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DELLEMC
ONLINE EVENTS

Webinar Series | Episode **Nine**

• **OUR PRESENTATION IS DUE TO START** •

TUESDAY September 19th
4:00PM (GMT) & 10:00AM (CST)

About us..

We're a global team of Dell technicians with highly varied specialties and interests, but most importantly, a shared passion for Social Media and customer support.

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We're here for you 24/7 through multiple social channels, offering global technical support for our business systems. Find us on Twitter to get valuable information & support for your company's IT infrastructure.

Shawn Burton
Sr. Social Media Analyst

- Born in England, moved to Texas in 2009
- Worked at Dell from 2011
- Started work with the Social Media team in 2013

Hobbies:
      I'm not happy unless my hands are smeared with engine oil, covered with dirt from the garden, full of wood splinters, or inside a computer.

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Agenda

Part 1: BIOS – Need to Know

Part 2: Tips

Resources

Related Dell Support

How to use Dell Command | Update to update all drivers BIOS and firmware for your system

Updating the Dell BIOS in Linux and Ubuntu Environments

BIOS Recovery options on a Dell PC or Tablet

How to run a Bios update on an Alienware Computer

How to restore the BIOS (System Setup) defaults on a Dell system

How Do I Know If I Should Update BIOS on My Computer?

Access UEFI (BIOS) System Setup from Windows on your Dell System

How to Setup Intel Rapid Start Technology in the UEFI Mode

How to access the RAID controller setup in UEFI configured systems

Client System Automated BIOS Update Command Line Syntax

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Part 1.

Need to Knows

BIOS

Basic Input Output System

Also know as "System Setup", the BIOS is software that is contained on a small memory chip on the PC's Motherboard, typically referred to as the CMOS

It acts as an interface between the computer's hardware and its operating system, e.g. Windows, allowing the software to control the PC's hardware.

The BIOS also contains instructions that the PC uses to perform basic instructions, such as whether to Boot from Network or Hard drive, which drive to Boot from first.

BIOS

Basic Input Output System

BIOS is also used to identify and configure hardware components in a computer such as the hard drive, floppy drive, optical drive, CPU, memory, Plug and Play devices etc. This is called the ESCD (Extended System Configuration Data) and this is usually stored in additional non-volatile memory also referred to as NVRAM (Non-Volatile Random Access Memory)

Over the years as technology has changed people still refer to the BIOS as both CMOS and NVRAM, however they are subtly different. The CMOS contains the BIOS and its settings, the NVRAM contains the ESCD, updating the BIOS will not clear the NVRAM.

Dell Latitude E7440

Settings
  General
    System Information
    Battery Information
    Boot Sequence
    Advanced Boot Options
    Date/Time
  + System Configuration
  + Video
  + Security
  + Secure Boot
  + Performance
  + Power Management
  + POST Behavior
  + Virtualization Support
  + Wireless
  + Maintenance
  + System Logs

Boot Sequence

☑ Windows Boot Manager

Boot List Option

○ Legacy
◉ UEFI

This list specifies the order that the BIOS searches de
system to boot. To change the boot order select the d
right hand side, then click up/down arrows or use the
the boot order of the device. The boot devices can als
list using the check boxes on the left hand side. Lega
Legacy boot mode. Legacy boot mode is not allowed

Load Defaults

UEFI Basics

Unified Extensible Firmware Interface

(UEFI) is the next generation interface between the operating system and platform firmware. It replaces the antiquated legacy Basic Input/output System (BIOS), that has been around for years.

The UEFI standard was created by the UEFI consortium which consists of over 140 technology companies.

UEFI was developed to allow support for new technologies during the booting process before the operating system loads. It is based on the EFI 1.10 specification that was originally published by Intel.

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UEFI Basics

Unified Extensible Firmware Interface

BIOS has significant limitations as it relates to modern hardware. It is limited to only 16-bit processor mode and 1 MB of addressable memory. UEFI on the other hand supports either 32-bit or 64-bit processor mode and can access all of the system's memory.

