MICROSOFT
TRAINING
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Microsoft Official Curriculum

Module 1: Introduction to Windows 2000 and Networking

Contents

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Instructor Notes

Presentation:
75 Minutes

Labs:
45 Minutes

This module provides students with an overview of the Microsoft® Windows® 2000 operating system and how it implements networking. The students learn about operating system and networking concepts as well as the features of Windows 2000. Then the module introduces networking concepts, the types of networks, and the functions of a network operating system. This section is followed by a lab in which the students distinguish between the different types of networks and identify the capabilities and limitations of some types of networks.

The contents of the first two sections are then applied in explaining how Windows 2000 implements networking. The concepts of authentication, domains, and Microsoft Active Directory™ directory services are introduced and explained. Two labs follow this section. In the first lab, students identify the benefits of a domain and the components of Active Directory. In the second lab, the students log on to Windows 2000 and determine whether their computer belongs to a workgroup or domain.

At the end of this module, students will be able to:

- Describe the features of the Windows 2000 operating system and its different versions.
- Define different networks and describe their advantages.
- Describe how Windows 2000 implements networking.

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Materials and Preparation

This section provides you with the required materials and preparation tasks that are needed to teach this module.

Required Materials

To teach this module, you need the following materials:

- Microsoft PowerPoint® file 2151A_01.ppt
- Module 1, "Introduction to Windows 2000 and Networking"

Preparation Tasks

To prepare for this module, you should:

- Read all of the materials for this module.
- Complete the three labs.
- Review the Delivery Tips and Key Points for each section and topic.
- Study the review questions and prepare alternative answers for discussion.
- Anticipate the questions that students may ask and prepare answers to them.

Module Strategy

Use the following strategy to present this module:

- Windows 2000 Operating Systems

  Introduce the need for an operating system and the functions it performs. Then explain the features of the Windows 2000 operating system and end the section by explaining the characteristics of the four versions of Windows 2000.

- Introduction to Networks

  Provide an overview of the need for networking and its benefits. Then explain the roles of clients and different types of servers in a network. Discuss the different types of networks next, followed by the features of a network operating system.

- Windows 2000 Implementation of Networking

  Explain how Windows 2000 provides enhanced networking capabilities. Introduce the concept of domains and explain the features and benefits of a domain. Then introduce Active Directory and describe its features and benefits. Conclude by discussing the mandatory logon feature and the procedure for logging on to Windows 2000.

Customization Information

This section identifies the lab setup requirements for a module and the configuration changes that occur on student computers during the labs. This information is provided to assist you in replicating or customizing Microsoft Official Curriculum (MOC) courseware.

Important The labs in this module are also dependent on the classroom configuration that is specified in the Customization Information section at the end of the Classroom Setup Guide for course 2151A, *Microsoft Windows 2000 Network and Operating System Essentials*.

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Lab Results

There are no configuration changes on student computers that affect replication or customization.

Overview

Slide Objective
To provide an overview of the module topics and objectives.

Lead-in
In this module, you will learn about basic operating system and networking concepts.

- **Windows 2000 Operating Systems**
- **Introduction to Networks**
- **Windows 2000 Implementation of Networking**

Delivery Tip
Use this page to introduce the need for the course and describe the major sections in it.

Key Points
The operating system provides an environment for running applications. A network connects multiple computers and peripherals to enable sharing of data and resources.

The fundamental core of a computer is its operating system: the software that controls its hardware. As its name suggests, the operating system operates the computer. It loads applications into the computer's memory, runs these applications, and manages peripheral devices, such as disks and printers.

A computer environment that consists of multiple computers and printers can be connected together to exchange data and information. Such a group of connected computers and devices is called a network.

Coordinating the numerous applications that run simultaneously on a network and managing the various peripheral devices attached to a network requires additional support. The network operating system provides this support in the form of networking features. Microsoft® Windows® 2000 is a new generation network operating system that provides improved infrastructure, management, and application support to network users and organizations.

At the end of this module, you will be able to:

- Describe the features of the Windows 2000 operating system and its different versions.
- Define a network and describe its advantages.
- Describe how Windows 2000 implements networking.

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Windows 2000 Operating Systems

Slide Objective
To introduce topics related to the Windows 2000 operating system.

Lead-in
Windows 2000 is a robust operating system with a number of useful features.

- **Operating System Functions**
- **Features of Windows 2000**
- **Versions of Windows 2000**

Windows 2000 provides an array of tools to assist the network administrator in simplifying day-to-day administrative tasks and in configuring client computers. Windows 2000 provides advanced capabilities for automating many of these tasks, thus decreasing overhead costs. The Windows 2000 operating system family consists of the following versions:

- Microsoft Windows 2000 Professional
- Microsoft Windows 2000 Server
- Microsoft Windows 2000 Advanced Server
- Microsoft Windows 2000 Datacenter Server

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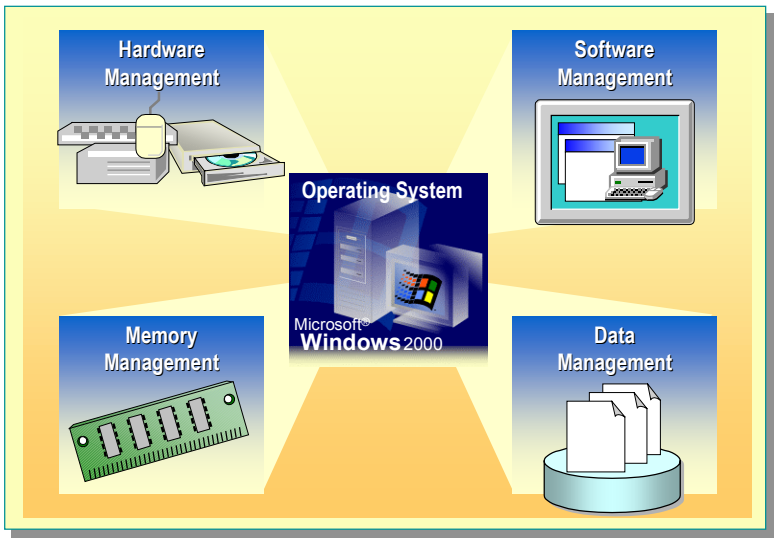
Operating System Functions

Slide Objective
To illustrate the functions of an operating system.

Lead-in
An operating system serves as the bridge between the software you use and the hardware with which you interact.



