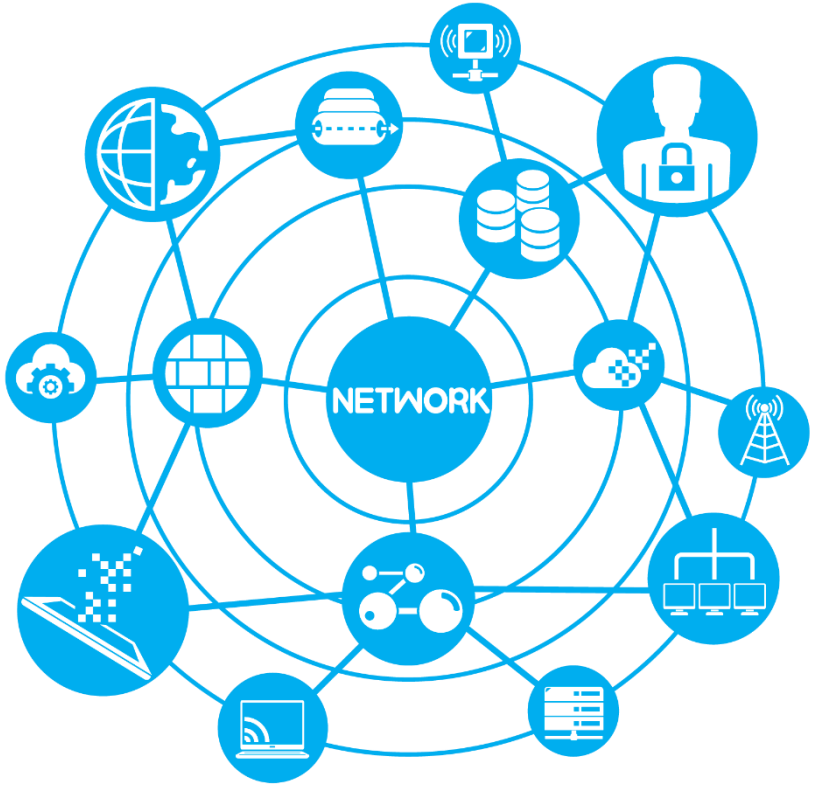
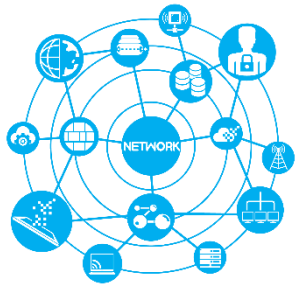
Computer Networks Fundamentals



