CISCO CCNA1

CCNA Routing and Switching: Introduction to Networks

HOOFDSTUK 1

Explore the Network

DE HOGESCHOOL
MET HET NETWERK

Hogeschool PXL – Elfde-Liniestraat 24 – B-3500 Hasselt
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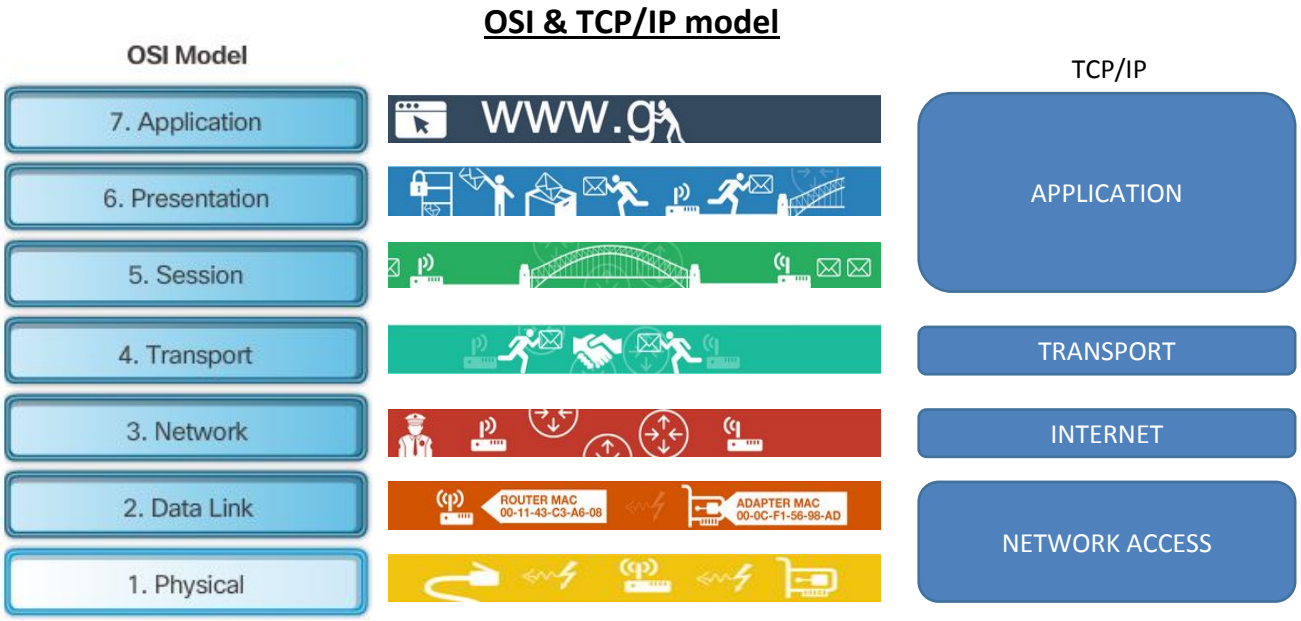
CCNA1 - Overzicht

- OSI model en de belangrijkste (LAN) protocollen.
- Data Flow in een LAN
  (verklaring volgens het OSI model).
- IP en subnetting.
- Het toepassen en onderzoeken van bovenstaande 3 in Packettrace oefeningen.

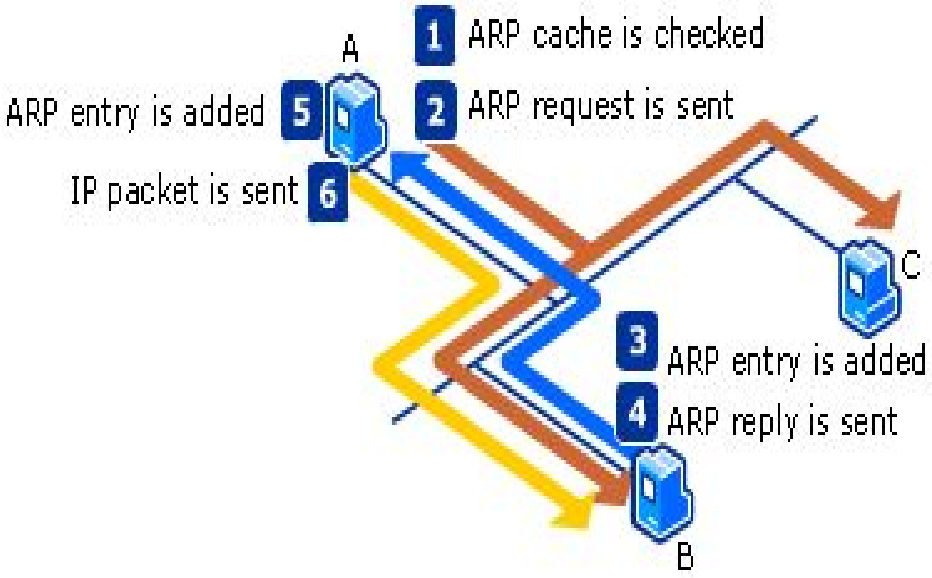
CCNA1 - Overzicht

1. OSI model en de belangrijkste (LAN) protocollen.



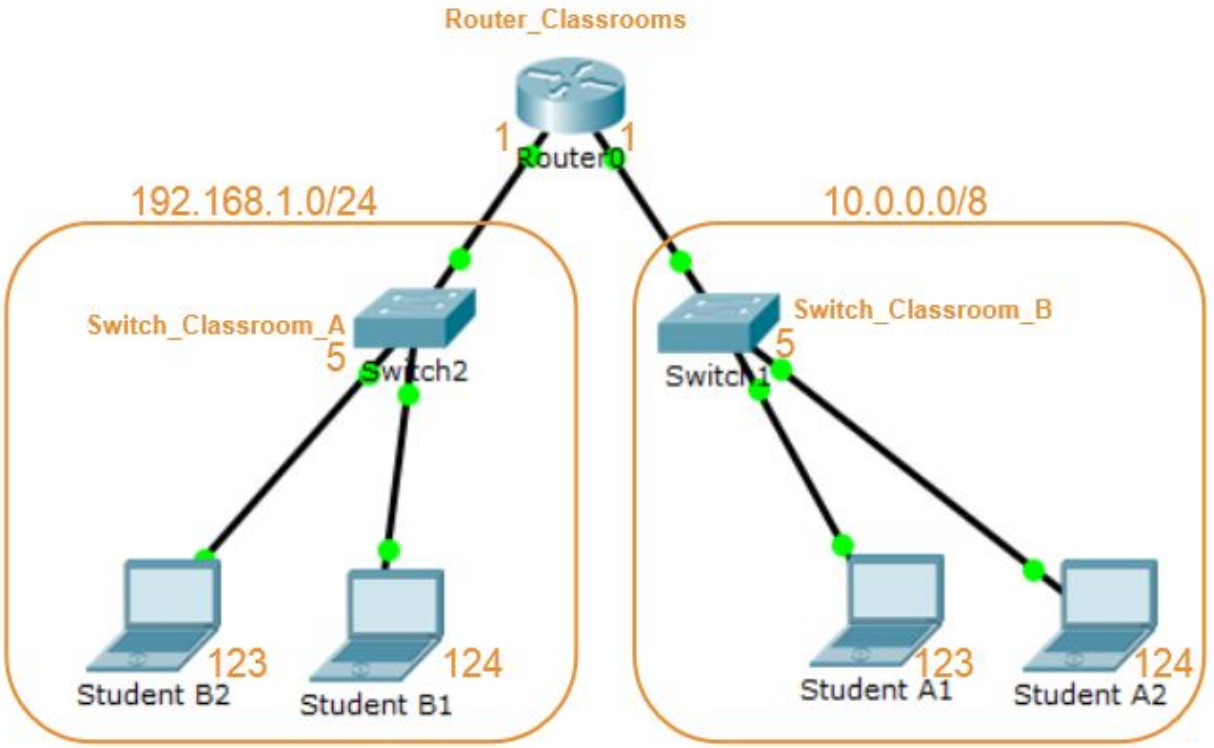
CCNA1 - Overzicht

2. Data Flow in een LAN (verklaring volgens het OSI model)



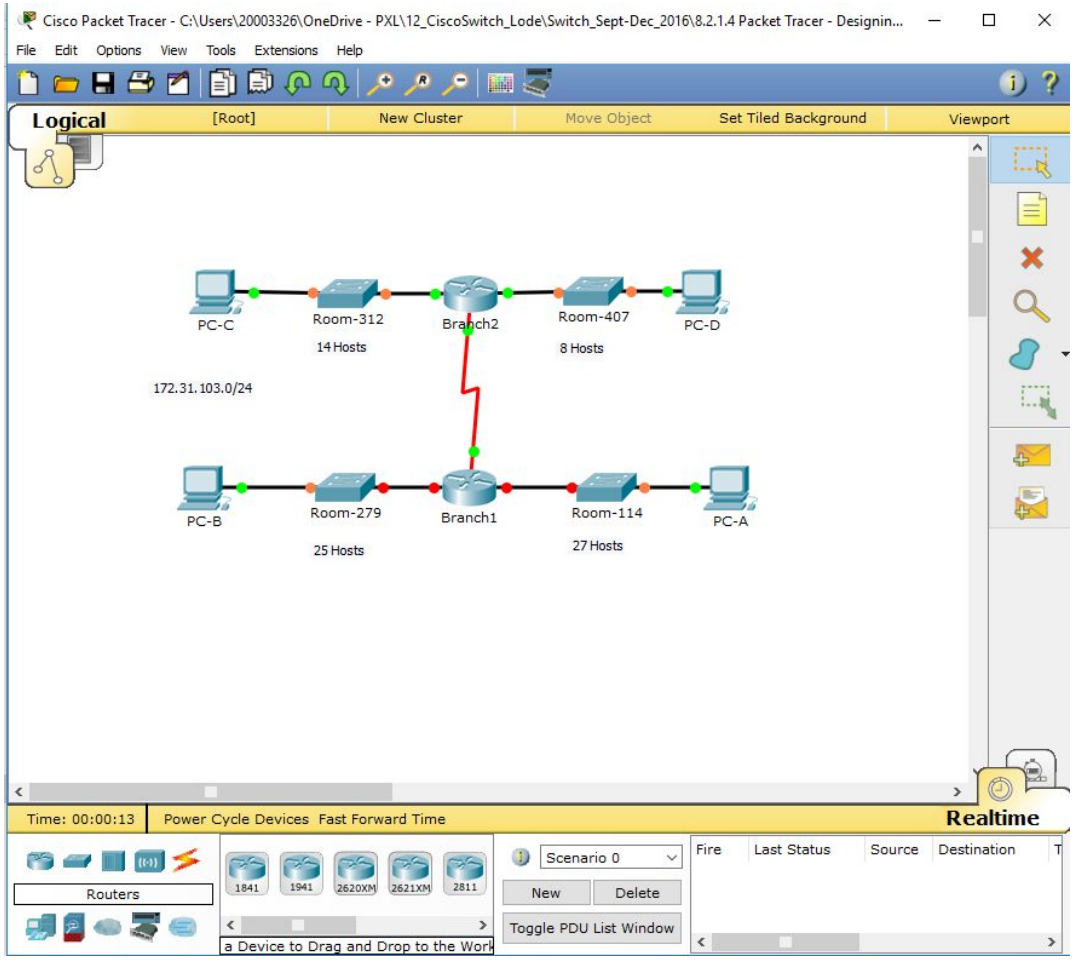
CCNA1 - Overzicht

3. IP en subnetting



CCNA1 - Overzicht

4. Packettrace oefeningen.



Situering hoofdstuk 1

Inleidend hoofdstuk over netwerken.

Dit hoofdstuk introduceert het platform van data netwerken waarop onze sociale en zakelijke relaties in toenemende mate afhankelijk zijn. Het materiaal, besproken in dit hoofdstuk, legt de basis voor het verkennen van de diensten, technologieën en problemen ondervonden door netwerk professionals.

Doelstelling:

- Beheer het vakjargon.
- Ken het verschil tussen een WAN en een LAN.
- Begrijp de basis-netwerk principes en symbolen.
- Weet waar een hedendaags netwerk voor staat (1.3 + 1.4)

Leertip:

Lees het hoofdstuk

Zie leerpad op blackboard!

Cisco Networking Academy
Mind Wide Open

Chapter 1:

Explore the Network

Introduction to Networks v5.1

Chapter 1:

Explore the Network

Section 1.1: Globally Connected

- Networks affect the way we interact, learn, work, and play.
- host devices
  - clients
  - servers
  - both.