An operating system is software that provides the means for applications to interact with the computer's hardware. An operating system manages four key aspects of a computer's operation: hardware management, software management, memory management, and data management.

- Hardware management

  The operating system enables the computer to communicate with peripheral devices, such as a printer or a mouse.

- Software management

  The operating system provides a mechanism for initiating processes that include programs, such as Microsoft Word and Microsoft PowerPoint®.

- Memory management

  The operating system allocates memory to each application, without affecting the memory used by other applications.

- Data management

  The operating system manages files stored on hard disks and other mass-storage devices. The operating system enables applications to create and open files, transfer data between devices, and perform such file-management tasks as renaming and deleting.

The operating system coordinates the interaction between the computer and applications that run on it. It controls the flow of data within the computer and provides the graphical user interface (GUI), a means of interacting with the computer. The GUI provides an intuitive graphical way of issuing commands to the system, as compared to a text-based environment.

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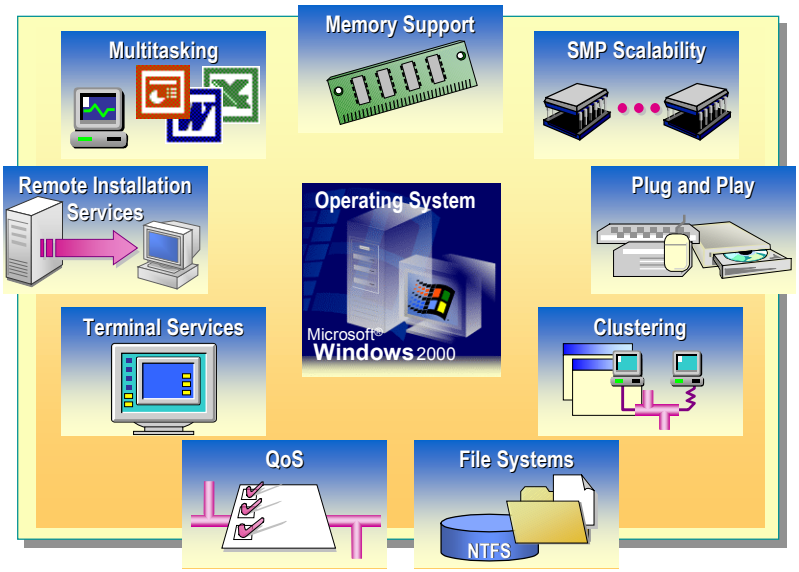
Features of Windows 2000

Slide Objective
To illustrate the features of the Windows 2000 operating system.

Lead-in
Windows 2000 has many features that enhance its functionality.



Delivery Tip
If the level of the class permits, define the features provided by the NTFS file system at a high level. You do not need to explain the features in detail and you can refer the students to **Additional Reading** for more information.

The Windows 2000 operating system provides many enhanced features for its users. These features include multitasking, memory support, symmetric multiprocessing, Plug and Play, clustering, NTFS, Quality of Service, Terminal Services and Remote Installation Services.

Multitasking

Multitasking enables users to run multiple applications simultaneously on the same system. The number of applications that a user can run simultaneously and the system performance when running them depends on the amount of memory in the system.

Memory Support

To function, each application that runs on Windows 2000 requires a certain amount of memory. In order to support multiple applications running simultaneously (multitasking) and applications with large requirements for memory, Windows 2000 provides support for up to 64 gigabytes (GB) of memory.

Symmetric Multiprocessing (SMP) Scalability

Symmetric multiprocessing (SMP) is a technology that allows an operating system to use multiple processors simultaneously to improve performance by reducing transaction time. Depending on the version, Windows 2000 provides SMP support for up to 32 processors.

Plug and Play

With Windows 2000, it is easy to install a Plug and Play device. This is a device that you plug in and use immediately without having to perform a complicated setup process. After you plug in such a device, Windows 2000 automatically identifies the added component and completes the configuration.

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Clustering

Windows 2000 provides the ability to group independent computers together to run a common set of applications. This grouping appears as a single system to the client and application. Such a grouping is called clustering, and the groups of computers are called clusters. This arrangement of computers avoids a single point of failure. If one computer fails, another computer in the cluster provides the same services in its place.

File System Features

The NTFS file system is the recommended file system for use with Windows 2000. Windows 2000 provides the following features through NTFS support:

- File system recovery
- Large partition size
- Security
- Disk quotas
- Compression

Note You can also use the FAT (file allocation table) and FAT32 file systems with Windows 2000. For more information about the NTFS, FAT, and FAT32 file systems, please see *File and Print Services Technical Overview* under **Additional Reading** on the Web page on the Student Materials compact disc.

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Quality of Service (QoS)

In Windows 2000, Quality of Service (QoS) is a set of service requirements that the network must meet to ensure an adequate service level for data transmission. Using QoS, you can control how network bandwidth is allocated to applications. QoS provides a guaranteed, end-to-end, express delivery system for information across the network.

Terminal Services

Terminal Services provides remote access to a server desktop through a *terminal emulator*. A terminal emulator is an application that lets you access a remote computer as though you were physically located at it. Using Terminal Services, you can run client applications on the server so that client computers function as terminals rather than as independent systems.

By using Terminal Services, you can reduce the total cost of operation of your network. You can distribute Windows-based applications to client computers that might not normally be able to run Windows. You can also use Terminal Services to administer your server from anywhere on the network.

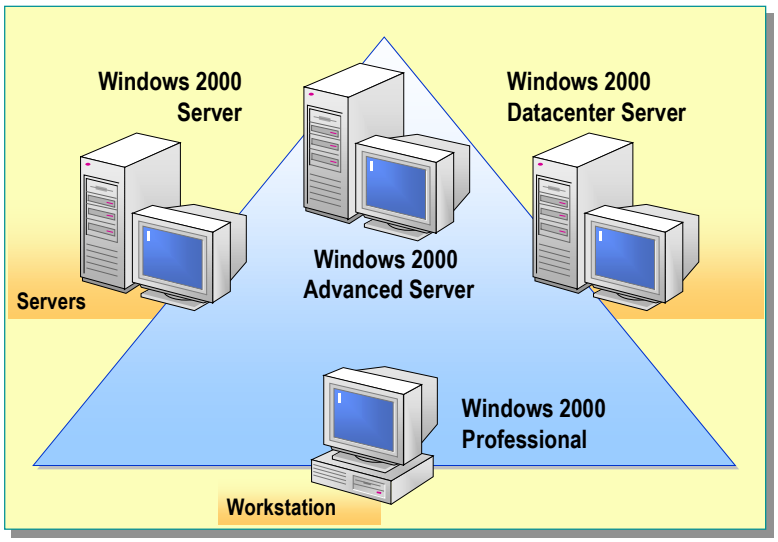
Remote Installation Services

Remote Installation Services (RIS) enables an administrator to deploy an operating system throughout the organization, without needing to physically visit each client computer. RIS is an optional component that is available as part of the Microsoft Windows 2000 Server operating system.

