PART I

Overview of Data Communications and Networking

Overview

Chapters

Chapter 1   *Introduction*

Chapter 2   *Network Models*
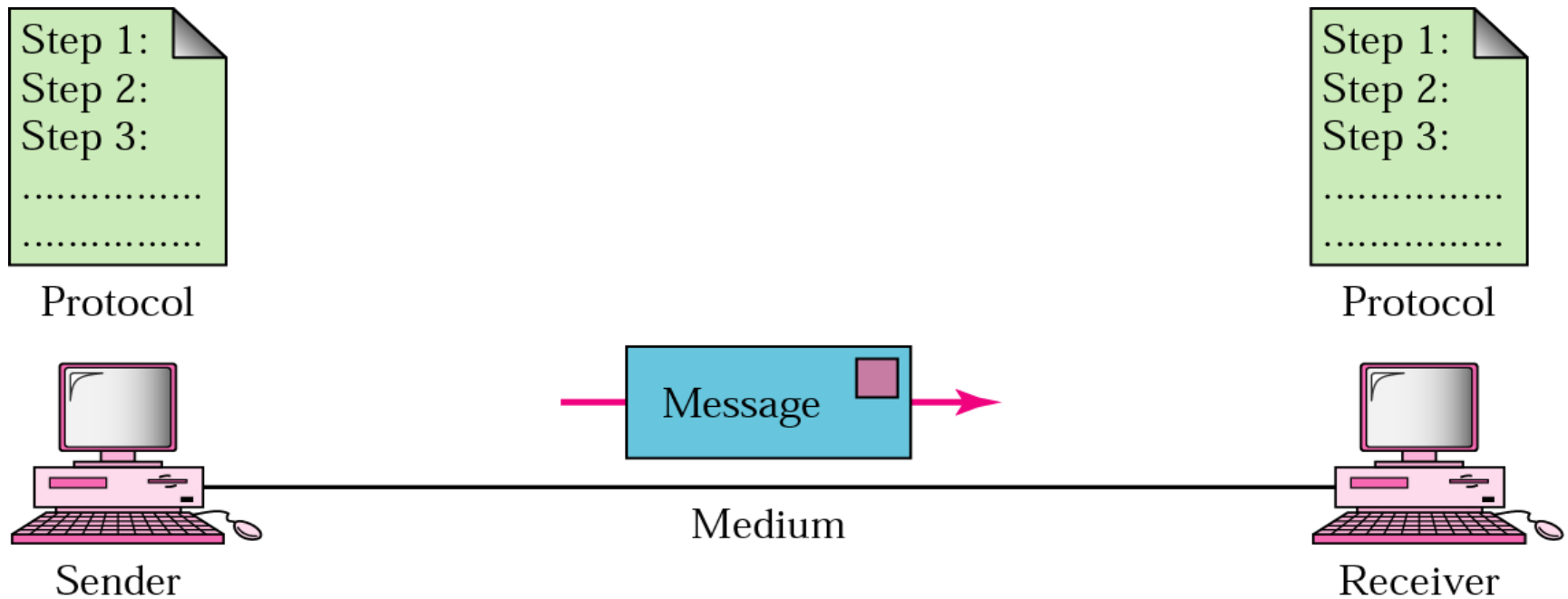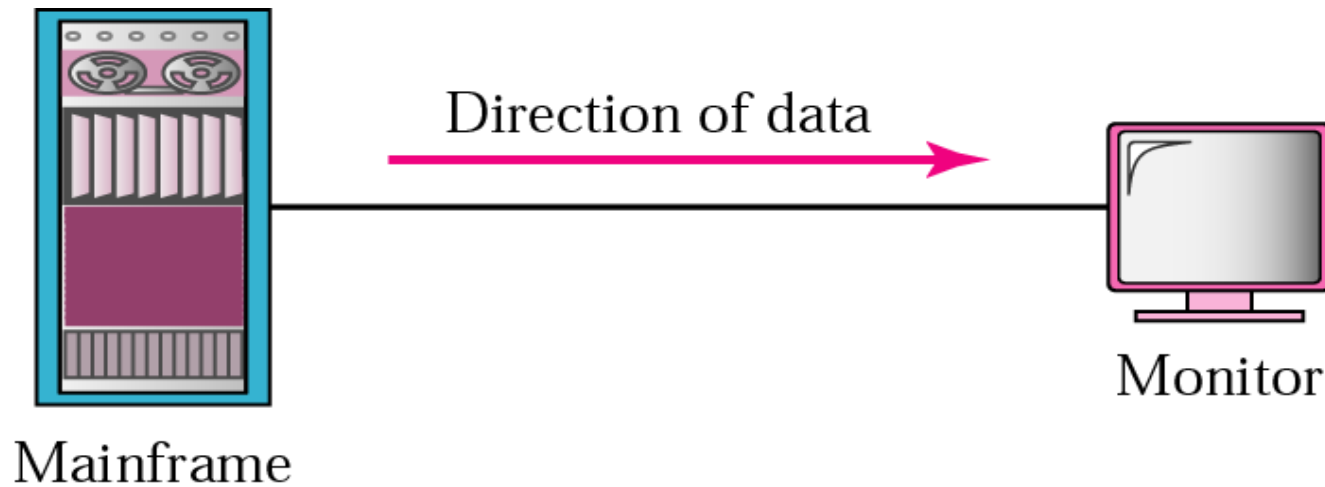
Chapter 1