1.1.1: Networking Today

1.1.1.1 Networks in Our Daily Lives

1.1.1.2 Technology Then and Now

1.1.1.3 No Boundaries

1.1.1.4 Networks Support the Way We Learn

1.1.1.5 Networks Support the Way We Communicate

1.1.1.6 Networks Support the Way We Work

1.1.1.7 Networks Support the Way We Play

1.1.1.8 Lab - Researching Network Collaboration Tools

1.1.2: Providing Resources in a Network

1.1.2.1 Networks of Many Sizes

Small Home Networks

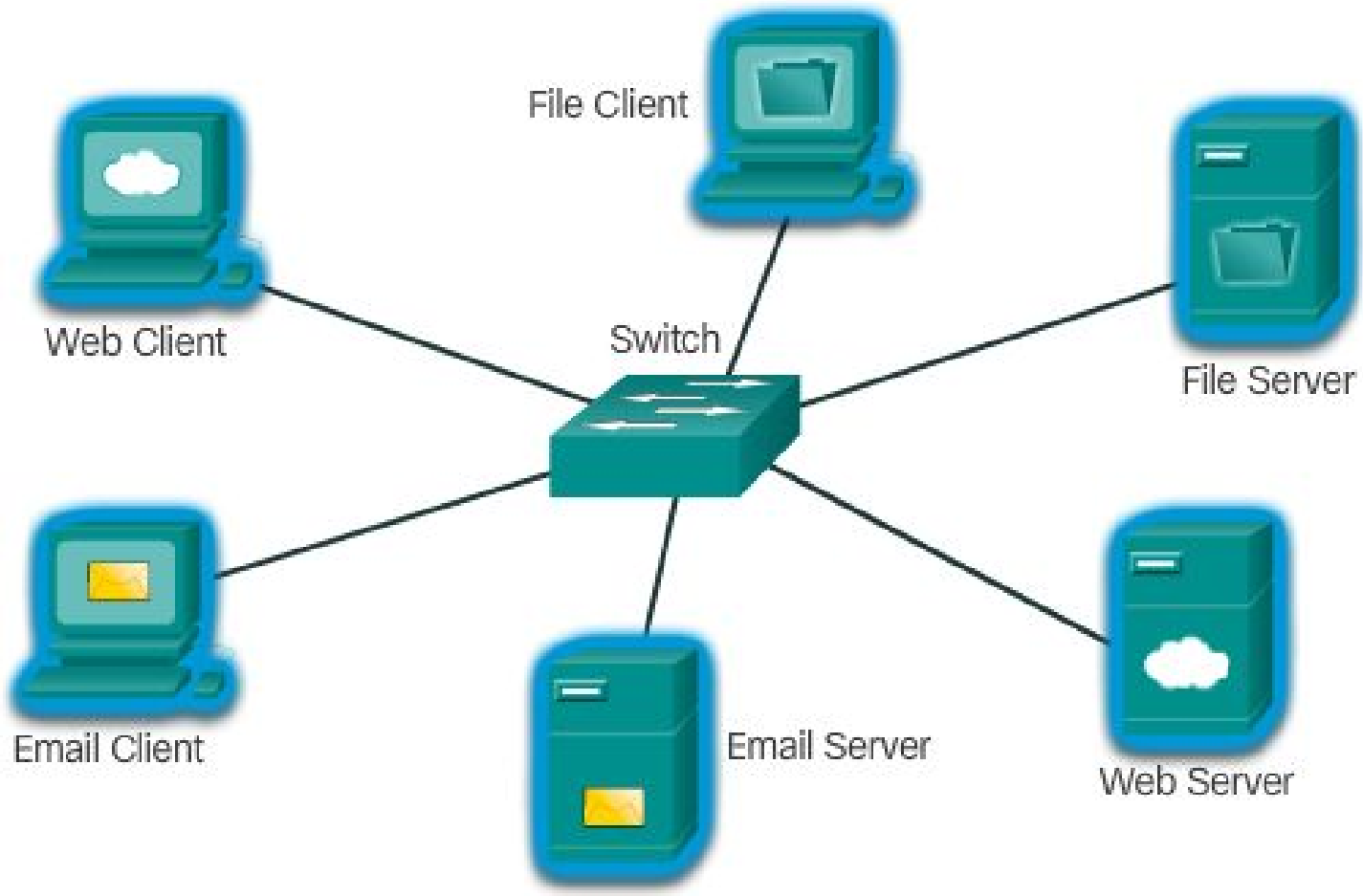
Small Office/Home Office Networks

Medium to Large Networks

World Wide Networks

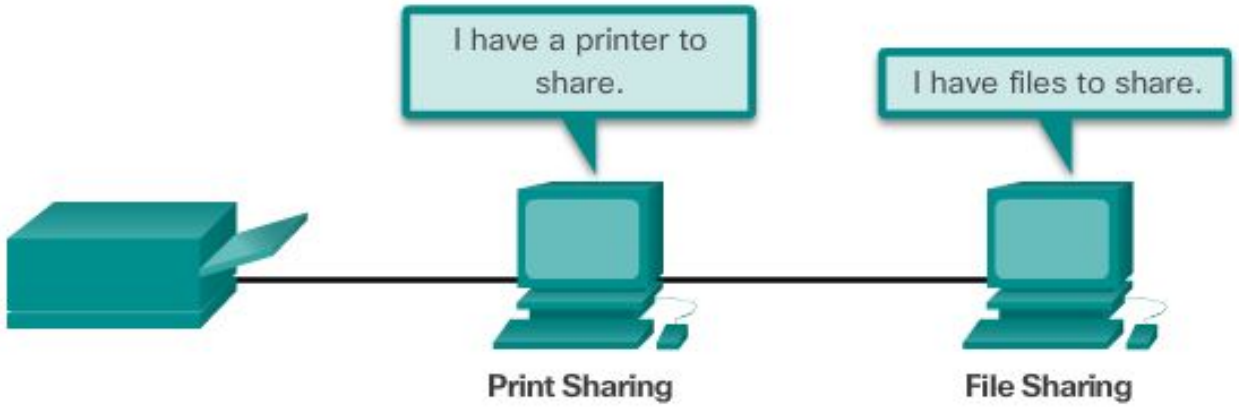
1.1.2: Providing Resources in a Network

1.1.2.2 Clients and Servers



1.1.2: Providing Resources in a Network

1.1.2.3 Peer-to-Peer



+ Easy to set up
+ Less complexity
+ Lower cost
+ For simple tasks

- No centralized administration
- Not as secure
- Not scalable
- slow performance

Section 1.2: LANs, WANs, and the Internet

1.2.1: Network Components

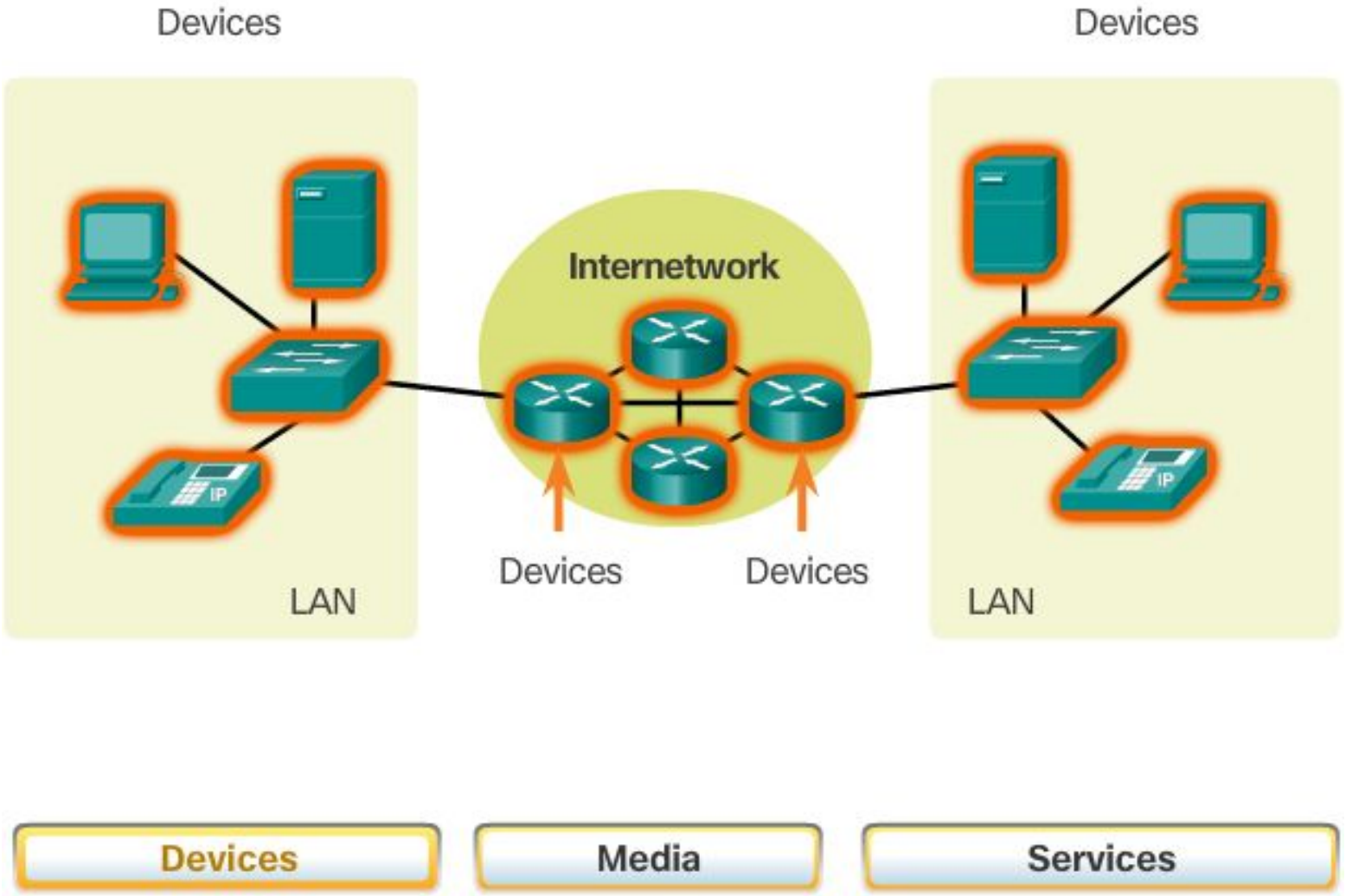
1.2.2: LANs and WANs

1.2.3: The Internet, Intranets, and Extranets

1.2.4: Internet Connections

1.2.1: Network Components

1.2.1.1 Overview of Network Components

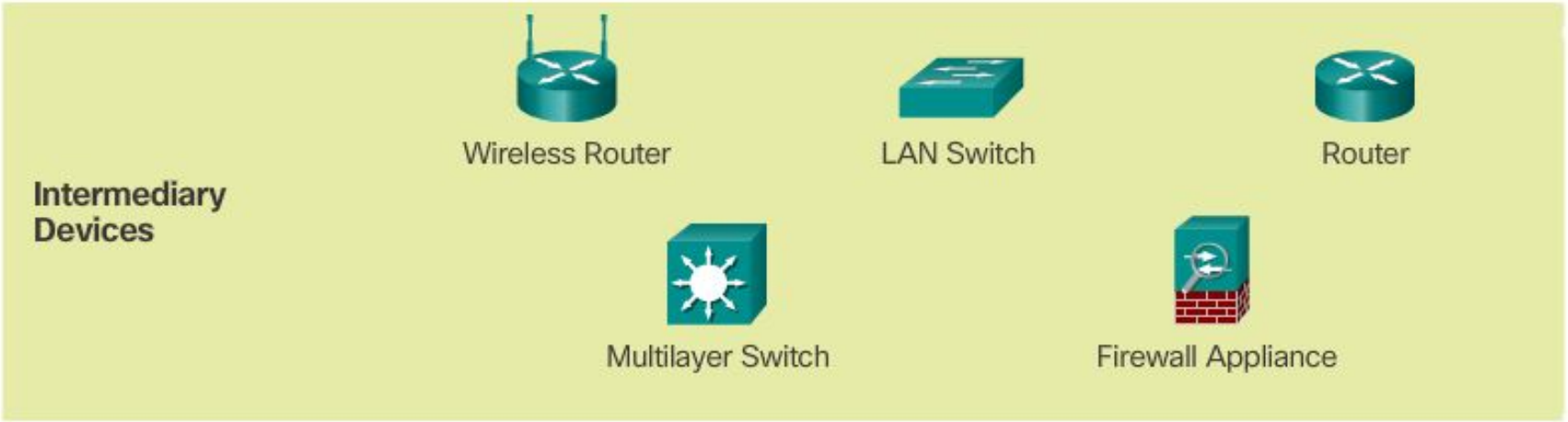


1.2.1: Network Components

1.2.1.2 End Devices

1.2.1: Network Components

1.2.1.3 Intermediary Network Devices



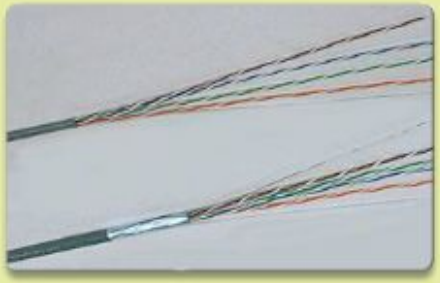
Intermediary network devices perform some or all of these functions:

- Regenerate and retransmit data signals
- Maintain information about what pathways exist through the network and internetwork
- Notify other devices of errors and communication failures
- Direct data along alternate pathways when there is a link failure
- Classify and direct messages according to priorities
- Permit or deny the flow of data, based on security settings