BIOS uses a Master Boot Record (MBR) for the disk partitioning scheme, whereas UEFI uses a newer partitioning scheme called GUID Partition Table (GPT) which overcomes certain limitations of MBR. UEFI is able to support disk sizes greater than 2 TB.

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Figure 5. - Default BIOS/MBR Disk Partitions

Figure 6. - Default UEFI/GPT Disk Partitions

BIOS/UEFI

Disk partitioning

Default BIOS/MBR Disk Partitions (See Figure 5.)

Default UEFI/GPT Disk Partitions (See Figure 6.)

benefits to running UEFI over BIOS on Windows 10 systems. Secure Boot: protects the pre-boot process against root kits/boot kits and requires no additional configuration (other than switching it on once the system is running UEFI). Once enabled, only signed boot loaders will be able to run. Other advantages of UEFI that your end users will appreciate is faster startup times, faster shutdown times, faster sleep times and faster resuming times compared to BIOS based systems.

security features that require UEFI are: Credential Guard, Device Guard, Early Launch Anti-malware driver and Measured Boot

BIOS

How do you get in

You can enter the system BIOS or Setup on a Dell PC by pressing F2 at the Dell loading screen.
Or by pressing F12 and selecting BIOS Setup from the menu. (Figure 2)

Caution: Be careful when altering BIOS settings. The BIOS interface is designed for advanced users, you can change a setting that could prevent your computer from starting correctly and you could suffer potential loss of data.
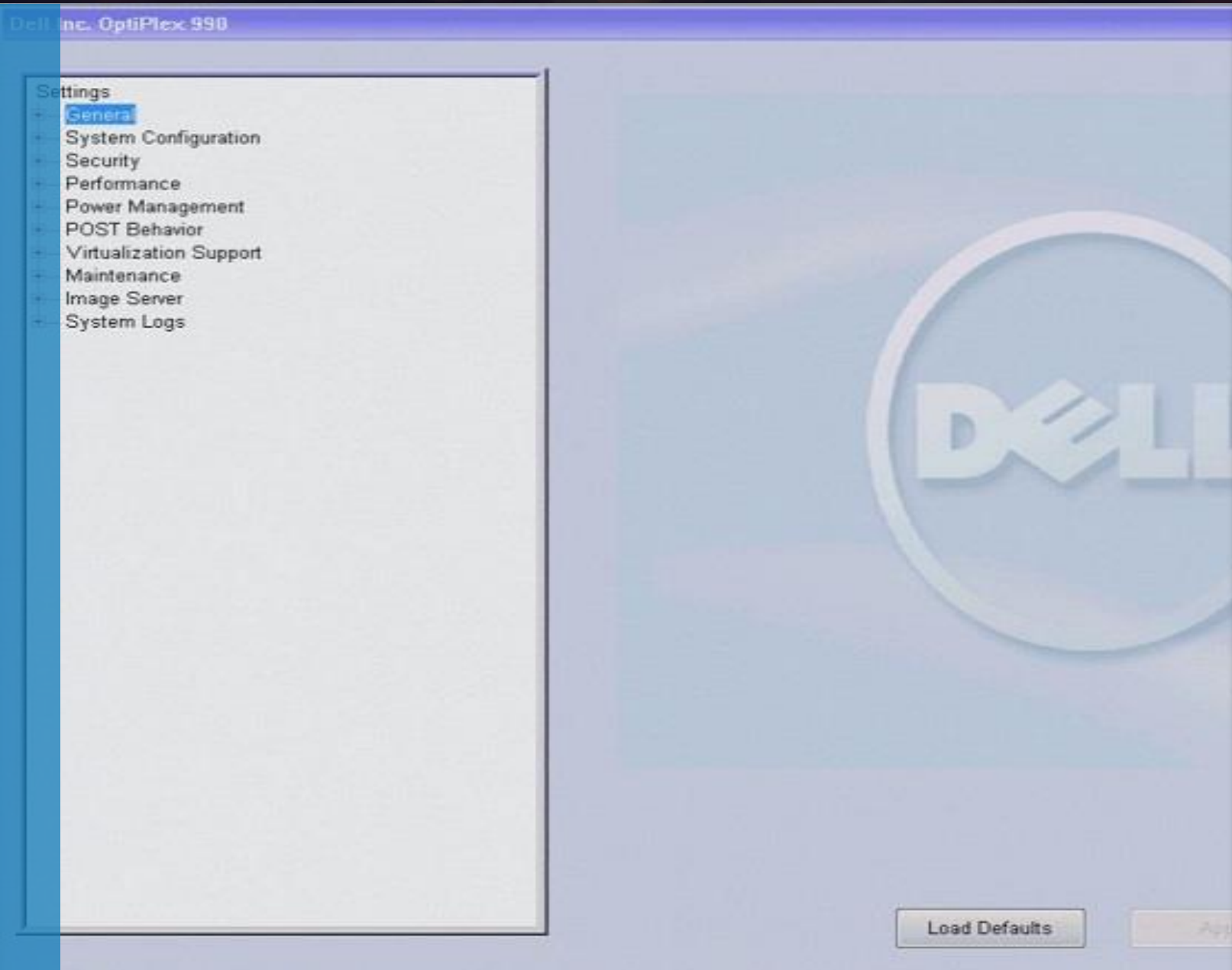
GUI

