

TestOut[®]

TestOut Network Pro - English 5.0.x

LESSON PLAN

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0.1: Network Pro Introduction

Summary

You should have the following skills before you study for the Network Pro certification:

- Knowledge of PC hardware installation and configuration
- Knowledge of Windows client computer use and administration

You can gain these skills through the TestOut PC Pro course and certification.

Video/Demo	Time
 0.1.1 Network Pro Introduction	<u>3:35</u>
Total Video Time	3:35

Total Time

About 4 minutes

0.2: Use the Simulator

Summary

In this section, you will learn to:

- Read simulated component documentation and view components to make appropriate choices and meet the scenario's requirements.
- Add and remove simulated computer components.
- Change views and navigate between floors and buildings to view and add simulated components.
- Use the zoom feature to view additional image details.
- Attach simulated cables.
- Use the simulation interface to identify where simulated cables connect to the computer.
- Configure services on Hyper-V guest servers.

Video/Demo

- 📺 0.2.1 Use the Simulator

Time

10:59

Total Video Time 10:59

Lab/Activity

- 🔧 0.2.2 Explore a Single Location in a Lab
- 🔧 0.2.3 Explore Multiple Locations in a Lab

Total Time

About 21 minutes

1.1: Networking Overview

Lecture Focus Questions:




- Why are protocols important for networking?
- What are the advantages of a client-server network as compared to a peer-to-peer network?
- What is the main characteristic of a subnet? How can you tell one subnet from another?
- How does an intranet differ from the internet?
- What is the main purpose of an extranet?

This section covers the following Network+ certification exam objective:

1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Types
 - LAN
 - MAN
 - WAN
 - CAN

Video/Demo

	Time
 1.1.1 Introduction to Networking	5:23
 1.1.2 Network Types	7:47
 1.1.3 Networking Terms	<u>10:58</u>

Total Video Time 24:08

Fact Sheets

-  1.1.4 Networking Facts

Number of Exam Questions

4 questions

Total Time

About 34 minutes

1.2: Network Topologies

Lecture Focus Questions:

- What is defined by the logical topology?
- How does the logical topology differ from the physical topology?
- Why can a single physical topology support multiple logical topologies?
- Why is a physical mesh topology normally an impractical solution?
- What advantages of the logical star topology have as compared to the logical bus topology?
- Why is termination important on a physical bus topology?
- How do hosts on a physical ring topology communicate?

This section covers the following Network+ certification exam objective:

1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Wired topologies
 - Logical vs. physical
 - Star
 - Ring
 - Mesh
 - Bus

Video/Demo

 1.2.1 Network Topologies

Time

7:09

Total Video Time

7:09

Fact Sheets

 1.2.2 Topology Facts

Number of Exam Questions

12 questions

Total Time

About 25 minutes

1.3: The OSI Model




Lecture Focus Questions:

- What is the OSI model? Why is it important for understanding networking?
- What are the advantages of using a theoretical model to describe networking?
- What is the name of Layer 3 in the OSI model? Layer 5?
- Which OSI model layers typically correspond to the network architecture?
- How does the session ID differ from the port number?
- Which OSI model layer would you find a frame at?
- What is the difference between connectionless and connection-oriented services?



This section covers the following Network+ certification exam objective:

1.2 Explain devices, applications, protocols and services at their appropriate OSI layers.

- Layer 1 — Physical
- Layer 2 — Data link
- Layer 3 — Network
- Layer 4 — Transport
- Layer 5 — Session
- Layer 6 — Presentation
- Layer 7 — Application

Video/Demo	Time
 1.3.1 The OSI Model	3:01
 1.3.3 OSI Model Layers	7:56
 1.3.4 OSI Model Communications	<u>3:14</u>
Total Video Time	14:11

Fact Sheets

-  1.3.2 OSI Model Facts
-  1.3.5 OSI Layers Facts

Number of Exam Questions

14 questions

Total Time

About 39 minutes

1.4: Network Protocols

Lecture Focus Questions:

- How does a protocol suite differ from a protocol?
- How does TCP differ from UDP?
- What are the differences between the three email protocols (IMAP4, POP3, and SMTP)?
- How does SSH differ from Telnet? How does HTTPS differ from HTTP?

This section covers the following Network+ certification exam objectives:

1.1 Explain the purposes and uses of ports and protocols.

- Protocols and ports
 - SSH 22
 - DNS 53
 - SMTP 25
 - SFTP 22
 - FTP 20, 21
 - TFTP 69
 - TELNET 23
 - DHCP 67, 68
 - HTTP 80
 - HTTPS 443
 - SNMP 161
 - RDP 3389
 - NTP 123
 - SIP 5060, 5061
 - SMB 445
 - POP 110
 - IMAP 143
 - LDAP 389
 - LDAPS 636
 - H.323 1720
- Connection-oriented vs. connectionless




1.8 Explain the functions of network services.

- NTP

3.4 Given a scenario, use remote access methods.

- RDP
- Telnet

Video/Demo

	Time
 1.4.1 TCP/IP Protocol Suite	7:57
 1.4.2 Common Network Services	8:14
 1.4.3 Explore Network Services	<u>7:58</u>
Total Video Time	24:09

Fact Sheets

-  1.4.4 Common TCP/IP Protocols

Number of Exam Questions

12 questions

Total Time

About 42 minutes

1.5: Numbering Systems

Lecture Focus Questions:

- What is the difference between a binary numbering system and a hexadecimal numbering system?
- What are the possible values in a binary number?
- In a hexadecimal number, how many possible characters can be used for each number space?
- In a 3-bit binary number, how many possible combinations are there?

Video/Demo

 1.5.1 Numbering Systems

Time

8:39

Total Video Time

8:39

Fact Sheets

 1.5.2 Numbering System Facts

Number of Exam Questions

3 questions

Total Time

About 17 minutes

2.1: Twisted Pair

Lecture Focus Questions:

- Why are wires twisted together in twisted pair cables?
- What is the difference between STP cabling and UTP cabling?
- What is the difference between Cat 3, Cat 5e, and Cat 6a cables?
- How can you tell the difference between RJ11 and RJ45 connectors?
- You have an installation that requires Cat 5 cabling. Which cable ratings could you use for the installation?

In this section, you will learn to:

- Select and install cables to connect a DSL modem.
- Select and install cables to connect to an Ethernet network.

This section covers the following TestOut Network Pro certification exam objective:

1.1 Given a scenario, implement a cabling solution to establish network communication.

This section covers the following Network+ certification exam objective:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Media types
 - Copper
 - UTP
 - STP
 - Plenum vs. PVC
 - Connector types
 - Copper
 - RJ-45
 - RJ-11
 - Copper cable standards
 - Cat 3
 - Cat 5
 - Cat 5e
 - Cat 6
 - Cat 6a
 - Cat 7

Video/Demo

-  2.1.1 Twisted Pair

Time

11:25

Total Video Time 11:25

Lab/Activity

-  2.1.3 Connect to an Ethernet Network

Fact Sheets

📖 2.1.2 Twisted Pair Facts

Number of Exam Questions

7 questions

Total Time

About 29 minutes

2.2: Coaxial

Lecture Focus Questions:

- What is the function of the wire mesh in coaxial cables?
- Which part of the cable is used to carry data?
- Which connector type and cable grade is used to connect a cable modem to the internet?
- Is twisted pair cable more immune to EMI than coaxial cable?

In this section, you will learn to:

- Connect a cable modem.

This section covers the following TestOut Network Pro certification exam objective:

1.1 Given a scenario, implement a cabling solution to establish network communication.

This section covers the following Network+ certification exam objectives:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Media types
 - Copper
 - Coaxial
 - Connector types
 - Copper
 - BNC
 - DB-9
 - DB-25
 - F-type
 - Copper cable standards
 - RG-6
 - RG-59

3.4 Given a scenario, use remote access methods.

- Out-of-band management
 - Modem

Video/Demo

 2.2.1 Coaxial

Time

4:54

Total Video Time 4:54

Lab/Activity

 2.2.3 Connect a Cable Modem

Fact Sheets

 2.2.2 Coaxial Cable Facts

Number of Exam Questions

6 questions

Total Time

About 21 minutes

2.3: Fiber Optic

Lecture Focus Questions:

- How do light waves within a fiber optic cable travel around corners?
- What advantages do fiber optic cables offer over twisted pair cables and other media choices? What are the disadvantages of implementing fiber optic cables?
- What is the difference between single mode and multimode cables?
- How can you tell the difference between an ST connector and an SC connector?
- Which connector types combine two strands of fiber into a single connector?
- What are media converters used for?

In this section, you will learn to:

- Select and install components to connect to a network that uses fiber optic media.

This section covers the following TestOut Network Pro certification exam objective:

1.1 Given a scenario, implement a cabling solution to establish network communication.

This section covers the following Network+ certification exam objectives:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Media types
 - Copper
 - Fiber
 - Single-mode
 - Multimode
 - Connector types
 - Fiber
 - LC
 - ST
 - SC
 - APC
 - UPC
 - MTRJ

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Media converter

Video/Demo

 2.3.1 Fiber Optic

Time

10:52

Total Video Time 10:52

Lab/Activity

2.3.3 Connect Fiber Optic Cables

Fact Sheets

 2.3.2 Fiber Optic Facts

Number of Exam Questions

9 questions

Total Time

About 30 minutes

2.4: Wiring Implementation

Lecture Focus Questions:

- What is the difference between the T568A and T568B standards? When should you use both standards?
- What type of cable would you use to connect two hosts together in a back-to-back configuration using twisted pair cable?
- When should you use stranded core twisted pair cable instead of solid core twisted pair?
- What is the difference between the MDF and an IDF?
- What type of cable connects an IDF to the MDF?
- Who is typically responsible for installing a demarc extension?
- What is the difference between a 25 pair block and a 50 pair block? What can you use to make the 50 pair block function like a 25 pair block?
- When you use a punch down tool, which way should the blade be facing?
- What is a patch panel used for?

In this section, you will learn to:

- Use the appropriate tools to create Cat 5 drop cables.
- Use the appropriate tools to connect cables using punch down blocks.
- Connect patch panel cables.

This section covers the following TestOut Network Pro certification exam objective:

1.1 Given a scenario, implement a cabling solution to establish network communication.

This section covers the following Network+ certification exam objectives:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Copper termination standards
 - TIA/EIA 568a
 - TIA/EIA 568b
- Termination points
 - 66 block
 - 110 block
 - Patch panel
 - Fiber distribution panel




2.5 Compare and contrast WAN technologies.

- Termination
 - Demarcation point
 - Smart jack

3.1 Given a scenario, use appropriate documentation and diagrams to manage the network.

- Wiring and port locations
- IDF/MDF documentation



Video/Demo

	Time
 2.4.1 Twisted Pair Cable Construction	9:58
 2.4.3 Wiring Distribution	5:15
 2.4.4 Use Punchdown Blocks	<u>5:31</u>
Total Video Time	20:44

Lab/Activity

-  2.4.6 Connect Patch Panel Cables 1
-  2.4.7 Connect Patch Panel Cables 2

Fact Sheets

-  2.4.2 Cable Construction Facts
-  2.4.5 Wiring Distribution Facts

Number of Exam Questions

13 questions

Total Time

About 54 minutes

2.5: Troubleshoot Network Media

Lecture Focus Questions:

- How do you prevent back reflection and optical return loss?
- What is the difference between a short circuit and an open circuit?
- What happens when you connect a single mode fiber to multimode fiber?
- What is the difference between a time-domain reflectometer and an optical time-domain reflectometer?
- Which tool would you use to test the bandwidth of your internet connection?
- Which cable types are immune to the effects of EMI?
- How does distance affect attenuation? How does distance affect impedance?
- What is the single best method to reduce the effects of an impedance mismatch?
- What is the difference between a regular cable tester and a cable certifier?
- Which tool would you use to find the end of a specific cable within a wiring closet?

This section covers the following TestOut Network Pro certification exam objective:

5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objectives:

2.5 Compare and contrast WAN technologies.

- Termination
 - Smart jack

5.2 Given a scenario, use the appropriate tool.

- Hardware tools
 - Crimper
 - Punchdown tool
 - OTDR
 - Multimeter
 - Light meter
 - Tone generator
 - Cable tester
 - Loopback adapter
 - Spectrum analyzer
- Software tools
 - Bandwidth speed tester




5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Attenuation
- Crosstalk
- EMI




- Open/short
- Incorrect pin-out
- Incorrect cable type
- Transceiver mismatch
- TX/RX reverse
- Damaged cables
- Bent pins

5.4 Given a scenario, troubleshoot common wireless connectivity and performance issues.

- Reflection
- Refraction
- Absorption

Video/Demo	Time
 2.5.1 Troubleshoot Copper Wiring Issues	13:52
 2.5.3 Troubleshoot Fiber Optic Wiring Issues	7:30
 2.5.5 Troubleshooting Tools	<u>6:08</u>
Total Video Time	27:30

Fact Sheets

-  2.5.2 Copper Wiring Troubleshooting Facts
-  2.5.4 Fiber Optic Wiring Troubleshooting Facts
-  2.5.6 Troubleshooting Tools Facts

Number of Exam Questions

15 questions

Total Time

About 58 minutes

3.1: Network Adapters

Lecture Focus Questions:

- What are two major differences between a modem and an Ethernet NIC?
- How can you identify a network card manufacturer from its MAC address?
- What is the function of a transceiver?
- What is the purpose of the CRC?
- At which OSI layer does a network adapter card operate? At which layer does a media converter work?
- Can you use a media converter to connect network segments that are using different architecture types? Why or why not?
- How does a computer find the MAC address of another device on the same subnet?
- What does the MAC address FF-FF-FF-FF-FF-FF indicate?