Asst. Pro. Dr. Mazin S. Al-Hakeem

Computer Networks Fundamentals

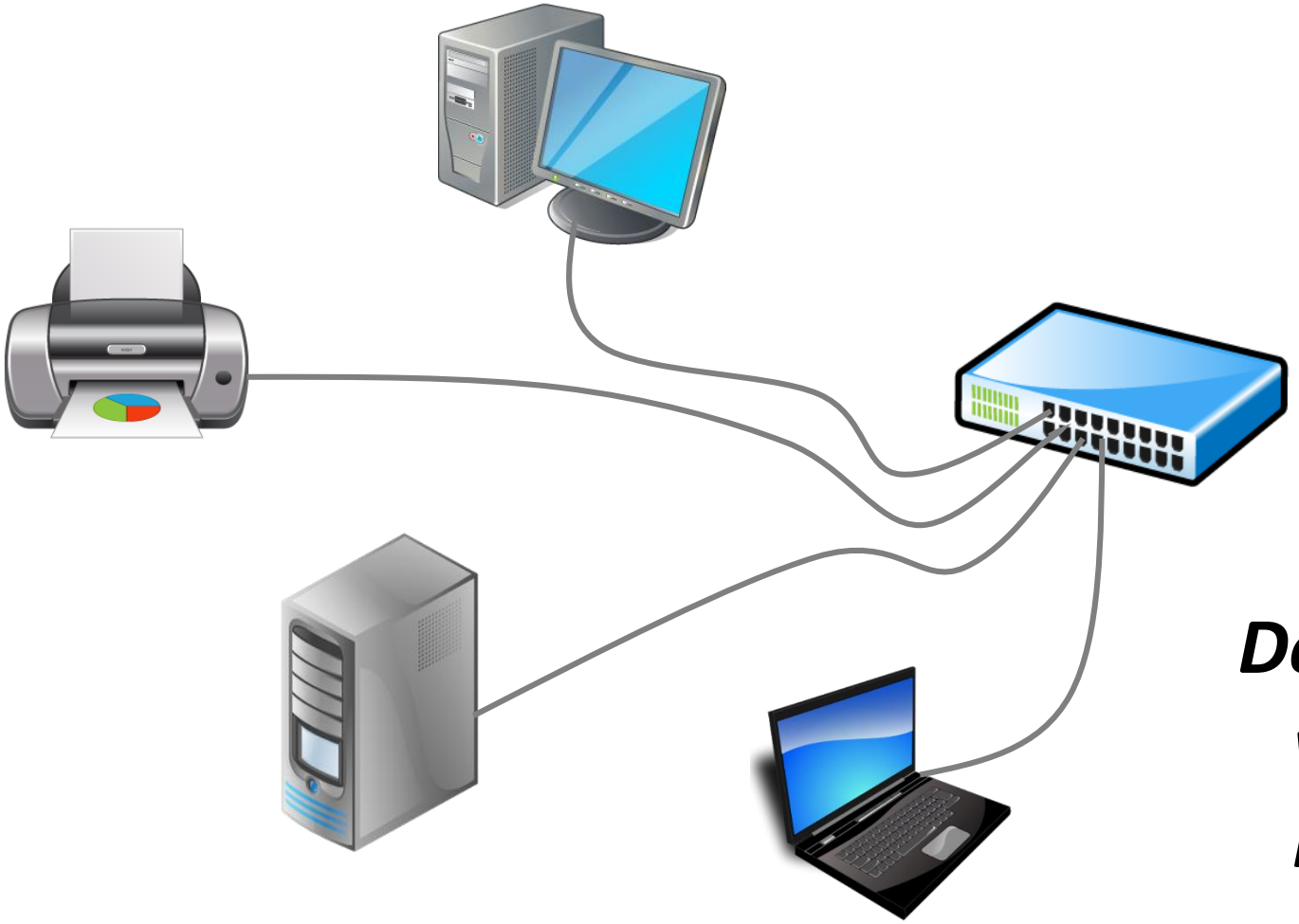


Chapter One
Introduction to Networking

Lecture 2

Asst. Pro. Dr. Mazin S. Al-Hakeem

A **Protocols** is a **set of rules** that govern data communication



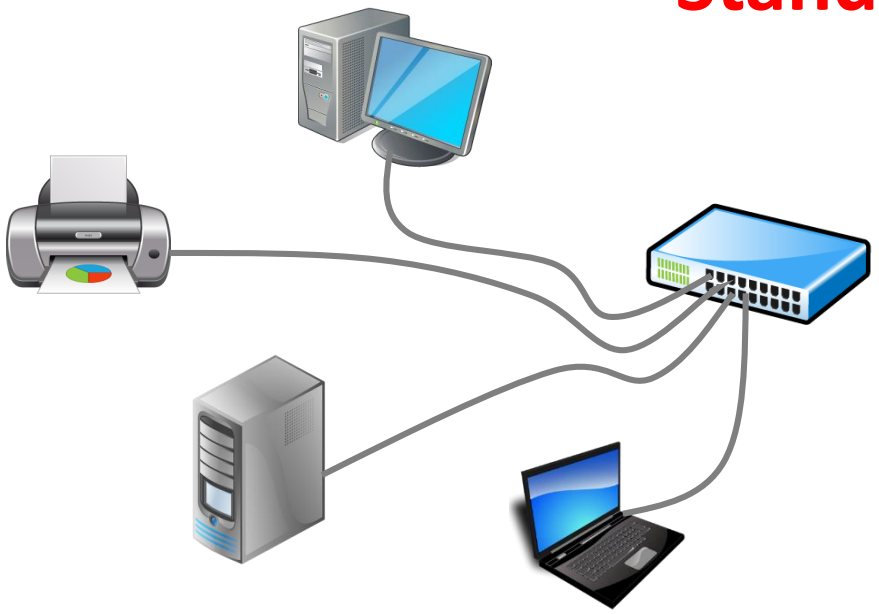
Defines

what is communicated,

how it's communicated, *and*

when its communicated

Standards



IEEE Member #: 93573534

The **I**nternational **S**tandards **O**rganization (**ISO**)

The **I**nternational **T**elecommunications **U**nion (**ITU**)

The **A**merican **N**ational **S**tandards **I**nstitute (**ANSI**)

The **I**nstitute of **E**lectrical and **E**lectronics **E**ngineers (**IEEE**)

Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

1 Line Configuration

A link is the physical communication pathway that transfers data from one device to another.

