

## REVIEW LESSON

MTA Course: 10753 Windows Operating System Fundamentals

Lesson name: Windows Operating System Fundamentals 4.1

Topic: Understand file systems (One 50-minute class period)

File name: 10753\_WindowsOS\_RL\_4.1

### Lesson Objective

**4.1:** Understand file systems. *This objective may include but is not limited to:* understanding FAT, FAT32, NTFS, and 32 bit vs. 64 bit.

### Preparation Details

#### Prerequisite student experiences and knowledge:

This MTA Certification Exam Review lesson is written for students who have learned about Microsoft Windows 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 “Resources” section at the end of this review lesson.

#### Instructor preparation activities:

- Make copies available of the Student Activity document 10753\_WindowsOS\_SA\_4.1.
- The instructor should have access to an existing system running Windows 7 Professional or a virtual machine with Windows 7 Professional for the purpose of demonstrating how to explore online resources for virtual applications.

#### Resources, software, and additional files needed for this lesson:

- 10753\_WindowsOS\_SA\_4.1
- 10753\_WindowsOS\_SA\_4.1\_key
- 10753\_WindowsOS\_PPT\_4.1

## **Teaching Guide**

### **Essential Vocabulary**

**FAT file system**—a filing system with the file allocation table (FAT) located at the beginning of a logical volume. FAT was designed for small disks and simple folder structures. Two copies of the FAT are stored on the volume. If one copy of the FAT becomes corrupted, the other FAT is used.

**NT file system (NTFS)**—an advanced file system designed for use specifically with Microsoft Windows NT. It supports long filenames, full security access control, file system recovery, extremely large storage media, and various features for the Windows NTPOSIX subsystem.

### **Lesson Sequence**

#### **Activating prior knowledge/lesson staging (5 minutes):**

Direct students to answer each question in their notes.

1. What is the file size limit on a FAT32 formatted volume? (4GB.)
2. Does NTFS support encryption? (Yes, NTFS 5.0 and later support encryption.)
3. Can you convert an NTFS-formatted volume to a FAT32-formatted volume? (Yes, however, the partition must be reformatted; therefore, all data will be lost unless backed up to a separate device.)

#### **Lesson activity (40 minutes):**

1. Teacher instruction (20 minutes; see the “Suggested best practices” section regarding this presentation)
  - a. Use the included Microsoft PowerPoint presentation to review file systems.
2. Guided practice (20 minutes)
  - a. Direct students to complete the Student Activity document 10753\_WindowsOS\_SA\_4.1.

#### **Assessment/lesson reflection (5 minutes):**

1. In the same notes that they created for the “Activating prior knowledge/lesson staging” section at the beginning of the class, direct students to check their initial answers and make any changes if necessary.
2. Instruct students to submit any questions they have or any topics about which they would like more assistance.

3. After class, look through the student responses and follow up with any student requiring additional help.

**Resources:**

- **Microsoft: Comparing NTFS and FAT file systems**  
*<http://windows.microsoft.com/en-US/windows-vista/Comparing-NTFS-and-FAT-file-systems>*
- **Microsoft TechNet: FAT**  
*<http://technet.microsoft.com/en-us/library/cc938438.aspx>*
- **Microsoft: Formatting Disk Drives**  
*<http://windows.microsoft.com/en-US/windows-vista/Formatting-disks-and-drives>*
- **Microsoft: Convert a hard disk or partition to NTFS format**  
*<http://windows.microsoft.com/en-US/windows7/Convert-a-hard-disk-or-partition-to-NTFS-format>*
- **Microsoft: Convert a hard disk or partition to FAT32 format**  
*<http://windows.microsoft.com/en-US/windows7/Convert-a-hard-disk-or-partition-to-FAT32-format>*
- **Microsoft TechNet: File Systems**  
*[http://technet.microsoft.com/en-us/library/cc766145\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc766145(WS.10).aspx)*
- **Microsoft: File System Redirector**  
*[http://msdn.microsoft.com/en-us/library/aa384187\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/aa384187(v=vs.85).aspx)*

**Suggested best practices:**

- Microsoft recommends that all drives and volumes be formatted using NTFS. FAT32 is recommended only when it is needed for multi-boot systems. It is important to tell the students that the file permissions built-in feature will be used in Module 4.2. Securing the file system using permissions on remote drives is a good practice; however, it does not prevent loss due to someone physically stealing your drives and then accessing the data. Only encryption can protect the files in the event of theft.