In this section, you will learn to:

- Select and install network cards to meet network connection requirements.
- Connect a media converter.

This section covers the following TestOut Network Pro certification exam objectives:

- 1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).
- 5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objectives:

- 2.1 Given a scenario, deploy the appropriate cabling solution.

- Transceivers
 - SFP
 - GBIC
 - SFP+
 - QSFP
 - Characteristics of fiber transceivers
 - Bidirectional

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Modems

Video/Demo

-  3.1.1 Network Adapters

Time

8:34

Total Video Time

8:34

Lab/Activity

- 🔗 3.1.3 Select and Install a Network Adapter
- 🔗 3.1.4 Connect a Media Converter

Fact Sheets

- 📄 3.1.2 Network Adapter Facts

Number of Exam Questions

10 questions

Total Time

About 34 minutes

3.2: Network Devices

Lecture Focus Questions:

- A host on a network sends a frame to the hub. Which other devices on the network will see this frame?
- A host on a network sends a frame to a switch. Which other devices on the network will see this frame?
- What are the similarities and differences between a bridge and a switch?
- What are the advantages of using switches instead of hubs?
- At which OSI model layer do wireless access points operate?
- What type of device do you use to translate from one network architecture to another?

In this section, you will learn to:

- Select and install appropriate networking hardware.

This section covers the following TestOut Network Pro certification exam objectives:

1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).

5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objective:

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Switch
- Hub

Video/Demo



 3.2.1 Network Devices

Time

10:10

Total Video Time 10:10

Lab/Activity

-  3.2.3 Install a Hub
-  3.2.4 Select a Networking Device

Fact Sheets

 3.2.2 Network Connection Device Facts

Number of Exam Questions

14 questions

Total Time

About 40 minutes

3.3: Internetwork Devices

Lecture Focus Questions:

- What is the main role of a router?
- How does a router differ from a switch or a hub?
- How are the physical and logical network addresses used when data is routed through an internetwork? Which addresses stay the same? Which addresses change from hop to hop?
- How does a firewall protect a network?

In this section, you will learn to:

- Select the appropriate device to connect two networks.

This section covers the following TestOut Network Pro certification exam objectives:

1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).
5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objectives:

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Firewall
- Router

2.3 Explain the purposes and use cases for advanced networking devices.

- Multilayer switch

Video/Demo

 3.3.1 Internetwork Devices

Time

6:28

Total Video Time

6:28

Lab/Activity

 3.3.3 Select a Router

Fact Sheets

 3.3.2 Internetwork Device Facts

Number of Exam Questions

5 questions

Total Time

About 22 minutes

4.1: Ethernet

Lecture Focus Questions:

- What logical topologies are supported on an Ethernet network?
- What is the purpose of the backoff on Ethernet networks?
- How can you eliminate collisions on an Ethernet network?
- What device is used to enable full-duplex communications with Ethernet?

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - CSMA/CD

2.1 Given a scenario, deploy the appropriate cabling solution.

- Transceivers
 - Characteristics of fiber transceivers
 - - Duplex

Video/Demo

 4.1.1 Ethernet Architecture

Time

8:20

Total Video Time

8:20

Fact Sheets

 4.1.2 Ethernet Facts

Number of Exam Questions

4 questions

Total Time

About 18 minutes

4.2: Ethernet Specifications

Lecture Focus Questions:

- What is the maximum cable length for most Ethernet standards that use twisted pair cables?
- Which twisted pair cable category should you use on a 1000BaseT network?
- What is the advantage of using single mode cable on a 1000BaseLX network?
- What is the difference between 1000BaseLX and 1000BaseSX?

In this section, you will learn to:

- Reconnect to an Ethernet network

This section covers the following TestOut Network Pro certification exam objective:

1.1 Given a scenario and networking requirements, select and install cables for communication between computers and networking devices.

This section covers the following Network+ certification exam objective:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Ethernet deployment standards
 - 100BaseT
 - 1000BaseT
 - 1000BaseLX
 - 1000BaseSX
 - 10GBaseT

Video/Demo

 4.2.1 Ethernet Specifications

Time

6:26

Total Video Time

6:26

Lab/Activity

 4.2.3 Reconnect to an Ethernet Network

Fact Sheets

 4.2.2 Ethernet Specifications Facts

Number of Exam Questions

15 questions

Total Time

About 32 minutes

4.3: Connect Network Devices

Lecture Focus Questions:

- Which cable type would you use to connect a workstation to a regular port on a hub or a switch?
- Which cable type would you use to connect a router to the uplink port on a switch?
- Which cable type would you use to connect two switches together using their uplink ports?
- Which switch feature makes choosing crossover or straight-through cables easier?
- When would you use a rollover cable?

In this section, you will learn to:

- Connect network devices.

This section covers the following TestOut Network Pro certification exam objectives:

1.1 Given a scenario and networking requirements, select and install cables for communication between computers and networking devices.

2.1 Given a scenario with one or more wired networks, select and install the appropriate networking or internetworking device(s).

This section covers the following Network+ certification exam objectives:

2.1 Given a scenario, deploy the appropriate cabling solution.

- Connector types
 - Copper
 - DB-9
 - DB-25
- Copper termination standards
 - Crossover
 - Straight-through

Video/Demo

 4.3.1 Connect Devices

Time

7:38

Total Video Time

7:38

Lab/Activity

 4.3.3 Connect Network Devices

Fact Sheets

 4.3.2 Device Connection Facts

Number of Exam Questions

11 questions

Total Time

About 29 minutes

4.4: Troubleshoot Physical Connectivity

Lecture Focus Questions:

- What happens if a host goes down in a star topology? What happens if a host goes down in a token ring topology?
- What happens if there is a cable break on a bus topology? What happens if there is a cable break on a dual ring topology?
- What is indicated by a flashing green link light?
- What might be the problem if none of the NIC lights are working?

In this section, you will learn to:

- Connect a network cable.
- Replace the patch cable.
- Replace a faulty cable.
- Troubleshoot a faulty cable.
- Reconnect a switch.
- Troubleshoot a switch.
- Connect an unplugged cable.
- Troubleshoot an unplugged cable.

This section covers the following TestOut Network Pro certification exam objectives:

1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).

5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objectives:

1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Wired topologies
 - Logical vs. physical
 - Star
 - Ring
 - Mesh
 - Bus

5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Duplex/speed mismatch
- Network connection LED status indicators

5.5 Given a scenario, troubleshoot common network service issues.

- Hardware failure

Video/Demo

- 4.4.1 Troubleshoot the Physical Network Topology
- 4.4.3 Troubleshoot the Link Status

Time

6:55

6:24

Total Video Time

13:19

Lab/Activity

- 4.4.5 Explore Physical Connectivity
- 4.4.6 Troubleshoot Physical Connectivity 1
- 4.4.7 Troubleshoot Physical Connectivity 2
- 4.4.8 Troubleshoot Physical Connectivity 3
- 4.4.9 Troubleshoot Physical Connectivity 4

Fact Sheets

- 4.4.2 Physical Network Topology Troubleshooting Facts
- 4.4.4 Link Status Troubleshooting Facts

Number of Exam Questions

12 questions

Total Time

About 61 minutes

5.1: IP Addressing

Lecture Focus Questions:

- What is an octet?
- What is the decimal equivalent of the following binary number? 01100111. What is the binary equivalent of the following decimal number? 211.
- How is the network portion of an IP address identified?
- Which portion of a class C address designates the network address?
- What is the difference between subnetting and supernetting? Which method uses a subnet mask that is longer than the default subnet mask?
- What does /14 mean in the following IP address: 199.78.11.12/14?
- How does variable-length subnet masking work?

In this section, you will learn to:

- Configure IP addresses.
- Configure IP addresses on mobile devices.

This section covers the following TestOut Network Pro certification exam objective:

2.1 Given a scenario, configure IP addressing, DNS, and DHCP for a network host.

This section covers the following Network+ certification exam objective:



1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - Broadcast

1.4 Given a scenario, configure the appropriate IP addressing components.

- Subnet mask
- Subnetting
 - Classful
 - Classes A, B, C, D, and E
 - Classless
 - VLSM
 - CIDR notation (IPv4 vs. IPv6)
 - Address assignments
 - DHCP
 - Static

Video/Demo

	Time
 5.1.1 IP Addresses	10:43
 5.1.3 Subnets	12:13
 5.1.6 IP Address Assignment	<u>6:42</u>

Total Video Time 29:38

Lab/Activity

- 🔧 5.1.7 Configure IP Addresses
- 🔧 5.1.8 Configure IP Addresses on Mobile Devices

Fact Sheets

- 📄 5.1.2 IP Address Facts
- 📄 5.1.4 Subnet Facts
- 📄 5.1.5 Variable Length Subnet Mask (VLSM) Facts
- 📄 5.1.9 IP Address Assignment Facts

Number of Exam Questions

15 questions

Total Time

About 75 minutes

5.2: APIPA and Alternate Addressing

Lecture Focus Questions:

- How do you know if a host is using an APIPA address?
- Which IP configuration parameters are set when APIPA is used? Which parameters are not set?
- In which scenarios would an alternate IP configuration simplify IP configuration?

In this section, you will learn to:

- Set Up alternate addressing.
- Configure alternate addressing.



This section covers the following TestOut Network Pro certification exam objective:

2.1 Given a scenario, configure IP addressing, DNS, and DHCP for a network host.

This section covers the following Network+ certification exam objective:

1.4 Given a scenario, configure the appropriate IP addressing components.

- Address assignments
 - APIPA

Video/Demo	Time
 5.2.1 APIPA	4:03
 5.2.2 Set Up Alternate Addressing	3:53
Total Video Time	7:56

Lab/Activity

-  5.2.3 Configure Alternate Addressing

Fact Sheets

-  5.2.4 APIPA and Alternate IP Addressing Facts

Number of Exam Questions

3 questions

Total Time

About 21 minutes

5.3: DHCP Server Configuration

Lecture Focus Questions:

- What type of configuration parameters can be delivered using DHCP?
- What are the advantages of static IP address assignments?
- When might you want to use static IP addressing?

In this section, you will learn to:

- Configure a DHCP server.
- Configure DHCP options.
- Create DHCP exclusions.
- Create DHCP client reservations.
- Configure a DHCP client.

This section covers the following TestOut Network Pro certification exam objective:

3.1 Given a scenario, configure DHCP services for a network subnet.

This section covers the following Network+ certification exam objectives:




1.4 Given a scenario, configure the appropriate IP addressing components.

- Address assignments
 - DHCP
 - IP reservations






1.8 Explain the functions of network services.

- DHCP service
 - MAC reservations
 - Pools
 - IP exclusions
 - Scope options
 - Lease time

Video/Demo

	Time
 5.3.1 DHCP Server	10:37
 5.3.3 DHCP Options	4:17
 5.3.7 Configure Host Addressing	<u>2:24</u>
Total Video Time	17:18

Lab/Activity

-  5.3.2 Configure a DHCP Server
-  5.3.4 Configure DHCP Options
-  5.3.5 Create DHCP Exclusions
-  5.3.6 Create DHCP Client Reservations
-  5.3.8 Configure a DHCP Client

Fact Sheets

📖 5.3.9 DHCP Configuration Facts

Number of Exam Questions

8 questions

Total Time

About 56 minutes

5.4: DHCP Relay

Summary

As you study this section, answer the following question:

- What is the difference between an RFC 1542 compliant router and a DHCP relay agent?

In this section, you will learn to:

- Configure a DHCP relay agent
- Add a DHCP server on another subnet

This section covers the following TestOut Network Pro certification exam objective:

3.1 Given a scenario, configure DHCP services for a network subnet.

This section covers the following Network+ certification exam objective:

1.8 Explain the functions of network services.

- DHCP service
 - DHCP relay/IP helper

Video/Demo

- 📺 5.4.1 Configure DHCP Relay

Time

5:50

Total Video Time

5:50

Lab/Activity

- 🔧 5.4.3 Configure a DHCP Relay Agent
- 🔧 5.4.4 Add a DHCP Server on Another Subnet

Fact Sheets

- 📄 5.4.2 DHCP Relay Facts

Number of Exam Questions

3 questions

Total Time

About 24 minutes

5.5: DNS Name Resolution

Lecture Focus Questions:

- How are host names organized in DNS?
- What is the difference between a forward lookup zone and a reverse lookup?
- What is the role of the root servers in DNS?
- In DNS, what is the difference between a zone and a domain?
- What is the difference between an A record and a PTR record?

In this section, you will learn to:

- Configure DNS addresses.
- Create standard DNS zones.
- Create reverse DNS zones.
- Create host records.
- Create CNAME records.
- Troubleshoot DNS records.

This section covers the following TestOut Network Pro certification exam objective:

3.2 Given a scenario, configure DNS for the network.

This section covers the following Network+ certification exam objective:

1.8 Explain the functions of network services.

- DNS service
 - Record types
 - A, AAA
 - TXT (SPF, DKIM)
 - SRV
 - MX
 - CNAME
 - NS
 - PTR
 - Internal vs. external DNS
 - Third-party/cloud-hosted DNS
 - Hierarchy
 - Forward vs. reverse zone

Video/Demo

 5.5.1 DNS	12:53
 5.5.2 Configure DNS	11:34

Total Video Time 24:27

Lab/Activity

-  5.5.4 Configure DNS Addresses
-  5.5.5 Create Standard DNS Zones

- 🔗 5.5.6 Create Host Records
- 🔗 5.5.7 Create CNAME Records
- 🔗 5.5.8 Troubleshoot DNS Records

Fact Sheets

- 📄 5.5.3 DNS Facts

Number of Exam Questions

5 questions

Total Time

About 60 minutes

5.6: IP Version 6

Lecture Focus Questions:

- What is the primary reason for developing IPv6?
- How many hexadecimal numbers are in an IPv6 address? How does this compare to a MAC address?
- What do you add to an IPv6 address when you remove one or more quartets with all 0s?
- What information is included within the IPv6 address prefix?
- How many numbers are used for the interface ID? How can the interface ID be related to the MAC address?
- What is the difference between ISATAP and 6to4 tunneling?
- What is the difference between stateful autoconfiguration and stateless autoconfiguration?

