

Module 16: Configuring Network Connectivity Between Operating Systems

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Simulations and interactive exercises were built with Macromedia Authorware

Instructor Notes

Presentation:
45 Minutes

Labs:
30 Minutes

This module provides students with the knowledge and skills necessary to enable Microsoft® Windows® 2000 network connectivity among Netware and Macintosh networks, Systems Network Architecture (SNA) hosts, and UNIX networks.

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

- Configure access to NetWare resources.
- Provide Macintosh users with access to Windows 2000 resources.
- Connect to SNA hosts by using Microsoft Host Integration Server 2000.
- Connect to UNIX resources.

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 2153a_16.ppt.
- The lab simulations “Configuring Services for NetWare” and “Configuring File and Print Services for Macintosh”, in the **Lab Simulations** folder on the Web page on the Student Materials compact disc.

Preparation Tasks

To prepare for this module, you should:

- Read all of the materials for this module.
- Complete the lab simulations.
- Read the following white papers under **Additional Reading** on the Web page on the Student Materials compact disc:
 - *Services for NetWare Version 5 Overview*
 - *Services for UNIX version 2.0*
- Read all of the white papers about Services for NetWare that are available at <http://www.microsoft.com/windows2000/library>.
- Search for and read the following topics in Windows 2000 Server Help:
 - “AppleTalk Network Integration”
 - “Novell Network Integration”
- Search for and read the topic “Interoperability” in the Windows 2000 Server Resource Kit.

Module Strategy

Use the following strategy to present this module:

- **Configuring Access to NetWare Resources**

This topic provides information about the features in Windows 2000 that enable an organization to support a heterogeneous environment that comprises both Windows 2000–based servers and NetWare servers. Describe Gateway Service for NetWare, and explain that it acts as a gateway that enables Windows 2000–based clients to access resources on NetWare servers. In addition, explain that Gateway Service for NetWare depends on and works with the NWLink IPX/SPX/NetBIOS Compatible Transport Protocol (NWLink).

Describe the requirements that must be met before installing Gateway Service for NetWare, and then demonstrate the installation procedure. Explain how to configure Gateway Service for NetWare by demonstrating the procedure for enabling the Windows 2000–based server gateway and the procedure for establishing shared folders and permissions. Explain how to configure and establish a connection to a NetWare-based printer. Finally, describe File and Print Services for NetWare.

- **Providing Macintosh Users with Access to Windows 2000 Resources**

This topic provides information about how to enable Microsoft and Macintosh clients to share files and resources. Provide an overview of AppleTalk network integration services, and emphasize the benefits of AppleTalk network integration. Identify the different methods for connecting Macintosh clients to a Windows 2000 network.

Demonstrate the procedure for installing File Services and Print Services for Macintosh. Explain the necessary configuration tasks for File Services and Print Services for Macintosh by demonstrating the procedure for creating and sharing a Macintosh-accessible volume, and the procedure for creating a user account that Macintosh clients can use to access print devices on a Windows 2000–based server.

- **Connecting to SNA Hosts by Using Host Integration Server 2000**

This topic describes how Host Integration Server 2000 provides access to IBM host systems (also known as SNA hosts) and their resources. Describe the connection types and standard IBM SNA protocols that Host Integration Server 2000 uses. This section does not include installation and configuration information because Host Integration Server 2000 is an add-on utility that is not included in Windows 2000.

- **Connecting to UNIX Resources**

This topic describes how Services for UNIX provides interoperability between Windows 2000–based systems and UNIX. This section does not include installation and configuration information because Windows Services for UNIX is an add-on utility that is not included in 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.

This module includes only computer-based interactive lab exercises, and as a result, there are no lab setup requirements or configuration changes that affect replication or customization.

Overview

Topic Objective

To provide an overview of the module topics and objectives.

Lead-in

In this module, you will learn how to enable network connectivity among Microsoft Windows 2000, Novell NetWare, Macintosh, UNIX, and IBM host networks.

- **Configuring Access to NetWare Resources**
- **Providing Macintosh Users Access to Windows 2000 Resources**
- **Connecting to SNA Hosts by Using Host Integration Server 2000**
- **Connecting to UNIX Resources**

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Microsoft® Windows® 2000 Server supports interoperability with Novell NetWare, Macintosh, IBM hosts, and UNIX, enabling you to integrate Windows 2000 into an existing environment. You can introduce Windows 2000 incrementally into a network environment because it provides migration paths from any number of existing systems, devices, and applications.

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

- Configure access to NetWare resources.
- Provide Macintosh users with access to Windows 2000 resources.
- Connect to Systems Network Architecture (SNA) hosts by using Microsoft Host Integration Server 2000.
- Connect to UNIX resources.

◆ Configuring Access to NetWare Resources

Topic Objective

To list the topics that are related to configuring access to NetWare resources.

Lead-in

Windows 2000 provides several features and services that enable an organization to support a heterogeneous environment composed of both Windows 2000 and NetWare servers.

- Overview of Gateway Service for NetWare
- Installing Gateway Service for NetWare
- Configuring Gateway Service for NetWare
- Services for NetWare

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Windows 2000 provides several features and services that enable computers running Windows 2000 Server to interoperate with Novell NetWare servers. You can use these features to support a heterogeneous environment composed of both Windows 2000–based servers and NetWare servers.

