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Module 6: Introduction to Network Administration

FIGURE

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Upon completion of this module, the student will be able to perform tasks related to the following:	
6.1	Workstations and Servers
6.2	Network Management

Single User Desktop System

FIGURES

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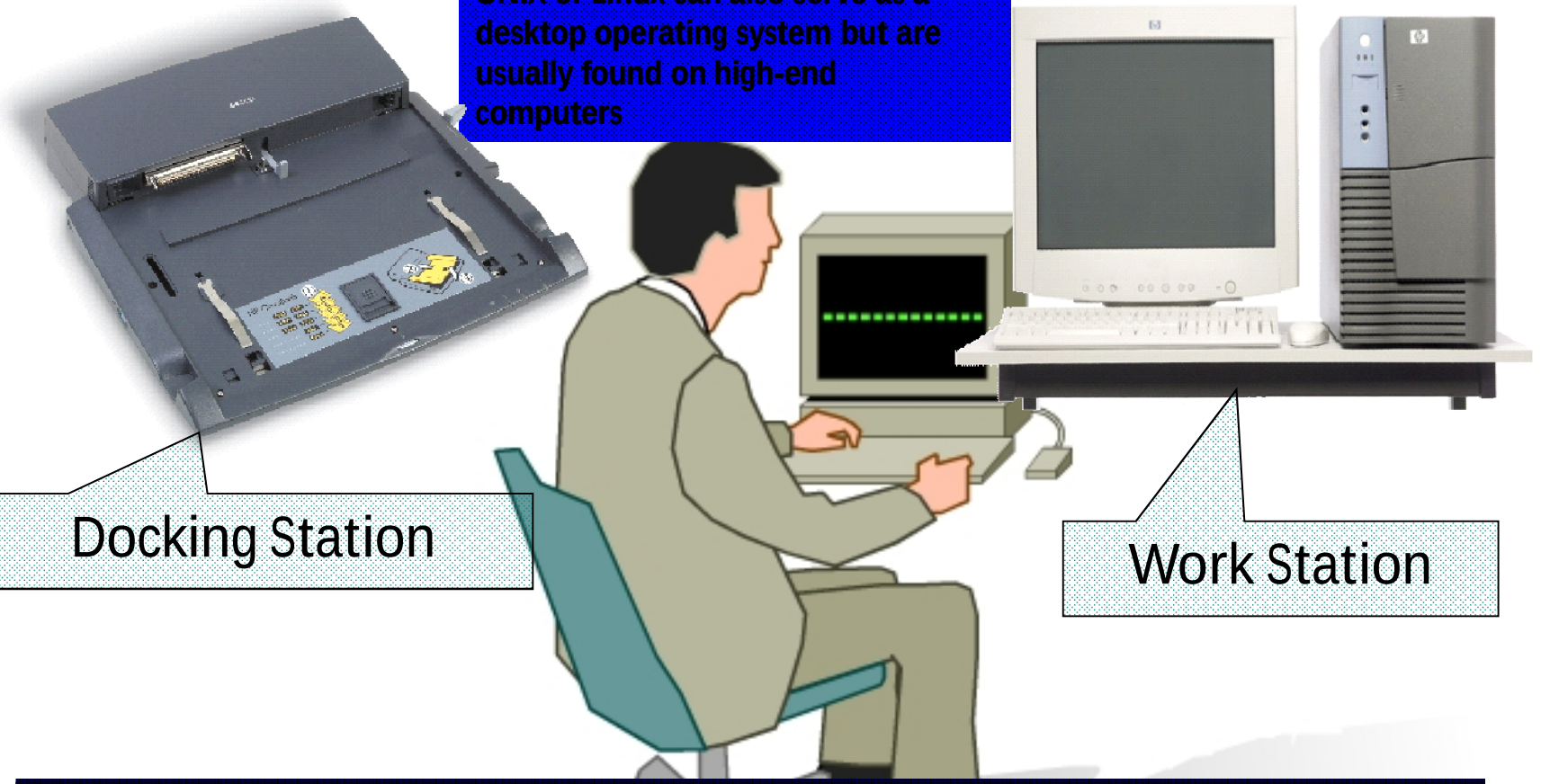
UNIX or Linux can also serve as a desktop operating system but are usually found on high-end computers