In this section, you will learn to:

- Configure IPv6 addresses.
- Configure a DHCP6 server.
- Configure an IPv6 address.

This section covers the following TestOut Network Pro certification exam objectives:

2.1 Given a scenario, configure IP addressing, DNS, and DHCP for a network host.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.





- IPv6 concepts
 - Addressing
 - Tunneling
 - Dual stack
 - Router advertisement
 - Neighbor discovery

1.4 Given a scenario, configure the appropriate IP addressing components.

- Loopback and reserved
- Default gateway
- Address assignments
 - DHCPv6
 - EUI64

1.8 Explain the functions of network services.





- IPAM

Video/Demo	Time
 5.6.1 IP Version 6	9:27
 5.6.5 IPv6 Address Assignment	11:06
 5.6.6 Configure IPv6 Addresses	9:33
 5.6.7 Configure a DHCP6 Server	<u>4:59</u>
Total Video Time	35:05

Lab/Activity

-  5.6.9 Configure an IPv6 Address

Fact Sheets

-  5.6.2 IPv6 Facts
-  5.6.3 IPv6 Address Type Facts
-  5.6.4 IPv4 to IPv6 Migration
-  5.6.8 IPv6 Address Assignment Facts

Number of Exam Questions

8 questions

Total Time

About 69 minutes

5.7: Multicast

Lecture Focus Questions:

- How does multicast differ from unicast and broadcast?
- What is the IP address range reserved for multicast groups?
- What does a regular switch do when it receives a multicast frame?
- Which device would you configure to prevent multicast traffic from being sent to non-group members?

This section covers the following Network+ certification exam objective:

1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - Multicast
 - Unicast

Video/Demo

 5.7.1 Multicast

Time

6:24

Total Video Time 6:24

Fact Sheets

 5.7.2 Multicast Facts

Number of Exam Questions

6 questions

Total Time

About 18 minutes

5.8: Troubleshoot IP Configuration Issues

Lecture Focus Questions:

- What does the **/release** switch do when used with **ipconfig**?
- How can you tell if a rogue DHCP server is active on your network?
- How do you know if a host is using APIPA?

In this section, you will learn to:

- Find information about IP configuration settings on Windows and Linux systems.
- Troubleshoot IP configuration problems.

This section covers the following TestOut Network Pro certification exam objectives:

3.4 Given a scenario, use network tools to discover network devices and resources.

5.2 Given a scenario, troubleshoot IP configuration issues to establish network communication.

This section covers the following Network+ certification exam objective:




5.2 Given a scenario, use the appropriate tool.

- Software tools
 - Command line
 - ipconfig
 - ifconfig





5.5 Given a scenario, troubleshoot common network service issues.

- Incorrect gateway
- Incorrect netmask
- Duplicate IP addresses
- Duplicate MAC addresses
- Expired IP address
- Exhausted DHCP scope
- Rogue DHCP server

Video/Demo

	Time
 5.8.1 IP Configuration Troubleshooting	12:07
 5.8.2 Use ipconfig	6:46
 5.8.3 Use ifconfig	<u>4:12</u>
Total Video Time	23:05

Lab/Activity

-  5.8.5 Explore IP Configuration
-  5.8.6 Troubleshoot IP Configuration 1
-  5.8.7 Troubleshoot IP Configuration 2
-  5.8.8 Troubleshoot IP Configuration 3

Fact Sheets

📄 5.8.4 Ipconfig Utility Facts

Number of Exam Questions

5 questions

Total Time

About 54 minutes

5.9: Troubleshoot IP Communications

Lecture Focus Questions:

- What is the difference between netstat and arp?
- If a ping test fails, what should you do?
- What information does tracert provide?
- What does TCPdump do?

In this section, you will learn to:

- Use ping and tracert.
- Use arp and netstat.
- Use tcpdump.
- Explore network communications.

This section covers the following TestOut Network Pro certification exam objectives:
3.4 Given a scenario, use network tools to discover network devices and resources.
5.2 Given a scenario, troubleshoot IP configuration issues to establish network communication.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Segmentation and interface properties
 - ARP table

5.2 Given a scenario, use the appropriate tool.


- Software tools
 - Command line
 - ping
 - tracert, traceroute
 - iptables
 - netstat
 - tcpdump
 - route
 - arp

5.5 Given a scenario, troubleshoot common network service issues.

- Unresponsive service

Video/Demo

Time

- | | |
|---|------|
|  5.9.1 Network Communication Troubleshooting | 7:18 |
|  5.9.2 Use ping and tracert | 9:26 |
|  5.9.4 Use arp and netstat | 8:32 |

📺 5.9.6 Use tcpdump

Total Video Time 5:41
30:57

Lab/Activity

🔧 5.9.8 Explore Network Communications

Fact Sheets

📄 5.9.3 Network Communication Troubleshooting Facts

📄 5.9.5 arp and netstat Facts

📄 5.9.7 tcpdump Facts

Number of Exam Questions

15 questions

Total Time

About 66 minutes

5.10: Troubleshoot Name Resolution

Lecture Focus Questions:

- What are the symptoms of name resolution problems?
- What is the difference between **nslookup** and **dig**?

In this section, you will learn to:

- Use nslookup



This section covers the following TestOut Network Pro certification exam objectives:
3.4 Given a scenario, use network tools to discover network devices and resources.
5.3 Given a scenario, troubleshoot wired or wireless network connectivity to establish network communication.

This section covers the following Network+ certification exam objectives:
5.2 Given a scenario, use the appropriate tool.

- Software tools
 - Command ling
 - dig

5.5 Given a scenario, troubleshoot common network service issues.

- Names not resolving

Video/Demo	Time
 5.10.1 Name Resolution Troubleshooting	4:11
 5.10.3 Use nslookup	<u>9:13</u>
Total Video Time	13:24

Lab/Activity

-  5.10.4 Explore nslookup

Fact Sheets

-  5.10.2 Name Resolution Troubleshooting Facts

Number of Exam Questions

7 questions

Total Time

About 31 minutes

6.1: Switch Access

Lecture Focus Questions:

- What are the requirements for connecting a VTY (virtual terminal) to a Cisco device?
- What types of cable can you use to connect a PC to a router console port?
- What is the difference between a managed switch and an unmanaged switch?
- What is the difference between in-band and out-of-band management?



In this section, you will learn to:

- Use the command line interface (CLI).

This section covers the following TestOut Network Pro certification exam objective:
2.3 Given a scenario, perform basic router configuration tasks.

This section covers the following Network+ certification exam objectives:
3.4 Given a scenario, use remote access methods.

- Out-of-band management
 - Console router

Video/Demo	Time
 6.1.1 Device Access	4:14
 6.1.2 Use the Command Line Interface (CLI)	<u>7:23</u>
Total Video Time	11:37

Fact Sheets

-  6.1.3 Device Connection Facts

Number of Exam Questions

3 questions

Total Time

About 20 minutes

6.2: Switch IP Configuration

Lecture Focus Questions:

- Why would you configure an IP address on a switch?
- What does the **ip address dhcp** command allow you to do?



In this section, you will learn to:

- Configure management VLAN settings.
- Configure switch IP settings.

This section covers the following TestOut Network Pro certification exam objective:
4.3 Given a scenario, configure security for a switch.

Video/Demo	Time
 6.2.1 IP Address and Default Gateway Configuration	<u>3:29</u>
Total Video Time	3:29

Lab/Activity

-  6.2.3 Configure Management VLAN Settings
-  6.2.4 Configure Switch IP Settings

Fact Sheets

-  6.2.2 Switch IP Configuration Facts

Number of Exam Questions

3 questions

Total Time

About 22 minutes

6.3: Switch Interface Configuration

Lecture Focus Questions:

- How does the VLAN interface configuration mode differ from Ethernet, FastEthernet, and GigabitEthernet interface configuration modes?
- What must you consider if you manually configure speed or duplex settings?
- What happens when autonegotiation fails for the Ethernet interface on a Cisco device?
- What is the default setting for all ports on a switch?




In this section, you will learn to:

- Configure switch interfaces.
- Configure switch ports.

This section covers the following TestOut Network Pro certification exam objective:
2.2 Given a scenario, perform basic switch configuration tasks.

This section covers the following Network+ certification exam objective:
1.3 Explain the concepts and characteristics of routing and switching.




- Segmentation and interface properties
 - Port mirroring

Video/Demo	Time
 6.3.1 Switch Operations	7:08
 6.3.3 Switch Configuration Overview	3:31
 6.3.4 Configure Switch Interfaces	<u>5:48</u>
Total Video Time	16:27

Lab/Activity

-  6.3.7 Configure Switch Ports

Fact Sheets

-  6.3.2 Switch Forwarding Facts
-  6.3.5 Switch Configuration Mode Facts
-  6.3.6 Switch Configuration Command List

Number of Exam Questions

4 questions

Total Time

About 41 minutes

6.4: Virtual LANs

Lecture Focus Questions:

- What are two advantages of creating VLANs on your network?
- You have two VLANs configured on a single switch. How many broadcast domains are there? How many collision domains are there?
- What happens if two devices on the same switch are assigned to different VLANs?

In this section, you will learn to:

- Create VLANs.
- Explore VLANs.

This section covers the following TestOut Network Pro certification exam objective:
3.6 Given a scenario, configure virtual networking.

This section covers the following Network+ certification exam objective:
1.3 Explain the concepts and characteristics of routing and switching.

- Segmentation and interface properties
 - VLANs

Video/Demo

-  6.4.1 VLAN Overview
-  6.4.3 Configure VLANs



Time

5:26

6:26

Total Video Time 11:52

Lab/Activity

-  6.4.5 Create VLANs
-  6.4.6 Explore VLANs

Fact Sheets

-  6.4.2 VLAN Facts
-  6.4.4 VLAN Command List

Number of Exam Questions

13 questions

Total Time

About 45 minutes

6.5: Trunking

Lecture Focus Questions:

- What is trunking?
- Why is trunking important to VLAN configuration?
- What protocol does a Cisco switch use to automatically detect trunk ports?
- By default, traffic from which VLANs are allowed on trunk ports?
- What is the default configuration of most Cisco switches?

In this section, you will learn to:

- Configure trunking
- Configure the native VLAN
- Configure allowed VLANs




This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.




- Properties of network traffic
 - Broadcast domains
- Segmentation and interface properties
 - VLANs
 - Trunking (802.1q)
 - Tagging and untagging ports

4.6 Explain common mitigation techniques and their purposes.



- Change native VLAN

Video/Demo	Time
 6.5.1 Access and Trunk Ports	8:40
 6.5.2 Trunking	3:19
 6.5.6 Native VLAN	<u>6:06</u>
Total Video Time	18:05

Lab/Activity

-  6.5.5 Configure Trunking
-  6.5.7 Configure the Native VLAN
-  6.5.8 Configure Allowed VLANs

Fact Sheets

-  6.5.3 Trunking Facts
-  6.5.4 Trunking Command List

Number of Exam Questions

7 questions

Total Time

About 51 minutes

6.6: Spanning Tree Protocol

Lecture Focus Questions:

- Why does root switch selection never require a tie breaker?
- When would you modify an STP mode?
- How does PVST+ differ from Rapid PVST+?
- How do ports work in a multiple VLAN environment?
- How are root bridges designated in a multiple VLAN environment?
- What happens during STP convergence?





In this section, you will learn to:

- Configure STP
- Select a root bridge
- Configure Rapid PVST+
- Find STP Info
- Configure EtherChannels




This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - Protocol data units
- Segmentation and interface properties
 - Switching loops/spanning tree

Video/Demo	Time
 6.6.1 Spanning Tree Protocol	7:17
 6.6.2 Configure STP	2:42
 6.6.3 Select a Root Bridge	3:21
 6.6.8 Configure EtherChannels	8:14
Total Video Time	21:34

Lab/Activity

-  6.6.5 Configure the Root Bridge
-  6.6.6 Configure Rapid PVST+
-  6.6.7 Find STP Info

Fact Sheets

-  6.6.4 STP Facts
-  6.6.9 EtherChannel Facts

Number of Exam Questions

15 questions

Total Time

About 62 minutes

6.7: Switch Troubleshooting

Lecture Focus Questions:

- You have a network connected by switches with a single device connected to each switch port. Why would you be surprised to see collisions on this network?
- What is a duplex mismatch?
- What conditions lead to a broadcast storm?
- How can you prevent switching loops from forming?
- You moved a device from one switch port to another, and now it cannot communicate with any other device on the network. The switch link lights are lit. What switch configuration should you check?
- Other than the switch configuration, what should you check if you see excessive frame errors on the switch?