Windows 2000 Server includes Gateway Service for NetWare, which enables a computer running Windows 2000 Server to connect to computers running NetWare 3.x or 4.x server software. You can also use Gateway Service for NetWare to enable computers running any type of Microsoft client software to gain access to NetWare resources.

Services for NetWare is a separate product that you can use to enable a computer running Windows 2000 Server to interoperate with NetWare and NetWare-compatible computers.

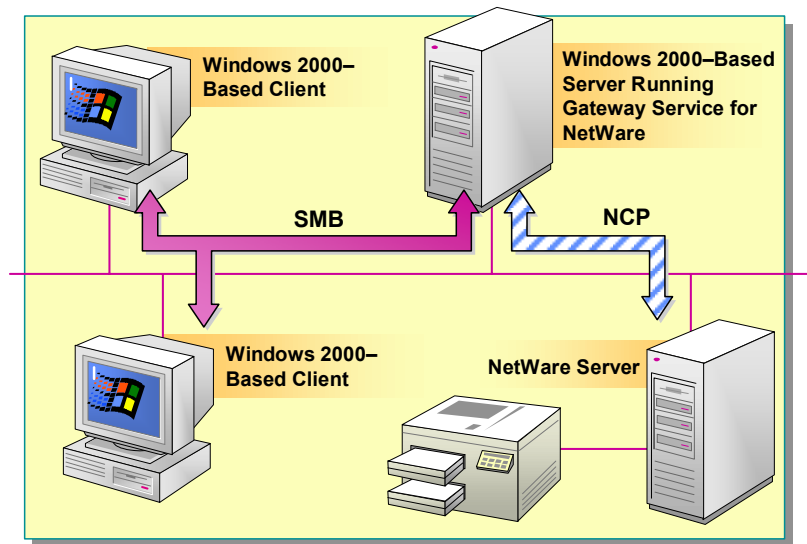
Overview of Gateway Service for NetWare

Topic Objective

To illustrate the concept of Gateway Service for NetWare.

Lead-in

Gateway Service for NetWare provides connectivity between a computer running Windows 2000 and NetWare servers.



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Gateway Service for NetWare enables a computer running Windows 2000 Server to access the resources on a NetWare server. The Windows 2000-based server can then provide client computers with access to the NetWare resources.

Accessing NetWare Resources

Gateway Service for NetWare acts as a gateway between the server message block (SMB) or Common Internet File System (CIFS) protocol used on Windows networks, and the NetWare Core Protocol (NCP) used on NetWare networks. When you enable this gateway, Windows 2000-based network clients can access resources on NetWare servers through the gateway located on the computer running Windows 2000 Server. You can use Gateway Service for NetWare to provide users with occasional access to NetWare-based resources.

Install NetWare client software on client computers that use NetWare servers frequently, because all access to NetWare servers must go through the computer on which Gateway Service for NetWare is installed.

The NWLink Protocol

Gateway Service for NetWare depends on and works with the NWLink IPX/SPX/NetBIOS Compatible Transport Protocol (NWLink). Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX) is the protocol used in Novell NetWare networks. NWLink is the Microsoft implementation of the IPX/SPX protocol used in Novell networks.

Windows 2000–based clients can use NWLink to access client and server applications running on Novell NetWare servers. NetWare clients can use NWLink to access client and server applications running on Windows 2000–based servers. With NWLink, computers running Windows 2000 can communicate with other network devices, such as printers, that use IPX/SPX.

Important NWLink alone does not allow you to access file and printer resources on a Novell NetWare server. To access these resources, you must install client software, such as Client Service for NetWare or Gateway Service for NetWare.

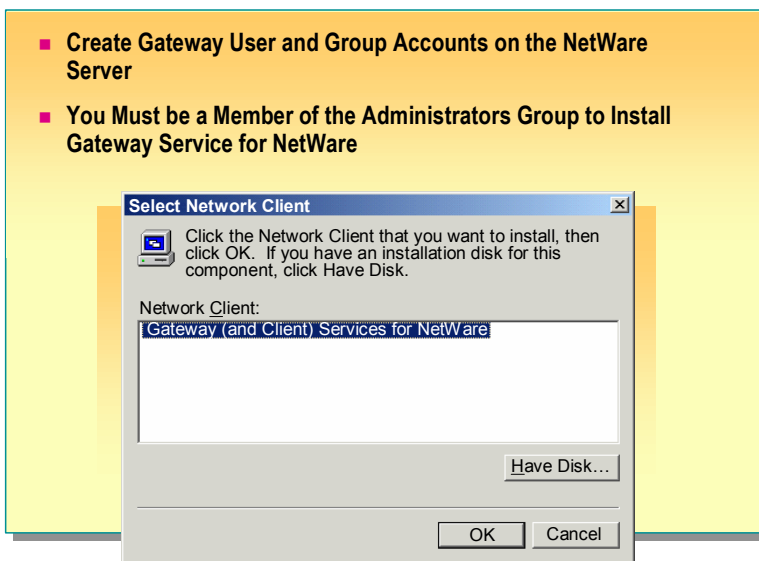
Installing Gateway Service for NetWare

Topic Objective

To list the topics that are related to installing Gateway Service for NetWare, and to illustrate the user interface for the installation process.

