

# Computer Systems Technology II

**8623 36 weeks / 280 hours**

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## Acknowledgments

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## Course Description

**Suggested Grade Level:** 11 or 12

**Prerequisites:** 8622

This advanced course provides students with training in procedures for optimizing and troubleshooting concepts for computer systems, subsystems, and networks. Students explore the following:

- Basic network design and connectivity
- Network documentation
- Network limitations and weaknesses
- Network security, standards, and protocols

Students will gain a basic understanding of emerging technologies including unified communications, mobile, cloud, and virtualization technologies. The course prepares students for postsecondary education and training and a successful career in information technology. Upon successful completion of the course, students may qualify to take CompTIA’s A+ and Network+ certification exams.

## Task Essentials List

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (\*) are sensitive.

Task Number	8623	Tasks/Competencies
Demonstrating Safe Lab Procedures and Tool Use		
39	⊕	Explain safe lab procedures for repairs and maintenance.
40	⊕	Demonstrate use of tools and materials in the lab.
Demonstrating Preventive Maintenance and Troubleshooting		
41	⊕	Explain the purpose of preventive maintenance and data protection.
42	⊕	Perform preventive maintenance and data protection.
43	⊕	Apply the steps of the troubleshooting process.
44	⊕	Use tools and software for preventive maintenance.
45	⊕	Troubleshoot laptops.
46	⊕	Troubleshoot printers.
Analyzing Operating Systems		

<b>Task Number</b>	<b>8623</b>	<b>Tasks/Competencies</b>
47	+	Identify operating system files.
48	+	Identify concepts and procedures for creating, viewing, and managing disks, directories, and files in operating systems.
49	+	Upgrade an operating system.
50	+	Use command-line functions to manage operating systems.
51	+	Compare a domain-integrated PC with a workgroup PC.
52	+	Perform procedures to optimize the operating system.
53	+	Optimize an installed operating system.
54	+	Compare a default installation to a custom installation.
55	+	Perform a custom installation of an operating system.
56	+	Administer disks, directories, and files.
57	+	Optimize Web browser performance.
58	+	Optimize video subsystem.
59	+	Perform disk imaging and cloning.
60	+	Install a second operating system.
61	+	Troubleshoot operating systems.
<b>Performing Advanced Procedures on Networks</b>		
62	+	Identify potential safety hazards and implement proper safety procedures related to networks.
63	+	Design a network based on the customer's needs.
64	+	Implement the customer's network.

<b>Task Number</b>	<b>8623</b>	<b>Tasks/Competencies</b>
65	+	Configure a wireless network.
66	+	Install an email client.
67	+	Perform preventive-maintenance procedures for networks.
68	+	Troubleshoot the network.
<b>Performing Security Functions</b>		
69	+	Explain why security is important.
70	+	Describe security threats.
71	+	Explain Web security.
72	+	Describe physical and digital security procedures.
73	+	Outline security requirements based on customer needs.
74	+	Select security components based on customer needs.
75	+	Implement customer's security policy.
76	+	Evaluate preventive-maintenance on security systems.
77	+	Troubleshoot security functions.
<b>Examining Mobile Devices</b>		
78	+	Explain the basic features of mobile operating systems.
79	+	Establish network connectivity.
80	+	Compare methods of securing mobile devices.
81	+	Compare mobile hardware to laptops.
82	+	Configure mobile device synchronization.

Legend: ⊕ Essential ○ Non-essential ⊖ Omitted

## **Curriculum Framework**

# **Demonstrating Safe Lab Procedures and Tool Use**

### **Task Number 39**

**Explain safe lab procedures for repairs and maintenance.**

#### **Definition**

Explanation should include

- procedures for ensuring safe working environments
- a list of potential safety hazards, with a description of how to implement proper safety procedures for computer components
- a description of environmental issues (e.g., proper disposal of monitors and batteries)
- ESD-prevention procedures.

