

REVIEW LESSON

MTA Course: 98-365 Windows Server® Administration Fundamentals

Lesson name: Understanding Server Performance Management 5.2

Topic: Understand performance monitoring

(One 50-minute class period)

File name: WinServerFund_RL_5.2

Lesson Objective

5.2: Understand performance monitoring. *This objective may include but is not limited to:* methodology; procedures; creating a baseline; perfmon; Resource Monitor; Task Manager; performance counters.

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.

Students should have used Performance Monitor on Windows Server 2008® R2 or Windows 7®.

Instructor preparation activities

- Make copies of Student Activity WinServerFund_SA_5.2
- 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_5.2
- WinServerFund_SA_5.2
- WinServerFund_SA_5.2_Key

Teaching Guide**Essential Vocabulary**

counters—measurements of system state or activity.

memory—in common usage, it refers only to a computer's main memory, the fast semiconductor storage (RAM) directly connected to the processor or a 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.

paging file—a file on the hard disk that operating systems (such as Windows, Mac OS X, and UNIX) use to hold parts of programs and data files that do not fit in memory. The paging file and physical memory, or RAM, make up virtual memory. Data is moved from the paging file to memory as needed and moved from memory to the paging file to make room for new data in memory.

performance—is the measure of how quickly a computer completes application and system tasks. Overall system performance might be limited by the access speed of the physical hard disks, the amount of memory available to all running processes, the top speed of the processor, or the maximum throughput of the network interfaces.

reliability—is the measure of how often the system operates as it is configured and expected to perform. Reliability can be reduced when applications stop responding, services stop and restart, drivers fail to initialize, or in the worst case, when operating systems fail.

Task Manager—a Windows application used to manage programs, services, and processes and monitor a computer performance.

Lesson Sequence

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

1. Student prompt (see PowerPoint® slide 3): On a sheet of paper, answer the following questions:
 - a. A system on the network is running slowly, a performance report is produced and it shows that the page file is being accessed at a high rate. What can be done to alleviate this problem?
 - b. Why would you create a baseline report using performance monitor on a new system?
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 performance monitoring.
 - 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_5.2, creating data collector sets and performance reports.
 - If time allows, you may review all or part of the worksheet.

Assessment/lesson reflection (5 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: How to use and troubleshoot issues with Windows Task Manager**
<http://support.microsoft.com/kb/323527>
- **Microsoft TechNet: Chapter 10 – Working with Performance Counters**
<http://technet.microsoft.com/en-us/library/bb734903.aspx>
- **Microsoft TechNet: Performance and Reliability Monitoring Step-by-Step Guide for Windows Server 2008**
[http://technet.microsoft.com/en-us/library/cc771692\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc771692(WS.10).aspx)
- **Microsoft TechNet: Performance Monitoring Getting Started Guide for Windows 7 and Windows Server 2008 R2**
[http://technet.microsoft.com/en-us/library/dd744567\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/dd744567(WS.10).aspx)
- **Microsoft TechNet: Windows Performance Monitor**
(*<http://technet.microsoft.com/en-us/library/cc749249.aspx>*)
- **Microsoft TechNet: Windows Reliability and Performance Monitor**
[http://technet.microsoft.com/en-us/library/cc755081\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc755081(WS.10).aspx)

Suggested best practices

- The PowerPoint presentation steps the students through the activities they will be performing in WinServerFund_SA_5.2. It is important to view the additional counters. It is also important to discuss what some of the counters' purposes are by clicking the description box and how you can use that information to determine optimum performance.

Additional notes to the instructor:

- The student activity has the students create performance reports on their systems. The results will vary based on the fact that each system is running something different. In a typical lab environment, the systems should be similar; therefore, the resource results among the students should be similar. The instructor should run through the activity to create his/her own baseline to compare to the students' results.