Graphic User Interface

Different BIOS interfaces exist across our system lines. These different GUIs will often provide different configurable information.

Changes to the BIOS can also be provided by Dell via BIOS updates – these can effect multiple areas of a systems performance and even alter the settings available for modification through the BIOS GUI

Why Update ?

Dell recommends updating the BIOS as part of your scheduled update cycle. Like Operating System and driver revisions, the update contains feature enhancements or changes that will help keep your system software current and compatible with other system modules (hardware, firmware, drivers and software) as well as providing security updates and increased stability.

Unlike Windows and Anti-Virus program updates which are usually automatic, BIOS has to be updated manually.

Dell provides an easy to use self installing update package that allows this task to be performed relatively easily.

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BIOS Version

Checking the BIOS version already installed

On Windows 10 type msinfo32 into Search and press Return

Once the System Information window opens, make sure System Summary is highlighted in the left navigation window, and look for BIOS Version/Date in the right summary window (Figure 4)

You can also check the BIOS version from the command prompt.

    1.Click **Start**. In the Run or Search box, type **cmd**, then **Click** on "**cmd.exe**" in search results.
    2.If the User Access Control window appears select **Yes**
    3.In the Command Prompt window, at the **C:** prompt, type **systeminfo** and press **Enter**, you will find the BIOS version in the results.
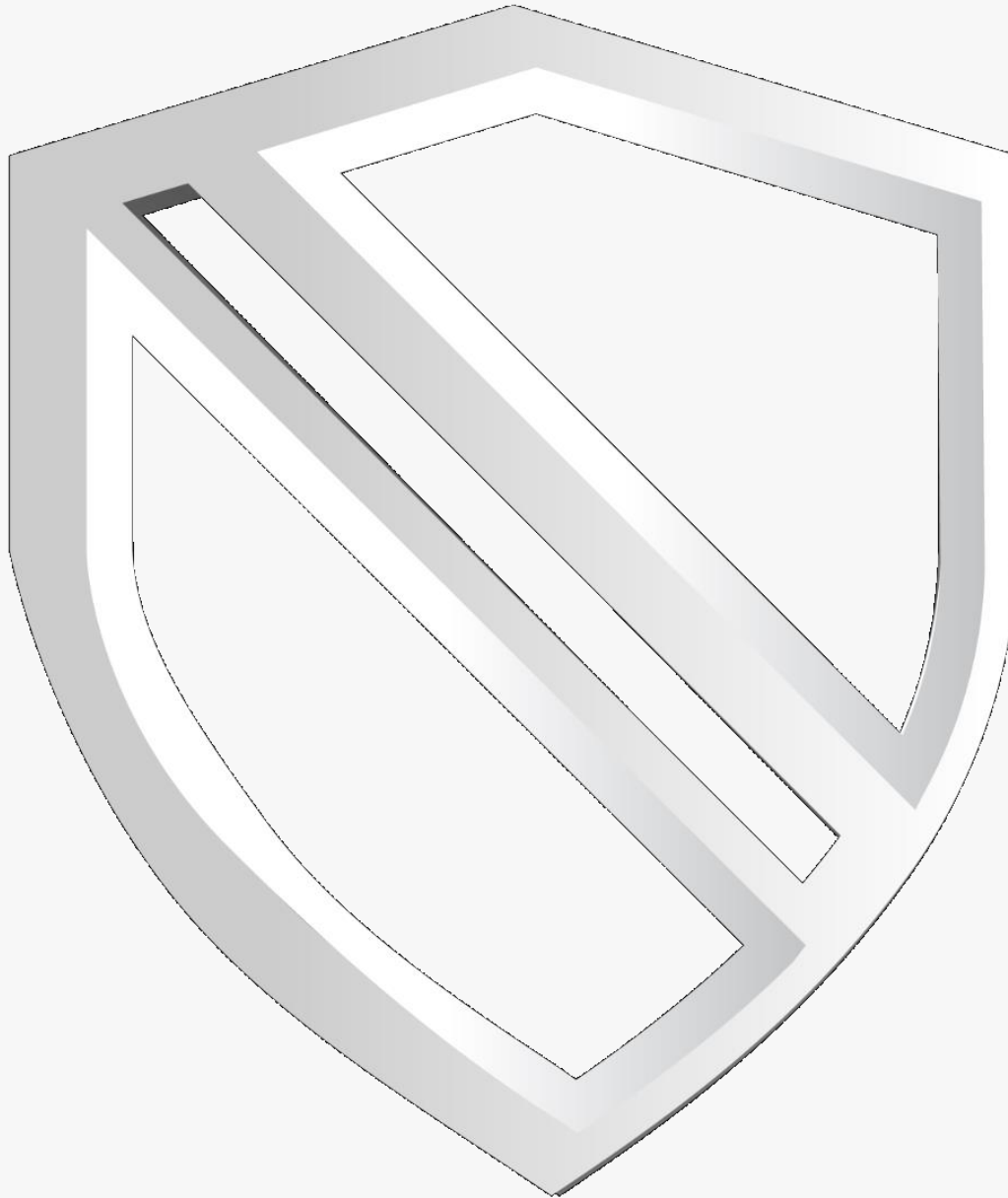
Bitlocker & BIOS

Updating with BitLocker Enabled

1. Caution: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key.

2. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot.

3. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install.