- Intercepts user data and application commands
- Directs the command to either
  - the local operating system or
  - the network interface card (NIC)
- Delivers transmissions from the network to the application

Single User Desktop System

FIGURES

6.1.1 Workstations

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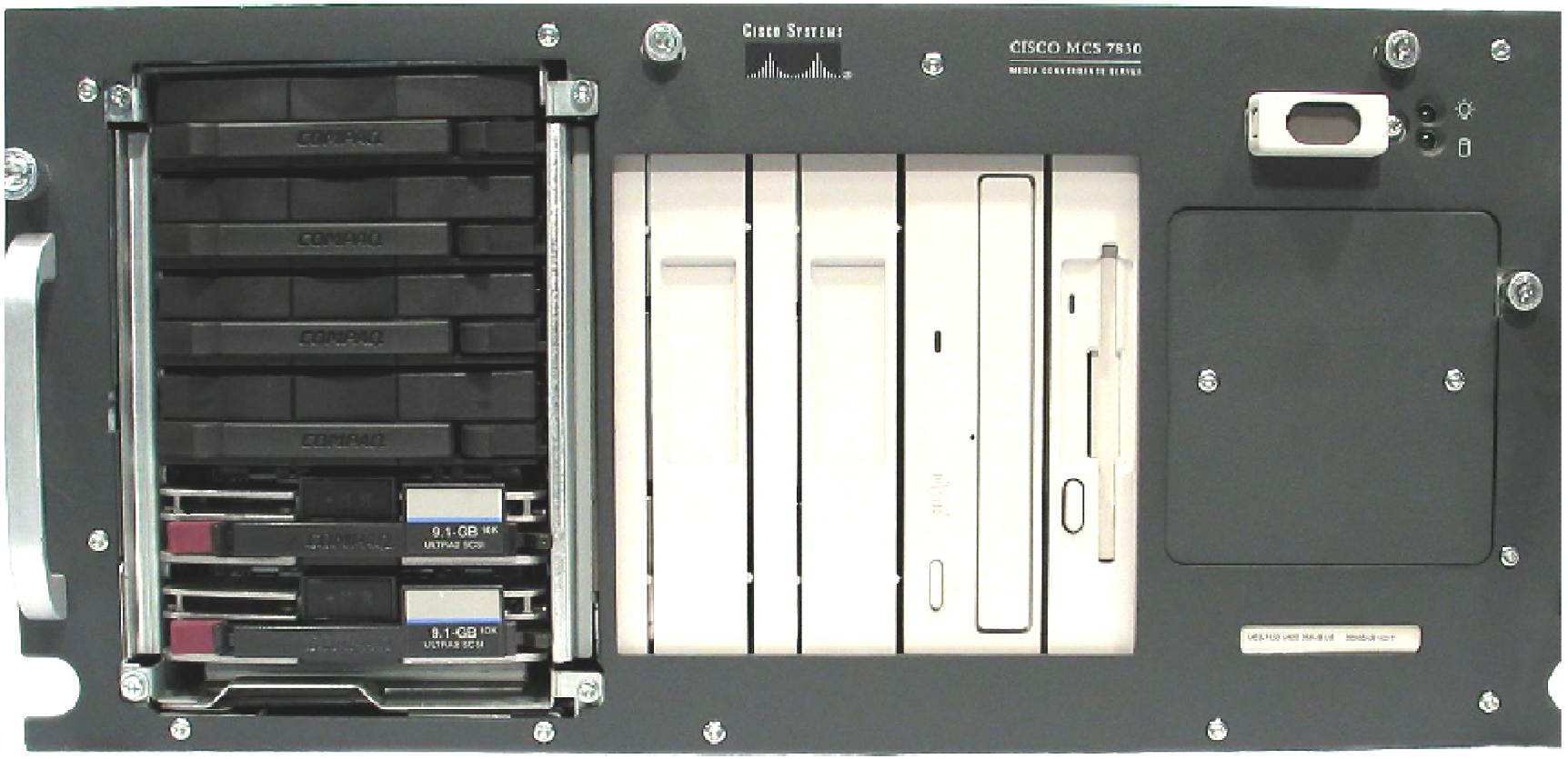
1. A diskless workstation is a special computer that runs on a network.
2. It has no disk drives but otherwise is a normal computer.
3. Because they have no disk drives, it is not possible to upload data from the workstation or download anything to it.
4. A diskless workstation cannot pass a virus onto the network, nor can it be used to take data from the network by copying this information to a disk drive.
5. For this reason, such workstations are used in networks where security is paramount.