Point-to-Point

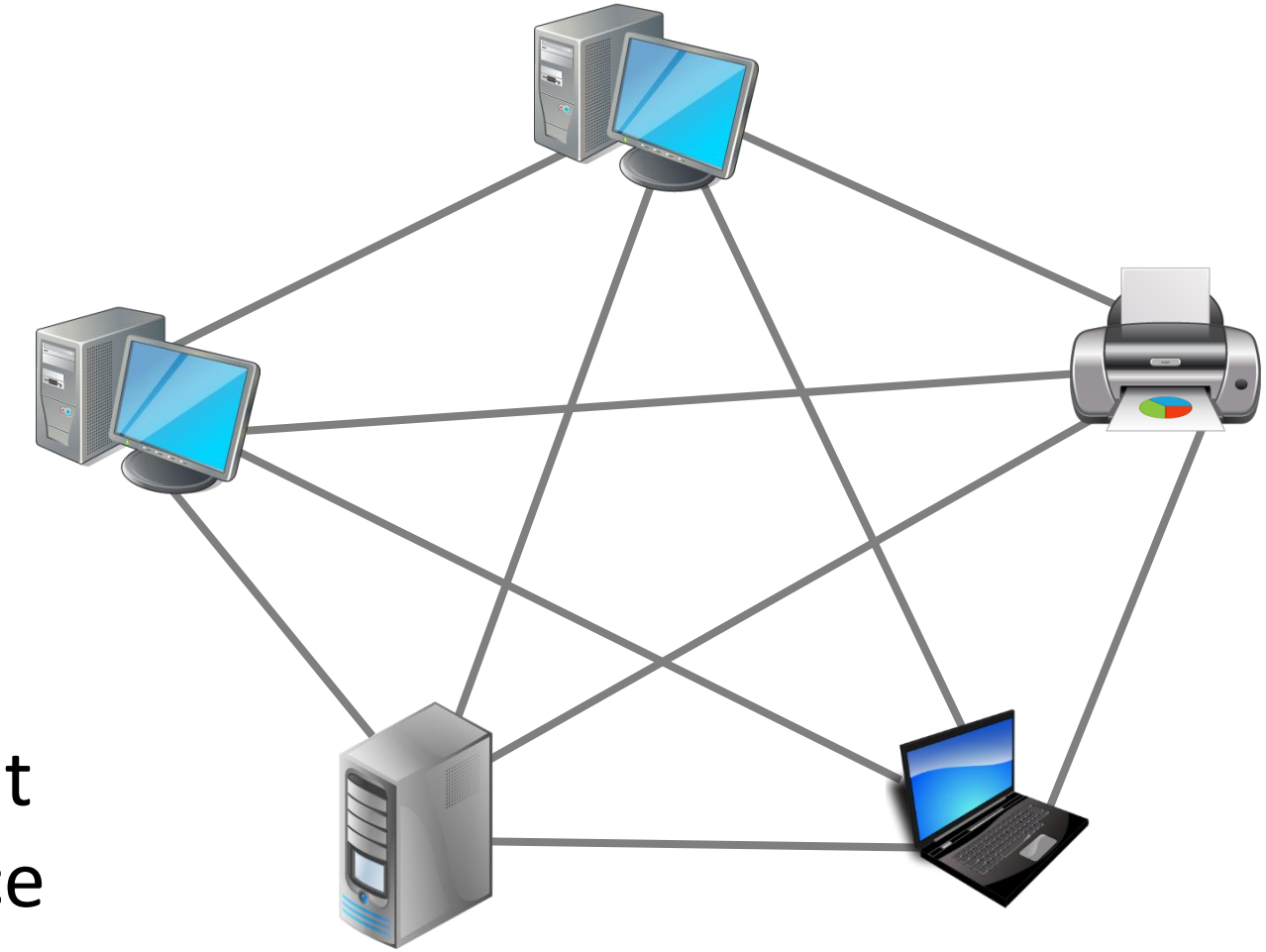
Multipoint

Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

2 Topology

refers to the way a network is laid out



Mesh

Every node has a dedicated point-to-point link to every other device

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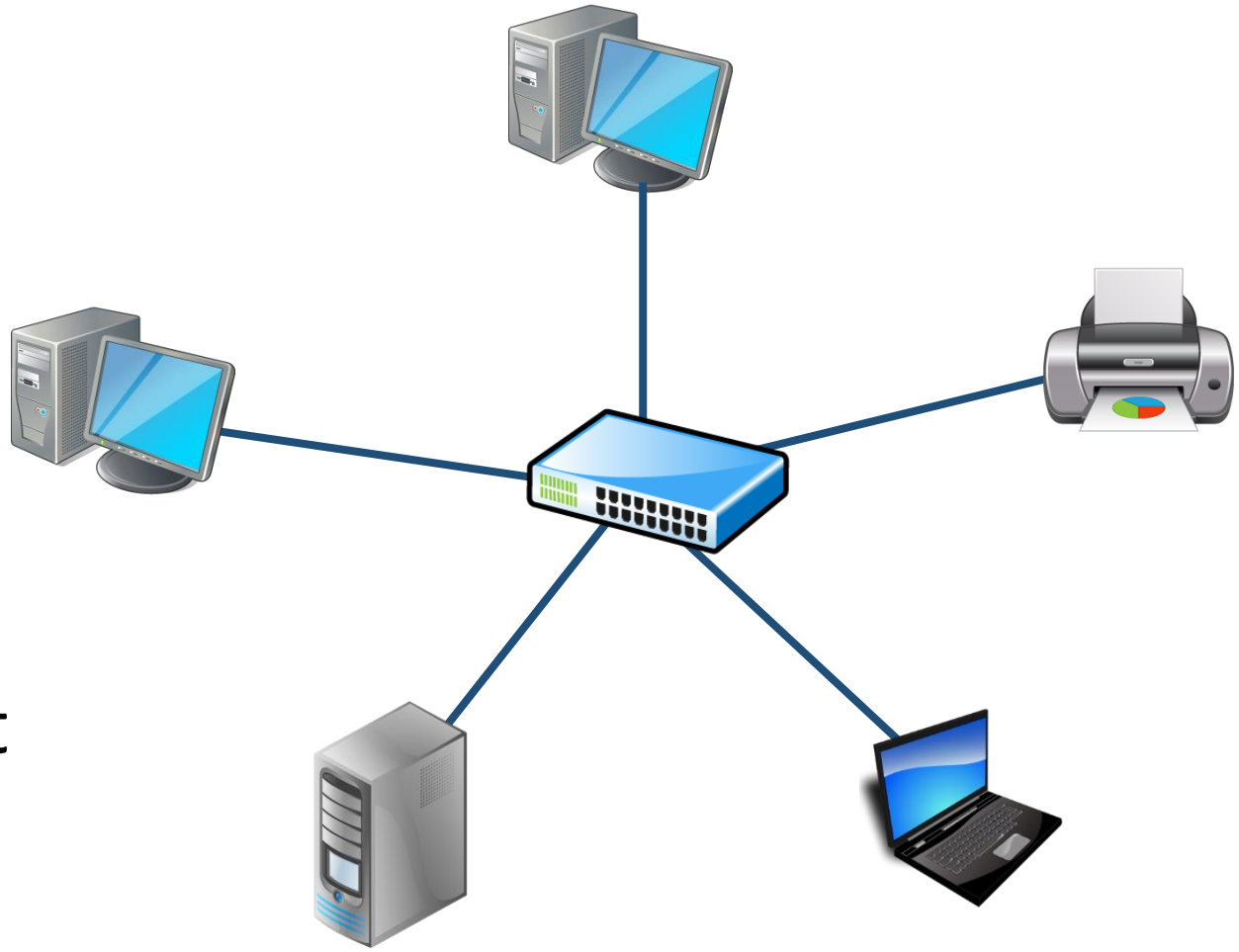

Star

Every node has a dedicated point-to-point link only to a central controller (hub , switch)

