Chapter 1

Introduction

1-1 DATA COMMUNICATIONS

The term telecommunication means communication at a distance. The word data refers to information presented in whatever form is agreed upon by the parties creating and using the data. Data communications are the exchange of data between two devices via some form of transmission medium such as a wire cable.

Topics discussed in this section:

Components
Data Representation
Data Flow

Figure 1.1 *Five components of data communication*

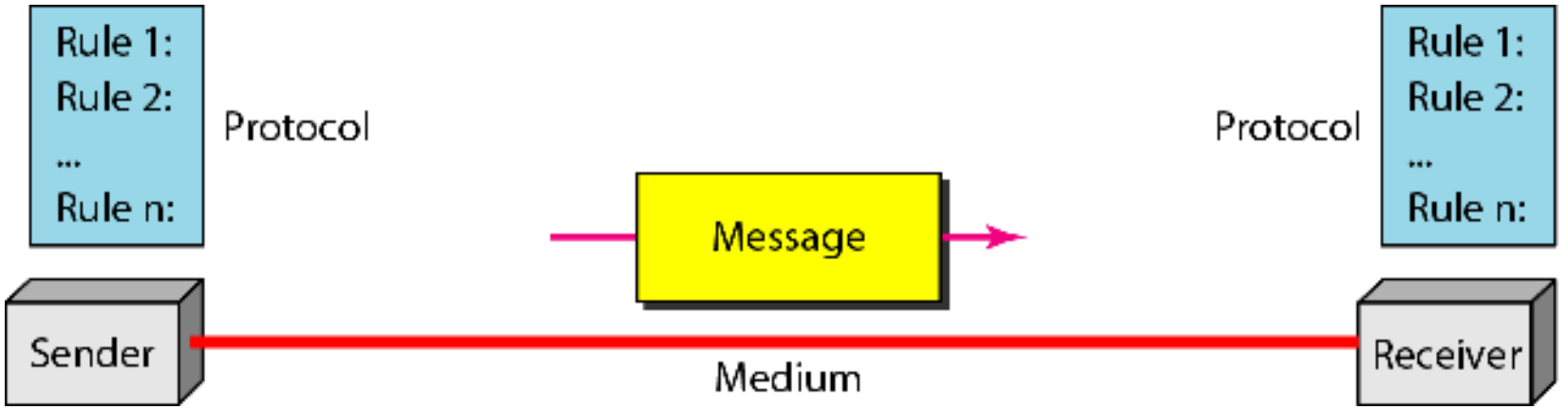
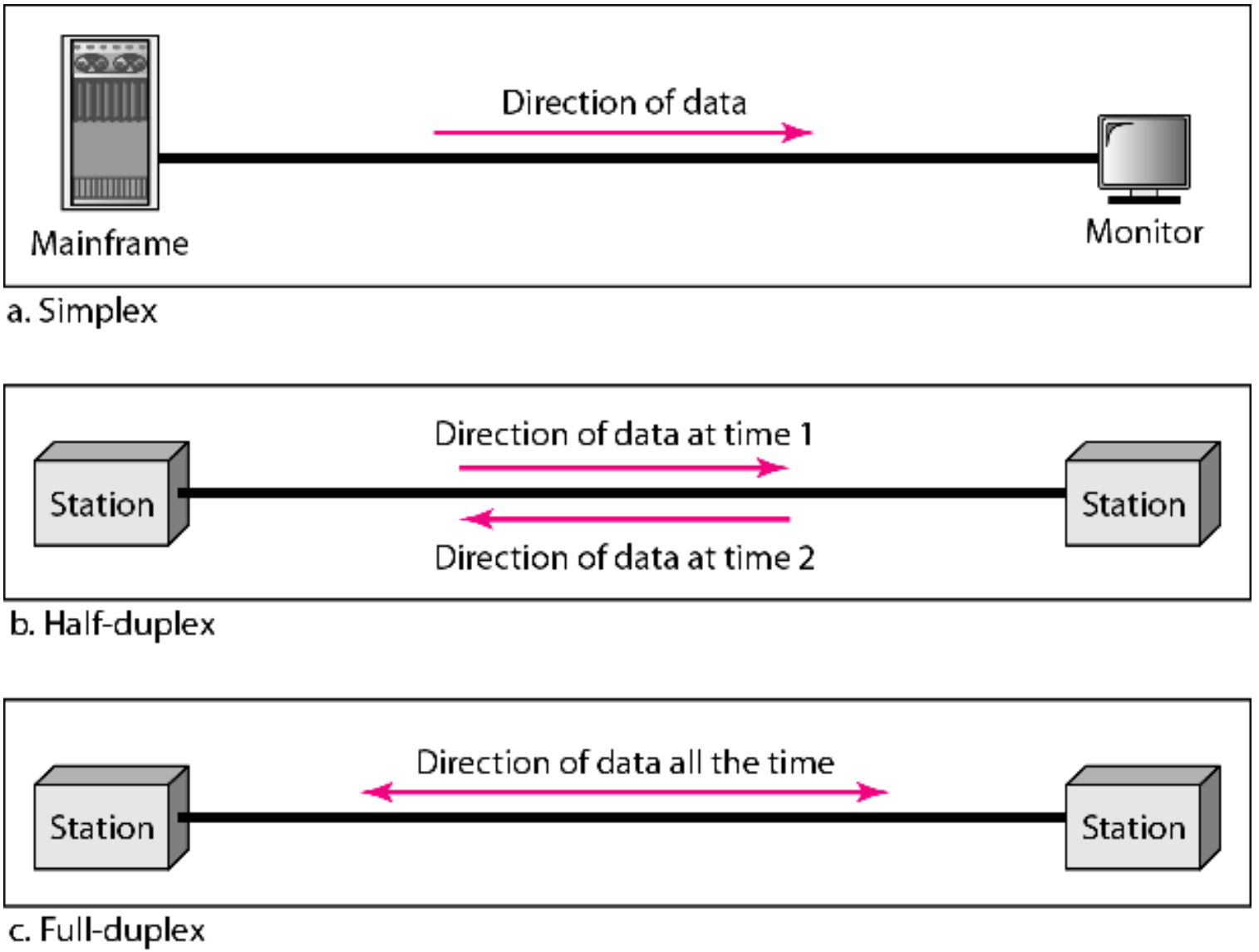