1.2.1: Network Components

1.2.1.4 Network Media

Copper

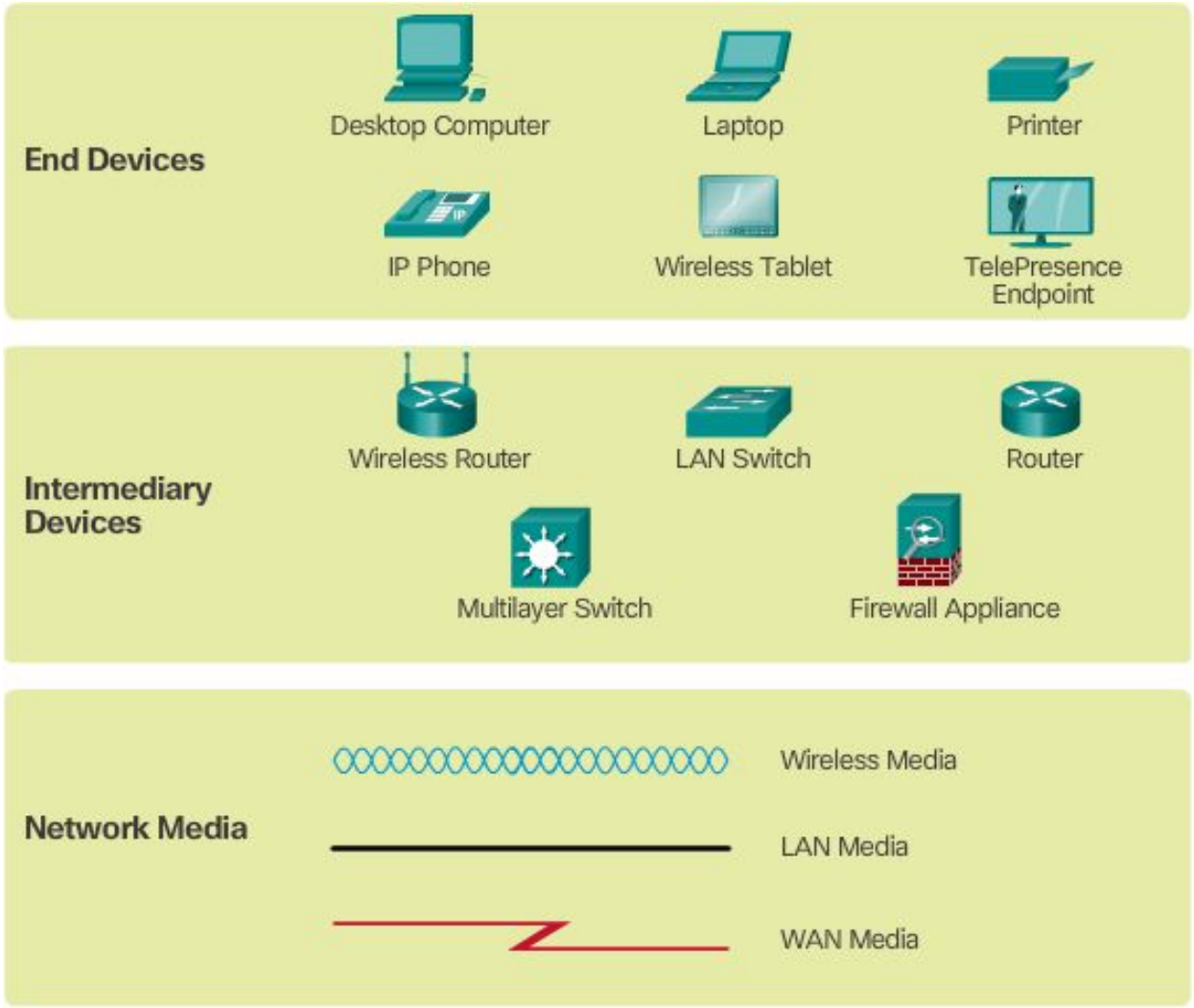


Fiber Optic

Wireless

1.2.1: Network Components

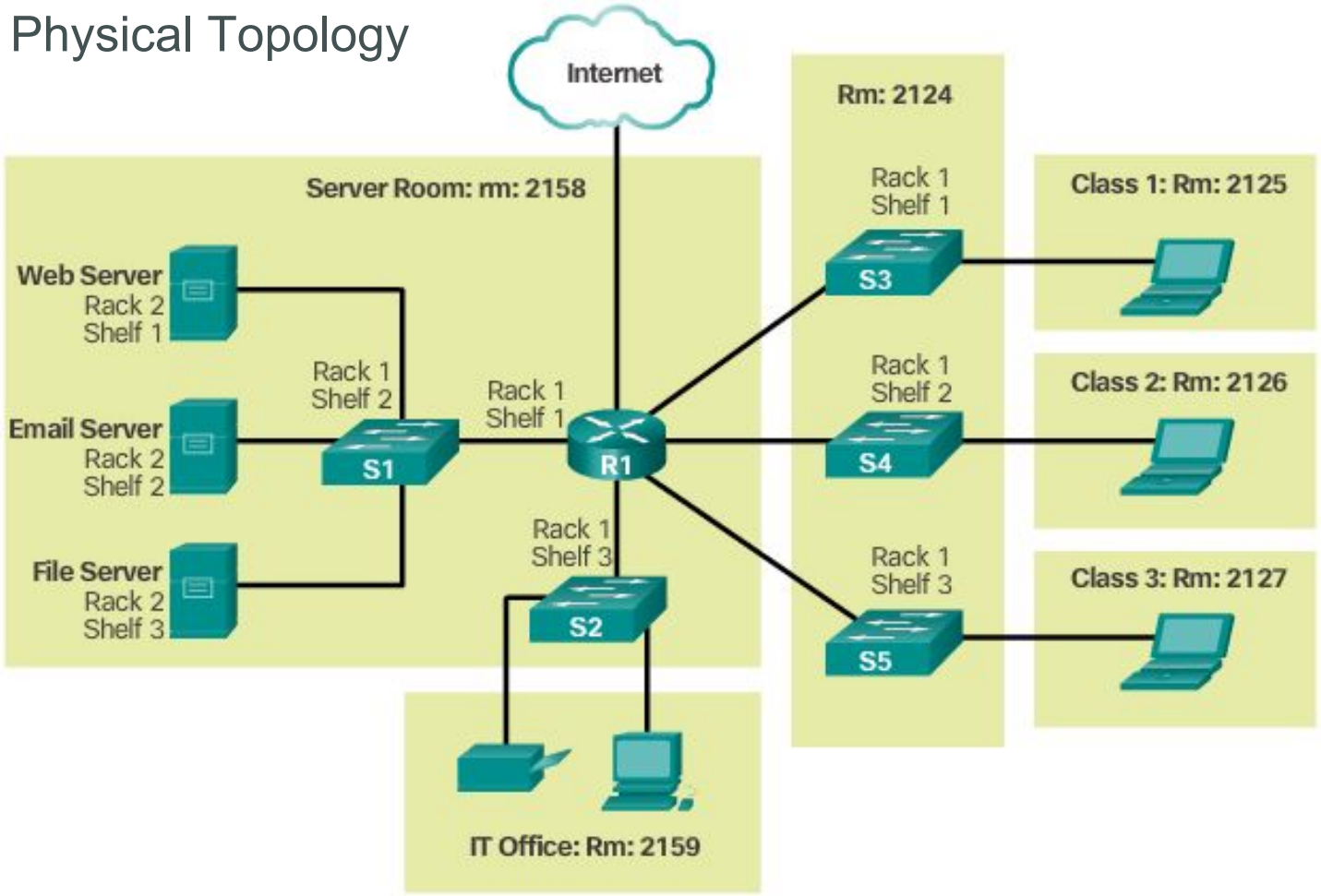
1.2.1.5 Network Representations



1.2.1: Network Components

1.2.1.6 Topology Diagrams (physical)

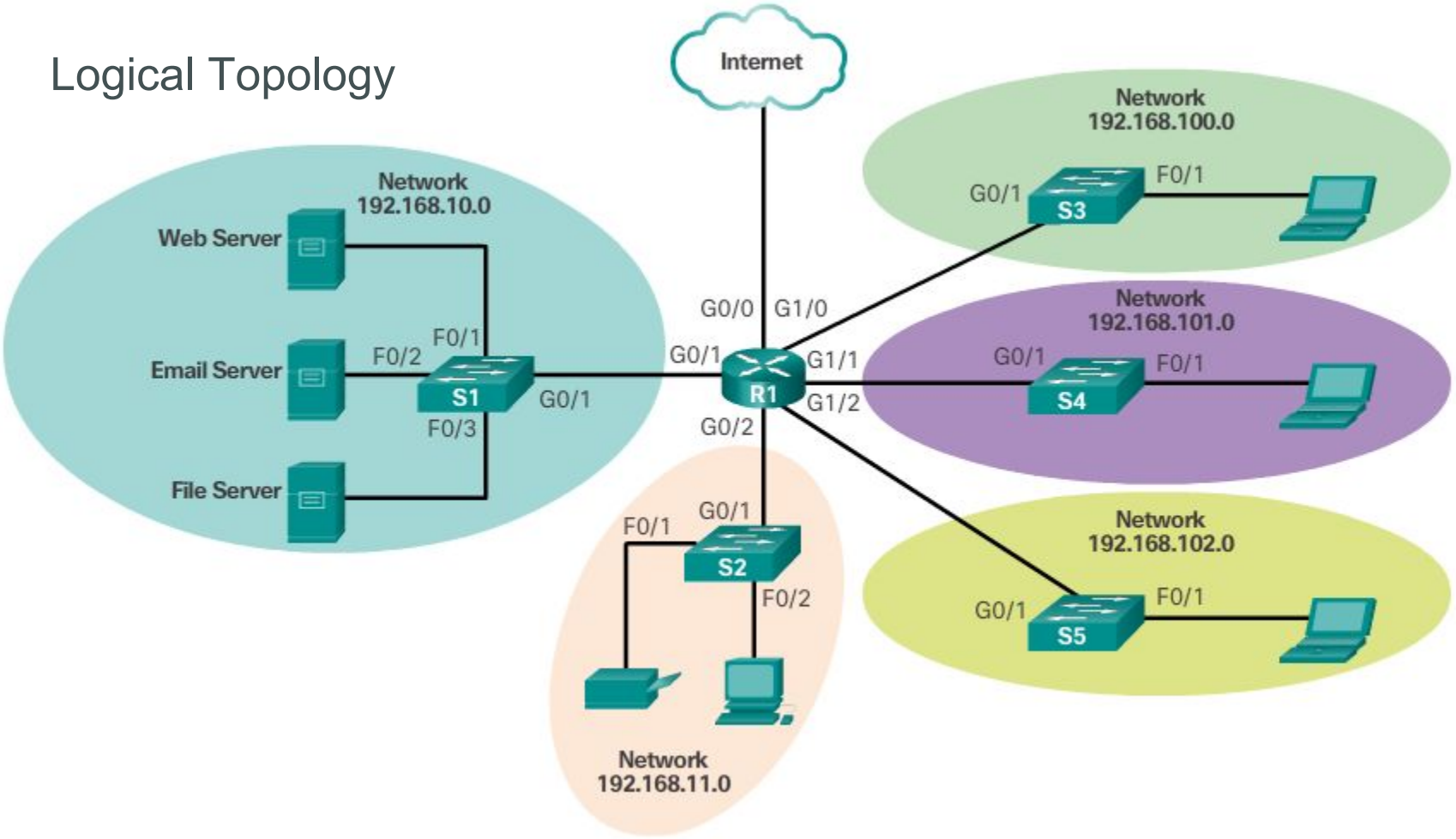
Physical Topology



1.2.1: Network Components

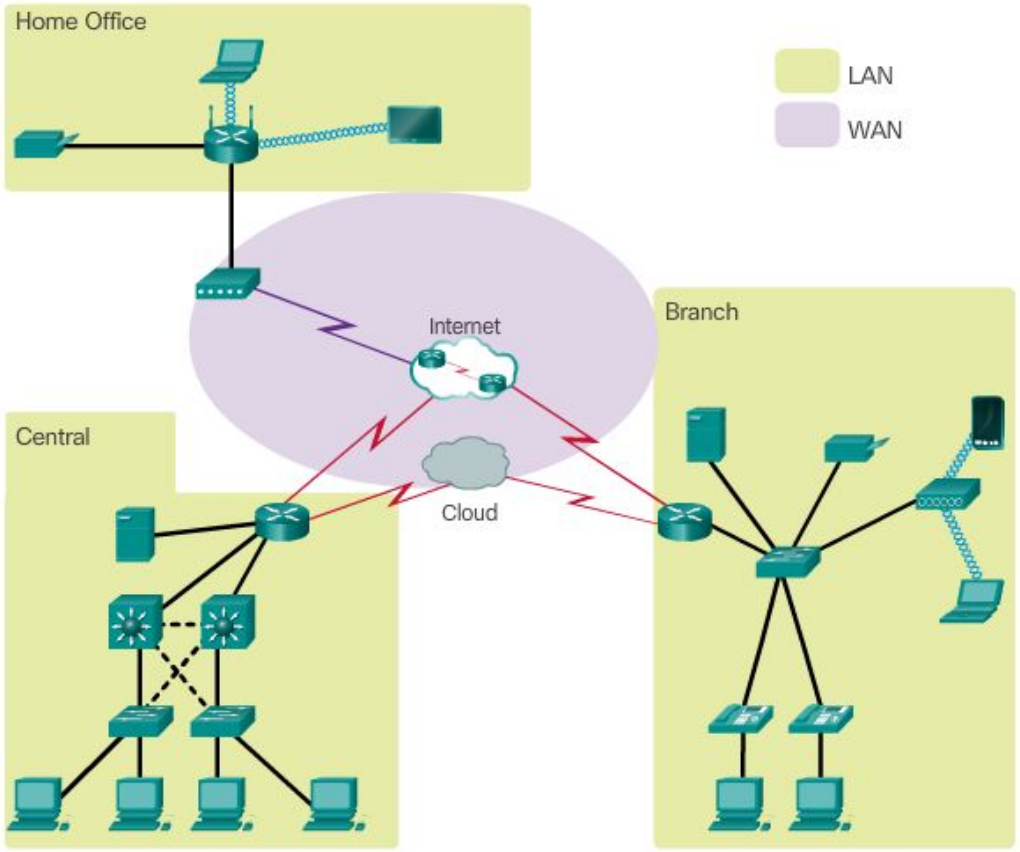
1.2.1.6 Topology Diagrams (Logical)

