

Networking HN

Unit:	Unit 1—Fundamentals of Networking					
Big Ideas:	The Internet is a large global network comprised of thousands of smaller networks that allow information to be routed among computers. These structures have an impact on the personal networks we encounter on a daily basis.					
Unit Essential Questions:	What is the link between a computer network and the “network” in every human brain and how has this allowed the internet to become what it is today?					
Concept & Pacing	New Emphasis (Pa Core Standard)	Key Vocabulary	Essential Questions	Mini-Lessons/Activities	Instructional Materials	Assessments
<p>Chapter 1: Networking Basics</p> <p>Section 1.1 “Principles of Networking”</p> <p>Section 1.2 “The Evolution of Networks”</p> <p>Section 1.3 “Networking Careers”</p> <p>Section 1.4 “The Computer System”</p>	<p>NBEA Standards</p> <hr/> <p><u>DATA AND NETWORKING INFRASTRUCTURES</u></p> <p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p> <p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify basic network connectivity concepts ● Apply basic networking terminology to a network environment ● Identify and use basic networking resources ● Recognize the impact of the convergence of telephony, data, and video communications on networks ● Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify network connectivity hardware and related software ● Identify network architecture and topologies ● Identify and distinguish network protocols, standards, and theoretical models in actual implementations ● Identify network hardware infrastructure components including networking media and connection hardware and software ● Design and develop network infrastructure ● Install and configure network servers, routers, clients, and related hardware and software ● Monitor and manage computer networks 	<p>ARPANET</p> <p>Asynchronous communication</p> <p>Central processing unit (CPU)</p> <p>Complex instruction set computers (CISC)</p> <p>Distributed computing</p> <p>Dumb terminal</p> <p>File sharing</p> <p>Hyperlink</p> <p>Input</p> <p>Multitask</p> <p>Network</p> <p>Network administrator</p> <p>Network architect</p> <p>Network engineer</p> <p>Network support technician</p> <p>Operating system</p> <p>Output</p> <p>Outsourcing</p> <p>Random-access memory (RAM)</p> <p>Read-only memory (ROM)</p> <p>Reduced instruction set computers (RISC)</p> <p>Redundant</p> <p>Reliable</p> <p>Resource</p> <p>Scalable</p> <p>Synchronous communication</p>	<p>Describe the difference between synchronous and asynchronous communication and how does this pertain to computers?</p> <p>What is ARPANET and how has it led to the technology and infrastructure of today’s networks?</p> <p>What are the different networking careers and why do they all play an important part when dealing with the internet?</p>	<p>Bell-ringers for each section</p> <p>Kahoot review game for test</p> <p>Chapter Review Questions</p>	<p>Textbook</p> <p>Internet and class website</p> <p>PowerPoint</p> <p>Handouts</p>	<p>Chapter Project</p> <p>Chapter Test</p>

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	<ul style="list-style-type: none"> ● Apply virtualization technology to servers, networks, storage and related infrastructure ● Configure and manage network operating systems in multi-vendor environments ● Implement hardware and software security solutions ● Monitor and fortify network security ● Develop enterprise networking solutions ● Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> ● Implement a distributed storage solution ● Develop networking strategic plans ● Develop policies, protocols and procedures for maintaining enterprising networks <p><u>PA Standards</u></p> <p>15.4.5.C: Describe the purpose, use, and care of peripheral devices of computer systems including input, processing, storage, and output devices.</p> <p>15.4.8.C: Compare and contrast peripheral devices of computing systems for specific needs.</p> <p>15.4.12.C: Develop criteria for analyzing hardware options to meet defined needs.</p> <p>15.4.12.E: Analyze the different operating systems and recommend the appropriate system for specific user needs.</p> <p>15.4.8.F: Identify network communication technologies.</p> <p>15.4.12.F: Compare and contrast network environments, including the function of network devices and connectivity issues.</p>	Terminal Throughput Timesharing				
	<p>NBEA Standards</p> <hr style="border: 0.5px solid blue;"/> <p>DATA AND NETWORKING INFRASTRUCTURES</p>	Bandwidth Bus network	What are the differences and similarities of	Bell-ringers for each section	Textbook	Chapter Project Chapter Test