4. For more information on this subject, please see Knowledge Article:

5. Updating BIOS on Systems With BitLocker Enabled
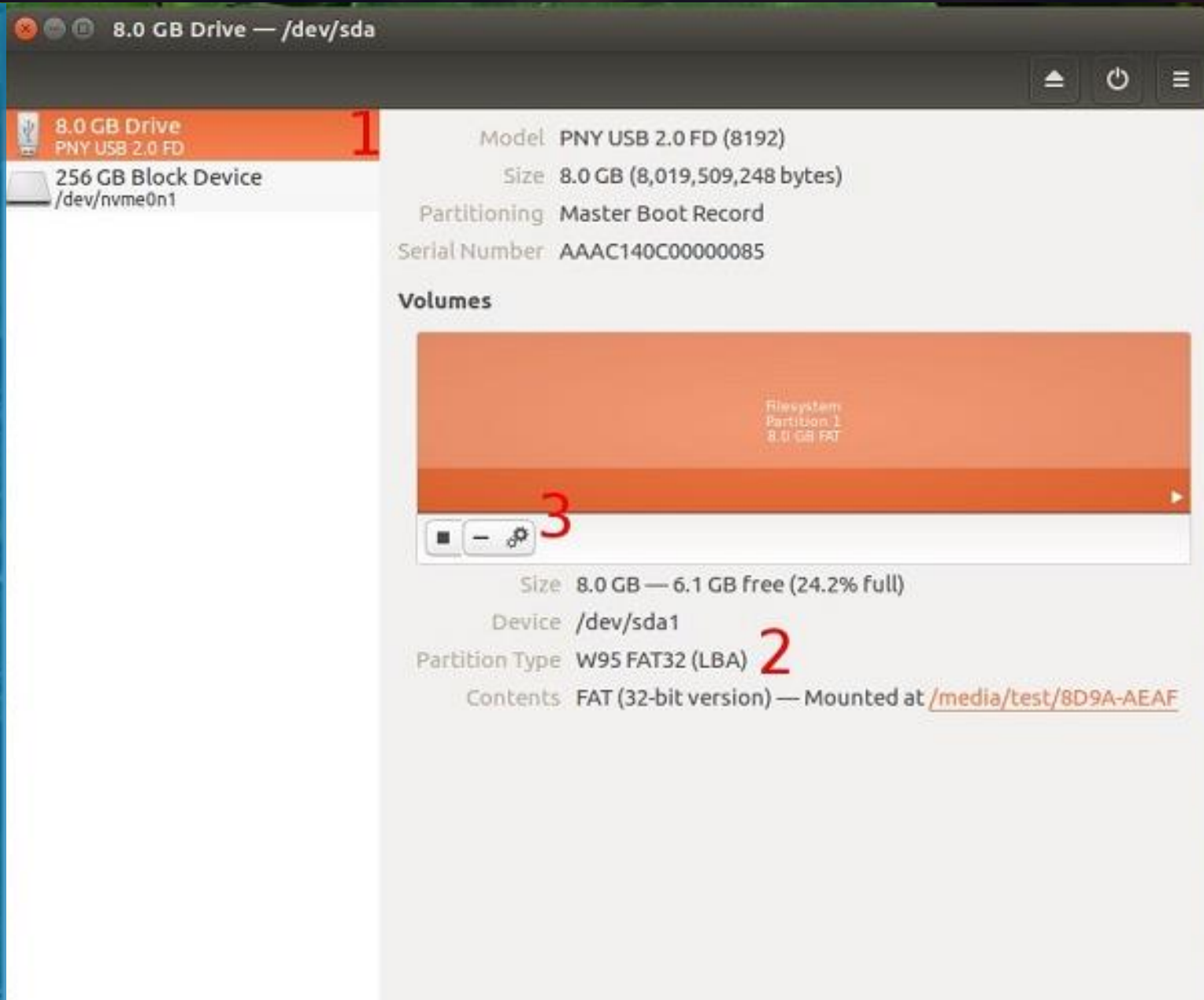
BIOS & Ubuntu

Updating the Dell BIOS in Linux

UEFI Capsule updates

If your system is listed at https://secure-lvfs.rhcloud.com/lvfs/devicelist External Link then it supports UEFI capsule updates and can be updated natively within the OS.

Ubuntu 16.04 and later natively will notify you for BIOS updates. The system will regularly check for BIOS updates automatically. When an update is available, a popup will be displayed to flash the update

Note: Other Linux distributions may need to have the capsule flashing tools manually installed. Check with your distribution vendor for more information.

sln171755

BIOS Update / AC

Forcing an install without AC

1. Download the relevant or latest BIOS update file from http://www.dell.com/support/drivers

2. Click Start. In the Run or Search box, type cmd right click on "cmd.exe" in search results, and select Run as administrator.

3. If the User Access Control window appears select Yes

4. In the Command Prompt window, at the C:\Windows\system32> prompt, type in cd\ and press Enter this will return you to the root directory

5. At the C:\> prompt, type biosflashname.exe /forceit and press Enter.

6. Note: biosflashname is the actual name of the BIOS you downloaded eg. A6540A09.exe and there is also a space between that and the /forceit switch)

7. After saying YES to the User Access control prompt, the update should commence without the AC adapter warning. Reboot when prompted to complete the update.

BIOS Recovery

Initiating a BIOS Recovery

Verify that the laptop is powered OFF and disconnect the AC adapter.

Press and hold the CTRL key + ESC key on the keyboard.

Plug in the AC adapter to the laptop.

Release the CTRL key + ESC key on the keyboard once you see the BIOS recovery screen.