Lead-in

You must create gateway user and group accounts on the NetWare server before you install Gateway Service for NetWare on the Windows 2000-based server.



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You can use Gateway Service for NetWare in a mixed NetWare and Windows 2000 network to provide users with access to resources on NetWare servers. Users of computers running Windows 2000 can access resources on a NetWare server through the computer running Gateway Service for NetWare. Client computers do not require NetWare client software when accessing resources through Gateway Service for NetWare.

Note The NWLink protocol is installed during the Gateway Service for NetWare installation process, if it is not already on the server.

Preparing to Install Gateway Service for NetWare

You must create gateway user and group accounts on the NetWare server before you install Gateway Service for NetWare on the Windows 2000-based server. You must meet the following requirements to prepare to install Gateway Service for NetWare:

- Set up a user account on the NetWare server, with the same name and password as the user account that you configure as the gateway account, on the computer running Windows 2000. Assign to the gateway user account the NetWare rights for files that users will access. You can restrict a user's level of access for shared folders on the computer running Gateway Service for NetWare, but the gateway user account must have sufficient rights to access files on the NetWare server. These rights are required because the gateway account accesses all files on the NetWare server.
- Create a group account named NTGateway on the NetWare server. Add the user account that was set up previously to this group account.

Delivery Tip

Describe the requirements that must be met before installing Gateway Service for NetWare.

Performing the Installation

Delivery Tip

Demonstrate the procedure for installing Gateway Service for NetWare.

To install Gateway Service for NetWare:

1. In Network and Dial-up Connections, right-click the local area connection for the network on which the NetWare server resides, and then click **Properties**.
2. On the **General** tab, click **Install**.
3. In the **Select Network Component Type** dialog box, click **Client**, and then click **Add**.
4. In the **Select Network Client** dialog box, click **Gateway (and Client) Services for NetWare**, and then click **OK**.

Note You must be a member of the Administrators group to install Gateway Service for Netware.

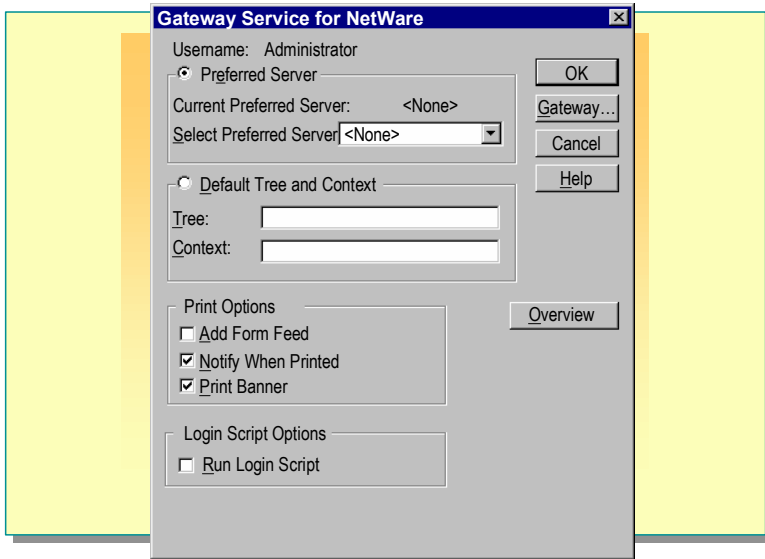
Configuring Gateway Service for NetWare

Topic Objective

To illustrate the user interface for configuring Gateway Service for NetWare.

Lead-in

You must enable the gateway to provide Microsoft clients access to NetWare resources.



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After you have installed Gateway Service for NetWare, you must configure it to enable the gateway. Then, on the Windows 2000–based server, establish a connection and create a shared resource for the Microsoft clients. This provides network clients running Microsoft client software with access to NetWare files and printers without having to run NetWare client software locally.

Configuring the Windows 2000–Based Server Gateway

To configure Gateway Service for NetWare, open the **Gateway Service for NetWare** dialog box by double-clicking **GSNW** in Control Panel.

To enable the Windows 2000–based server gateway:

1. In the **Gateway Service for NetWare** dialog box, click **Gateway**.
2. In the **Configure Gateway** dialog box, select the **Enable Gateway** check box.
3. Type the gateway account name that you want to use for this gateway connection, type the password, and then click **OK**.

The password must be identical to the password for the user account that you created on the NetWare server. You need to do this only once for each server that acts as a gateway.

Delivery Tip

Demonstrate the procedure for enabling the Windows 2000–based server gateway.

Delivery Tip

Demonstrate the procedure for establishing shared folders and permissions.

Establishing Shared Folders and Permissions

After you install Gateway Service for NetWare and configure the gateway, you can establish shared folders and permissions. To user of computers running Windows 2000, the shared folder appears as a typical shared folder on the server running Gateway Service for NetWare. When a user accesses a file in the shared folder, Gateway Service for NetWare retrieves the file from a NetWare server by using the gateway account. The server running Gateway Service for NetWare then makes the file available to the user as if it were located on the server itself.

To create a shared folder, in the **Configure Gateway** dialog box, click **Add**. In the appropriate text boxes, type the share name of the shared folder that users will see, the network path of the Novell volume and directory that you are mapping the shared folder to, a drive mapping, and the user limit for that particular folder. To complete the configuration, set user permissions on the shared folder for an appropriate access level to NetWare resources.