Figure 1.2 *Data flow (simplex, half-duplex, and full-duplex)*



1-2 NETWORKS

A network is a set of devices (often referred to as nodes) connected by communication links. A node can be a computer, printer, or any other device capable of sending and/or receiving data generated by other nodes on the network.

Topics discussed in this section:

Distributed Processing
Network Criteria
Physical Structures
Network Models
Categories of Networks
Interconnection of Networks: Internetwork

Figure 1.3 *Types of connections: point-to-point and multipoint*

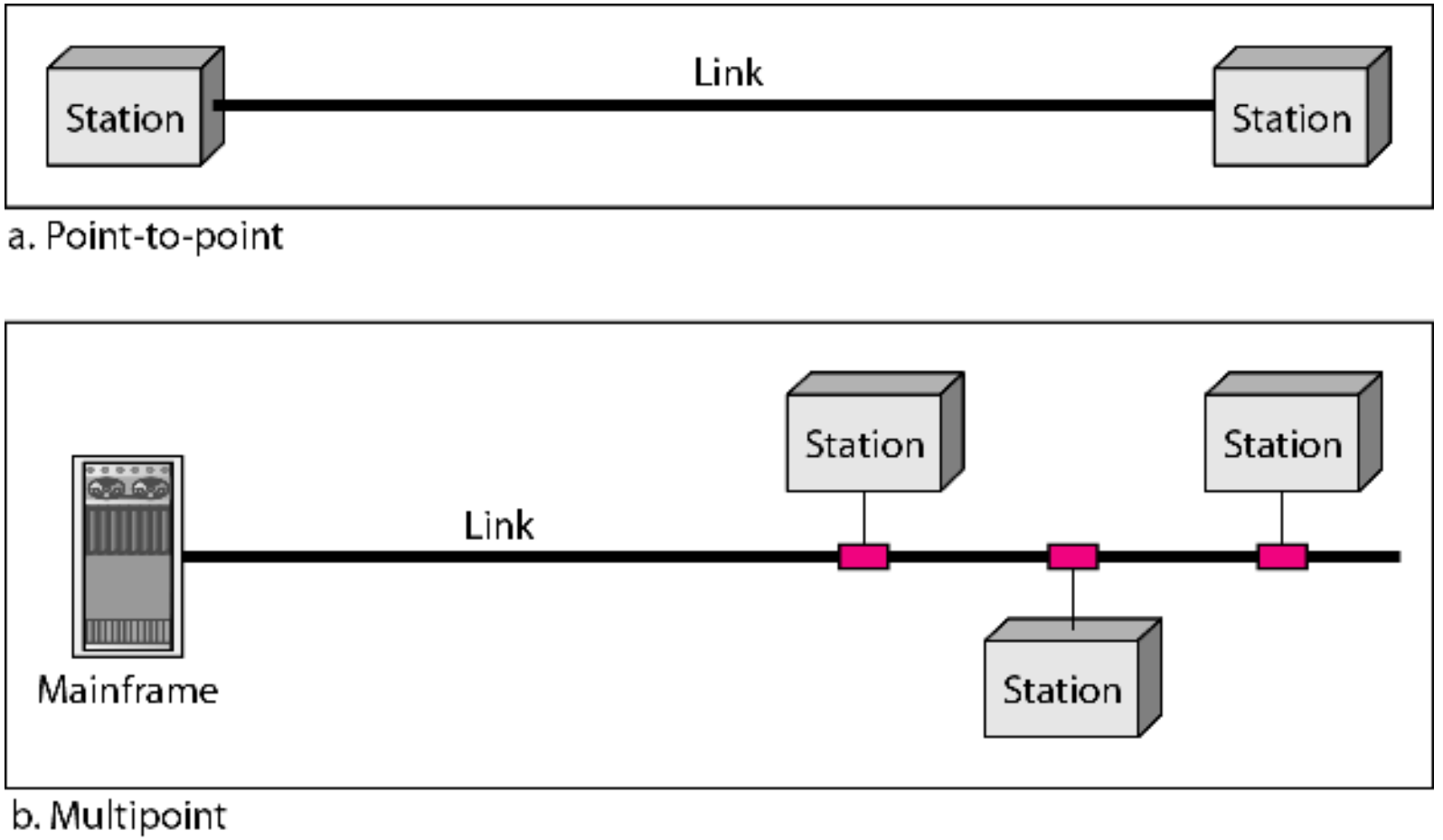


Figure 1.4 *Categories of topology*

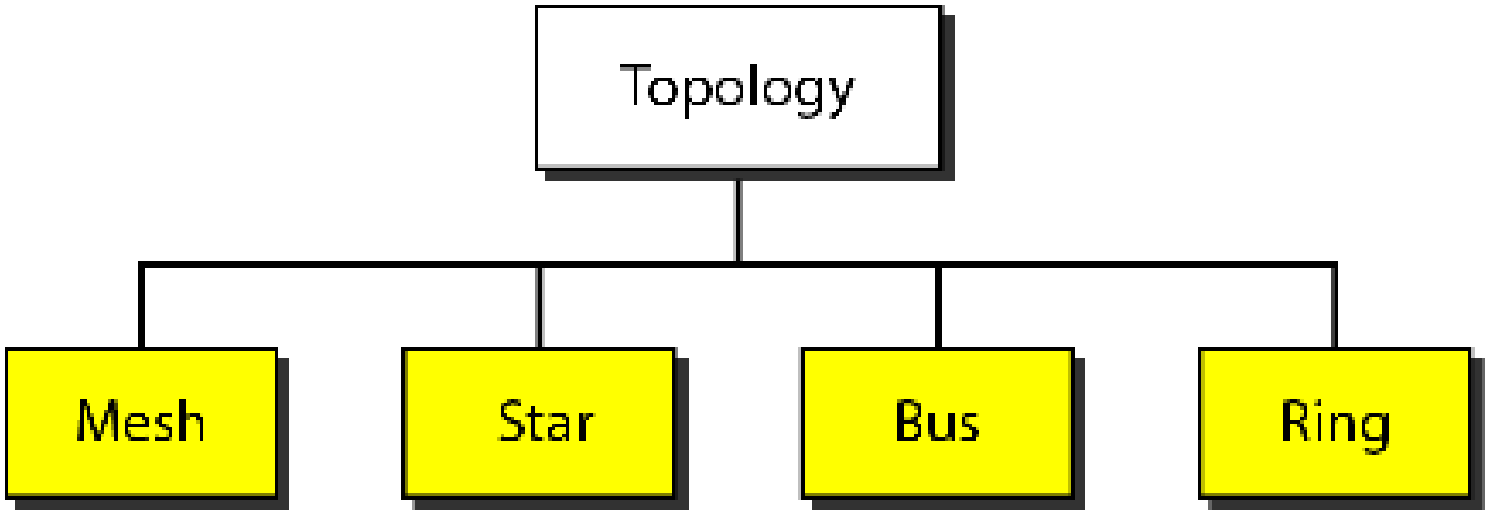


Figure 1.5 *A fully connected mesh topology (five devices)*

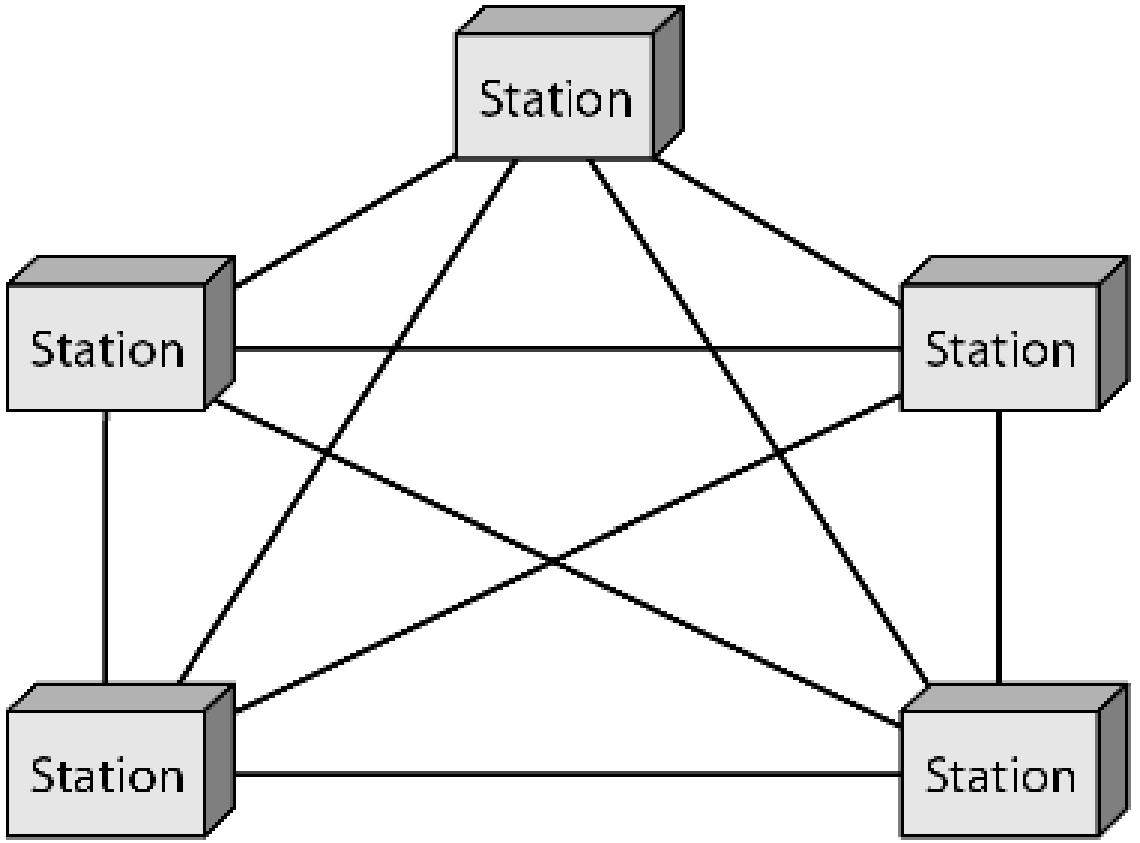


Figure 1.6 *A star topology connecting four stations*

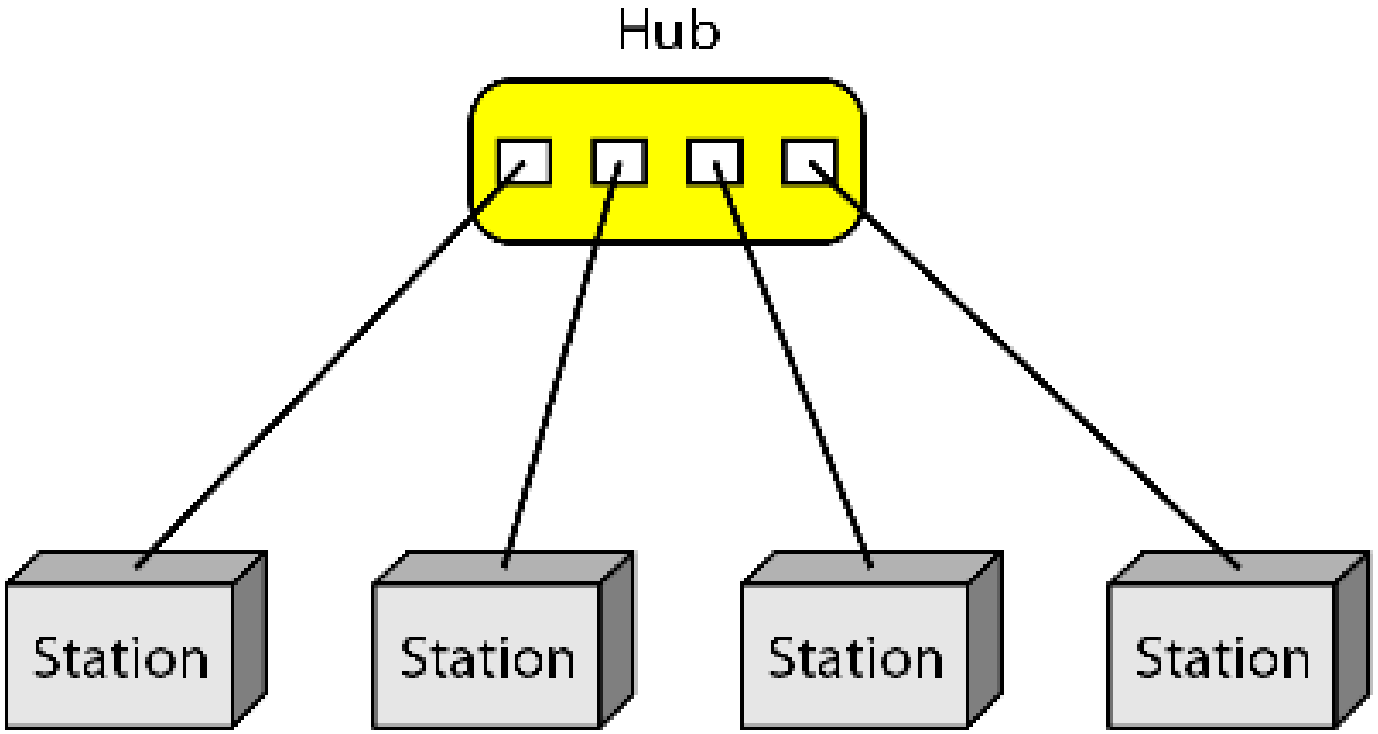