#### **Process/Skill Questions**

- What hazardous voltages are present inside a computer?
  - What is the proper way to dispose of a computer?
  - What are common hazards when working on the inside of a computer?
- 

### **Task Number 40**

**Demonstrate use of tools and materials in the lab.**

#### **Definition**

Demonstration should include proper use of

- eye protection
- various hand and specialty tools
- electrostatic discharge (ESD) prevention procedures

- cleaning materials.

### **Process/Skill Questions**

- What types of clothing and jewelry could be dangerous to wear in lab settings and when working with computer equipment?
- How do you mitigate ESD?
- What tools are commonly used on a personal computer?
- What solvents are appropriate for use inside a computer?

## **Demonstrating Preventive Maintenance and Troubleshooting**

### **Task Number 41**

**Explain the purpose of preventive maintenance and data protection.**

#### **Definition**

Explanation should include

- increasing safety
- maintaining performance
- providing data protection
- increasing product longevity
- maintaining productivity.

### **Process/Skill Questions**

- How can the absence of preventive maintenance lead to a loss of productivity?
- How can data be safeguarded from loss?
- What are some consequences of data loss or corruption?
- What are advantages of improved data read/write performance?

---

### **Task Number 42**

**Perform preventive maintenance and data protection.**

## **Definition**

Performance should include

- using backup procedures
- inspecting visual and audio components
- making system updates
- scheduling preventive maintenance
- cleaning components on a routine basis
- using various utilities.

## **Process/Skill Questions**

- How often should a data backup occur?
  - What are the three types of data backup?
  - Where should data be backed up to?
  - When should system updates not be applied?
- 

## **Task Number 43**

**Apply the steps of the troubleshooting process.**

### **Definition**

Application should include the following steps:

- Identify the problem.
- Establish a theory of probable cause.
- Test the theory to determine cause.
- Establish a plan of action to resolve the problem, and implement the solution.
- Verify full system functionality.
- Document findings, actions, and outcomes.

### **Process/Skill Questions**

- What is the importance of documenting findings, actions, and outcomes?
  - What should be done if a probable cause is not the problem?
  - How does a repair technician know if a system is fully functional?
  - What is an acceptable level of performance of a computer system?
-



## **Task Number 44**

### **Use tools and software for preventive maintenance.**

#### **Definition**

Use should include hardware, software, and other tools.

#### **Process/Skill Questions**

- What software is often used during preventive maintenance?
  - What test equipment can be used for troubleshooting computer problems?
  - What software tool generally improves hard drive performance?
  - What are some software tools built into operating systems that improve system performance?
- 

## **Task Number 45**

### **Troubleshoot laptops.**

#### **Definition**

Troubleshooting should include

- using the six-step troubleshooting process
- assembly/disassembly
- troubleshooting power issues
- backlighting (LCD)
- keypad issues
- cooling.

#### **Process/Skill Questions**

- What are some common problems with laptops?
  - What components can be swapped in laptops for troubleshooting?
  - What problems are exacerbated by the laptop form factor?
  - How are keyboards removed from a laptop computer?
- 

## **Task Number 46**

## **Troubleshoot printers.**

### **Definition**

Troubleshooting should include

- using the six-step troubleshooting process
- identifying common output problems (e.g., blank pages, dark pages, streaking, driver issues)
- identifying paper path problems.

### **Process/Skill Questions**

- What are some common problems with printers?
- What component is at fault if a laser printer prints streaks on the paper?
- What is the problem if multiple pages are printed with random characters?
- How is the print head cleaned on an ink jet printer?

## **Analyzing Operating Systems**

### **Task Number 47**

## **Identify operating system files.**

### **Definition**

Identification should include the names, locations, and functions of boot sequence files

- BOOT.INI
- NTLDR
- NTDETECT.COM
- NTBOOTDD.SYS
- registry data files.