Important All users have access to all of the NetWare files that you have assigned to the gateway account, unless you configure permissions.

Activating a Gateway to a NetWare Printer

You can configure and establish a connection to a NetWare-based printer through Gateway Service for NetWare. However, you can only do this after you establish the appropriate user and group accounts, set the necessary rights on the NetWare servers, and install and configure Gateway Service for NetWare on the Windows 2000-based server.

Note For more information about setting up a gateway printer share, in the **Gateway Service for NetWare** dialog box, click the **Overview** button.

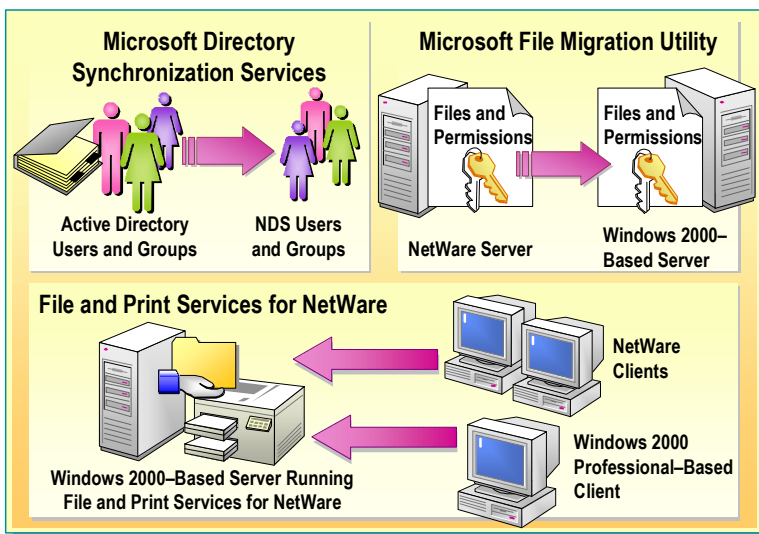
Services for NetWare

Topic Objective

To illustrate the features of Services for NetWare.

Lead-in

Services for NetWare is a separate product that enables you to integrate an existing NetWare environment into a Windows 2000 network.



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Services for NetWare is separate product that includes interoperability services and tools that you can use to integrate an existing NetWare environment into a Windows 2000 network.

Services for NetWare includes the following utilities:

- *Microsoft Directory Synchronization Services.* Provides two-way synchronization of directory information stored in the Active Directory™ directory service and NDS. This helps to reduce costs and simplifies network management because it eliminates the need to replace existing directories or manage separate directories.
- *File Migration Utility.* Enables you to migrate files from NetWare servers to a computer running Windows 2000 Server, while preserving directory structures and security permissions. This helps you to quickly and securely migrate to Windows 2000 from a NetWare environment.
- *File and Print Services for NetWare.* Enables a computer running Windows 2000 to provide file and print services to NetWare clients. The Windows 2000-based server appears as a NetWare server to the NetWare clients, and the clients can access volumes, files, and printers through the server. No changes or additions to the NetWare client software are necessary. This simplifies network management and eases the transition to Windows 2000 from a NetWare environment.

Note For more information about Services for NetWare, see the white paper *Services for Netware Version 5 Overview*, under **Additional Reading** on the Web page on the Student Materials compact disc.

Lab A: Configuring Gateway Service for NetWare (Simulation)

Topic Objective

To introduce the Gateway Service for NetWare simulation.

Lead-in

The Gateway Service for NetWare simulation enables you to experience the Gateway Service for NetWare installation and configuration process. It will also enable you to experience the process of accessing resources through Gateway Service for NetWare.



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Explain the lab objectives.

Objectives

After completing this lab, you will be able to:

- Install and configure Gateway Service for NetWare.
- Access resources by using Gateway Service for NetWare.

Prerequisites

Before working on this lab, you must have an understanding of Gateway Service for NetWare, the NWLink protocol, shared folders, and permissions.

Lab Setup

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

- A computer running 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.

Key Points

The lab does not reflect the real-world environment. It is recommended that you always use complex passwords for any administrator accounts, and never create accounts without a password.

Outside of the classroom environment, it is strongly advised that you use the most recent software updates that are necessary. Because this is a classroom environment, we may use software that does not include the latest updates.

Important The lab does not reflect the real-world environment. It is recommended that you always use complex passwords for any administrator accounts, and never create accounts without a password.

Important Outside of the classroom environment, it is strongly advised that you use the most recent software updates that are necessary. Because this is a classroom environment, we may use software that does not include the latest updates.

► To start the lab

1. Insert the Student Materials compact disc into your CD-ROM drive.
2. At the root of the compact disc, double-click **Default.htm**.
3. On the Student Materials Web page, click **Lab Simulations**, and then click **Configuring Services for NetWare**.
4. Read the introduction information, and then click the link to start the lab.

Estimated time to complete this lab: 15 minutes

◆ Providing Macintosh Users Access to Windows 2000 Resources

Topic Objective

To list the topics that are related to providing Macintosh users access to Windows 2000 resources.

