Lecture 29
NETWORK OPERATING SYSTEM

Topics Covered

- Functions of NOS
- Overview of NOS Characteristics
- Differences Between PC and a NOS
- Multiuser, Multitasking, and Multiprocessor Systems
- NOS Server Hardware
- Windows
- Windows NT 4.0
- Linux
- Server Software and Programs

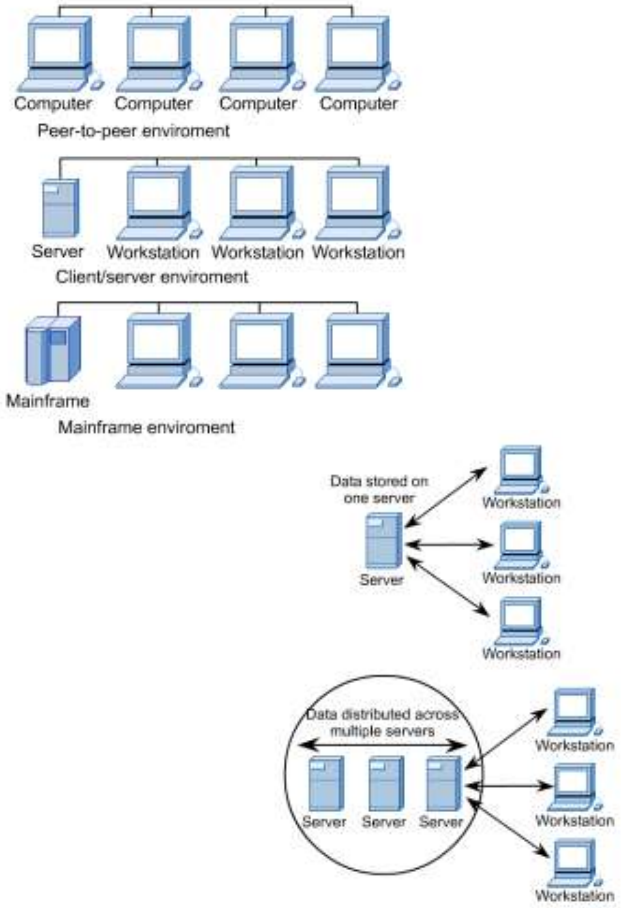
Introduction

- Network operating systems typically are used to run computers that act as servers. They provide the capabilities required for network operation.
- Network operating systems are also designed for client computers and provide functions so the distinction between network operating systems and stand alone operating systems is not always obvious.

Functions of NOS

- Account Administration for users
- Security
- File and print sharing
- Network services
- Backing up data

