

Instructional Scenario

The Community Center

Tech Refresh



Estimated Time Required: 6 hours

Course/Duty Area: Cybersecurity Fundamentals/Securing Operating Systems

Scenario:

You are volunteering as a junior technician for a local Community Center that is upgrading its public computer lab. The center uses a variety of systems: Windows desktops for public use, a Windows server to manage files, Apple MacOS and iOS devices for the staff, Android tablets for kids' programs, and Linux (Ubuntu) for its small web server.

The computer lab recently faced a security scare when a volunteer's laptop was infected with a virus that turned out to be a rootkit, leading to a zero-day vulnerability that bypassed traditional defenses. To prevent this, the new lab must implement operating system (OS) hardening, a strict patch management schedule, regular application updates, and defined user permissions to ensure public users don't have administrative rights.

To make the lab even safer, the lead technician wants to explore virtualization technology. Finally, a system backup plan must be created.

Big Question:

How can a technician set up and secure a diverse computer lab to ensure user safety and data reliability while preventing common cyber-attacks?

Focused Questions:

- What is the primary role of an OS, and why would you choose Linux for a web server but Windows for a public desktop?
- How do you match a computer's hardware capabilities with the specific requirements of a Windows Server OS?
- If a computer is acting strangely, how would you determine if the problem is a common virus, a rootkit, or a dynamic-link library (DLL) injection?
- What are three best practices for hardening a Windows desktop to protect it from public users?
- Why is it important to have an audit policy and different user permissions for staff versus the public?
- How does using a virtual machine as a sandbox protect the rest of the lab's physical computers?
- If the center has 500GB of data, what is the most efficient way to use full and incremental backups to save space while keeping data secure?

Student Project or Outcome:

Students (individually or in groups) will submit a "Community Center Computer Lab Proposal" detailing their configuration choices and addressing all requested requirements of the new computer lab.

Project-Based Assessment:

- “Community Center Computer Lab Proposal” detailing their configuration choices and addressing all requested requirements of the new computer lab.
- Group role-play where students explain and defend their choices to the lead technician at the local Community Center.
- Peer review/feedback of another student’s proposal with any recommended adjustments.

Teacher Resources:

- [Virginia Cyber Range](#)
- [Cybersecurity 1](#), Cyber.org
- [NICE Workforce Framework for Cybersecurity \(NICE Framework\)](#), National Initiative for Cybersecurity Careers and Studies (NICCS)

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ChatGPT artificial intelligence was used in the development of this instructional scenario.