Lead-in

The AppleTalk network integration services included in Windows 2000 enable Microsoft and Macintosh clients to share resources on a computer running Windows 2000 Server.

- Overview of AppleTalk Network Integration Services
- Identifying Connectivity Options
- Installing File Services and Print Services for Macintosh
- Configuring File Services and Print Services for Macintosh

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Windows 2000 includes AppleTalk network integration (formerly known as Services for Macintosh); this enables Microsoft and Macintosh clients to share files and printers.

Overview of AppleTalk Network Integration Services

Topic Objective

To list the AppleTalk network integration services and their benefits.

Lead-in

AppleTalk network integration services include File Services for Macintosh, Print Services for Macintosh, and the AppleTalk protocol.

AppleTalk Network Integration Services Include:

- File Services for Macintosh
- Print Services for Macintosh
- AppleTalk protocol

Benefits of AppleTalk Network Integration Services Include:

- File Sharing
- Printer Sharing
- Simplified administration
- AppleTalk routing support

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With AppleTalk network integration services, you can create accessible volumes that provide a central location from which clients running Microsoft operating systems and Macintosh clients can access file and print resources. The three components of AppleTalk network integration are:

- File Services for Macintosh
- Print Services for Macintosh
- The AppleTalk protocol

Note File Services for Macintosh and Print Services for Macintosh, combined, were formerly known as Services for Macintosh.

Delivery Tip

Describe the benefits of AppleTalk network integration.

The following table describes the benefits of AppleTalk network integration.

Function	Description
File sharing	Users can access the same documents, even if some users access the documents from Macintosh computers and other users access the documents from computers running Windows or MS-DOS®. For these users to edit the same file, applications must also be able to open the same document format.
Printer sharing	Clients can send print jobs either to a printer on a computer running Windows 2000 Server or to a Macintosh-based printer.
Simplified administration	Resources in mixed networks with both Windows 2000–based or MS-DOS–based computers and Macintosh clients can be maintained on and managed from a computer running Windows 2000 Server.
AppleTalk routing support	Macintosh networks can be connected to create an AppleTalk internetwork.

File Services for Macintosh

File Services for Macintosh is an AppleTalk network integration service that enables Macintosh clients and Microsoft clients to share files on a computer running Windows 2000 Server.

Print Services for Macintosh

Print Services for Macintosh enables Macintosh clients to send and spool documents to printers attached to a computer running Windows 2000 Server. Print Services for Macintosh also enables Macintosh and Windows clients to send documents to printers anywhere on an AppleTalk network.

AppleTalk Protocol

Key Point

The AppleTalk protocol is automatically installed when you install File Services for Macintosh or Print Services for Macintosh.

The AppleTalk protocol is the set of network protocols on which the AppleTalk network architecture is based. The AppleTalk protocol stack must be installed on a computer running Windows 2000 Server to enable Macintosh clients to connect to it.

Note Windows 2000 automatically installs the AppleTalk protocol when you install File Services for Macintosh or Print Services for Macintosh.

Identifying Connectivity Options

Topic Objective

To list the considerations for choosing a Macintosh client connectivity option.

Lead-in

You can use different methods for connecting Macintosh clients to your network, depending on the LAN technology in use.

Connectivity Options Vary for Clients that Use:

- Ethernet
- A Combination of Ethernet and LocalTalk
- A Combination of Ethernet and LocalTalk, and Token Ring Network Cards

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There are various options available for connecting to a Macintosh network. The option that you choose depends on the local area network (LAN) technology that is used on your network and is used by the Macintosh clients.

The following table describes the different connectivity options for a Windows 2000–based server that uses Ethernet.

Delivery Tip

Describe the different options for connecting Macintosh clients to a Windows 2000 network.

Macintosh Clients Use	Connectivity Options
Ethernet	• Install File Services for Macintosh on the server. This creates a central storage location from which clients can access files.
Combination of Ethernet and LocalTalk	• Install a LocalTalk card on the server to communicate with the Macintosh computers that use LocalTalk. - Or - • Install Ethernet cards on all of the Macintosh computers. - Or - • Use an Ethernet/LocalTalk router.
Combination of Ethernet and LocalTalk, and token ring network cards	• Install a token ring network card on the server to communicate with the clients that have token ring network cards. - And - • Install Ethernet cards on all of the Macintosh computers, or use an Ethernet/LocalTalk router.

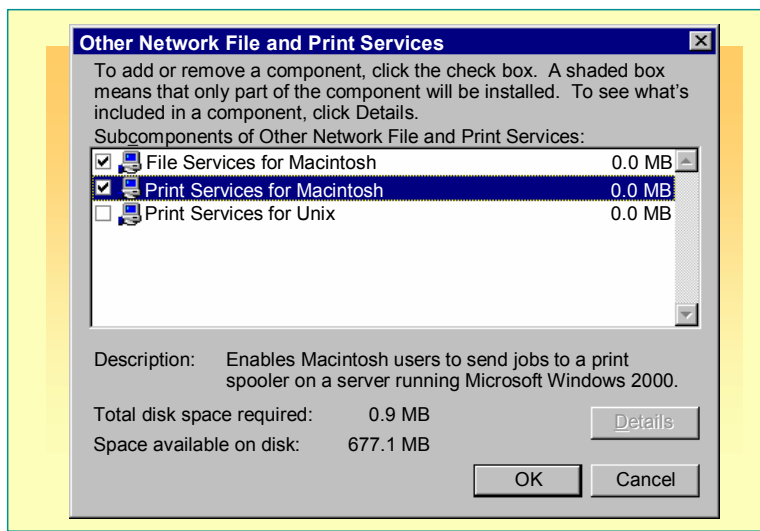
Installing File Services and Print Services for Macintosh

Topic Objective

To illustrate the user interface for installing File Services and Print Services for Macintosh.