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Segmentation and interface properties
 - MAC address table

5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Bad port
- Duplex/speed mismatch
- VLAN mismatch

Video/Demo

 6.7.1 Switch Troubleshooting

Time

12:38

Total Video Time 12:38

Fact Sheets

 6.7.2 Switch Troubleshooting Facts

Number of Exam Questions

9 questions

Total Time

About 27 minutes

7.1: Routing Basics

Lecture Focus Questions:

- With respect to routing, what is a packet?
- With respect to routing, what is a network?
- What does the next hop signify?
- What information is contained in a routing table?
- What is the function of a routing table?
- In a routing table, how is the default route used?
- What is the difference between static and dynamic routing?
- When would you create a static routing table entry?
- When would you configure both static and dynamic routing on the same router?
- What is the difference between interior and exterior routing?

This section covers the following TestOut Network Pro certification exam objective:

2.3 Given a scenario, perform basic router configuration tasks.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Routing
 - Routing types
 - Default
 - Static
 - Dynamic

Video/Demo

 7.1.1 Routing

Time

10:03

Total Video Time 10:03

Fact Sheets

 7.1.2 Routing Facts

Number of Exam Questions

6 questions

Total Time

About 22 minutes

7.2: Routing Protocols

Lecture Focus Questions:

- What network link characteristics are used by routing protocols when computing a metric value or cost?
- How does a distance vector routing protocol differ from a link state routing protocol?
- How are routing paths shared by distance vector routing protocols?
- How are routing paths shared by link state routing protocols?
- What is a hybrid routing protocol?
- How is administrative distance used to select a best path?
- What is the difference between RIP and RIPv2? Why is this important in today's networks?
- Which routing protocol is typically used within an ISP? Which protocol is used on the internet?
- Which routing protocols divide an autonomous system into areas?
- How does IS-IS differ from OSPF?

In this section, you will learn to:

- Configure a router with static routes.
- Enable OSPF routing.

This section covers the following TestOut Network Pro certification exam objective:

2.3 Given a scenario, perform basic router configuration tasks.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.




- Properties of network traffic
 - MTU
- Routing
 - Routing types
 - Static
 - Dynamic
 - Routing protocols (IPv4 and IPv6)
 - Distance-vector routing protocols
 - RIP
 - EIGRP
 - Link-state routing protocols
 - OSPF
 - Hybrid
 - BGP

Video/Demo



 7.2.1 Routing Protocol Characteristics

Time



12:40

 7.2.3 Routing Protocols	5:20
 7.2.5 High Availability	6:19
 7.2.6 Configure Routing	<u>11:01</u>
Total Video Time	35:20

Lab/Activity

-  7.2.7 Configure Static Routes
-  7.2.8 Enable OSPF Routing

Fact Sheets

-  7.2.2 Routing Protocol Characteristics Facts
-  7.2.4 Routing Protocol Facts

Number of Exam Questions

13 questions

Total Time

About 69 minutes

7.3: Network Address Translation

Lecture Focus Questions:

- How does NAT work?
- What is the difference between static NAT and dynamic NAT?
- What is port forwarding?
- What is the difference between NAT and PAT?
- Which IP addresses are considered private and guaranteed not to be used on the internet?

In this section, you will learn to:

- Configure NAT from the CLI.
- Configure NAT on an NSA.
- Configure port forwarding.





This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- NAT/PAT
- Port forwarding

1.4 Given a scenario, configure the appropriate IP addressing components.

- Private vs. public

Video/Demo	Time
 7.3.1 Network Address Translation	9:53
 7.3.2 Configure NAT from the CLI	8:41
 7.3.3 Configure NAT on an NSA	5:16
 7.3.4 Configure Port Forwarding	6:07
Total Video Time	29:57

Fact Sheets

-  7.3.5 NAT Facts

Number of Exam Questions

10 questions

Total Time

About 45 minutes

7.4: Routing Troubleshooting

Lecture Focus Questions:

- How is it possible for all hosts on a subnet to be configured with the wrong default gateway address?
- What is the format for the default route entry in a routing table? What purpose does the default route serve?
- What are the symptoms of a routing loop? How can you identify a routing loop?
- Why might you escalate routing problems that you observe?
- How can proxy ARP settings appear as routing problems?



In this section, you will learn to:

- Troubleshoot routing.
- Find path information.

This section covers the following TestOut Network Pro certification exam objective:
5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

This section covers the following Network+ certification exam objective:
5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Latency

Video/Demo	Time
 7.4.1 Routing Troubleshooting	13:52
 7.4.2 Troubleshoot Routing	<u>5:59</u>
Total Video Time	19:51

Lab/Activity

-  7.4.4 Find Path Information 1
-  7.4.5 Find Path Information 2

Fact Sheets

-  7.4.3 Troubleshoot Routing Facts

Number of Exam Questions

9 questions

Total Time

About 44 minutes

8.1: Firewalls

Lecture Focus Questions:

- How does a packet filtering firewall differ from a circuit-level gateway?
- Why is a packet filtering firewall a stateless device?
- What types of filter criteria can an application layer gateway use for filtering?
- Which security device might you choose to restrict access by user account?
- What is the difference between a proxy and a reverse proxy?

In this section, you will learn to:

- Configure a host firewall.
- Configure Linux iptables.

This section covers the following TestOut Network Pro certification exam objective:

4.1 Given a scenario, configure a host firewall to provide local security.

This section covers the following Network+ certification exam objectives:

1.1 Explain the purposes and uses of ports and protocols.

- Protocols and ports
 - SSH 22
 - DNS 53
 - SMTP 25
 - SFTP 22
 - FTP 20, 21
 - TFTP 69
 - TELNET 23
 - DHCP 67, 68
 - HTTP 80
 - HTTPS 443
 - SNMP 161
 - RDP 3389
 - NTP 123
 - SIP 5060, 5061
 - SMB 445
 - POP 110
 - IMAP 143
 - LDAP 389
 - LDAPS 636
 - 323 1720

1.3 Explain the concepts and characteristics of routing and switching.

- Access control list

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.





- Firewall

2.3 Explain the purposes and use cases for advanced networking devices.

- Proxy server
- UTM appliance
- NGFW/Layer 7 firewall
- Content filter

4.6 Explain common mitigation techniques and their purposes.

- Restricting access via ACLs

Video/Demo	Time
 8.1.1 Firewalls	3:15
 8.1.2 Firewall Types	11:14
 8.1.5 Configure Windows Firewall	4:06
 8.1.6 Configure Linux iptables	<u>4:02</u>
Total Video Time	22:37

Lab/Activity

-  8.1.8 Configure a Host Firewall

Fact Sheets

-  8.1.3 Firewall Facts
-  8.1.4 Common Ports
-  8.1.7 Linux iptable Facts

Number of Exam Questions

15 questions

Total Time

About 58 minutes

8.2: Security Appliances

Lecture Focus Questions:

- Under which conditions would you use an all-in-one security appliance?
- Which security functions are included in an all-in-one security appliance?

In this section, you will learn to:

- Configure network security appliance access.

This section covers the following TestOut Network Pro certification exam objective:
4.5 Given a scenario, perform administrative tasks on a network security appliance.

This section covers the following Network+ certification exam objectives:

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Firewall

2.3 Explain the purposes and use cases for advanced networking devices.

Video/Demo	Time
 8.2.1 All-in-One Security Appliances	3:33
 8.2.3 Network Security Appliance Access	<u>7:02</u>
Total Video Time	10:35

Lab/Activity

-  8.2.4 Configure Network Security Appliance Access

Fact Sheets

-  8.2.2 Security Solution Facts

Number of Exam Questions

3 questions

Total Time

About 24 minutes

8.3: Firewall Design and Implementation

Lecture Focus Questions:

- How do firewalls manage incoming and outgoing traffic?
- What is the difference between a standard ACL and an extended ACL?
- What does the **deny any** statement do?
- What is the difference between a routed firewall and a transparent firewall?

In this section, you will learn to:

- Create Firewall ACLs.
- Configure a DMZ.
- Configure a perimeter firewall.
- Configure a proxy server.

This section covers the following TestOut Network Pro certification exam objective:

4.1 Given a scenario, configure a host firewall to provide local security.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Segmentation and interface properties
 - DMZ

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Firewall






4.2 Explain authentication and access controls.

- Access control
 - MAC filtering

5.5 Given a scenario, troubleshoot common network service issues.

- Incorrect host-based firewall settings
- Incorrect ACL settings

Video/Demo

	Time
 8.3.1 Firewall Network Design Principles	10:09
 8.3.2 Configure a Perimeter Firewall	9:52
 8.3.3 Firewall ACLs	9:29
 8.3.4 Create Firewall ACLs	6:04
 8.3.7 Configure a Proxy Server	6:47

Total Video Time 42:21

Lab/Activity

- 🔧 8.3.5 Configure a DMZ
- 🔧 8.3.6 Configure a Perimeter Firewall

Fact Sheets

- 📄 8.3.8 Firewall Design and Configuration Facts

Number of Exam Questions

15 questions

Total Time

About 73 minutes

9.1: Network-Based Storage

Lecture Focus Questions:

- What is the difference between a SAN solution and a NAS solution?
- How does a SAN appear to users on a network?
- How does a NAS device appear to users on a network?
- How does a cluster appear to users on the network?
- What does load balancing alleviate on a network?
- What is failover?

In this section, you will learn to:

- Configure an iSCSI target.
- Configure an iSCSI initiator.

This section covers the following Network+ certification exam objectives:

1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Types
 - SAN

2.4 Explain the purposes of virtualization and network storage technologies.

- Network storage types
 - SAN
- Connection type
 - FCoE
 - Fibre Channel
 - iSCSI
 - InfiniBand

3.2 Compare and contrast business continuity and disaster recovery concepts.

- Availability concepts
 - Load balancing
 - Clustering

Video/Demo

	Time
 9.1.1 Storage Area Networks	10:42
 9.1.2 Configure an iSCSI SAN	5:54
 9.1.6 Network Attached Storage	6:41
 9.1.7 Configure a NAS Device	7:45

Total Video Time 31:02

Lab/Activity

- 🔗 9.1.3 Configure an iSCSI Target
- 🔗 9.1.4 Configure an iSCSI Initiator

Fact Sheets

- 📄 9.1.5 SAN Facts
- 📄 9.1.8 NAS Facts

Number of Exam Questions

6 questions

Total Time

About 58 minutes

9.2: Voice over IP (VoIP)

Lecture Focus Questions:

- How does VoIP differ from traditional phone service?
- What are the functions of a VoIP server? What are other names for a VoIP server?
- What is the difference between a hard VoIP phone and a soft VoIP phone?
- How is a VoIP gateway used?
- What is the most common open source VoIP protocol?
- What is the function of a codec?
- Why is quality of service (QoS) important for VoIP?
- What happens if there is too much latency in a VoIP call?
- What is jitter? How does it affect VoIP calls?

In this section, you will learn to:

- Configure VoIP.

This section covers the following TestOut Network Pro certification exam objective:

2.5 Given a scenario, configure a VoIP endpoint.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Segmentation and interface properties
 - PoE and PoE+ (802.3af, 802.3at)

2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- VoIP endpoint

2.3 Explain the purposes and use cases for advanced networking devices.

- VoIP PBX
- VoIP gateway

2.4 Explain the purposes of virtualization and network storage technologies.

- Jumbo frame

5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Jitter

5.4 Given a scenario, troubleshoot common wireless connectivity and performance issues.

- Latency
- Jitter

Video/Demo

 9.2.1 Voice over IP (VoIP)

Time

11:13

Total Video Time 11:13

Lab/Activity

- 🔧 9.2.3 Configure VoIP 1
- 🔧 9.2.4 Configure VoIP 2

Fact Sheets

 9.2.2 VoIP Facts

Number of Exam Questions

13 questions

Total Time

About 40 minutes



9.3: Virtualization

Lecture Focus Questions:

- What is the relationship between the host and the guest operating systems?
- What is the function of the hypervisor?
- What are the differences between a virtual machine and a virtual hard disk?
- Which type of virtualization allows applications to run within the virtual machine without being modified in any way?
- What is paravirtualization?
- What is the difference between full and partial virtualization?

In this section, you will learn to:

- Create a virtual machine.

Video/Demo	Time
 9.3.1 Virtualization Overview	10:51
 9.3.2 Create a Virtual Machine	<u>3:28</u>
Total Video Time	14:19

Fact Sheets

-  9.3.3 Virtualization Facts

Number of Exam Questions

4 questions

Total Time

About 24 minutes

9.4: Virtual Networking

Lecture Focus Questions:

- How is network as a service (NaaS) similar to the offsite datacenter? How is it different?
- What can you do to protect virtual hosts from network exploits?
- How does a virtual router differ from a physical router?
- What is the best way to set up a virtual firewall?
- What is the difference between a physical switch and a virtual switch?
- Where can you configure a custom MAC address for a virtual network interface?

In this section, you will learn to:

- Configure virtual network devices.

This section covers the following TestOut Network Pro certification exam objective:

3.6 Given a scenario, configure virtual networking

This section covers the following Network+ certification exam objectives:




1.3 Explain the concepts and characteristics of routing and switching.

- Software-defined networking


2.4 Explain the purposes of virtualization and network storage technologies.

- Virtual networking components
 - Virtual switch
 - Virtual firewall
 - Virtual NIC
 - Virtual router
 - Hypervisor

Video/Demo

	Time
 9.4.1 Virtual Networking Implementations	6:04
 9.4.2 Virtual Network Devices	7:08
 9.4.3 Configure Virtual Network Devices	<u>3:04</u>
Total Video Time	16:16

Fact Sheets

-  9.4.4 Virtualization Implementation Facts
-  9.4.5 Virtual Networking Facts

Number of Exam Questions

9 questions

Total Time

About 36 minutes

9.5: Cloud Computing

Lecture Focus Questions:

- What is the difference between a hybrid cloud and a community cloud?
- What is the difference between IaaS and PaaS?
- What two implementations are available for SaaS?
- What services does cloud computing provide?
- Which cloud computing model allows the client to run software without purchasing servers, data center space, or network equipment?

