

REVIEW LESSON

MTA Course: 98-365 Windows Server® Administration Fundamentals

Lesson name: Understanding Server Maintenance 6.1

Topic: Identify steps in the startup process

(One 50-minute class period)

File name: WinServerFund_RL_6.1

Lesson Objective

6.1: Identify steps in the startup process. *This objective may include but is not limited to:* BIOS; bootsector; bootloader; MBR; boot.ini; bcdedit; POST; Safe Mode.

Preparation Details

Prerequisite student experiences and knowledge

This MTA Certification Exam Review lesson is written for students who have learned about Windows® Server Administration fundamentals. Students who do not have the prerequisite knowledge and experiences cited in the objective will find additional learning opportunities using resources such as those listed in the Microsoft® resources and Web links at the end of this review lesson.

Instructor preparation activities

- Make copies of Student Activity WinServerFund_SA_6.1
- If available, have one virtual machine:
 - Windows Server 2008® R2 (Windows 7 Professional can be substituted)

Resources, software, and additional files needed for this lesson

- WinServerFund_PPT_6.1
- WinServerFund_SA_6.1
- WinServerFund_SA_6.1_Key

Teaching Guide

Essential Vocabulary

Boot Configuration Data (BCD) Store—contains boot configuration parameters and controls how the operating system is started in Windows 7® and Windows Server 2008 R2 operating systems.

basic input/output system (BIOS)—on PC-compatible computers, the set of essential software routines that tests hardware at startup, starts the operating system, and supports the transfer of data among hardware devices, including the date and time.

master boot record (MBR)—the first sector of the first hard disk; a physically small but critical element in the startup process on x64- and x86-based computer. When a computer is booted, it processes a series of self-tests and then reads the master boot record, or MBR, into memory. The MBR contains instructions that locate the disk's system (startup) partition, read the contents of the first sector of the system partition into memory, and then carry out the instructions contained in that sector.

power-on self-test (POST)—a set of routines stored in a computer's read-only memory (ROM) that tests various system components such as RAM, the disk drives, and the keyboard to see whether they are properly connected and operating.

Safe Mode—a boot option that loads the Windows operating system with the minimal set of drivers. This option allows Windows to start so that you can modify the registry or load or remove drivers. Safe mode can be started by pressing <F8> during startup.

Lesson Sequence

Activating prior knowledge/lesson staging (Anticipatory Set: 10 minutes)

1. Student prompt (see PowerPoint® slide 3): On a sheet of paper, describe steps in the Windows startup process.
2. Give students a few minutes to respond, allowing them to work until they have finished.
3. As time permits, call on a few students to report to the group with their responses.

Lesson activity (40 minutes)

1. Teacher Instruction (20 minutes)
 - Use the included PowerPoint presentation to review the Windows startup process.
 - At the end of the slideshow, ask the students to answer the Review Questions. Small-group discussions or a “think-pair-share” approach may be beneficial.
 - Show the question and give the students 1 minute to process the question and come up with answers.
 - Then give the students 2 minutes to discuss answers with a partner.

- Finally, have each pair of students share their answers with the whole group.
 - Repeat for each additional review question.
2. Guided Practice (20 minutes; please see the “Additional notes to the instructor” section regarding this assignment)
- Students complete WinServerFund_SA_6.1, modifying the Boot Configuration Data (BCD) Store and answering questions about the start-up process.
 - If time allows, you may review all or part of the worksheet.

Assessment/lesson reflection (10 minutes)

1. At the bottom of the page, tell students to write any questions they have or any topics about which they would like more assistance.
2. After class, look through the student responses and follow up with any student requiring additional help.

Microsoft resources and Web links

- **Microsoft TechNet: Boot Configuration Data Editor Frequently Asked Questions**
[http://technet.microsoft.com/en-us/library/cc721886\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc721886(WS.10).aspx)
- **Microsoft TechNet: How the Boot Configuration Data Store Works**
[http://technet.microsoft.com/en-us/library/cc770770\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc770770(WS.10).aspx)
- **Microsoft TechNet: Power-On Self-Test Process**
<http://technet.microsoft.com/en-us/library/cc976730.aspx>
- **Microsoft TechNet: Troubleshooting the Startup Process**
<http://technet.microsoft.com/en-us/library/bb457123.aspx>

Suggested best practices

- Providing demonstrations will be helpful with this lesson plan. If possible, have a system configured as a dual boot system to show the students the difference between a BCD Store with only one boot option versus a system with multi-boot options. The students will not have time to create a multi-boot environment.

Additional notes to the instructor

- The worksheet asks students to modify the BCD Store both using the GUI and BCDedit.exe. The paths in the answer key are from a virtual machine and should be similar to their systems. Answers may vary, however, due to lab setups.