Lead-in

You can install File Services for Macintosh or Print Services for Macintosh from **Add/Remove Programs** in Control Panel.



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Key Point

You must ensure that there is an NTFS partition on each computer that will share files with a Macintosh computer.

You can install File Services for Macintosh or Print Services for Macintosh from **Add/Remove Programs** in Control Panel. Before installing File Services for Macintosh, you must ensure that there is an NTFS file system partition for each computer on which you will install File Services for Macintosh or Print Services for Macintosh.

To install File Services for Macintosh or Print Services for Macintosh (or both):

Delivery Tip

Demonstrate the procedure for installing File Services and Print Services for Macintosh.

1. In Control Panel, open Add/Remove Programs, and then click **Add/Remove Windows Components**.
2. On the **Windows Components** page of the Windows Components wizard, click **Other Network File and Print Services** (but do not select or clear the check box), and then click **Details**.
3. In the **Other Network File and Print Services** dialog box, select the **Print Services for Macintosh** check box or the **File Services for Macintosh** check box (or both), and then click **OK**.
4. On the **Windows Components** page, click **Next**, and then click **Finish**.

Configuring File Services and Print Services for Macintosh

Topic Objective

To list the configuration tasks that are necessary after installing File Services and Print Services for Macintosh.

Lead-in

Configure File Services for Macintosh to create a Macintosh-accessible volume. Configure Print Services for Macintosh to create an account that all Macintosh clients will use.

To Configure File Services and Print Services for Macintosh:



Configure File Services for Macintosh to Create a Macintosh-accessible Volume



Configure Print Services for Macintosh to Create an Account That All Macintosh Clients Will Use

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After you install File Services for Macintosh or Print Services for Macintosh, you must configure them to enable Macintosh clients to access resources on a computer running Windows 2000 Server.

Configuring File Services for Macintosh

After installing File Services for Macintosh, you must create and share a Macintosh-accessible volume. A Macintosh-accessible volume is a folder on a computer running Windows 2000 Server that is made available to Macintosh clients.

To create a Macintosh-accessible volume:

1. Open Computer Management.
2. In the console tree, double-click **Shared Folders**, right-click **Shares**, and then click **New File Share**.
3. In the **Create Shared Folder** dialog box, in the **Folder to share** box, type the drive and path to the folder that you want to make available to Macintosh clients, or click **Browse** to locate the folder.
4. In the **Share name** box, type the name of the shared folder as it will appear to users who access the shared folder from a Windows-based computer. You can also type a description of the shared folder in the **Share description** box.
5. Under **Accessible from the following clients**, verify that the **Microsoft Windows** check box is selected, select the **Apple Macintosh** check box, and then click **Next**.
6. In the **Macintosh share name** box, type the name of the shared folder as it will appear to users who access the shared folder from a Macintosh computer.
7. Select the appropriate share permission, and then click **Finish**.

Delivery Tip

Demonstrate the procedure for creating and sharing a Macintosh-accessible volume.

Delivery Tip

Demonstrate the procedure for specifying a user account that Macintosh clients can use to access print devices on a Windows 2000-based server.

Configuring Print Services for Macintosh

Because AppleTalk has no mechanism for enforcing printer security, by default, Macintosh clients can access all printers on a computer that has Print Services for Macintosh installed. You can restrict which printers Macintosh clients can print to by configuring the Print Server for Macintosh service to log on as a different user account than the local system account. You can then assign printer permissions to this account. The account that you specify must also have the Log on as a service user right.

To specify a user account for Macintosh print jobs:

1. Open Computer Management.
2. In the console tree, expand **Services and Applications**, and then click **Services**.
3. In the details pane, double-click **Print Server For Macintosh**.
4. In the **Print Server for Macintosh Properties** dialog box, click the **Log On** tab.
5. Click **This account**, and then type the name of the user account, or click **Browse** to locate the user account.
6. Type the password of the user account in the **Password** and **Confirm password** boxes, and then click **OK**.

Lab B: Configuring File Services and Print Services for Macintosh (Simulation)

Topic Objective

To introduce the File Services and Print Services for Macintosh simulation.

Lead-in

The File Services and Print Services for Macintosh simulation will enable you to experience the installation and configuration process for File Services and Print Services for Macintosh.



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Explain the lab objectives.

Objectives

After completing this lab, you will be able to install and configure File Services and Print Services for Macintosh.

Prerequisites

Before working on this lab, you must have:

- An understanding of the AppleTalk protocol.
- An understanding of File Services and Print Services for Macintosh.
- An understanding of shared folders and permissions.

Lab Setup

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

- A computer running Windows 2000, Windows NT 4.0, Windows 98, or Windows 95.
- A minimum display resolution of 800 x 600 with 256 colors.

