Cybersecurity

Operations and Incident Response

4.1.3 Shell and Script Environments

What are some common shell and script environments used in Windows and Linux?

Overview
Given a scenario, the student will use the appropriate tool to assess organizational security.

Grade Level(s)
10, 11, 12

Cyber Connections

- Threats & Vulnerabilities
- Networks & Internet
- Hardware & Software

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Teacher Notes:

CompTIA SY0-601 Security+ Objectives

Objective 4.1

- Given a scenario, use the appropriate tool to assess organizational security.
    - Shell and script environments
        - SSH
        - PowerShell
        - Python
        - OpenSSL

Shell and Script Environments

Shell Environments

A ***shell*** is how a user interacts with an operating system. Typically a user will interact with the GUI (graphical user interface), but usually when a person is referring to a shell, they are referring to a CLI (command line interface). Here, a user will input commands as text to interact with the operating system. This is known as the Command Prompt or cmd.exe in a Windows environment. Users use certain simple commands like `dir`, `cd`, and `ipconfig` to interact with the system. In most Unix systems, which is a macOS and most Linux systems, the user will typically use a Bash shell. This Bash shell uses the Terminal with common commands like `ls`, `mkdir`, and `ifconfig` to interact with the system.

A ***script*** is a series of commands that automate a task for the user. One of the most common scripting languages today is ***Python***, which is a simple language in which users can write and run scripts that do a task for them automatically. Python is preinstalled on most operating systems, especially most Linux and macOS systems.

PowerShell is a newer CLI for Windows systems that is a scripting language inside of a shell environment. Users go into the PowerShell environment and can run pre-made scripts or type commands that allow them to have complete control over the system. ***SSH***, or Secure Shell, is a shell that allows a user to remotely connect and control another system. The user will connect to the remote system, log into the system, and then use commands in a CLI environment to remotely control that system. ***OpenSSL*** is not necessarily a shell or scripting language, but it is the security that most HTTPS websites use to encrypt their data since it goes over a network.