### **Process/Skill Questions**

- What is the function of the NTBOOTDD.SYS file?
- How is the boot sequence different between Windows XP and Windows 7?
- How can multiple operating systems be booted on a Microsoft computer?
- List all of the boot sequence files on a Windows 7 computer.

## **Task Number 48**

### **Identify concepts and procedures for creating, viewing, and managing disks, directories, and files in operating systems.**

#### **Definition**

Identification should include

- disks (e.g., active, primary, extended, and logical partitions)
- file systems (e.g., FAT 32, HPFS and NTFS)
- directory structures (e.g., create folders and navigate directory structures)
- files (e.g., creation, extensions, attributes, and permissions).

#### **Process/Skill Questions**

- What resources are available to technicians when managing disks?
  - What is the function of the active partition in a Microsoft operating system?
  - List three different Linux file system types. List three different Microsoft file system types.
  - What is the reference of a hierarchical directory structure called?
- 

## **Task Number 49**

### **Upgrade an operating system.**

#### **Definition**

Upgrading should include

- verifying hardware compatibility and meeting minimum system requirements
- backing up all relevant user data
- choosing proper installation method
- verifying third-party application functionality
- updating device drivers as applicable.

#### **Process/Skill Questions**

- How can a technician verify hardware compatibility?
- Which Microsoft operating systems can be directly upgraded to Windows 8?

- What software tools are available to determine if a Microsoft operating system can be upgraded?
  - What are disadvantages of upgrading an operating system?
- 

## **Task Number 50**

### **Use command-line functions to manage operating systems.**

#### **Definition**

Usage should reflect mastery of commands and appropriate syntax.

#### **Process/Skill Questions**

- When is it necessary to use command-line functions?
  - How do you list the contents of a directory with the command line?
  - How can you shutdown a computer with the command line?
  - List three commands with different syntax between Microsoft and Unix-based operating systems.
- 

## **Task Number 51**

### **Compare a domain-integrated PC with a workgroup PC.**

#### **Definition**

Comparison should include

- user rights (group and local policies)
- computer rights through policies.

#### **Process/Skill Questions**

- How are user rights established in a domain-integrated PC?
  - What is the function of the group policy editor?
  - What are the differences between local rights and domain rights?
  - What are major differences between client-server and peer-to-peer computer networking?
-

## **Task Number 52**

### **Perform procedures to optimize the operating system.**

#### **Definition**

Performance should include

- disk defragmentation
- disk cleanup
- disk diagnostics
- backups
- registry editing
- event log viewing
- remote access
- schedule of automatic tasks and updates
- restore points.

#### **Process/Skill Questions**

- When is it necessary to edit the registry?
  - How frequently should data backups be scheduled?
  - When are restore points automatically generated?
  - What files are deleted on a disk cleanup?
- 

## **Task Number 53**

### **Optimize an installed operating system.**

#### **Definition**

Optimization should include configuration of

- virtual memory
- hard-drive utilities
- system processes
- applications
- unessential services
- registry
- msconfig.

#### **Process/Skill Questions**

- When is optimization necessary?
  - How does a technician prevent programs from automatically starting on computer boot?
  - What tools are built in to a Microsoft operating system to improve hard drive performance?
  - What are the functions of the Task Manager?
- 

## **Task Number 54**

### **Compare a default installation to a custom installation.**

#### **Definition**

Comparison should include the expanded operating features and the application-specific requirements.

#### **Process/Skill Questions**

- Why are default installations recommended over custom?
  - When building a custom image for deployment, which applications should be included, and why?
  - What are advantages and disadvantages of a large number of custom deployment images?
  - List advantages and disadvantages of user computer customization in a corporate environment.
- 

## **Task Number 55**

### **Perform a custom installation of an operating system.**

#### **Definition**

Installation should include custom features as defined by the customer.

#### **Process/Skill Questions**

- What are some situations that might call for a custom installation?
- How are default Microsoft components (such as games) removed from a corporate image for deployment?
- How are programs added to a custom installation?
- How does a technician determine additional items required in a custom installation?

