type: none"> • Enable Legacy Option ROMs • Enable Attempt Legacy Boot • Default— None Selected
UEFI Boot Path Security	<p>This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu.</p> <ul style="list-style-type: none"> • Always, Except Internal HDD—Default • Always • Never
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

System information

Table 19. System Configuration

Option	Description
Integrated NIC	Allows you to control the on-board LAN controller. The option 'Enable UEFI Network Stack' is not selected by default. The options are: <ul style="list-style-type: none">• Disabled• Enabled• Enabled w/PXE (default)
Integrated NIC2	Allows you to control the on-board LAN controller. The option 'Enable UEFI Network Stack' is not selected by default. The options are: <ul style="list-style-type: none">• Disabled• Enabled (default)• Enabled w/PXE
UEFI Network Stack	Allows pre-OS and early OS networking features to use any enabled NICs. this may be used without PXE turned on. <ul style="list-style-type: none">• Enable UEFI Network Stack• Default - (Disabled)
Serial Port	Determines how the built-in serial port operates. Choose any one option: <ul style="list-style-type: none">• Disabled• COM1 (selected by default)• COM2• COM3• COM4
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. <ul style="list-style-type: none">• Disabled = The SATA controllers are hidden• AHCI = SATA is configured for AHCI mode• RAID ON = SATA is configured to support RAID mode (selected by default)
Drives	Allows you to enable or disable the various drives on-board: <ul style="list-style-type: none">• SATA-0 (enabled by default)• SATA-1 (enabled by default)• SATA-2 (enabled by default)• SATA-3 (enabled by default)• M.2 PCIe SSD-0 (enabled by default)• M.2 PCIe SSD-1 (enabled by default)
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. The Enable Smart Reporting option is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for: <ul style="list-style-type: none">• Enable USB Boot Support• Enable Front USB Ports

Option	Description
Front USB Configuration	<ul style="list-style-type: none"> • Enable Rear USB Ports • Enable Internal USB Port <p>All the options are enabled by default.</p> <p>Allows you to enable or disable the front USB ports. All the ports are enabled by default.</p>
Rear USB Configuration	<ul style="list-style-type: none"> • Front Port 1 (Left) • Front Port 2 (Center) • Front Port 3 (Right)* <p>All the options are enabled by default.</p> <p>Allows you to enable or disable the back USB ports. All the ports are enabled by default.</p>
Internal USB Configuration	<ul style="list-style-type: none"> • Rear Port 1 (Left)* • Rear Port 2 (Right)* <p>All the options are enabled by default.</p> <p>Allows you to enable or disable the Internal USB port. The port is enabled by default.</p>
Thunderbolt Adapter Configuration	<ul style="list-style-type: none"> • Internal Port 1 <p>When enabled the Thunderbolt technology feature and associated ports and adapters are enabled. This option is enabled by default.</p> <ul style="list-style-type: none"> • Enable Thunderbolt Technology Support (Default) • Security Level - No Security • Security Level -User Authorization (Default) • Security Level - Secure Connect • Security Level - Display Port Only
Audio	<p>Allows you to enable or disable the integrated audio controller. The option Enable Audio is selected by default.</p> <ul style="list-style-type: none"> • Enable Microphone (Default)
Dust Filter Maintenance	<p>Allows you to enable or disable BIOS messages for maintaining the optional dust filter installed in your computer. BIOS will generate a pre-boot reminder to clean or replace the dust filter based on the interval set. The option Disabled is selected by default.</p> <ul style="list-style-type: none"> • Disabled • 15 days • 30 days • 60 days • 90 days • 120 days • 150 days • 180 days
Miscellaneous Devices	<p>Allows you to enable or disable various on board devices.. The option Enable Secure Digital (SD) Card is selected by default.</p> <ul style="list-style-type: none"> • Enable Secure Digital (SD) Card • Secure Digital (SD) Card Boot

Option	Description
	<ul style="list-style-type: none"> Secure Digital (SD) Card Read-Only Mode
Front Power Button	<p>Allows you to enable or disable the power button on the front panel. The option Enable Front Power button is selected by default.</p> <ul style="list-style-type: none"> Enable Front Power Button Disabled Front Power Button

Video screen options

Table 20. Video

Option	Description
Multi-Display	<p>Allows you to enable or disable Multi-Display. It has to be enabled for windows 7 or later.</p> <ul style="list-style-type: none"> Enable Multi-Display (default) <p>NOTE: This feature is not applicable to other operating systems.</p>
Primary Display	<p>Allows you to select the primary display when multiple controllers are available in the system.</p> <ul style="list-style-type: none"> Auto (default) Intel HD Graphics ATI Radeon HD Graphics <p>NOTE: If you do not select Auto, the on-board graphics device will be present and enabled.</p>