Basic Concepts of Networking

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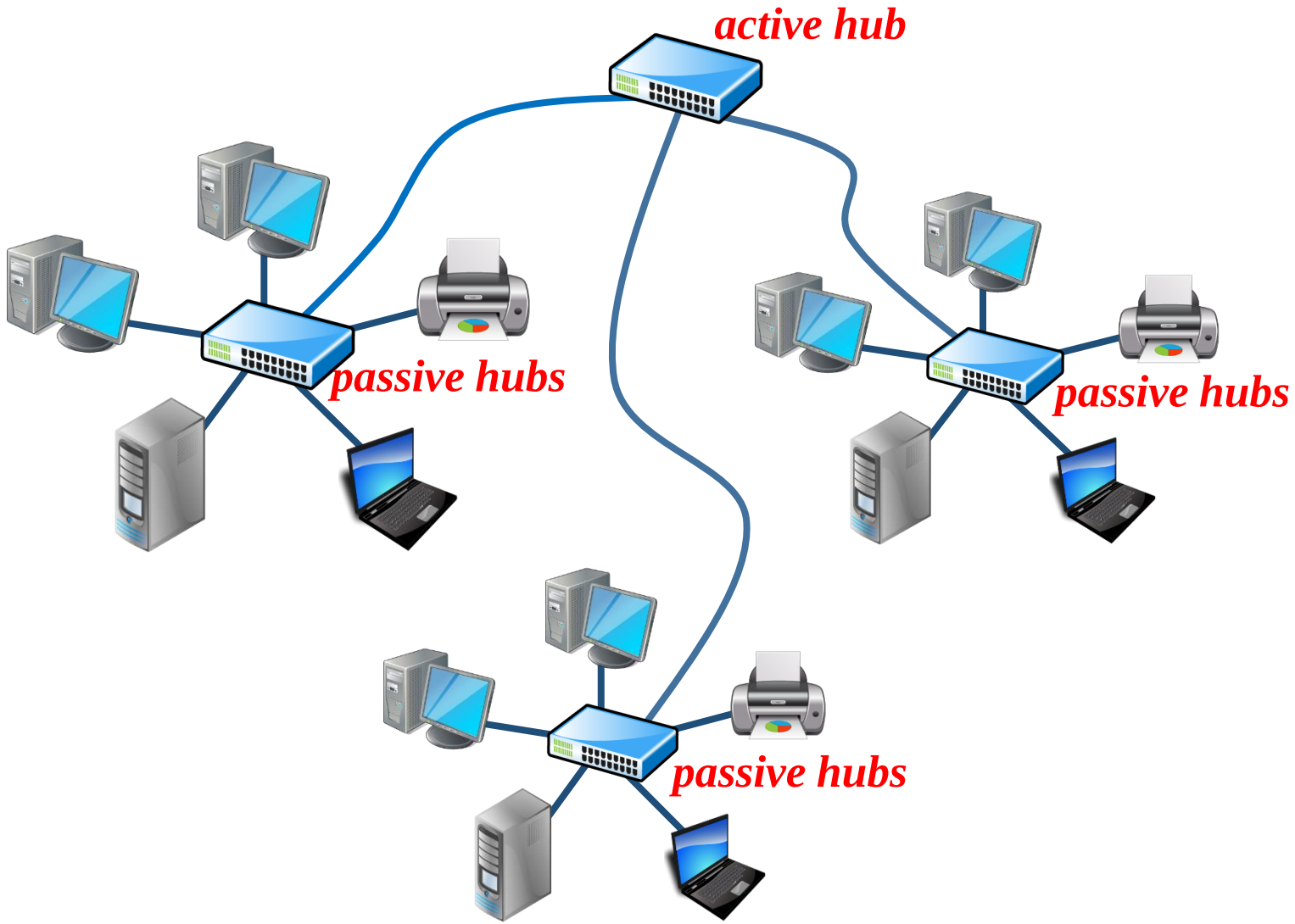
2 Topology

refers to the way a network is laid out

Tree

A tree topology is a variation of a star



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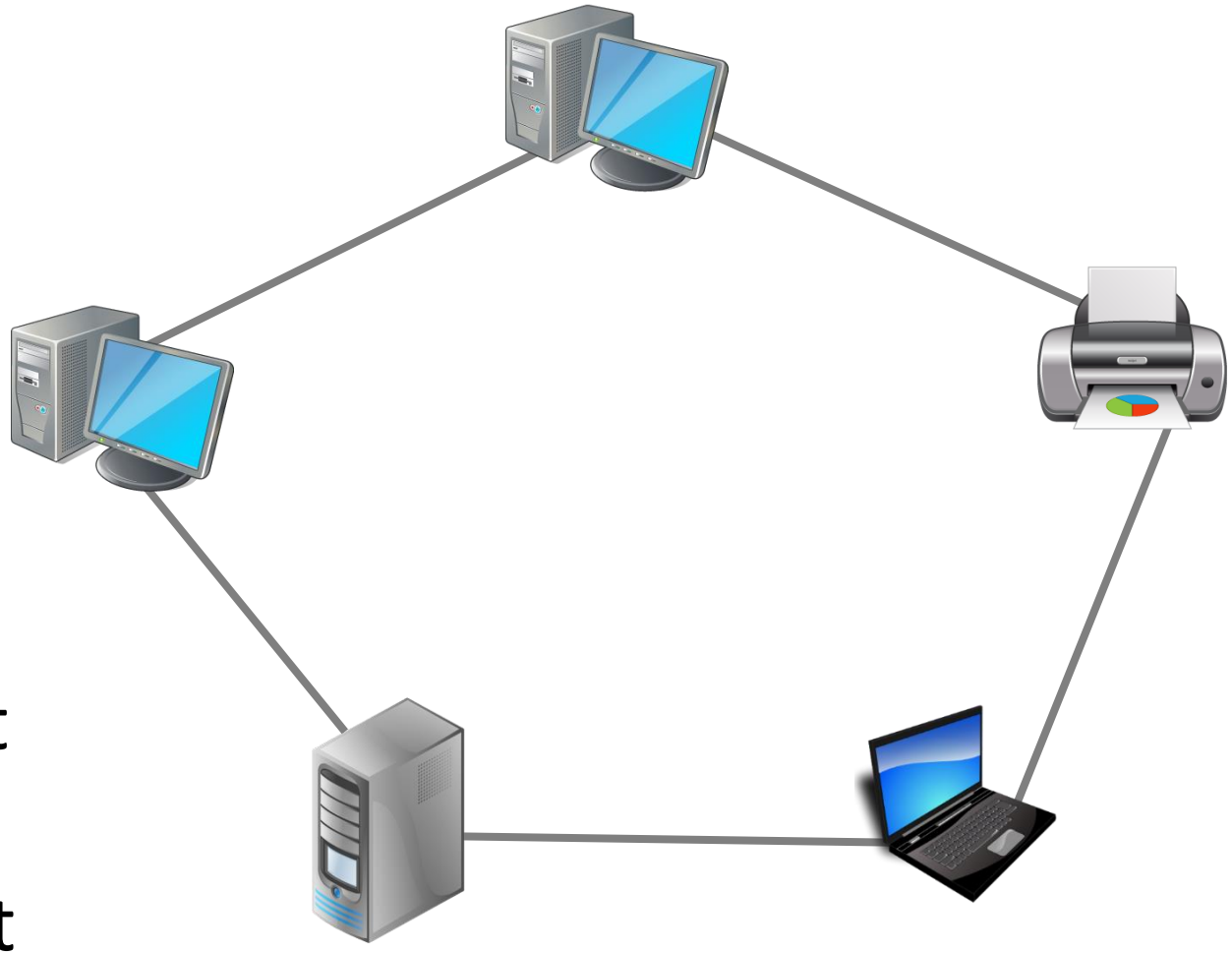