► To start the lab

1. Insert the Student Materials compact disc into your CD-ROM drive.
2. At the root of the compact disc, double-click **Default.htm**.
3. On the Student Materials Web page, click **Lab Simulations**, and then click **Configuring File Services and Print Services for Macintosh**.
4. Read the introduction information, and then click the link to start the lab.

Estimated time to complete this lab: 15 minutes

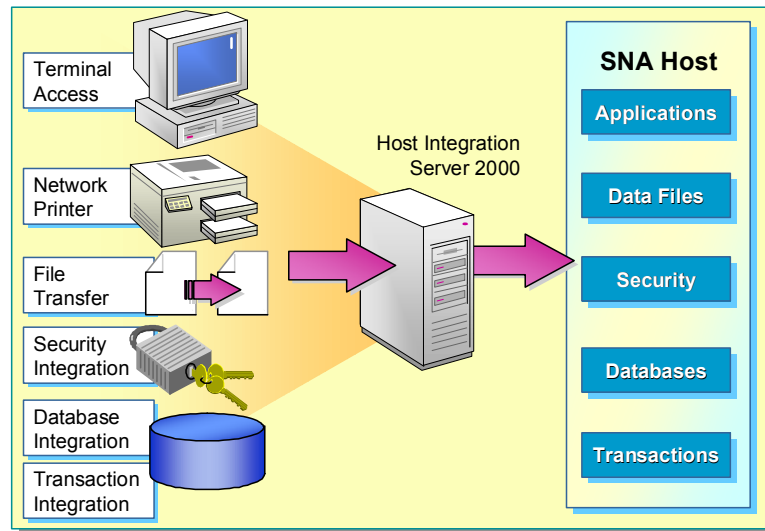
Connecting to SNA Hosts by Using Host Integration Server 2000

Topic Objective

To illustrate the functions of an SNA Server.

Lead-in

Host Integration Server 2000 provides access to SNA host systems and their resources.



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Many large organizations run applications on IBM mainframe systems that use the SNA networking protocol. Host Integration Server 2000 (formerly known as SNA Server) is a separate product in the Microsoft BackOffice® family of products that enables Windows 2000-based clients and servers to connect to IBM host systems (also known as SNA hosts) over standard networking protocols.

Connection Types

Delivery Tip

Describe the connection types that Host Integration Server 2000 uses.

Host Integration Server 2000 is a set of server processes that run on Windows 2000 Server. Host Integration Server 2000 acts as an SNA gateway and integrates systems on a LAN or a wide area network (WAN) with IBM mainframe systems and AS/400 systems by using two types of connections:

- The physical connections and logical connections into the Host Integration Server 2000 environment
- The client/server network connections to the non-SNA systems on the LAN or WAN, such as personal computers or server applications, which need access to Host Integration Server 2000 applications

Host Integration Server 2000 completes the network connection to the mainframe or AS/400 system by using standard IBM SNA protocols, such as Data Link Control (DLC) or Transmission Control Protocol/Internet Protocol (TCP/IP).

Note Heterogeneous clients can connect to Host Integration Server 2000 through other networking protocols, such as IPX/SPX, NetBIOS Enhanced User Interface (NetBEUI), Banyan VINES IP, AppleTalk, and Windows 2000 Routing and Remote Access.

The DLC Protocol

Token ring, Ethernet, and Fiber Distributed Data Interface (FDDI) connections use the IEEE 802.2 protocol. With a mainframe, an 802.2 DLC connection goes to a 37xx FEP or a 3174 communications controller (or, rarely, to an adapter in the mainframe). With an AS/400 system, an 802.2 DLC connection goes directly to the AS/400. These connections are generally faster than most other connections, except for channel connections.

Type of 802.2 connection	Common speeds
Token ring	4 or 16 megabits per second (Mbps)
Ethernet	10/100 Mbps
FDDI	100 Mbps (or faster)

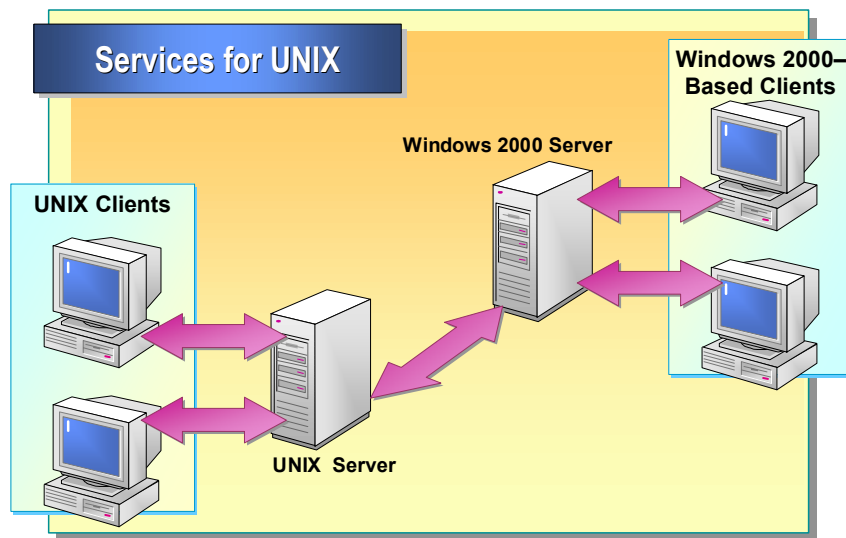
Connecting to UNIX Resources

Topic Objective

To illustrate how Services for UNIX works.