Introduction

1.1 Data Communication

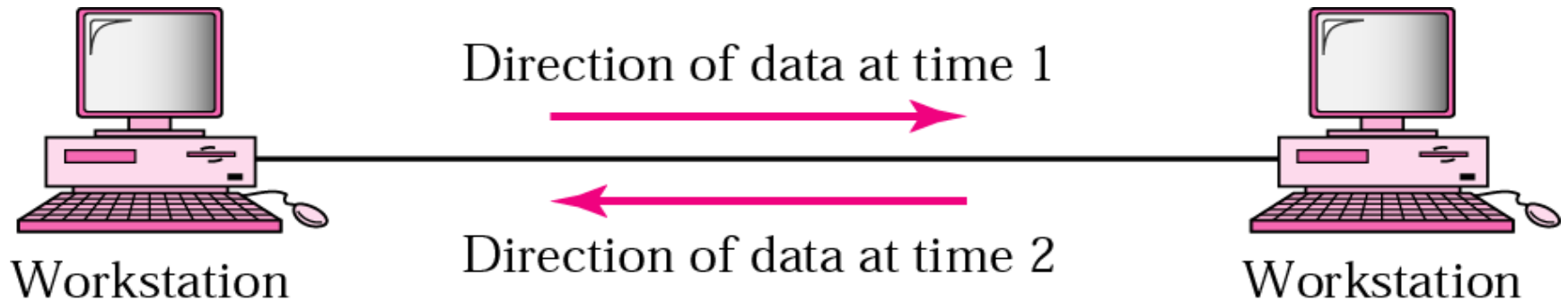Components

Data Representation

Direction of Data Flow

Figure 1.1 *Five components of data communication*
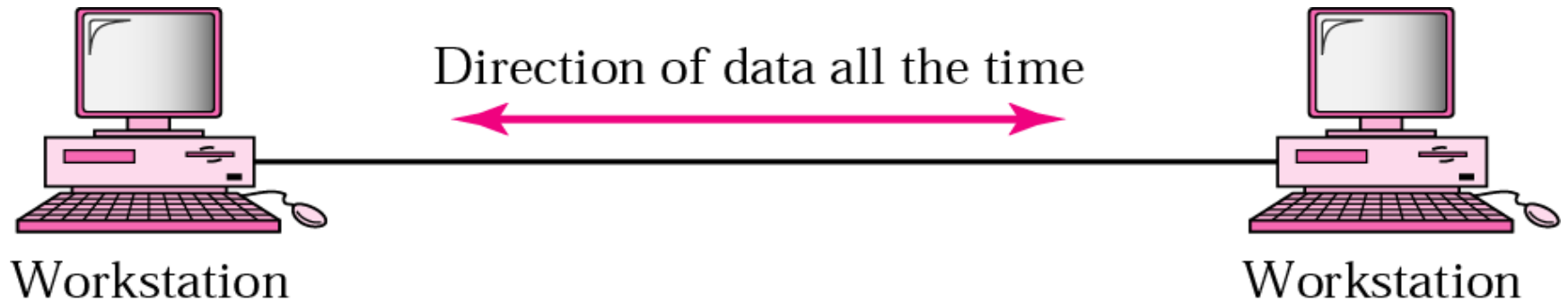
Figure 1.2 *Simplex*

Direction of data

Mainframe

Monitor

Figure 1.3 *Half-duplex*

Direction of data at time 1

Direction of data at time 2

Workstation

Workstation

Figure 1.4 *Full-duplex*

Direction of data all the time
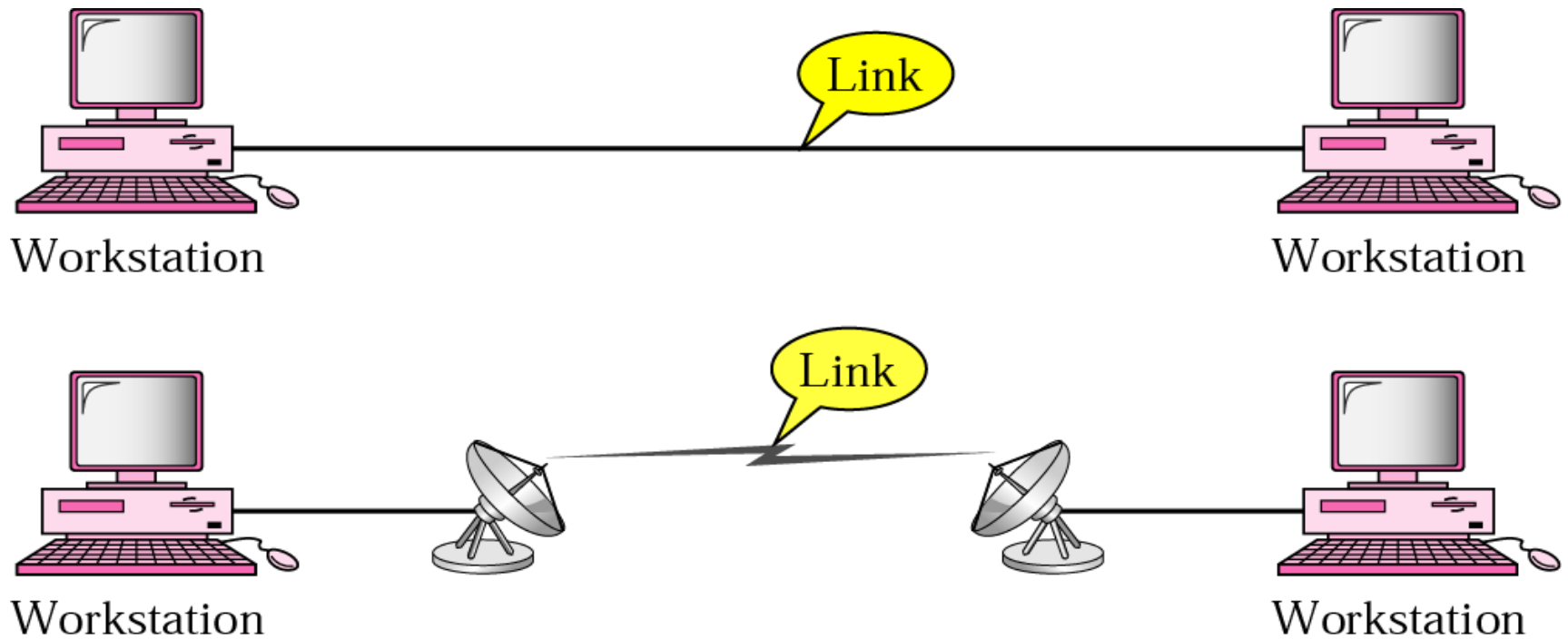
Workstation

