



Introduction

NETWORK SECURITY

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Networking Today

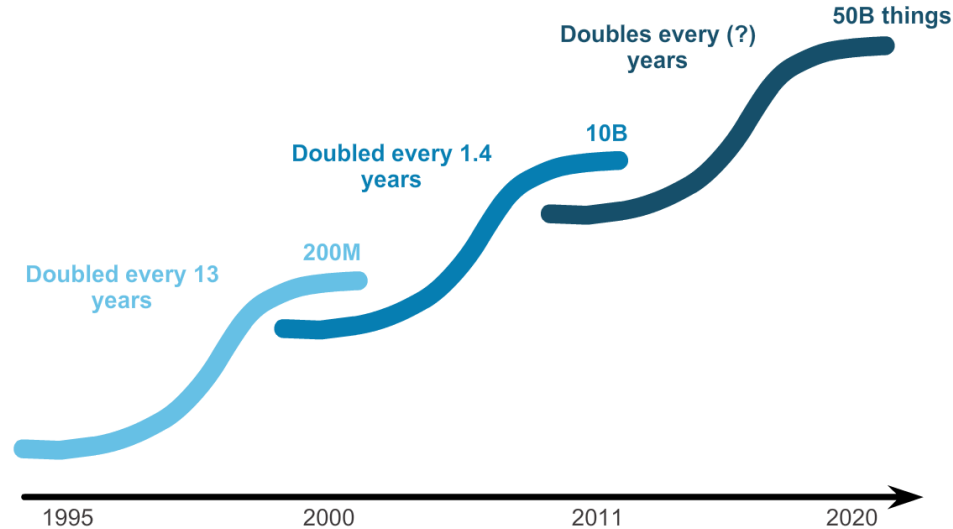
Networks in Our Past and Daily Lives

"Fixed" Computing
(You go to the device)

Mobility/BYOD
(The device goes with you)

Internet of Things
(Age of Devices)

Internet of Everything
(People, Process, Data, Things)



Networking Today

The Global Community





Interconnecting our Lives

Networking impacts in our daily lives

- ▶ Networks Support the Way We Learn
- ▶ Networks Support the Way We Communicate
- ▶ Networks Support the Way We Work
- ▶ Networks Support the Way We Play

Providing Resources in a Network

Networks of Many Sizes



Small Home Networks



Small Office/Home Office
Networks



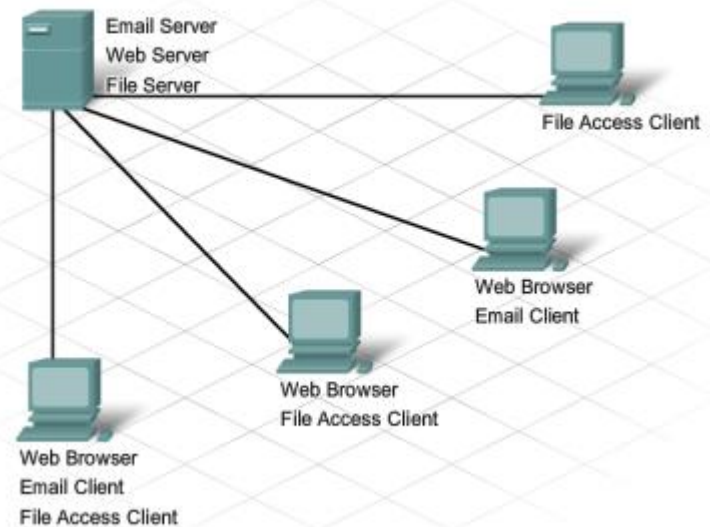
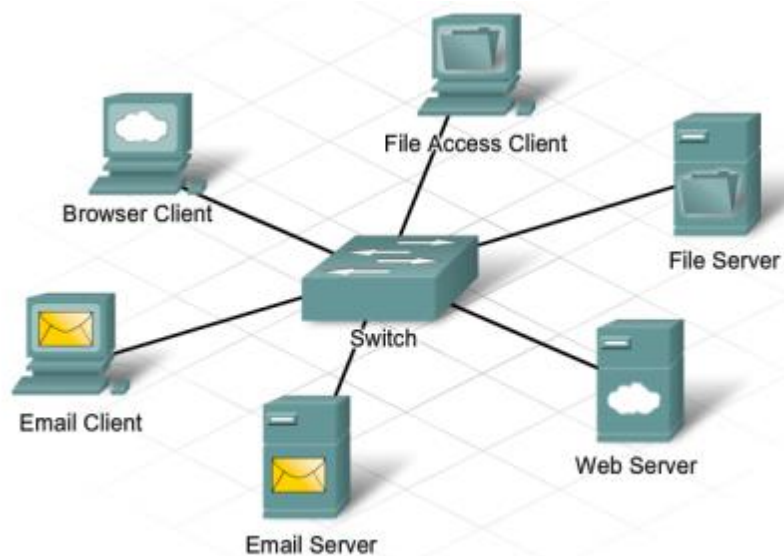
Medium to Large Networks



