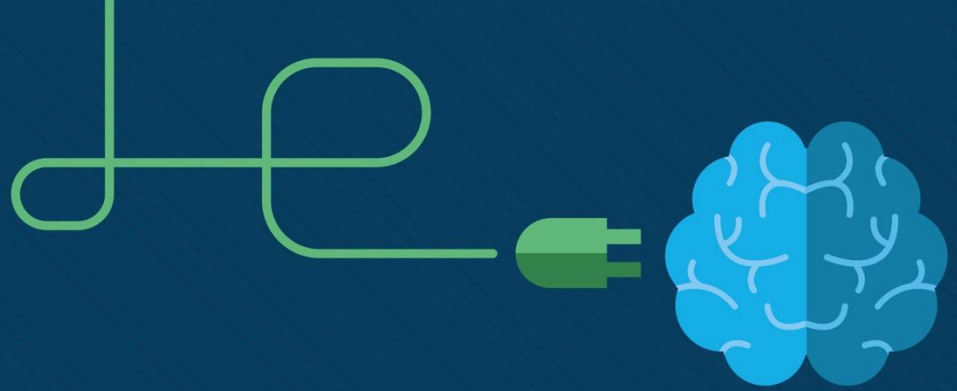


Module 1: Networking Today

Instructor Materials

Introduction to Networks v7.0
(ITN)

Instructor Materials – Module 1 Planning Guide

This PowerPoint deck is divided in two parts:

- Instructor Planning Guide
  - Information to help you become familiar with the module
  - Teaching aids
- Instructor Class Presentation
  - Optional slides that you can use in the classroom
  - Begins on slide # 12

Note: Remove the Planning Guide from this presentation before sharing with anyone.

For additional help and resources go to the Instructor Home Page and Course Resources for this course. You also can visit the professional development site on netacad.com, the official Cisco Networking Academy Facebook page, or Instructor Only FB group.

What to Expect in this Module

To facilitate learning, the following features within the GUI may be included in this module:

Feature	Description
Animations	Expose learners to new skills and concepts.
Videos	Expose learners to new skills and concepts.
Check Your Understanding(CYU)	Per topic online quiz to help learners gauge content understanding.
Interactive Activities	A variety of formats to help learners gauge content understanding.
Syntax Checker	Small simulations that expose learners to Cisco command line to practice configuration skills.
PT Activity	Simulation and modeling activities designed to explore, acquire, reinforce, and expand skills.

What to Expect in this Module (Cont.)

To facilitate learning, the following features may be included in this module:

Feature	Description
Hands-On Labs	Labs designed for working with physical equipment.
Class Activities	These are found on the Instructor Resources page. Class Activities are designed to facilitate learning, class discussion, and collaboration.
Module Quizzes	Self-assessments that integrate concepts and skills learned throughout the series of topics presented in the module.
Module Summary	Briefly recaps module content.

Check Your Understanding

- Check Your Understanding activities are designed to let students quickly determine if they understand the content and can proceed, or if they need to review.
- Check Your Understanding activities ***do not*** affect student grades.
- There are no separate slides for these activities in the PPT. They are listed in the notes area of the slide that appears before these activities.

Module 1: Activities

What activities are associated with this module?

Page #	Activity Type	Activity Name	Optional?
1.1.2	Video	The Cisco Networking Academy Learning Experience	Recommended
1.2.6	Check Your Understanding	Network Components	Recommended
1.3.3	Check Your Understanding	Network Representations and Topologies	Recommended
1.4.5	Check Your Understanding	Common Types of Networks	Recommended
1.5.5	Video	Download and Install Packet Tracer	Recommended
1.5.6	Video	Getting Started in Cisco Packet Tracer	Recommended
1.5.7	Packet Tracer	Network Representation	Recommended
1.6.6	Check Your Understanding	Reliable Networks	Recommended
1.7.5	Video	Cisco WebEx for Huddles	Recommended
1.7.10	Check Your Understanding	Network Trends	Recommended
1.8.3	Check Your Understanding	Network Security	Recommended
1.9.3	Lab	Research IT and Networking Job Opportunities	Recommended

Module 1: Best Practices

Prior to teaching Module 1, the instructor should:

- Review the activities and assessments for this module.
- Try to include as many questions as possible to keep students engaged during classroom presentation.