Versions of Windows 2000

Slide Objective
To illustrate the four versions of Windows 2000.

Lead-in
The Windows 2000 operating systems include four members: Windows 2000 Professional, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server.



Windows 2000 consists of four operating systems: Windows 2000 Professional, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server.

Windows 2000 Professional

Windows 2000 Professional is a desktop operating system that incorporates the best business features of Microsoft Windows 98 and builds on the traditional strengths of Microsoft Windows NT® version 4.0. Windows 2000 Professional includes a simplified user interface, improved Plug and Play functionality, power management, and support for a broad range of hardware devices. It supports SMP systems with two processors and 4 GB of physical memory.

Windows 2000 Server

Windows 2000 Server is the standard edition of the Windows 2000 server family. It contains all the features of Windows 2000 Professional and is ideal for small to medium-sized organizations. This version of Windows 2000 works well for file and print servers, Web servers, and workgroups. Windows 2000 Server supports SMP systems with four processors and 4 GB of physical memory.

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Windows 2000 Advanced Server

Windows 2000 Advanced Server contains all of the functionality of Windows 2000 Server, plus increased scalability and system availability. Scalability is the ability to increase processing power incrementally to meet increased network demands. This functionality is provided through clusters of multiple servers. These servers provide additional processing power, thereby increasing system availability. This way, if one server becomes unavailable, the other servers in the cluster provide the requested service.

Windows 2000 Advanced Server is designed for servers that are used in large-scale networks and for database-intensive work. Windows 2000 Advanced Server supports SMP systems with eight processors and 8 GB of physical memory.

Windows 2000 Datacenter Server

Windows 2000 Datacenter Server contains all of the functionality of Windows 2000 Advanced Server, plus support for additional memory and CPUs per computer. It is designed for large data warehouses, online transaction processing, and large-scale simulations. It can also support more than 10,000 simultaneous users in certain workloads. Windows 2000 Datacenter Server supports SMP systems with 32 processors and 64 GB of physical memory.

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Introduction to Networks

Slide Objective
To introduce the basic concepts of networking.

Lead-in
Members of a group need to be able to share information if they are to work together effectively. They can share information by connecting their computers to form a network.

- Networking Benefits
- Roles of Computers in a Network
- Types of Networks
- Network Operating Systems

Consider a situation in which many employees in an organization need to work with the same data. A copy of the data can be loaded on each computer so that the employees can access the data individually. However, a more efficient method is to load the data on one computer and provide the other computers access to the data from this computer remotely. This option saves disk space on the computers and provides a central location for storing and managing the data that multiple users need to access.

This need to share data and resources led to the development of networking. A network is a group of connected computers that allows people to share information. In a network, multiple users can access the same information and connect to the same resource. For example, instead of linking each computer to its own printer, all computers can be linked to a common printer for shared access by multiple users. In this section, you will learn about the basic concepts of networking.

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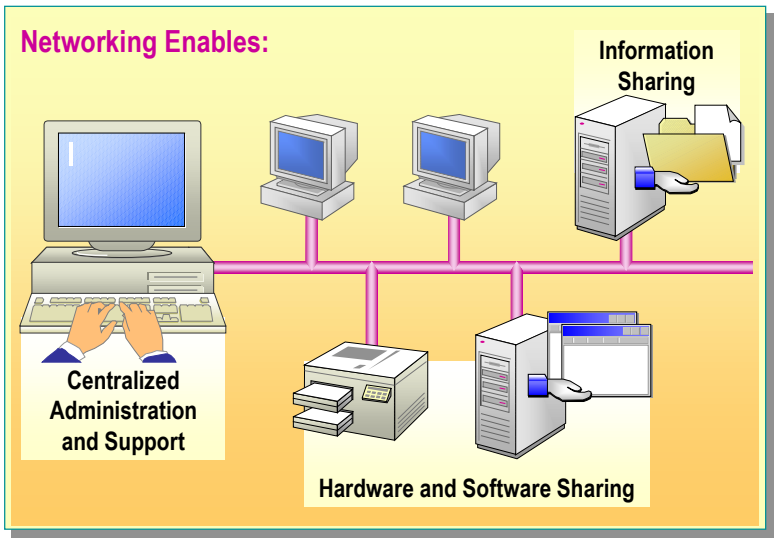
Networking Benefits

Slide Objective
To illustrate the benefits of a network.

Lead-in
A network is a group of computers that are interconnected.



Linking computers into networks provides benefits in the following areas: information sharing, hardware and software sharing, and administrative support. These benefits help increase productivity.

- Information sharing

  The ability to share information and data quickly and inexpensively is one of the popular benefits of networking technology. Network-based e-mail messages and scheduling are some of the activities for which many organizations use networks today.

- Hardware and software sharing

  Before the advent of networks, computer users required their own printers and other peripherals, which is an expensive factor in a large organization. The network revolution reduced these costs drastically by making it possible for several users to share hardware and software simultaneously.

- Centralized administration and support

  Networking computers also simplifies administration and support tasks. From just a single location, the network administrator can perform administrative tasks on any computer on the network. Also, it is more efficient for technical personnel to support one version of an operating system or application than to oversee a number of individual and unique systems and setups.