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<p>Chapter 2: Network Architecture and Topology</p> <p>Section 2.1 “Networking Components”</p> <p>Section 2.2 “Types of Networks”</p> <p>Section 2.3 “Network Architecture”</p> <p>Section 2.4 “The Shape of a Network”</p>	<p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p> <p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify basic network connectivity concepts ● Apply basic networking terminology to a network environment ● Identify and use basic networking resources ● Recognize the impact of the convergence of telephony, data, and video communications on networks ● Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify network connectivity hardware and related software ● Identify network architecture and topologies ● Identify and distinguish network protocols, standards, and theoretical models in actual implementations ● Identify network hardware infrastructure components including networking media and connection hardware and software ● Design and develop network infrastructure ● Install and configure network servers, routers, clients, and related hardware and software ● Monitor and manage computer networks ● Apply virtualization technology to servers, networks, storage and related infrastructure ● Configure and manage network operating systems in multi-vendor environments ● Implement hardware and software security solutions ● Monitor and fortify network security ● Develop enterprise networking solutions ● Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> ● Implement a distributed storage solution 	<p>Carrier sense multiple accesses with collision detection (CSMA/CD) Client Client/server network Data Dedicated server Hub Local area network (LAN) Local user Media Mesh network Network interface card (NIC) Network operating system (NOS) Node Nondedicated server Peer-to-peer network Peripheral Redundant Array of Inexpensive Disks (RAID) Remote user Ring network Security Server Star network Terminator Thin client Token Topology Trunk Wide area network (WAN) Wireless local area network (WLAN)</p>	<p>dedicated and nondedicated servers?</p> <p>How are networks classified and what classification is best for a particular geographical location?</p> <p>What are the factors when considering network architecture?</p> <p>What are the advantages and disadvantages for each of the network topologies?</p>	<p>Kahoot review game for test</p> <p>Chapter Review Questions</p>	<p>Internet and class website</p> <p>PowerPoint</p> <p>Handouts</p>	
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	<ul style="list-style-type: none"> • Develop networking strategic plans • Develop policies, protocols and procedures • for maintaining enterprising networks <p><u>PA Standards</u></p> <p>15.4.5.C: Describe the purpose, use, and care of peripheral devices of computer systems including input, processing, storage, and output devices.</p> <p>15.4.8.C: Compare and contrast peripheral devices of computing systems for specific needs.</p> <p>15.4.12.C: Develop criteria for analyzing hardware options to meet defined needs.</p> <p>15.4.12.E: Analyze the different operating systems and recommend the appropriate system for specific user needs.</p> <p>15.4.8.F: Identify network communication technologies.</p> <p>15.4.12.F: Compare and contrast network environments, including the function of network devices and connectivity issues.</p>					
	<p>NBEA Standards</p> <hr/> <p><u>DATA AND NETWORKING INFRASTRUCTURES</u></p> <p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p>	<p>Advanced program to program communications (APPC) Analog Baseband transmission Binding order</p>	<p>What are the parts of a data packet and what responsibility does each part have?</p>	<p>Bell-ringers for each section</p> <p>Kahoot review game for test</p>	<p>Textbook</p> <p>Internet and class website</p> <p>PowerPoint</p>	<p>Chapter Project</p> <p>Chapter Test</p>