Logical Topology



1.2.2: LANs and WANs

1.2.2.1 Types of Networks

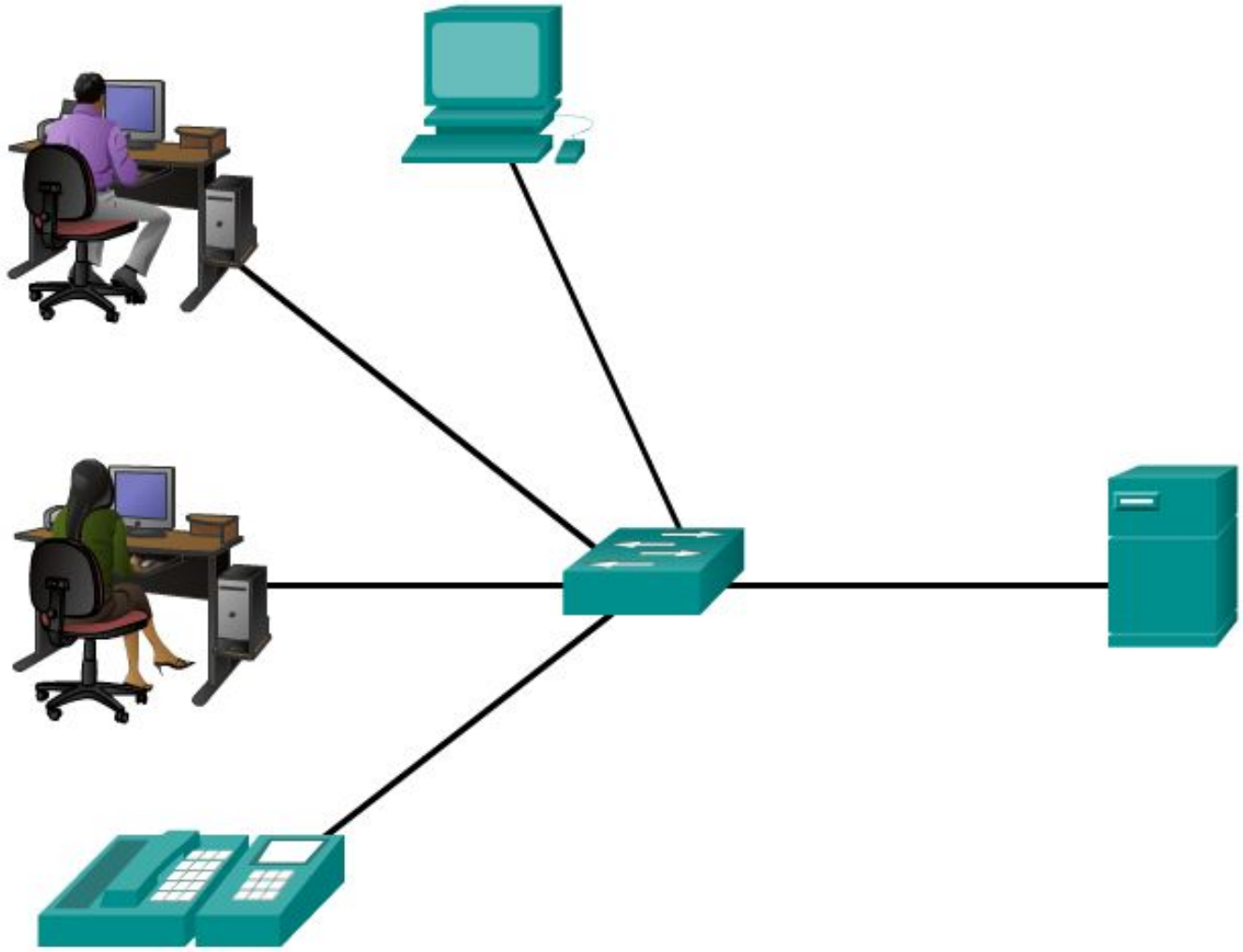


- LAN
- WAN

- MAN
- WLAN
- SAN

1.2.2: LANs and WANs

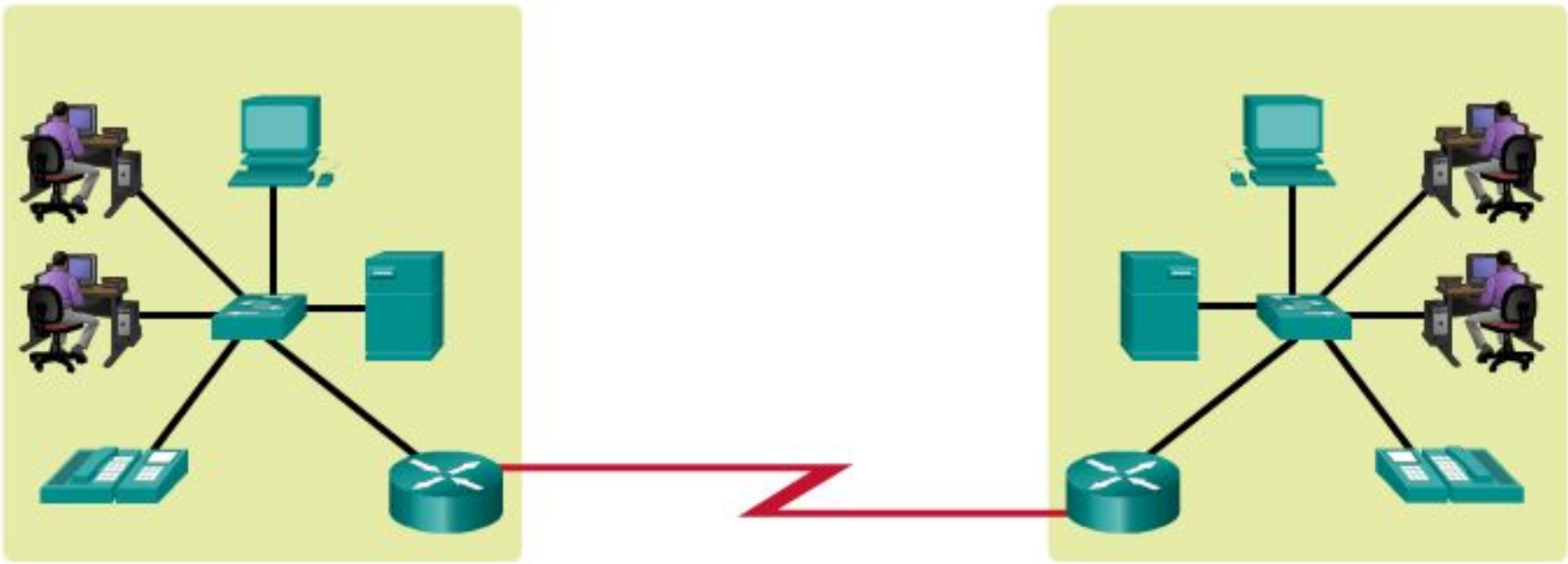
1.2.2.2 Local Area Networks



1.2.2: LANs and WANs

1.2.2.3 Wide Area Networks

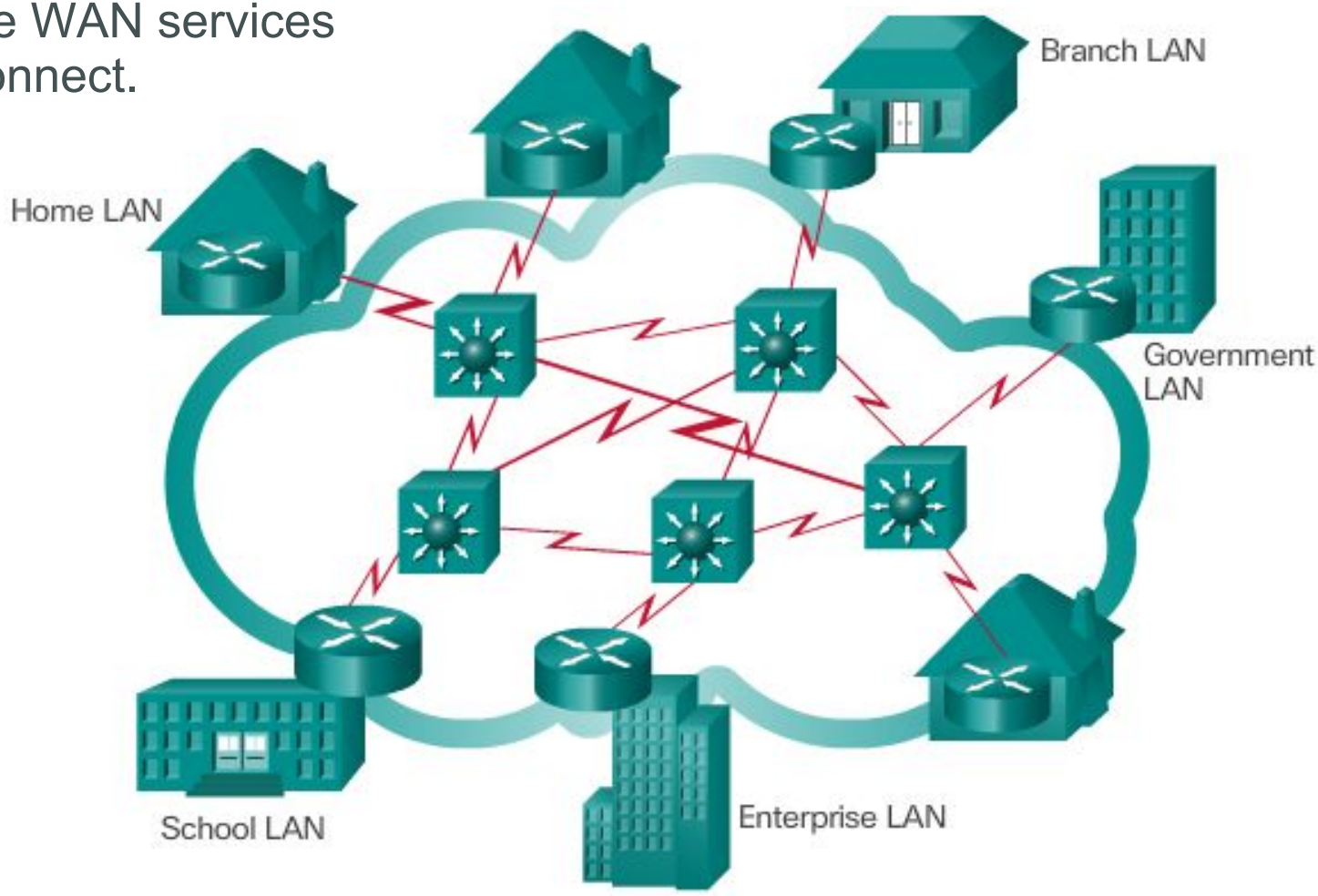
LANs separated by geographic distance are connected by a network known as a WAN.



1.2.3: The Internet, Intranets, and Extranets

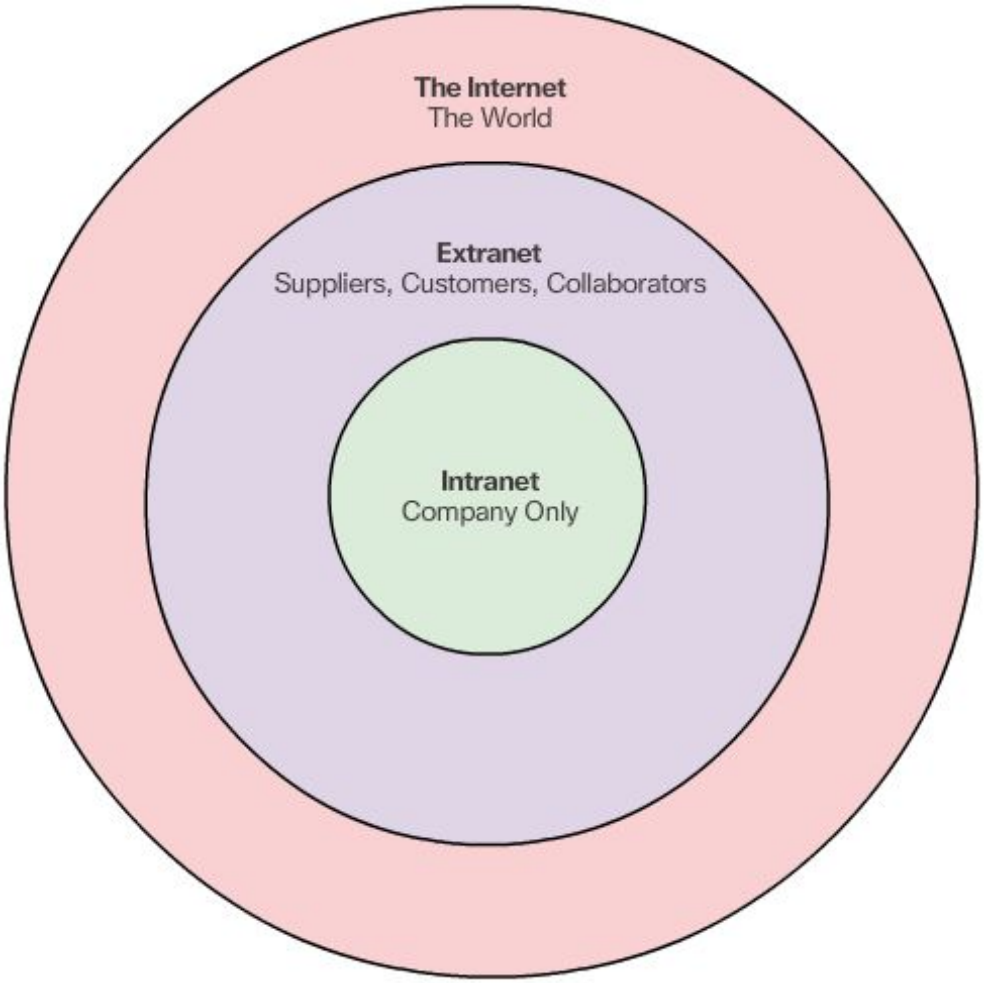
1.2.3.1 The Internet

LANs use WAN services to interconnect.