---

## **Task Number 56**

### **Administer disks, directories, and files.**

#### **Definition**

Administration should include configuration of

- drive partitions
- file systems
- file attributes
- file permissions
- basic or dynamic disks
- management console
- online/cloud storage.

#### **Process/Skill Questions**

- What regular administration duties are required of the technician?
- How are file permissions changed?
- How do you change the size of a partition on a hard drive?
- What is a drive partition?

---

## **Task Number 57**

### **Optimize Web browser performance.**

#### **Definition**

Optimization should include installation of necessary plug-ins and applets.

#### **Process/Skill Questions**

- When should installation of plug-ins be left to the user and not require the technician?
- How can a technician improve the start time of the Internet Explorer browser?
- List three alternatives to the Internet Explorer web browser.
- What are disadvantages of installing browser plug-ins for displaying media content?

## **Task Number 58**

### **Optimize video subsystem.**

#### **Definition**

Optimization should include

- multi-displays
- SLI and Crossfire
- digital vs. analog signaling
- color depth and resolution
- native resolution
- display technologies
- third-party drivers.

#### **Process/Skill Questions**

- In what work environments would optimizing video subsystems be performed?
  - Where should a technician find video drivers for optimum performance?
  - What is the importance of frequency in a display?
  - How does the number of video processing cores affect the video display?
- 

## **Task Number 59**

### **Perform disk imaging and cloning.**

#### **Definition**

Performance should include

- third-party software for cloning
- mounting disk images
- virtual CD drives
- PXE.

#### **Process/Skill Questions**

- What software packages are available to use for cloning?
- What additional tasks are required when cloning a Microsoft operating system?
- List three products used for cloning hard drives.
- List advantages and disadvantages of using PXE to deploy operating system images.



---

## **Task Number 60**

### **Install a second operating system.**

#### **Definition**

Installation should include

- partitioning of drives
- setting up virtual machines
- altering boot-configuration files
- setting boot order
- recognizing limitations of file systems.

#### **Process/Skill Questions**

- In what situations might a second operating system be required?
- What are the advantages and disadvantages of dual booting compared to virtualization?
- How much space on a hard drive should be allocated to a second operating system?
- What are the file system compatibilities between Microsoft and Unix-based operating systems?

---

## **Task Number 61**

### **Troubleshoot operating systems.**

#### **Definition**

Troubleshooting should include

- following the six-step troubleshooting process
- recovering operating systems (e.g., boot mode, ASR, and recovery console)
- replacing a missing or damaged file in the registry
- recognizing and resolving common error messages
- resolving system lockups, device-driver failures, auto restart errors, and application failures.

#### **Process/Skill Questions**

- What online sources are available to the technician when troubleshooting?

- What tools are available in Microsoft operating systems to recover a damaged installation?
- How do you boot into safe mode in a Microsoft operating system?
- How can user files be recovered if a computer will not boot?

# **Performing Advanced Procedures on Networks**

## **Task Number 62**

**Identify potential safety hazards and implement proper safety procedures related to networks.**

### **Definition**

Identification should include

- fiber-optic safety
- electrical safety
- OSHA fall guidelines
- cable, cable cutters, and cable-cutting safety hazards.

### **Process/Skill Questions**

- What would happen if one failed to comply with safety guidelines?
- What safety issues are unique to working with fiber optics?

---

## **Task Number 63**

**Design a network based on the customer's needs.**

### **Definition**

Design should include the following steps:

- Determine a topology.
- Determine protocols and network applications.
- Determine the components for the customer's network.
- Select cable types.

- Select ISP connection type.
- Select network adapters.
- Select network connectivity devices.