Workstation

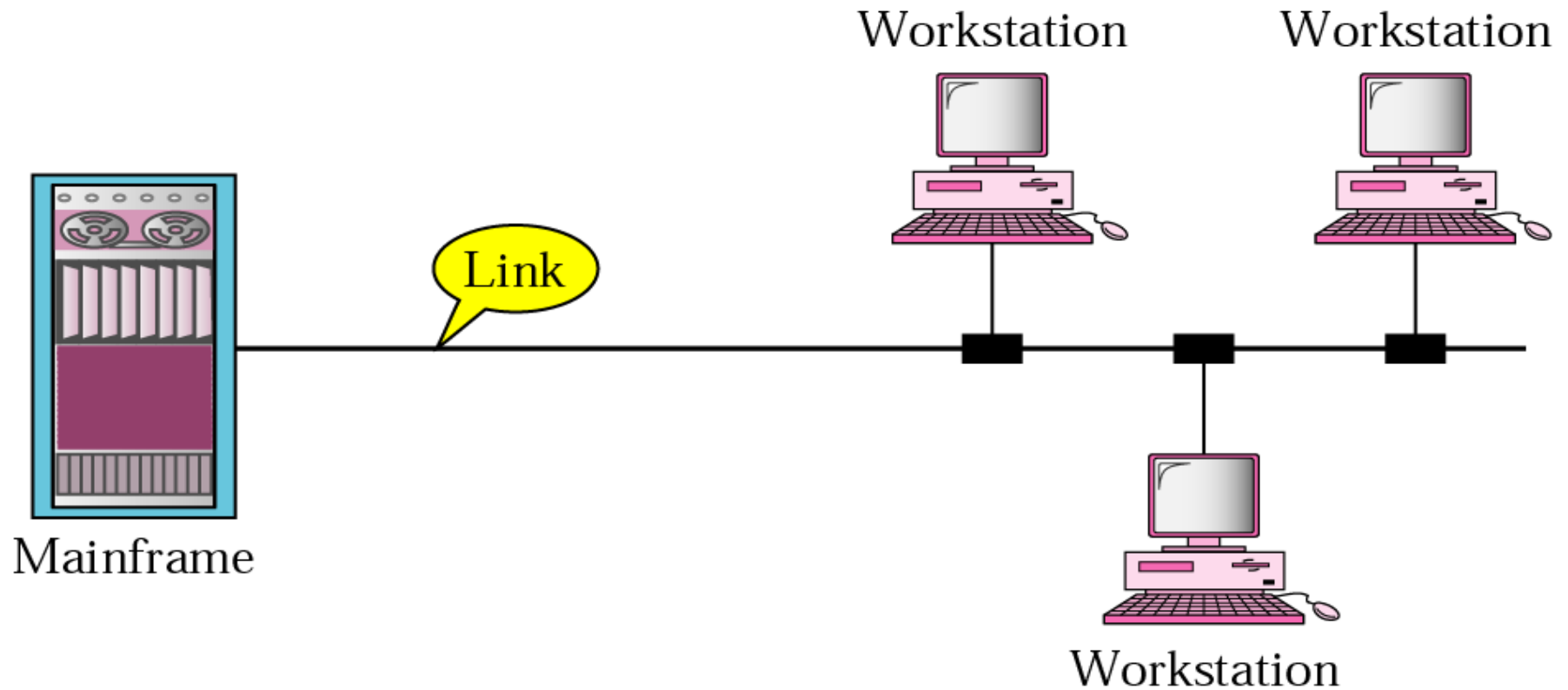# 1.2 Networks

Distributed Processing

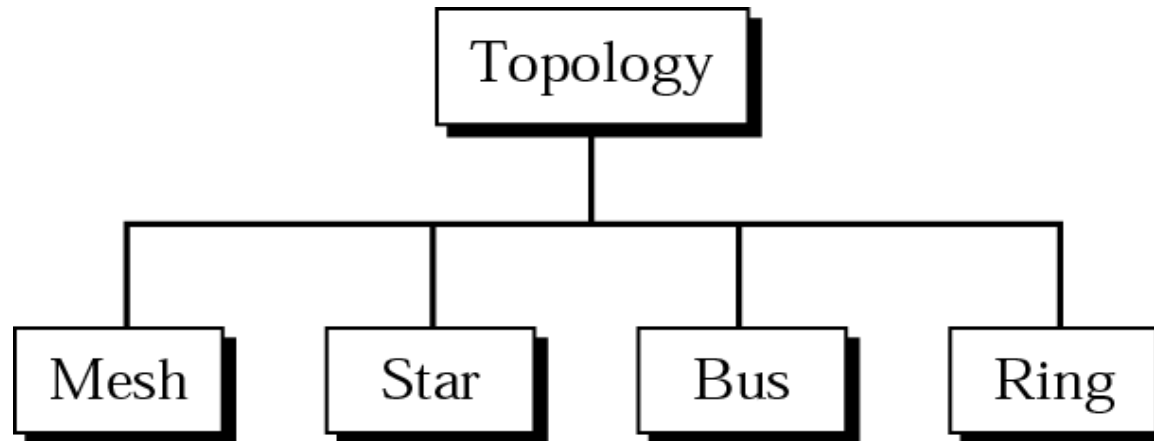Network Criteria

Physical Structures

Categories of Networks
