

OBJETIVOS DEL CURSO BASICO DE DATOS.- Revised Examination Objectives

Domain 1.0 - Media and Topologies – 20%

1.1 Recognize the following logical or physical network topologies given a diagram, schematic or description:

- Star
- Bus
- Mesh
- Ring

1.2 Specify the main features of 802.2 (Logical Link Control), 802.3 (Ethernet), 802.5 (token ring), 802.11 (wireless), and FDDI (Fiber Distributed Data Interface) networking technologies, including:

- Speed

- Access method (CSMA / CA (Carrier Sense Multiple Access/Collision Avoidance) and CSMA / CD (Carrier Sense Multiple Access / Collision Detection))

- Topology

- Media

1.3 Specify the characteristics (For example: speed, length, topology, and cable type) of the following cable standards:

- 10BASE-T and 10BASE-FL

- 100BASE-TX and 100BASE-FX

- 1000BASE-T, 1000BASE-CX, 1000BASE-SX and 1000BASE-LX

- 10 GBASE-SR, 10 GBASE-LR and 10 GBASE-ER

1.4 Recognize the following media connectors and describe their uses:

- RJ-11 (Registered Jack)

- RJ-45 (Registered Jack)

- F-Type

- ST (Straight Tip)

- SC (Subscriber Connector or Standard Connector)

- IEEE 1394 (FireWire)

- Fiber LC (Local Connector)

- MT-RJ (Mechanical Transfer Registered Jack)

- USB (Universal Serial Bus)

1.5 Recognize the following media types and describe their uses:

- Category 3, 5, 5e, and 6

- UTP (Unshielded Twisted Pair)

- STP (Shielded Twisted Pair)

- Coaxial cable

- SMF (Single Mode Fiber) optic cable

- MMF (Multimode Fiber) optic cable

1.6 Identify the purposes, features and functions of the following network components:

- Hubs
- Switches
- Bridges
- Routers
- Gateways
- CSU / DSU (Channel Service Unit / Data Service Unit)
- NICs (Network Interface Card)
- ISDN (Integrated Services Digital Network) adapters
- WAPs (Wireless Access Point)
- Modems
- Transceivers (media converters)
- Firewalls

1.7 Specify the general characteristics (For example: carrier speed, frequency, transmission type and topology) of the following wireless technologies:

- 802.11 (Frequency hopping spread spectrum)
- 802.11x (Direct sequence spread spectrum)
- Infrared
- Bluetooth

1.8 Identify factors which affect the range and speed of wireless service (For example: interference, antenna type and environmental factors).

Domain 2.0 – Protocols and Standards – 20%

2.1 Identify a MAC (Media Access Control) address and its parts.

2.2 Identify the seven layers of the OSI (Open Systems Interconnect) model and their functions.

2.3 Identify the OSI (Open Systems Interconnect) layers at which the following network components operate:

- Hubs
- Switches
- Bridges
- Routers
- NICs (Network Interface Card)
- WAPs (Wireless Access Point)

2.4 Differentiate between the following network protocols in terms of routing, addressing schemes, interoperability and naming conventions:

- IPX / SPX (Internetwork Packet Exchange / Sequence Packet Exchange)
- NetBEUI (Network Basic Input / Output System Extended User Interface)
- AppleTalk / AppleTalk over IP (Internet Protocol)
- TCP / IP (Transmission Control Protocol / Internet Protocol)

2.5 Identify the components and structure of IP (Internet Protocol) addresses (IPv4, IPv6) and the required setting for connections across the Internet.

2.6 Identify classful IP (Internet Protocol) ranges and their subnet masks (For example: Class A, B and C).

2.7 Identify the purpose of subnetting.

2.8 Identify the differences between private and public network addressing schemes.

2.9 Identify and differentiate between the following IP (Internet Protocol) addressing methods:

- Static
- Dynamic
- Self-assigned (APIPA (Automatic Private Internet Protocol Addressing))

2.10 Define the purpose, function and use of the following protocols used in the TCP / IP (Transmission Control Protocol / Internet Protocol) suite:

- TCP (Transmission Control Protocol)
- UDP (User Datagram Protocol)
- FTP (File Transfer Protocol)
- SFTP (Secure File Transfer Protocol)
- TFTP (Trivial File Transfer Protocol)
- SMTP (Simple Mail Transfer Protocol)
- HTTP (Hypertext Transfer Protocol)
- HTTPS (Hypertext Transfer Protocol Secure)
- POP3 / IMAP4 (Post Office Protocol version 3 / Internet Message Access Protocol version 4)
- Telnet
- SSH (Secure Shell)
- ICMP (Internet Control Message Protocol)
- ARP / RARP (Address Resolution Protocol / Reverse Address Resolution Protocol)
- NTP (Network Time Protocol)
- NNTP (Network News Transport Protocol)