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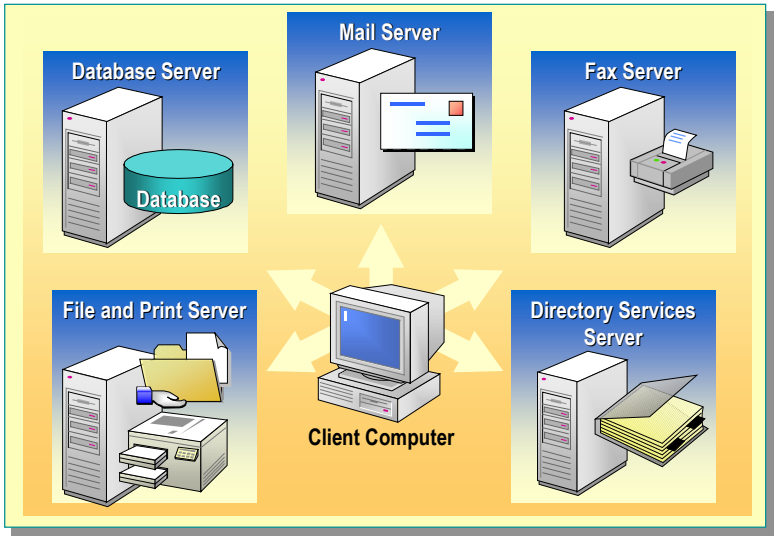
Roles of Computers in a Network

Slide Objective
To illustrate the functions of the two types of computers on a network.

Lead-in
A network consists of two types of computers: clients and servers.



Delivery Tip
Do not introduce Active Directory while explaining about the directory services servers. Active Directory is introduced later in the module.

Computers in a network function as either clients or servers.

Clients

Client computers (such as the users' computers) make requests for services or data on the network from computers referred to as servers.

Servers

Servers are computers that provide services and data to client computers. The servers in a network perform a variety of complex tasks. Servers for large networks have become specialized to accommodate the expanding needs of users.

The following are some examples of the different types of servers included on many large networks:

File and Print Servers

File and print servers provide file and printer resources from a centralized location. When a client sends a request for data to the file and print server, the entire database or file is downloaded to the computer making the request.

For example, when you open a word-processing application, the application runs on your computer and the document stored on the file and print server is loaded into your computer's memory so that you can edit or use the document locally. Once the document is saved back on the server, anyone on the network who has the proper access, or permission, may look at the file. In other words, file and print servers are used to store and retrieve centralized file and data records.

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Database Servers

Database servers can store large amounts of data in a centralized location and make this data available to users so that they do not need to download the entire database. With a database server, the entire database stays on the server and only the results of a request are downloaded to the computer making the request.

For example, you might use a client application that runs locally, such as Microsoft Access, to search an employee database for the names of all employees born in November. The employee database is stored on a database server, such as Microsoft SQL Server™. When the server processes your request, only the result of your query (the list of November birth dates) is downloaded from the server onto your local computer.

Mail Servers

Mail servers operate like database servers in that there are separate server and client applications, with data selectively downloaded from the server to the client. Mail servers manage the e-mail services for the network.

Fax Servers

Fax servers manage fax traffic into and out of the network by sharing one or more fax modems. This makes a fax service available to anyone on the network without having to install a fax machine on everyone's computer.

Directory Services Servers

Directory services servers provide a central location to store information about the network, including the identity of the users accessing the network and the names of the resources available in the network. This enables network security to be administered centrally.

An administrator can define a resource, such as a printer, and the type of access that users have to that resource. After the administrator defines the resource, users can locate the resource and use it, depending on the type of access assigned to them.

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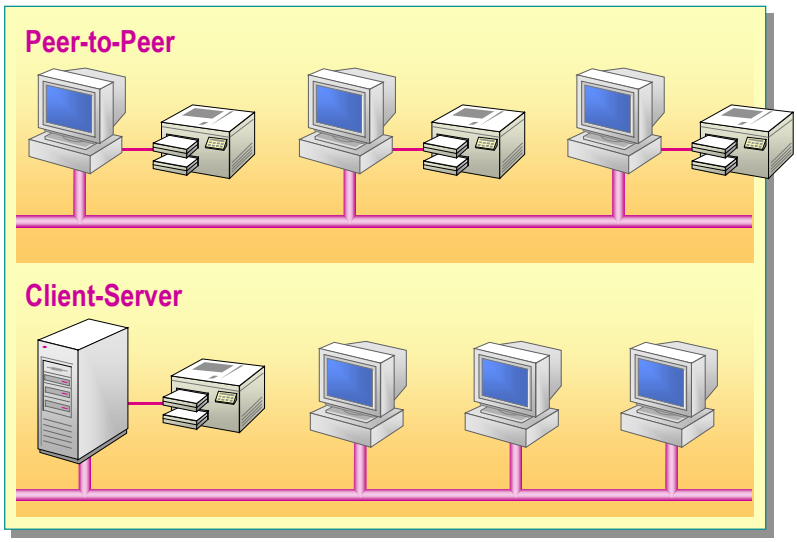
Types of Networks

Slide Objective
To illustrate the two types of networks.

Lead-in
Networks can be broadly classified into two types: peer-to-peer and client-server.



Delivery Tip
Ensure that students clearly understand the definition of a workgroup.

Based on how the computers in a network are configured and how they access information, networks are classified into two types: peer-to-peer and client-server. Distinctions between the two types of networks are important because each type possesses different capabilities.

Peer-to-Peer Networks

In a peer-to-peer network, there are no dedicated servers, and there is no hierarchy among the computers. All computers are equal and therefore are known as peers. Each computer functions as both a client and a server, and usually no administrator is responsible for maintaining the network. Security is provided by the local directory database on each computer. The user at each computer determines what data on that computer is shared on the network.

Peer-to-peer networks are also called *workgroups*. The term workgroup describes a small group of individuals, typically 10 or fewer, who work together. Peer-to-peer networks are good choices for environments where:

- There are 10 or fewer users.
- Users share resources and printers, but no specialized servers exist.
- Security is not an issue.
- The organization and the network will experience only limited growth within the foreseeable future.

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Client-Server Networks

As a network grows, a peer-to-peer network will probably no longer be able to meet the increased demand on shared resources. To accommodate the increased demand and provide additional functionality, most networks have dedicated servers. A dedicated server functions as a server only, not as a client. The configuration of these servers is optimized to process requests from network clients.

Client-server networks have become standard models for networking. As networks increase in size due to the number of connected computers and the physical distance and traffic between them, more than one server is usually needed. Distributing the network tasks among several servers ensures that each task is performed as efficiently as possible. Also, with the servers performing the network tasks, the workload on the individual computers is reduced.

