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Cert Guide

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CompTIA® A+ Core 1 (220-1001) and Core 2 (220-1002) Cert Guide

Fifth Edition

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BIOS Configuration for Video Cards

Video cards interact differently depending on the motherboard and BIOS settings. When adding a card, it may be necessary to enter BIOS to disable the onboard video, and some other systems allow both video systems to interact for better efficiency. These are the basic steps for BIOS configuration for video cards:

Step 1. Check and adjust the ***primary VGA BIOS*** setting (for the ***primary graphics adapter***) as needed:

Step 2. Choose **PCIE** or **PCIE > PCI** if you use a PCIe video card. On some systems, the term *NB PCIe video slot* is used for PCIe.

Step 3. Choose **PCI** or **PCI > PCIE** if you use a PCI video card.

For onboard video (integrated graphics), see the manufacturer's recommendation. (Onboard video can use PCI or PCI Express buses built into the motherboard.) On some recent systems, Auto is the default setting.

If the installed video card and driver are not working well but the screen is still visible, remove the card and use Device Manager's Driver Rollback feature to restore the previous driver.

Removing Drivers for an Old Video Card or Onboard Video

Key Topic

Although all video cards created since the beginning of the 1990s are based on VGA, virtually all of them use unique chipsets that require special software drivers to control acceleration features (faster onscreen video), color depth, and resolution. So, whenever you change video cards, you must change video driver software as well. Otherwise, your operating system will drop into a low-resolution mode and might give you an error message because the driver doesn't match the video card.

To delete an old video driver in Windows, open **Control Panel > Device Manager** and delete the listing for the current video card. Select **Uninstall a Program** in Control Panel and then uninstall the driver or configuration apps used by the current video card.

It is not necessary to delete old drivers in macOS or Linux.

Removing the Old Video Card

Follow these steps to remove an old video card (if present):

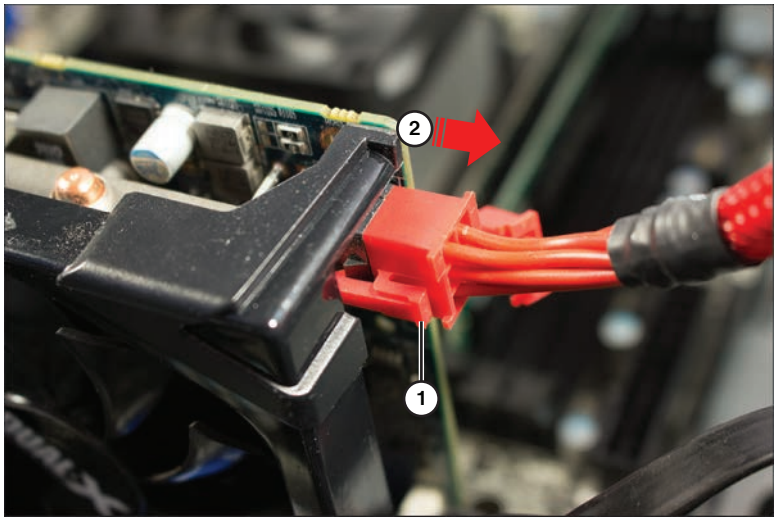
Step 1. Shut down the computer and disconnect it from AC power.

Step 2. Turn off the display.

Step 3. Disconnect the data cable attached to the video card.

Step 4. Open the case.

