


# Precision 3630 Tower

## Setup and Specifications Guide

1



## Notes, cautions, and warnings

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

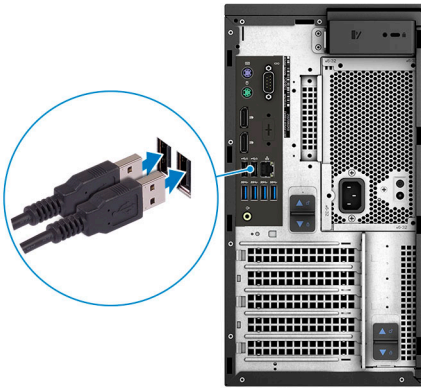
 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

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

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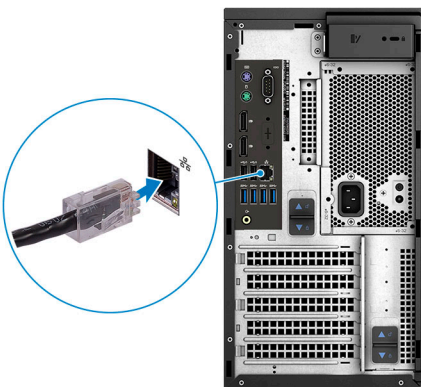
# Set up your computer

1. Connect the keyboard and mouse.



2. Connect to your network using a cable, or connect to a wireless network.

**i** **NOTE:** The wireless network card is optional and needs to be purchased separately.

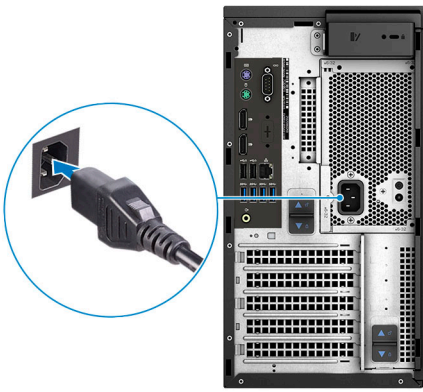


3. Connect the display.



**i** **NOTE:** If you ordered your computer with a discrete graphics card, the HDMI and the display ports on the back panel of your computer are covered. Connect the display to the discrete graphics card.

4. Connect the power cable.

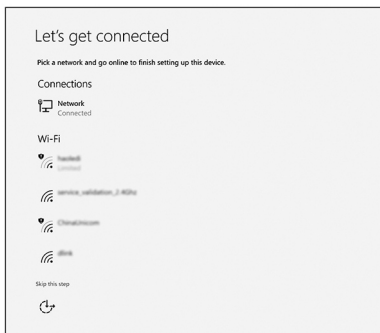


5. Press the power button.

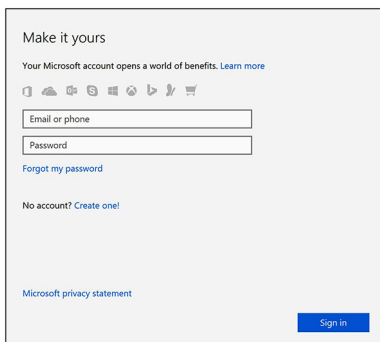


6. Follow the instructions on the screen to finish Windows setup:

a. Connect to a network.



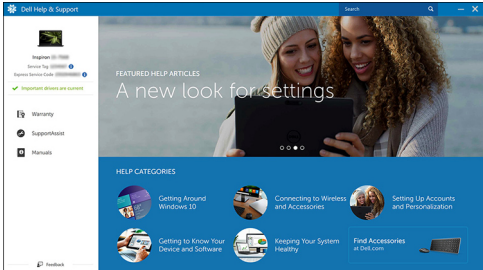



b. Sign-in to your Microsoft account or create a new account.



7. Locate Dell apps.

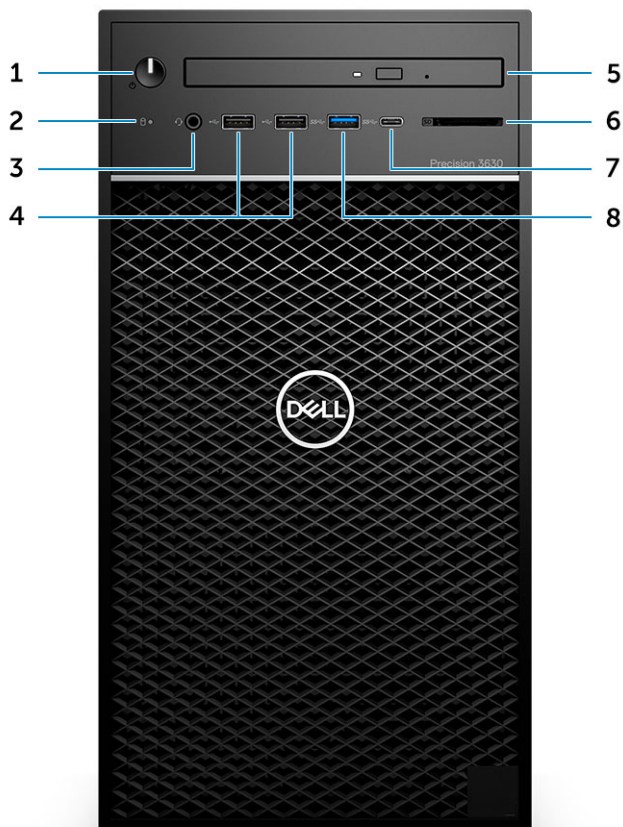
**Table 1. Locate Dell apps**

Icons	Functions
	<p>Register your computer</p>
	<p>Dell Help &amp; Support</p> 
	<p>SupportAssist — Check and update your computer</p>