This section covers the following Network+ certification exam objective:
1.7 Summarize cloud concepts and their purposes.

- Types of services
 - SaaS
 - PaaS
 - IaaS
- Cloud delivery models
 - Private
 - Public
 - Hybrid
- Connectivity methods
- Security implications/ considerations
- Relationship between local and cloud resources

Video/Demo

 9.5.1 Cloud Computing Overview

Time

12:07

Total Video Time 12:07

Fact Sheets

 9.5.2 Cloud Computing Facts

Number of Exam Questions

5 questions

Total Time

About 23 minutes

10.1: Wireless Concepts

Lecture Focus Questions:

- Under what circumstances might you choose an ad hoc wireless network?
- What device is used to create an infrastructure wireless network?
- How do wireless networks control media access?
- What is the difference between a BSS and an ESS?
- What do wireless clients use to identify a specific wireless access point?
- How do multiple access points identify themselves as part of the same network?

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).

2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - CSMA/CA



1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Wireless topologies
 - Mesh
 - Ad hoc
 - Infrastructure



2.5 Compare and contrast WAN technologies.

- Transmission mediums
 - Wireless

Video/Demo

	Time
 10.1.1 Radio Frequency Wireless	8:06
 10.1.2 Wireless Architecture	<u>7:50</u>
Total Video Time	15:56

Fact Sheets

-  10.1.3 Wireless Architecture Facts
-  10.1.4 Wireless Infrastructure Facts

Number of Exam Questions

5 questions

Total Time
About 31 minutes

10.2: Wireless Standards

Lecture Focus Questions:

- What are the differences between 802.11a and 802.11g specifications?
- Devices that support the 802.11g standards are typically compatible with which other wireless standard?
- How does MIMO differ from channel bonding?
- Why is channel bonding typically not used with the 2.4 GHz range?
- What happens when an 802.11a device connects to an access point that supports both 802.11n and 802.11a? What happens if the access point uses MIMO and supports dual band?
- Which types of devices typically use Bluetooth wireless?

In this section, you will learn to:

- Configure Bluetooth Connections

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).

2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objectives:





1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Types
 - - pan
- Technologies that facilitate the Internet of Things (IoT)
 - Bluetooth
 - IR
 - RFID

1.6 Given a scenario, implement the appropriate wireless technologies and configurations.

- 802.11 standards
 - - a
 - b
 - g
 - n
 - ac
- Frequencies

- - 2.4GHz
 - 5.0GHz
- Channel bandwidth
- Channel bonding

Video/Demo	Time
 10.2.1 Wireless Standards	13:22
 10.2.2 Infrared	3:33
 10.2.3 Bluetooth	4:28
 10.2.4 Configure Bluetooth Connections	<u>5:25</u>
Total Video Time	26:48

Fact Sheets

-  10.2.5 Wireless Standards Facts

Number of Exam Questions

12 questions

Total Time

About 44 minutes

10.3: Wireless Configuration

Lecture Focus Questions:

- What information does the wireless profile contain?
- What is the strongest encryption method?
- How does a MAC access list help keep a network secure?
- What is the purpose of a beacon?
- How are wireless networks listed in the notification area?

In this section, you will learn to:

- Create a Home Wireless Network.
- Secure a Home Wireless Network.
- Configure Wireless Profiles.

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).



2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objective:




2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Bridge
- Wireless access point
- Wireless range extender

Video/Demo

	Time
 10.3.1 Wireless Network Configuration	9:30
 10.3.3 Configure Wireless Networks	<u>9:47</u>
Total Video Time	19:17

Lab/Activity

-  10.3.4 Create a Home Wireless Network
-  10.3.5 Secure a Home Wireless Network
-  10.3.6 Configure Wireless Profiles

Fact Sheets

-  10.3.2 Wireless Configuration Tasks

Number of Exam Questions

5 questions

Total Time

About 45 minutes

10.4: Wireless Network Design

Lecture Focus Questions:

- What is device density?
- What is the difference between received signal length and signal to noise ratio?
- Which implementation automatically partitions a single broadcast domain into multiple VLANs?
- What information is specified in a logical network diagram?
- How do you measure the signal strength at a given distance from the access point?
- What is the Z-Wave protocol commonly used for?

In this section, you will learn to:

- Design an Indoor Wireless Network.
- Design an Outdoor Wireless Network.

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).

2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objectives:

1.5 Compare and contrast the characteristics of network topologies, types and technologies.

- Types
 - WLAN
- Technologies that facilitate the Internet of Things (IoT)
 - Z-Wave
 - Ant+
 - NFC
 - 11

1.6 Given a scenario, implement the appropriate wireless technologies and configurations.

- Site survey
- Speed and distance requirements
- MIMO/MU-MIMO
- Unidirectional/ omnidirectional





2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Bridge

- Wireless access point

5.2 Given a scenario, use the appropriate tool.

- Hardware tools
 - Spectrum analyzer

Video/Demo	Time
 10.4.1 Wireless Network Design	7:02
 10.4.2 Site Survey	7:17
 10.4.3 Wireless Antenna Types	6:10
 10.4.5 Conduct a Wireless Survey	<u>4:39</u>
Total Video Time	25:08

Lab/Activity

-  10.4.7 Design an Indoor Wireless Network
-  10.4.8 Design an Outdoor Wireless Network

Fact Sheets

-  10.4.4 Wireless Network Design Facts
-  10.4.6 Wireless Site Survey Facts

Number of Exam Questions

11 questions

Total Time

About 57 minutes

10.5: Wireless Network Implementation

Lecture Focus Questions:

- What is the difference between a hub-and-spoke infrastructure and a distributed wireless mesh infrastructure?
- What is a lightweight access point used for?
- Which protocol is used to route frames back and forth between the wireless network and the wired LAN?
- Which enterprise deployment has limited mobility and is difficult to manage?

In this section, you will learn to:

- Implement an Enterprise wireless network.

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).

2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objectives:



2.2 Given a scenario, determine the appropriate placement of networking devices on a network and install/configure them.

- Bridge
- Wireless access point

5.3 Given a scenario, troubleshoot common wired connectivity and performance issues.

- Bottlenecks

Video/Demo

	Time
 10.5.1 Enterprise Wireless Equipment	7:46
 10.5.2 Configure Enterprise Wireless Networks	<u>8:10</u>
Total Video Time	15:56

Lab/Activity

-  10.5.4 Implement an Enterprise Wireless Network

Fact Sheets

-  10.5.3 Enterprise Wireless Facts

Number of Exam Questions

4 questions

Total Time

About 30 minutes

10.6: Wireless Security

Lecture Focus Questions:

- What does open authentication use to authenticate a device?
- Why is open authentication an unsecure solution?
- Which two additional components are required to implement 802.1x authentication?
- What is the difference between WPA Personal and WPA Enterprise?
- How can geofencing protect your network?
- Which default values should you always change on your wireless network?

In this section, you will learn to:

- Secure an Enterprise wireless network.

This section covers the following TestOut Network Pro certification exam objectives:

1.3 Given a scenario, implement appropriate wireless networking device(s).

2.4 Given a scenario, establish a wireless network connection for a device on the network.

This section covers the following Network+ certification exam objectives:

4.2 Explain authentication and access controls.

- Access control
 - MAC filtering

4.3 Given a scenario, secure a basic wireless network.




- WPA
- WPA2
- TKIP-RC4
- CCMP-AES
- Authentication and authorization
 - Shared or open
 - Preshared key
 - MAC filtering
- Geofencing

4.4 Summarize common networking attacks.

- Rogue access point
- Evil twin
- War-driving
- Deauthentication

Video/Demo



Time

 10.6.1 Wireless Security	8:44
 10.6.3 Wireless Attacks	9:39
 10.6.5 Secure a Wireless Network	<u>13:26</u>
Total Video Time	31:49

Lab/Activity

-  10.6.6 Secure an Enterprise Wireless Network

Fact Sheets

-  10.6.2 Wireless Security Facts
-  10.6.4 Wireless Attack Facts

Number of Exam Questions

15 questions

Total Time

About 62 minutes

10.7: Wireless Troubleshooting

Lecture Focus Questions:

- Where is the best place to situate your wireless access point?
- What types of objects might obstruct radio frequency wireless transmissions?
- How many channels should separate two different wireless networks?
- Which types of wireless networks require line-of-sight connections?
- How do range and antenna placement affect wireless networks?
- How does refraction affect your RF signal?

In this section, you will learn to:

- Optimize a wireless network.
- Explore wireless network problems.
- Troubleshoot wireless network problems.

This section covers the following TestOut Network Pro certification exam objective:
5.3 Given a scenario, troubleshoot wired or wireless network connectivity to establish network communication.



This section covers the following Network+ certification exam objectives:
5.2 Given a scenario, use the appropriate tool.

- Software tools
 - WiFi analyzer

5.4 Given a scenario, troubleshoot common wireless connectivity and performance issues.

- Reflection
- Refraction
- Absorption
- Latency
- Incorrect antenna type
- Interference
- Incorrect antenna placement
- Distance limitations
- Frequency mismatch
- Wrong SSID
- Wrong passphrase
- Security type mismatch
- Power levels

Video/Demo

	Time
 10.7.1 Wireless Communications Troubleshooting	11:34
 10.7.2 Troubleshoot Wireless Connections	6:23

📺 10.7.4 Optimize Wireless Networks0
Total Video Time

7:26
25:23

Lab/Activity

- 🔧 10.7.5 Optimize a Wireless Network
- 🔧 10.7.6 Explore Wireless Network Problems
- 🔧 10.7.7 Troubleshoot Wireless Network Problems

Fact Sheets

- 📄 10.7.3 Wireless Network Troubleshooting Facts

Number of Exam Questions

14 questions

Total Time

About 60 minutes

11.1: WAN Concepts

Lecture Focus Questions:

- What is the optical carrier specification base rate? Why is the base rate significant?
- What are the differences between T1 and T3? E1 and E3? J1 and J3?
- Concerning WAN technologies, what is a channel? Why are channels important?
- What is the difference between a packet-switched network and a circuit-switched network?
- What are the two parts of a CSU/DSU? Which functions does each perform?
- Which WAN technology uses fixed-length cells?
- Which WAN technology is a transport technology for carrying signals over fiber optic cables?
- Which WAN technology can be implemented over regular telephone lines?
- How does MPLS add labels to packets? What are these labels used for?

This section covers the following TestOut Network Pro certification exam objectives:

1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).

1.3 Given a scenario, implement appropriate wireless networking device(s).

This section covers the following Network+ certification exam objectives:




1.3 Explain the concepts and characteristics of routing and switching.

- Distributed switching
- Packet-switched vs. circuit-switched network

2.5 Compare and Contrast WAN technologies.




- Service type
 - ISDN
 - T1/T3
 - E1/E3
 - OC-3 - OC-192
 - Metropolitan Ethernet
 - PRI
- Transmission mediums
 - Copper
 - Fiber
- Characteristics of service
 - MPLS
 - ATM
 - Frame relay
 - SIP trunk
- Termination
 - Demarcation point
 - CSU/DSU

Video/Demo

	Time
 11.1.1 WAN Structure	5:14
 11.1.2 WAN Technologies	10:02
 11.1.3 WAN Services	<u>10:29</u>

Total Video Time 25:45

Fact Sheets

-  11.1.4 WAN Media Facts
-  11.1.5 WAN Facts
-  11.1.6 WAN Services Facts

Number of Exam Questions

15 questions

Total Time

About 56 minutes

11.2: WAN Connections

Lecture Focus Questions:

- What is the difference between LCP and NCP?
- In which layer of the OSI model does PPP function?
- Which PPP feature can detect link errors?
- During PPP configuration, which authentication methods are available?

In this section, you will learn to:

- Configure a PPP WAN link.

This section covers the following TestOut Network Pro certification exam objectives:



1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).

1.3 Given a scenario, implement appropriate wireless networking device(s).

This section covers the following Network+ certification exam objective:

2.5 Compare and contrast WAN technologies.

- Characteristics of Service
 - PPP

Video/Demo	Time
 11.2.1 PPP WAN Connections	3:01
 11.2.2 Set Up a PPP WAN Link	<u>3:22</u>
Total Video Time	6:23

Lab/Activity

-  11.2.4 Configure a PPP WAN Link

Fact Sheets

-  11.2.3 PPP WAN Connection Facts

Number of Exam Questions

8 questions

Total Time

About 25 minutes

11.3: Internet Connectivity

Lecture Focus Questions:

- What connection speeds should you expect from a PSTN internet connection?
- What is multiplexing? How does it increase the bandwidth of a connection?
- How does DSL enable you to talk on the phone and connect to the internet at the same time?
- What are the requirements for qualifying for DSL service?
- Which DSL service does not support simultaneous voice and data transmissions?
- What is the difference between BRI and PRI with ISDN?
- What is the difference between a B channel and a D channel?
- What are the disadvantages of a satellite internet connection?

In this section, you will learn to:

- Connect to a DSL network.