6.1.2 Servers

- Hypertext Transfer Protocol (HTTP)
- File Transfer Protocol (FTP)
- Domain Name System (DNS)
- Simple Mail Transfer Protocol (SMTP)
- Post Office Protocol 3 (POP3)
- Internet Messaging Access Protocol (IMAP)
- File sharing protocols include Sun Microsystems Network File System (NFS)
- Microsoft Server Message Block (SMB).
- Print services
- Dynamic Host Configuration Protocol (DHCP)
- Firewall: Proxy or Network Address Translation (NAT)

Some Windows operating systems may be installed on both workstations **and** servers. The NT/2000/XP versions of Windows software provide network server capability.

6.1.2 Servers



- Servers are typically larger systems than workstations
- Extra memory for multiple tasks that are active or resident in memory at the same time.
- Extra disk space for shared files and as an extension to the internal memory on the system.
- Extra expansion slots to connect shared devices, such as printers and multiple network interfaces.

6.1.2 Servers

- Multiprocessor systems are capable of executing multiple tasks in parallel by assigning each task to a different processor.
- Must function effectively under heavy loads.
- Redundancy is a feature of fault tolerant systems that are designed to survive failures and can be repaired without interruption while the systems are up and running.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One Very Busy Spigot

Connecting Computer Systems

FIGURES

6.1.2 Servers

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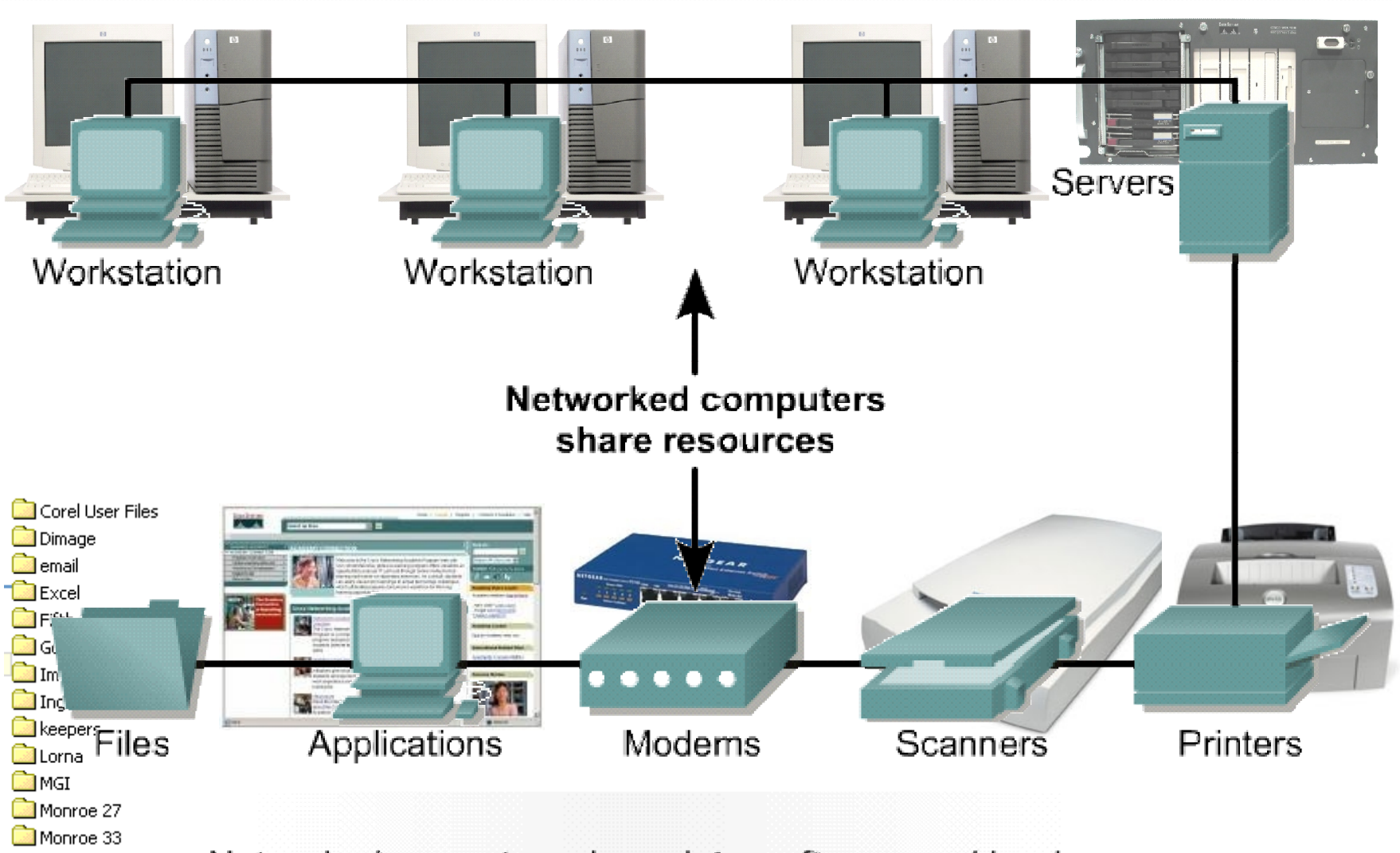