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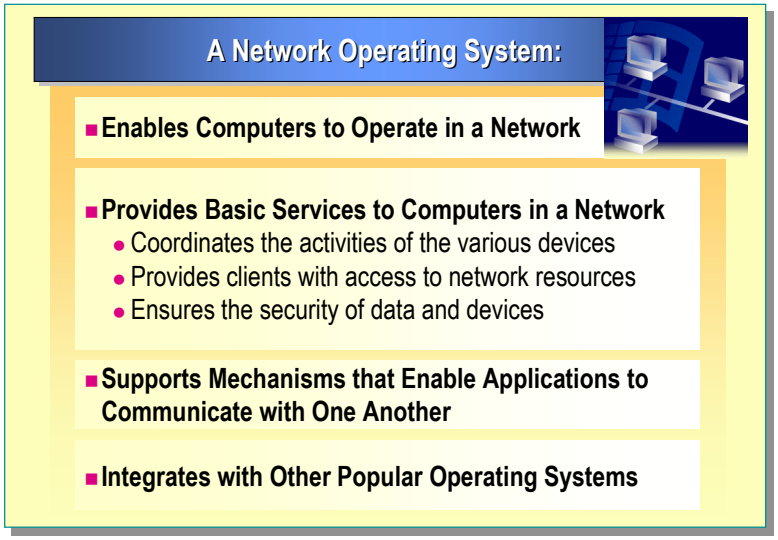
Network Operating Systems

Slide Objective
To describe the features of a network operating system.

Lead-in
The network operating system manages the task of providing network functionality and ensuring the efficient functioning of a network.



The core of a network is the network operating system. Just as a computer cannot operate without an operating system, a network of computers cannot operate without a network operating system. Every network operating system provides basic services to the computers on its network. These services include:

- Coordinating the activities of the various devices on the network to ensure that communication takes place as and when required.
- Providing clients with access to network resources, including files and such peripheral devices as printers and fax machines.
- Ensuring the security of data and devices on the network.

Features of Network Operating Systems

A network operating system must support mechanisms that enable applications to communicate with one another: for example, applications that enable multiple computers to work jointly on a single task, such as a mathematical calculation. A network operating system must also support multiple processors, clusters of disk drives, and data security features. Finally, a network operating system must be reliable and be able to recover quickly from errors.

Depending upon the network operating system's manufacturer, a desktop computer's networking software can be added either to the computer's own operating system or be integrated with it. Network operating system software is integrated into a number of popular operating systems, including Microsoft Windows 2000, Windows NT, Windows 98, Windows 95, and Apple Macintosh.

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Lab A: Identifying Computer Networks

Slide Objective
To introduce the lab.

Lead-in
In this lab, you will identify the types of computer networks.

Objectives

After completing this lab, you will be able to:

- Distinguish between different types of networks.
- Identify components that are added to the network to provide additional functionality.
- Identify limitations and capabilities of certain types of networks.

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Lab Setup

This lab is a simulation. To complete this lab, you need the following:

- A computer running Microsoft Windows 2000, Microsoft Windows NT version 4.0, Microsoft Windows 98, or Microsoft Windows 95.
- A minimum display resolution of 800 x 600 with 256 colors. (16-bit recommended).
- Microsoft Internet Explorer 5 or higher.

► To start the lab

1. Log on to Windows 2000 as Administrator with a password of **password**.
2. On the desktop, double-click the **Internet Explorer** icon.
3. On the Student Materials Web page, click **Lab Simulations**.
4. Click **Identifying Computer Networks**.
5. Read the introduction information, and then click the link to begin the simulation.

Estimated time to complete this lab: 15 minutes

Windows 2000 Implementation of Networking

Slide Objective
To introduce topics related to the implementation of networking by Windows 2000.

Lead-in
Windows 2000 is the new generation of Microsoft network operating systems.

- Features of a Domain
- Benefits of a Domain
- Domain Organization
- Features of Active Directory
- Benefits of Active Directory
- Accessing a Windows 2000 Network

Windows 2000 serves organizational needs by making it easy to connect people and networks in innovative ways through domain organization and Microsoft Active Directory™ directory service for enhanced communication.

A Windows 2000 network allows organizations to improve information sharing, streamline operations, and create an efficient communications infrastructure. Windows 2000 includes centralized security and information management services. It also provides network communications services through directory-enhanced management and adherence to established networking standards.

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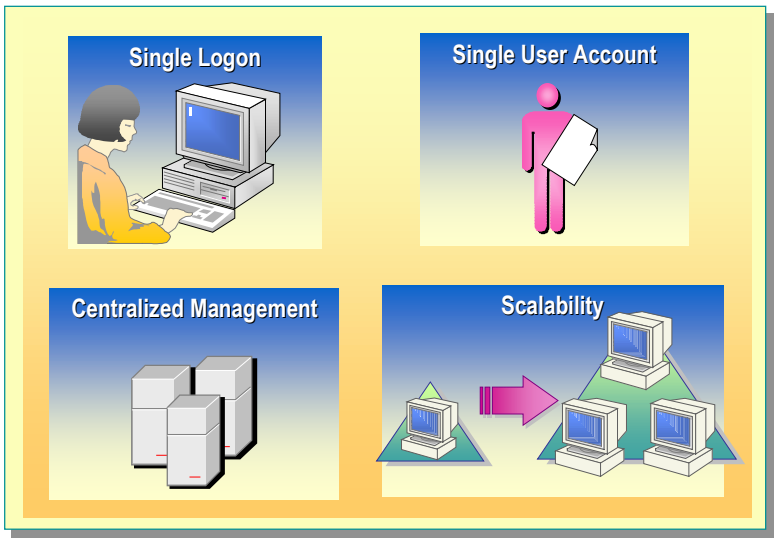
Features of a Domain

Slide Objective
To illustrate the features of a domain.

Lead-in
Windows 2000 manages networks by organizing them into structures called domains.



Delivery Tip
Ensure that the students obtain a clear understanding of the differences between domains and workgroups.

In Windows 2000, a domain is a logical grouping of networked computers that share a common area for storing security information. A domain provides a centralized approach to administering network resources. Users on one computer can access shared resources on other computers in the domain, provided they have been assigned the appropriate permissions.

Domains are similar in concept to workgroups, but provide a number of useful features, as described below.

Single logon

Domains provide a single logon process for users to access various network resources, including file, print, and application resources. All user accounts are stored in a central location.