This section covers the following TestOut Network Pro certification exam objectives:

1.2 Given a scenario, deploy appropriate wired networking or internetworking device(s).

1.3 Given a scenario, implement appropriate wireless networking device(s).

This section covers the following Network+ certification exam objectives:

1.6 Given a scenario, implement the appropriate wireless technologies and configurations.

- Cellular
 - GSM
 - TDMA
 - CDMA

2.3 Explain the purposes and use cases for advanced networking devices.

- AAA/RADIUS server

2.5 Compare and contrast WAN technologies.

- Characteristics of Service
 - PPPoE
 - PPP
- Service type
 - DSL
 - Cable broadband
 - Dial-up
 - ISDN
 - PRI

- Transmission mediums
 - Satellite

3.5 Identify policies and best practices.

- Remote access policies

4.2 Explain authentication and access controls.

- Authorization, authentication and accounting
 - RADIUS
 - TACACS+

Video/Demo	Time
 11.3.1 Traditional Internet Connectivity	13:15
 11.3.2 Mobile Internet Connectivity	<u>8:09</u>
Total Video Time	21:24

Lab/Activity

-  11.3.4 Connect to a DSL Network

Fact Sheets

-  11.3.3 Internet Services Facts

Number of Exam Questions

15 questions

Total Time

About 47 minutes

11.4: Remote Access

Lecture Focus Questions:

- What functions are performed by PPP for remote access connections?
- How does PPPoE differ from PPP?
- Why is proxy ARP necessary for dial-up remote access clients?
- What is the difference between authentication and authorization?
- What is an advantage of using RADIUS or TACACS+ in your remote access solution?
- How does RADIUS differ from TACACS+?

In this section, you will learn to:

- Configure a remote access server.
- Configure a RADIUS solution.

This section covers the following TestOut Network Pro certification exam objective:
4.4 Given a scenario, configure systems and remote devices to create and use a VPN connection.

This section covers the following Network+ certification exam objectives:
2.3 Explain the purposes and use cases for advanced networking devices.

- AAA/RADIUS server

2.5 Compare and contrast WAN technologies.

- Characteristics of Service
 - PPPoE
 - PPP




3.5 Identify policies and best practices.

- Remote access policies

4.2 Explain authentication and access controls.

- Authorization, authentication and accounting
 - RADIUS
 - TACACS+

Video/Demo

	Time
 11.4.1 Remote Access	15:04
 11.4.3 Configure a Remote Access Server	9:51
 11.4.4 Configure a RADIUS Solution	<u>7:35</u>

Total Video Time 32:30

Fact Sheets

 11.4.2 Remote Access Facts

Number of Exam Questions

14 questions

Total Time

About 52 minutes

11.5: WAN Troubleshooting

Lecture Focus Questions:

- Which command shows you summary information about the interface status?
- Which utility allows you to verify the Application layer connectivity and configuration?
- What does an up/down interface status mean?
- Which command allows you to view the interface status and identify connectivity problems on a WAN link?
- What does it mean if the interface status is administratively down/down?

In this section, you will learn to:

- Troubleshoot WAN Issues.



This section covers the following TestOut Network Pro certification exam objectives:
5.1 Given a scenario, troubleshoot issues with networking media or devices to establish network communication.

5.3 Given a scenario, troubleshoot wired or wireless network connectivity to establish network communication.

This section covers the following Network+ certification exam objective:

5.5 Given a scenario, troubleshoot common network service issues.

- Incorrect time

Video/Demo	Time
 11.5.1 WAN Troubleshooting	8:46
 11.5.2 Troubleshoot WAN Issues	<u>8:02</u>
Total Video Time	16:48

Fact Sheets

-  11.5.3 WAN Troubleshooting Facts

Number of Exam Questions

9 questions

Total Time

About 31 minutes

12.1: Network Design, Documentation, and Policies

Lecture Focus Questions:

- Which document allows you to effectively monitor your system's performance?
- Why is it important to conduct a needs assessment?
- In the IT asset lifecycle, in which phase do you apply updates and patches?
- Why should you test a new asset in a sandbox environment?
- What information is needed to create a network diagram?

This section covers the following Network+ certification exam objectives:

1.7 Summarize cloud concepts and their purposes.

- Security implications/ considerations

3.1 Given a scenario, use appropriate documentation and diagrams to manage the network.

- Diagram symbols
- Logical vs. physical diagrams
- Rack diagrams
- Wiring and port locations
- Inventory management
- Network configuration and performance baselines
- Standard operating procedures/work instructions

3.2 Compare and contrast business continuity and disaster recovery concepts.

- MTTR
- MTBF

3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Processes
 - Reviewing baselines

3.5 Identify policies and best practices.

- System life cycle
 - Asset disposal

Video/Demo

Time

 12.1.1 Organization Policies and Procedures	3:43
 12.1.2 Network Design	8:50
 12.1.4 Network Documentation	8:38

📺 12.1.6 Asset Management 7:19
Total Video Time 28:30

Fact Sheets

- 📄 12.1.3 Network Design Facts
- 📄 12.1.5 Network Documentation Facts
- 📄 12.1.7 Asset Management Facts

Number of Exam Questions

14 questions

Total Time

About 58 minutes

12.2: Risk Management

Lecture Focus Questions:

- What is the difference between a threat and a vulnerability?
- What is a mission-critical system?
- What is the difference between a BCP and a BIA?
- Which part of risk response can introduce the possibility of negligence and lead to liability?
- What is the difference between a tangible asset and an intangible asset?
- What is the difference between quantitative and qualitative analysis?

This section covers the following Network+ certification exam objectives:

3.1 Given a scenario, use appropriate documentation and diagrams to manage the network.

- Change management documentation



3.5 Identify policies and best practices.

- Incident response policies

4.6 Explain common mitigation techniques and their purposes.

- Role separation

Video/Demo

	Time
 12.2.1 Risk Management	3:04
 12.2.3 Business Continuity	<u>2:28</u>
Total Video Time	5:32

Fact Sheets

-  12.2.2 Risk Management Facts
-  12.2.4 Business Continuity Facts
-  12.2.5 Incident Response Facts

Number of Exam Questions

14 questions

Total Time

About 35 minutes

12.3: Security Policies

Lecture Focus Questions:

- What are the characteristics of a strong password?
- What information should be included in the privacy policy as personally identifiable information?
- Which vulnerabilities does a vulnerability scan look for in your network?
- Why should you destroy old versions of the security plan?
- What is the difference between onboarding and off-boarding?
- Which document specifies who is going to do what and when?

This section covers the following Network+ certification exam objectives:

3.2 Compare and contrast business continuity and disaster recovery concepts.

- SLA requirements

3.5 Identify policies and best practices.

- On-boarding/off-boarding procedures
- NDA


3.5 Identify policies and best practices.

- Privileged user agreement
- Password policy
- Licensing restrictions
- International export controls
- Data loss prevention
- Remote access policies
- AUP
- Safety procedures and policies

4.6 Explain common mitigation techniques and their purposes.

- Privileged user account
- Role separation

Video/Demo

-  12.3.1 Security Policies
-  12.3.3 Third-Party Integration Policies and Documents

Total Video Time

Time

14:05

8:55

23:00

Fact Sheets

-  12.3.2 Security Policy Facts
-  12.3.4 Third-Party Integration Facts

Number of Exam Questions

15 questions

Total Time

About 48 minutes

13.1: Physical Security

Lecture Focus Questions:

- What are some examples of physical security measures you can implement to protect your network?
- Which physical control measure uses mantraps, turnstiles, and double-entry doors?
- Who can prevent and react to security breaches?
- Which type of physical security system establishes controls at each layer to ensure that defeating one level of security does not allow an attacker subsequent access?
- What is the difference between an anti-passback system and a motion detector?


In this section, you will learn to:

- Implement Physical Security.

This section covers the following Network+ certification exam objective:
4.1 Summarize the purposes of physical security devices.

- Detection
 - Motion detection
 - Video surveillance
 - Asset tracking tags
 - Tamper detection
- Prevention
 - Badges
 - Biometrics
 - Smart cards
 - Key fob
 - Locks

Video/Demo

 13.1.1 Physical Security

Time

10:19

Total Video Time 10:19

Lab/Activity

 13.1.3 Implement Physical Security

Fact Sheets

 13.1.2 Physical Security Facts

Number of Exam Questions

15 questions

Total Time

About 36 minutes

13.2: Social Engineering

Lecture Focus Questions:

- What is social engineering? What is the best defense against social engineering?
- What is the difference between piggybacking and tailgating?
- How can you verify that a website is using HTTPS?
- What is the difference between pretexting and masquerading?
- In which type of social engineering attack does an attacker lie about having authority or use their high status in a company to force victims to provide information?

In this section, you will learn to:

- Respond to social engineering exploits.

This section covers the following TestOut Network Pro certification exam objective:



4.6 Given a scenario, respond to social engineering exploits.

This section covers the following Network+ certification exam objective:

4.4 Summarize common networking attacks.

- Social engineering
- Insider threat
- Phishing

Video/Demo

	Time
 13.2.1 Social Engineering	11:08
 13.2.3 Identify Social Engineering Exploits	<u>8:06</u>
Total Video Time	19:14

Lab/Activity

-  13.2.4 Respond to Social Engineering Exploits

Fact Sheets

-  13.2.2 Social Engineering Facts

Number of Exam Questions

12 questions

Total Time

About 42 minutes

13.3: Network Vulnerabilities and Threats 1

Lecture Focus Questions:

- What is the main goal in a denial of service (DoS) attack?
- How do DDoS and DRDoS attacks differ?
- What is the difference between a virus and a worm?
- In addition to implementing virus scanning software, what must you do to ensure that you are protected from the latest virus variations?
- In which type of spoofing are packets intended for the default gateway sent to the attacker instead?
- In which type of session attack does the attacker hijack and exploit a user's cookies?

In this section, you will learn to:

- Perform a UDP Flood Attack.
- Perform ARP Poisoning.

This section covers the following TestOut Network Pro certification exam objective:






4.6 Given a scenario, respond to social engineering exploits.

This section covers the following Network+ certification exam objective:

4.4 Summarize common networking attacks.

- DoS
 - Reflective
 - Amplified
 - Distributed
- Logic bomb
- Ransomware
- DNS poisoning
- ARP poisoning
- Spoofing
- Man-in-the-middle

Video/Demo

	Time
 13.3.1 Malware	10:55
 13.3.3 Denial of Service (DoS)	4:44
 13.3.4 Perform a UDP Flood Attack	4:09
 13.3.6 Session and Spoofing Attacks	5:11
 13.3.7 Perform ARP Poisoning	<u>7:42</u>
Total Video Time	32:41

Fact Sheets

-  13.3.2 Malware Facts
-  13.3.5 DoS Attack Facts

📖 13.3.8 Session and Spoofing Attack Facts

Number of Exam Questions

15 questions

Total Time

About 63 minutes

13.4: Network Vulnerabilities and Threats 2

Lecture Focus Questions:

- What is a drive-by download?
- What is the difference between MAC flooding and MAC spoofing?
- How does a command injection attack a web application?
- What is the difference between XSS and CSRF/XSRF?
- How does salting the hash protect your network?
- What is the target of ARP spoofing?
- How does a buffer overflow differ from an integer overflow?

In this section, you will learn to:

- Crack passwords.

This section covers the following TestOut Network Pro certification exam objective:

4.6 Given a scenario, respond to social engineering exploits.

This section covers the following Network+ certification exam objectives:

4.4 Summarize common networking attacks.

- VLAN hopping
- Brute force





4.5 Given a scenario, implement network device hardening.

- Changing default credentials
- Avoiding common passwords




4.4 Summarize common networking attacks.

- Phishing

Video/Demo

	Time
 13.4.1 Switch Attacks	5:43
 13.4.3 Password Attacks	6:22
 13.4.4 Crack Passwords	8:22
 13.4.6 Web Attacks	4:39
Total Video Time	25:06

Fact Sheets

-  13.4.2 Switch Attack Facts
-  13.4.5 Password Attack Facts
-  13.4.7 Web Attack Facts

Number of Exam Questions

10 questions

Total Time

About 51 minutes

13.5: Authentication

Lecture Focus Questions:

- What is the role of a CA in a PKI?
- What is the subject name within a certificate?
- What does an authentication protocol do?
- How does CHAP protect the password or shared secret during the authentication process?
- Which authentication protocol would you choose if you needed to use smart cards?
- What are the two ticket types used with Kerberos? How do tickets make authentication and authorization more efficient?
- What device is required to implement 802.1x authentication?
- What is the difference between a strong authentication method and a mutual authentication method?

This section covers the following TestOut Network Pro certification exam objective:

4.6 Given a scenario, respond to social engineering exploits.

This section covers the following Network+ certification exam objectives:

4.2 Explain authentication and access controls.

4.2 Explain authentication and access controls.




- Authorization, authentication and accounting
 - Kerberos
 - Single sign-on
 - Certificates
 - Auditing and logging
- Multifactor authentication
 - Something you know
 - Something you have
 - Something you are
 - Somewhere you are
 - Something you do
- Access control
 - 802.1x
 - Captive portal

4.3 Given a scenario, secure a basic wireless network.



- Authentication and authorization
 - EAP
 - PEAP
 - EAP-FAST
 - EAP-TLS

4.6 Explain common mitigation techniques and their purposes.

- Signature management

Video/Demo	Time
 13.5.1 Authentication	10:34
 13.5.3 Authentication Protocols	11:11
 13.5.4 Digital Certificates	<u>5:24</u>
Total Video Time	27:09

Fact Sheets

-  13.5.2 Authentication Facts
-  13.5.5 Authentication Protocol Facts

Number of Exam Questions

15 questions

Total Time

About 53 minutes

13.6: Secure Protocols

Lecture Focus Questions:

- Which protocol is the secure alternative to Telnet?
- What is the difference between SFTP and FTPS?
- Which protocol is added to HTTP for secure Web browsing?
- What improvements does SNMPv3 provide over earlier SNMP versions?

