



EUCIP - IT Administrator

Module 3 LAN and Network Services

Version 2.0

Module 3 Goals

Module 3 Module 3, *Local Area Network and Network Services*, requires the candidate to be familiar with the procedure of installing, using and managing a local area network starting with the servers. He/She should be able to add and remove users and shared resources. The candidate should be able to repair the network problems. Also, he/she should know how to manage the system tools, which are included in most operating systems, in order to repair the problems that may occur.

Category	Knowledge Area	Ref.	Knowledge Item
3.1 Network Fundamentals	3.1.1 Network components	3.1.1.1	Know the basic components of a network, such as server, client, NIC, protocols, Network Operating System (NOS), shared resources
		3.1.1.2	Understand the role of a Server, its requirements, and function. Also know the basic server components and be able to build or order a server, so that it covers the network needs.
		3.1.1.3	Understand the role of a Client, its requirements, and function. Also know the basic client components and be able to build or order a client, so that it covers the user and the applications needs.
		3.1.1.4	Understand the function of a Network Interface Card, NIC. Also be able to choose the appropriate card for a network
		3.1.1.5	Understand function of basic network equipment. Be able to choose basic network equipment.
	3.1.2 Topology	3.1.2.1	Understand the basic LAN topologies (Busnet, Ringnet, Starnet), the main WAN topologies (mesh, ...), and the differences between them. Know their function, capabilities and limitations.
		3.1.2.2	Understand and distinguish between types of Network Cables, that can be used, such as coaxial, twisted pair, fiber optic. Know their capabilities and limitations.
		3.1.2.3	Understand and distinguish between network architectures, such as Ethernet, Token ring, Fiber Distributed Data Interface (FDDI).
		3.1.2.4	Know the different types of Ethernet networks, such as 10BASE-2, 10BASE-5, 10BASE-T
		3.1.2.5	Be able to recognize the different Network adapter Connectors, Coax/BNC, DIX/AUI/DB15, RJ45 etc. Also know their use.

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	3.1.3 Types of Network	3.1.3.1	Know the definitions of Local Area Network, LAN and Wide Area Network, WAN.
		3.1.3.2	Understand and distinguish between Peer to Peer and Domain based Networks.
3.2 Installing software	3.2.1 Install Operating System	3.2.1.1	Know the most common network server and client operating system.
		3.2.1.2	Be able to install and configure an operating system on a server.
		3.2.1.3	Install, configure and remove network services on a server
		3.2.1.4	Be able to install, configure and remove network services on a client.
	3.2.2 Install and remove applications	3.2.2.1	Be aware of the process of program installation in a common shared resource
		3.2.2.2	Know how to upgrade application software in a shared resource.
3.3 Installation and Configuration	3.3.1 Installation and Configuration of a NIC	3.3.1.1	Be able to install a NIC or replace a damaged one.
		3.3.1.2	Be able to check and configure a NIC and set resources such as I/O Addresses, IRQs etc
		3.3.1.3	Be able to install and update drivers for a NIC
	3.3.2 Network Protocol	3.3.2.1	Be aware of the most common protocols such as TCP/IP, NetBEUI, HTTP, and FTP. Also know what MAC address is.
		3.3.2.2	Be able to install, configure and activate a protocol. Also be able to bind a protocol to a NIC.
		3.3.2.3	Know the structure of a TCP/IP protocol and its properties, such as IP address, WINS Configuration, Gateway and DNS Configuration.
3.4 Manage users and groups accounts	3.4.1 Add and remove users and groups	3.4.1.1	Understand and distinguish between the different user and group types an operating system uses.
		3.4.1.2	Know how to add a new user or group. Also, know how to add a new user to a group.
		3.4.1.3	Know how to remove a user or group. Also, know how to remove a user from a group.
	3.4.2 Set Properties	3.4.2.1	Know how to identify user properties, such as logon time, profile, etc