## Chassis

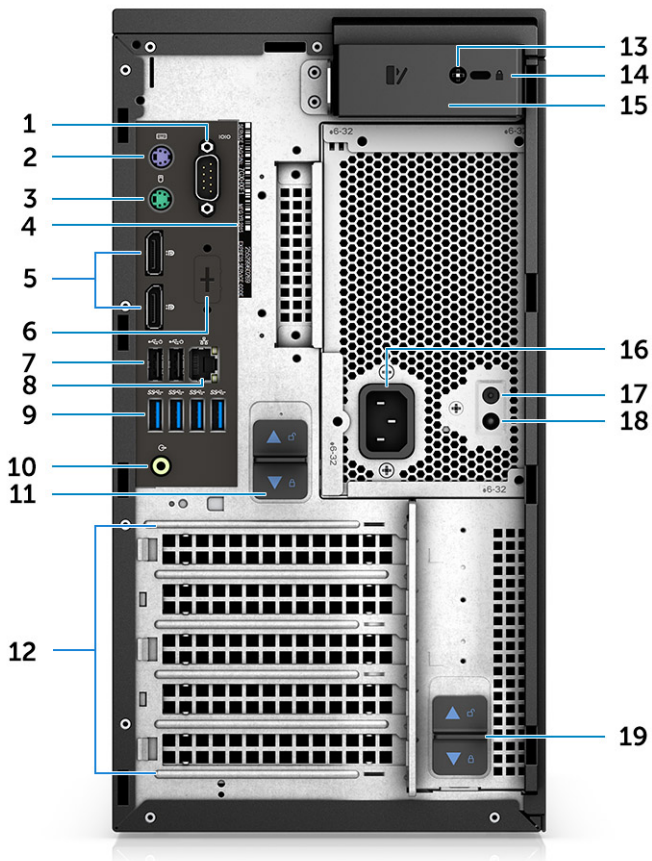
This chapter illustrates the multiple chassis views along with the ports and connectors and also explains the FN hot key combinations.

### Front view



1. Power button/Diagnostics indicator
2. Hard drive activity LED
3. 3.5 mm stereo headset/mic combo
4. USB 2.0 Type-A ports
5. Optical drive/CAC Reader (Optional)
6. Media card reader (Optional)
7. USB 3.1 Type-C port
8. USB 3.0 Type-A port

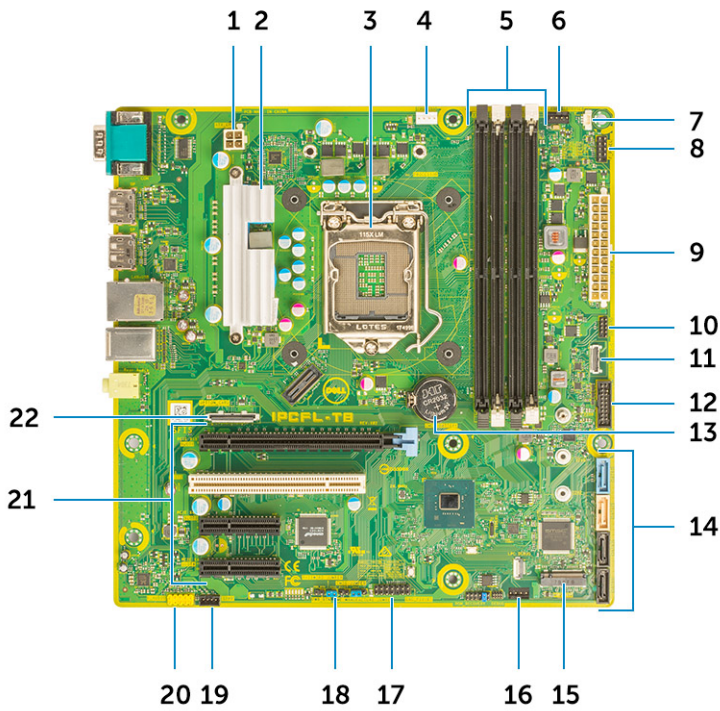
# Back view



- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Serial port</li> <li>2. PS2 port (Keyboard)</li> <li>3. PS2 port (Mouse)</li> <li>5. DisplayPort x 2</li> <li>7. Two USB 2.0 Type-A (with SmartPower)</li> <li>9. 4 x USB 3.1 Gen1 ports</li> <li>11. PSU hinge release latch</li> <li>12. Expansion card slots</li> <li>13. Side cover safety screw</li> <li>15. Cover release latch</li> <li>17. PSU Built in Self Test (BIST) button</li> <li>19. PSU hinge release latch</li> </ol> | <ol style="list-style-type: none"> <li>4. Service Tag label</li> <li>6. Placeholder for optional VGA, DP, HDMI, Type-C daughterboards</li> <li>8. RJ45 network connector (speed up to 1000 Mbps)</li> <li>10. Audio line out</li> <li>14. Kensington/padlock slot</li> <li>16. Power connector port</li> <li>18. PSU Built in Self Test (BIST) LED</li> </ol> |
|---|---|



# Motherboard layout



## Tower system board components

1. Power (CPU)
2. VR Heatsink (Available only with 95 W heat sink solution)
3. Processor socket
4. CPU fan connector
5. Memory module connector
6. System fan connector
7. Intruder switch connector
8. Power button module connector
9. ATX PSU power connector
10. SD Card reader connector
11. Front panel USB Type-C connector
12. Front USB connector
13. Coin cell battery
14. SATA connectors
15. M.2 connector
16. Front fan connector
17. CAC\_PIV/BT connector
18. Password Jumper
19. Speaker connector
20. Audio connector
21. PCIe slots (Top to Bottom):

**NOTE:** Computers purchased before July, 19 did not have provision for front fan and old system board may not have this connector.

- a. Full Height PCIe x16
- b. PCI x1
- c. Two Full Height PCIe x4

22. Optional card connector (VGA, HDMI, DP,USB Type-C)

## System 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 information

**Table 2. System information**

Feature	Specifications
Chipset	Intel C246 chipset
DRAM bus width	64-bit
FLASH EPROM	SP1 128 Mbits
PCIe bus	8 GHz
External bus frequency	DMI 3.0-8GT/s

### Processor

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

**Table 3. Processor specifications**

Type	UMA Graphics
<b>Intel Xeon E Processors:</b>	
Intel Xeon E Processor E-2224 (4 Core, 4T, 8 MB cache, 3.3 GHz, 4.5 GHz Turbo, 71 W)	None
Intel Xeon E Processor E-2224G (4 Core, 4T, 8 MB cache, 3.4 GHz, 4.7 GHz Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2236 (6 Core, 12T, 12 MB Cache, 3.4 GHz, 4.8 Ghz, Turbo, 71 W )	None
Intel Xeon E Processor E-2246G (6 Core, 12T, 12 MB Cache, 3.5 GHz, 4.8 Ghz, Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2274G (4 Core 8T, 8 MB Cache, 3.5 GHz, 4.9 GHz, Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2286G (6 Core, 12T, 12 MB Cache, 3.8 GHz, 4.9 GHz, Turbo, 95 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2124 (4 Core, 8 MB Cache, 3.4 GHz, 4.5 GHz Turbo, 71 W)	None