Lead-in

Services for UNIX is an add-on utility that you can use on a Windows 2000 network to access UNIX resources.



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UNIX and Windows 2000 do not have a common mechanism for sharing files. UNIX uses Network File System (NFS) and Windows 2000 uses CIFS. To share files, one system must be modified to communicate with the file-sharing protocol of the other.

To integrate Windows 2000 with UNIX, use Windows Services for UNIX version 2.0, which is an add-on utility that provides core network interoperability with existing UNIX environments and synchronizes user passwords between Windows 2000-based systems and UNIX. Services for UNIX enables users of Windows 2000-based computers to access UNIX resources just as they would access any Windows-based resources.

Windows Services for UNIX 2.0:

- Enables you to share network resources among Windows NT, Windows 2000, and UNIX-based systems.
- Provides a subset of UNIX utilities to give UNIX users and administrators their familiar set of tools.
- Simplifies both local and remote network administration, and supports either graphical or character-based administration.
- Provides the ability to consolidate UNIX accounts and Windows accounts in Windows 2000, to centralize and synchronize account management.

Note For more information about Services for UNIX, see the white paper *Services for UNIX version 2.0*, under **Additional Reading** on the Web page on the Student Materials compact disc, and the Services for UNIX Web site at <http://www.microsoft.com/windows2000/sfu>.

Review

Topic Objective

To reinforce module objectives by reviewing key points.

Lead-in

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

- **Configuring Access to NetWare Resources**
- **Providing Macintosh Users Access to Windows 2000 Resources**
- **Connecting to SNA Hosts by Using Host Integration Server 2000**
- **Connecting to UNIX Resources**

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1. The Accounting department in your company is running a Novell NetWare 4.11 server on a network that is separate from the rest of the company. The rest of the company has recently upgraded to a Windows 2000 domain environment. You must configure a connection between the Accounting department and the rest of the company to enable the Sales department to share data with the accounting department. After you have configured a connection between the two networks, what solutions can you implement that will allow the two departments to share data, and why?

Install Gateway Service for NetWare on a Windows 2000–based server. This will enable the Windows 2000–based clients in the Sales department to access data on the NetWare server in the Accounting Department.

Install File and Print Services for NetWare to provide the Novell NetWare clients access to shared data on the Windows 2000–based server.

2. What are the different options for connecting Macintosh clients to a Windows 2000 network?
 - **Ethernet**
 - **A combination of Ethernet and LocalTalk**
 - **A combination of Ethernet and LocalTalk, and token ring network cards**

3. Describe the connection types that Host Integration Server 2000 uses.

Host Integration Server 2000 acts as an SNA gateway and integrates systems on a LAN or a WAN with IBM mainframe systems and AS/400 systems by using two types of connections:

- **The physical connections and logical connections into the Host Integration Server 2000 environment.**
- **The client/server network connections to the non-SNA systems on the LAN or WAN, such as personal computers or server applications, which need access to Host Integration Server 2000 applications.**

4. The Engineering department in your company uses UNIX workstations for mathematical three-dimensional modeling. You must create a solution to enable Windows 2000–based computers in your company to share data with the UNIX systems. What product would you use to accomplish this?

Services for UNIX enables users of Windows 2000–based computers to access UNIX resources just as they would access any Windows-based resources.

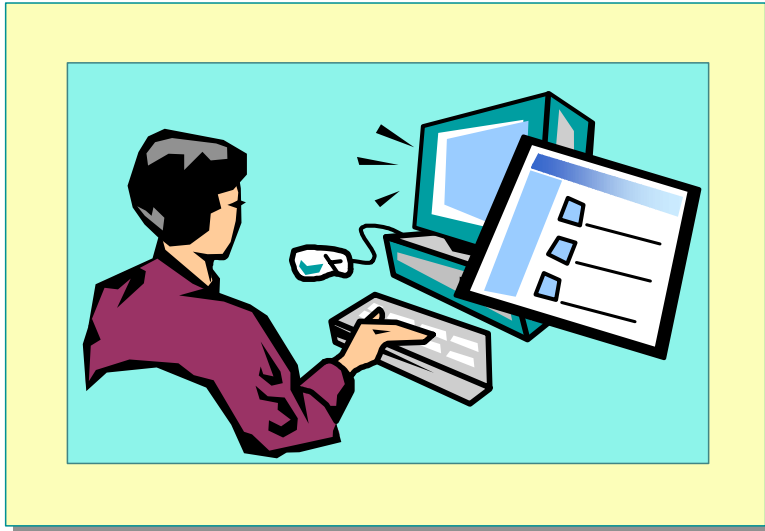
Course Evaluation

Topic Objective

To direct students to a Web site to complete a course evaluation.

Lead-in

Go to the Web site listed on this page to complete a course evaluation.



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Your evaluation of this course will help Microsoft understand the quality of your learning experience.

To complete a course evaluation, go to
<http://www.metricsthatmatter.com/survey>.

Microsoft will keep your evaluation strictly confidential and will use your responses to improve your future learning experience.