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		3.4.2.2	Know how to change user properties, such as password, logon time, profile etc
		3.4.2.3	Know how to identify group properties, such as group members etc
3.5 Create and manage shared resources and account permissions	3.5.1 Create shared resources	3.5.1.1	Know what shared resources are and be aware of their benefits and security and privacy risks.
		3.5.1.2	Know how to create shared resources, such as file resources, printer resources and modem resources.
		3.5.1.3	Be able to check the available shared resources in a network. Also know how to check which users use shared resources at any time and control the permissions to shared resources.
	3.5.2 Remove shared resources	3.5.2.1	Know how to remove shared resources, such as file resources and print resources
		3.5.2.2	Know how to disconnect users from a shared resource.
	3.5.3 Logical Network Drives	3.5.3.1	Be aware of the term network logical drive.
		3.5.3.2	Understand the process of connecting a logical network drive to a shared resource.
		3.5.3.3	Understand the process of connecting a client to a shared print resource, using a logical print port.
		3.5.3.4	Know how to connect a client to a shared resource on a server or other clients.
	3.5.4 Manage account permissions	3.5.4.1	Understand the permissions for shared resources the network operating system can use.
		3.5.4.2	Be able to set, remove and modify permissions for a user or a group
		3.5.4.3	Be able to check the login users. Also know how to logout user from the network.
3.6 Manage Network Printers	3.6.1 Installing and managing printers	3.6.1.1	Know how to install a network printer
		3.6.1.2	Know how to connect and use a shared printer and control their permissions
		3.6.1.3	Know how to check the printer status (print queue status)
		3.6.1.4	Know how to cancel or pause a print job. Also know how to reorder it if possible.
3.7 Security and protection	3.7.1 Backup	3.7.1.1	Understand the importance of creating backups.

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		3.7.1.2	Know how to schedule backups, using the available utilities and an external storage device.
		3.7.1.3	Know how to recover backup files
3.8 Utilities	3.8.1 Administrative Tools	3.8.1.1	Know how to use the available utility for managing users and groups.
		3.8.1.2	Know how to monitor the server performance
		3.8.1.3	Be aware of the shared resource manager utilities
	3.8.2 Disk administration utility	3.8.2.1	Be aware of the available disk administration utility. Also know how to create, format and activate a partition etc.
		3.8.2.2	Configure, monitor and manage file systems
		3.8.2.3	Be able to recognize the file system OS is using and know how to convert from one file system to another file system if applicable.
		3.8.2.4	Be aware of the term RAID and their benefits. Also know the most common used RAID types, such as RAID0, RAID1 and RAID5.
		3.8.2.5	Know how to install, recover and manage a RAID system.
	3.8.3 Network utilities	3.8.3.1	Be able to use network utilities to configure manage and trace network usage.
3.9 Sharing Internet Services.	3.9.1 Installing Services	3.9.1.1	Know how to install configure and manage a simple mail server.
		3.9.1.2	Know how to install configure and manage a simple web service.
3.10 Internet connections	3.10.1 Modem communication	3.10.1.1	Be aware of the function of a modem. Also know what the terms modulation, demodulation, DTE and DCE mean.
		3.10.1.2	Be aware of the most common modem communications standards, such as V.90, V.42 etc
		3.10.1.3	Know how flow control Hardware (RTS/CTS) and Software (XON/XOFF) works
		3.10.1.4	Be aware of the most common modem commands such as AT, ATZ, ATD, ATH etc
		3.10.1.5	Know how data transfers via a modem. Also know the difference between BPS and Baud and when they are used.

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		3.10.1.6	Know what UART does. Also know the different types of UART and their features
	3.10.2 ISDN-communication	3.10.2.1	Know how ISDN-communication works and its benefits
		3.10.2.2	Know the different types of ISDN and the differences between B- and D channel
	3.10.3 DSL-communication	3.10.3.1	Know how DSL- technology works and its benefits
		3.10.3.2	Know the different types of DSL, such as ASDL, HDCL, SDSL and VDCL. Also know the differences between them
	3.10.4 Sharing Internet Connections	3.10.4.1	Know how to create and configure a local IP proxy to share an IP link.
3.11 Configuration and Upgrading	3.11.1 Configuration	3.11.1.1	Be able to check the current server configuration and create documentation for it.
		3.11.1.2	Be able to check the current client configuration and create documentation for it.
	3.11.2 Upgrading	3.11.2.1	Know how to upgrade operating system of both a client PC and Server
		3.11.2.2	Know what is and how works automatic update procedures.
3.12 Diagnosing and Troubleshooting	3.12.1 Diagnose and resolve problems	3.12.1.1	Be able to use the available diagnostic utilities
		3.12.1.2	Be able to diagnose the reason why a user cannot gain access to the network. Also locate the source of the problem (server, cable, NIC, drivers, etc)
		3.12.1.3	Be capable of diagnosing and troubleshooting user permissions. Why can't a user save or use a shared resource;
		3.12.1.4	Be capable of diagnosing and troubleshooting local and domain user accounts, if any domain is available.
		3.12.1.5	Be able to diagnose printing problems
		3.12.1.6	Be able to diagnose and troubleshoot the TCP/IP protocol.
		3.12.1.7	Be able to diagnose and troubleshoot performance problems.