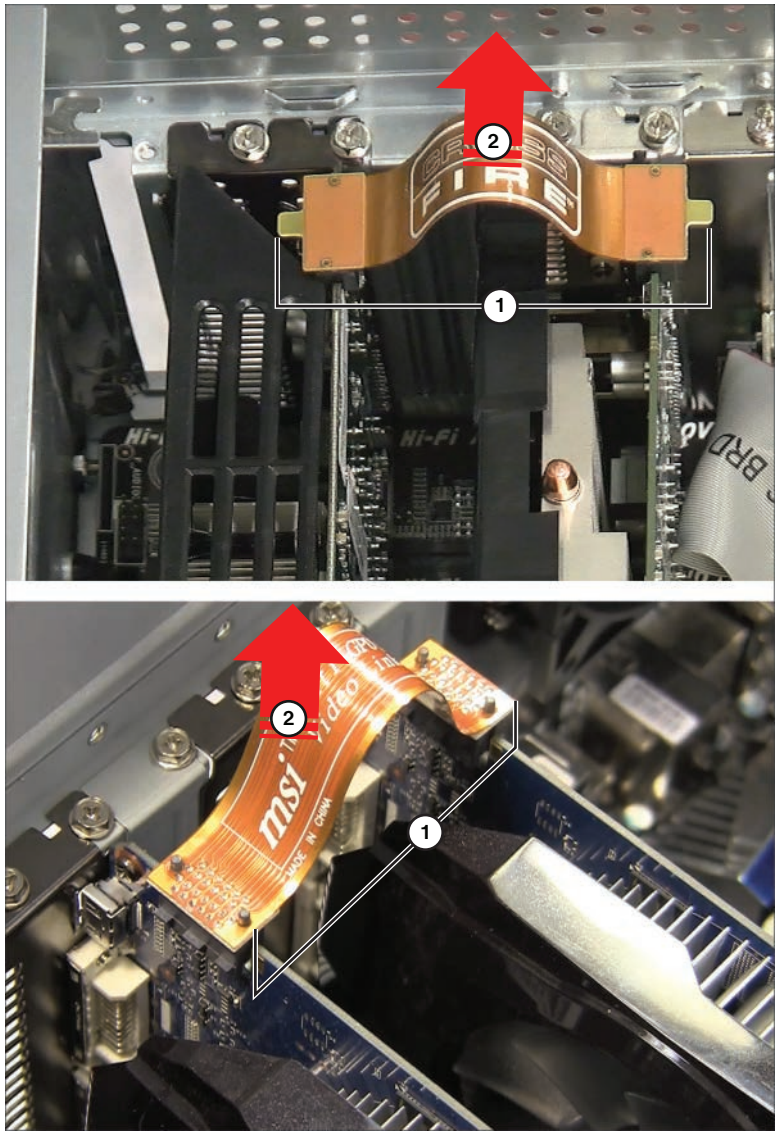
Step 5. Disconnect any power cables running to the video card (see Figure 3-80).



1. Push locking tab in
2. Pull power cable away from card

FIGURE 3-80 Removing the PCIe Power Cable from a Video Card

Step 6. Remove SLI (NVIDIA) or CrossFire (AMD) cables connected to any card(s) you are removing (see Figure 3-81).

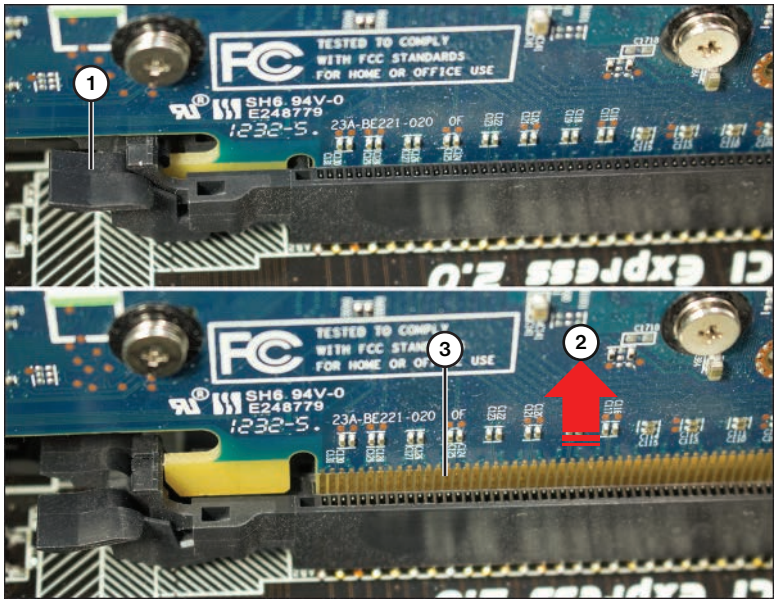


1. Lift up ends of connector cable to release
2. Lift connector cable out of system

FIGURE 3-81 SLI and CrossFire Cables, Which Should Be Removed Before Removing Video Cards for Replacement

Step 7. Remove the old video card(s) by removing the screw holding a card bracket in place and releasing the card-retention mechanism that holds video card in place (see Figure 3-82). Repeat for each video card.

NOTE Card-retention mechanisms vary widely from motherboard to motherboard. In addition to the design shown in Figure 3-82, some use a lever that can be pushed to one side to release the lock; others use a knob that is pulled out to release the lock.