Security

Table 21. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.
System Password	Allows you to set, change, and delete the system password.
Internal HDD-0 Password	Allows you to set, change, and delete the computer's internal HDD.
Strong Password	This option lets you enable or disable strong passwords for the system.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for an administrative password and the system password. The range of characters is between 4 and 32.
Password Bypass	<p>This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart.</p> <ul style="list-style-type: none"> Disabled — Always prompt for the system and internal HDD password when they are set. This option is disabled by default. Reboot Bypass — Bypass the password prompts on Restarts (warm boots). <p>NOTE: The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.</p>
Password Change	This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set.

Option	Description
	Allow Non-Admin Password Changes - This option is enabled by default.
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. This option is selected by default. Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS)
TPM 2.0 Security	<p>Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system.</p> <ul style="list-style-type: none"> • TPM On (default) • Clear • PPI Bypass for Enable Commands • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable (default) • Key Storage Enable (default) • SHA - 256 (default) <p>Choose any one option:</p> <ul style="list-style-type: none"> • Disabled • Enabled (default)
Computrace	<p>This field lets you Activate or Disable the BIOS module interface of the optional Computrace Service from Absolute Software. Enables or disables the optional Computrace service designed for asset management.</p> <ul style="list-style-type: none"> • Deactivate - This option is selected by default. • Disable • Activate
Chassis Intrusion	<p>This field controls the chassis intrusion feature.</p> <p>Choose any one of the option:</p> <ul style="list-style-type: none"> • Disabled (default) • Enabled • On-Silent
OROM Keyboard Access	<p>This option determines whether users are able to enter Option ROM Configuration screens via hotkeys during boot.</p> <ul style="list-style-type: none"> • Enabled (Default) • Disabled • One Time Enable
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. This option is not set by default.
Master Password Lockout	Allows you to disable master password support. Hard Disk passwords need to be cleared before the settings can be changed. This option is not set by default.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default.

Secure boot options

Table 22. Secure Boot

Option	Description
Secure Boot Enable	<p>Allows you to enable or disable Secure Boot feature</p> <ul style="list-style-type: none">Secure Boot Enable <p>This option is selected by default.</p>
Secure Boot Mode	<p>Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures.</p> <ul style="list-style-type: none">Deployed Mode (default)Audit Mode
Expert key Management	<p>Allows you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options are:</p> <ul style="list-style-type: none">PK (default)KEKdbdbx <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p> <ul style="list-style-type: none">Save to File- Saves the key to a user-selected fileReplace from File- Replaces the current key with a key from a user-selected fileAppend from File- Adds a key to the current database from a user-selected fileDelete- Deletes the selected keyReset All Keys- Resets to default settingDelete All Keys- Deletes all the keys <p>NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.</p>

Intel software guard extensions options

Table 23. Intel software guard extensions

Option	Description
Intel SGX Enable	<p>This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS.</p> <p>Click one of the following options:</p> <ul style="list-style-type: none">DisabledEnabledSoftware controlled—Default
Enclave Memory Size	<p>This option sets SGX Enclave Reserve Memory Size</p>

Option	Description
	Click one of the following options: <ul style="list-style-type: none"> • 32 MB • 64 MB • 128 MB—Default

Performance

Table 24. Performance

Option	Description
Multi Core Support	<p>This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores.</p> <ul style="list-style-type: none"> • All—Default • 1 • 2 • 3
Intel SpeedStep	<p>Allows you to enable or disable the Intel SpeedStep mode of processor.</p> <ul style="list-style-type: none"> • Enable Intel SpeedStep <p>This option is set by default.</p>
C-States Control	<p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> • C states <p>This option is set by default.</p>
Cache Prefetch	<p>Allows you to enable or disable the MLC streamer and MLC spatial prefetcher of te processor</p> <ul style="list-style-type: none"> • Hardware Prefetcher • Adjacent Cache Prefetcher <p>Both options are enabled by default.</p>
Intel TurboBoost	<p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> • Enable Intel TurboBoost <p>This option is set by default.</p>
HyperThread Control	<p>Allows you to enable or disable HyperThreading in the processor.</p> <ul style="list-style-type: none"> • Disabled • Enabled (Default)

