Competency: Network Installation—Planning and Configuration
Tasks
1. Demonstrate knowledge of the key functions and subsystems of the network.
2. Define the types of network architecture: work group (e.g., peer to peer) and server based (e.g., domain controlled) and explain how to determine what to use.
3. Identify services delivered by a server, such as application server, communication server, domain/directory server, fax server, file and print server, mail server, and Web server.
4. Gather data to identify customer requirements.
5. Identify and analyze system and network requirements.
6. Identify time, technology, and resource constraints.
7. Identify physical requirements for system implementation.
8. Research product and vendor architecture and equipment specifications/limitations.
9. Prepare cost/benefit/risk analysis.
10. Develop testing strategy.
11. Prepare overall plan for integrating new processes, protocols, and equipment.
12. Analyze facilities' bandwidth requirements and capacity planning (e.g., power cable/wire conduit).
13. Revise processes/structure based on testing and certification.
14. Identify hardware/software selection criteria.
15. Select and install a LAN/WAN technology that meet defined set of requirements.
16. Assess user needs to determine which network operating systems (OS) to use.
17. Set up/configure workstation-network connections and test network connectivity using a network analyzer.
18. Set up/configure network components (e.g., interface cards, routers, switches).
19. Plan, configure, and optimize a TCP/IP physical and logical network.
20. Install network cabling with proper termination according to appropriate standards.
21. Set up a network-wide printing strategy to meet the needs of users.
22. Identify major considerations faced when installing a network operating system (OS).
23. Install a server operating system.
24. Identify and upgrade desktop and server computer hardware and peripherals.
25. Determine methods for segmenting and balancing the network load including number of servers needed.

26. Describe and give examples of application-specific servers.
27. Identify software licensing requirements and categories.
28. Configure and manage file systems and desktop settings and customize.
29. Evaluate the correctness and effectiveness of implementing the network system.
30. Design security for computers, accounts, and authentication.
31. Determine threats and analyze risks to network perimeters.
32. Design an audit policy and incident response procedures.
Competency: Problem Solving/Troubleshooting
Tasks
1. Identify and analyze potential hardware compatibility problems.
2. Identify and analyze precautions included in programs used on networks (e.g., self-metering, security keys, and required configuration settings).
3. Identify network areas in which application problems could exist (e.g., memory allocation, file lock settings, and resource availability).
4. Perform preventative maintenance on computers and peripherals using available diagnostic tools.
5. Perform software license audits.
6. Coordinate security procedures.
7. Restore LAN operating systems and replace LAN hardware components.
8. Execute testing in accordance with established plans and schedule and interpret test results.
9. Document errors reported/tracked and develop central log strategy.
10. Use the appropriate network utility to troubleshoot various connectivity issues.
11. Demonstrate the use of visual indicators and diagnostic utilities to interpret problems.
12. Identify and resolve a network configuration with incorrect protocols, client software misconfiguration, authentication misconfiguration, and insufficient rights/permissions.
13. Describe the sequential steps needed to identify and resolve a wiring or infrastructure problem.
14. Identify TCP/IP routing trouble shooting tools and troubleshoot TCP/IP routing.
15. Optimize and troubleshoot DNS.
16. Minimize impact of problems on productivity (e.g., minimize downtime).
17. Demonstrate knowledge of basic troubleshooting steps.
18. Evaluate problem-solving outcomes to determine whether the problem was solved as intended and to determine needed follow-up actions.

19. Select most appropriate solution and fix recoverable problems.
20. Assess the impact of changes that affect interfaces.
21. Identify new or replacement networking components needed.
Competency: Network Administrator Functions
Tasks
1. Determine file organization (e.g., by owners, users, and privileges).
2. Establish naming conventions for the network, files, accounts, and services.
3. Determine methods for increasing performance (e.g., segmenting and balancing the network load, resolving channel, and cable bottlenecks).
4. Describe and analyze the role of the network manager and the basic principles of network management.
5. Determine procedures for network optimization and tuning.
6. Determine procedures for managing network assets (e.g., users, groups, and printers).
7. Perform administration functions using network management software.
8. Install and monitor server software applications.
9. Perform system analysis and bandwidth optimization.
10. Perform resource management (e.g., apply standards, address protocols, monitor network activity, perform trend analyses, functional verifications, audits, and monitoring).
11. Respond to system messages.
12. Document actions taken (e.g., backups, virus prevention, and software distribution).
13. Evaluate software activities and execute network diagnostic program for software and hardware.
14. Manage disk resources by planning how resources are shared and by setting up and administering rights (e.g., permissions and quotas).
15. Identify uses and features of e-mail and calendaring and appropriate policies and procedures for implementation.
16. Provide technical support and orientation to network system.
17. Manage and distribute critical software updates that resolve known security vulnerabilities and other stability issues.
Competency: Configuration of Internet Resources—Web service, DMZ, FTP, etc.
Tasks
1. Configure Internet access for a network.
2. Configure IP addresses and name resolution.
3. Describe and implement IPP (Internet Printing Protocol) services.

4. Explain and implement Secure Sockets Layer (SSL) authentication.
5. Describe the structure and architecture that make up the domain name system (DNS).
6. Plan, manage, and monitor DNS servers to ensure that they are functioning properly and to optimize network performance.
7. Explain the characteristics, uses, and benefits of software firewalls and hardware firewalls.
8. Describe the key features of Web servers.
9. Install and configure Web-based services using utilities and HTML-based administration tools.
10. Establish WWW service, FTP service, SNMP service, and NNTP service.
11. Illustrate Virtual Private Networks (VPN) and the purpose of remote access protocols, including Point-to-Point Tunneling Protocol (PPTP), and Layer 2 Tunneling Protocol (L2TP).
12. Distinguish among the following security methods: DMX(including dual-homed and triple-homed firewalls), VLan, intranet, extranet, PKI.
13. Demonstrate knowledge of the principles and operation of wire (e.g., coaxial and fiber optics) and wireless systems.
14. Demonstrate knowledge of the principles and operation of fiber optics, analog, and digital circuits.
Competency: Backup and Disaster Recovery
Tasks
1. Describe the purpose of a disaster recovery plan for a network.
2. Differentiate between disaster recovery and business continuity.
3. Compare different options of backing up and securing data and restoring a system and perform system backup.
4. Identify common backup devices.
5. Identify the criteria for selecting a backup system.
6. Establish process for archiving files.
7. Select and test a disaster recovery plan.
8. Identify method for avoiding common computer system disasters (e.g., UPS and RAID).
9. Use the features of a server operating system to prevent a disaster or recover when one occurs.
10. Develop backup process and backup and restore data.
11. Implement backup procedures in accordance with a regular schedule.
12. Configure a shadow copy.
13. Identify and maintain battery backup equipment.
14. Install surge suppression protection.

15. Implement recovery procedures as needed.
Competency: Configuration Network Resources & Services
Tasks
1. Identify the purpose of network services and protocols.
2. Identify and monitor your network perimeter including rogue devices, VPN servers and wireless access points
3. Determine the impact of modifying, adding, or removing network services for network resources and users.
4. Design remote connectivity.
5. Configure network cards and network settings.
6. Describe the purpose and benefits of using a proxy service.
7. Describe the functions of remote access protocols and services, such as telnet, SSH, and remote desktop.
8. Identify and investigate emerging networks and technologies.
9. Configure VLAN to map an IP network.
10. Provide accurate tracking and monitoring of VLAN.
11. Implement security controls such as MAC or DAC to ensure user policies are enabled.

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