**Table 3. Processor specifications (continued)**

Type	UMA Graphics
Intel Xeon E Processor E-2124G (4 Core, 8 MB Cache, 3.4 GHz, 4.5 GHz Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2136 (6 Core HT, 12 MB Cache, 3.3 Ghz, 4.5 GHz Turbo, 71 W)	None
Intel Xeon E Processor E-2146G (6 Core 12T, 12 MB Cache, 3.5 GHz, 4.5 Ghz Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2174G (4 Core 8T, 8 MB Cache, 3.8 Ghz, 4.7 GHz Turbo, 80 W)	Intel UHD Graphics P630
Intel Xeon E Processor E-2186G (6 Core 12T, 12 MB Cache, 3.8 Ghz, 4.7 GHz Turbo, 95 W)	Intel UHD Graphics P630
<b>Intel Core Processors:</b>	
Intel Core Processor i3-9100 (4 Core, 4T, 6 MB Cache, 4.0 GHz, 65 W)	Intel UHD Graphics 630
Intel Core Processor i5-9500 (6 Core, 6T, 9 MB Cache, 3.0 GHz, 4.0 GHz Turbo, 65 W)	Intel UHD Graphics 630
Intel Core Processor i5-9600 (6 Core, 6T, 9 MB Cache, 3.6 GHz, 4.60 GHz Turbo, 65 W)	Intel UHD Graphics 630
Intel Core Processor i7-9700 (8 Core, 8T, 12 MB Cache, 3.6 GHz, 4.70 GHz Turbo, 65 W)	Intel UHD Graphics 630
Intel Core Processor i7-9700K (8 Core, 8T, 12 MB Cache, 3.6 GHz, 4.90 GHz Turbo, 95 W )	Intel UHD Graphics 630
Intel Core Processor i9-9900 (8 Core, 16 MB Cache, 3.1 Ghz, 5.0 Ghz Turbo)	Intel UHD Graphics 630
Intel Core Processor i9-9900K (8 Core, 16 MB Cache, 3.6 Ghz, 5.0 Ghz Turbo)	Intel UHD Graphics 630
Intel Core Processor i3-8100 (4 Core, 4T, 6 MB Cache, 3.6 GHz, 65 W)	Intel HD Graphics 630
Intel Core Processor i5-8500 (6 Core, 6T, 9 MB Cache, 3.0 GHz, 4.1 GHz Turbo, 65 W)	Intel HD Graphics 630
Intel Core Processor i5-8600 (6 Core, 6T, 9 MB Cache, 3.1 GHz, 4.3 GHz, Turbo, 65 W)	Intel HD Graphics 630
Intel Core Processor i7-8700 (6 Core, 12T, 12 MB Cache, 3.20 GHz, 4.6 GHz, Turbo, 65 W)	Intel HD Graphics 630
Intel Core Processor i7-8700K (6 Core, 12T, 12 MB Cache, 3.7 GHz, 4.7 GHz, Turbo, 91 W)	Intel HD Graphics 630
<b>Intel Pentium Gold Processors:</b>	
Intel Pentium Gold G5420 (2 Core, 4T, 4 MB Cache, 3.6 GHz , 65 W)	Intel UHD Graphics 610
Intel Pentium Gold G5400 (2 Core, 4T, 4 MB Cache, 3.6 GHz , 65 W)	Intel UHD Graphics 610

# Memory

**Table 4. Memory specifications**

Feature	Specifications
Minimum memory configuration	4 GB
Maximum memory configuration	128 GB
Number of slots	4 UDIMM slots
Maximum memory supported per slot	32 GB
Memory options	<ul style="list-style-type: none"> <li>• 4 GB DDR4 (1 x 4 GB) - Non-ECC</li> <li>• 8 GB DDR4 (2 x 4 GB) - Non-ECC</li> <li>• 8 GB DDR4 (1 x 8 GB) - ECC/ Non-ECC</li> <li>• 16 GB DDR4 (2 x 8 GB) - ECC/ Non-ECC</li> <li>• 16 GB DDR4 (4 x 4 GB) - Non-ECC</li> <li>• 32 GB DDR4 (4 x 8 GB) - ECC/ Non-ECC</li> <li>• 32 GB DDR4 (2 x 16 GB) - ECC/ Non-ECC</li> <li>• 64 GB DDR4 (4 x 16 GB) - ECC/ Non-ECC</li> <li>• 128 GB DDR4 (4 x 32 GB) - ECC/ Non-ECC</li> </ul>
Type	DDR4 SDRAM or ECC memory
Speed	<ul style="list-style-type: none"> <li>• 2666 MHz (6 Cores)</li> <li>• 2400 MHz (4 Cores)</li> </ul>

# Storage

**Table 5. Storage specifications**

Type	Form factor	Interface	Security option	Capacity
One Solid-State Drive (SSD)	M.2 2280/ 2260/ 2242 PCIe x4	<ul style="list-style-type: none"> <li>• SATA AHCI, Up to 6 Gbps</li> <li>• PCIe 3 x 4 NVME, Up to 32 Gbps</li> </ul>	Yes, with SED drives	Up to 2 TB
One 2.5 inch Hard-Disk Drive (HDD)	Approximately (2.760 x 3.959 x 0.374 inches)	SATA AHCI, Up to 6 Gbps	Yes, with SED/FIPS HDD	Up to 2 TB
One 2.5 inch Solid-State Drive (SSD)	Approximately (2.760 x 3.959 x 0.374 inches)	SATA AHCI, Up to 6 Gbps	NONE	Up to 1 TB
One 3.5 inch Hard-Disk Drive (HDD)	Approximately (4.00 x 1.00 x 0.984 inches)	SATA AHCI, Up to 6 Gbps	NONE	Up to 8 TB
Zoom2 card	M.2 2280 PCIe x4	PCIe x 4 up to 32 Gbps	NONE	Up to 2 TB

# Storage Matrix

**Table 6. Storage combinations**

Primary/Boot drive	Secondary drive
M.2 Drive	Upto 3x 3.5" / 4x 2.5" SATA SSD/HDD / PCIe SSD M.2 Interposer Card
2.5 inch Drive	Upto 2x 3.5" / 3x 2.5" SATA SSD/HDD /1 x M.2 Drive /PCIe SSD M.2 Interposer Card
3.5 inch Drive	Upto 2x 3.5" / 3x 2.5" SATA SSD/HDD /1 x M.2 Drive / PCIe SSD M.2 Interposer Card