Power management


Table 25. Power Management

Option	Description
AC Recovery	<p>Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to:</p> <ul style="list-style-type: none">• Power Off—Default• Power On• Last Power State <p>This option is Power Off by default.</p>
Enable Intel Speed Shift Technology	<p>Allows you to enable or disable Intel Speed Shift Technology support. The option Enable Intel Speed Shift Technology is set by default.</p>
Auto On Time	<p>Sets time to automatically turn on the computer. Time is kept in standard 12-hour format (hour:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields.</p> <p>NOTE: This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if Auto Power is set to disabled.</p>
Wake on LAN	<p>This option allows the computer to power up from the off state when triggered by a special LAN signal. This feature only works when the computer is connected to AC power supply.</p> <ul style="list-style-type: none">• Disabled - Does not allow the system to power on by special LAN signals when it receives a wake-up signal from the LAN.• LAN - Allows the system to be powered on by special LAN.• LAN Only - Allows the system to be powered on by special LAN signals.• LAN with PXE Boot - A wakeup packet sent to the system in either the S4 or S5 state, that will cause the system to wake-up and immediately boot to PXE. <p>This option is Disabled by default.</p>
Block Sleep	<p>Allows you to block entering to sleep in OS environment. This option is disabled by default.</p>

Thermal configuration

Table 26. Thermal configuration

Option	Description
Thermal Mode	<p>Allows you to determine the speed of the system fans. This option is enabled by default.</p> <ul style="list-style-type: none">• Low• Auto (Default) <p>This option is set to Auto by default.</p> <p>NOTE: This setting applies to all the Zone</p>
CPU Zone	<p>Allows you to control the minimum and maximum fan speed in the CPU Zone. The range of characters is between 0 and 100.</p> <p>NOTE: When Thermal Mode is set in auto, Zero is the optimal speed level.</p>
PSU Zone	<p>Allows you to control the minimum and maximum fan speed in the PSU Zone. The range of characters is between 0 and 100.</p> <p>NOTE: When Thermal Mode is set in auto, Zero is the optimal speed level.</p>

Option	Description
PCIe Zone	Allows you to control the minimum and maximum fan speed in the PCIe Zone. The range of characters is between 0 and 100.  NOTE: When Thermal Mode is set in auto, Zero is the optimal speed level.

Post behavior

Table 27. POST Behavior

Option	Description
Numlock LED	Allows you to enable or disable the Numlock feature when your computer starts. This option is enabled by default.
Keyboard Errors	Allows you to enable or disable the keyboard error reporting when the computer starts. The option Enable Keyboard Error Detection is enabled by default.
Extend BIOS POST Time	This option creates an additional pre-boot delay. <ul style="list-style-type: none"> • 0 seconds (default) • 5 seconds • 10 seconds
Full Screen Logo	This option will display full screen logo if your image match screen resolution. The option Enable Full Screen Logo is not set by default.
Warnings and Errors	This option causes the boot process to only pause when warning or errors are detected. Choose any one of the option: <ul style="list-style-type: none"> • Prompt on Warnings and Errors—Default • Continue on Warnings • Continue on Warnings and Errors

Manageability

Table 28. Manageability

Option	Description
USB provision	This option is not selected by default.
MEBx Hotkey	This option is selected by default.

Virtualization support


Table 29. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by the Intel Virtualization technology. <ul style="list-style-type: none"> • Enable Intel Virtualization Technology

Option	Description
	This option is set by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by the Intel Virtualization technology for direct I/O. <ul style="list-style-type: none"> • Enable VT for Direct I/O This option is set by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. <ul style="list-style-type: none"> • Trusted Execution This option is not set by default.

Maintenance

Table 30. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	Controls the SERR message mechanism. This option is set by default. Some graphics cards require that the SERR message mechanism be disabled.
BIOS Downgrade	Allows you to flash previous revisions of the system firmware. <ul style="list-style-type: none"> • Allow BIOS Downgrade This option is set by default.
Data Wipe	Allows you to securely erase data from all internal storage devices. <ul style="list-style-type: none"> • Wipe on Next Boot This option is not set by default.
BIOS Recovery	BIOS Recovery from Hard Drive —This option is set by default. Allows you to recover the corrupted BIOS from a recovery file on the HDD or an external USB key. BIOS Auto-Recovery — Allows you to recover the BIOS automatically.  NOTE: BIOS Recovery from Hard Drive field should be enabled. Always Perform Integrity Check —Performs integrity check on every boot.
First Power On Date	Allows you the set Ownership date. The option Set Ownership Date is not set by default.