1. **Push down on locking tab**
2. **Pull up on card**
3. **Card connectors now visible**

FIGURE 3-82 Releasing the Card-Retention Mechanism Before Removing a PCIe x16 Video Card

To complete a CrossFire or SLI installation, use the configuration apps supplied with the video card drivers to enable CrossFire or SLI and select specific 3D performance settings.

Video Card Physical Installation

Follow these steps to install the new video card:

Key Topic

Step 1. Insert the new video card into a PCIe x16 slot. If the motherboard has two or more PCIe x16 slots, use the slot closest to the port cluster for the primary (or only) card.

Step 2. Lock the card into position with the card retention mechanism and with the screw for the card bracket.

Step 3. If the card uses power, connect the appropriate PCIe power connector to the card (refer to Figure 3-80).

Step 4. If the card is running in multi-GPU mode and uses SLI or CrossFire, connect the appropriate bridge cable between the new card and a compatible existing (or new) card in the system (refer to Figure 3-81).

Step 5. Reattach the data cable from the display to the new video card.

Driver Installation

Driver installation takes place when the system is restarted:

Step 1. Turn on the display.

Step 2. Reconnect power to the system and turn on the computer.

Step 3. Provide video drivers as requested; you might need to run an installer program for the drivers. If you are installing the card under Linux, check with the card vendor for downloadable Linux drivers for your distribution.

Step 4. If the monitor is not detected as a Plug and Play monitor but as a default monitor, install a driver for the monitor.

NOTE A driver disc might have been packed with the monitor, or you might need to download a driver from the monitor vendor's website. If you do not install a driver for a monitor identified as a default monitor, you will not be able to choose from the full range of resolutions and refresh rates the monitor actually supports.

Installing Sound Cards

A sound card converts the digital sound signal into an analog sound experience preferred by the human ear. For most users, the onboard sound card that is integrated into the motherboard is fine, but some users want high-fidelity sound for home theaters and music mixing. Purchasing an internal sound card that is more powerful and has more input/output options makes sense for professionals who work with sound.

Installing a sound card is similar to installing a video card. Before installing a sound card, be sure to disable onboard audio with the system BIOS setup program and uninstall any proprietary mixer or configuration apps used by onboard audio.

To install a sound card, follow these steps:

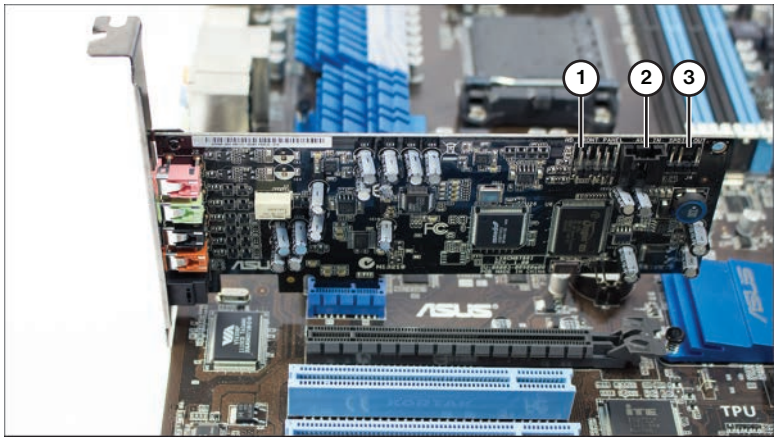
Step 1. Shut down the computer and disconnect it from AC power.

Step 2. Open the case to gain access to the PC's expansion slots.

Step 3. Select an empty PCIe or PCI expansion slot that is appropriate for the form factor of the sound card to be installed.

Step 4. Remove the corresponding bracket from the back of the case.

Step 5. Insert the card into the slot (see Figure 3-83).



1. Front panel audio header
2. Aux in (from optical drive)
3. SPDIF out digital audio header

FIGURE 3-83 A Typical PCIe Sound Card with 5:1 Surround Audio After Being Inserted into an Expansion Slot

Step 6. Secure the card bracket into place, using the screw or locking mechanism you removed or released in Step 4.

Step 7. Connect any header cables as needed (refer to Figure 3-83).

Step 8. Connect speakers, microphone, and line-in and line-out cables as needed to support your audio or home theater subsystem.

Step 9. Close the system.

Step 10. Reconnect AC power and restart the system.