Ring

Every node has a dedicated point-to-point line only with the two nodes on either side of it

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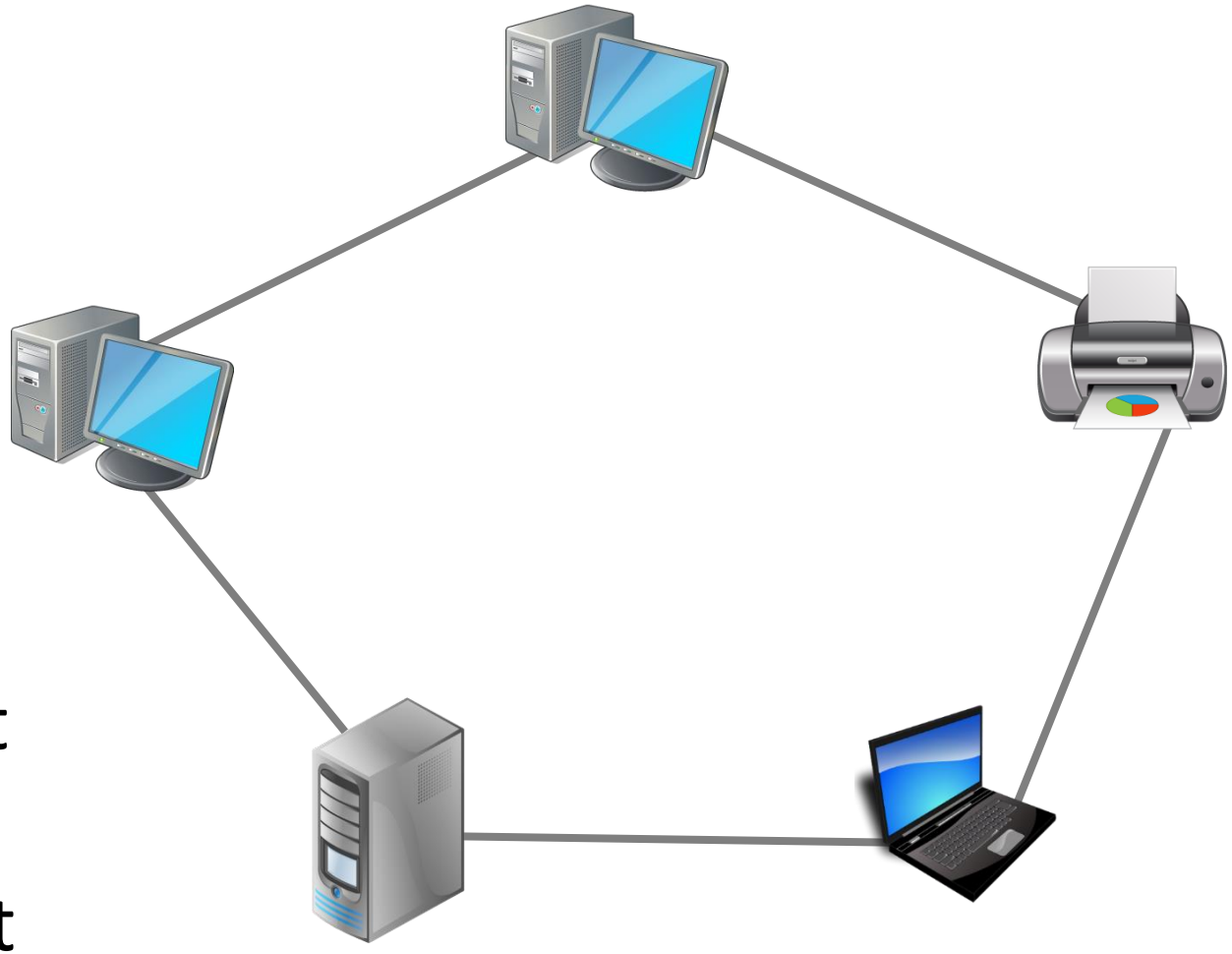

Ring

Every node has a dedicated point-to-point line only with the two nodes on either side of it