System logs

Table 31. System Logs

Option	Description
BIOS events	Allows you to view and clear the System Setup (BIOS) POST events.

Advanced configuration

Table 32. Advanced configuration

Option	Description
ASPM	Allows you to set the ASPM level. <ul style="list-style-type: none">• Auto (default) - There is handshaking between the device and PCI Express hub to determine the best ASPM mode supported by the device• Disabled - ASPM power management is turned off at all time• L1 Only - ASPM power management is set to use L1
PCIe LinkSpeed	Allows the user to select the max PCIe link speed. <ul style="list-style-type: none">• Auto (Default)• Gen 1• Gen 2

Updating the BIOS in Windows

It is recommended to update your BIOS (System Setup), when you replace the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power outlet.

NOTE: If BitLocker is enabled, it must be suspended prior to updating the system BIOS, and then re-enabled after the BIOS update is completed.

- 1 Restart the computer.
- 2 Go to **Dell.com/support**.
 - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
 - Click **Detect Product** and follow the instructions on screen.
- 3 If you are unable to detect or find the Service Tag, click **Choose from all products**.
- 4 Choose the **Products** category from the list.

NOTE: Choose the appropriate category to reach the product page

- 5 Select your computer model and the **Product Support** page of your computer appears.
- 6 Click **Get drivers** and click **Drivers and Downloads**.
The Drivers and Downloads section opens.
- 7 Click **Find it myself**.
- 8 Click **BIOS** to view the BIOS versions.
- 9 Identify the latest BIOS file and click **Download**.
- 10 Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.
- 11 Click **Save** to save the file on your computer.
- 12 Click **Run** to install the updated BIOS settings on your computer.

Follow the instructions on the screen.

Updating BIOS on systems with BitLocker enabled

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <http://www.dell.com/support/article/sln153694>

Updating your system BIOS using a USB flash drive

If the system cannot load into Windows but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

NOTE: You will need to use a bootable USB Flash drive. Please refer to the following article for further details: <http://www.dell.com/support/article/sln143196>

- 1 Download the BIOS update .EXE file to another system.
- 2 Copy the file e.g. O9010A12.EXE onto the bootable USB Flash drive.
- 3 Insert the USB Flash drive into the system that requires the BIOS update.
- 4 Restart the system and press F12 when the Dell Splash logo appears to display the One Time Boot Menu.
- 5 Using arrow keys, select **USB Storage Device** and click Return.
- 6 The system will boot to a Diag C:\> prompt.
- 7 Run the file by typing the full filename e.g. O9010A12.exe and press Return.
- 8 The BIOS Update Utility will load, follow the instructions on screen.

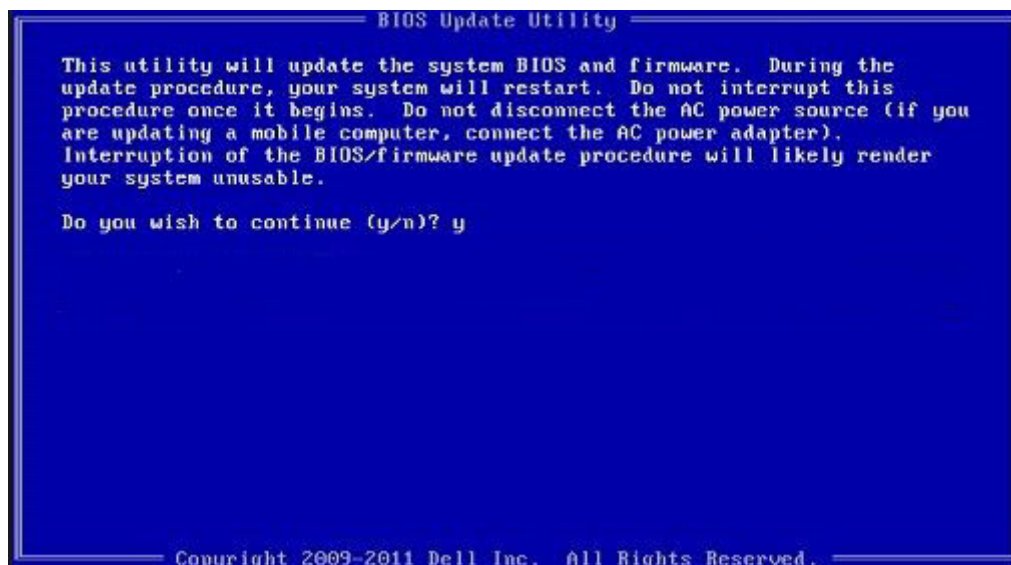


Figure 1. DOS BIOS Update Screen

Updating the Dell BIOS in Linux and Ubuntu environments

If you want to update the system BIOS in a Linux environment such as Ubuntu, see <http://www.dell.com/support/article/sln171755>.