World Wide Networks

Providing Resources in a Network

Clients and Servers

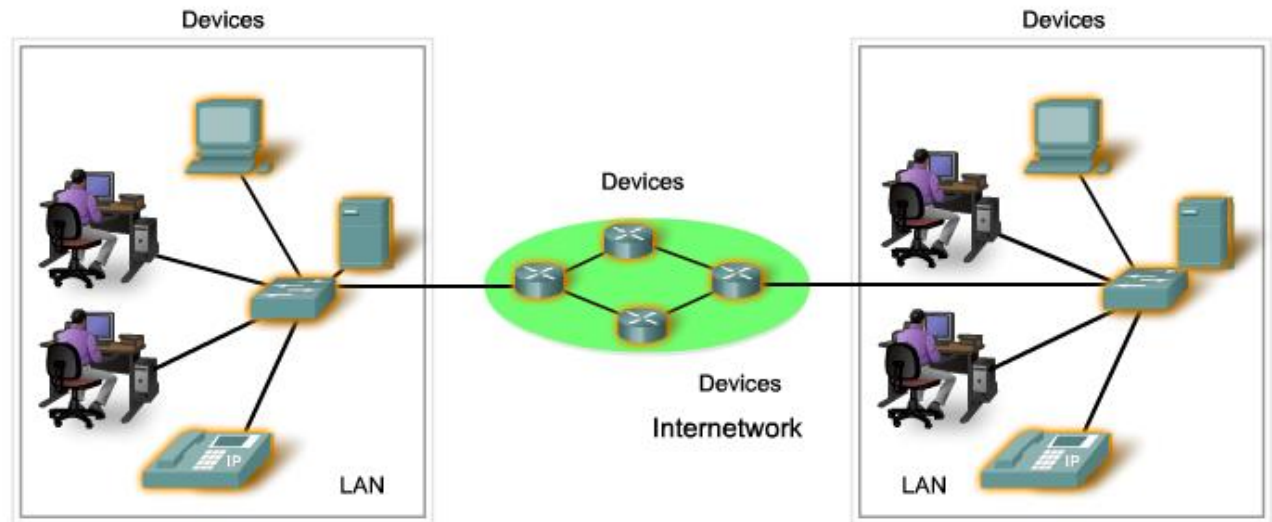


LANs, WANs, and Internets

Components of a Network

There are three categories of network components:

- ▶ Devices
- ▶ Media
- ▶ Services





Components of a Network

End Devices

Some examples of end devices are:

- ▶ Computers (work stations, laptops, file servers, web servers)
- ▶ Network printers
- ▶ VoIP phones
- ▶ Security cameras
- ▶ Mobile handheld devices (such as smartphones, tablets, PDAs, and wireless debit / credit card readers and barcode scanners)