Single user account

Users in a domain need only a single account to access resources on various computers. (In contrast, users in a workgroup require a separate account on each computer that they access.)

Centralized management

Domains provide centralized administration. All user account and resource information can be administered from a single location within the domain.

Scalability

Domains are scalable to very large networks. The ways in which users access resources and how resources are managed in very large networks are the same as on a small network.

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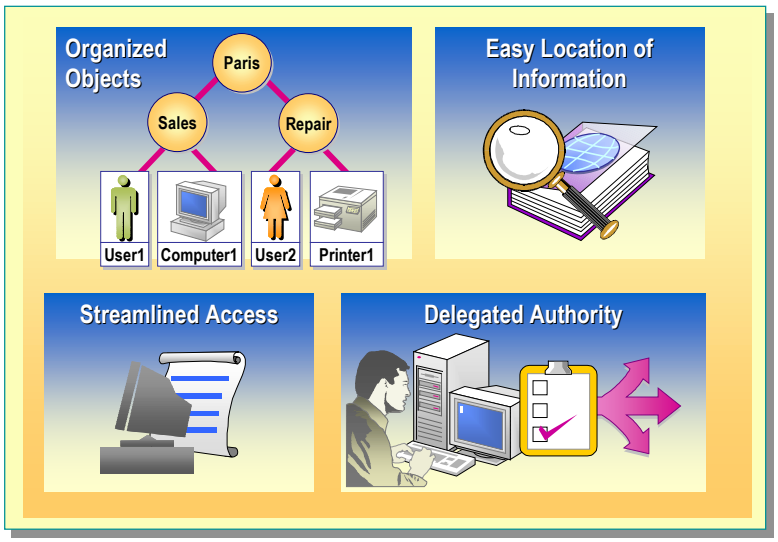
Benefits of a Domain

Slide Objective
To illustrate the benefits of a domain.

Lead-in
Windows 2000 manages networks by organizing them into structures called domains, which provide many benefits.



A domain provides several benefits:

- Organized objects

  You can organize the objects in the domain into organizational units. An organizational unit is a collection of *objects* in a domain. Objects are representations of the actual physical components that exist in an organization's network. They are associated with one or more domains, such as users, specific groups of users, computers, applications, services, files, and distribution lists.

  For example, consider a domain in the network of a company. To simplify the management of all the resources in the company network, the resources of each department in the company can be organized into an organizational unit. Each organizational unit can be managed by someone in that department. In this manner, each department in the company constitutes an organizational unit, and the network administrator can manage groups of organizational units instead of individual resources.

- Easy location of information

  Publishing a resource refers to making it available in a listing of domain objects, which makes it easy for users to locate and use the resources. For example, if a printer installed in a domain is published, users can locate it from the list of domain objects and access it. If the printer is not published, users can still access it, but they have to know its location to be able to do so.

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- Streamlined access

  Applying a policy to the domain establishes how users can access, configure, and use domain resources, which consolidates resource and security management. These policies are applied only within the domain, not across domains.

- Delegated authority

  Domains enable you to assign permissions to an administrator to manage objects in an entire domain or in one or more organizational units within the domain. This eliminates the need for a number of administrators with wide-ranging administrative authority and overlapping responsibilities.

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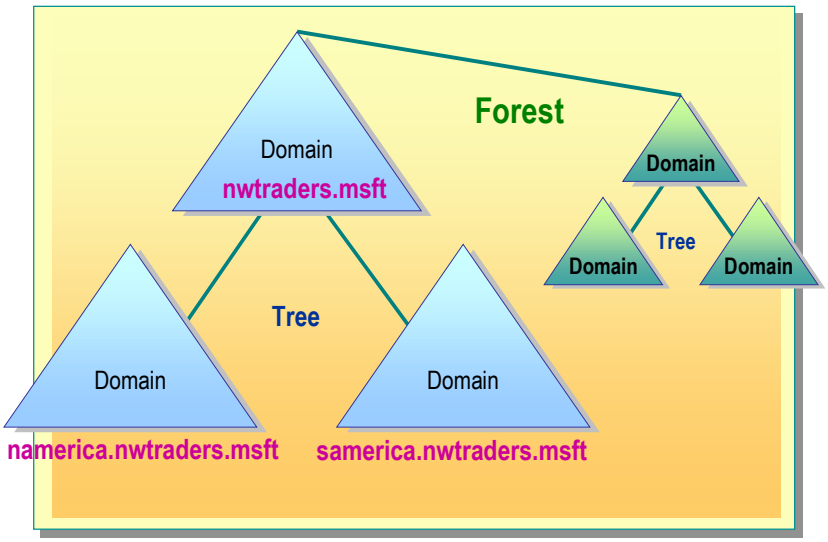
Domain Organization

Slide Objective
To illustrate how domains are organized.

Lead-in
Windows 2000 manages networks by organizing them into structures called domains.



Delivery Tip
After lecturing on this topic, conduct a class discussion using the classroom configuration as an example of domain and sub-domain structures. Draw the classroom configuration on the board and ask the students to identify the structures in it in terms of a domain.

Every domain is managed by a domain controller. To simplify the management of multiple domains, domains are grouped into structures called trees and forests.

Domain Controller

A computer running Windows 2000 Server manages each domain. Such a computer is known as a domain controller. A domain controller manages all security-related interactions between users and the domain.

Trees

A *tree* is a hierarchical arrangement of Windows 2000 domains that share a common name. When you add a domain to an existing tree, you make it a sub-domain of a domain in the tree. This sub-domain is called a child domain, and the domain to which it is added is known as its parent domain.

After the child domain joins the tree, its domain name is added to the domain name of the parent. For example, when the domain London joins an existing tree and becomes a child of the parent domain nwtraders.msft, its domain name becomes london.nwtraders.msft.

Forests

A *forest* is a group of trees that do not share a common name, but do share a common configuration. By default, the name of the root tree, or the first tree that is created in the forest, is used to refer to a given forest. For example, if nwtraders.msft is the first domain in the first tree and another tree joins it to make a forest, the name of the forest is nwtraders.msft.