# Audio

**Table 7. Audio specifications**

Feature	Specifications
Controller	Integrated Realtek ALC3234
Type	Two-channel high-definition audio
Speakers	One
Interface	<ul style="list-style-type: none"> <li>• Universal audio jack (Rear)</li> <li>• Stereo headset/mic combo (Front)</li> </ul>
Internal speaker amplifier	2 W

# Video card

**Table 8. Video card specifications**

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel HD Graphics 630	UMA	Intel Core i3,i5 or i7 8XXX Series Processors	Integrated	Shared system memory	DisplayPort X 2	4096 x 2304
Intel UHD Graphics 610	UMA	Intel Pentium Gold G54XX Series Processors	Integrated	Shared system memory	DisplayPort X 2	4096 x 2304
Intel UHD Graphics 630	UMA	Intel Core i3,i5 or i7 9XXX Series Processors	Integrated	Shared system memory	DisplayPort X 2	4096 x 2304
Intel UHD Graphics P630	UMA	Intel Xeon E-21XXG and 22XXG Series Processors	Integrated	Shared system memory	DisplayPort X 2	4096 x 2304

**Table 8. Video card specifications (continued)**

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
nVIDIA Quadro P Series (P5000, P4000, P2000, P1000, P620, P400)	Discrete	NA	GDDR5/ GDDR5X	2 GB - 16 GB	Upto four DisplayPort(DP 1.4) DVI-I	4096 × 2304
nVIDIA GeForce series 10 (GTX 1080/1060)	Discrete	NA	GDDR5/ GDDR5X	6 GB / 8 GB	DVI-D HDMI 2.0 3x DP1.3 (DP 1.4 ready)	4096 × 2304
nVIDIA Quadro RTX series (RTX4000, RTX5000)	Discrete	NA	GDDR5/ GDDR5X	6 GB / 8 GB	DVI-D HDMI 2.0 3x DP1.3 (DP 1.4 ready)	7680x4320
nVIDIA GeForce series 20 (RTX2060 SL, RTX 2080B/ RTX 2080 Super)	Discrete	NA	GDDR5/ GDDR5X	6 GB / 8 GB	DVI-D HDMI 2.0 Up to 3x DP1.3 (DP 1.4 ready)	7680x4320
AMD Radeon Pro WX Series (2100, 3200, 3100, 4100, 5100, 7100) and RX580	Discrete	NA	GDDR5	2 GB - 8 GB	DP1.3 2-4 mini-DP	4096 × 2304

**NOTE:** Graphics cards with power rating equals to or more than 75 Watts requires a 6-pin and/or 8-pin power connector dongle.

## Communication

**Table 9. Communication specifications**


Feature	Specifications
Wireless Frequency band: 2.4 GHz, 5 GHz	Intel® Dual Band Wireless-AC 9260 (Thunder Peak 2) 802.11AC 2x2 Wi-Fi + BT 5 LE M.2 Wireless Card Qualcomm QCA9377 dual band WiFi and Bluetooth Card
Add-in cards	1 GB NIC, 2.5 GB/5 Gb NIC
RJ45 Network adapter (10/100/1000 Mbps)	Intel® Ethernet Connection I219 Series

## Ports and connectors

**Table 10. Ports and connectors**

Feature	Specifications
Memory card reader	Optional SD 4.0 media card reader
Smart card reader	Optional

**Table 10. Ports and connectors (continued)**

Feature	Specifications
USB	<ul style="list-style-type: none"> <li>• Two USB 2.0 Type-A port(Front)</li> <li>• One USB 3.1 Gen 2 Type-C port (Front)</li> <li>• One USB 3.1 Type-A port (Front)</li> <li>• Four USB 3.1 Gen 1 port (Rear)</li> <li>• Two USB 2.0 ports (Rear, with SmartPower)</li> </ul> <p> <b>NOTE:</b> SmartPower On feature is not available in China</p>
Security	Noble Wedge/Kensington lock slot
Audio	Universal audio jack (Front) Line-out (Rear)
Video	<ul style="list-style-type: none"> <li>• DisplayPort/HDMI/VGA/USB Type-C (optional)</li> <li>• Two DisplayPort 1.2</li> </ul>
Network adapter	One RJ-45 connector
Serial port	One serial port
PS/2	<ul style="list-style-type: none"> <li>• Mouse</li> <li>• Keyboard</li> </ul>

## Media card-reader

**Table 11. Media-card reader specifications**

Feature	Specifications
Type	Push-Pull type with USB 3.0 interface
Supported cards	<ul style="list-style-type: none"> <li>• SD</li> <li>• SDHC</li> <li>• SDXC</li> <li>• UHS-I</li> <li>• UHS-II</li> </ul>

## Power Supply

**Table 12. Power Specifications**

Feature	Specifications
Energy efficient power supply	Internal
80 plus bronze certification	300 W EPA bronze (No SD)
80 plus gold certification	300 W / 460 W (w/SD) and 850 W(w/SD)
Recyclable packaging	Optional, US only
MultiPack packaging	No



# Physical system dimensions

**Table 13. Physical system dimensions**

Feature	Specifications
Chassis volume (liters)	20.41
Chassis weight (pounds / kilograms)	23.37/10.6

**Table 14. Chassis dimensions**


Feature	Specifications
Height (inches / centimeters)	13.19/33.50
Width (inches / centimeters)	6.95/ 17.66
Depth (inches / centimeters)	13.58 /34.50
Shipping weight (pounds / kilograms – includes packaging materials)	33/14.97

**Table 15. Packaging parameters**



Feature	Specifications
Height (inches / centimeters)	18.5/47
Width (inches / centimeters)	13.9/35.3
Depth (inches / centimeters)	19.37/49.2

# Computer environment

**Airborne contaminant level:** G1 as defined by ISA-S71.04-1985

 **NOTE:** For more details on Dell environmental features, please go to the environmental attributes section. See your specific region for availability.