Networked computers share data, software, and hardware resources.

Network Server Environment

FIGURES

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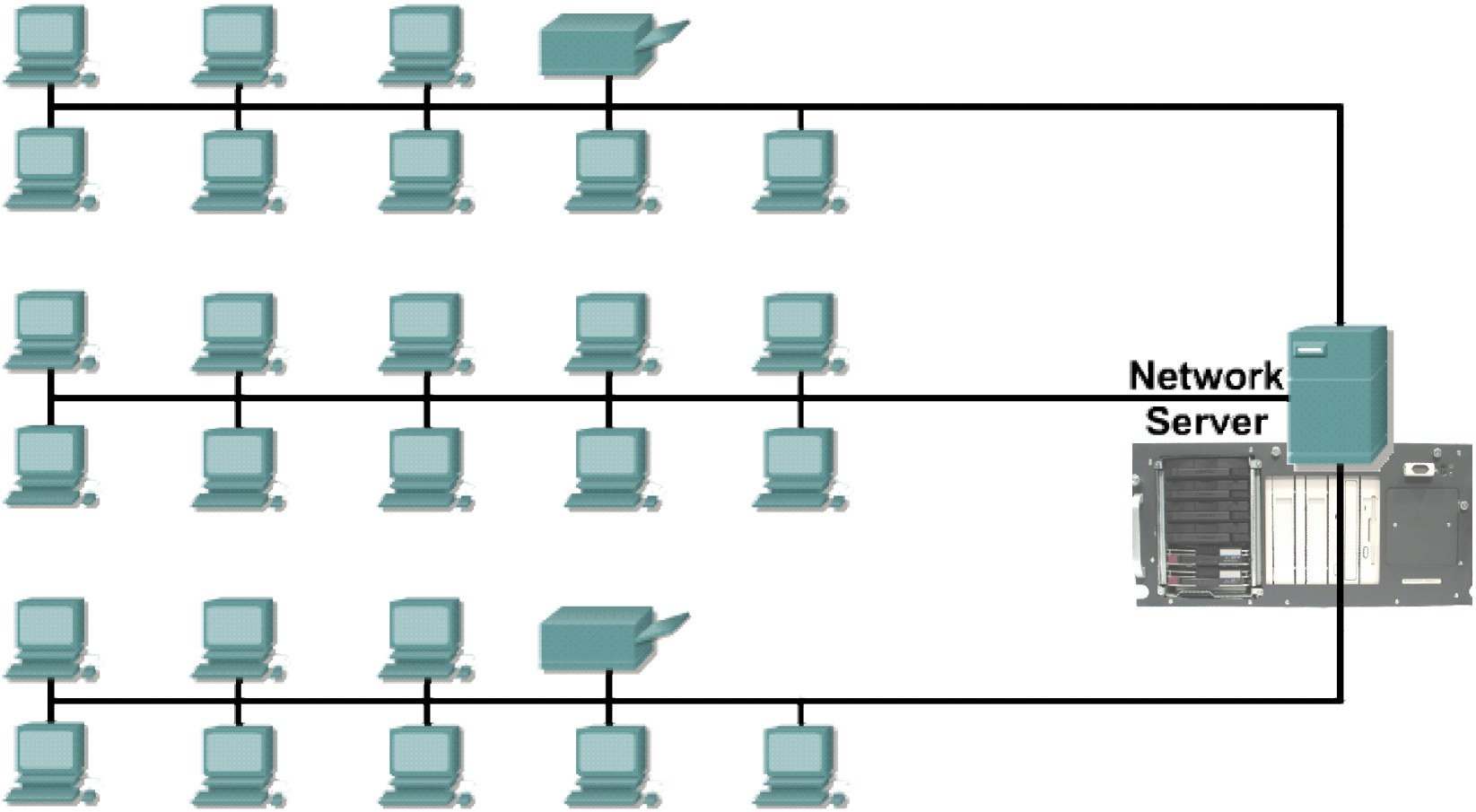