Basic Concepts of Networking

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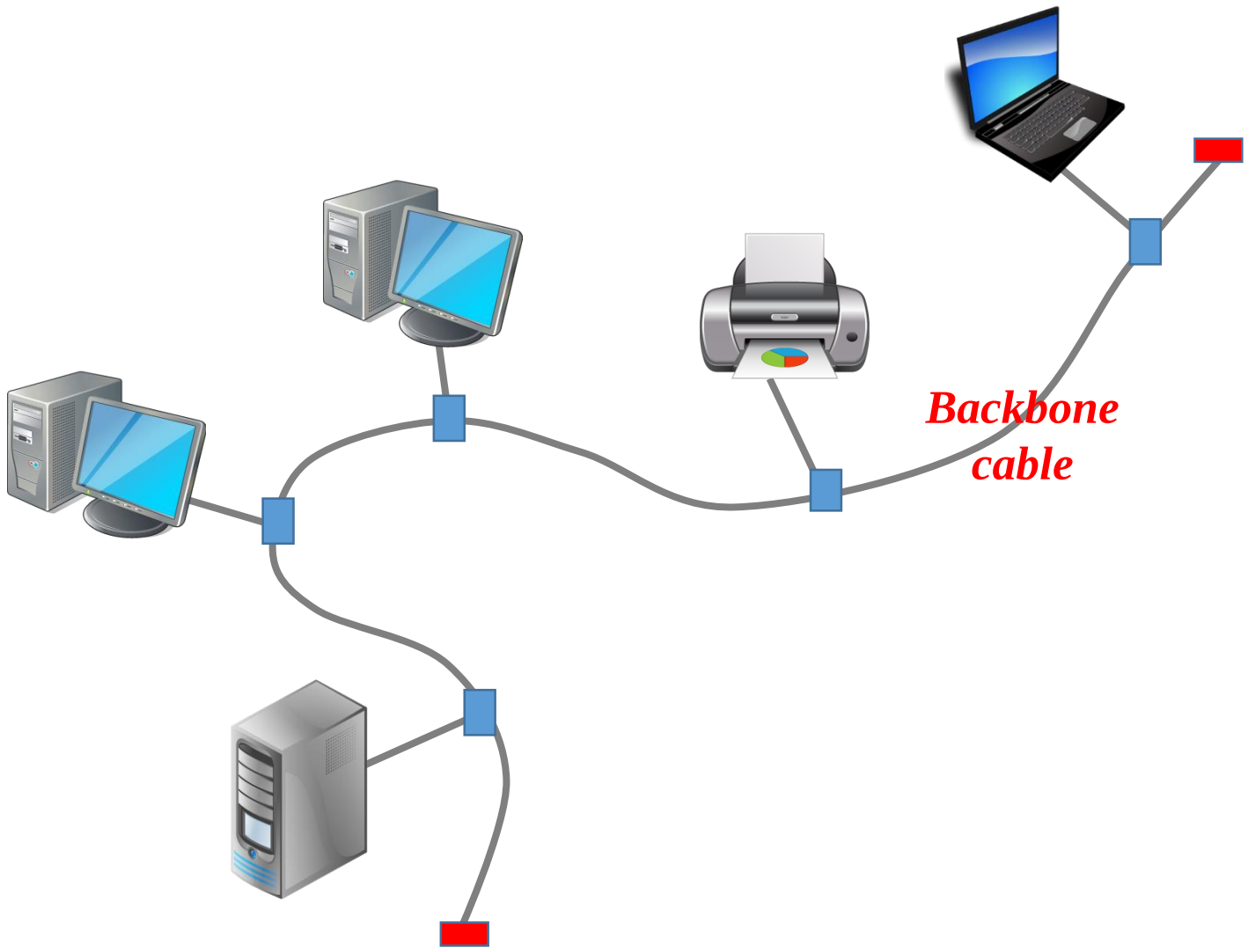
2 Topology

refers to the way a network is laid out

Bus

One backbone cable to link all the nodes in the network with multipoint



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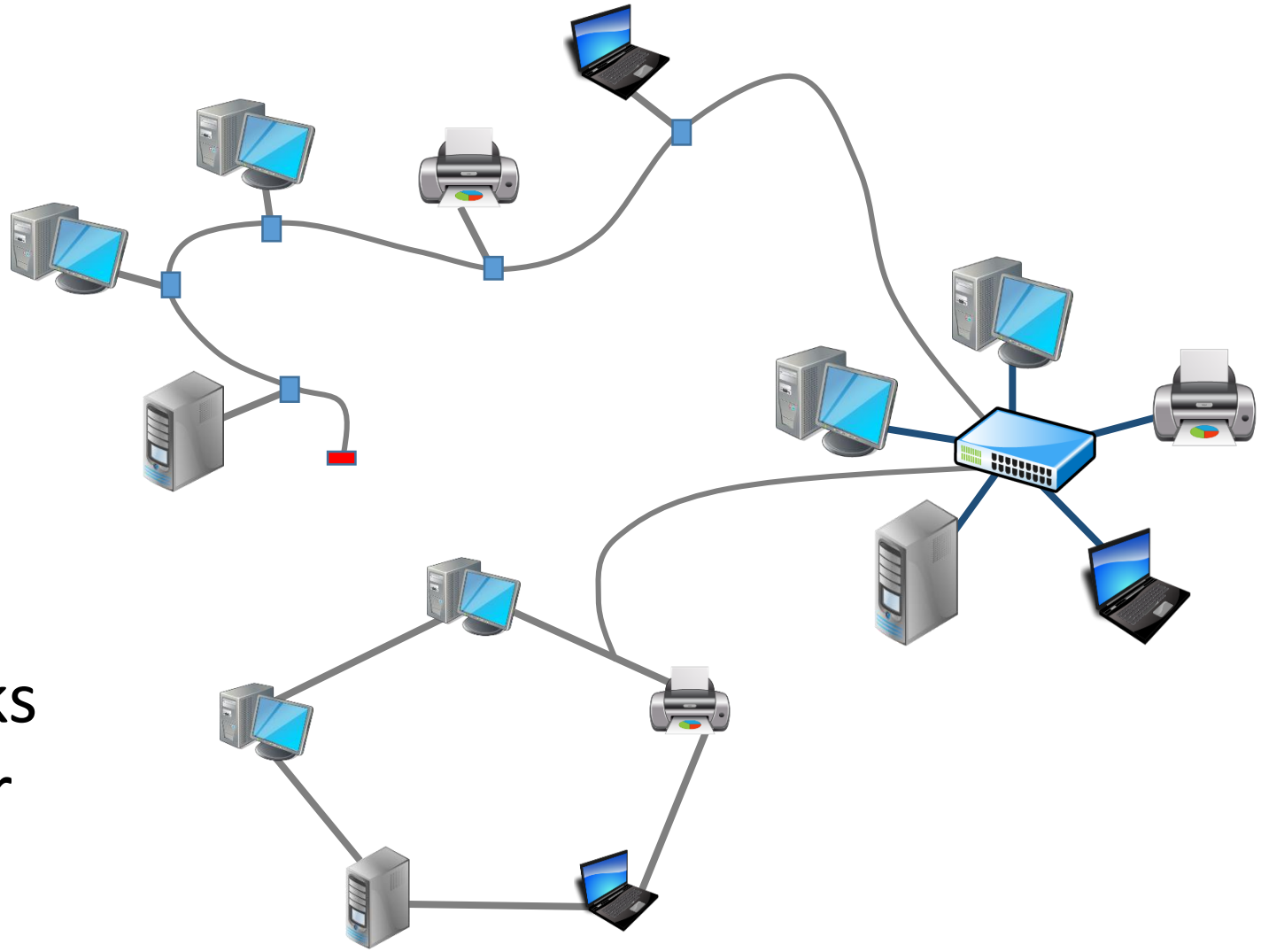