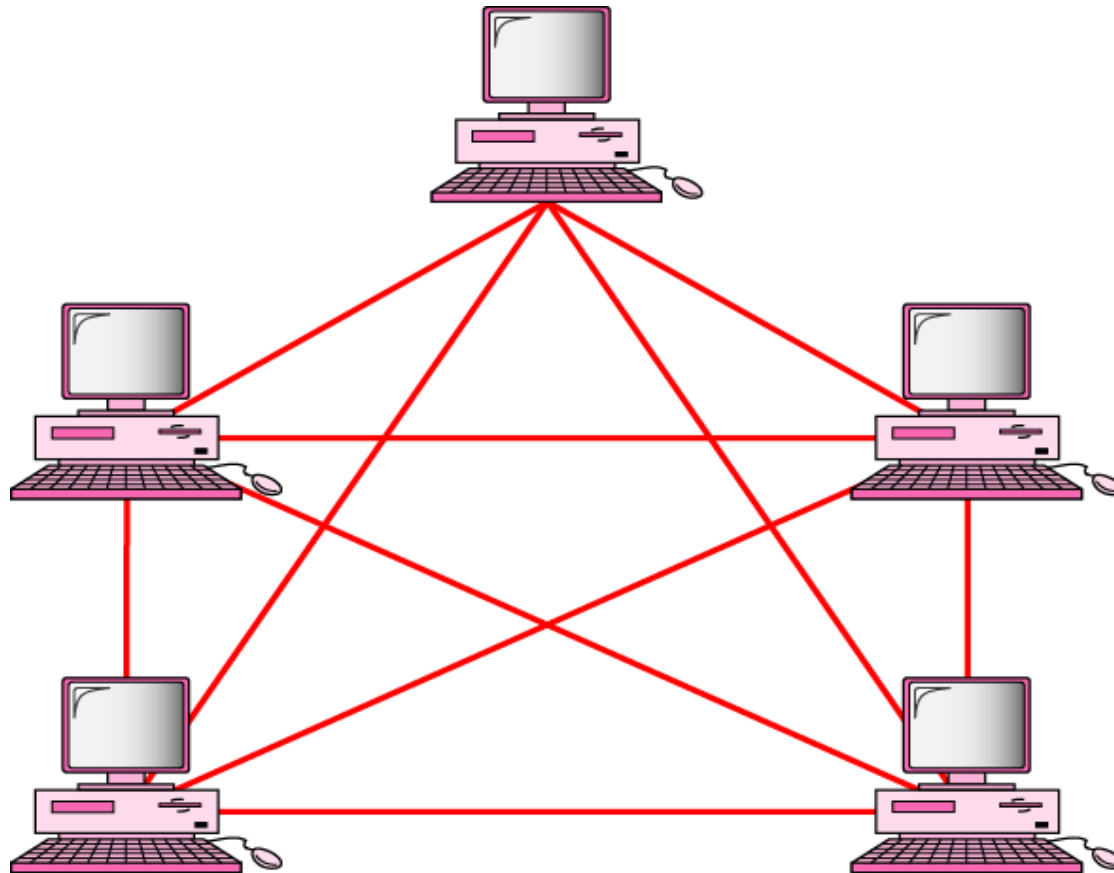
Figure 1.5   Point-to-point connection
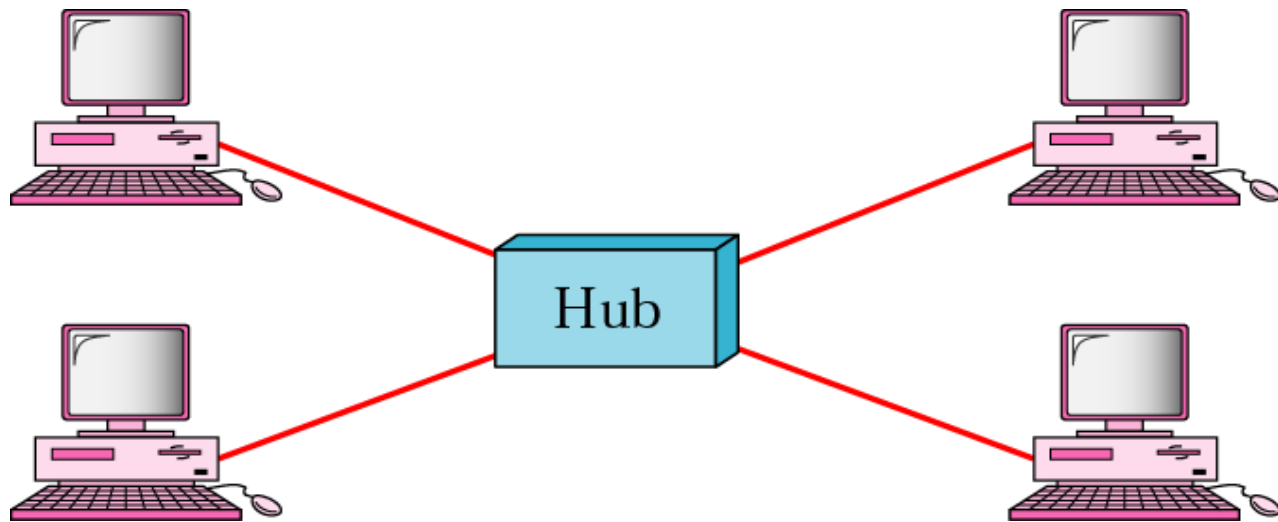
Figure 1.6 *Multipoint connection*
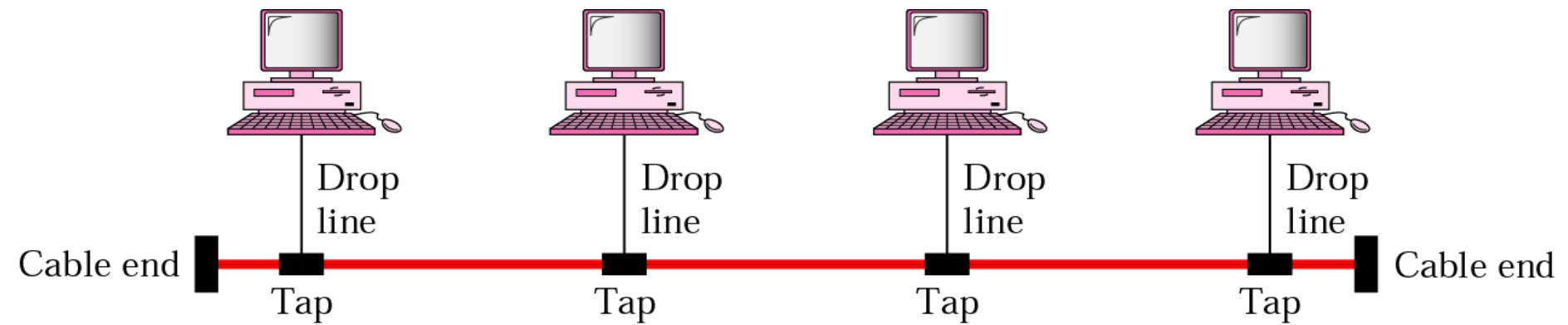
Figure 1.7   Categories of topology