Multiple users and devices can be managed by a network server.

Client-Server Networks

FIGURES

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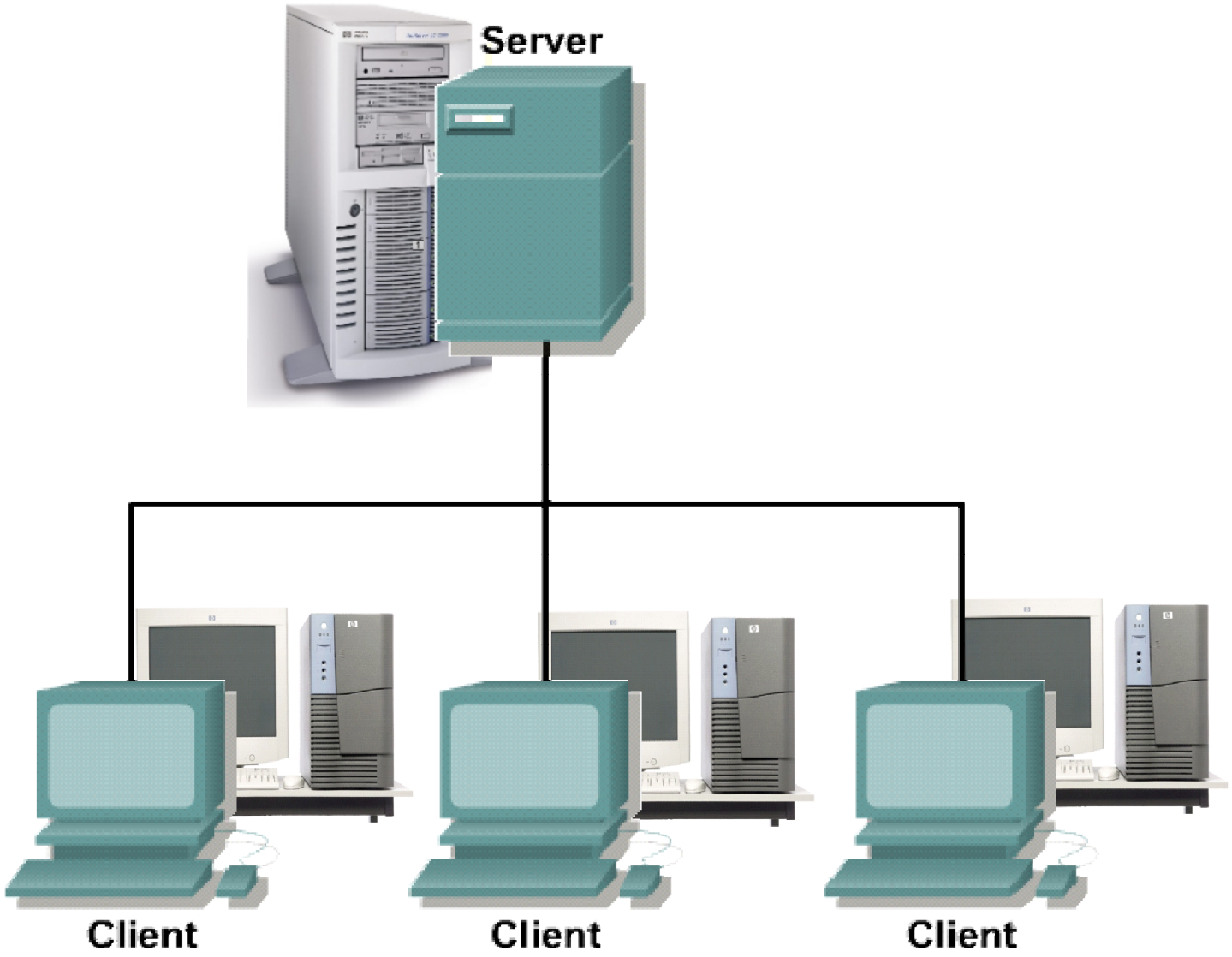

