Module Three SG

Exam Three will draw questions from multiple content areas including: our networking textbook, our assignments, and our class lectures. The purpose of this guide is to help you focus your exam preparations.

Important Note
Security, Chapter 10, has been moved to Module Four. It will be covered on Test Four rather than Test Three.
Note One
This guide should not be considered a substitute for reading each text chapter and doing each module assignment.
Note Two
By midnight of the exam day, you should have posted each assignment's deliverable to your assignment portfolio.
Note Three
The length and format of this exam will resemble that of previous exams. If there is a matching section, it will draw exclusively from the Keywords presented in this Study Guide.

Exam Three Content Areas

Business Data Communications & Networking
>   Chapter 7, Backbone Networks
>   Chapter 8, Wide Area Networks
>   Chapter 9, The Internet
>   *Chapter 10, Security (Moved to Module 4)*

Module Three Assignments
>   Wireless (Professor Messer)
>   WAN Technology (Professor Messer)
>   Broadband Technology (Eli)
>   Physical Network Segmentation (Eli)

Chapter Seven, Backbone Networks
Questions
1. Compare and contrast switches, routers, and gateways.
2. What circumstances require the use of a router?
3. Define and explain the three backbone architecture layers.
4. What are the advantages and disadvantages of VLANs?

Key Words

1.	access layer	Layer that is closest to the user. Technologies used in a LAN.
2.	backbone network (BN)	A high speed network that connects many networks.
3.	core layer	Part of the backbone that connects the different BNs together, often from building to building.
4.	distribution layer	Part of the backbone that connects the LANs together.
5.	Gateway (Level 7)	Translates one network layer protocol into another, translate data link layer protocols, and open sessions between application programs, thus overcoming both hardware and software incompatibilities.
6.	Main distribution facility (MDF)	Connects equipment inside a telecommunications facility to cables and subscriber carrier equipment.
7.	Multi Protocol Label switching (MPLS)	Sometimes called a layer-2.5 technology because it inserts 4-byte header that contains its own information between the layer-2 frame and the layer-3 IP packet.
8.	Virtual LAN (VLAN)	Networks in which computers are assigned to LAN segments by software rather than by hardware.

Chapter 8, Wide Area Networks

Questions

1. What are common carriers, local exchange carriers, and interexchange carriers?
2. How does Multiprotocol Label Switching (MPLS) work?
3. Compare and contrast circuit-switched services, dedicated-circuit services, and packet-switched services.
4. Compare and contrast ring, star, and mesh WAN architectures.
5. What are the most commonly used T carrier services? What data rates do they provide?
6. What is SONET?
7. How do datagram services differ from virtual circuit services?
8. How do VPN services differ from common carrier services?
9. Explain how VPNs work.

Key Words

1.	channel service unit/data service unit (CSU/DSU)	Digital interface device used to connect a Data Terminal Equipment device (DTE), such as a router, to a digital circuit, such as a T1 line.
2.	circuit-switched network	Oldest and simplest approach to WAN circuits.
3.	frame relay	A standardized wide area network technology that specifies

		the physical and logical link layers of digital telecommunications channels using a packet switching methodology.
4.	interexchange carrier (IXC)	In the US, a Long distance telephone company, such as MCI, Sprint, and the former AT&T.
5.	IPSec	An end-to-end security scheme operating in the Internet Layer of the Internet Protocol Suite.
6.	L2TP	An example of a Level 2 VPN.
7.	packet assembly/ disassembly (PAD)	Communications device which provides multiple asynchronous terminal connectivity to a packet switching network or host computer.
8.	synchronous optical network (SONET)	Standard for connecting fiber Optic transmission systems. Establishes Optical Carrier (OC) levels from 51.8 Mbps (OC-1) to 9.95 Gbps (OC-192).
9.	T carrier	Most commonly used form of dedicated-circuit services in North America today.
10.	virtual private network (VPN)	Using encryption, provides the equivalent of a private packet-switched network over the public Internet.

Chapter Nine, The Internet

Questions

1. What is the basic structure of the Internet?
2. What is a Network Access Point (NAP)? How does it compare to a Metropolitan Area Exchange (MAE)?
3. What is WiMax?
4. What are the principal organizations responsible for Internet governance, and what do they do?
5. What is the IETF?
6. What is ICANN?
7. What is an RFP?

Key Words

1.	broadband	Originally a technical term that referenced "analog transmission." However, the term has been corrupted in common usage so that to most people it usually refers to "high speed communications."
2.	customer premises equipment (CPE)	Equipment installed at a customer's location that connects to a carrier's telecommunication's channel.
3.	Data over Cable	An international telecommunications standard that permits

	Service Interface Specification (DOCSIS)	the addition of high-speed data transfer to an existing cable TV system.
4.	digital subscriber line (DSL)	A family of technologies that provide Internet access by transmitting digital data over the wires of a local telephone network.
5.	DSL access multiplexer (DSLAM)	A network device that connects multiple customer digital subscriber line (DSL) interfaces to a high speed digital communications channel using multiplexing techniques.
6.	Internet Architecture Board (IAB)	The committee charged with oversight of the technical and engineering development of the Internet.
7.	Internet Corporation for Assigned Names and Numbers (ICANN)	A nonprofit private organization responsible for the coordination of the global Internet's systems of unique identifiers, and, in particular ensuring its stable and secure operation.
8.	Internet Engineering Task Force (IETF)	An open standards organization that develops and promotes Internet standards.
9.	local loop	In telephony, the physical link or circuit that connects from the demarcation point of the customer premises to the edge of the common carrier or telecommunications service provider network.
10.	request for comment (RFC)	Documents technical and organizational issues related to the Internet and Internet Standards.
11.	WiMax	A standards-based (802.16) technology enabling the delivery of last mile wireless broadband access as an alternative to cable and DSL.

Chapter Ten, Network Security (Moved to Module 4)

WAN Technology

Questions

1. When entering a building, what type of media does a T1 line most likely use?
2. How does the cost of non-terrestrial communications compare with conventional terrestrial networking?
3. Other than cost, what is the significant disadvantage of satellite communications?
4. What does the A in "ADSL" represent?
5. What type of media would an ADSL line use when it enters a building?
6. Which technology, circuit or packet switching, is most like the technology utilized by POTS?
7. What is the major criticism of circuit switching?

8. Why is packet switching considered more efficient that circuit switching?
9. What type of cable is typically used in a local area network?
10. What purpose does the twist in TWP copper cable serve?
11. What type of cabling would you use for very long distance and very high speed runs?
12. When you use fiber optic cables, what are two conventional cabling operations that require extra care?

Broadband Technology
Questions

1. In a broadband context, what is the difference between synchronous and asynchronous communications?
2. What is latency?
3. From Eli's point of view, what is the difference between business and residential service?
4. Why would an ISP block a particular port?
5. What is an SLA?
6. When would you use a T1 line?
7. What is the primary advantage of carrier class Ethernet?
8. In an old building, what could be a problem source concerning DSL service?
9. With a cable connection, what type of problem could be associated with a trunk line?
10. From a business perspective, what is a potential weakness of cable?
11. What is FIOS?
12. What is the reason that you probably don't want a satellite connection?

Physical Network Segmentation
Questions

1. What is a demarc point?
2. What is the significance of a demark point?
3. What is a Main Distribution Frame (MDF)?
4. What is an Intermediate Distribution Frame (IDF)?
5. In a conventional small network, where would you expect to find the MDF?
6. If you had a network that covered five floors in a building, how many IDF(s) and MDF(s) would you expect to have?
7. What purpose does an IDF serve?

Best of luck!