CompTIA

The Official CompTIA

Network+ Course Content

Exam N10-008

Official CompTIA Content Series for CompTIA Performance Certifications

Table of Contents

Lesson 1: Comparing OSI Model Network Functions 1

Topic 1A: Compare and Contrast OSI Model Layers 2

Topic 1B: Configure SOHO Networks 10

Lesson 2: Deploying Ethernet Cabling 19

Topic 2A: Summarize Ethernet Standards 20

Topic 2B: Summarize Copper Cabling Types 25

Topic 2C: Summarize Fiber Optic Cabling Types 34

Topic 2D: Deploy Ethernet Cabling 41

Lesson 3: Deploying Ethernet Switching 51

Topic 3A: Deploy Networking Devices 52

Topic 3B: Explain Network Interfaces 58

Topic 3C: Deploy Common Ethernet Switching Features 65

Lesson 4: Troubleshooting Ethernet Networks 75

Topic 4A: Explain Network Troubleshooting Methodology 76

Topic 4B: Troubleshoot Common Cable Connectivity Issues 85

Lesson 5: Explaining IPv4 Addressing 97

Topic 5A: Explain IPv4 Addressing Schemes 98

Topic 5B: Explain IPv4 Forwarding 106

Topic 5C: Configure IP Networks and Subnets 115

Lesson 6: Supporting IPv4 and IPv6 Networks 125

Topic 6A: Use Appropriate Tools to Test IP Configuration 126

Topic 6B: Troubleshoot IP Networks 133

Topic 6C: Explain IPv6 Addressing Schemes 139

Lesson 7: Configuring and Troubleshooting Routers 149
Topic 7A: Compare and Contrast Routing Concepts 150
Topic 7B: Compare and Contrast Dynamic Routing Concepts 156
Topic 7C: Install and Troubleshoot Routers 171

Lesson 8: Explaining Network Topologies and Types 185
Topic 8A: Explain Network Types and Characteristics 186
Topic 8B: Explain Tiered Switching Architecture 194
Topic 8C: Explain Virtual LANs 200

Lesson 9: Explaining Transport Layer Protocols 207
Topic 9A: Compare and Contrast Transport Protocols 208
Topic 9B: Use Appropriate Tools to Scan Network Ports 216

Lesson 10: Explaining Network Services 225
Topic 10A: Explain the Use of Network Addressing Services 226
Topic 10B: Explain the Use of Name Resolution Services 233
Topic 10C: Configure DNS Services 241

Lesson 11: Explaining Network Applications 247
Topic 11A: Explain the Use of Web, File/Print, and Database Services 248
Topic 11B: Explain the Use of Email and Voice Services 256

Lesson 12: Ensuring Network Availability 267
Topic 12A: Explain the Use of Network Management Services 268
Topic 12B: Use Event Management to Ensure Network Availability 274
Topic 12C: Use Performance Metrics to Ensure Network Availability 284

Lesson 13: Explaining Common Security Concepts 295
Topic 13A: Explain Common Security Concepts 296
Topic 13B: Explain Authentication Methods 304

Lesson 14: Supporting and Troubleshooting Secure Networks 317
Topic 14A: Compare and Contrast Security Appliances 318
Topic 14B: Troubleshoot Service and Security Issues 329

Lesson 15: Deploying and Troubleshooting Wireless Networks 341
Topic 15A: Summarize Wireless Standards 342
Topic 15B: Install Wireless Networks 350
Topic 15C: Troubleshoot Wireless Networks 358
Topic 15D: Configure and Troubleshoot Wireless Security 366

Lesson 16: Comparing WAN Links and Remote Access Methods 375
Topic 16A: Explain WAN Provider Links 376
Topic 16B: Compare and Contrast Remote Access Methods 383

Lesson 17: Explaining Organizational and Physical Security Concepts 395
Topic 17A: Explain Organizational Documentation and Policies 396
Topic 17B: Explain Physical Security Methods 408
Topic 17C: Compare and Contrast Internet of Things Devices 416

Lesson 18: Explaining Disaster Recovery and High Availability Concepts 423
Topic 18A: Explain Disaster Recovery Concepts 424
Topic 18B: Explain High Availability Concepts 431

Lesson 19: Applying Network Hardening Techniques 439
Topic 19A: Compare and Contrast Types of Attacks 440
Topic 19B: Apply Network Hardening Techniques 453

Lesson 20: Summarizing Cloud and Datacenter Architecture..... 463

Topic 20A: Summarize Cloud Concepts..... 464

Topic 20B: Explain Virtualization and Storage Area Network Technologies..... 471

Topic 20C: Explain Datacenter Network Architecture..... 478

Appendix A: Mapping Course Content to CompTIA Network+ (N10-008).....A-1

Solutions S-1

Glossary G-1

Index I-1

About This Course

CompTIA is a not-for-profit trade association with the purpose of advancing the interests of IT professionals and IT channel organizations, and its industry-leading IT certifications are an important part of that mission. CompTIA's Network+ Certification is an entry-level certification designed for professionals with 9-12 months' work experience in roles such as a junior network administrator or network support technician.