1.2.3: The Internet, Intranets, and Extranets

1.2.3.2 Intranets and Extranets



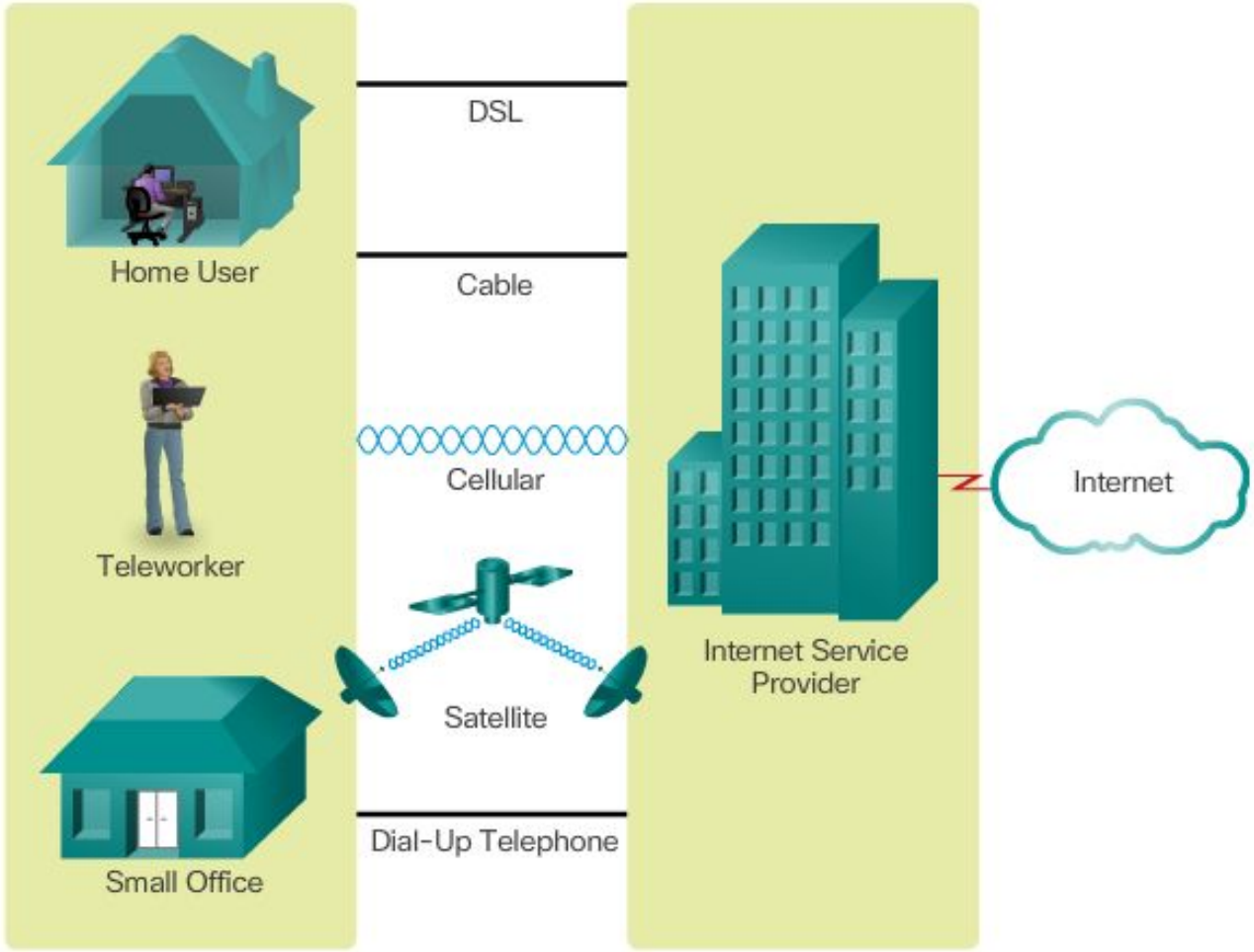
1.2.4: Internet Connections

1.2.4.1 Internet Access Technologies

- Internet Service Provider (ISP)
- Broadband cable
- Broadband Digital Subscriber Line (DSL)
- Wireless WANs
- Mobile Services
- Business DSL
- Leased Lines
- Metro Ethernet

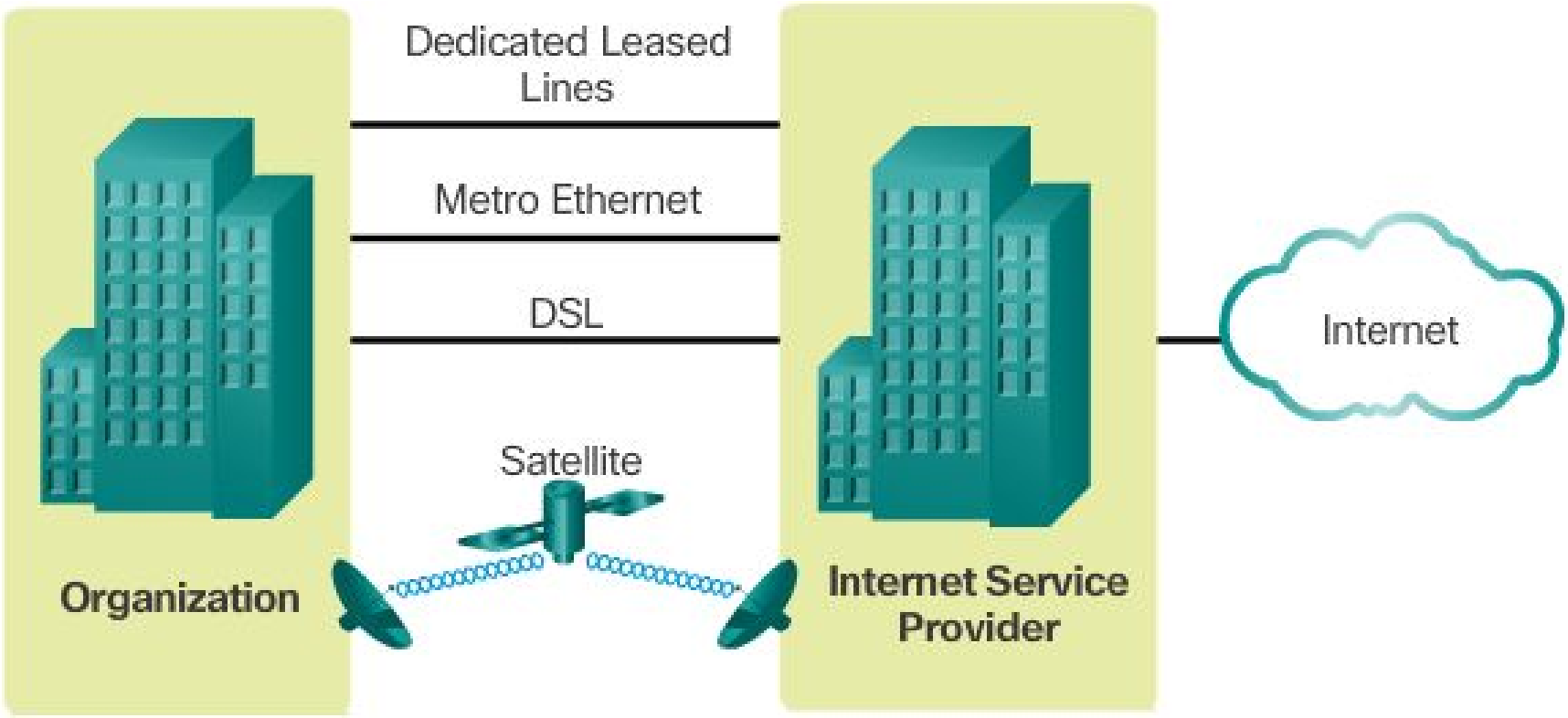
1.2.4: Internet Connections

1.2.4.2 Home and Small Office Internet Connections



1.2.4: Internet Connections

1.2.4.4 Business Internet Connections

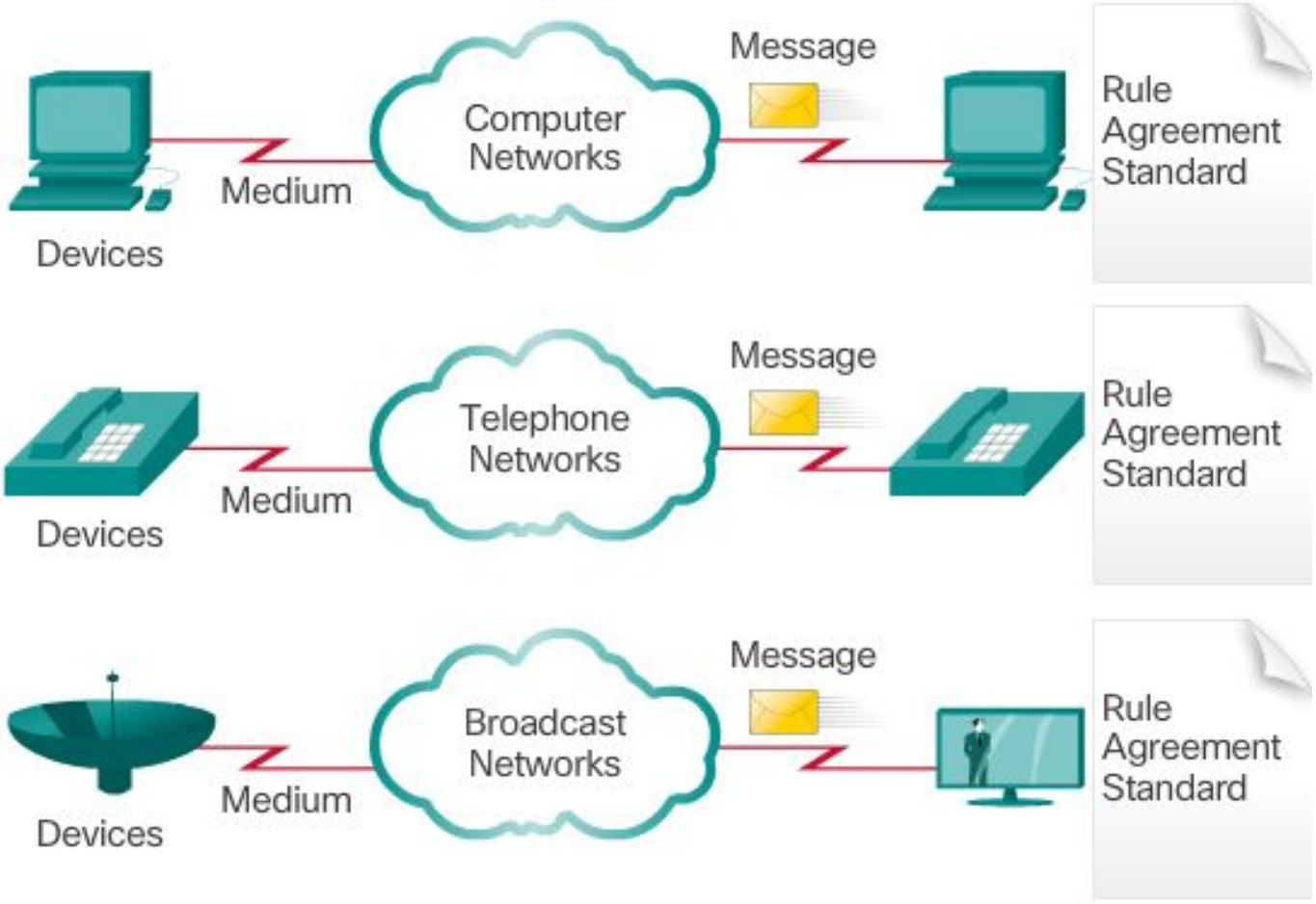


Section 1.3:
The Network as a Platform

1.3.1: Converged Networks
1.3.2: Reliable Networks

1.3.1: Converged Networks

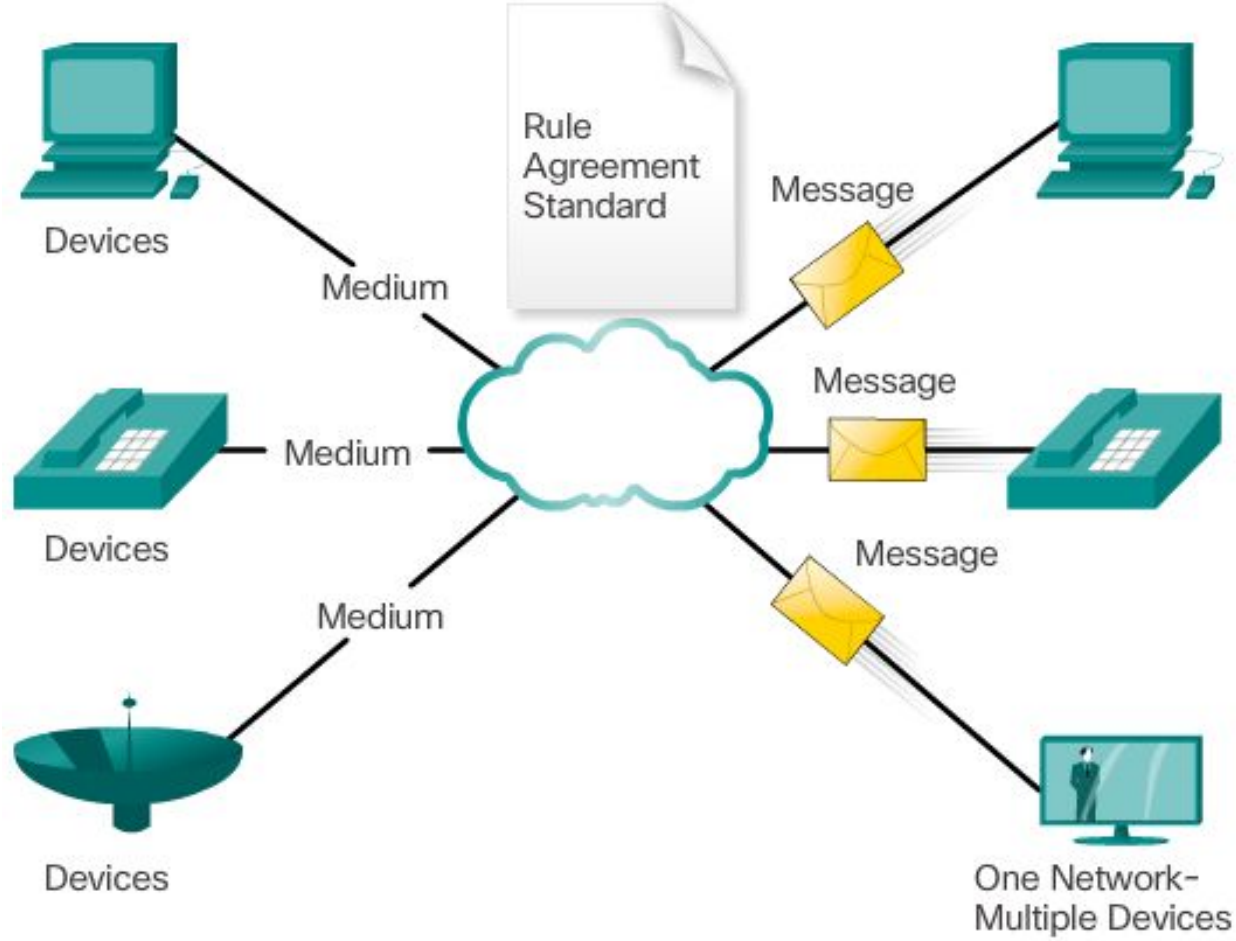
1.3.1.1 Traditional Separate Networks



Multiple services are running on multiple networks.