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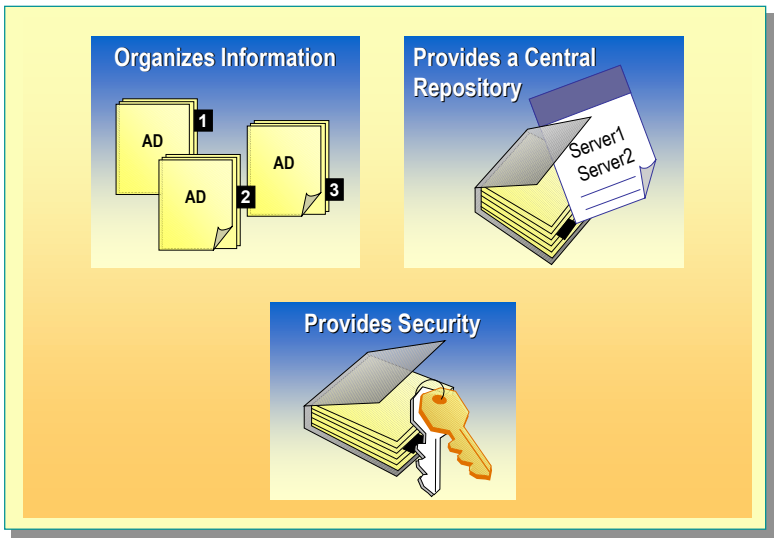
Features of Active Directory

Slide Objective
To illustrate the features of Active Directory.

Lead-in
Windows 2000 organizes information in a centralized location known as Active Directory.



Active Directory™ directory service is the Windows 2000 directory service. Active Directory stores information about network objects and provides a hierarchical structure that makes it easier to organize domains and resources. This in turn makes it easier for users to locate network resources, such as files and printers.

Active Directory has many useful features:

- Active Directory organizes the directory into sections that permit storage of a very large number of objects. As a result, Active Directory can expand as an organization grows. This allows the network to grow from a network with a single server and a few hundred objects to a network with thousands of servers and millions of objects.
- Active Directory provides a central repository for gathering and distributing information about objects on a network, including users, groups, and printers, and makes this information easy to find and use.
- Security is integrated with Active Directory through logon authentication and access control to objects in the directory. With a single network logon, administrators can manage the directory data throughout their network, and authorized network users can access resources anywhere on the network.

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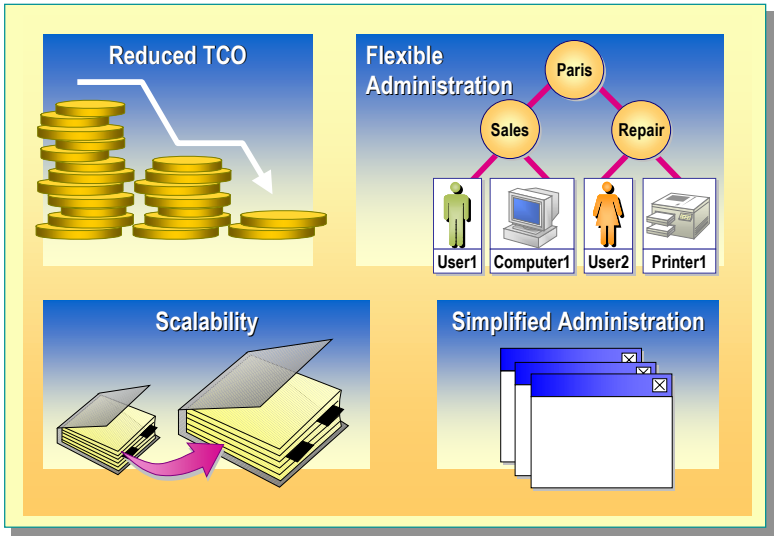
Benefits of Active Directory

Slide Objective
To illustrate the benefits of Active Directory.

Lead-in
Windows 2000 organizes information in a centralized location known as Active Directory, which provides many benefits.



Active Directory addresses the following organizational needs: reduced total cost of ownership, flexible administration, scalability, and simplified administration.

- Reduced total cost of ownership

  Total cost of ownership (TCO) refers to the actual cost of owning a computer. This includes the costs of maintenance, training, technical support, and upgrades to the hardware and software.

  Active Directory helps reduce TCO by implementing policies. Applying a policy within Active Directory allows you to configure desktop environments and install applications from a central location. This reduces the time it takes to configure settings and install applications on each computer.

- Flexible administration

  The organizational units into which a domain can be divided reside in Active Directory. The organizational units allow you to specify the users who will have administrative authority over portions of your network.

- Scalability

  Active Directory extends the features of previous Windows-based directory services and is designed to work well in organizations of any size.

- Simplified administration

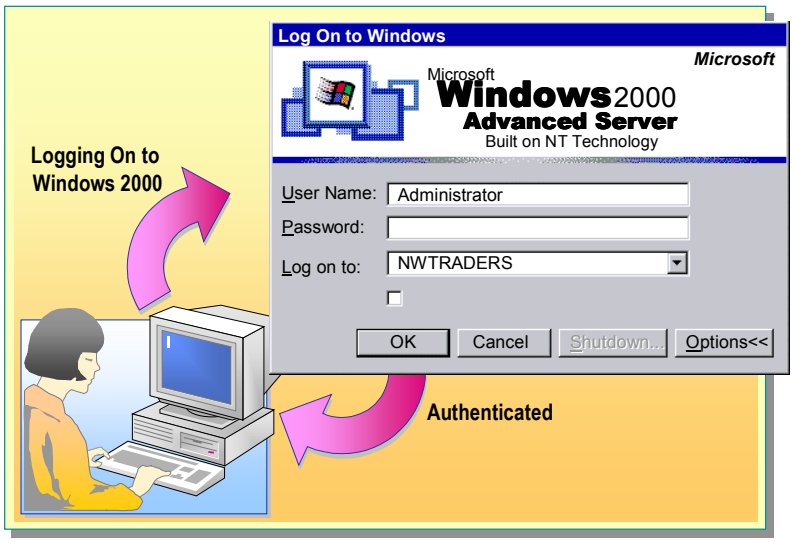
  Active Directory provides customizable administrative tools that simplify administration and make it easier to administer resources throughout a network.

Training Materials for Microsoft Certified Partner use only

Accessing a Windows 2000 Network

Slide Objective
To illustrate the mandatory logon feature of Windows 2000.

Lead-in
Windows 2000 has a number of built-in network management features.



Windows 2000 features a mandatory logon process to validate the identity of every user accessing the system. During the logon process, Windows 2000 authenticates a user to verify the identity of the user. This process ensures that only valid users gain access to resources on a computer or the network. Logging on provides the user with access to everything on the network for which the user has been assigned the appropriate permissions.