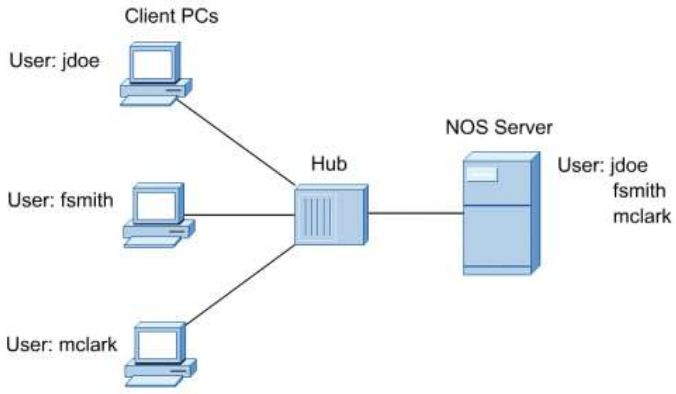
Overview of NOS Characteristics



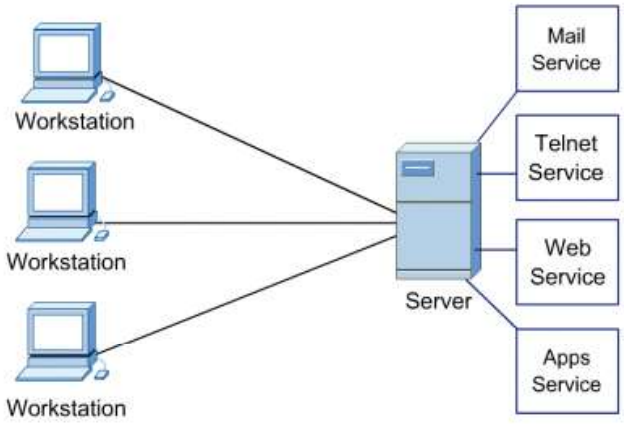
- Network operating systems (NOSs) distribute their functions over a number of networked computers.
- It then adds functions that allow access to shared resources by a number of users concurrently.
- NOS computers take on specialized roles to accomplish concurrent access to shared resources.
- Client systems contain specialized software that allows them to request shared resources that are controlled by server systems responding to a client request.

Differences Between PC and a NOS

- The NOS enhances the reach of the client PC by making remote services available as extensions of the local native operating system.
- Although a number of users may have accounts on a PC, only a single account is active on the system at any given time.
- NOS supports multiple user accounts at the same time and enables concurrent access to shared resources by multiple clients.

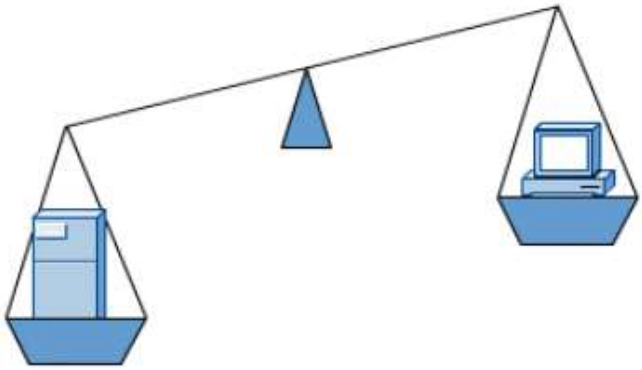


Multiuser, Multitasking, and Multiprocessor Systems



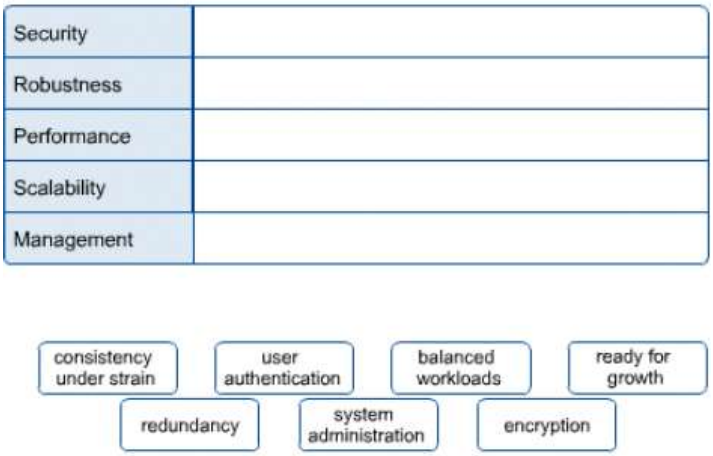
- A NOS server is a multitasking system. Internally, the OS must be capable of executing multiple tasks or processes at the same time.
- Some systems are equipped with more than one processor, called multiprocessing systems.
- They are capable of executing multiple tasks in parallel by assigning each task to a different processor.
- The aggregate amount of work that the server can perform in a given time is greatly enhanced in multiprocessor systems.