- SCP (Secure Copy Protocol)
- LDAP (Lightweight Directory Access Protocol)
- IGMP (Internet Group Multicast Protocol)
- LPR (Line Printer Remote)

2.11 Define the function of TCP / UDP (Transmission Control Protocol / User Datagram Protocol) ports.

2.12 Identify the well-known ports associated with the following commonly used services and protocols:

- 20 FTP (File Transfer Protocol)
- 21 FTP (File Transfer Protocol)
- 22 SSH (Secure Shell)
- 23 Telnet
- 25 SMTP (Simple Mail Transfer Protocol)
- 53 DNS (Domain Name Service)
- 69 TFTP (Trivial File Transfer Protocol)
- 80 HTTP (Hypertext Transfer Protocol)
- 110 POP3 (Post Office Protocol version 3)
- 119 NNTP (Network News Transport Protocol)
- 123 NTP (Network Time Protocol)
- 143 IMAP4 (Internet Message Access Protocol version 4)
- 443 HTTPS (Hypertext Transfer Protocol Secure)

2.13 Identify the purpose of network services and protocols (For example: DNS (Domain Name Service), NAT (Network Address Translation), ICS (Internet Connection Sharing), WINS (Windows Internet Name Service), SNMP (Simple Network Management Protocol), NFS (Network File System), Zeroconf (Zero configuration), SMB (Server Message Block), AFP (Apple File Protocol), LPD (Line Printer Daemon) and Samba).

2.14 Identify the basic characteristics (For example: speed, capacity and media) of the following WAN (Wide Area Networks) technologies:

- Packet switching
- Circuit switching
- ISDN (Integrated Services Digital Network)
- FDDI (Fiber Distributed Data Interface)
- T1 (T Carrier level 1) / E1 / J1
- T3 (T Carrier level 3) / E3 / J3
- OCx (Optical Carrier)
- X.25

2.15 Identify the basic characteristics of the following internet access technologies:

- xDSL (Digital Subscriber Line)
- Broadband Cable (Cable modem)
- POTS / PSTN (Plain Old Telephone Service / Public Switched Telephone Network)
- Satellite
- Wireless

2.16 Define the function of the following remote access protocols and services:

- RAS (Remote Access Service)
- PPP (Point-to-Point Protocol)
- SLIP (Serial Line Internet Protocol)
- PPPoE (Point-to-Point Protocol over Ethernet)
- PPTP (Point-to-Point Tunneling Protocol)
- VPN (Virtual Private Network)
- RDP (Remote Desktop Protocol)

2.17 Identify the following security protocols and describe their purpose and function:

- IPSec (Internet Protocol Security)
- L2TP (Layer 2 Tunneling Protocol)
- SSL (Secure Sockets Layer)
- WEP (Wired Equivalent Privacy)
- WPA (Wi-Fi Protected Access)
- 802.1x

2.18 Identify authentication protocols (For example: CHAP (Challenge Handshake Authentication Protocol), MS-CHAP (Microsoft Challenge Handshake Authentication Protocol), PAP (Password Authentication Protocol), RADIUS (Remote Authentication Dial-In User Service), Kerberos and EAP (Extensible Authentication Protocol)).

Domain 3.0 Network Implementation – 25%

3.1 Identify the basic capabilities (For example: client support, interoperability, authentication, file and print services, application support and security) of the following server operating systems to access network resources:

- UNIX / Linux / Mac OS X Server
- Netware
- Windows
- Appleshare IP (Internet Protocol)

- 3.2 Identify the basic capabilities needed for client workstations to connect to and use network resources (For example: media, network protocols and peer and server services).
- 3.3 Identify the appropriate tool for a given wiring task (For example: wire crimper, media tester / certifier, punch down tool or tone generator).
- 3.4 Given a remote connectivity scenario comprised of a protocol, an authentication scheme, and physical connectivity, configure the connection. Includes connection to the following servers:
- UNIX / Linux / MAC OS X Server
 - Netware
 - Windows
 - Appleshare IP (Internet Protocol)
- 3.5 Identify the purpose, benefits and characteristics of using a firewall.
- 3.6 Identify the purpose, benefits and characteristics of using a proxy service.
- 3.7 Given a connectivity scenario, determine the impact on network functionality of a particular security implementation (For example: port blocking / filtering, authentication and encryption).
- 3.8 Identify the main characteristics of VLANs (Virtual Local Area Networks).
- 3.9 Identify the main characteristics and purpose of extranets and intranets.
- 3.10 Identify the purpose, benefits and characteristics of using antivirus software.
- 3.11 Identify the purpose and characteristics of fault tolerance:
- Power
 - Link redundancy
 - Storage
 - Services
- 3.12 Identify the purpose and characteristics of disaster recovery:
- Backup / restore
 - Offsite storage
 - Hot and cold spares
 - Hot, warm and cold sites