Flashing the BIOS from the F12 One-Time boot menu

Updating your system BIOS using a BIOS update .exe file copied to a FAT32 USB key and booting from the F12 one time boot menu.

BIOS Update

You can run the BIOS update file from Windows using a bootable USB key or you can also update the BIOS from the F12 One-Time boot menu on the system.

Most Dell systems built after 2012 have this capability and you can confirm by booting your system to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your system. If the option is listed, then the BIOS supports this BIOS update option.

NOTE: Only systems with BIOS Flash Update option in the F12 One-Time Boot Menu can use this function.

Updating from the One-Time Boot Menu

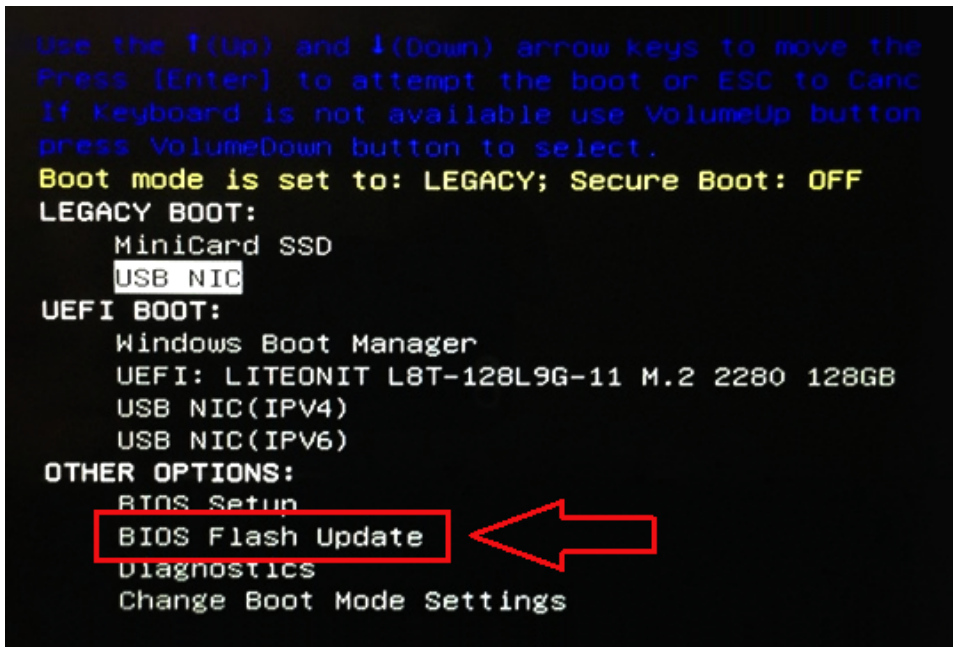
To update your BIOS from the F12 One-Time boot menu, you will need:

- USB key formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB key
- AC power adapter connected to the system
- Functional system battery to flash the BIOS

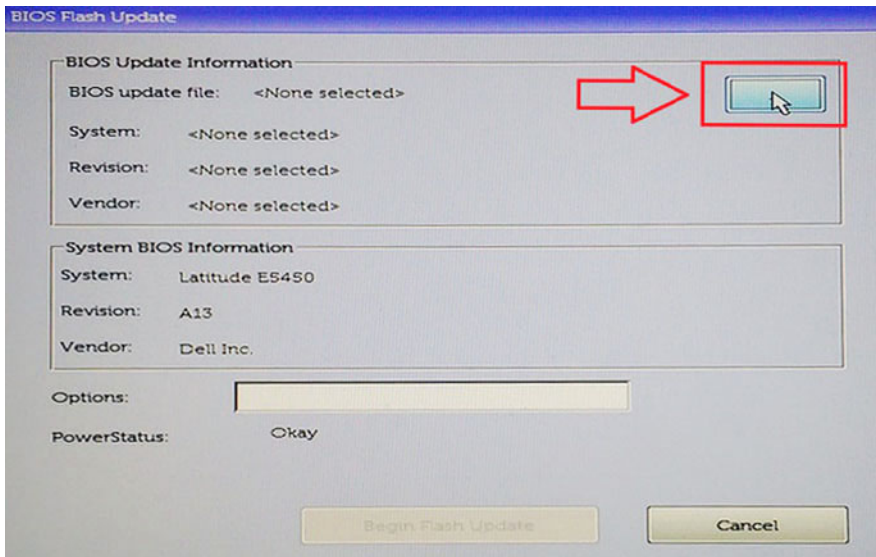
Perform the following steps to execute the BIOS update flash process from the F12 menu:

CAUTION: Do not power off the system during the BIOS update process. Powering off the system could make the system fail to boot.