To gain access to resources in a Windows 2000 network, a user needs a user account. A user account contains information about a user, including the user's name and password. If the computer is a member of a domain, the user account enables a user to log on to either the local computer or to the domain, but not to both, and, with the appropriate permissions, to access network resources. If the computer is a member of a workgroup, a user account enables a user to log on to the local computer only, since the user account exists only in the security database on the local computer.

To log on to a Windows 2000 domain, a user provides a user principal name. A user principal name consists of the user's logon name followed by the @character and a user principal name suffix. This suffix is usually the domain where the account exists, such as nwtraders.msft. An example of a user principal name is user@nwtraders.msft. The default user principal name suffix for a user account is the full domain name of the domain that contains the user account.

Logging On to Windows 2000

To log on to Windows 2000, press CTRL+ALT+DELETE. This displays the **Log On to Windows** dialog box. Type the user name and password in the appropriate areas to initiate the logon process. If the computer is a member of a domain, you can click **Options** to display the **Log on to** list box. You can then log on by clicking either the local computer or the relevant domain in the list.

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Viewing Network Membership

After you log on, you can access the **System Properties** dialog box of your computer to determine the type of network membership you have—a domain or a workgroup.

To access the System Properties dialog box

- From the desktop, right-click the **My Computer** icon, and then click **Properties**.

The **System Properties** dialog box has five tabs. Click the **Network Identification** tab to determine whether your computer belongs to a workgroup or a domain.

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Lab B: Identifying Features of a Windows 2000 Network

Slide Objective
To introduce the lab.

Lead-in
In this lab, you will identify the features of a Windows 2000 network.

Objectives

After completing this lab, you will be able to:

- Identify components that are added to the network to provide additional functionality.
- Identify benefits of a domain.
- Identify components of Active Directory.

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Lab Setup

This lab is a simulation. To complete this lab, you need the following:

- A computer running Microsoft Windows 2000, Microsoft Windows NT version 4.0, Microsoft Windows 98, or Microsoft Windows 95.
- A minimum display resolution of 800 x 600 with 256 colors. (16-bit recommended).
- Microsoft Internet Explorer 5 or higher.

► To start the lab

1. Log on to Windows 2000 as Administrator with a password of **password**.
2. On the desktop, double-click the **Internet Explorer** icon.
3. On the Student Materials Web page, click **Lab Simulations**.
4. Click **Identifying Features of a Windows 2000 Network**.
5. Read the introduction information, and then click the link to begin the lab.

Estimated time to complete this lab: 15 minutes

Lab C: Logging On to Windows 2000

Slide Objective
To introduce the lab.

Lead-in
In this lab, you will log on to Windows 2000 and identify the operating system running on your computer.

Objectives

After completing this lab, you will be able to:

- Log on to Windows 2000.
- Identify which operating system is running on your computer.
- Determine whether your computer is located in a workgroup or domain.

Lab Setup

To complete this lab, you need the following:

- A computer running Windows 2000 Server configured as a primary domain controller.

Estimated time to complete this lab: 15 minutes

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Exercise 1
Logging On to Windows 2000

Goal

In this exercise, you will use My Computer on the desktop to determine your computer name and whether you computer is in a domain or workgroup. You will log off and then log on using the **Log On To Windows** dialog box, specifying the domain information that you identified in the first step.

Tasks	Detailed Steps
1. Using the **Network Identification** tab in the **System Properties** dialog box, determine whether your computer is in a domain or workgroup.	**a.** On the desktop, right-click the **My Computer** icon on the desktop. **b.** Click **Properties**, and then click the **Network Identification** tab.
What is the name of your computer? **Answers will vary.**	
Is your computer a member of a workgroup or domain? **Domain.**	
What is the name of your computer's workgroup or domain? **Answers will vary.**	
2. Log off from Windows 2000, and then display the **Security** dialog box.	**c.** Press CTRL+ALT+DELETE, and click **Log Off**. **d.** In the **Log Off Windows** dialog box, click **Yes** to the question: Are you sure you want to log off? *You will be logged off. The Welcome to Windows screen appears.*

	e. Press CTRL+ALT+DELETE  *The **Log On to Windows** dialog box appears.*
 What operating system is currently installed on the computer? **Microsoft Windows 2000 Advanced Server.**	
3. Log on to your domain as Administrator with a password of **password**.	**f.** Type **administrator** for the user name and **password** for the password. **g.** Click **Options**.  *The **Log on to** box appears, letting you click your domain in a list.* **h.** In the **Log on to** list, click your own domain, and then click **OK**.
4. Close the **System Properties** dialog box and log off from Windows 2000.	**i.** Click **OK** to close the **System Properties** dialog box. **j.** Press CTRL+ALT+DELETE**,** and then click **Log Off**.

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Review

Slide Objective
To reinforce module objectives by reviewing key points.

Lead-in
The review questions cover some of the key concepts taught in the module.

- Windows 2000 Operating Systems
- Introduction to Networks
- Windows 2000 Implementation of Networking

1. Which four key aspects of a computer's operation does an operating system manage?

   Hardware Management.

   Software Management.

   Memory Management.

   Data Management.

2. All the employees in your organization have access to individual hardware and software resources. Lately, the number of employees has increased. What can you do to ensure that several employees can share the existing hardware and software simultaneously?

   Install a network.

3. Your organization is upgrading to the Windows 2000 operating system. Since the company's network has about 5,000 computers, which Windows 2000 operating system would best ensure scalability and system availability?

   Windows 2000 Advanced Server.

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4. When installing a network, you want to ensure that an administrator can maintain the network with minimal effort. What type of network enables this and also ensures that each computer functions as both a client and a server?

   A peer-to-peer network.

5. Your company's network has increased in size due to an increase in the number of connected computers and in the physical distance and traffic between them. Which network type is most suitable for use in this situation?

   A client-server network.

6. In a workgroup, where are the user accounts located?

   In the security database on the local computer.

7. What are the benefits of using domains in Windows 2000?

   Organizing domain objects.

   Easy location of information about domain objects.

   Streamlined access to domain objects.

   Delegating authority.

8. Which organizational needs are addressed by Active Directory?

   Reduced total cost of ownership (TCO).

   Simplified administration.

   Flexible administration.

   Scalability.

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