

## REVIEW LESSON

MTA Course: 98-367 Security Fundamentals

Lesson name: Understand Operating System Security 2.5\_A

Topic: Understand encryption

(One 50-minute class period)

File name: SecurityFund\_RL\_2.5\_A

### Lesson Objective

**2.5\_A:** Understand core security principles. *This objective may include but is not limited to:* EFS, how EFS-encrypted folders impact moving and copying files, BitLocker<sup>®</sup> (ToGo), Trusted Platform Module (TPM), software-based encryption, MAIL encryption and signing and other uses.

### Preparation Details

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

- SecurityFund\_PPT\_2.5\_A
- Windows<sup>®</sup> 7 or Windows Server<sup>®</sup> 2008 R2
- Microsoft<sup>®</sup> Outlook<sup>®</sup> 2007 or 2010

### Teaching Guide

#### Essential vocabulary

**BitLocker (ToGo)**—BitLocker drive encryption is a data protection feature available Windows Server 2008 R2 and in some editions of Windows 7 Ultimate Edition. Having BitLocker integrated with the operating system addresses the threats of data theft or exposure from lost, stolen, or inappropriately decommissioned computers.

**EFS**—encrypting file system (EFS) is a feature of Windows that allows you to store information on your hard disk in an encrypted format. Encryption is the strongest protection that Windows provides to help you keep your information secure.

**Encryption**—the process of encoding data to prevent unauthorized access, especially during transmission. Encryption is usually based on one or more keys, or codes, that are essential for decoding, or returning the data to readable form.

**Secure/Multipurpose Internet mail (S/MIME)**—an Internet e-mail security-oriented protocol that adds public key encryption and support for digital signatures to the widely used MIME e-mail protocol.

### **Lesson Sequence**

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

1. Student prompt (see PowerPoint® slide 3): On a sheet of paper, list the “threats” that BitLocker could protect against.
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, slide 5)
  - Use the included PowerPoint slideshow to start the “Windows BitLocker ToGo®” video. <http://technet.microsoft.com/en-us/windows/dd408739.aspx>
  - At the end of the presentation, ask the students to review the video. Small group discussions may be beneficial.
  - Finally, have each student share his/her comments with the whole group.
2. Guided practice (20 minutes; slide 9)
  - Students complete the “walkthrough” in Outlook to set up mail encryption, identifying the steps required.
  - If time allows, have the students apply for a Digital Certificate by clicking on “encrypted email Settings”.

#### **Assessment/lesson reflection (10 minutes)**

1. On the same paper they used for the Anticipatory Set, tell students to summarize the importance of file and mail encryption. See PowerPoint slide 10.
  - Be sure to give ample time for students to write their summaries.
  - If time allows, pick a few students to read their summaries.
2. At the bottom of the page, tell students to write down 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.

### **Microsoft resources and Web links**

- **How Do I: BitLocker and BitLocker To Go? VIDEO**  
*<http://technet.microsoft.com/en-us/windows/dd408739.aspx>*
- **TechNet: BitLocker Drive Encryption Overview**  
*<http://technet.microsoft.com/en-us/library/cc732774.aspx>*
- **TechNet: Understanding S/MIME**  
*[http://technet.microsoft.com/en-us/library/aa995740\(EXCHG.65\).aspx](http://technet.microsoft.com/en-us/library/aa995740(EXCHG.65).aspx)*
- **TechNet: Windows Trusted Platform Module Management Step-by-Step**  
*[http://technet.microsoft.com/en-us/library/cc749022\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc749022(WS.10).aspx)*