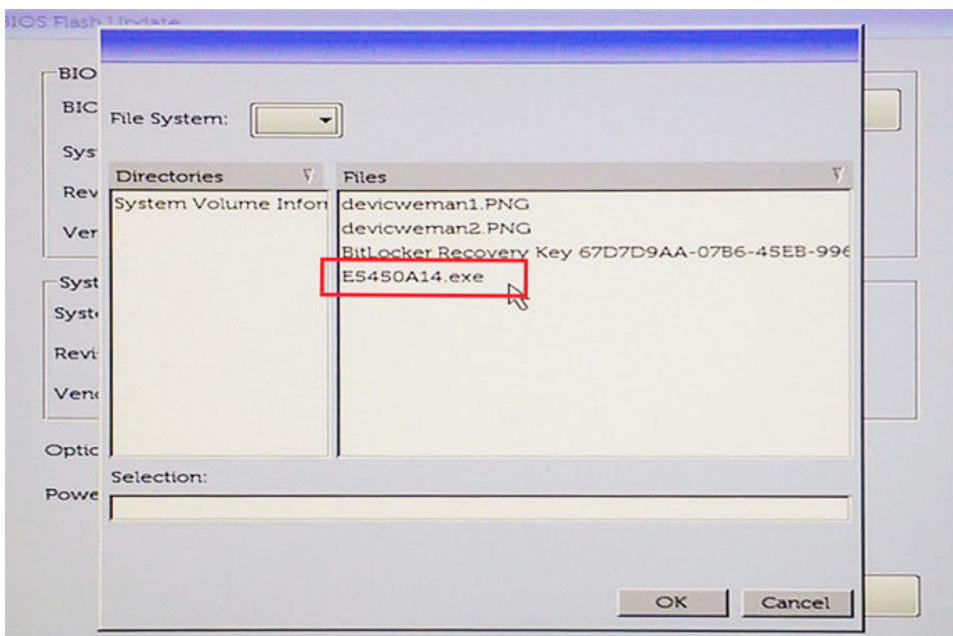
- 1 From a power off state, insert the USB key where you copied the flash into a USB port of the system .
- 2 Power on the system and press the F12 key to access the One-Time Boot Menu, Highlight BIOS Flash Update using the arrow keys then press **Enter**.



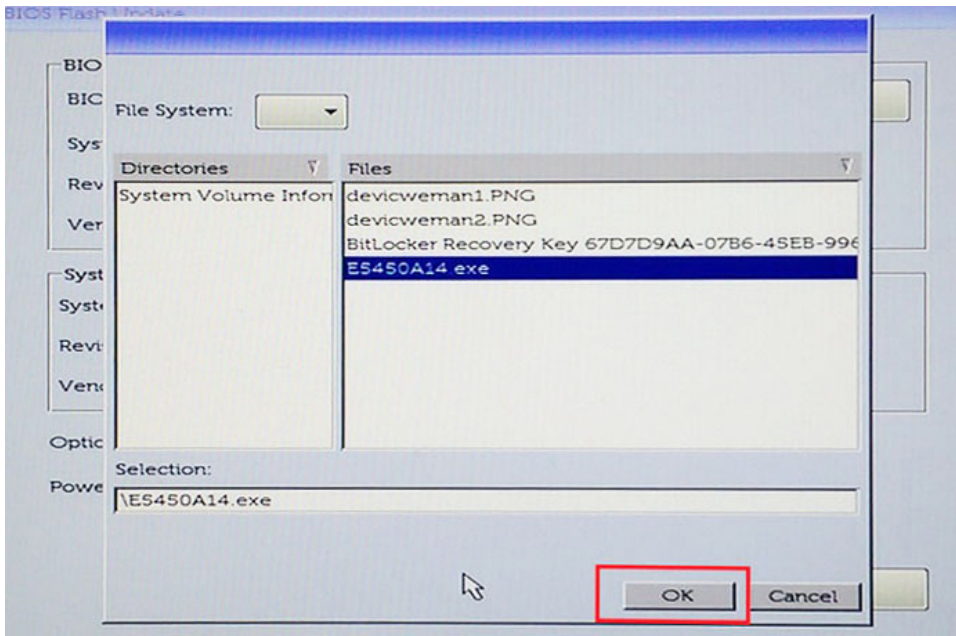
- 3 The Bios flash menu will open then click the browse button.