> The CompTIA Network+ certification exam will verify the successful candidate has the knowledge and skills required to:
>
> - Establish network connectivity by deploying wired and wireless devices.
> - Understand and maintain network documentation.
> - Understand the purpose of network services.
> - Understand basic datacenter, cloud, and virtual networking concepts.
> - Monitor network activity, identifying performance and availability issues.
> - Implement network hardening techniques.
> - Manage, configure, and troubleshoot network infrastructure.
>
> *CompTIA Network+ Exam Objectives*

Course Description

Course Objectives

This course can benefit you in two ways. If you intend to pass the CompTIA Network+ (Exam N10-008) certification examination, this course can be a significant part of your preparation. But certification is not the only key to professional success in the field of network support. Today's job market demands individuals have demonstrable skills, and the information and activities in this course can help you build your network administration skill set so that you can confidently perform your duties in any entry-level network support technician role.

On course completion, you will be able to:

- Deploy and troubleshoot Ethernet networks.
- Support IPv4 and IPv6 networks.
- Configure and troubleshooting routers.
- Support network services and applications.
- Ensure network security and availability.
- Deploy and troubleshooting wireless networks.
- Support WAN links and remote access methods.
- Support organizational procedures and site security controls.
- Summarize cloud and datacenter architecture.

Target Student

The Official CompTIA Network+ Guide (Exam N10-008) is the primary course you will need to take if your job responsibilities include network administration, installation, and security within your organization. You can take this course to prepare for the CompTIA Network+ (Exam N10-008) certification examination.

Prerequisites

To ensure your success in this course, you should have basic IT skills comprising nine to twelve months' experience. CompTIA A+ certification, or the equivalent knowledge, is strongly recommended.

The prerequisites for this course might differ significantly from the prerequisites for the CompTIA certification exams. For the most up-to-date information about the exam prerequisites, complete the form on this page: www.comptia.org/training/resources/exam-objectives.

How to Use The Study Notes

The following sections will help you understand how the course structure and components are designed to support mastery of the competencies and tasks associated with the target job roles and will help you to prepare to take the certification exam.

As You Learn

At the top level, this course is divided into **lessons,** each representing an area of competency within the target job roles. Each lesson is composed of a number of topics. A **topic** contains subjects that are related to a discrete job task, mapped to objectives and content examples in the CompTIA exam objectives document. Rather than follow the exam domains and objectives sequence, lessons and topics are arranged in order of increasing proficiency. Each topic is intended to be studied within a short period (typically 30 minutes at most). Each topic is concluded by one or more activities, designed to help you to apply your understanding of the study notes to practical scenarios and tasks.

Additional to the study content in the lessons, there is a glossary of the terms and concepts used throughout the course. There is also an index to assist in locating particular terminology, concepts, technologies, and tasks within the lesson and topic content.

In many electronic versions of the book, you can click links on key words in the topic content to move to the associated glossary definition, and on page references in the index to move to that term in the content. To return to the previous location in the document after clicking a link, use the appropriate functionality in your eBook viewing software.

Watch throughout the material for the following visual cues.

Student Icon	Student Icon Descriptive Text
	A **Note** provides additional information, guidance, or hints about a topic or task.
	A **Caution** note makes you aware of places where you need to be particularly careful with your actions, settings, or decisions so that you can be sure to get the desired results of an activity or task.

As You Review

Any method of instruction is only as effective as the time and effort you, the student, are willing to invest in it. In addition, some of the information that you learn in class may not be important to you immediately, but it may become important later. For this reason, we encourage you to spend some time reviewing the content of the course after your time in the classroom.

Following the lesson content, you will find a table mapping the lessons and topics to the exam domains, objectives, and content examples. You can use this as a checklist as you prepare to take the exam, and review any content that you are uncertain about.

As A Reference

The organization and layout of this book make it an easy-to-use resource for future reference. Guidelines can be used during class and as after-class references when you're back on the job and need to refresh your understanding. Taking advantage of the glossary, index, and table of contents, you can use this book as a first source of definitions, background information, and summaries.