

uCertify

Course Outline

Networking Essentials



15 Mar 2026

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1. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

2. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.

265
EXERCISES

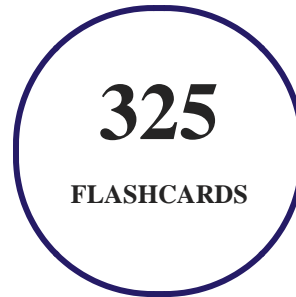
3. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.

200
QUIZ

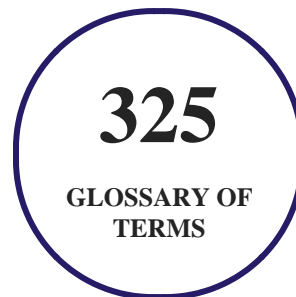
4. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



5. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



6. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

7. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

8. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

9. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
 1. Best Postsecondary Learning Solution
- **2015**
 1. Best Education Solution

2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

10. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Introduction

Chapter 2: Networking Basics, Connectors, Ethernet, Devices

- First Things First: What's a Network?
- Physical Network Topologies
- Topology Selection, Backbones, and Segments
- Internetworking Models
- The OSI Reference Model
- Introduction to Encapsulation

- Modulation Techniques
- Physical Media
- Cable Properties
- Wiring Standards
- Installing Wiring Distributions
- Network Basics
- Ethernet Basics
- Ethernet at the Data Link Layer
- Ethernet at the Physical Layer
- Ethernet over Other Standards (IEEE 1905.1-2013)
- Common Network Connectivity Devices
- Other Specialized Devices
- Networked Devices
- Planning and Implementing a Basic SOHO Network Using Network Segmentation

Chapter 3: Internet Protocol

- Introducing TCP/IP
- Data Encapsulation

- IP Terminology
- The Hierarchical IP Addressing Scheme
- IPv4 Address Types
- Internet Protocol Version 6 (IPv6)
- Subnetting Basics
- Troubleshooting IP Addressing
- Introduction to Network Address Translation (NAT)

Chapter 4: IP Routing and Protocols, and Virtual LANs

- Routing Basics
- The IP Routing Process
- Testing Your IP Routing Understanding
- Static and Dynamic Routing
- Routing Protocol Basics
- Distance-Vector Routing Protocols
- Link-State Routing Protocols
- High Availability
- Advanced IPv6 Concepts

- IPv6 Routing Protocols
- Networking Before Layer 2 Switching
- Switching Services
- Spanning Tree Protocol
- Virtual LANs
- VLAN Trunking Protocol
- Two Additional Advanced Features of Switches

Chapter 5: Wireless networks, Sensors, Documents, High Availability and Disaster Recovery

- Introduction to Wireless Technology
- Cellular Technologies
- The 802.11 Standards (Regulatory Impacts)
- Comparing 802.11 Standards
- Wireless Network Components
- Installing a Wireless Network
- Site Survey
- Wireless Security
- Performance Metrics/Sensors

- SNMP
- Network Device Logs
- Interface Statistics/Status
- Interface Errors or Alerts
- Environmental Factors and Sensors
- Baselines
- NetFlow Data
- Uptime/Downtime
- Plans and Procedures
- Hardening and Security Policies
- Common Documentation
- Common Agreements
- Load Balancing
- Multipathing
- Network Interface Card (NIC) Teaming
- Redundant Hardware/Clusters
- Facilities and Infrastructure Support

- Redundancy and High Availability (HA) Concepts
- Mean Time to Repair (MTTR)
- Mean Time Between Failure (MTBF)
- Recovery Time Objective (RTO)
- Recovery Point Objective (RPO)
- Network Device Backup/Restore

Chapter 6: Security Concepts, Attacks, and Network Hardening Techniques

- Confidentiality, Integrity, and Availability (CIA)
- Threats
- Vulnerabilities
- Least Privilege
- Role-Based Access
- Zero Trust
- Defense in Depth
- Authentication Methods
- Security Risk Assessments
- Security Information and Event Management (SIEM)

- Technology-Based Attacks
- Human and Environmental
- Best Practices
- Wireless Security
- IoT Access Considerations

Chapter 7: Remote Access & Physical Security, Cloud, Network Availability

- Site-to-Site VPN
- Client-to-Site VPN
- Remote Desktop Connection
- Remote Desktop Gateway
- SSH
- Virtual Network Computing (VNC)
- Virtual Desktop
- Authentication and Authorization Considerations
- In-Band vs. Out-of-Band Management
- Detection Methods
- Prevention Methods