NOS Server Hardware



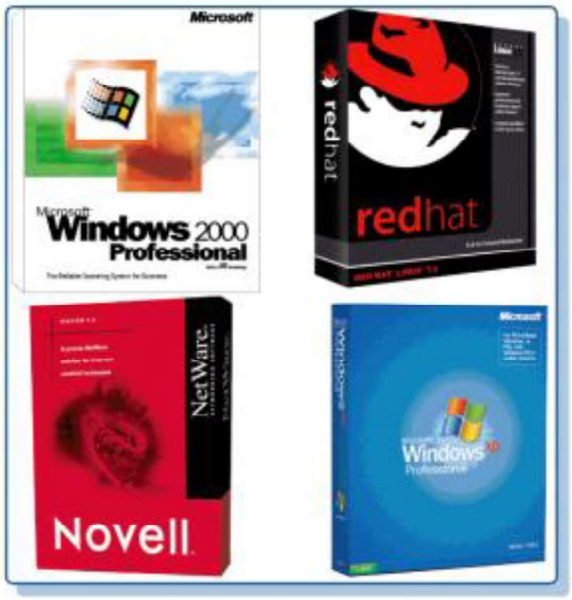
- NOS servers are large systems with additional memory to support multiple tasks that are all active, or resident, in memory at the same time.
- Additional disk space is also required on servers to hold shared files and to function as an extension to the internal memory on the system.
- Because a NOS depends on the continuous operation of its servers, the extra hardware components justify the additional expense.

Choosing a NOS



- The main features to consider when selecting a NOS include:
  - Performance
  - Management and monitoring tools
  - Security
  - Scalability
  - Robustness/fault tolerance

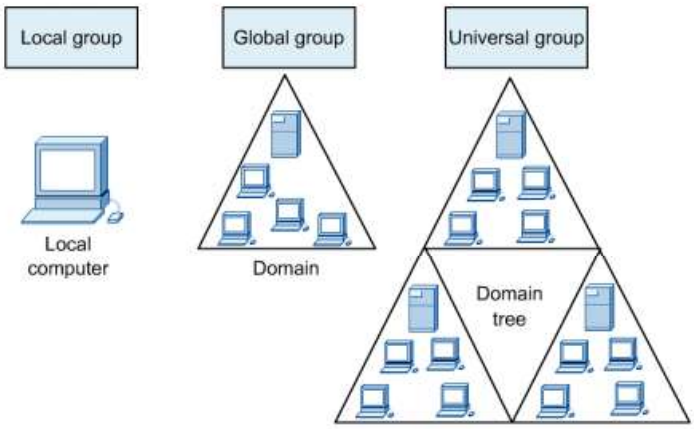
Types of NOS



- It is important to know the basics about popular NOS families.
- Many networks now include more than one server type, and knowing how to get these diverse systems to interoperate is an important skill for a network administrator.
- Operating systems on the network have their own language.
- Different NOS vendors use the same terms in different ways.

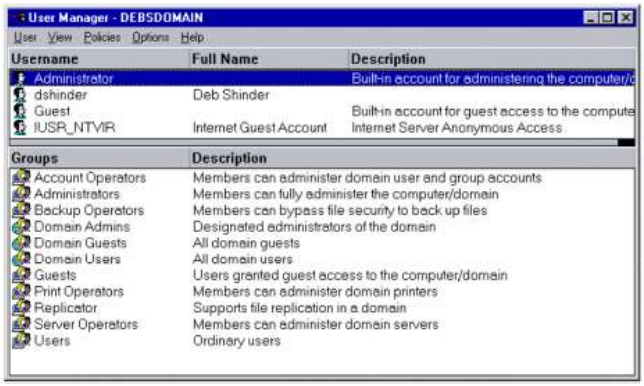
Windows

Windows Terminology



- Windows server-based networks that run Windows NT Server or Windows 2000 Server are based on the concept of the domain.
- A domain is a group of computers and users that serves as a boundary of administrative authority.
- Windows NT domains and Windows 2000 domains, although similar in function, interact with one another differently.

Windows NT 4.0



- The Domain Structure of Windows NT was entirely different from the Domain Structure in Windows 2000.
- Instead of Active Directory, Windows NT provides an administrative tool called the User Manager for Domains.
- It is accessed from the domain controller and is used to create, manage, and remove domain user accounts.

Windows NT 4.0

- Each NT domain requires one Primary Domain Controller (PDC).
- This is a "master" server that contains the Security Accounts Management Database (SAM).
- A domain can also have one or more Backup Domain Controllers (BDCs), each of which contains a read-only copy of the SAM.
- The SAM is what controls the authentication process when a user logs onto the domain.