### **Process/Skill Questions**

- Why would selecting the right configurations be beneficial to you and the customer?
  - What considerations influence the selection of connector types?
- 

## **Task Number 64**

### **Implement the customer's network.**

#### **Definition**

Implementation should include the following steps:

- Install and test the customer's network.
- Configure the customer's Internet and network resources.
- Document network as constructed.
- Establish a network security plan.
- Educate end user on appropriate network use.

### **Process/Skill Questions**

- How would each node be tested to ensure connectivity?
  - What online tools can be used for documentation?
- 

## **Task Number 65**

### **Configure a wireless network.**

#### **Definition**

Configuration should include the following steps:

- Install and configure wireless NIC.
- Install, configure, and secure wireless routers.
- Test connection.

## **Process/Skill Questions**

- What command line utilities can be used to verify connectivity?
- 

## **Task Number 66**

### **Install an email client.**

#### **Definition**

Installation should include

- selecting appropriate email protocols
- configuring authentication and security
- testing connectivity.

#### **Process/Skill Questions**

- Why is it important to send and receive a test email?
  - What are the benefits and challenges of an email client compared with a web-based email application?
- 

## **Task Number 67**

### **Perform preventive-maintenance procedures for networks.**

#### **Definition**

Performance should include securing and protecting network cabling and equipment and adhering to the network security plan.

#### **Process/Skill Questions**

- What steps can be taken to ensure electromagnetic interference (EMI) does not occur?
  - What products are commonly used to protect cabling and equipment from physical harm?
- 

## **Task Number 68**

# Troubleshoot the network.

## Definition

Troubleshooting should include

- use of command-line tools (e.g., IPCONFIG, PING, TRACERT, NSLOOKUP, NETSTAT)
- cable-testing equipment
- NIC diagnostics
- protocol configuration
- permissions
- firewall configuration
- electrical interference
- third-party software
- documentation of findings, actions, and outcomes.

## Process/Skill Questions

- What would happen if a node were to drop for any reason?
- How can electrical interference affect network components?
- How are permissions most commonly established within an organization?

# Performing Security Functions

## Task Number 69

### Explain why security is important.

#### Definition

Explanation should include

- threats to data
- identity theft
- espionage
- privacy issues
- business losses
- loss of productivity.

#### Process/Skill Questions

- What are the implications of the end user obtaining a rootkit on a network?

- To what degree of privacy are employees' entitled when using a company network?
  - How is productivity affected when employees are given access to the Internet at work?
- 

## **Task Number 70**

### **Describe security threats.**

#### **Definition**

Description should include

- malicious software (e.g., viruses, worms, spyware, and spam)
- social engineering
- denial of service and other network threats
- proper disposal of data-storage devices.

#### **Process/Skill Questions**

- What are the differences among malware, spyware, and greyware?
  - What are some recent examples of denial-of-service threats?
  - How should data-storage devices be treated when their use is to be discontinued?
- 

## **Task Number 71**

### **Explain Web security.**

#### **Definition**

Explanation should include

- data encryption
- SSL/HTTPS
- firewalls
- password procedures.

#### **Process/Skill Questions**

- How is a network measured to ensure that proper steps have been taken for a secure environment?
- What are common strategies for managing passwords?

---

## **Task Number 72**

### **Describe physical and digital security procedures.**

#### **Definition**

Description should include

- requirements of a basic local security policy
- the tasks required to protect physical equipment
- ways to protect data
- encryption settings for wired and wireless networks
- password policies
- wireless security techniques.

#### **Process/Skill Questions**

- Why would having a local security policy benefit the business, technician, and end-user?
- What security issues are unique to wireless environments?

---

## **Task Number 73**

### **Outline security requirements based on customer needs.**

#### **Definition**

Outline should include a local security policy and an explanation of when and how to use security hardware and security application software.

#### **Process/Skill Questions**

- What could happen if a local security policy were not created?
- How might a technician or IT department develop a security policy?

---

## **Task Number 74**

### **Select security components based on customer needs.**

## **Definition**

Selection should be based on examination and comparison of

- security techniques
- access-control devices
- firewall types.