Figure 1.8   *Fully connected mesh topology (for five devices)*
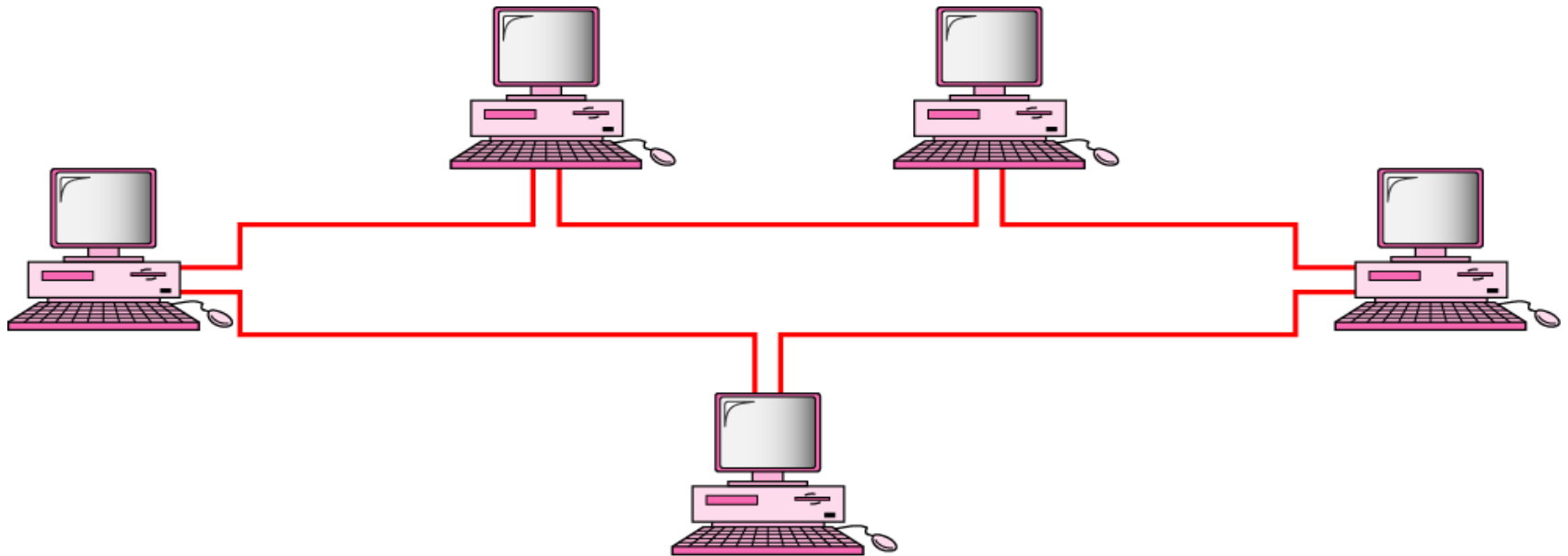
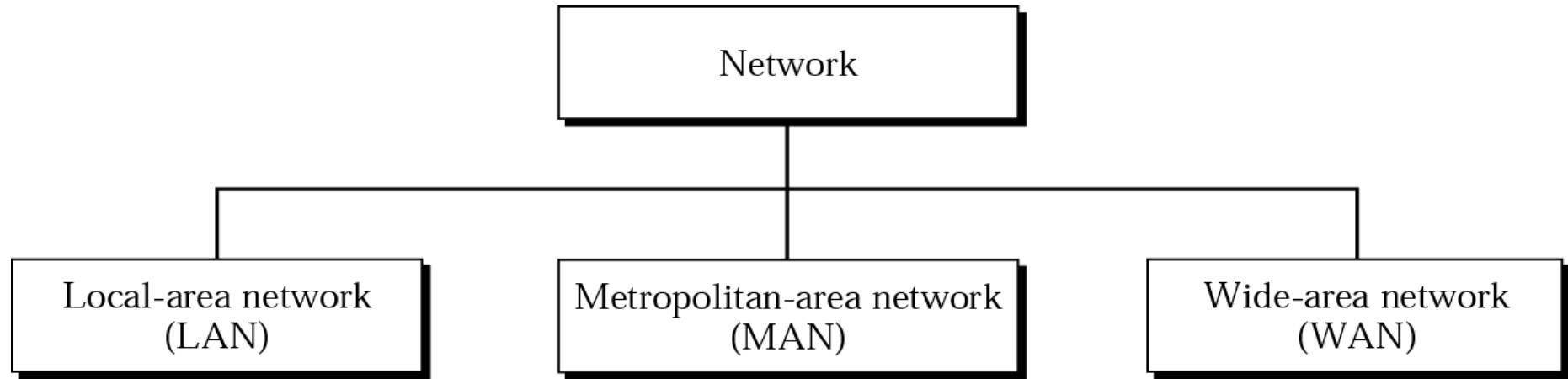