On the BIOS Recovery screen, select Reset NVRAM(if available) and press the Enter key. Select Disabled and press the Enter key if you wish to save the current BIOS settings.

Select Recover BIOS and press the Enter key to start the recovery process.

USB BIOS Update

Update using a USB Flash Drive

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 press 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 hit Return

8. The BIOS Update Utility will load, follow the instructions on screen

Part 2.

ImagingTips

Ensuring a smooth transition from Windows 7 by using UEFI instead of Legacy Mode

UEFI

Legacy Option ROM

UEFI

Windows 7

Windows 10

- Secure Boot
- Device Guard
- Credential Guard

Figure 7. - Using UEFI instead of Legacy Mode for Windows 7

UEFI

What does UEFI mean for imaging?

UEFI allows the system to boot faster and employ more security for the operating system, but this can create more complexity.
UEFI should be used if possible for greater compatibility with newer Operating Systems and hardware advancements (See Figure 7.).

Figure 8. below is an example of a properly formatted UEFI device; the BIOS will not boot to (or show a device) in the UEFI boot list unless the file "Bootx64.efi" can be located under the EFI\Boot directory of a FAT32 formatted device:

On a hard drive the typical OS partition is formatted for NTFS but there is a System partition that will be formatted FAT32 to allow the BIOS to locate the Bootx64.efi file that allows booting to Windows;

UEFI BIOS requires a clear FAT32 partition to boot.
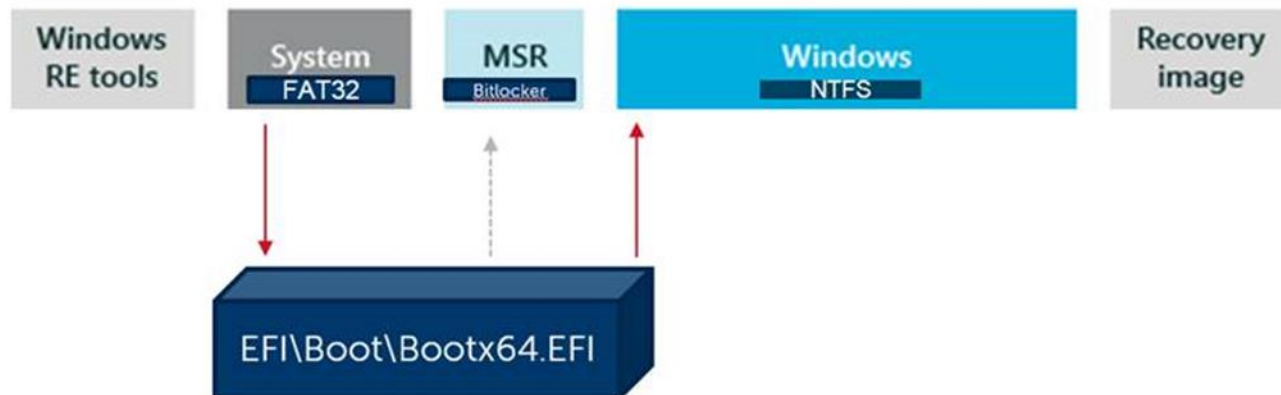
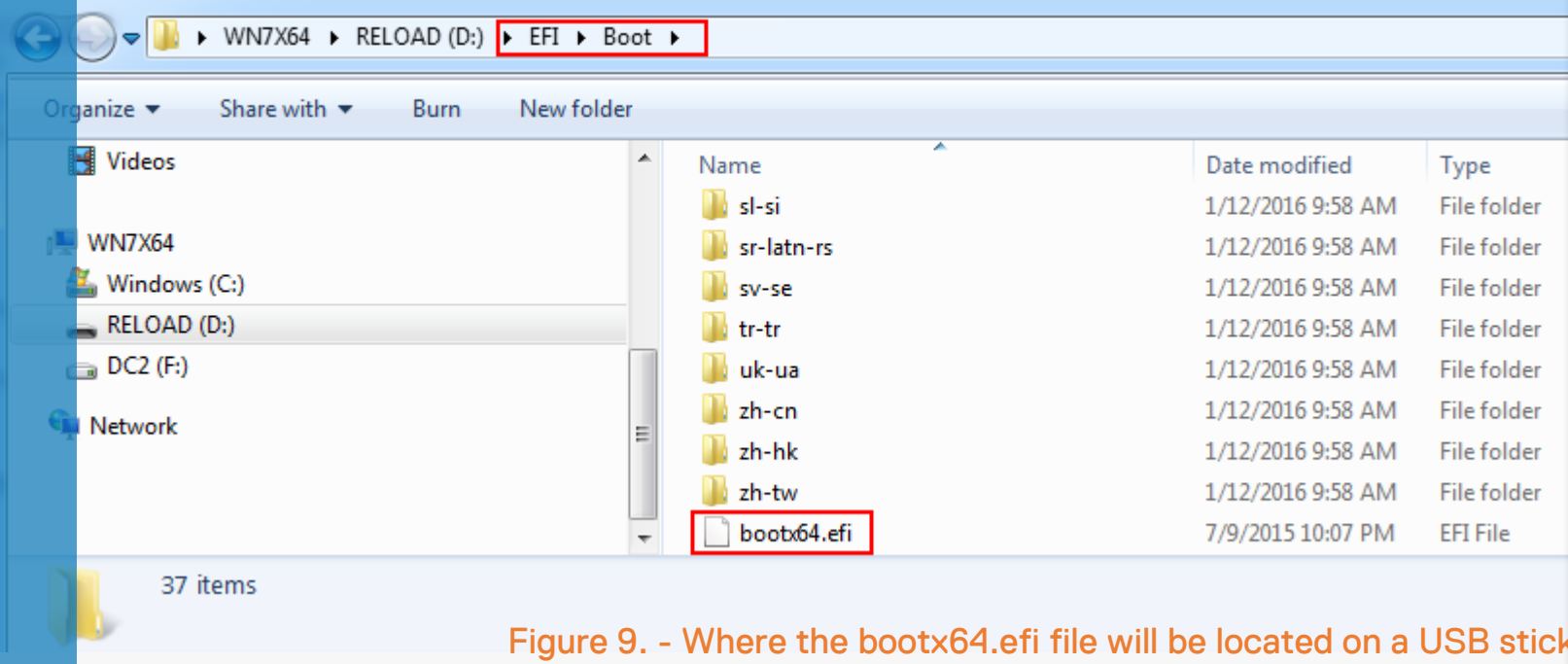Figure 8. - UEFI BIOS requires a clear FAT32 partition to boot.