Client/Server Environment

FIGURES

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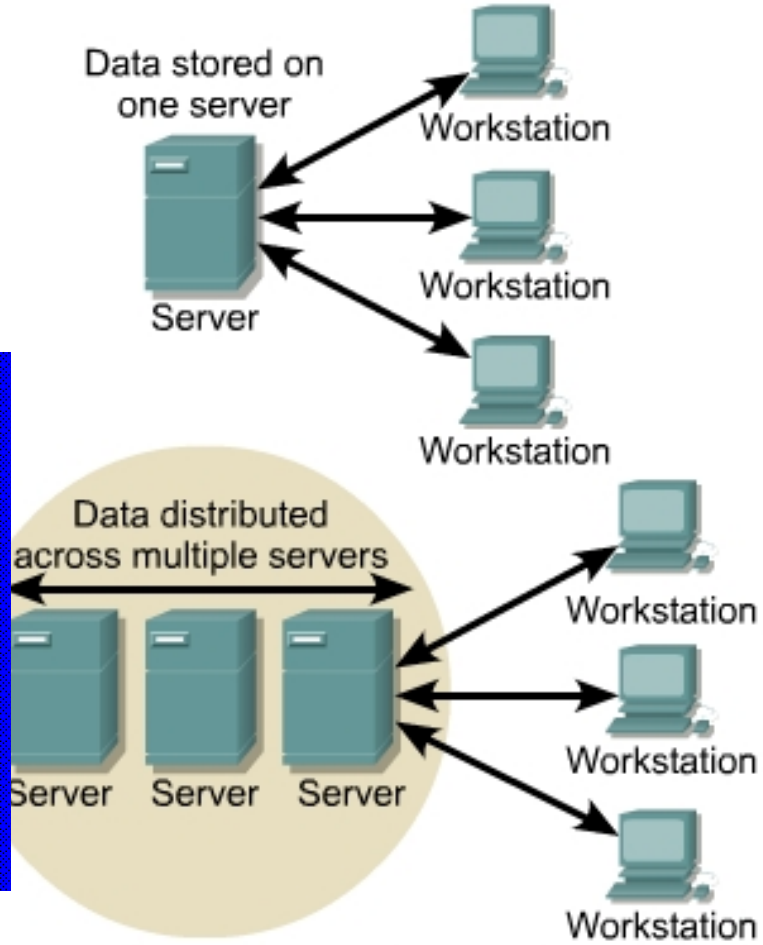
6.1.2 Servers

- One server running a NOS may work well when serving only a handful of clients.
- Most organizations use several servers.
- Typically
  - one server for e-mail
  - one server for file sharing
  - one for FTP.



Data can be located on one server or located across a number of servers.

