Written by Networking Authority Todd Lammle

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STUDY GUIDE

Exam N10-004

Todd Lammle

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CompTIA Network+ Study Guide

N10-004 Exam Objectives

OBJECTIVE	CHAPTER
1.0 NETWORK TECHNOLOGIES	
1.1 Explain the function of common networking protocols	6
TCP; FTP; UDP; TCP/IP suite; DHCP; TFTP; DNS; HTTP(S); ARP; SIP (VoIP); RTP (VoIP); SSH; POP3; NTP; IMAP4; Telnet; SMTP; SNMP2/3; ICMP; IGMP; TLS	
1.2 Identify commonly used TCP and UDP default ports	6
TCP ports: FTP – 20, 21; SSH – 22;TELNET – 23; SMTP – 25; DNS – 53; HTTP – 80; POP3 – 110; NTP – 123; IMAP4 – 143; HTTPS – 443	
UDP ports: TFTP – 69; DNS – 53; BOOTPS/DHCP – 67; SNMP – 161	
1.3 Identify the following address formats	7
IPv6; IPv4; MAC addressing	
1.4 Given a scenario, evaluate the proper use of the following addressing technologies and addressing schemes	7, 8
Addressing Technologies: Subnetting; Classful vs. classless (e.g. CIDR, Supernetting); NAT; PAT; SNAT; Public vs. private; DHCP (static, dynamic APIPA)	
Addressing schemes: Unicast; Multicast; Broadcast	
1.5 Identify common IPv4 and IPv6 routing protocols	10
Link state: OSPF; IS-IS	
Distance vector: RIP; RIPv2; BGP	
Hybrid: EIGRP	
1.6 Explain the purpose and properties of routing	9
IGP vs. EGP; Static vs. dynamic; Next hop; Understanding routing tables and how they pertain to path selection; Explain convergence (steady state)	
1.7 Compare the characteristics of wireless communication standards	12
802.11 a/b/g/n: Speeds; Distance; Channels; Frequency	
Authentication and encryption: WPA; WEP; RADIUS; TKIP	
2.0 NETWORK MEDIA AND TOPOLOGIES	
2.1 Categorize standard cable types and their properties	3
Type: CAT3, CAT5, CAT5e, CAT6; STP, UTP; Multimode fiber, single-mode fiber; Coaxial: RG-59; RG-6; Serial; Plenum vs. Non-plenum	
Properties: Transmission speeds; Distance; Duplex; Noise immunity (security, EMI); Frequency	

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OBJECTIVE	CHAPTER
2.2 Identify common connector types	3
RJ-11; RJ-45; BNC; SC; ST; LC; RS-232	
2.3 Identify common physical network topologies	1
Star; Mesh; Bus; Ring; Point to point; Point to multipoint; Hybrid	
2.4 Given a scenario, differentiate and implement appropriate wiring standards	3
568A; 568B; Straight vs. cross-over; Rollover; Loopback	
2.5 Categorize WAN technology types and properties	16
Type: Frame relay; E1/T1; ADSL; SDSL; VDSL; Cable modem; Satellite; E3/T3; OC-x; Wireless; ATM; SONET; MPLS; ISDN BRI; ISDN PRI; POTS; PSTN	
Properties: Circuit switch; Packet switch; Speed; Transmission media; Distance	
2.6 Categorize LAN technology types and properties	4
Types: Ethernet; 10BaseT; 100BaseTX; 100BaseFX; 1000BaseT; 1000BaseX; 10GBaseSR; 10GBaseLR; 10GBaseER; 10GBaseSW; 10GBaseLW; 10GBaseEW; 10GBaseT	
Properties: CSMA/CD; Broadcast; Collision; Bonding; Speed; Distance	
2.7 Explain common logical network topologies and their characteristics	1
Peer to peer; Client/server; VPN; VLAN	
2.8 Install components of wiring distribution	3
Vertical and horizontal cross connects; Patch panels; 66 block; MDFs; IDFs; 25 pair; 100 pair; 110 block; Demarc; Demarc extension; Smart jack; Verify wiring installation; Verify wiring; termination	
3.0 NETWORK DEVICES	
3.1 Install, configure and differentiate between common network devices	5
Hub; Repeater; Modem; NIC; Media converters; Basic switch; Bridge; Wireless access point; Basic router; Basic firewall; Basic DHCP server	
3.2 Identify the functions of specialized network devices	5
Multilayer switch; Content switch; IDS/IPS; Load balancer; Multifunction network devices; DNS server; Bandwidth shaper; Proxy server; CSU/DSU	
3.3 Explain the advanced features of a switch	11
PoE; Spanning tree; VLAN; Trunking; Port mirroring; Port authentication	
3.4 Implement a basic wireless network	12
Install client; Access point placement; Install access point—Configure appropriate encryption, Configure channels and frequencies, Set ESSID and beacon—Verify installation	