Components of a Network

Network Infrastructure Devices

Examples of intermediary network devices are:

- ▶ Network Access Devices (switches, and wireless access points)
- ▶ Internetworking Devices (routers)
- ▶ Security Devices (firewalls)

Components of a Network

Network Media

Copper



Fiber Optic



Wireless



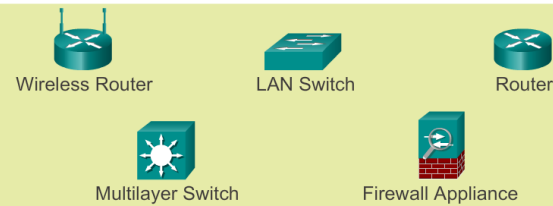
Components of a Network

Network Representations

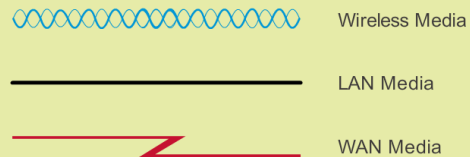
End Devices



Intermediary Devices

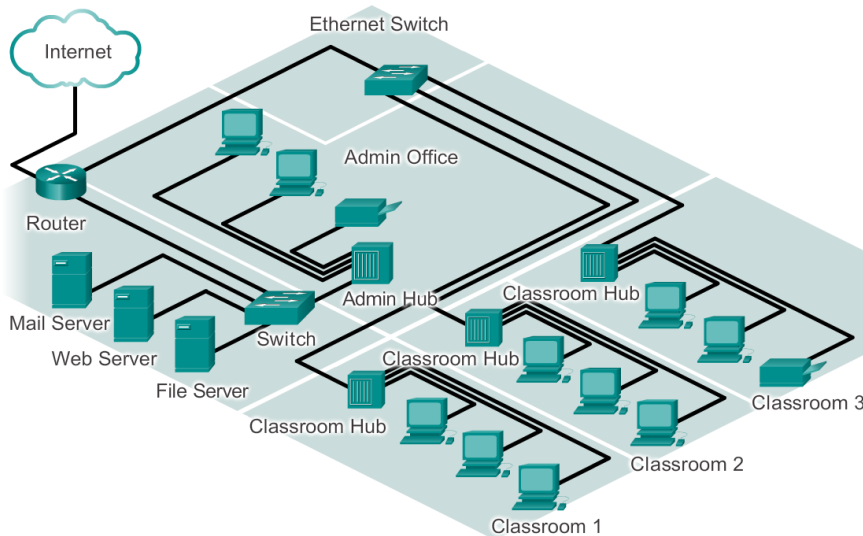


Network Media

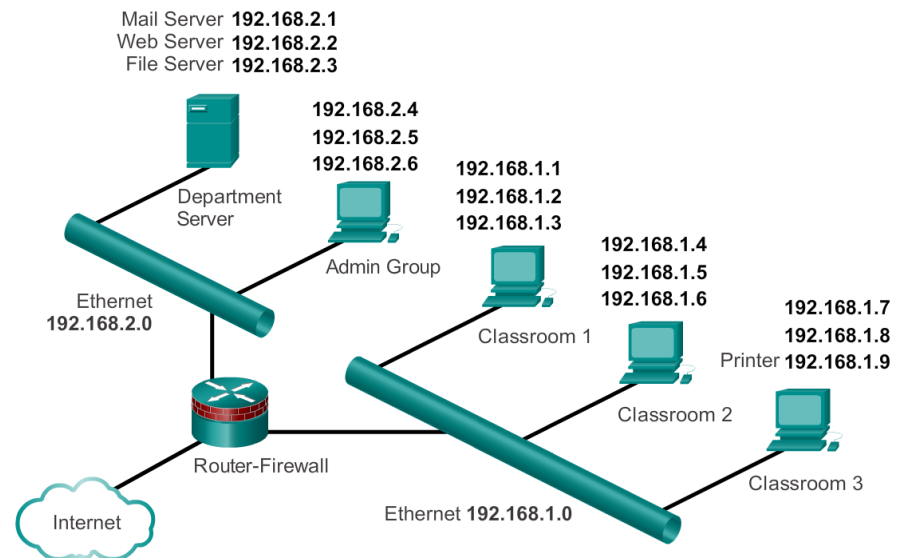


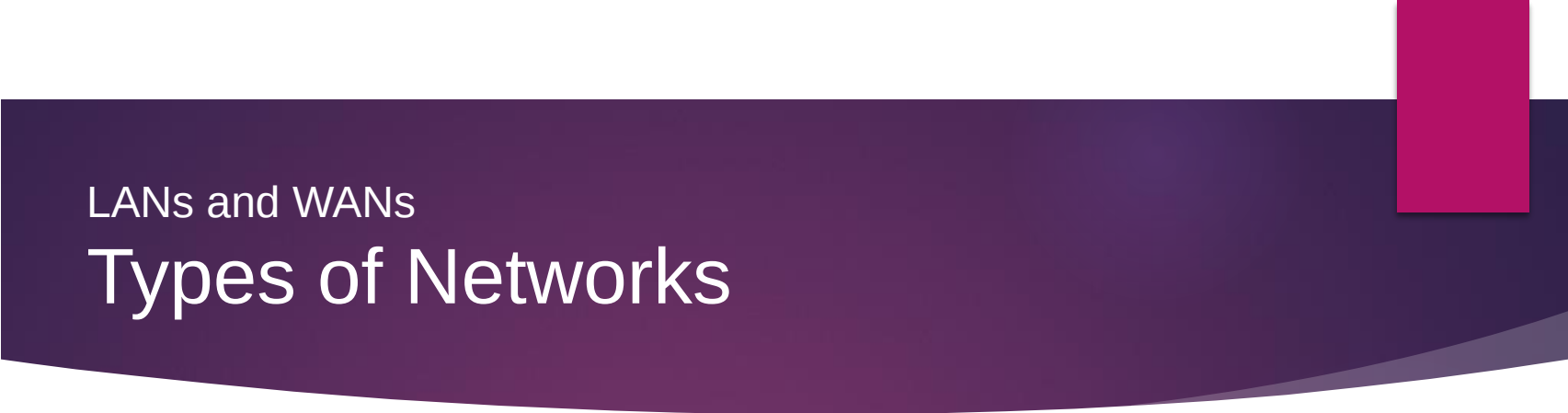
Components of a Network Topology Diagrams

Physical Topology



Logical Topology





LANs and WANs

Types of Networks

The two most common types of network infrastructures are:

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

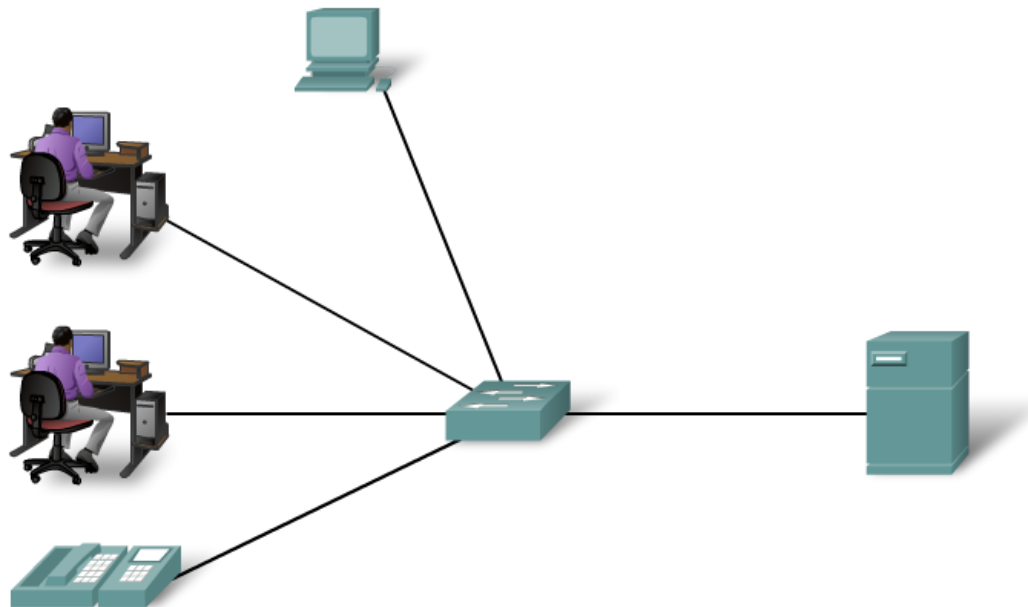
Other types of networks include:

- ▶ Metropolitan Area Network (MAN)
- ▶ Wireless LAN (WLAN)
- ▶ Storage Area Network (SAN)

LANs and WANs

Local Area Networks (LAN)

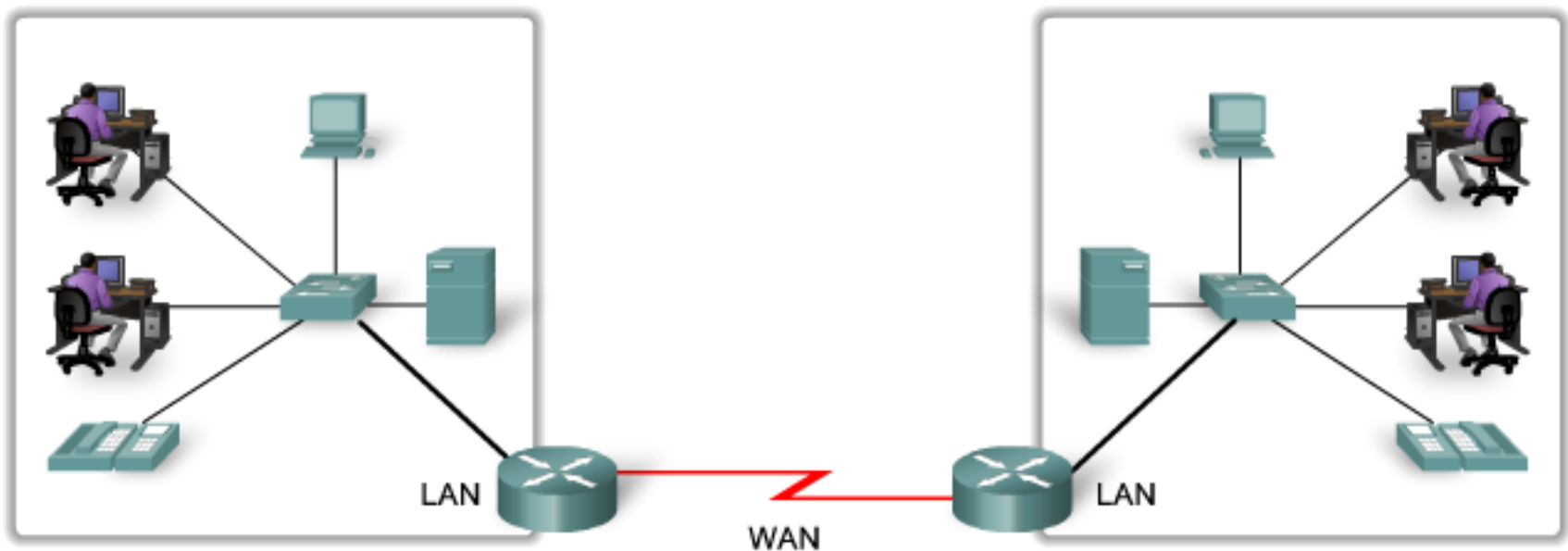
A network serving a home, building or campus is considered a Local Area Network (LAN).