## **Process/Skill Questions**

- How could adopting the wrong approach to security adversely affect the customer's network/integrity?
  - What are some limitations of firewalls?
- 

## **Task Number 75**

### **Implement customer's security policy.**

#### **Definition**

Implementation should include the following steps:

- Configure security settings.
- Configure firewall types.
- Protect against malicious software.
- Educate the end user.

#### **Process/Skill Questions**

- What is the best way to see if a firewall is allowing or denying access as expected?
  - What are some recently exposed malicious software?
  - How should a technician educate the end user?
- 

## **Task Number 76**

### **Evaluate preventive-maintenance on security systems.**

#### **Definition**

Evaluation should include



- operating system updates
- account maintenance
- data backup
- backup testing
- off-site storage and in-house data library
- password policy.

### **Process/Skill Questions**

- What issues might be associated with operating system updates?
  - Why is a regular backup schedule vitally important to a network?
- 

## **Task Number 77**

### **Troubleshoot security functions.**

#### **Definition**

Troubleshooting should include identifying

- common security threats
- software firewall issues
- wireless client configuration issues
- data access issues (e.g., permissions, security policies)
- encryption and encryption technology issues
- documenting findings, actions, and outcomes.

#### **Process/Skill Questions**

- What are common approaches to troubleshooting security threats?
- How should each item be tested after troubleshooting?

## **Examining Mobile Devices**

### **Task Number 78**

#### **Explain the basic features of mobile operating systems.**

#### **Definition**

Explanation should include

- Android
- iOS
- Windows Mobile
- others.

### **Process/Skill Questions**

- How might a technician describe various mobile operating systems so that a customer can make an informed decision when purchasing a device?
  - What are the unique strengths of each of the most common mobile operating systems?
- 

## **Task Number 79**

### **Establish network connectivity.**

#### **Definition**

Services should include

- wireless/cellular configuration
- Bluetooth
- email.

### **Process/Skill Questions**

What are the best apps for each operating system to test connectivity?

---

## **Task Number 80**

### **Compare methods of securing mobile devices.**

#### **Definition**

Comparison should include

- pass codes
- biometrics
- picture passwords
- locator applications/services
- antivirus
- updates.

## Process/Skill Questions

- What are some of the newest methods of protecting mobile devices from theft?
  - What privacy concerns are related to locator applications/services?
- 

## Task Number 81

### Compare mobile hardware to laptops.

#### Definition

Comparison should include

- FSP (field serviceable parts)
- touch interface
- solid state storage
- upgradability.

#### Process/Skill Questions

- For what uses is a mobile device preferable over a laptop? A laptop over a mobile device?
  - When is it advisable to upgrade a mobile device?
- 

## Task Number 82

### Configure mobile device synchronization.

#### Definition

Configuration should include

- user data
- software
- connectivity.

#### Process/Skill Questions

- What services need to be installed to ensure proper synchronization is taking place?
- What happens if a sync is missed?

# SOL Correlation by Task

39	Explain safe lab procedures for repairs and maintenance.	
40	Demonstrate use of tools and materials in the lab.	
41	Explain the purpose of preventive maintenance and data protection.	
42	Perform preventive maintenance and data protection.	
43	Apply the steps of the troubleshooting process.	
44	Use tools and software for preventive maintenance.	
45	Troubleshoot laptops.	
46	Troubleshoot printers.	
47	Identify operating system files.	
48	Identify concepts and procedures for creating, viewing, and managing disks, directories, and files in operating systems.	
49	Upgrade an operating system.	
50	Use command-line functions to manage operating systems.	
51	Compare a domain-integrated PC with a workgroup PC.	
52	Perform procedures to optimize the operating system.	
53	Optimize an installed operating system.	
54	Compare a default installation to a custom installation.	
55	Perform a custom installation of an operating system.	
56	Administer disks, directories, and files.	
57	Optimize Web browser performance.	
58	Optimize video subsystem.	
59	Perform disk imaging and cloning.	
60	Install a second operating system.	
61	Troubleshoot operating systems.	
62	Identify potential safety hazards and implement proper safety procedures related to networks.	
63	Design a network based on the customer's needs.	
64	Implement the customer's network.	
65	Configure a wireless network.	
66	Install an email client.	
67	Perform preventive-maintenance procedures for networks.	
68	Troubleshoot the network.	