Figure 1.7 *A bus topology connecting three stations*

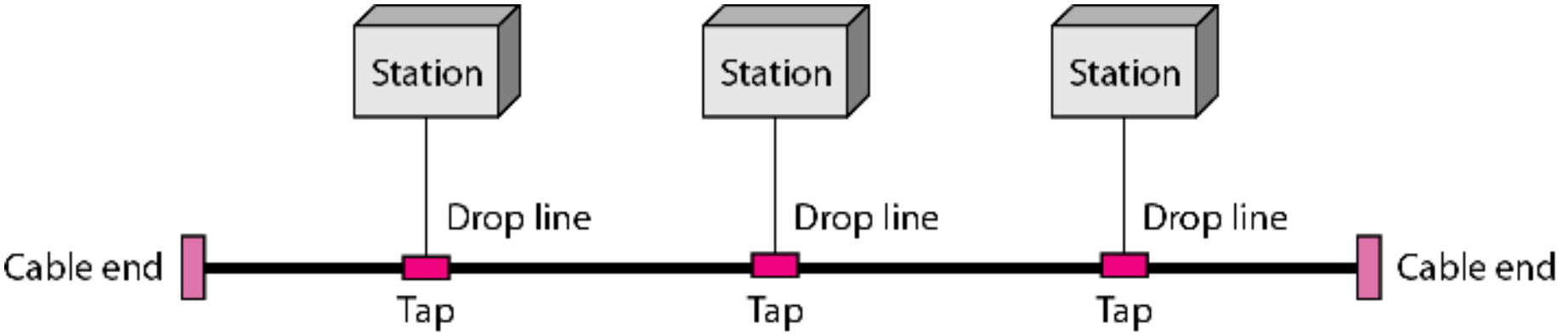


Figure 1.8 *A ring topology connecting six stations*

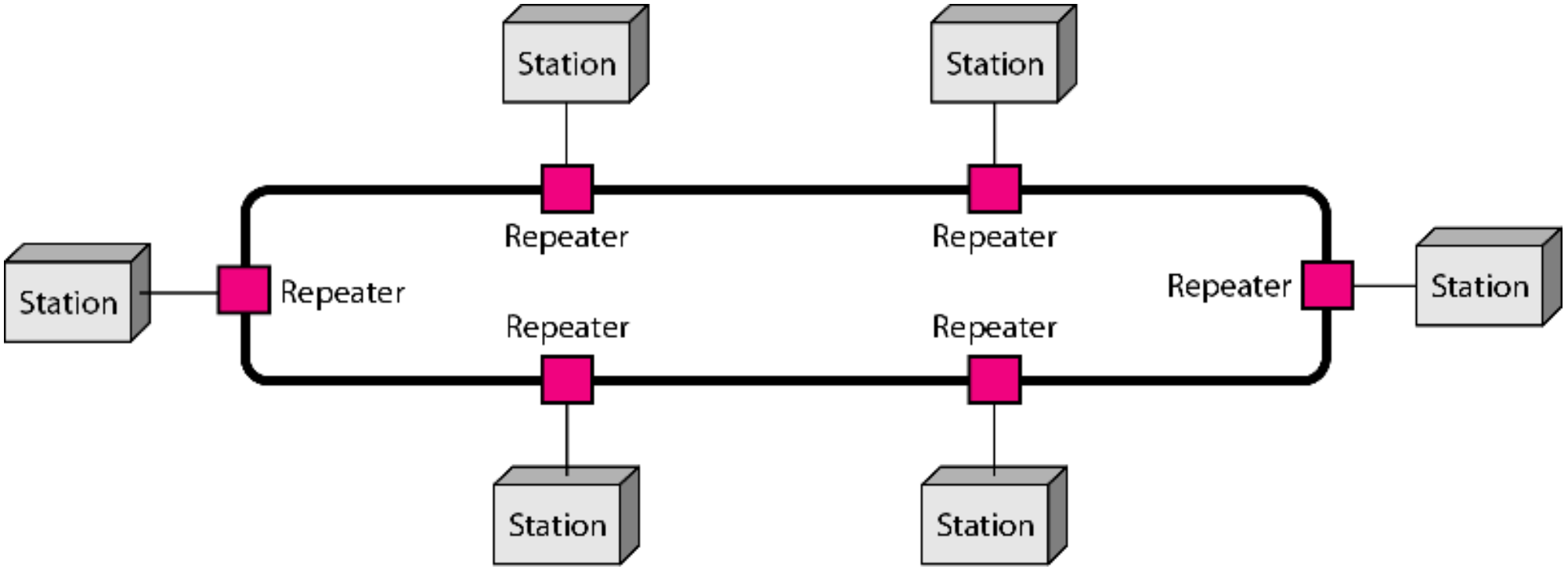


Figure 1.9 *A hybrid topology: a star backbone with three bus networks*