Domain 4.0 Network Support – 35%

- 4.1 Given a troubleshooting scenario, select the appropriate network utility from the following:
- Tracert / traceroute
 - ping
 - arp
 - netstat
 - nbtstat
 - ipconfig / ifconfig
 - winipcfg
 - nslookup / dig
- 4.2 Given output from a network diagnostic utility (For example: those utilities listed in objective 4.1), identify the utility and interpret the output.
- 4.3 Given a network scenario, interpret visual indicators (For example: link LEDs (Light Emitting Diode) and collision LEDs (Light Emitting Diode)) to determine the nature of a stated problem.
- 4.4 Given a troubleshooting scenario involving a client accessing remote network services, identify the cause of the problem (For example: file services, print services, authentication failure, protocol configuration, physical connectivity and SOHO (Small Office / Home Office) router).

4.5 Given a troubleshooting scenario between a client and the following server environments, identify the cause of a stated problem:

- UNIX / Linux / Mac OS X Server
- Netware
- Windows
- Appleshare IP (Internet Protocol)

4.6 Given a scenario, determine the impact of modifying, adding or removing network services (For example: DHCP (Dynamic Host Configuration Protocol), DNS (Domain Name Service) and WINS (Windows Internet Name Service)) for network resources and users.

4.7 Given a troubleshooting scenario involving a network with a particular physical topology (For example: bus, star, mesh or ring) and including a network diagram, identify the network area affected and the cause of the stated failure.

4.8 Given a network troubleshooting scenario involving an infrastructure (For example: wired or wireless) problem, identify the cause of a stated problem (For example: bad media, interference, network hardware or environment).

4.9 Given a network problem scenario, select an appropriate course of action based on a logical troubleshooting strategy. This strategy can include the following steps:

1. Identify the symptoms and potential causes
2. Identify the affected area
3. Establish what has changed
4. Select the most probable cause
5. Implement an action plan and solution including potential effects
6. Test the result
7. Identify the results and effects of the solution
8. Document the solution and process

Acronyms Reference:

ACL Access Control List
AD Active Directory
ADSL Asymmetric Digital Subscriber Line
AFP Apple File Protocol
AH Authentication Header
AM Amplitude Modulation
AMI Alternate Mark Inversion
APIPA Automatic Private Internet Protocol Addressing
ARP Address Resolution Protocol
ATM Asynchronous Transfer Mode
AV Anti-Virus
BDC Backup Domain Controller
BERT Bit-Error Rate Test
BIND Berkeley Internet Name Domain
BNC British Naval Connector / Bayonet Niell-Concelman
BootP Boot Protocol /Bootstrap Protocol
BRI Basic Rate Interface
BSD Berkeley Software Distribution
CDFS CD-ROM File System
CHAP Challenge Handshake Authentication Protocol
CIFI Common Internet File System
CNAME Canonical Name



CRAM-MD5 Challenge-Response Authentication Mechanism – Message Digest 5
CSMA / CA Carrier Sense Multiple Access / Collision Avoidance
CSMA / CD Carrier Sense Multiple Access / Collision Detection
CSNW Client Services for NetWare
CSU Channel Service Unit
dB decibels
DC Domain Controller
DHCP Dynamic Host Configuration Protocol
DLC Data Link Control
DNS Domain Name Service / Domain Name Server / Domain Name System
DSL Digital Subscriber Line
DSU Data Service Unit
EAP Extensible Authentication Protocol
EFS Encrypting File System
EMI ElectroMagnetic Interference
FAT File Allocation Table
FDDI Fiber Distributed Data Interface
FDDI Fiber Distributed Data Interface
FDM Frequency Division Multiplexing
FHSS Frequency Hopping Spread Spectrum
FM Frequency Modulation
FQDN Fully Qualified Domain Name / Fully Qualified Distunguished Name
FTP File Transfer Protocol
GBIC Gigabit Interface Converter
Gbps Giga bits per second
GPO Group Policy Object
GSNW Gateway Services for NetWare
HDLC High-Level Data Link Control
HTTP Hypertext Transfer Protocol
HTTPS Hypertext Transfer Protocol Secure
Hz Hertz
IANA Internet Assigned Numbers Authority
ICA Independent Computer Architecture
ICMP Internet Control Message Protocol
ICS Internet Connection Sharing
IEEE Institute of Electrical and Electronics Engineers
IGMP Internet Group Multicast Protocol
IIS Internet Information Server
IKE Internet Key Exchange
IMAP4 Internet Message Access Protocol version 4
IP Internet Protocol
IPSec Internet Protocol Security
IPv4 Internet Protocol version 4
IPv6 Internet Protocol version 6
IPX Internetwork Packet Exchange
IPX / SPX Internetwork Packet Exchange / Sequence Packet Exchange
IRC Internet Relay Chat
ISA Industry Standard Architecture
ISDN Integrated Services Digital Network
ISM Industrial, Scientific, and Medical
ISP Internet Service Provider