In this section, you will learn to:

- Add SSL on a website.

This section covers the following Network+ certification exam objective:

3.4 Given a scenario, use remote access methods.

- VPN
 - SSL/TLS/DTLS

4.4 Summarize common networking attacks.



- Exploits vs. vulnerabilities

4.5 Given a scenario, implement network device hardening.

- File hashing
- Using secure protocols
- Generating new keys

4.6 Explain common mitigation techniques and their purposes.

- File integrity monitoring

Video/Demo	Time
 13.6.1 Secure Protocols	8:02
 13.6.2 Add SSL to a Website	<u>4:29</u>
Total Video Time	12:31

Fact Sheets

-  13.6.3 Secure Protocol Facts

Number of Exam Questions

7 questions

Total Time

About 25 minutes

13.7: Remote Access Security

Lecture Focus Questions:

- How does a remote access VPN differ from a host-to-host VPN?
- With a site-to-site VPN, which devices are configured as the VPN tunnel endpoints?
- What does PPTP use for encryption? What does L2TP use?
- What is the difference between AH and ESP used with IPsec?
- Why would you want to use SSL VPNs when creating VPNs?

In this section, you will learn to:

- Configure a VPN connection.
- Configure a mobile device VPN connection.

This section covers the following TestOut Network Pro certification exam objective:
4.4 Given a scenario, configure systems and remote devices to create and use a VPN connection.

This section covers the following Network+ certification exam objectives:
2.3 Explain the purposes and use cases for advanced networking devices.

- VPN concentrator



2.5 Compare and contrast WAN technologies.

- Characteristics of service
 - DMVPN

3.4 Given a scenario, use remote access methods.

- VPN
 - IPsec
 - SSL/TLS/DTLS
 - Site-to-site
 - Client-to-site

Video/Demo

	Time
 13.7.1 Virtual Private Networks (VPNs)	10:26
 13.7.3 Set Up a VPN Connection	<u>5:54</u>
Total Video Time	16:20

Lab/Activity

-  13.7.4 Configure a VPN Connection
-  13.7.5 Configure a Mobile Device VPN Connection

Fact Sheets

 13.7.2 VPN Facts

Number of Exam Questions

12 questions

Total Time

About 44 minutes

13.8: Troubleshoot Network Security Issues

Lecture Focus Questions:

- How do you defend against a ping of death attack?
- What does the **sniffer-detect** script with the NMAP utility allow you to do?
- What tools can help you find backdoors?
- What can you do to prevent your network from becoming an amplifier for DoS attacks?
- What do you need in order to configure two-factor authentication?

This section covers the following Network+ certification exam objectives:

4.2 Explain authentication and access controls.

- Authorization, authentication and accounting
 - Local authentication

4.4 Summarize common networking attacks.

- Exploits vs. vulnerabilities




4.5 Given a scenario, implement network device hardening.

- Disabling unused ports
 - IP ports
 - Device ports (physical and virtual)

5.5 Given a scenario, troubleshoot common network service issues.

- Untrusted SSL certificate
- Blocked TCP/UDP ports

Video/Demo

	Time
 13.8.1 Resolve Network Security Issues	8:46
 13.8.2 Respond to Network Attacks	3:00
 13.8.3 Authentication Issues	<u>4:14</u>
Total Video Time	16:00

Fact Sheets

-  13.8.4 Security Troubleshooting Facts

Number of Exam Questions

5 questions

Total Time

About 26 minutes

14.1: Detection and Prevention

Lecture Focus Questions:

- What type of recognition method is used by most virus scanning software?
- How does an IPS differ from an IDS?
- What is the advantage of using a network-based IDS instead of a host-based IDS?
- What should you do regularly when using a signature-based IDS?
- How can packet sniffing and port scanning software be used to improve the security of your network?
- Which devices can you use to discover open ports?

In this section, you will learn to:

- Configure Intrusion Prevention
- Enable Wireless Intrusion Prevention

This section covers the following TestOut Network Pro certification exam objective:
4.5 Given a scenario, perform administrative tasks on a network security appliance.
This section covers the following Network+ certification exam objectives:
2.3 Explain the purposes and use cases for advanced networking devices.

- IDS/IPS

3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Processes
 - Port scanning
 - Vulnerability scanning
- Event management
 - SIEM

4.5 Given a scenario, implement network device hardening.

- Disabling unused ports
 - IP ports
 - Device ports (physical and virtual)





4.6 Explain common mitigation techniques and their purposes.

- Honeypot/honeynet



5.2 Given a scenario, use the appropriate tool.

- Software tools
 - Port scanner



Video/Demo

	Time
 14.1.1 Intrusion Detection and Prevention	4:22
 14.1.2 Configure an IDS/IPS	5:58
 14.1.3 Security Information and Event Management	4:20
 14.1.7 Vulnerability Assessment	<u>4:23</u>
Total Video Time	19:03

Lab/Activity

-  14.1.5 Configure Intrusion Prevention
-  14.1.6 Enable Wireless Intrusion Prevention

Fact Sheets

-  14.1.4 Intrusion Detection and Prevention Facts
-  14.1.8 Vulnerability Assessment Facts

Number of Exam Questions

15 questions

Total Time

About 55 minutes

14.2: Penetration Testing

Lecture Focus Questions:

- Why should you perform a penetration test on your network?
- Which type of penetration testing provides you with the most accurate results regarding your network's vulnerabilities?
- How does black box testing differ from grey box testing?
- In which stage of penetration testing do you create a fingerprint of your system?
- What is the difference between operations penetration testing and electronic penetration testing?

In this section, you will learn to:

- Use penetration testing tools.

This section covers the following Network+ certification exam objectives:



4.6 Explain common mitigation techniques and their purposes.

- Penetration testing

5.2 Given a scenario, use the appropriate tool.

- Software tools
 - Command line
 - nmap

Video/Demo

	Time
 14.2.1 Penetration Testing	2:38
 14.2.3 Explore Penetration Testing Tools	<u>18:19</u>
Total Video Time	20:57

Fact Sheets

-  14.2.2 Penetration Testing Facts

Number of Exam Questions

10 questions

Total Time

About 36 minutes

14.3: Network Hardening

Lecture Focus Questions:

- How does SecureDynamic differ from SecureSticky?
- How does DAI validate ARP packets on the network?
- What is the difference between enforcement and remediation servers?
- How does an A port violation occur? How can you resolve it?
- What does DHCP snooping do on your network?

In this section, you will learn to:

- Configure port security.

This section covers the following TestOut Network Pro certification exam objective:

4.3 Given a scenario, configure security for a switch.

This section covers the following Network+ certification exam objectives:

3.4 Given a scenario, use remote access methods.

- SSH
- HTTPS/management URL
- Remote file access
 - FTP/FTPS
 - SFTP
 - TFTP

4.2 Explain authentication and access controls.

- Access control
 - NAC
 - Port security

4.5 Given a scenario, implement network device hardening.

- Disabling unnecessary services
- Disabling unused ports
 - IP ports
 - Device ports (physical and virtual)

4.6 Explain common mitigation techniques and their purposes.

- Device hardening
- Switch port protection
 - Spanning tree
 - Flood guard
 - BPDU guard

- Root guard
- DHCP snooping

Video/Demo

	Time
 14.3.1 Network Hardening Techniques	12:04
 14.3.2 Switch Port Security	8:39
 14.3.4 Configure Switch Port Security	3:48
 14.3.6 Network Access Control	6:50
 14.3.7 Configure NAC	<u>14:03</u>

Total Video Time 45:24

Lab/Activity

-  14.3.5 Configure Port Security

Fact Sheets

-  14.3.3 Switch Port Security Facts
-  14.3.8 NAC Facts

Number of Exam Questions

13 questions

Total Time

About 74 minutes

15.1: Update Management

Lecture Focus Questions:

- What is the difference between a hotfix and a service pack?
- What does flashing do to firmware?
- Where can you go to find updates for applications or drivers?
- What does Windows Update do?

In this section, you will learn to:

- Configure an update server.

This section covers the following Network+ certification exam objectives:



3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Processes
 - Patch management
 - Rollback

4.5 Given a scenario, implement network device hardening.

- Upgrading firmware
- Patching and updates

Video/Demo

	Time
 15.1.1 Update Deployment and Management	7:32
 15.1.2 Configure an Update Server	<u>7:22</u>
Total Video Time	14:54

Fact Sheets

-  15.1.3 Update Deployment and Management Facts

Number of Exam Questions

4 questions

Total Time

About 24 minutes

15.2: Data Protection

Lecture Focus Questions:

- What is the difference between a data backup and a server backup?
- What permissions do you need to perform a backup?
- Which type of server backup is for recovering only critical volumes?
- In Windows 8.x, which application do you use to back up user account files?
- How does backing up your server to an internal disk differ from backing up to an external disk?

In this section, you will learn to:

- Configure a data backup.
- Configure a server backup.

This section covers the following TestOut Network Pro certification exam objective:




3.5 Given a scenario, perform data and server backup and recovery tasks.

This section covers the following Network+ certification exam objective:



3.2 Compare and contrast business continuity and disaster recovery concepts.

- Recovery
 - Cold sites
 - Warm sites
 - Hot sites
 - Backups
 - Full
 - Differential
 - Incremental
 - Snapshots



Video/Demo

	Time
 15.2.1 Data Backups	9:48
 15.2.2 Protect Data	4:58
 15.2.3 Recover Files from Backup	<u>4:04</u>
Total Video Time	18:50

Lab/Activity

-  15.2.6 Configure a Data Backup
-  15.2.7 Configure a Server Backup

Fact Sheets

-  15.2.4 Workstation Backup Facts
-  15.2.5 Server Backup Facts

Number of Exam Questions

4 questions

Total Time

About 43 minutes

15.3: Remote Management

Lecture Focus Questions:

- What is the difference between Telnet and SSH?
- How does remote desktop software differ from terminal emulation software?
- How can you use a remote desktop solution for troubleshooting and technical support within your organization?
- How does a remote desktop protocol minimize the data sent between the client and server devices for a remote connection?
- What is device redirection? How does it add flexibility to remote desktop connections?
- What are the differences between hot, warm, and cold sites?

In this section, you will learn to:

- Allow remote desktop connections.



This section covers the following TestOut Network Pro certification exam objective:
3.3 Given a scenario, configure Remote Desktop to allow remote access to systems.
This section covers the following Network+ certification exam objectives:
3.4 Given a scenario, use remote access methods.

- VNC

3.5 Identify policies and best practices.

- Remote access policies

Video/Demo

	Time
 15.3.1 Remote Management	9:07
 15.3.2 Use Remote Desktop	<u>10:48</u>
Total Video Time	19:55

Lab/Activity

-  15.3.3 Allow Remote Desktop Connections

Fact Sheets

-  15.3.4 Remote Management Facts

Number of Exam Questions

4 questions

Total Time

About 34 minutes

15.4: Mobile Device Management

Lecture Focus Questions:





- What can you do to prevent malware from a mobile device from spreading?
- What can you use to remotely clear data on a mobile device?
- What should your acceptable use policy specify?

In this section, you will learn to:

- Create a guest network for BYOD use.

This section covers the following Network+ certification exam objective:
3.5 Identify policies and best practices.

- On-boarding/off-boarding procedures
- BYOD

Video/Demo	Time
 15.4.1 Mobile Device Management	10:20
 15.4.2 Enroll Mobile Devices	4:54
 15.4.3 Configure Mobile Device Policies	12:20
 15.4.4 Set Up a Guest Network for BYOD	<u>6:03</u>
Total Video Time	33:37

Lab/Activity

-  15.4.5 Create a Guest Network for BYOD

Fact Sheets

-  15.4.6 Mobile Device Management Facts

Number of Exam Questions

13 questions

Total Time

About 57 minutes

15.5: Data Center Management

Lecture Focus Questions:

- How does a brownout differ from a blackout?
- What are the best temperature and humidity ranges for electronic components?
- What is the difference between an SPS and a UPS?
- What is the air exchange rate for a server room?
- How should hot and cold aisles be set up for optimal air circulation?

In this section, you will learn to:

- Configure UPS settings.





This section covers the following Network+ certification exam objectives:

3.1 Given a scenario, use appropriate documentation and diagrams to manage the network.

- Labeling

3.2 Compare and contrast business continuity and disaster recovery concepts.

- Availability concepts
 - Power management
 - Battery backups/UPS
 - Power generators
 - Dual power supplies
 - Redundant circuits

Video/Demo	Time
 15.5.1 Network Device Installation	7:38
 15.5.2 Power Management	11:36
 15.5.3 Configure UPS Settings	10:25
 15.5.5 Environmental Monitoring	<u>7:10</u>
Total Video Time	36:49

Fact Sheets

-  15.5.4 Power Management Facts
-  15.5.6 Environmental Monitoring Facts

Number of Exam Questions

13 questions

Total Time

About 60 minutes

15.6: Monitoring

Lecture Focus Questions:

- Why should you enable logging only for specific events?
- After you configure system logging, what else must you do to take advantage of logging's benefits?
- How does a load tester differ from a throughput tester?
- What must you do to configure a packet sniffer to be able to see all frames on a subnet?

In this section, you will learn to:

- View Event Logs.
- Use a packet sniffer.
- Monitor utilization.
- Monitor Interface Statistics.