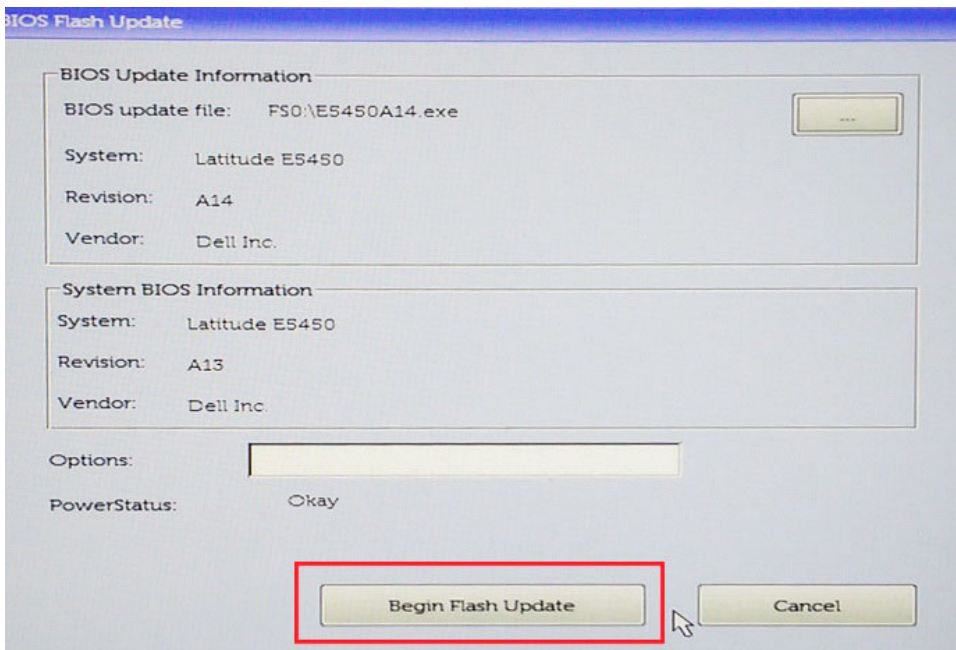
- 4 The E5450A14.exe file is shown as an example in the following screenshot. The actual file name may vary.



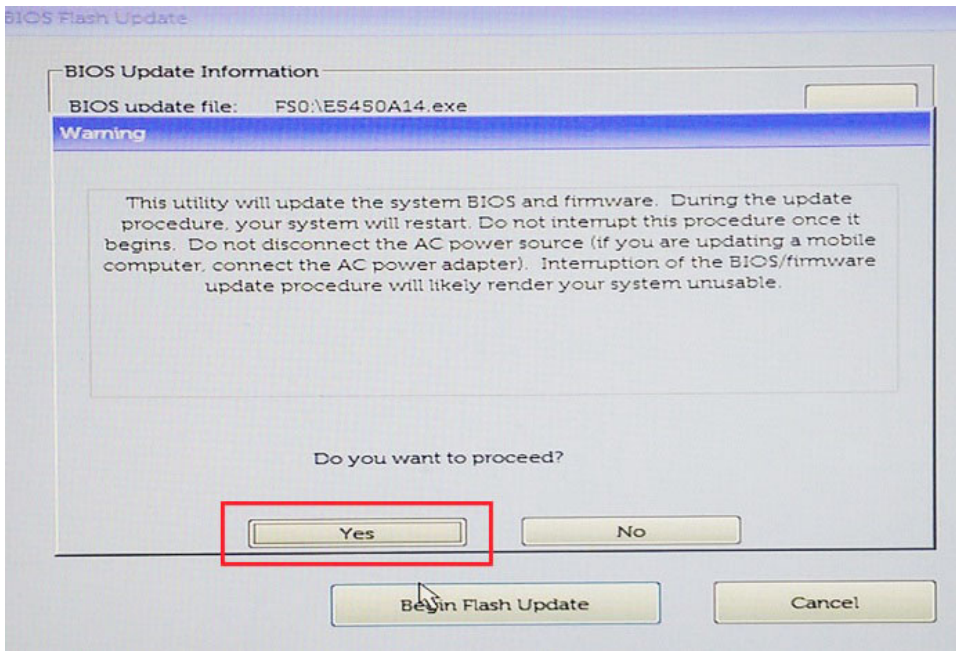
- 5 Once the file is selected, it will show in the file selection box and you can click the OK button to continue.