Topic 1.1

- Ask the class:
  - What wouldn’t we have without the internet?
  - What will be possible in the future using the network as the platform?

Module 1: Best Practices (Cont.)

Topic 1.2

- Ask the students what they think of when someone uses the term “host”. What is a “host”?
- Discuss the difference between a server client network verses a peer-to-peer (P2P) network. Ask the students what kind of issues we can have with a P2P.
- In a P2P a user may share information with someone who really should not have this right. Remember this is a decentralized model that administers cannot exercise much control.
- Also when a person who is the server is not available (gone to lunch, on vacation, etc.) their resources will not be available to the client. It is important that this is best used on extremely small networks.

Module 1: Best Practices (Cont.)

Topic 1.3

- Create a Packet Tracer demonstration and refer to it throughout the module when referencing concepts introduced in the module (routers, switches, interface, ports, network media connections)
  - Demonstrate a basic topology and some of the key icons
  - Reinforce the differences between the physical and logical topologies
  - Analogies can be good too, when thinking about a street map, a map that shows the physical topology would show where the streets are; whereas a logical map might show which directions the traffic flows on the streets, such as one-way streets or streets in both directions, etc. It is important to know both the physical and the logical, just as it is important to know not only where the streets are, but also which way traffic is allowed to flow on them.

Topic 1.4

- Ask the students what kinds of equipment have on their home networks. Consider that all of these items are on the largest networks. The difference is in ability, quantity, and cost of a companies equipment.

Module 1: Best Practices (Cont.)

Topic 1.5

- Ask the class how they connect to the internet at home.
- Does anyone ever remember connecting via dialup modem?
- Ask the class if any uses a VoIP phone service bundled from their ISP. This would be an example of home converged network.

Topic 1.6

- QoS is the ability to give an advantage to certain kinds of traffic.
  - Ask the class when we like to give advantage to something or someone, but to everyone. If they cannot think of anything, ask if we have an emergency would we want the ambulance, firetruck, etc. to be treated like any other piece of traffic on the highway?
  - Briefly discuss examples of how Confidentiality, Integrity, and Availability are implemented.
    - Confidentiality – Encryption
    - Integrity – checksums or hashing
    - Availability – ensured with redundant hardware, connections, backups, disaster recovery

Module 1: Best Practices (Cont.)

Topic 1.7

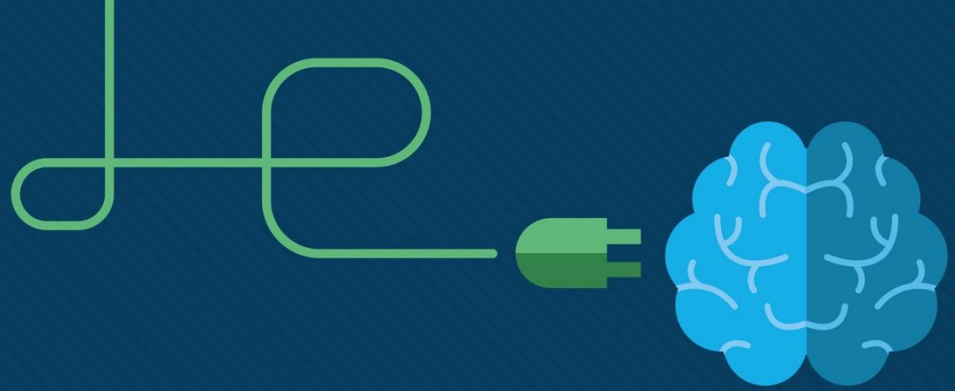
- Have students discuss what devices they BYOD to and where.
- Ask students if they use Cloud Computing and what for.
- 1.7.6 – Do some research ahead of time to help describe what a Custom Cloud is
- 1.7.7 – Ask the students to discuss if anyone is currently making use of smart home technology
  - What are various other possibilities besides what is mentioned in the curriculum?

