

REVIEW LESSON

MTA Course: 98-365 Windows Server® Administration Fundamentals

Lesson name: Understanding Server Performance Management 5.1

Topic: Identify major server hardware components

(One 50-minute class period)

File name: WinServerFund_RL_5.1

Lesson Objective

5.1: Identify major server hardware components. *This objective may include but is not limited to:* memory; disk; processor; network; 32 and 64 bits; removable drives; graphic cards; cooling; power usage; ports.

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_5.1

Resources, software, and additional files needed for this lesson

- WinServerFund_PPT_5.1
- WinServerFund_SA_5.1
- WinServerFund_SA_5.1_Key
- Internet access

Teaching Guide

Essential Vocabulary

hot-pluggable—replacing system components without shutting down the system. More specifically, hot-swapping describes replacing components without significant interruption to the system, while hot-plugging describes the addition of components that would expand the system without significant interruption to the operation of the system

memory—in common usage, it refers only to a computer's main memory, the fast semiconductor storage (RAM) directly connected to the processor or device where information can be stored and retrieved. In the most general sense, memory can refer to data storage such as disk drives or tape drives.

network interface card (NIC)—a hardware device that handles an interface to a computer network and allows a network-capable device to access that network.

Open Systems Interconnection reference model (OSI)—a layered architecture (plan) that standardizes levels of service and types of interaction for computers exchanging information through a communications network.

rack-mounted—built for installation in a metal frame or cabinet of standard width (typically 19 inches or 23 inches) and mounting arrangements.

Redundant Array of Independent Disks (RAID)—a data storage method in which data is distributed across a group of computer disk drives that function as a single storage unit. All the information stored on each of the disks is duplicated on other disks in the array. This redundancy ensures that no information will be lost if one of the disks fails. RAID is generally used on network servers where data accessibility is critical and fault tolerance is required.

Serial Attached SCSI (SAS)—a computer bus used to move data to and from computer storage devices such as hard drives and tape drives.

tower—a microcomputer system in which the cabinet for the central processing unit (CPU) is tall, narrow, and deep rather than short, wide, and deep. The motherboard is usually vertical, and the disk drives are often perpendicular to the motherboard. A tower cabinet is at least 24 inches tall.

uninterruptable power supply (UPS)—a device, connected between a computer (or other electronic equipment) and a power source (usually an outlet receptacle), that ensures that electrical flow to the computer is not interrupted because of a blackout and, in most cases, protects the computer against potentially damaging events.

Lesson Sequence

Activating prior knowledge/lesson staging (Anticipatory Set: 2 minutes)

1. Student prompt (see PowerPoint® slide 3): On a sheet of paper, indentify what processor type is required for Microsoft® Windows Server 2008 R2.
2. Give students 1 minute 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 major server hardware components.
 - 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)
 - Students complete WinServerFund_SA_5.1, answering questions regarding major server hardware components.
 - If time allows, you may review all or part of the worksheet by discussing student’s responses to the questions.

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

- **Wikipedia: 19-inch rack**
<http://upload.wikimedia.org/wikipedia/en/2/29/Chassis-Plans-Rack.jpg>
- **Wikipedia: Chassis-Plans-3U.jpg**
<http://upload.wikimedia.org/wikipedia/en/0/0c/Chassis-Plans-3U.jpg>

- **Wikipedia: Chassis-Plans-Rack.jpg**
<http://upload.wikimedia.org/wikipedia/en/2/29/Chassis-Plans-Rack.jpg>
- **Wikipedia: Data Center**
http://en.wikipedia.org/wiki/Data_center
- **Wikipedia: FileSPARCstation20 scsi cradle with drive**
http://en.wikipedia.org/wiki/File:SPARCstation20_scsi_cradle_with_drive.jpg
- **Wikipedia: Hot swapping**
http://en.wikipedia.org/wiki/Hot_swapping
- **Microsoft: RAID**
[http://msdn.microsoft.com/en-us/library/ms184252\(SQL.90\).aspx](http://msdn.microsoft.com/en-us/library/ms184252(SQL.90).aspx)
- **Wikipedia: RamTypes.jpg**
<http://upload.wikimedia.org/wikipedia/commons/a/ac/RamTypes.JPG>
- **Wikipedia: Server (computing)**
[http://en.wikipedia.org/wiki/Server_\(computing\)](http://en.wikipedia.org/wiki/Server_(computing))
- **Wikipedia: Uninterruptable power supply**
http://en.wikipedia.org/wiki/Uninterruptible_power_supply
- **Wikipedia: UPSFrontView.jpg**
<http://upload.wikimedia.org/wikipedia/commons/archive/f/f4/20061116141103%21UPSFrontView.jpg>
- **Wikipedia: Storage Area Network**
http://en.wikipedia.org/wiki/Storage_Area_Network

Suggested best practices

- This lesson plan benefits greatly from visual aids. There are hyperlinks available in the PowerPoint presentation to several images of hardware components. If a server class machine is available, use that for visual representation of the various hardware components. If the server contains hot-pluggable components, demonstrate how they are removed and allow the students to view the components individually.