- Asset Disposal
- Data Center Network Architectures
- Software-Defined Networking
- Traffic Flows
- Branch Office vs. On-premises Data Center vs. Colocation
- Cloud Computing and Its Effect on the Enterprise Network
- Overview of Network Programmability in Enterprise Network
- Application Programming Interfaces (APIs)
- Managing Network Documentation
- Network Monitoring
- Network Optimization
- Performance Metrics/Sensors
- Network Metrics
- Network Device Logs
- Interface Statistics/Status
- Interface Errors
- Baseline
- NetFlow

- Uptime
- Downtime

Chapter 8: Cable Connectivity Issues, Troubleshooting, and Software Tools

- Identifying Hardware Tools
- Narrowing Down the Problem
- Troubleshooting Steps
- Troubleshooting Tips
- Software Tools
- Using traceroute
- Using ipconfig, ifconfig, and ip
- Using the iptables Utility
- Using the ping Utility
- Using the Address Resolution Protocol
- Using the arp Utility
- Using the nslookup Utility
- Resolving Names with the Hosts File
- Using the Mtr Command (pathping)

- Using the Nmap Utility
- Using the route Command
- Using the nbtstat Utility
- Using the netstat Utility
- Using tcpdump
- Using the File Transfer Protocol
- Using the Telnet Utility

Chapter 9: Appendix A: Subnetting Class A

- Subnetting Practice Examples: Class A Addresses
- Subnetting in Your Head: Class A Addresses
- Written Lab 1
- Written Lab 2

11. Practice Test

Here's what you get



Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

12. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

Networking Basics, Connectors, Ethernet, Devices

- Identifying Clients and Servers
- Connecting Devices in a Peer- To- Peer Architecture
- Connecting Devices in Bus Topology
- Preparing a Temporary Server for the Network or Internet Connection
- Preparing a Temporary Server for the Network or Internet Connection
- Connecting a New Workstation to the Internet
- Connecting a Workstation to the Ethernet and to the Internet
- Configuring Advanced Ethernet Options
- Configuring and Displaying Speed, Duplex, and Description on a Switch
- Creating a Subinterface on a Router and Assigning an IP Address
- Configuring a DHCP Server
- Adding a DNS server
- Performing a Proxy Server Operation

Internet Protocol

- Understanding the IPv4 Header
- Displaying the Structure of a UDP Segment
- Displaying the Structure of a TCP Segment
- Displaying a Router's IP ARP Table
- Configuring a Class C IP Address
- Configuring a Class A IP Address
- Configuring a Class B IP Address
- Enabling and Verifying SLAAC on a Router
- Pinging a Host Using a PC
- Configuring a CIDR-Based IP Network
- Configuring Network Address Translation
- Configuring Port Address Translation

IP Routing and Protocols, and Virtual LANs

- Using the show IP route Command
- Configuring Static Routing
- Configuring GRE Tunnels
- Using the show Command
- Configuring an Access Port
- Identifying the Root Ports and Viewing the STP Information of a Switch
- Creating a VLAN and Viewing its Assignment to Port Mapping
- Configuring and Viewing a Trunk Port Status

Wireless networks, Sensors, Documents, High Availability and Disaster Recovery

- Installing a NIC
- Connecting a Wireless Router to a Laptop
- Turning on the Personal Hotspot of an iPhone
- Viewing the Application, Security, and System Logs
- Configuring Syslog and Viewing Settings on a Router
- Viewing Interface Statistics and Status
- Configuring NetFlow
- Creating a Demilitarized Zone
- Configuring a Default Domain Password Policy
- Configuring VRRP

Security Concepts, Attacks, and Network Hardening Techniques

- Setting Up a Honeypot
- Installing a RADIUS Server
- Configuring AAA for Device Access Control
- Simulating a DoS Attack
- Cracking Passwords
- Performing a DoS Attack with the SYN Flood
- Performing ARP Spoofing
- Using Social Engineering Techniques to Plan an Attack
- Using OWASP ZAP

- Configuring DHCP Snooping

Remote Access & Physical Security, Cloud, Network Availability

- Configuring an SSH Server
- Creating a Virtual Switch

Cable Connectivity Issues, Troubleshooting, and Software Tools

- Part III: Command Line Tools
- Capturing a Packet Using Wireshark
- Part I: Command Line Tools
- Part II: Command Line Tools

Here's what you get

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LIVE LABS

58

VIDEO TUTORIALS

01:27

HOURS

13. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

You can't stay away! Get