Topic1.8

- Ask the class what kind of internal threats that they might see as a network administrator.
- Ask why internal attacks are as important to address as the obvious external attacks.

Topic 1.9

- Discuss the benefits of obtaining a CCNA certification.
- Have students research current networking job openings that require a CCNA or other Cisco certification.



Module 1: Networking Today

Introduction to Networks v7.0
(ITN)

Module Objectives

Module Title: Networking Today

Module Objective: Explain the advances in modern technologies.

Topic Title	Topic Objective
Networks Affect our Lives	Explain how networks affect our daily lives.
Network Components	Explain how host and network devices are used.
Network Representations and Topologies	Explain network representations and how they are used in network topologies.
Common Types of Networks	Compare the characteristics of common types of networks.
Internet Connections	Explain how LANs and WANs interconnect to the internet.
Reliable Networks	Describe the four basic requirements of a reliable network.
Network Trends	Explain how trends such as BYOD, online collaboration, video, and cloud computing are changing the way we interact.
Network Security	Identify some basic security threats and solution for all networks.
The IT Professional	Explain employment opportunities in the networking field.

1.1 Networks Affect Our Lives

Networks Connect Us

Communication is almost as important to us as our reliance on air, water, food, and shelter. In today's world, through the use of networks, we are connected like never before.

Video – The Cisco Networking Academy Learning Experience

Cisco Networking Academy: learn how we use technology to make the world a better place.

No Boundaries

- World without boundaries
- Global communities
- Human network

1.2 Network Components

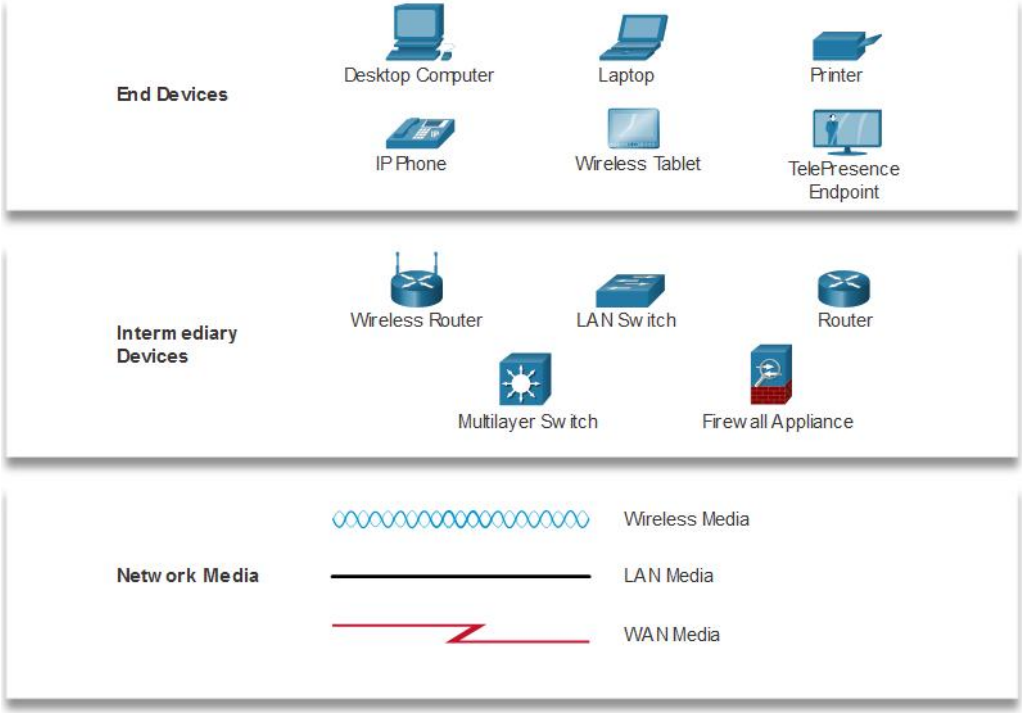
Network Representations

Network diagrams, often called topology diagrams, use symbols to represent devices within the network.