1.3.1: Converged Networks

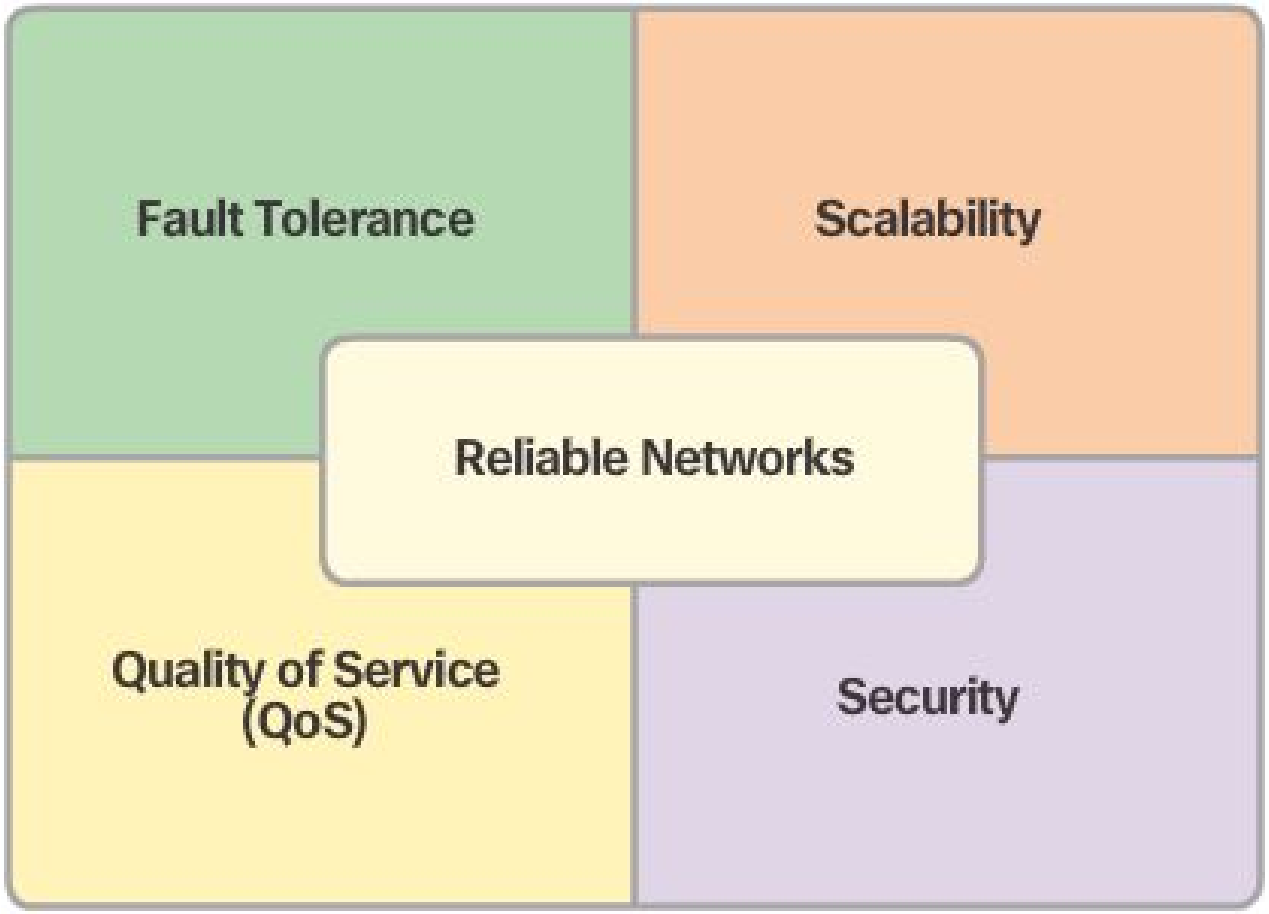
1.3.1.2 The Converging Networks



Converged data networks carry multiple services on one network.