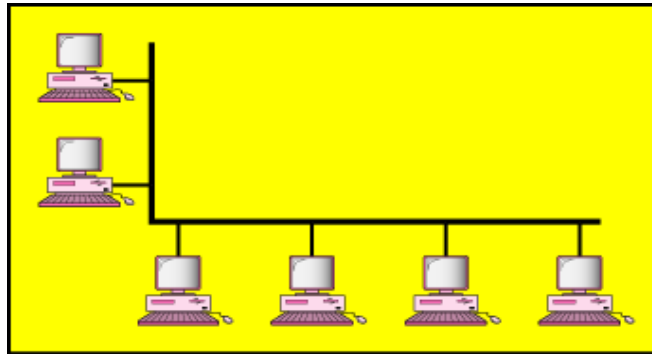**Figure 1.9   Star topology**
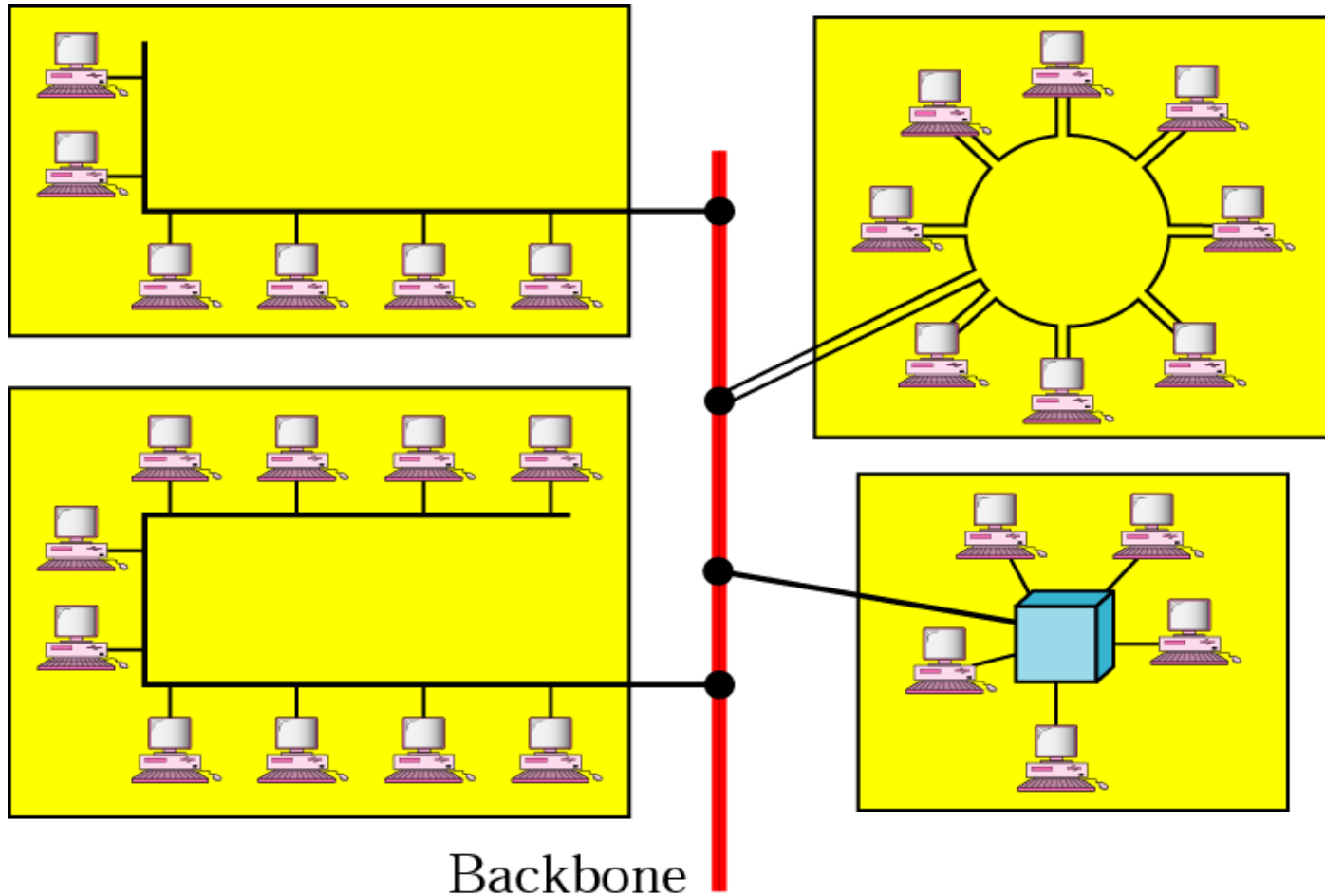
Figure 1.10   *Bus topology*