**Table 16. Computer environment**

	Operating	Storage
Temperature range	0 °C to 35 °C (32°F to 95°F)	- 40 °C to 65 °C (- 40 °F to 149 °F)
Relative humidity (maximum)	10 % to 80 % (non-condensing)  <b>NOTE:</b> Maximum dew point temperature = 26 °C	10 % to 95 % (non-condensing)  <b>NOTE:</b> Maximum dew point temperature = 33 °C
Vibration (maximum)	0.26 GRMS	1.37 GRMS
Shock (maximum)	40 G <sup>†</sup>	105 G <sup>‡</sup>
Altitude (maximum)	- 15.2 m to 3048 m (- 50 ft to 10,000 ft)	- 15.2 m to 10,668 m (- 50 ft to 35,000 ft)

\* 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.

# System setup

System setup enables you to manage your desktop 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

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

## System Setup options

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

**Table 17. General**

Option	Description
<b>System Information</b>	<p>This section lists the primary hardware features of your computer.</p> <ul style="list-style-type: none"> <li>● System Information</li> <li>● Memory Configuration</li> <li>● PCI Information</li> <li>● Processor Information</li> <li>● Device Information</li> </ul>
<b>Boot Sequence</b>	<p>Allows you to change the order in which the computer attempts to find an operating system.</p> <ul style="list-style-type: none"> <li>● Windows Boot Manager</li> <li>● Onboard NIC</li> <li>● Onboard NIC</li> </ul>
<b>Boot List Options</b>	<p>Allows you to change the boot list option.</p> <ul style="list-style-type: none"> <li>● Legacy</li> <li>● <b>UEFI</b> (default)</li> </ul>
<b>Advanced Boot Options</b>	<p>Allows you to Enable Legacy Option ROMs</p> <ul style="list-style-type: none"> <li>● Enable Legacy Option ROMs (Default: not enabled)</li> </ul>
<b>UEFI Boot Path Security</b>	<ul style="list-style-type: none"> <li>● <b>Always, Except Internal HDD</b> (default)</li> <li>● Always</li> <li>● Never</li> </ul>
<b>Date/Time</b>	<p>Allows you to set the date and time. The changes to the system date and time takes effect immediately.</p>

**Table 18. System configuration**

Option	Description
<b>Integrated NIC</b>	<p>Allows you to configure the on-board LAN controller. The options are:</p> <ul style="list-style-type: none"> <li>● Disabled</li> <li>● Enabled</li> <li>● <b>Enabled w/PXE</b> (Default)</li> </ul>
<b>Serial Port</b>	<p>Identifies and defines the serial port settings. You can set the serial port to:</p> <ul style="list-style-type: none"> <li>● Disabled</li> <li>● <b>COM1</b> (Default)</li> <li>● COM2</li> <li>● COM3</li> <li>● COM4</li> </ul>
<b>SATA Operation</b>	<p>Allows you to configure the internal SATA hard-drive controller. The options are:</p> <ul style="list-style-type: none"> <li>● Disabled</li> <li>● AHCI</li> <li>● <b>RAID On</b> (Default)</li> </ul>
<b>Drives</b>	<p>Allows you to configure the SATA drives on board. The options are:</p> <ul style="list-style-type: none"> <li>● SATA-0</li> <li>● SATA-1</li> <li>● SATA-2</li> <li>● SATA-3</li> <li>● SATA-4</li> <li>● M.2 PCIe SSD-0</li> </ul>

**Table 18. System configuration (continued)**

Option	Description
	Default Setting: <b>All drives are enabled.</b>
<b>SMART Reporting</b>	This field controls if the hard drive errors for the integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. <ul style="list-style-type: none"> <li>● Enable SMART Reporting - This option is disabled by default.</li> </ul>
<b>USB Configuration</b>	Allows you to enable or disable the USB configuration. The options are: <ul style="list-style-type: none"> <li>● <b>Enable Boot Support</b> (default)</li> <li>● <b>Enable Front USB Ports</b> (default)</li> <li>● <b>Enable rear USB Ports</b> (default)</li> </ul>
<b>Front USB Configuration</b>	Allows you to enable or disable the Front USB configuration. The options are: <ul style="list-style-type: none"> <li>● Front Port 1 (Left)</li> <li>● Front Port 2 (Center)</li> <li>● Front Port 3 (Right)*</li> <li>● Front Port 4 (Type C)*</li> </ul> *Denotes a USB 3.0-capable port
<b>Rear USB Configuration</b>	Allows you to enable or disable the rear USB configuration. The options are: <ul style="list-style-type: none"> <li>● Rear Port 1 (Upper Left)</li> <li>● Rear Port 2 (Upper Right)</li> <li>● Rear Port 3 (Left)*</li> <li>● Rear Port 4 (Center Left)*</li> <li>● Rear Port 5 (Center Right)*</li> <li>● Rear Port 6 (Right)*</li> </ul> *Denotes a USB 3.1 Gen 1-capable port
<b>Memory Map IO above 4 GB</b>	The option is enabled by default.
<b>USB PowerShare</b>	Allows you to enable or disable USB PowerShare. Enable USB PowerShare -This option is disabled by default.
<b>Audio</b>	Allows you enable or disable the audio feature. <b>Enable Audio</b> (Default) <ul style="list-style-type: none"> <li>● <b>Enable Microphone</b> (Default)</li> <li>● <b>Enable Internal Speaker</b> (Default)</li> </ul>
<b>Miscellaneous devices</b>	Allows you to enable or disable various on board devices. <ul style="list-style-type: none"> <li>● <b>Enable PCI Slot</b> (Default)</li> <li>● <b>Enable Secure Digital (SD) card</b> (Default)</li> <li>● Secure Digital (SD) Card Boot (Default)</li> </ul>

**Table 19. Video**

Option	Description
<b>Multi-Display</b>	The option is selected by default.
<b>Primary Display</b>	Allows you to configure primary video controller when there are multiple controllers available. The options are: <ul style="list-style-type: none"> <li>● <b>Auto</b> (Default)</li> <li>● Intel HD Graphics</li> <li>● NVIDIA HD Graphics</li> </ul>