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<p>Chapter 3: Modes of Transmission</p> <p>Section 3.1 “How Network Traffic Gets from Here to There”</p> <p>Section 3.2 “Network Models”</p> <p>Section 3.3 “Protocols”</p>	<p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify basic network connectivity concepts ● Apply basic networking terminology to a network environment ● Identify and use basic networking resources ● Recognize the impact of the convergence of telephony, data, and video communications on networks ● Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify network connectivity hardware and related software ● Identify network architecture and topologies ● Identify and distinguish network protocols, standards, and theoretical models in actual implementations ● Identify network hardware infrastructure components including networking media and connection hardware and software ● Design and develop network infrastructure ● Install and configure network servers, routers, clients, and related hardware and software ● Monitor and manage computer networks ● Apply virtualization technology to servers, networks, storage and related infrastructure ● Configure and manage network operating systems in multi-vendor environments ● Implement hardware and software security solutions ● Monitor and fortify network security ● Develop enterprise networking solutions ● Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> ● Implement a distributed storage solution ● Develop networking strategic plans ● Develop policies, protocols and procedures for maintaining enterprising networks 	<p>Binding process Broadband transmission Bus Cyclical redundancy check (CRC) Data frame Data packet Digital Interface Internetworking Media access control (MAC) Multiplexing Open systems interconnection (OSI) reference model Parallel transmission Protocol Protocol stack Serial transmission Session Transmission control protocol/Internet protocol (TCP/IP) reference model</p>	<p>What are the models widely used for describing network communication tasks?</p> <p>Why do various protocols work at different levels within a network reference model?</p>	<p>Chapter Review Questions</p>	<p>Handouts</p>	
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<p>Chapter 4:</p>	<p>NBEA Standards</p> <hr/> <p><u>DATA AND NETWORKING INFRASTRUCTURES</u></p> <p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p> <p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> Identify basic network connectivity concepts 	<p>Attenuation BNC connector Boot-on-LAN Bridge Brouter Crosstalk Demodulation Fiber optic cable Gateway Hop Infrared</p>	<p>What are the advantages and disadvantages of each type of network connectivity device?</p> <p>What are the different types of network media</p>	<p>Bell-ringers for each section</p> <p>Kahoot review game for test</p> <p>Chapter Review Questions</p>	<p>Textbook</p> <p>Internet and class website</p> <p>PowerPoint</p> <p>Handouts</p>	<p>Chapter Project</p> <p>Chapter Test</p>

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<p>Network Hardware and Media</p> <p>Section 4.1 “Network Connectivity Devices”</p> <p>Section 4.2 “Network Media”</p> <p>Section 4.3 “Network Interface Cards”</p> <p>Section 4.4 “Wireless Networking”</p>	<ul style="list-style-type: none"> • Apply basic networking terminology to a network environment • Identify and use basic networking resources • Recognize the impact of the convergence of telephony, data, and video communications on networks • Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> • Identify network connectivity hardware and related software • Identify network architecture and topologies • Identify and distinguish network protocols, standards, and theoretical models in actual implementations • Identify network hardware infrastructure components including networking media and connection hardware and software • Design and develop network infrastructure • Install and configure network servers, routers, clients, and related hardware and software • Monitor and manage computer networks • Apply virtualization technology to servers, networks, storage and related infrastructure • Configure and manage network operating systems in multi-vendor environments • Implement hardware and software security solutions • Monitor and fortify network security • Develop enterprise networking solutions • Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> • Implement a distributed storage solution • Develop networking strategic plans • Develop policies, protocols and procedures for maintaining enterprising networks <p><u>PA Standards</u></p>	<p>Microwave Modulation Narrowband radio Noise Programmable read-only memory (PROM) Repeater Router Segment Shielded twisted-pair (STP) Shielding Spread-spectrum radio Switch Twisted-pair cable Unshielded twisted-pair (UTP) Wired encryption privacy (WEP)</p>	<p>and why are some better than others?</p> <p>What is a NIC and what responsibility does it have?</p> <p>Why is security an issue when incorporating wireless technology?</p>			
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<p>Chapter 5: Network Models and Protocols</p>	<p>NBEA Standards</p> <hr/> <p><u>DATA AND NETWORKING INFRASTRUCTURES</u></p> <p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p> <p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> Identify basic network connectivity concepts 	<p>AppleTalk Attached resource computer network (ARCnet) Carrier sense multiple access with collision avoidance (CSMA/CA) Contention Device driver Domain name system (DNS) Ethernet</p>	<p>What enable devices made by different manufacturers to communicate with each other?</p> <p>What are the various transmission methods wireless networks use and</p>	<p>Bell-ringers for each section</p> <p>Kahoot review game for test</p> <p>Chapter Review Questions</p>	<p>Textbook</p> <p>Internet and class website</p> <p>PowerPoint</p> <p>Handouts</p>	<p>Chapter Project</p> <p>Chapter Test</p>