Important terms to know include:

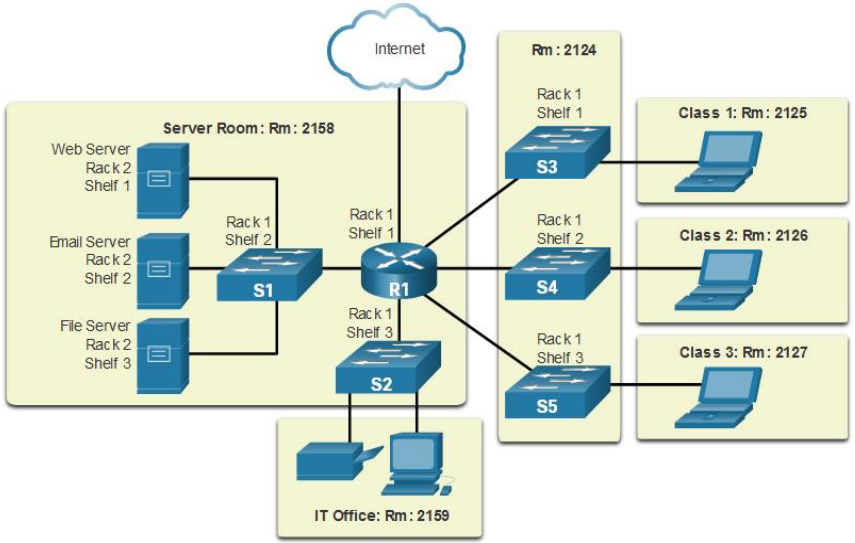
- Network Interface Card (NIC)
- Physical Port
- Interface

Note: Often, the terms port and interface are used interchangeably

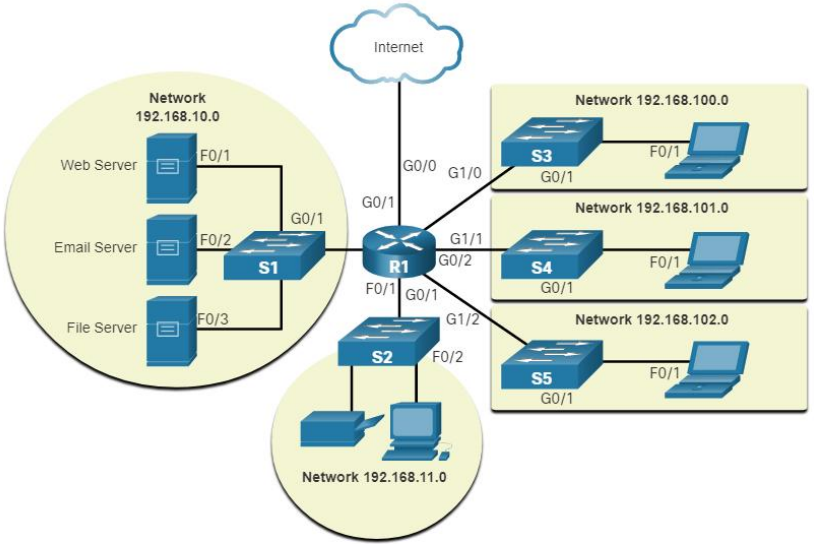


Topology Diagrams

Physical topology diagrams illustrate the physical location of intermediary devices and cable installation.



Logical topology diagrams illustrate devices, ports, and the addressing scheme of the network.



1.4 Common Types of Networks

Networks of Many Sizes

Small Home

SOHO

Medium/Large

World Wide

- Small Home Networks – connect a few computers to each other and the Internet
- Small Office/Home Office – enables computer within a home or remote office to connect to a corporate network
- Medium to Large Networks – many locations with hundreds or thousands of interconnected computers
- World Wide Networks – connects hundreds of millions of computers world-wide – such as the internet