LANs and WANs

Wide Area Networks (WAN)

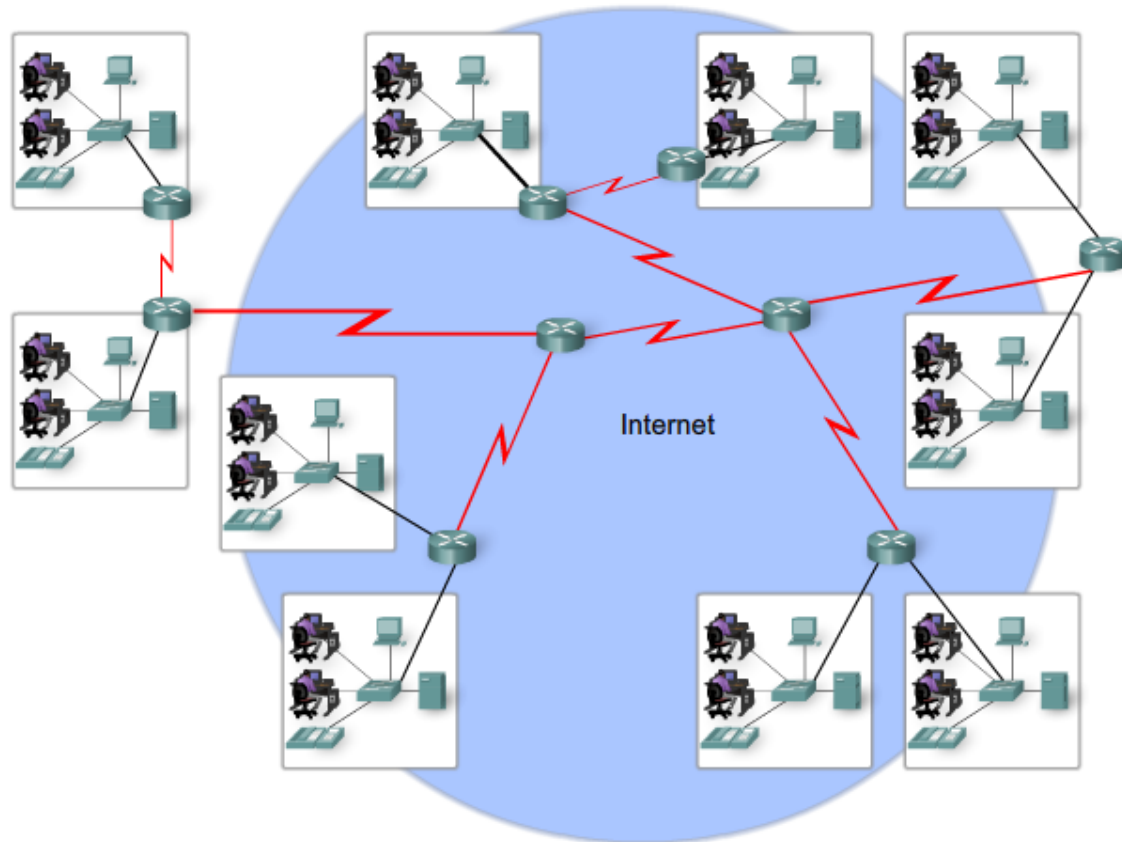
LANs separated by geographic distance are connected by a network known as a Wide Area Network (WAN).



LANs, WANs, and Internets

The Internet

LANs and WANs may be connected into internetworks.