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OBJECTIVE	CHAPTER
4.0 NETWORK MANAGEMENT	
4.1 Explain the function of each layer of the OSI model	2
Layer 1 – physical; Layer 2 – data link; Layer 3 – network; Layer 4 – transport; Layer 5 – session; Layer 6 – presentation; Layer 7 – application	
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Wiring schematics; Physical and logical network diagrams; Baselines; Policies, procedures, and configurations; Regulations	
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Compare wiring schematics, physical and logical network diagrams, baselines, policies and procedures and configurations to network devices and infrastructure; Update wiring schematics, physical and logical network diagrams, configurations and job logs as needed	
4.4 Conduct network monitoring to identify performance and connectivity issues using the following:	20
Network monitoring utilities (e.g. packet sniffers, connectivity software, load testing, throughput testers); System logs, history logs, event logs	
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Methods: QoS; Traffic shaping; Load balancing; High availability; Caching engines; Fault tolerance	
Reasons: Latency sensitivity; High bandwidth applications—VoIP, Video applications—Uptime	
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Information gathering – identify symptoms and problems; Identify the affected areas of the network; Determine if anything has changed; Establish the most probable cause; Determine if escalation is necessary; Create an action plan and solution identifying potential effects; Implement and test the solution; Identify the results and effects of the solution; Document the solution and the entire process	
4.7 Given a scenario, troubleshoot common connectivity issues and select an appropriate solution	19
Physical issues: Cross talk; Nearing crosstalk; Near end crosstalk; Attenuation; Collisions; Shorts; Open impedance mismatch (echo); Interference	
Logical issues: Port speed; Port duplex mismatch; Incorrect VLAN; Incorrect IP address; Wrong gateway; Wrong DNS; Wrong subnet mask—Issues that should be identified but escalated: Switching loop, Routing loop, Route problems, Proxy arp, Broadcast storms; Wireless Issues: Interference (bleed, environmental factors), Incorrect encryption, Incorrect channel, Incorrect frequency, ESSID mismatch, Standard mismatch (802.11 a/b/g/n); Distance; Bounce; Incorrect antenna placement	

OBJECTIVE	CHAPTER
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Packet sniffers; Intrusion detection software; Intrusion prevention software; Port scanners	
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6.3 Explain the methods of network access security	13
Filtering: ACL—MAC filtering, IP filtering—Tunneling and encryption—SSL VPN, VPN, L2TP, PPTP, IPSEC— Remote access—RAS, RDP, PPPoE, PPP, VNC, ICA	
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Mitigation techniques: Policies and procedures; User training; Patches	

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Wiley Publishing, Inc.

Acquisitions Editor: Jeff Kellum
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Associate Producer: Shawn Patrick
Media Quality Assurance: Angie Denny
Book Designer: Judy Fung, Bill Gibson
Compositor: Craig Woods, Happenstance Type-O-Rama
Proofreader: Publication Services, Inc.
Indexer: Jack Lewis
Project Coordinator, Cover: Lynsey Stanford
Cover Designer: Ryan Sneed

Published simultaneously in Canada

ISBN: 978-0-470-42747-7

Library of Congress Cataloging-in-Publication Data.
Lammle, Todd.
CompTIA Network+ study guide (Exam N10-004) / Todd Lammle. — 1st ed.
p. cm.
ISBN 978-0-470-42747-7 (paper/cd-rom) -- ISBN 978-0-470-42748-4 (cloth/cd-rom) 1. Computer networks—Examinations—Study guides. 2. Electronic data processing personnel--Certification. I. Title.
TK5105.5.L3555 2009
004.6076—dc22

2009001904

10 9 8 7 6 5 4 3 2 1

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Acknowledgments

Monica Lammle's writing style, editing ability, encouragement, and dedication to ensuring that my books are concise yet highly readable has been invaluable to the success of this and many other projects.

Susan Herman was the development editor of this, the newest book in the Sybex CompTIA series. Thank you, Susan, for having the patience of Job, and for working so hard on this book with me. I'm so happy (and relieved) that you took on the job and, most of all, that you didn't run screaming from the room the next day!

Jeff Kellum is instrumental to my success in the Cisco world and is my acquisitions editor for this new CompTIA Network+ book. Jeff, thanks for your guidance and continued patience for all our books we've published together!

In addition, Christine O'Connor was an excellent production editor and she worked really hard to get the book done as quickly as possible, without missing the small mistakes that are so easy to over look. I am always very pleased when I hear that she will be working with me on a new project. Tiffany Taylor was latest copy editor, and she was patient, helpful, and detailed, but yet worked extremely hard to get this book out the shelf as fast as possible, and for that I thank her tremendously.

Steven Johnson literally hashed and rehashed each topic in this guide with me at all hours of the day and night, scrutinizing the material until we both agreed it was verifiably solid. Thank you, Steve!

I also want to mention Patrick Conlan, who tech-edited my CCNA book and is writing the Sybex Cisco Network Professional's Advanced Internetworking Guide. Pat was very helpful in throwing ideas at me for this book, and was the photographer for all the pictures I put in this book.

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