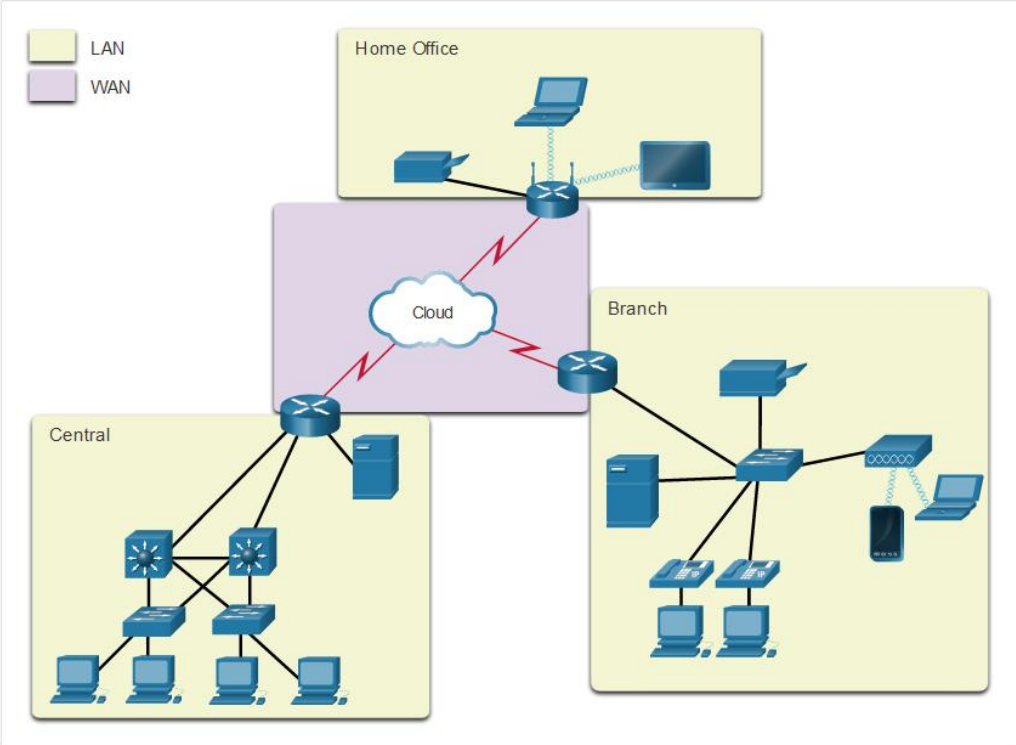
LANs and WANs

Network infrastructures vary greatly in terms of:

- Size of the area covered
- Number of users connected
- Number and types of services available
- Area of responsibility

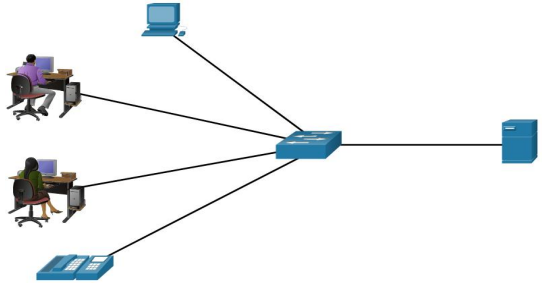
Two most common types of networks:

- Local Area Network (LAN)
- Wide Area Network (WAN).

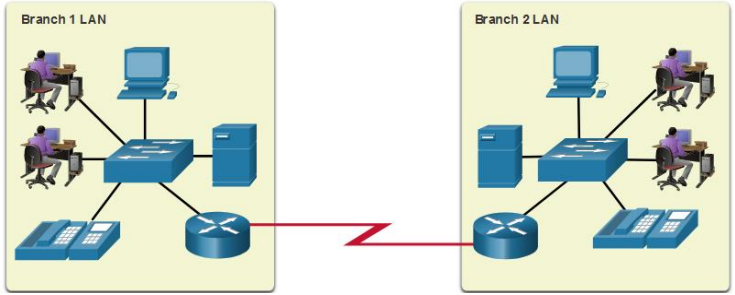


LANs and WANs (cont.)

A LAN is a network infrastructure that spans a small geographical area.



A WAN is a network infrastructure that spans a wide geographical area.



LAN	WAN
Interconnect end devices in a limited area.	Interconnect LANs over wide geographical areas.
Administered by a single organization or individual.	Typically administered by one or more service providers.
Provide high-speed bandwidth to internal devices.	Typically provide slower speed links between LANs.