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<p>Section 5.1 “Common LAN Models”</p> <p>Section 5.2 “Other LAN Models”</p> <p>Section 5.3 “TCP/IP”</p> <p>Section 5.4 “Other Models and Protocols”</p>	<ul style="list-style-type: none"> ● Apply basic networking terminology to a network environment ● Identify and use basic networking resources ● Recognize the impact of the convergence of telephony, data, and video communications on networks ● Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify network connectivity hardware and related software ● Identify network architecture and topologies ● Identify and distinguish network protocols, standards, and theoretical models in actual implementations ● Identify network hardware infrastructure components including networking media and connection hardware and software ● Design and develop network infrastructure ● Install and configure network servers, routers, clients, and related hardware and software ● Monitor and manage computer networks ● Apply virtualization technology to servers, networks, storage and related infrastructure ● Configure and manage network operating systems in multi-vendor environments ● Implement hardware and software security solutions ● Monitor and fortify network security ● Develop enterprise networking solutions ● Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> ● Implement a distributed storage solution ● Develop networking strategic plans ● Develop policies, protocols and procedures for maintaining enterprising networks <p><u>PA Standards</u></p>	<p>Frame</p> <p>Integrated services digital network (ISDN)</p> <p>Integrated services LAN (ISLAN)</p> <p>Internet protocol (IP)</p> <p>Internetwork packet exchange/sequenced packet exchange (IPX/SPX)</p> <p>Logical link control (LLC)</p> <p>Multistation access unit (MAU)</p> <p>NetBIOS extended user interface (NetBEUI)</p> <p>NetWare</p> <p>Network basic input/output system (NetBIOS)</p> <p>Token ring</p> <p>Transmission control protocol (TCP)</p> <p>User datagram protocol (UDP)</p> <p>Wifi</p>	<p>what are their advantages and disadvantages?</p> <p>How do protocol stacks operate on different types of networks?</p>			
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	<p>NBEA Standards</p> <hr/> <p><u>DATA AND NETWORKING INFRASTRUCTURES</u></p> <p>Achievement Standard: Develop the skills to design, deploy, and administer networks and telecommunications systems.</p> <p>Level 1 – 2 Performance Expectations</p> <ul style="list-style-type: none"> ● Identify basic network connectivity concepts ● Apply basic networking terminology to a network environment 	<p>Administrative tools Disk operating system (DOS) Domain Extended file system version 2 (EXT2) File allocation table (FAT) File system directory Graphical user interface (GUI) Group Groupware</p>	<p>What are the common operating systems and what are their advantages and disadvantages?</p> <p>What are password policies and how do they help prevent unauthorized</p>	<p>Bell-ringers for each section</p> <p>Kahoot review game for test</p> <p>Chapter Review Questions</p>	<p>Textbook</p> <p>Internet and class website</p> <p>PowerPoint</p> <p>Handouts</p>	<p>Chapter Project</p> <p>Chapter Test</p>

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<p>Chapter 6: Networking Operating Systems and Software</p> <p>Section 6.1 “Common Operating Systems”</p> <p>Section 6.2 “Graphical User Interface”</p> <p>Section 6.3 “Network Operating System Software”</p>	<ul style="list-style-type: none"> • Identify and use basic networking resources • Recognize the impact of the convergence of telephony, data, and video communications on networks • Configure basic networking devices and security <p>Level 3 Performance Expectations</p> <ul style="list-style-type: none"> • Identify network connectivity hardware and related software • Identify network architecture and topologies • Identify and distinguish network protocols, standards, and theoretical models in actual implementations • Identify network hardware infrastructure components including networking media and connection hardware and software • Design and develop network infrastructure • Install and configure network servers, routers, clients, and related hardware and software • Monitor and manage computer networks • Apply virtualization technology to servers, networks, storage and related infrastructure • Configure and manage network operating systems in multi-vendor environments • Implement hardware and software security solutions • Monitor and fortify network security • Develop enterprise networking solutions • Obtain telecommunications and networking industry certification(s) <p>Level 4 Performance Expectations</p> <ul style="list-style-type: none"> • Implement a distributed storage solution • Develop networking strategic plans • Develop policies, protocols and procedures for maintaining enterprising networks <p><u>PA Standards</u></p> <p>15.4.5.C: Describe the purpose, use, and care of peripheral devices of computer systems including input, processing, storage, and output devices.</p>	<p>Hierarchical file system (HFS) Linux Macintosh Menu system Microsoft active directory Novell directory services (NDS) NT file system (NTFS) Open source Post office protocol (POP) Simple mail transfer protocol (SMTP) Tree structure Uniplexed information and computing system (UNIX) Windows</p>	<p>access to the network?</p>			
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