This section covers the following TestOut Network Pro certification exam objective:

3.4 Given a scenario, use network tools to discover network devices and resources.

This section covers the following Network+ certification exam objectives:

3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Processes
 - Packet/traffic analysis
- Metrics
 - Error rate
 - Utilization
 - Packet drops
 - Bandwidth/throughput

5.2 Given a scenario, use the appropriate tool.

- Software tools
 - Packet sniffer
 - Protocol analyzer
 - Command line

Video/Demo

-  15.6.1 Network Monitoring
-  15.6.2 Protocol Analyzers
-  15.6.3 View Event Logs
-  15.6.4 Use a Packet Sniffer
-  15.6.5 Monitor Utilization
-  15.6.6 Monitor Interface Statistics

Time

- 7:11
- 2:37
- 4:03
- 7:14
- 8:19
- 5:07

Total Video Time 34:31

Fact Sheets

📄 15.6.7 Network Monitoring Facts

Number of Exam Questions

15 questions

Total Time

About 55 minutes

15.7: Log File Management

Lecture Focus Questions:

- When you enable logging for security level 4, what additional messages are received?
- What does the logging process do?
- What information is provided in the facility component of the log message?
- Which log messages are sent to the console by default for a Cisco device?

In this section, you will learn to:



- Configure a Syslog server.

This section covers the following TestOut Network Pro certification exam objective:
3.4 Given a scenario, use network tools to discover network devices and resources.

This section covers the following Network+ certification exam objective:

3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Processes
 - Log reviewing

Video/Demo	Time
 15.7.1 Log File Management	5:33
 15.7.2 Configure a Syslog Server	<u>3:19</u>
Total Video Time	8:52

Fact Sheets

-  15.7.3 Log File Management Facts

Number of Exam Questions

4 questions

Total Time

About 18 minutes

15.8: Network Management with SNMP

Lecture Focus Questions:

- What is the role of the MIB when using SNMP?
- What is a trap? How can you use a trap in network administration?
- How is the community name used with SNMP?
- Why doesn't the community name provide security for SNMP devices?

In this section, you will learn to:

- Configure an SNMP system.

This section covers the following TestOut Network Pro certification exam objective:



3.4 Given a scenario, use network tools to discover network devices and resources.

This section covers the following Network+ certification exam objective:

3.3 Explain common scanning, monitoring and patching processes and summarize their expected outputs.

- Event management
 - Notifications
 - Alerts
- SNMP monitors
 - MIB

Video/Demo

	Time
 15.8.1 Network Management	5:12
 15.8.2 Configure an SNMP System	<u>2:36</u>
Total Video Time	7:48

Fact Sheets

-  15.8.3 SNMP Facts

Number of Exam Questions

4 questions

Total Time

About 17 minutes

16.1: Optimization

Lecture Focus Questions:

- Which feature would you use to configure a device with two connections to the same network?
- What is the purpose of spanning tree in a switched network?
- How does spanning tree compare to Ethernet bonding?
- Why doesn't spanning tree provide improved performance?
- How does a caching server improve network performance?
- When should quality of service (QoS) be a major concern on your network?
- What is the difference between a collision domain and a broadcast domain?
- Your network uses hubs as connection devices. What happens to the number of collisions on the network as you add devices?
- Which device provides guaranteed bandwidth between devices?
- Which device can you use to filter broadcast traffic?
- Your network uses switches as connection devices. All devices have a dedicated switch port. What happens to the number of collisions on the network as you add devices?

In this section, you will learn to:

- Configure NIC teaming.

This section covers the following Network+ certification exam objectives:

1.3 Explain the concepts and characteristics of routing and switching.

- Properties of network traffic
 - Broadcast domains
 - Collision domains
- Performance concepts
 - Traffic shaping
 - QoS
 - Diffserv
 - CoS

2.3 Explain the purposes and use cases for advanced networking devices.

- Load balancer





3.2 Compare and contrast business continuity and disaster recovery concepts.

- Availability concepts
 - Fault tolerance
 - High availability
 - NIC teaming

- Port aggregation

4.6 Explain common mitigation techniques and their purposes.



- Network segmentation
 - DMZ
 - VLAN

Video/Demo	Time
 16.1.1 Optimization	7:58
 16.1.2 Network Segmentation	10:12
 16.1.4 NIC Teaming Concepts	4:49
 16.1.5 Set Up NIC Teaming	<u>3:32</u>
Total Video Time	26:31

Lab/Activity

-  16.1.6 Configure NIC Teaming

Fact Sheets

-  16.1.3 Optimization Facts
-  16.1.7 NIC Teaming Facts

Number of Exam Questions

15 questions

Total Time

About 57 minutes

16.2: Troubleshooting Methodology

Lecture Focus Questions:

- Why is it important to follow a troubleshooting methodology?
- When faced with a problem, why shouldn't you start trying fixes immediately?
- What is escalation? When should it be performed?
- After the problem is fixed, what else must you do to finish troubleshooting?
- What is the difference between **ping** and **tracert**?
- What Linux command is similar to **ipconfig**?
- When would you use **nslookup** or **dig**?

This section covers the following Network+ certification exam objectives:

1.8 Explain the functions of network services.

- DHCP service
 - TTL



5.1 Explain the network troubleshooting methodology.

- Identify the problem
 - Gather information
 - Duplicate the problem, if possible
 - Question users
 - Identify symptoms
 - Determine if anything has changed
 - Approach multiple problems individually
- Establish a theory of probable cause
 - Question the obvious
 - Consider multiple approaches
 - Top-to-bottom/bottom-to-top OSI model
 - Divide and conquer
 - Test the theory to determine the cause
 - Once the theory is confirmed, determine the next steps to resolve the problem
 - If the theory is not confirmed, reestablish a new theory or escalate
 - Establish a plan of action to resolve the problem and identify potential effects
 - Implement the solution or escalate as necessary
 - Verify full system functionality and, if applicable, implement preventive measures
 - Document findings, actions, and outcomes



5.2 Given a scenario, use the appropriate tool.

- Software tools

- Command line
 - ping
 - tracert, traceroute
 - nslookup
 - pathping

Video/Demo	Time
 16.2.1 Troubleshooting Methodology	6:09
 16.2.3 Troubleshooting Utilities	<u>9:29</u>
Total Video Time	15:38

Fact Sheets

-  16.2.2 Troubleshooting Methodology Facts
-  16.2.4 Troubleshooting Utility Facts

Number of Exam Questions

10 questions

Total Time

About 36 minutes

Practice Exams

A.0: Network Pro Practice Exams

Network Pro Certification Practice Exam (12 questions)

B.0: Network+ Practice Exams

Network+ Certification Practice Exam (90 questions)

Appendix A: Approximate Time for the Course

The total time for the LabSim for TestOut Network Pro course is approximately **56 hours and 54 minutes**. Time is calculated by adding the approximate time for each section which is calculated using the following elements:

- Video/demo times
- Text Lessons (5 minutes assigned per text lesson)
- Simulations (5 minutes assigned per simulation)
- Questions (1 minute per question)

Additionally, there are approximately another **2 hours and 30 minutes** of Practice Test material at the end of the course.

The breakdown for this course is as follows:

Module	Sections	Time	Videos	Labs	Text	Exams
0.0: Introduction						
	0.1: Network Pro Introduction	4	4	0	0	0
	0.2: Use the Simulator	21	11	10	0	0
	Total	0:25	0:15	0:10	0:00	0:00
1.0: Networking Basics						
	1.1: Networking Overview	34	25	0	5	4
	1.2: Network Topologies	25	8	0	5	12
	1.3: The OSI Model	39	15	0	10	14
	1.4: Network Protocols	42	25	0	5	12
	1.5: Numbering Systems	17	9	0	5	3
	Total	2:37	1:22	0:00	0:30	0:45
2.0: Cables and Connectors						
	2.1: Twisted Pair	29	12	5	5	7
	2.2: Coaxial	21	5	5	5	6
	2.3: Fiber Optic	30	11	5	5	9
	2.4: Wiring Implementation	54	21	10	10	13
	2.5: Troubleshoot Network Media	58	28	0	15	15
	Total	3:12	1:17	0:25	0:40	0:50
3.0: Networking Devices						
	3.1: Network Adapters	34	9	10	5	10
	3.2: Network Devices	40	11	10	5	14
	3.3: Internetwork Devices	22	7	5	5	5
	Total	1:36	0:27	0:25	0:15	0:29
4.0: Ethernet						
	4.1: Ethernet	18	9	0	5	4
	4.2: Ethernet Specifications	32	7	5	5	15
	4.3: Connect Network Devices	29	8	5	5	11

4.4: Troubleshoot Physical Connectivity	61	14	25	10	12
Total	2:20	0:38	0:35	0:25	0:42
5.0: IP Configuration					
5.1: IP Addressing	75	30	10	20	15
5.2: APIPA and Alternate Addressing	21	8	5	5	3
5.3: DHCP Server Configuration	56	18	25	5	8
5.4: DHCP Relay	24	6	10	5	3
5.5: DNS Name Resolution	60	25	25	5	5
5.6: IP Version 6	69	36	5	20	8
5.7: Multicast	18	7	0	5	6
5.8: Troubleshoot IP Configuration Issues	54	24	20	5	5
5.9: Troubleshoot IP Communications	66	31	5	15	15
5.10: Troubleshoot Name Resolution	31	14	5	5	7
Total	7:54	3:19	1:50	1:30	1:15
6.0: Switch Management					
6.1: Switch Access	20	12	0	5	3
6.2: Switch IP Configuration	22	4	10	5	3
6.3: Switch Interface Configuration	41	17	5	15	4
6.4: Virtual LANs	45	12	10	10	13
6.5: Trunking	51	19	15	10	7
6.6: Spanning Tree Protocol	62	22	15	10	15
6.7: Switch Troubleshooting	27	13	0	5	9
Total	4:28	1:39	0:55	1:00	0:54
7.0: Routing					
7.1: Routing Basics	22	11	0	5	6
7.2: Routing Protocols	69	36	10	10	13
7.3: Network Address Translation	45	30	0	5	10
7.4: Routing Troubleshooting	44	20	10	5	9
Total	3:00	1:37	0:20	0:25	0:38
8.0: Firewalls					
8.1: Firewalls	58	23	5	15	15
8.2: Security Appliances	24	11	5	5	3
8.3: Firewall Design and Implementation	73	43	10	5	15
Total	2:35	1:17	0:20	0:25	0:33
9.0: Network Customization					
9.1: Network-Based Storage	58	32	10	10	6
9.2: Voice over IP (VoIP)	40	12	10	5	13
9.3: Virtualization	24	15	0	5	4
9.4: Virtual Networking	36	17	0	10	9
9.5: Cloud Computing	23	13	0	5	5
Total	3:01	1:29	0:20	0:35	0:37
10.0: Wireless Networking					
10.1: Wireless Concepts	31	16	0	10	5
10.2: Wireless Standards	44	27	0	5	12
10.3: Wireless Configuration	45	20	15	5	5
10.4: Wireless Network Design	57	26	10	10	11
10.5: Wireless Network Implementation	30	16	5	5	4

10.6: Wireless Security	62	32	5	10	15
10.7: Wireless Troubleshooting	60	26	15	5	14
Total	5:29	2:43	0:50	0:50	1:06
11.0: Wide Area Networks (WANs)					
11.1: WAN Concepts	56	26	0	15	15
11.2: WAN Connections	25	7	5	5	8
11.3: Internet Connectivity	47	22	5	5	15
11.4: Remote Access	52	33	0	5	14
11.5: WAN Troubleshooting	31	17	0	5	9
Total	3:31	1:45	0:10	0:35	1:01
12.0: Network Policies and Procedures					
12.1: Network Design, Documentation, and Policies	58	29	0	15	14
12.2: Risk Management	35	6	0	15	14
12.3: Security Policies	48	23	0	10	15
Total	2:21	0:58	0:00	0:40	0:43
13.0: Network Security					
13.1: Physical Security	36	11	5	5	15
13.2: Social Engineering	42	20	5	5	12
13.3: Network Vulnerabilities and Threats 1	63	33	0	15	15
13.4: Network Vulnerabilities and Threats 2	51	26	0	15	10
13.5: Authentication	53	28	0	10	15
13.6: Secure Protocols	25	13	0	5	7
13.7: Remote Access Security	44	17	10	5	12
13.8: Troubleshoot Network Security Issues	26	16	0	5	5
Total	5:40	2:44	0:20	1:05	1:31
14.0: Network Hardening					
14.1: Detection and Prevention	55	20	10	10	15
14.2: Penetration Testing	36	21	0	5	10
14.3: Network Hardening	74	46	5	10	13
Total	2:45	1:27	0:15	0:25	0:38
15.0: Network Management					
15.1: Update Management	24	15	0	5	4
15.2: Data Protection	43	19	10	10	4
15.3: Remote Management	34	20	5	5	4
15.4: Mobile Device Management	57	34	5	5	13
15.5: Data Center Management	60	37	0	10	13
15.6: Monitoring	55	35	0	5	15
15.7: Log File Management	18	9	0	5	4
15.8: Network Management with SNMP	17	8	0	5	4
Total	5:08	2:57	0:20	0:50	1:01
16.0: Network Optimization					
16.1: Optimization	57	27	5	10	15
16.2: Troubleshooting Methodology	36	16	0	10	10
Total	1:33	0:43	0:05	0:20	0:25
Total Course Time 56:54					
Practice Exams					
A.0: Network Pro Practice Exams	Number of Questions		Time		

A.3: Network Pro Certification Practice Exam	12	1:00
Total	12	1:00
B.0: Network+ Practice Exams	Number of Questions	Time
B.4: Network+ Certification Practice Exam	90	1:30
Total	90	1:30
Total Practice Exam Time 2:30		