Hybrid

combines several topologies as sub-networks linked together in a larger topology

Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

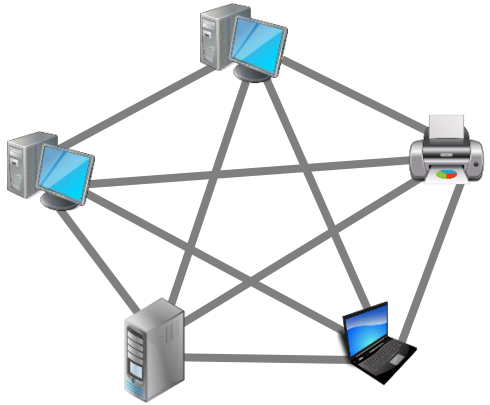
2 Topology

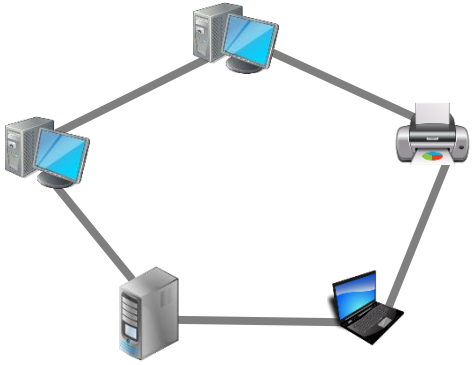
refers to the way a network is laid out

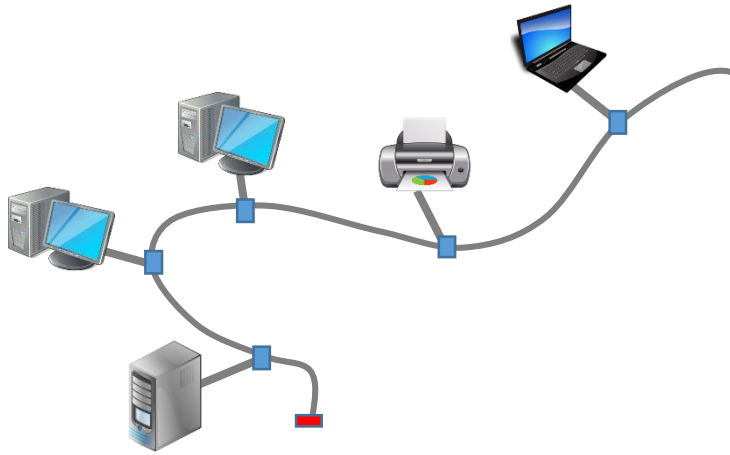
Mesh **Star**

Tree **Ring**

Bus **Hybrid**







Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

3 Transmission Modes

Simplex

unidirectional communication

Half-Duplex

transmit and receive, but not at the same time

Full-Duplex

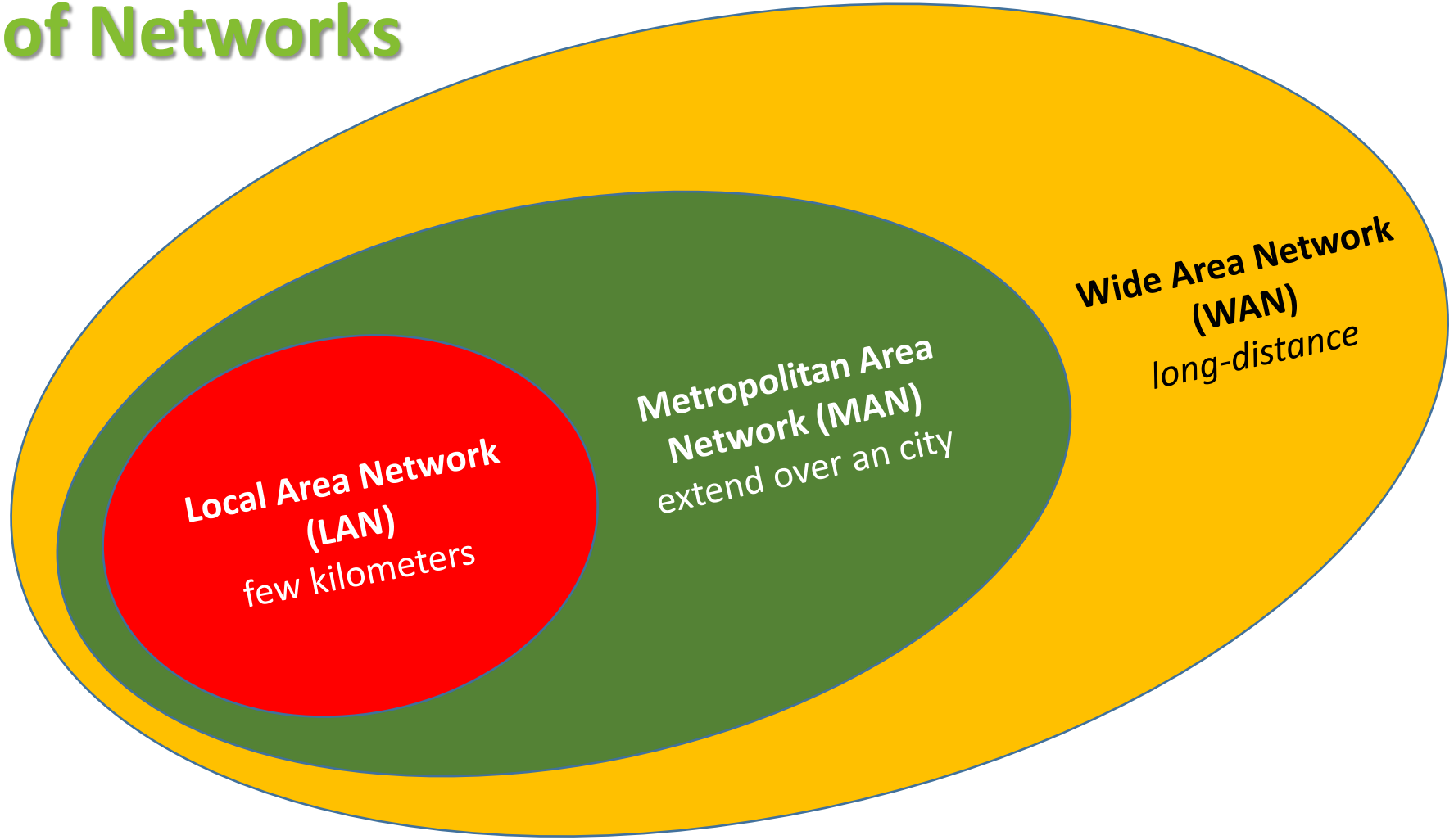
transmit and receive at the same time

Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

4 Categories of Networks

According to the size

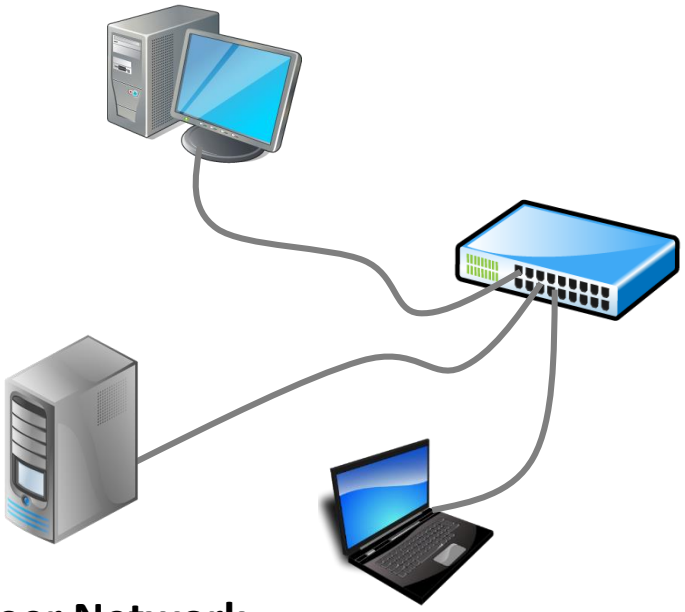