69	Explain why security is important.	History and Social Science: GOVT.1, GOVT.16
70	Describe security threats.	History and Social Science: VUS.1, VUS.14
71	Explain Web security.	History and Social Science: VUS.1, VUS.14
72	Describe physical and digital security procedures.	History and Social Science: VUS.1, VUS.14
73	Outline security requirements based on customer needs.	
74	Select security components based on customer needs.	
75	Implement customer's security policy.	
76	Evaluate preventive-maintenance on security systems.	
77	Troubleshoot security functions.	
78	Explain the basic features of mobile operating systems.	
79	Establish network connectivity.	
80	Compare methods of securing mobile devices.	
81	Compare mobile hardware to laptops.	
82	Configure mobile device synchronization.	

## Project: Network Backup

### Duty Areas

Performing Advanced Procedures on Networks  
 Performing Advanced Security Functions

### Materials/Equipment Needed

- Windows XP computer
- Internet connection

### Instructions

As the network administrator for a local bank, you are assigned the all-important task of overseeing the network backup system. Are you doing your backups properly? If not, you risk losing all of the bank's account records. And if the network backup fails, you will be held responsible! The first step is to decide which backup system to use.

### Section I: Cyber Hunt

Define the advantages and disadvantages of each type of backup system, as found here:  
<https://www.backup4all.com/>.

1. Incremental Backup
2. Differential Backup
3. Full Backup
4. Mirror Backup

## **Section II: Q&A**

The following questions are related to network backup systems. Use the links (when provided) to answer the questions. If a question does not have a link, you should offer your opinion based on what you have learned thus far.

5. Which method of backup would you choose and why?
6. How you would restore a file from a backup set?
7. What is a virtual tape library  
([http://www.webopedia.com/TERM/V/virtual\\_tape\\_library.html](http://www.webopedia.com/TERM/V/virtual_tape_library.html))?
8. How much does a Maxell 400 GB backup tape cost from CDWG  
(<http://www.cdwg.com/shop/products/default.aspx?EDC=712035>)?

## **Section III: Deliverables**

The following deliverables require individual research using the Internet and websites of your choice.

1. Develop a system request that outlines how you are going to implement your system.
2. Develop an executive and technical overview of data you are backing up. (Come up with your own ideas.)

## **GRADING RUBRIC**

### **Activity (Points)**

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- Answers to cyber hunt questions (12.5)

- Answers to Q&A (12.5)
- Two paragraphs on backup system chosen and rationale (15)
- One-page overview of your backup system and how it works (20)
- One-page executive overview of your backup system (20)
- One-page technical overview of your backup system (20)

## PRESENTATION

### Activity (Points)

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- PowerPoint presentation appearance (25)
- Accuracy of content (25)
- Posture and speaking abilities (25)
- Professional dress and demeanor (25)

# Project: Wireless Security Lab

## Duty Area

Performing Advanced Procedures on Networks

## Materials/Equipment Needed

- Wireless access point (WAP)
- Windows XP computer
- Wireless network adapter
- Optional wired PC with Windows XP

## Instructions

### 1. Connect the WAP (equipment may vary).

- Connect the WAP to power and Internet service.
- Turn on the WAP.
- After a minute or two, connect the wired PC to one of the network ports on the back of the WAP.