**Table 20. Security**

Option	Description
Strong Password	This option lets you enable or disable strong passwords for the system. The option is disabled by default.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for a 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"> <li>● <b>Disabled</b> — Always prompt for the system and internal HDD password when they are set. This option is enabled by default.</li> <li>● Reboot Bypass — Bypass the password prompts on Restarts (warm boots).</li> </ul> <p><b>i</b> <b>NOTE:</b> 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	<p>This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set.</p> <p><b>Allow Non-Admin Password Changes</b> - This option is enabled by default.</p>
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"> <li>● TPM On (default)</li> <li>● Clear</li> <li>● <b>PPI Bypass for Enable Commands</b> (default)</li> <li>● PPI Bypass for Disable Commands</li> <li>● PPI Bypass for Clear Commands</li> <li>● <b>Attestation Enable</b> (default)</li> <li>● <b>Key Storage Enable</b> (default)</li> <li>● <b>SHA-256</b> (default)</li> </ul> <p>Choose any one option:</p> <ul style="list-style-type: none"> <li>● Disabled</li> <li>● <b>Enabled</b> (default)</li> </ul>
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"> <li>● Deactivate</li> <li>● Disable</li> <li>● <b>Activate</b> (default)</li> </ul>
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"> <li>● Disabled</li> <li>● Enabled</li> <li>● <b>On-Silent</b> (default)</li> </ul>
OROM Keyboard Access	<ul style="list-style-type: none"> <li>● Disabled</li> <li>● <b>Enabled</b> (default)</li> <li>● One Time Enable</li> </ul>

**Table 20. Security (continued)**

Option	Description
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. 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.

**Table 21. Secure Boot**

Option	Description
<b>Secure Boot Enable</b>	The option is enabled by default.
<b>Secure Boot Mode</b>	<ul style="list-style-type: none"> <li>● <b>Deployed Mode</b> (default)</li> <li>● Audit Mode</li> </ul>
<b>Expert Key Management</b>	<p>Allows you to enable or disable Custom Mode Key Management.</p> <ul style="list-style-type: none"> <li>● Enable Custom Mode (This option is not enabled by default)</li> </ul> <p>If Enabled, the options are:</p> <ul style="list-style-type: none"> <li>● <b>PK</b> (default)</li> <li>● KEK</li> <li>● db</li> <li>● dbx</li> </ul>

**Table 22. Intel Software Guard Extensions**

Option	Description
<b>Intel SGX Enable</b>	<p>Allows you to enable or disable Intel Software Guard Extensions. The options are:</p> <ul style="list-style-type: none"> <li>● Disabled</li> <li>● Enabled</li> <li>● <b>Software controlled</b> (Default)</li> </ul>
<b>Enclave Memory Size</b>	<p>Allows you to change the Intel Software Guard Extensions Enclave Reserve Memory size. The options are:</p> <ul style="list-style-type: none"> <li>● 32 MB</li> <li>● 64 MB</li> <li>● 128 MB</li> </ul>

**Table 23. Performance**

Option	Description
<b>Multi Core Support</b>	<p>This field specifies whether the processor will have one or all cores enabled. The performance of some applications will improve with the additional cores. This option is enabled by default. Allows you to enable or disable multi-core support for the processor. The options are:</p> <ul style="list-style-type: none"> <li>● <b>All</b> (Default)</li> <li>● 1</li> <li>● 2</li> <li>● 3</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>● The options displayed could be different depending on the installed processor.</li> <li>● The options depend on the number of cores supported by the installed processor (All, 1, 2, N-1 for N-Core Processors)</li> </ul>
<b>Intel SpeedStep</b>	Allows you to enable or disable the Intel SpeedStep feature.

**Table 23. Performance (continued)**

Option	Description
	Default Setting: <b>Enable Intel SpeedStep</b>
<b>C-States Control</b>	Allows you to enable or disable the additional processor sleep states. <b>C states</b> (This option is selected by default)
Cache Prefetcher	<ul style="list-style-type: none"> <li>• <b>Hardware Prefetcher</b> (default)</li> <li>• <b>Adjacent Cache Prefetch</b> (default)</li> </ul> <p>When Hardware Prefetcher is enabled, the processor’s hardware prefetcher will automatically prefetch data and code for the processor When Adjacent Cache is enabled, the process will retrieve the currently requested cache line, as well as subsequent cache line.</p>
<b>Intel TurboBoost</b>	Allows you to enable or disable the Intel TurboBoost mode of the processor. The option <b>Intel TurboBoost</b> is set by default.
<b>Hyper-Thread Control</b>	Allows you to enable or disable the HyperThreading in the processor. <ul style="list-style-type: none"> <li>• Disabled</li> <li>• <b>Enabled</b>—Default</li> </ul>

**Table 24. Power management**

Option	Description
<b>AC Recovery</b>	Specifies how the computer will respond when AC power is applied after a AC power loss. You can set the AC Recovery to: <ul style="list-style-type: none"> <li>• <b>Power Off</b> (Default)</li> <li>• Power On</li> <li>• Last Power State</li> </ul>
<b>Enable Intel Speed Shift Technology</b>	Allows you to enable or disable Intel Speed Shift Technology support. The option <b>Enable Intel Speed Shift Technology</b> is set by default.
<b>Auto On Time</b>	Allows you to set the time at which the computer must turn on automatically. The options are: <ul style="list-style-type: none"> <li>• <b>Disabled</b> (Default)</li> <li>• Every Day</li> <li>• Weekdays</li> <li>• Select Days</li> </ul>
<b>Deep Sleep Control</b>	Allows you to define the controls when Deep Sleep is enabled. <ul style="list-style-type: none"> <li>• Disabled</li> <li>• Enabled in S5 only</li> <li>• <b>Enabled in S4 and S5</b> (Default)</li> </ul>
<b>Fan Control Override</b>	Allows you to control the speed of the system fan. The options are: The option Fan Control Override is not enabled by default.
<b>Wake on LAN/WLAN</b>	This option allows the computer to power up from the off state when triggered by a special LAN signal. Wake-up from the Standby state is unaffected by this setting and must be enabled in the operating system. This feature only works when the computer is connected to AC power supply. <ul style="list-style-type: none"> <li>• <b>Disabled</b> (Default)</li> <li>• LAN Only</li> <li>• WLAN Only</li> <li>• LAN or WLAN</li> </ul>

**Table 24. Power management (continued)**

Option	Description
	<ul style="list-style-type: none"> <li>LAN with PXE Boot</li> </ul>
<b>Block Sleep</b>	Allows you to block entering to sleep (S3 state) in OS Environment. The option Block Sleep is disabled by default.