UEFI

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- On a hard drive the typical OS partition is formatted for NTFS but there is a System partition that will be formatted FAT32 to allow the BIOS to locate the Bootx64.efi file that allows booting to Windows:

- Example of where the bootx64.efi file will be located on a USB stick when made correctly (See Figure 9.):

Figure 9. - Where the bootx64.efi file will be located on a USB stick

Imaging Checklist

- ✓ UEFI BIOS requires a FAT32 formatted partition to boot to
- ✓ Using UEFI is suggested in most cases (instead of Legacy)
- ✓ UEFI requires 64-bit boot images when used on 64-bit procs
- ✓ Windows 7 requires Legacy Option ROMs to be Enabled
- ✓ Windows 7 requires Secure Boot to be Disabled.

USB

- ✓ USB Type-C NICs: If the system has a BIOS POST Behavior/Fastboot option, it should be set to 'Thorough'
- ✓ If boot mode is set to UEFI, Select UEFI: USB PMAP (under UEFI).
- ✓ If boot mode is set to Legacy, Select USB Storage Device (under Legacy).

NIC

- ✓ UEFI Network Stack must be enabled for UEFI PXE boot to be available (IPV4 / IPV6).
- ✓ If boot mode is set to UEFI, Select Onboard NIC (IPV4) (under UEFI).
- ✓ If boot mode is set to Legacy, Select Onboard NIC (under Legacy).
- ✓ Some PXE boot installs require Secure Boot to be Disabled.