### 2. Log in to the WAP.

- Open a browser and go to 192.168.1.1 or 192.168.0.1 to access the WAP configuration interface.
- Username: *admin*
- Password: *password*

### 3. Configure the WAP.

- Click on wireless settings in the menu.
- Change the SSID to CSTLAB.
- Select WPA-PSK under security options.
- Provide a pass phrase in the appropriate box.
- Under Advanced Wireless Settings, click on Access Control List.
- Make sure Access Control is turned on.
- Save settings on the WAP.

#### **4. Test the configuration.**

- Use your wireless computer to connect to the WAP.
- Follow the on-screen prompts to gain access to the Internet.
- Verify connections.

#### **5. Finish the WAP configuration.**

- On the wireless PC, connect to 192.168.1.1 or 192.168.0.1.
- Log in, using proper credentials.
- Change the administrator password.
- Write the password down.
- Under DHCP settings on the WAP, change the settings to allow only the amount of leases you need (e.g., one or two).
- Save settings.
- Turn off SSID Broadcast on the WAP.
- Save settings.

#### **6. Document your work.**

- Using a word-processing program, document all of the settings that you have modified on the WAP.
- Save document and print.

### **Related Questions (to be completed and turned in as part of the lab)**

1. What is the model number of your WAP?
2. What is the SSID of your WAP?
3. Why did you change the default password for your WAP?
4. Why did you enable MAC filtering?
5. What is the purpose of disabling the SSID broadcast?
6. What is the function of the encryption key or pass phrase you entered?



7. Why would you limit the scope of your DHCP leases?

8. Using the Internet, research some tips that will allow you to further secure your Wi-Fi access. List some of those tips here.

## Teaching Resources

### CompTIA

A+ Essentials Objectives

A+ 220-502 Objectives

<http://www.comptia.org>

### Cisco Networking Academy

IT Essentials: PC Hardware and Software

Training Resources Academy Connection

[www.cisco.com](http://www.cisco.com)

## Entrepreneurship Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked “optional.” Teachers can find the infusion/unit in the course listing.

## Microsoft Imagine Academy Resources

Microsoft Imagine Academy (MSIA) offers classroom resources and materials and instructional techniques that will help enhance instruction and learning for this course. Using the school’s membership ID and product key for the Microsoft Imagine Academy, all resources are available through the [MSIA Member Dashboard on the Microsoft site](#).

- To access the curriculum resources, select the Classroom Tile from the member site.
- To access downloadable curriculum resources including the MOAC e-Book, Lesson Plans, and Study Guides select Curriculum Overview - Curriculum Downloads.
- To access Online Learning videos and tutorials select Online Learning Directory tile.
- For more information visit: [How to Get Started with Microsoft Imagine Academy Program](#).

# Appendix: Credentials, Course Sequences, and Career Cluster Information

## Industry Credentials: Only apply to 36-week courses

- A+ Certification Examination
- Business Information Processing Assessment
- College and Work Readiness Assessment (CWRA+)
- Computer Maintenance Technology Examination
- Computer Networking Fundamentals Assessment
- Computer Repair Technology Assessment
- Computer Service Technician (CST) Examination
- Computer Technology Assessment
- Customer Service Examination
- Customer Service Specialist (CSS) Examination
- IC3 Digital Literacy Certification Examination
- IT Fundamentals+ Certification Examination
- Microsoft 365 Fundamentals Examination
- Microsoft Certified Azure Fundamentals Examination
- Microsoft Dynamics 365 Fundamentals Examination
- Microsoft Office Specialist (MOS) Examinations
- Microsoft Technology Associate (MTA) Examinations
- National Career Readiness Certificate Assessment
- Network Administration Certification Tests
- Professional Communications Certification Examination
- Security+ Certification Examination
- Technical Support Certification Tests
- Workplace Readiness Skills for the Commonwealth Examination

**Concentration sequences:** *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Computer Systems Technology I (8622/36 weeks, 140 hours)

Career Cluster: Information Technology	
Pathway	Occupations
Information Support and Services	Computer Support Specialist