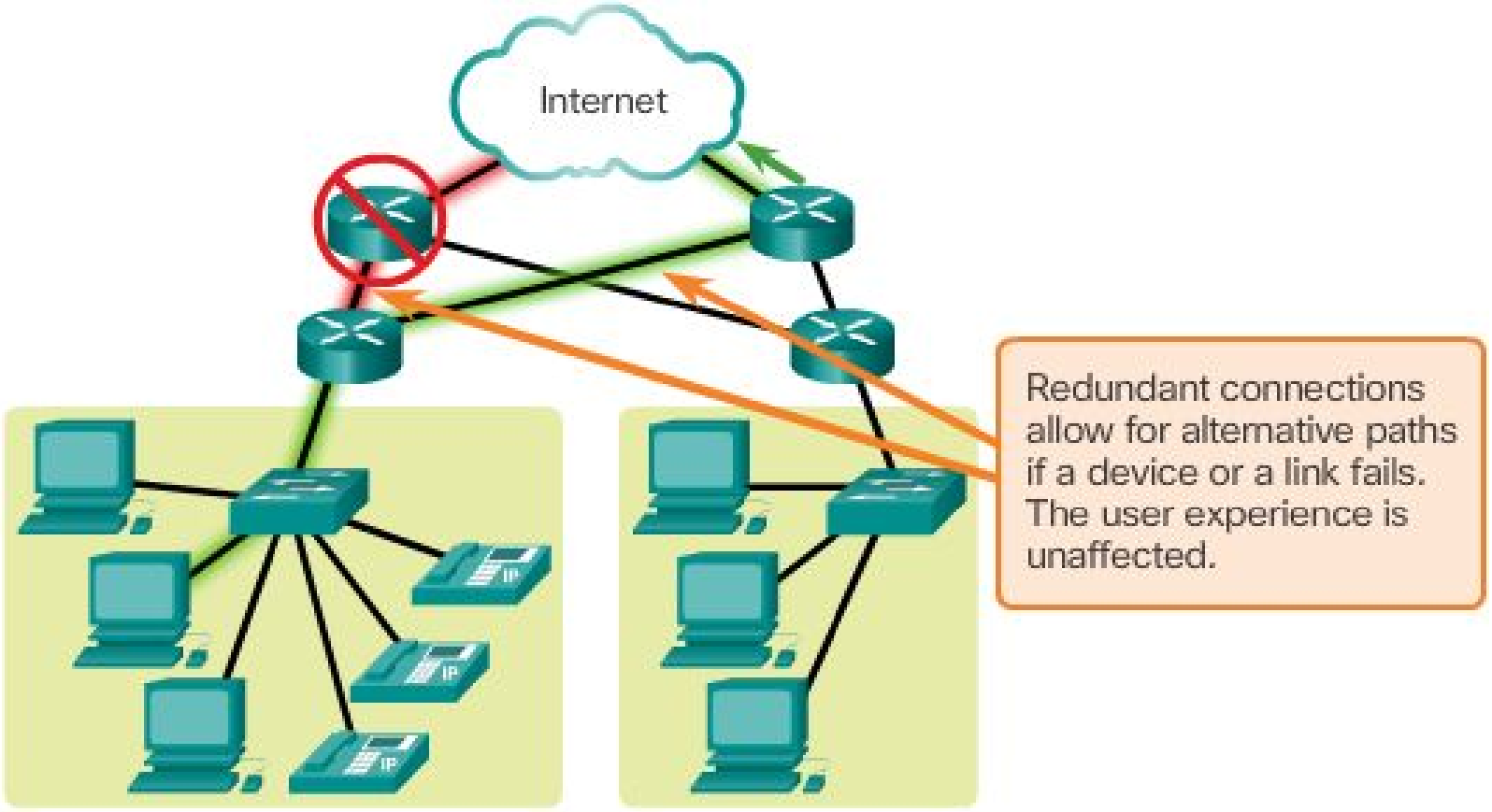
1.3.2: Reliable Networks

1.3.2.1 Network Architecture



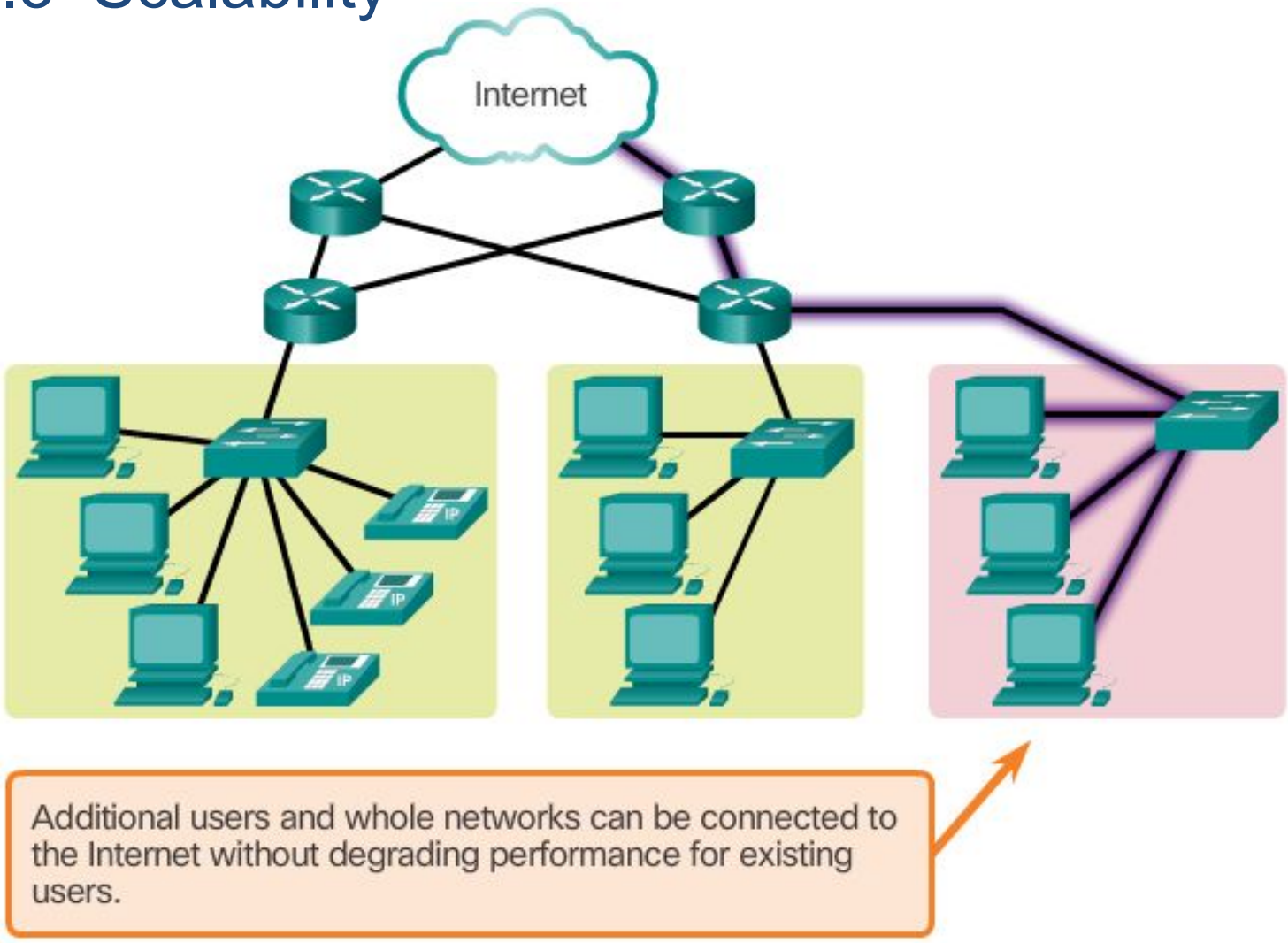
1.3.2: Reliable Networks

1.3.2.2 Fault Tolerance



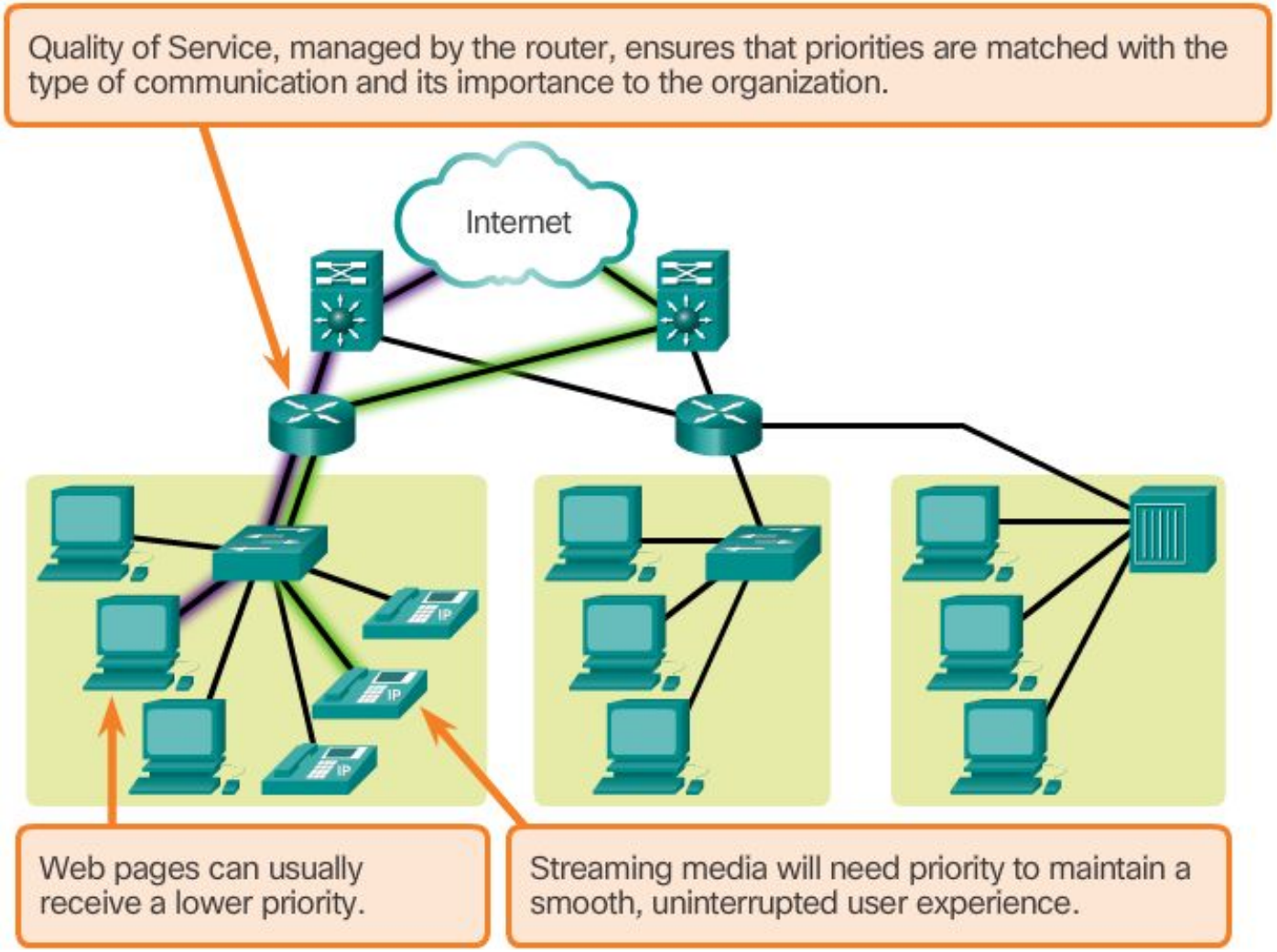
1.3.2: Reliable Networks

1.3.2.3 Scalability



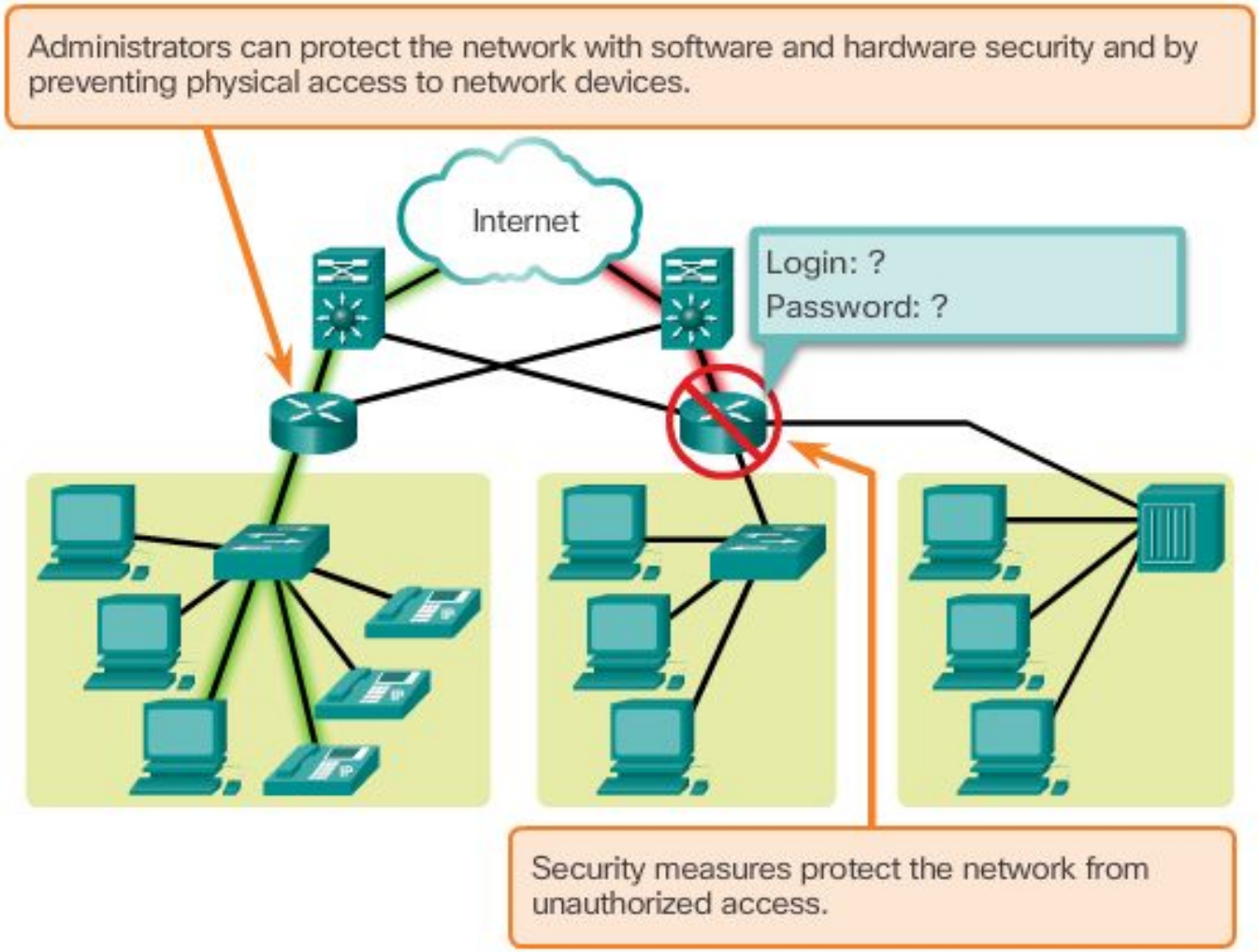
1.3.2: Reliable Networks

1.3.2.4 Quality of Service



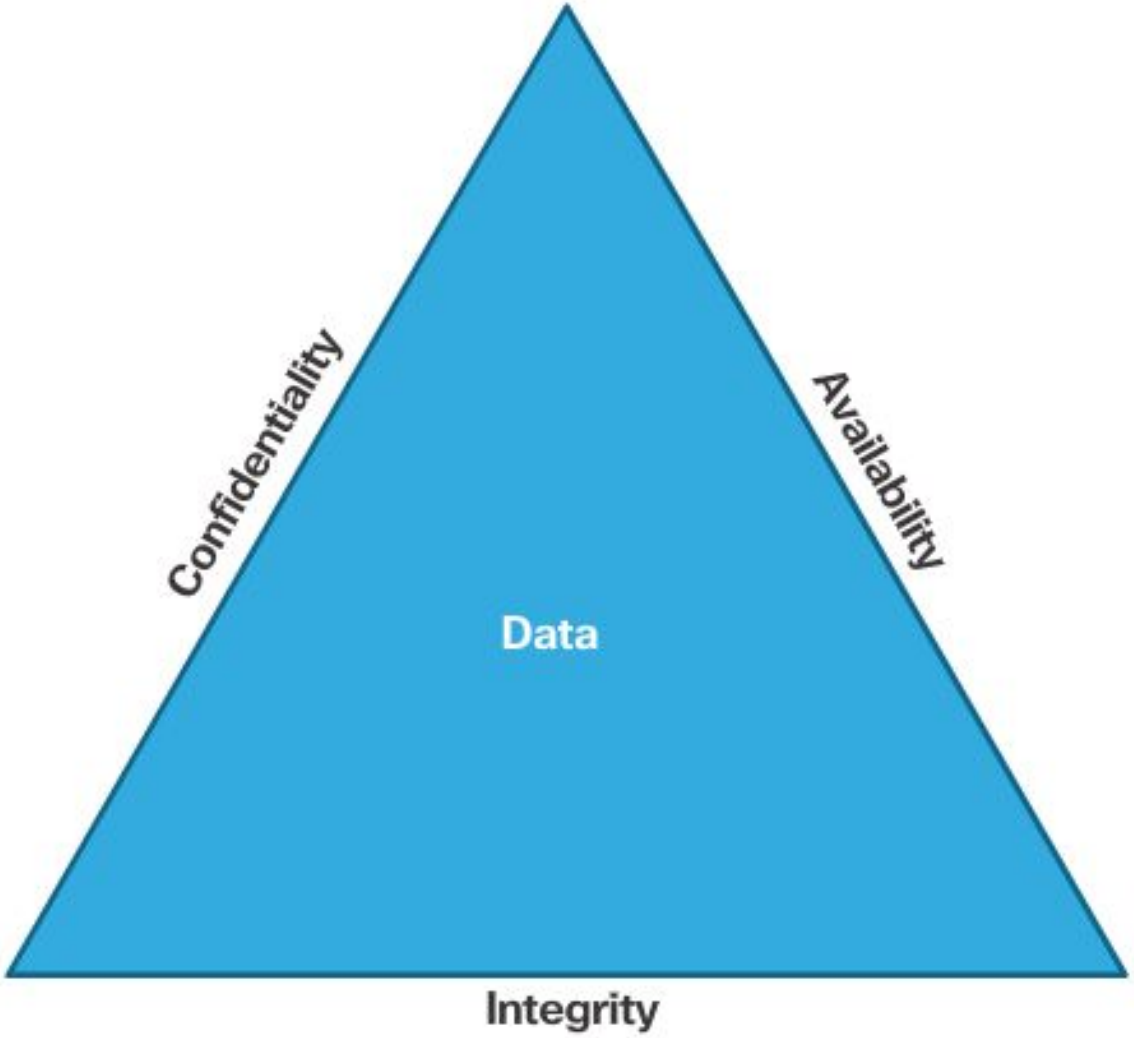
1.3.2: Reliable Networks

1.3.2.5 Security



1.3.2: Reliable Networks

1.3.2.5 Security (cont.)



Section 1.4:
The Changing Network Environment

1.4.1: Network Trends
1.4.2: Networking Technologies for the Home
1.4.3: Network Security

1.4.1: Network Trends

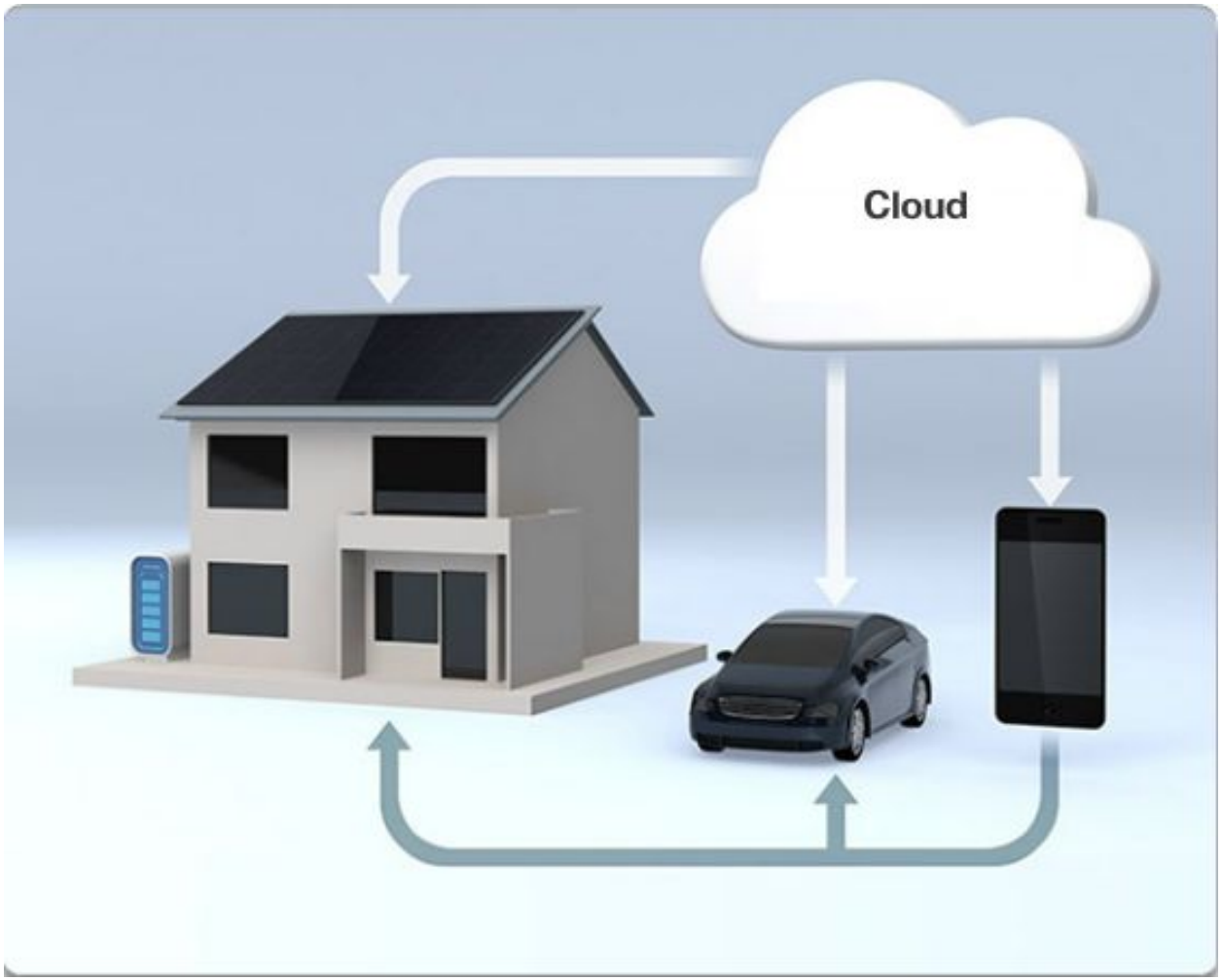
1.4.1.1 New Trends

Top trends include:

- 1.4.1.2 Bring Your Own Device (BYOD)
- 1.4.1.3 Online collaboration
- 1.4.1.4 Video communications
- 1.4.1.5 Cloud computing