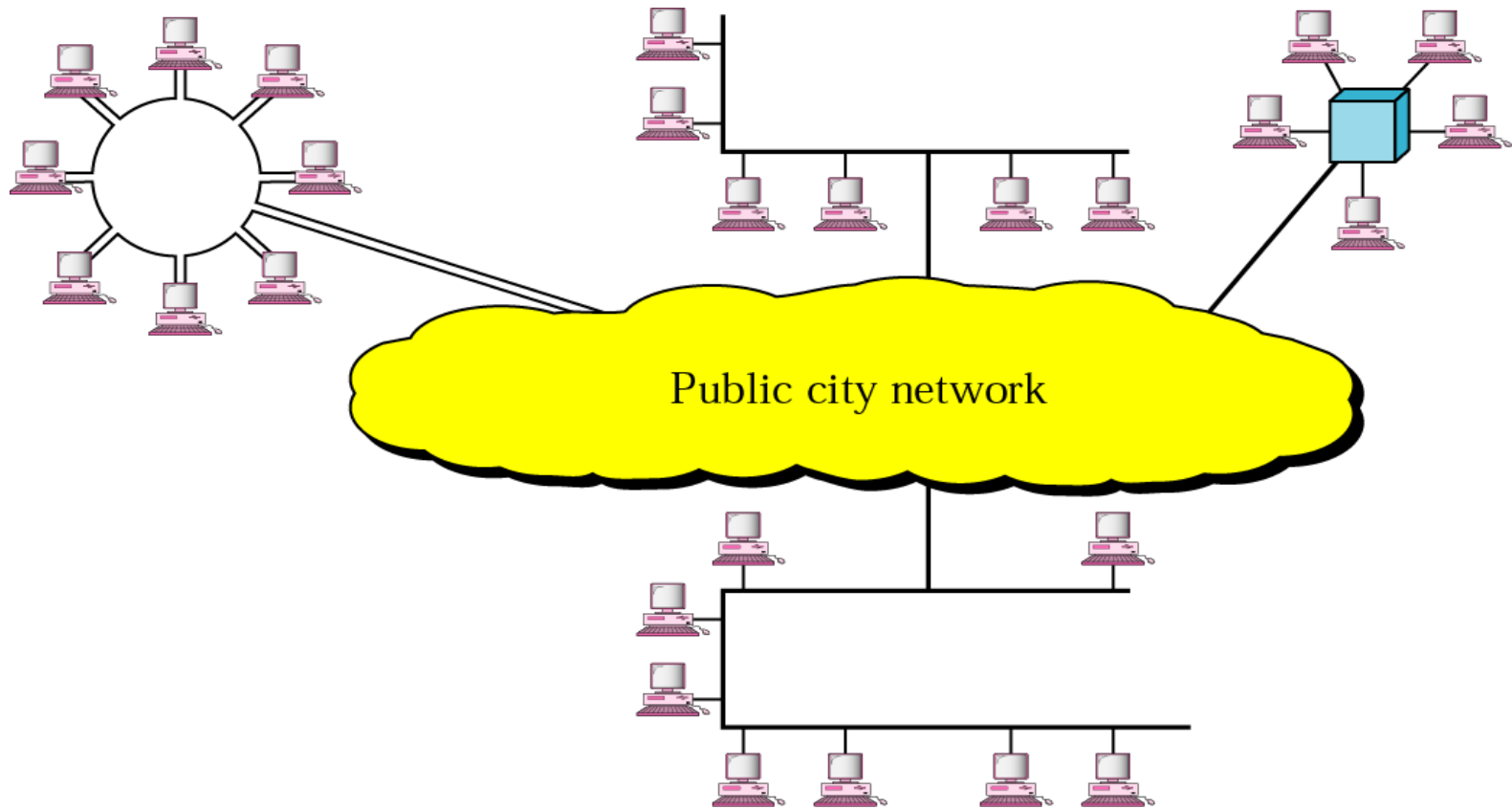# Figure 1.11   Ring topology

Figure 1.12   Categories of networks

Figure 1.13 *LAN*

a. Single-building LAN

Figure 1.13 *LAN (Continued)*

Backbone

b. Multiple-building LAN

Figure 1.14 *MAN*
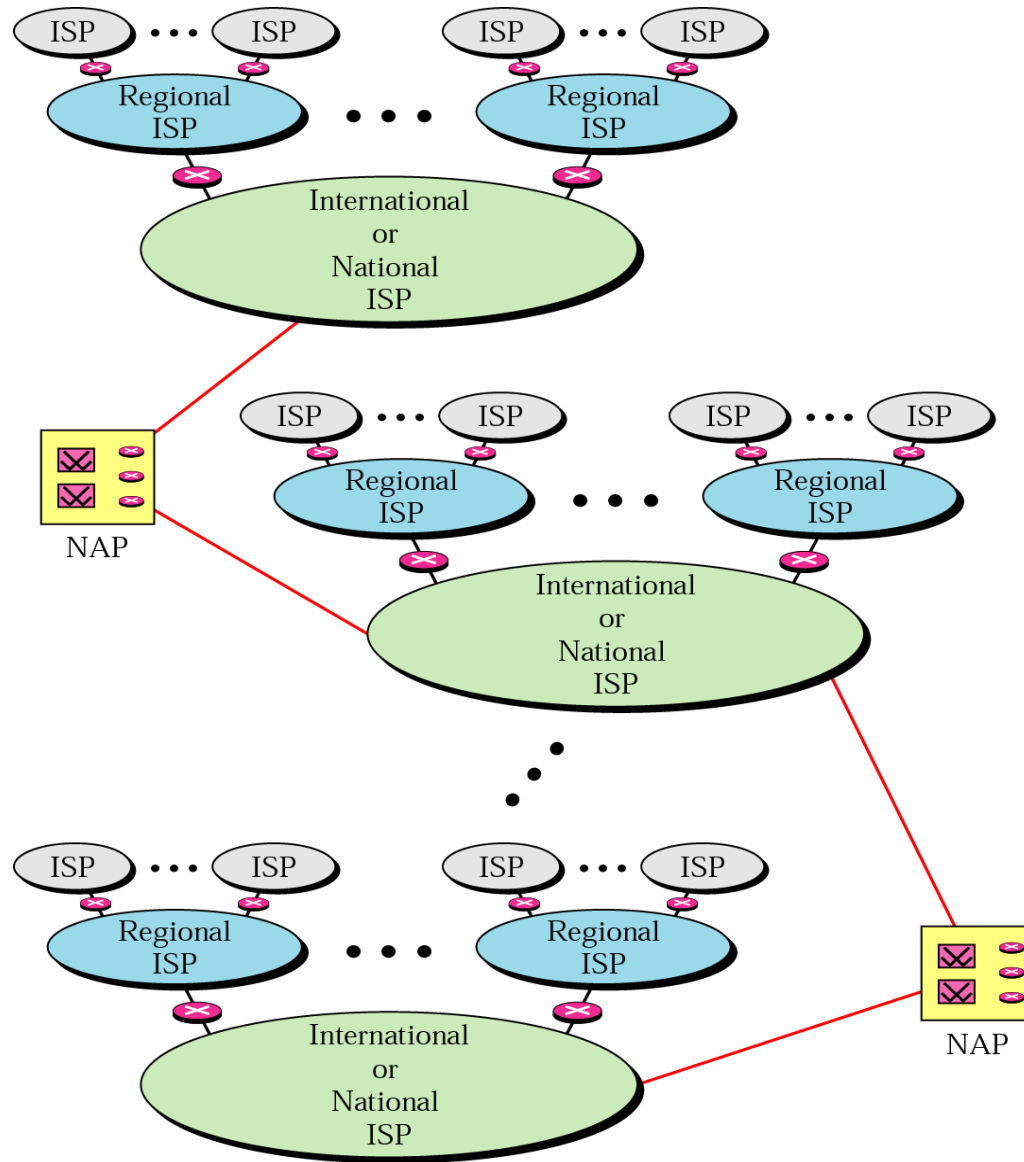

