4.6.3 Device Troubleshooting Facts

This lesson covers the following topics:

- Troubleshoot installed devices
- Troubleshoot issues caused by installation
- Troubleshoot input and USB devices

Troubleshoot Installed Devices

If you have installed or connected a device but it is not working properly, try the following:

- Make sure that devices are plugged in and turned on, that all cables are securely connected, and that expansion cards are properly seated.
- Update the driver to the latest version by downloading the latest driver from the manufacturer's website.
- Check BIOS/UEFI settings to ensure that the function is enabled.
- Verify that the device is recognized and enabled in Device Manager.
    - If the device is not listed in Device Manager, try rescanning for new devices. If that doesn't detect the device, make sure the device is plug and play compatible and that it is correctly connected and turned on.
    - A yellow question mark identifies a device that Windows could not recognize (no driver was found for the device). To correct this problem, you can right-click the device and search for a suitable driver. In many cases, you will need to download the driver from the manufacturer's website or install the driver from the device's installation disc.
    - A down arrow identifies a disabled device. To use a disabled device, enable it in Device Manager.
    - A device with an exclamation mark indicates some kind of problem with the device. The device might be partially working, but has encountered some type of error.
- If the hardware device still does not work, try replacing it with one you know to be good (ideally, one that is exactly the same). For example, if you can't get the network card working, replace it with one that you know works. If the new one works, then the old one is broken.
- In addition to swapping the cards, try moving the device to a different bus slot or connector.
- For hardware devices that include firmware, try updating the firmware to fix bugs, make new features available, or reduce security risks.
    - Download the firmware update from the manufacturer's website.
    - Before you update the firmware, back up or write down configuration settings.
    - Do not turn off the device during the update.

Troubleshoot Issues Caused by Installation

Occasionally, installing a new device will lead to system instability, crashes, BSODs, or even the inability to boot the system. If your computer has any of these problems and you have recently added a new device or updated a driver, try the following:

- If you can boot the system and log on:
    - Roll back the driver to a previous version if it was updated recently.
    - Disable the device in Device Manager.
    - Physically remove the device and then uninstall the device in Device Manager to remove the driver from the system. If you uninstall the device without removing it from the system, Windows will detect the device at the next startup and try to reinstall the driver.

- Revert the system to a restore point before the device was updated or added.
- If the system crashes during startup before you can log on, try booting using the Last Known Good configuration. This starts Windows using the hardware configuration that existed during the last successful logon.

  If you install a new device and then restart the computer and log on successfully, using Last Known Good will not help resolve the problem.

- If the system crashes during startup or has a problem after you log on that prevents you from taking actions to correct the problem, try booting into Safe Mode. Once in Safe Mode, disable or uninstall the device, roll back the driver, or revert to a restore point.
- If you cannot boot the system into Safe Mode:
  - Enable boot logging to record a detailed list of drivers that are loading during system startup. Examine the **Ntbtlog.txt** file and identify the last driver that has loaded successfully. The problem device will be after this device.
  - Boot the system from the installation disc and use System Restore to revert the system to a recent restore point.
- If you still can't start the system, try reducing the system to a minimum state by removing everything except for the CPU, one memory module, the video card, and the hard disk or optical drive for starting the operating system. Once you can start the system, add hardware devices one by one until you find the component that is causing the problem. You can also perform the process in reverse, removing components until the system becomes stable, then adding components back in.

Troubleshoot Input and USB Devices

Device	Considerations
Input Devices	Check the following when troubleshooting input devices: - Make sure the device is plugged in securely. - For stuck or malfunctioning keyboard keys, you might be able to pop the key off and clean the contact underneath. Be aware that replacing the keyboard might be cheaper than spending a lot of time cleaning it. - Make sure that nothing is on the keyboard as the system boots. If a key is pressed during the boot up process, a 301 (keyboard) error can result. If this happens, then it is more than likely you will have to reboot. - For wireless devices, check the battery level. Charge the device or change the batteries if necessary. - If advanced features are not available for the device, update or install the correct device driver.
USB	To troubleshoot USB and FireWire devices, consider the following: - Install the driver before plugging in the device. - Overloading the USB bus's power resources can cause devices to not have sufficient power to work properly. Make sure that you are not exceeding 500 mA of power through the USB bus. - The cable might be too long for the current setup. Remember that shorter cable lengths are best. Try not to use cables that are longer than 3–4 feet. - Verify BIOS/UEFI settings for onboard USB. Make sure onboard ports are enabled and that the correct USB version is enabled.