**Table 25. POST behavior**

Option	Description
<b>Numlock LED</b>	Allows you to specify if the NumLock function is enabled when the system boots. This option is enabled by default.
<b>Keyboard Errors</b>	Specifies whether keyboard related errors are reported when it boots. This option is enabled by default.
Extend BIOS POST Time	This option creates an additional pre-boot delay. <ul style="list-style-type: none"> <li><b>0 seconds</b> (default)</li> <li>5 seconds</li> <li>10 seconds</li> </ul>
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"> <li><b>Prompt on Warnings and Errors</b> (default)</li> <li>Continue on Warnings</li> <li>Continue on Warnings and Errors</li> </ul>

**Table 26. Manageability**

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

**Table 27. Virtualization support**

Option	Description
<b>Virtualization</b>	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by Intel Virtualization technology. <ul style="list-style-type: none"> <li><b>Enable Intel Virtualization Technology</b> - This option is enabled by default.</li> </ul>
<b>VT for Direct I/O</b>	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel Virtualization technology for direct I/O. <ul style="list-style-type: none"> <li><b>Enable VT for Direct I/O</b> - This option is enabled by default.</li> </ul>
<b>Trusted Execution</b>	Allows you to specify whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Program. <ul style="list-style-type: none"> <li><b>Trusted Execution</b> - This option is disabled by default.</li> </ul>

**Table 28. Maintenance**

Option	Description
<b>Service Tag</b>	Displays the service tag of your computer.
<b>Asset Tag</b>	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.



**Table 28. Maintenance (continued)**

Option	Description
<b>SERR Messages</b>	Allows you to control the SERR message mechanism. This option is not set by default. Some graphics cards require that the SERR message mechanism be disabled.
<b>BIOS Downgrade</b>	Allows you to control the flashing of the system firmware to previous revisions. This option is enabled by default.
<b>Data Wipe</b>	Allows you to securely erase data from all internal storage devices. The option is disabled by default.
<b>BIOS Recovery</b>	Allows you to recover from certain corrupted BIOS conditions using a recovery file. This option is enabled by default.

**Table 29. System Logs**


Option	Description
<b>BIOS events</b>	Displays the system event log and allows you to clear the log. <ul style="list-style-type: none"><li>• Clear Log</li></ul>

**Table 30. Advanced Configurations**


Option	Description
<b>ASPM</b>	Allows you to set the Active State Power Management level: <ul style="list-style-type: none"><li>• <b>Auto</b> (Default)</li><li>• Disabled</li><li>• L1 Only</li></ul>
PCIe Linkspeed	Allows you to select the max PCIe link speed attainable by devices within the system. <ul style="list-style-type: none"><li>• <b>Auto</b> (default)</li><li>• Gen1</li><li>• Gen2</li></ul>

## 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.

 **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 reinstall. For more information about this subject, see Knowledge Article: [Updating the BIOS on Dell Systems With BitLocker Enabled](#)

## 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 [How to Create a Bootable USB Flash Drive using Dell Diagnostic Deployment Package \(DDDP\)](#)

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 **Enter**.
6. The system will boot to a Diag C:\> prompt.
7. Run the file by typing the full filename, for example, O9010A12.exe and press **Enter**.
8. The BIOS Update Utility will load. Follow the instructions on screen.

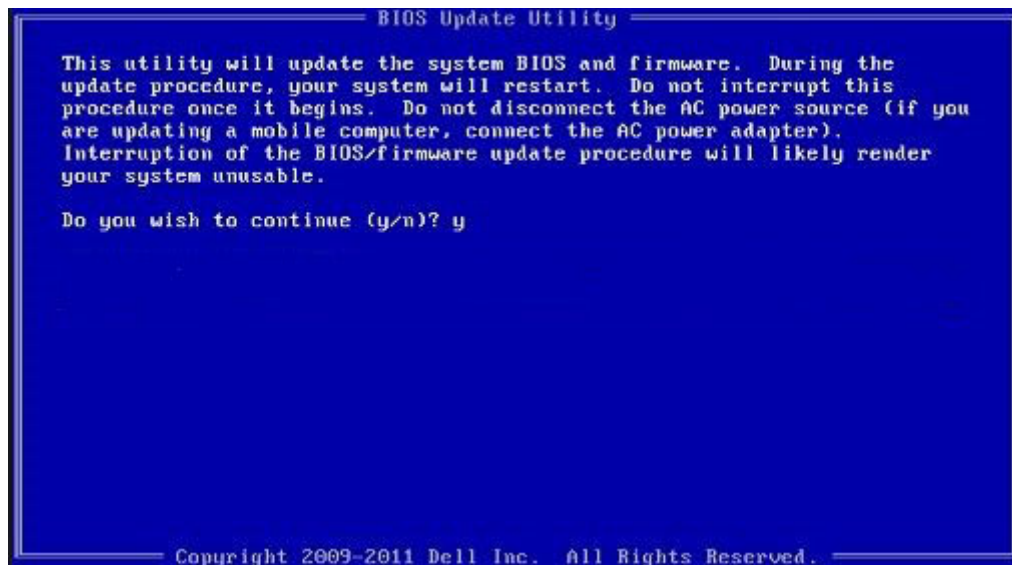


Figure 1. DOS BIOS Update Screen

## 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 <https://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

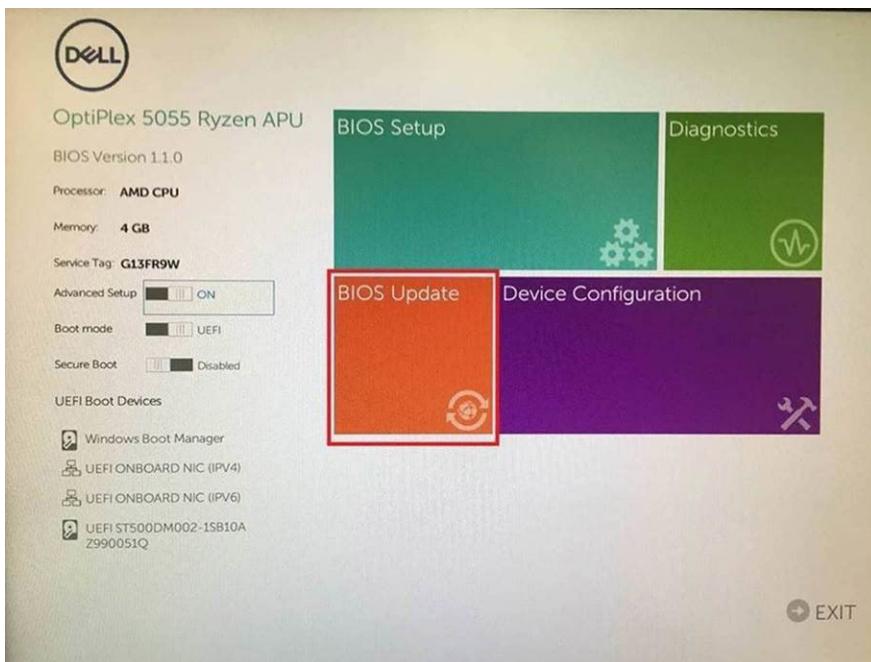
To update your BIOS from the F12 One-Time boot menu, you will need:

- 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

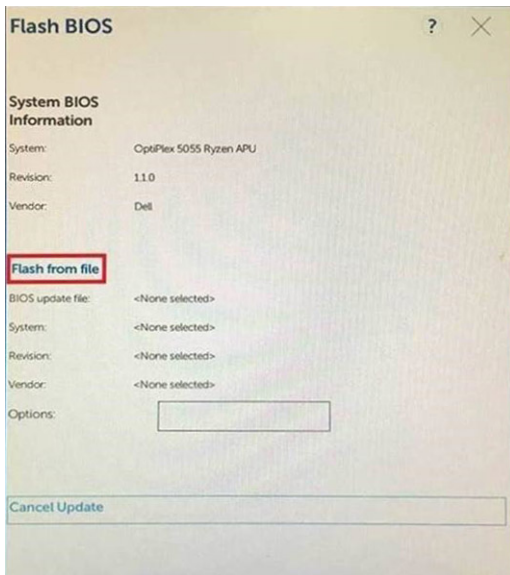
Perform the following steps to execute the BIOS update flash process from the F12 menu:

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

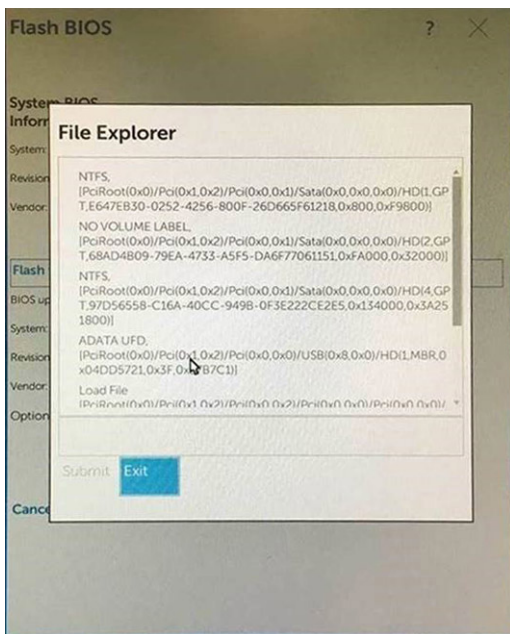
1. From a power off state, insert the USB key where you copied the flash into a USB port of the system .
2. Power on the system and press the F12 key to access the One-Time Boot Menu, Highlight BIOS Update using the mouse or arrow keys then press **Enter**.



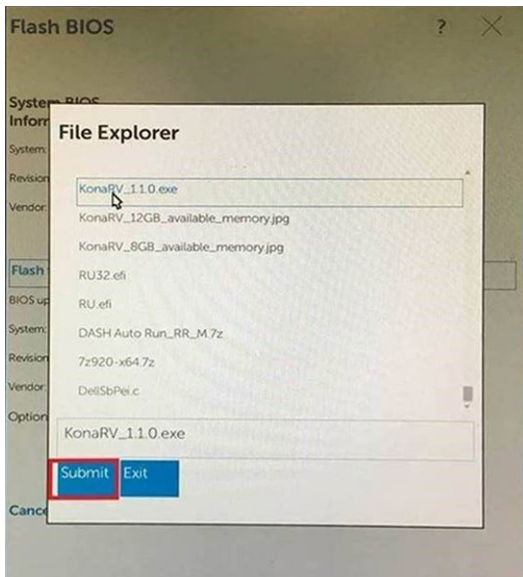
3. The Bios flash menu will open then click the **Flash from file**.



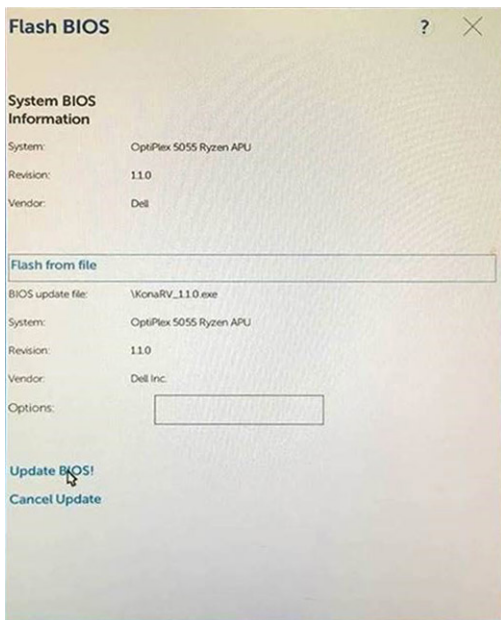
4. Select external USB device



5. Once the file is selected, Double click the flash target file, then press submit .



6. Click the **Update BIOS** then system will reboot to flash the BIOS.



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

## System and setup password

**Table 31. System and setup password**

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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.**

 **NOTE:** System and setup password feature is disabled.

## Assigning a system setup password

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


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

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.  
The **Security** screen is displayed.
2. Select **System/Admin 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 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**.  
 **NOTE:** If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.
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 restarts.

# Software

This chapter details the supported operating systems along with instructions on how to install the drivers.


## Supported operating systems

**Table 32. Supported operating systems**

Supported operating systems	Description
Windows operating system	<ul style="list-style-type: none"> <li>• Microsoft Windows 10 Home (64-bit)</li> <li>• Microsoft Windows 10 Pro (64-bit)</li> <li>• Microsoft Windows 10 Pro National Academic (64-bit)</li> <li>• Microsoft Windows 10 Home National Academic (64-bit)</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Ubuntu 16.04 SP1 LTS (64-bit)</li> <li>• Neokylin v6.0 SP4 (China only)</li> <li>• Red Hat Enterprise Linux 7.5</li> </ul>

## Downloading Windows drivers


1. Turn on the .
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your , and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your model.

4. Click **Drivers and Downloads**.
5. Select the operating system installed on your .
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your .
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the driver file icon and follow the instructions on the screen.

# 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.