Server Farm

FIGURES

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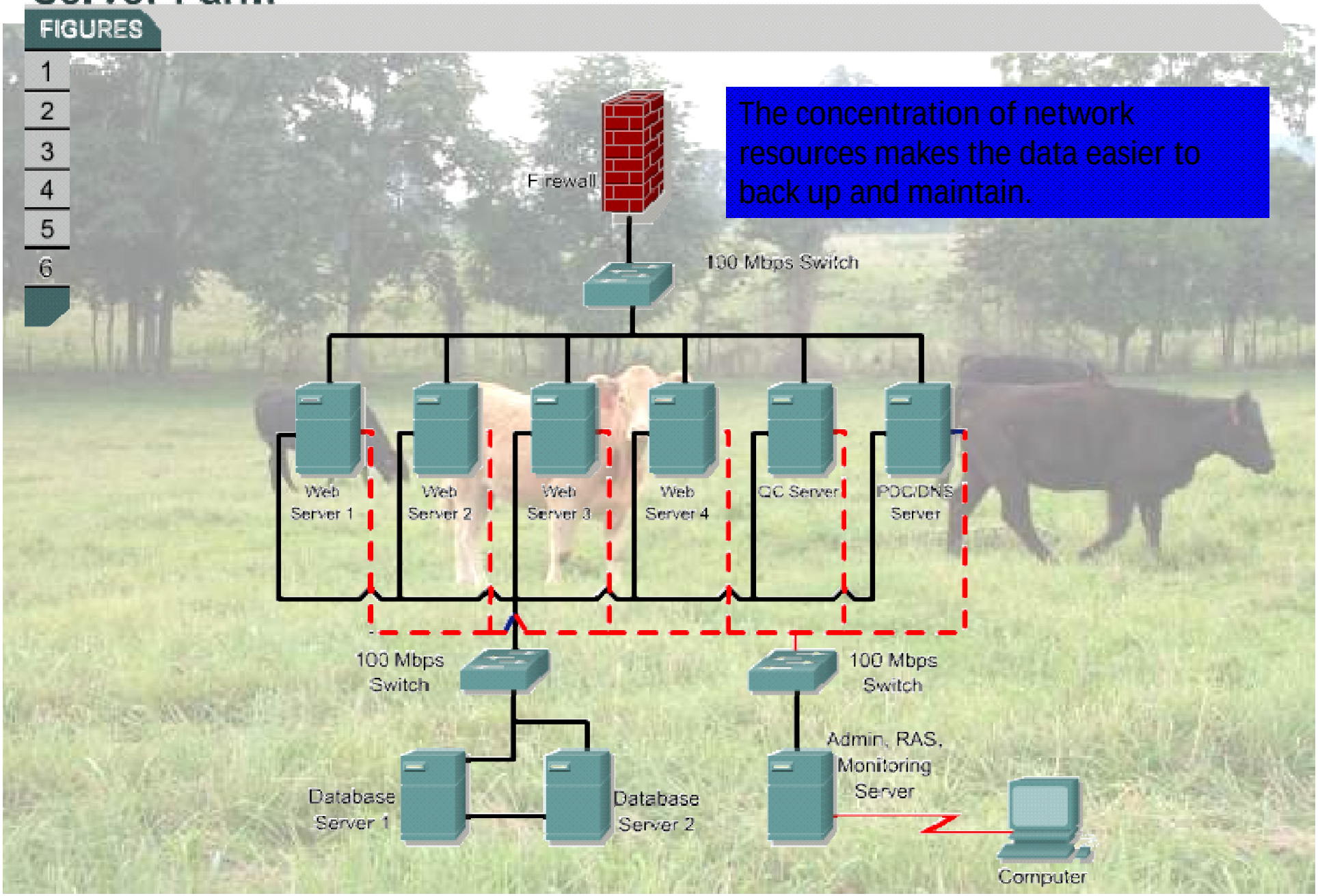

The concentration of network resources makes the data easier to back up and maintain.