Public city network

Figure 1.15 *WAN*
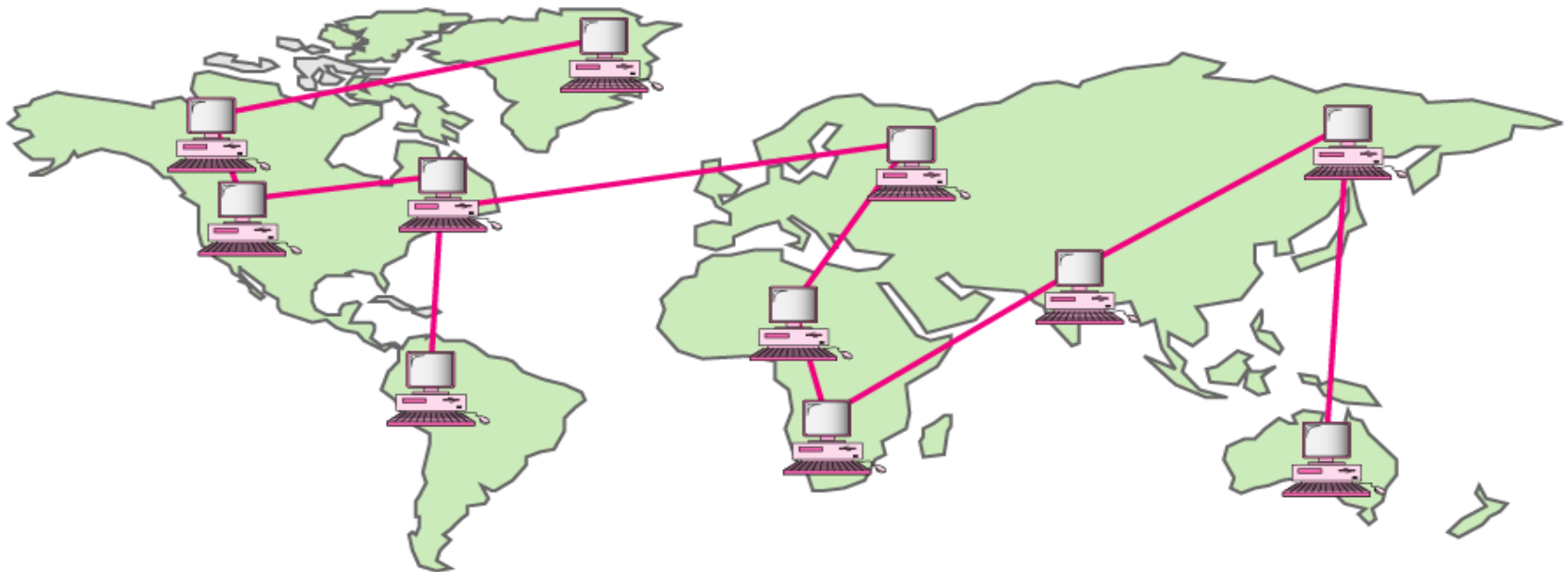
1.3 The Internet

A Brief History

The Internet Today

Figure 1.16   Internet today

1.4 Protocols and Standards

Protocols

Standards

Standards Organizations

Internet Standards