Basic Concepts of Networking

Five general concepts provide the basis for the relationship between the communicating devices

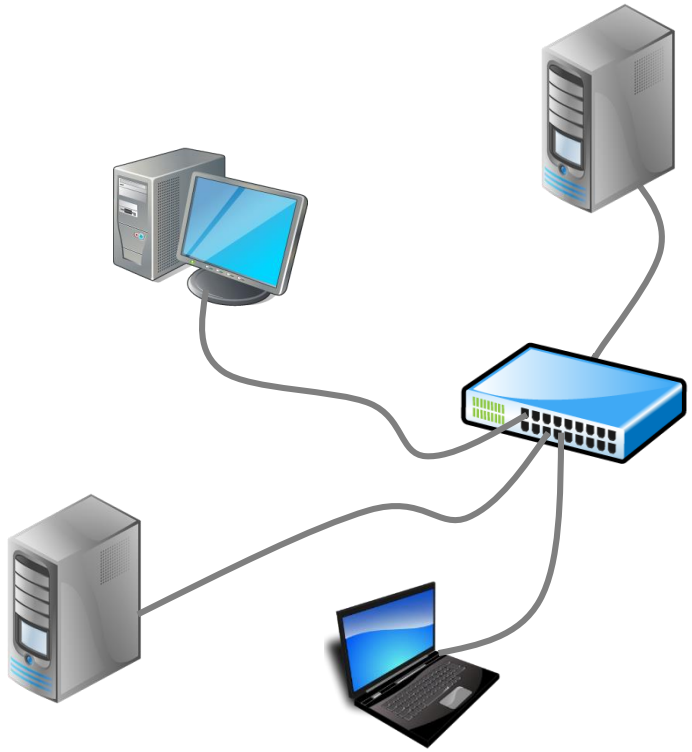
4 Categories of Networks

According to service providing

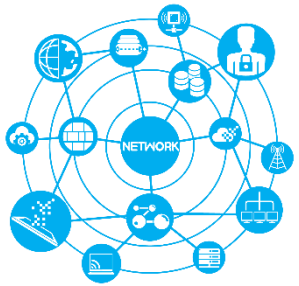


Peer to Peer Network

Client/Server Network

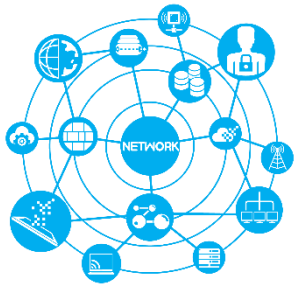


Computer Networks Fundamentals
Chapter One
Introduction to Networking



Lecture 2

- Protocols
- Standards
- Basic Concepts of Networking
  - Line Configuration (Point-to-Point, Multipoint)
  - Topology (Mesh, Star, Tree, Ring, Bus, Hybrid)
  - Transmission Modes (Simplex, Half-Duplex, Full-Duplex)
  - Categories of Networks (According to the size and to service providing)



Any Question ?

Thank You