Client-Server Interaction

FIGURES

6.1.3 Client-server relationship

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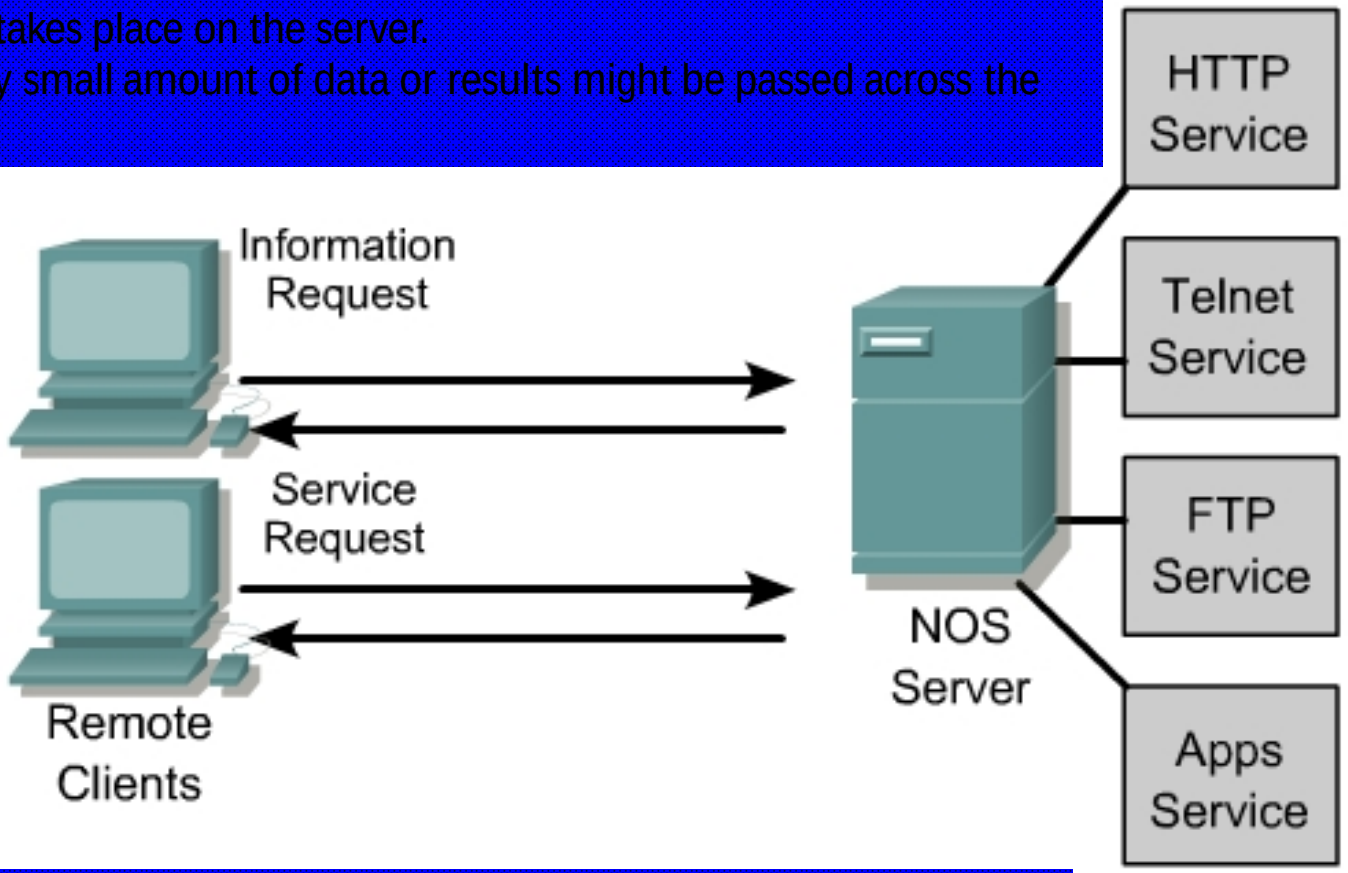
Toolbar: Maximize

•In a typical file server environment, the client would retrieve large portions of the database files to process the files locally.
•With client-server computing, the large database is stored, and the processing takes place on the server.
•A relatively small amount of data or results might be passed across the network.



From a NETWORK point of view, any computer running TCP/IP (workstation or a server) is considered a host.

Distributed Computing Environment

FIGURES

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6.1.3 Client-server relationship

- The workstation and server normally would be connected to the LAN by a hub or switch.