Reliable Network

Supporting Network Architecture

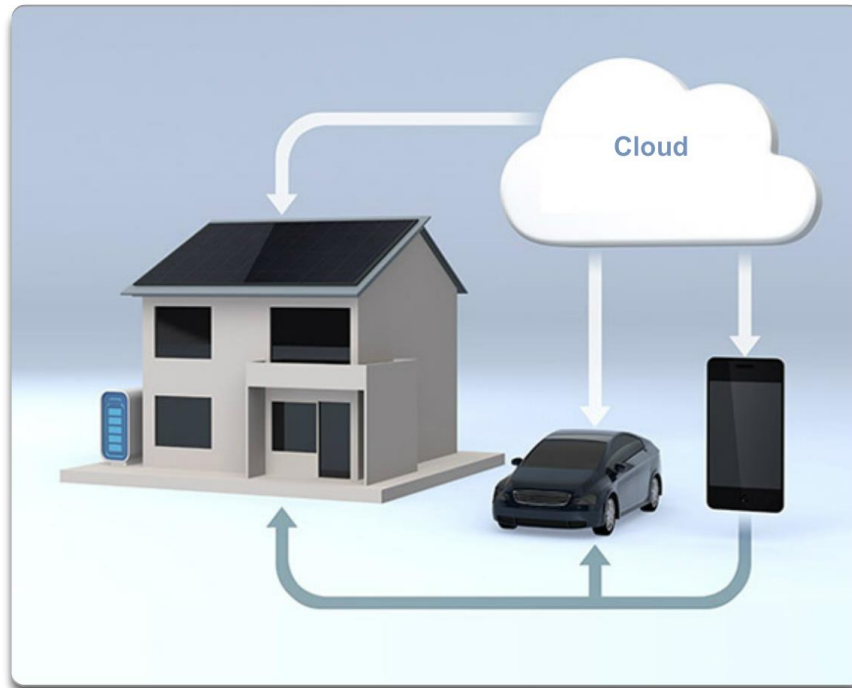
As networks evolve, we are discovering that there are four basic characteristics that the underlying architectures need to address in order to meet user expectations:

- ▶ Fault Tolerance
- ▶ Scalability
- ▶ Quality of Service (QoS)
- ▶ Security

Networking Technologies for the Home

Technology Trends in the Home

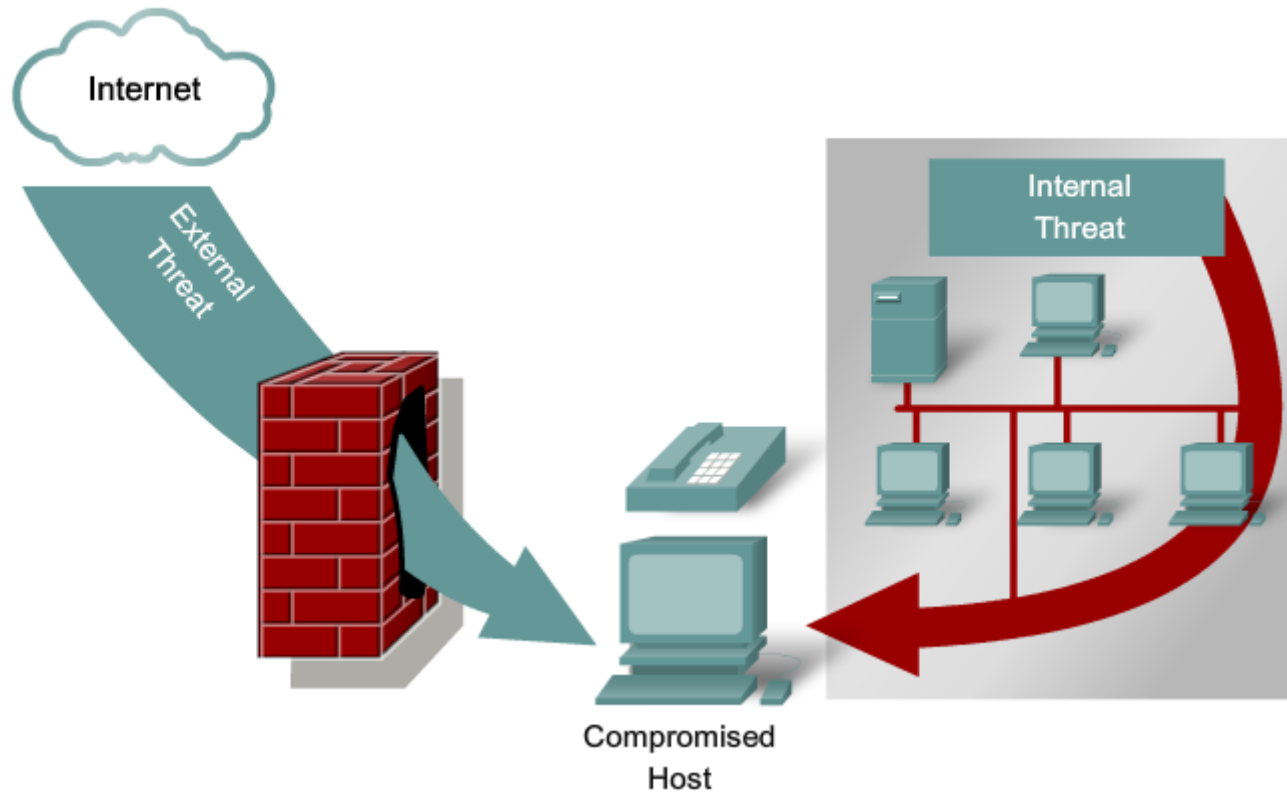
Smart Home Technology



Future of Networking

Network Security

Threats to Networks



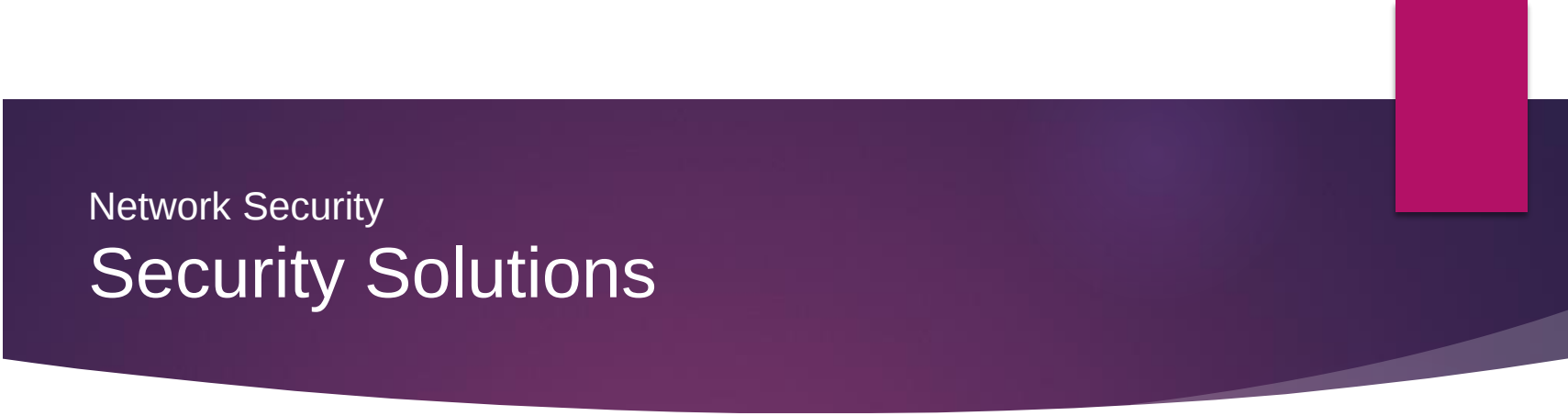


Network Security

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



Network Security

Security Solutions

Network security components often include:

- ▶ Antivirus and antispyware
- ▶ Firewall filtering
- ▶ Dedicated firewall systems
- ▶ Access control lists (ACL)
- ▶ Intrusion prevention systems (IPS)
- ▶ Virtual Private Networks (VPNs)



Thank You