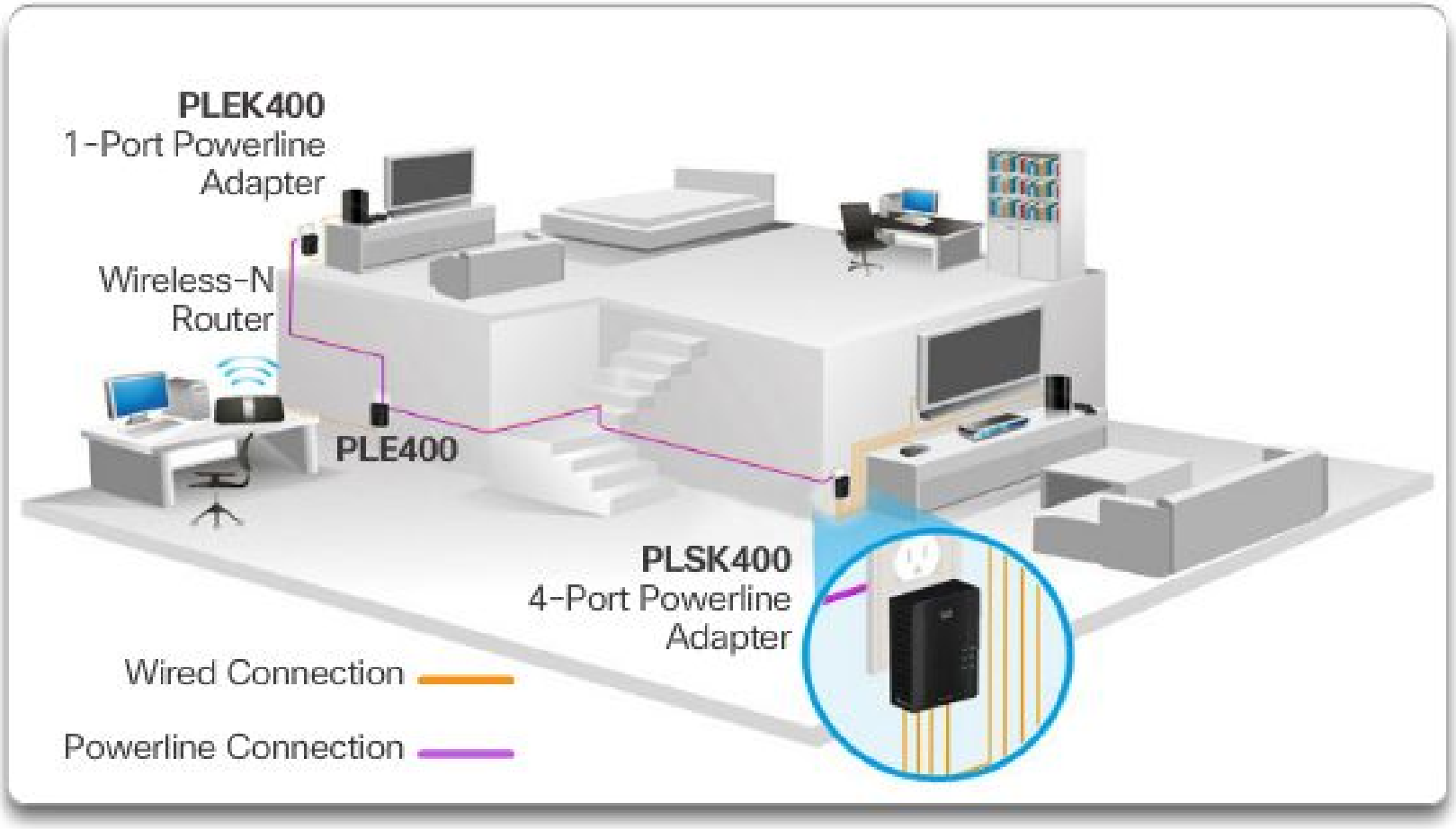
1.4.2: Networking Technologies for the Home

1.4.2.1 Technology Trends in the Home



1.4.2: Networking Technologies for the Home

1.4.2.2 Powerline Networking

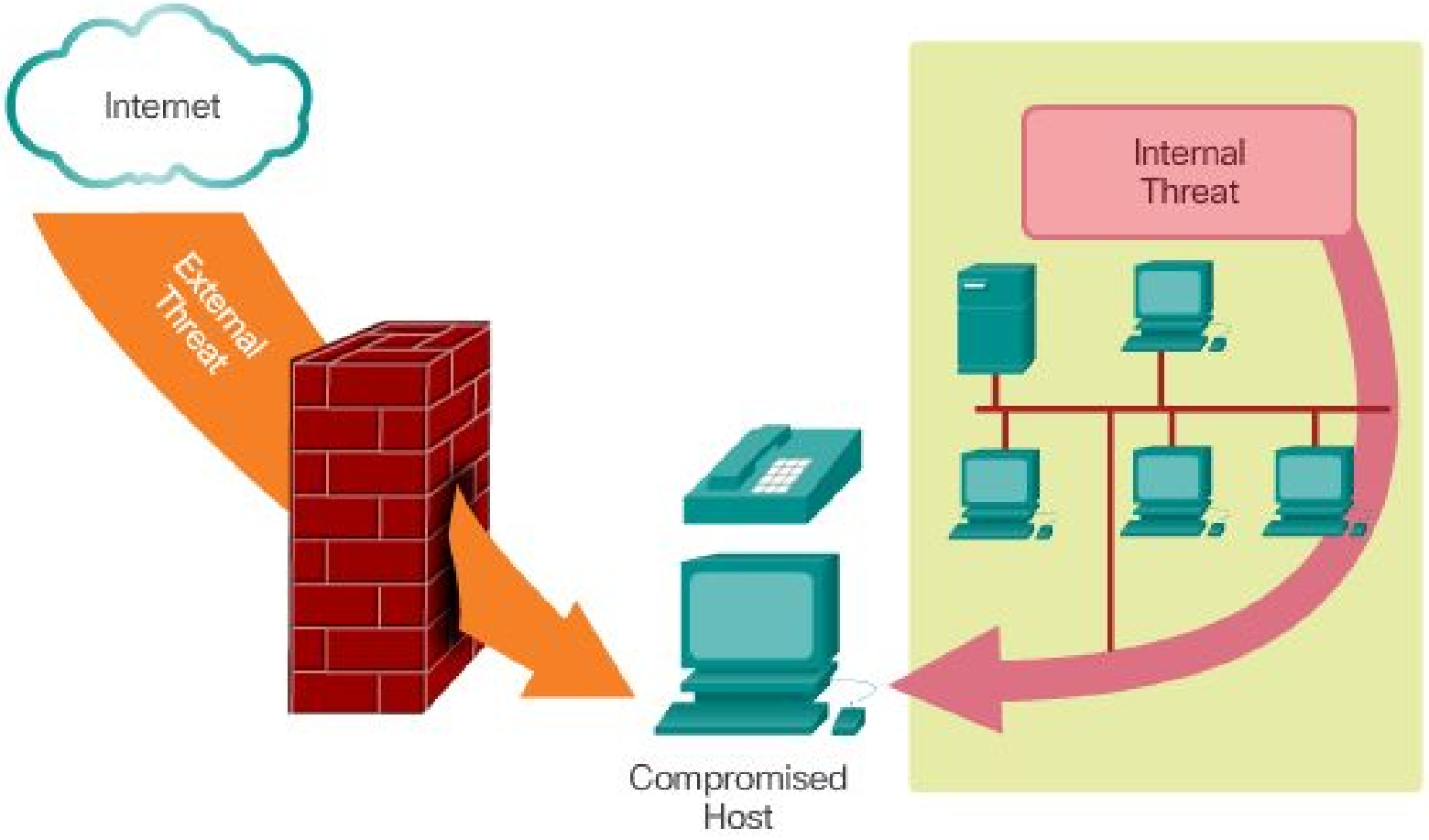


1.4.2: Networking Technologies for the Home

1.4.2.3 Wireless Broadband

1.4.3: Network Security

1.4.3.1 Security Threats



1.4.3: Network Security

1.4.3. 1 Security Threats

The most common external threats to networks include:

- Viruses, worms, and Trojan horses
- Spyware and adware
- Zero-day attacks, also called zero-hour attacks
- Hacker attacks
- Denial of service attacks
- Data interception and theft
- Identity theft

1.4.3: Network Security

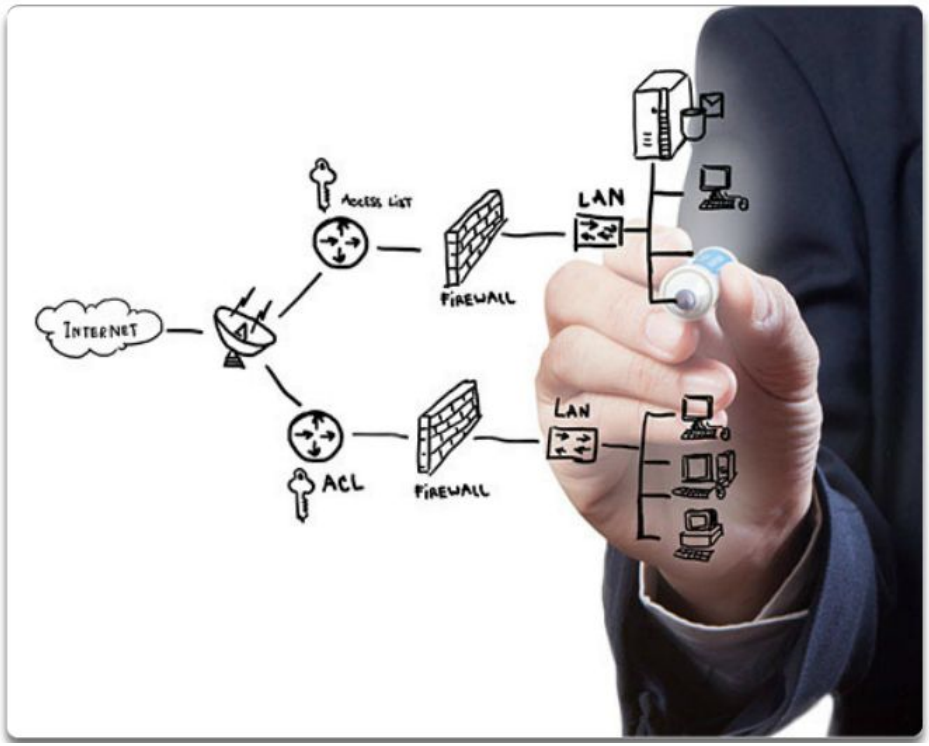
1.4.3.2 Security Solutions

Minimum solutions:

- Antivirus and antispyware
- Firewall filtering

Additional solutions:

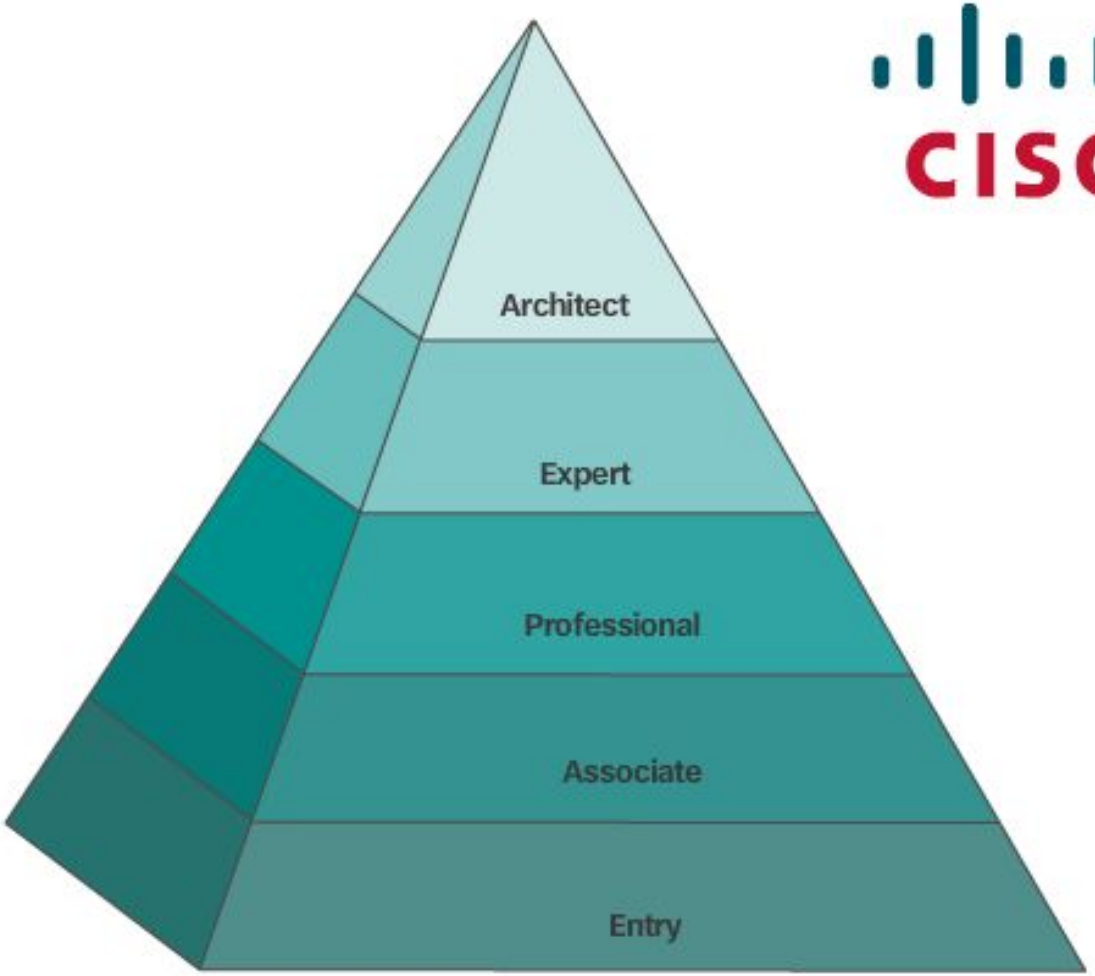
- Dedicated firewall systems
- Access control lists (ACL)
- Intrusion prevention systems (IPS)
- Virtual Private Networks (VPNs)



Topic 1.4.4:
Network Architecture

1.4.4: Network Architecture

CCNA



CH1: Explore the network

1.0 Introduction

1.1 Globally Connected

1.2 LANs, WANs, and the Internet

1.3 The Network as a Platform

1.4 The Changing Network Environment

1.5 Summary

REMARK → Before starting CH2: INSTALL PACKET TRACER !!
(Netacad < student resources < Packet tracer)