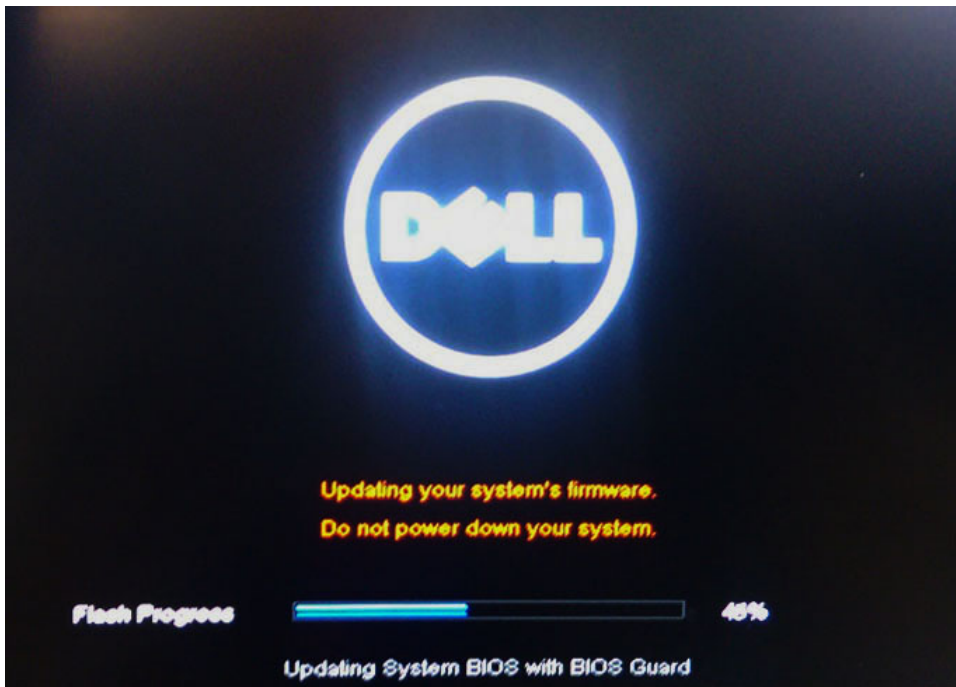
- 6 Click the **Begin Flash Update** button.



- 7 A warning box is displayed asking you if you want to proceed. Click the Yes button to begin the flash.



- 8 At this point the BIOS flash will execute, the system will reboot and then the BIOS flash will start and a progress bar will show the progress of the flash. Depending on the changes included in the update, the progress bar may go from zero to 100 multiple times and the flash process could take as long as 10 minutes. Generally this process takes two to three minutes.



- 9 Once complete, the system will reboot and the BIOS update process is completed.

System and setup password

Table 33. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.

You can create a system password and a setup password to secure your computer.

⚠ CAUTION: The password features provide a basic level of security for the data on your computer.

⚠ CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

ℹ NOTE: System and setup password feature is disabled.

Assigning a system password and setup password

You can assign a new **System Password** only when the status is in **Not Set**.

To enter the system setup, press F2 immediately after a power-on or re-boot.

- 1 In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
- 2 Select **System Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (;), ([), (\), (]), (^).
- 3 Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
- 4 Press Esc and a message prompts you to save the changes.
- 5 Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system setup password

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

To enter the System Setup, press F2 immediately after a power-on or reboot.

- 1 In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
- 2 In the **System Security** screen, verify that **Password Status** is **Unlocked**.
- 3 Select **System Password**, alter or delete the existing system password and press Enter or Tab.
- 4 Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

ℹ NOTE: If you change the System and/or Setup password, re-enter the new password when promoted. If you delete the System and/or Setup password, confirm the deletion when promoted.

- 5 Press Esc and a message prompts you to save the changes.
- 6 Press Y to save the changes and exit from System Setup.
The computer reboot.

Getting help

Contacting Dell

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

- 1 Go to **Dell.com/support**.
- 2 Select your support category.
- 3 Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
- 4 Select the appropriate service or support link based on your need.