IT Information Technology
Kbps Kilobits per second
L2F Layer 2 Forwarding
L2TP Layer 2 Tunneling Protocol
LAN Local Area Network
LC Local Connector
LDAP Lightweight Directory Access Protocol
LED Light Emitting Diode
LLC Logical Link Control
LPD Line Printer Daemon
LPR Line Printer Remote
MAC Media Access Control / Medium Access Control
MAU Multistation Access Unit
Mbps Megabits per second
MBps Megabytes per second
MDI Media Dependent Interface
MDIX Media Dependent Interface Crossover
MIB Management Information Base
MMF MultiMode Fiber
MSAU MultiStation Access Unit
MS-CHAP Microsoft Challenge Handshake Authentication Protocol
MT-RJ Mechanical Transfer-Registered Jack
MX Mail Exchanger
NAT Network Address Translation
NCP NetWare Core Protocol
NDS NetWare Directory Services
NetBEUI Network Basic Input / Output Extended User Interface
NetBIOS Network Basic Input / Output System
NFS Network File System
NIC Network Interface Card
NIS Network Information Service
NLM NetWare Loadable Module nm nanometer
NNTP Network News Transport Protocol
NT New Technology
NTFS New Technology File System
NTP Network Time Protocol
OCx Optical Carrier
OS Operating Systems
OSI Open Systems Interconnect
OSPF Open Shortest Path First
OTDR Optical Time Domain Reflectometer
OU Organizational Unit
PAP Password Authentication Protocol
PC Personal Computer
PCI Peripheral Component Interconnect
PCMCIA Personal Computer Memory Card International Association
PDC Primary Domain Controller
POP3 Post Office Protocol version 3
POTS Plain Old Telephone System
PPP Point-to-Point Protocol
PPPoE Point-to-Point Protocol over Ethernet

PPTP Point-to-Point Tunneling Protocol
PRI Primary Rate Interface
PSTN Public Switched Telephone Network
PVC Permanent Virtual Circuit
QoS Quality of Service
RADIUS Remote Authentication Dial-In User Service
RAID Redundant Array of Independent Disks / Redundant Array of Inexpensive Disks
RARP Reverse Address Resolution Protocol
RAS Remote Access Service
RDP Remote Desktop Protocol
RFI Radio Frequency Interface
RG Radio Grade
RJ Registered Jack
RSA Rivest, Shamir, Adelman
S / MIME Secure Multipurpose Internet Mail Extensions
SC Standard Connector / Subscriber Connector
SCP Secure Copy Protocol
SFF Small Form Factor
SFTP Secure File Transfer Protocol
SLIP Serial Line Internet Protocol
SMB Server Message Block
SMF Single Mode Fiber
SMS Storage Management Services
SMTP Simple Mail Transfer Protocol
SNMP Simple Network Management Protocol
SOA Start of Authority
SOHO Small Office / Home Office
SONET Synchronous Optical Network
SPS Standby Power Supply
SPX Sequence Packet Exchange
SSH Secure Shell
SSID Service Set Identifier
SSL Secure Sockets Layer
ST Straight Tip
STP Shielded Twisted Pair
T1 T-Carrier Level 1
TA Terminal Adaptor
TCL Terminal Control Language
TCP Transmission Control Protocol
TCP / IP Transmission Control Protocol / Internet Protocol
tsh turbo C shell
TDR Time Domain Reflectometer
TFTP Trivial File Transfer Protocol
TTL Time to Live
UDP User Datagram Protocol
UNC Universal Naming Convention
UPS Uninterruptible Power Supply
URL Uniform Resource Locator
USB Universal Serial Bus
UTP Unshielded Twisted Pair
VLAN Virtual Local Area Network



VPN Virtual Private Network
WAN Wide Area Network
WAP Wireless Application Protocol / Wired Access Point
WEP Wired Equivalent Privacy
WINS Window Internet Name Service
WPA Wi-Fi Protected Access
www World Wide Web
XML Extensible Markup Language
Zeroconf Zero Configuration