Academic
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Microsoft®
Windows NT® Server
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Lab Manual

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Windows NT® Server Enterprise Technologies

Lab Manual

Introduction to Laboratory Exercises

Included with the Academic Learning Series (ALS) texts are hands-on lab exercises designed to give you practical experience using Microsoft Windows NT Server in the Enterprise. This hands-on experience is an essential part of your training because it is difficult to truly understand and use its features without having had the opportunity to explore firsthand the menus, options, and responses. The tasks included in these exercises provide an opportunity for you to test the concepts presented in the text and to use the tools of Microsoft Windows NT Server 4.0 with emphasis on enterprise installations.

The lab exercises are best used in a classroom setting, though some exercises can be completed individually. The exercises presume a classroom network setup in one or more Windows NT domains with shared resources (depending upon the specific ALS text being used).

The directory of subdirectories, programs, and data files designed to support these labs can be shared from the instructor's system or installed on each student's system. A lab setup guide is provided for the instructor to use in setting up the classroom to support the labs.

The lab exercises do not precisely mirror the text's practice activities. Domain names, user names, IP addresses, shared resources, and other specific references in the lab exercises may be somewhat different from similar references in the ALS text or from those used in setting up the classroom network.

Local constraints must be followed to ensure proper network operations. Since it is not possible to predict each institution's local networking requirements, your instructor will explain differences that occur.

The old saying, "The way to get to Carnegie Hall is to practice, practice, practice" is equally true of the pursuit of personal competency and Microsoft Certification. The tests required for Microsoft Certified Systems Engineer, or other Microsoft certifications are demanding. One of the best ways to become confident in the use of Microsoft Windows NT Server in the Enterprise is to complete each of the assigned lab exercises as well as the practice tasks included in the text.

Lab 1: Directory Services Introduction

Objective

After completing this lab, you will be able to:

- Design a Microsoft Windows NT network based on Windows NT Directory Services.

Before You Begin

The lab consists of two scenario-based exercises. Each exercise describes a company that is migrating to Windows NT and wants to implement Windows NT Directory Services. You will use unique criteria to answer some questions involved in drafting a network design for each company. If time permits, your instructor may have you work individually or with a partner to sketch your network design. You will be revisiting the designs as the course progresses.

The purpose of these exercises is to test your pre-course network planning knowledge in order to establish a baseline from which to measure how much you have learned after completing the course. These exercises also start you thinking about using directory services in designing networks.

Estimated time to complete this lab: 30 minutes

Exercise 1
Designing Your Network Using Directory Services

The XYZ Company is in the process of replacing their older midrange system with Windows NT–based computers. Most employees gain access to the midrange system through terminal devices. Some users have 386-based computers and a few have 486-based computers. These computers are not networked. The company has already purchased the hardware for the migration. The network will be used for basic file and print sharing and will also have one Windows NT server running Microsoft SQL Server. The majority of users will need access to SQL Server. Desktop applications will be installed on the local computers, but data files will be saved on the servers.

▶ **To draft a network design using the following criteria**

Environmental components	Detail
Users	100
Location or locations	Single office
Administration	Full-time administrators, centrally located
Servers	Three computers: 486/66 with 16 MB RAM, and 1.2 GB hard disk; one P90 dedicated to SQL Server
Clients	All 386 and 486 computers, running Microsoft Windows for Workgroups 3.11 or Windows 95
Microsoft BackOffice applications	SQL Server, and Messaging
Server usage	Basic file and print

1. How many domains will you need to use?

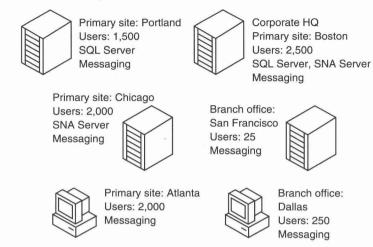2. How many trusts will need to be configured?

3. Use the space below to sketch your network design.

Exercise 2
Designing Your Network Using Directory Services

The WXY Company has 10,000 users; 8,000 are located in four primary sites, with the remaining employees located in branch offices in major U.S. cities. The company currently has LANs installed in each location but will be replacing them with Windows NT–based networks. Plans call for maintaining the four administrative units. Three of the four primary sites operate independently of the others. The fourth is corporate headquarters. Branch offices have between 25 and 250 users who need access to all four of the primary sites, but seldom need access to the other branch offices.

▶ **To draft a network design using the following criteria**

Environmental components	Detail
Users	10000
Location or locations	Four primary sites, with 20 smaller sites in major cities in the U.S. No plans for opening any international locations.
Administration	Full-time administrators at each of the four primary sites; some of the smaller sites have part-time administrators.
Number of domain controllers	To be determined.
Clients	286, 386, and 486 computers, running MS-DOS under Microsoft Windows; Microsoft Windows for Workgroups 3.11; or Microsoft Windows 95.
Server applications	Microsoft SQL Server, Microsoft SNA Server, and Messaging.

Primary site: Portland
Users: 1,500
SQL Server
Messaging

Corporate HQ
Primary site: Boston
Users: 2,500
SQL Server, SNA Server
Messaging

Primary site: Chicago
Users: 2,000
SNA Server
Messaging

Branch office:
San Francisco
Users: 25
Messaging

Primary site: Atlanta
Users: 2,000
Messaging

Branch office:
Dallas
Users: 250
Messaging

1. How many domains will you need to configure?

_____

2. How many trusts will need to be configured?

_____

3. Use the space below to sketch your network design.

Summary

This objective	Was met by
Design a Windows NT network using Windows NT Directory Services.	Looking at the two scenarios and designing the networks to best use the capabilities of directory services.

Lab 2:   Installing, Configuring, and Testing TCP/IP

Objectives

After completing this lab, you will be able to:

- Install TCP/IP.
- Manually configure TCP/IP parameters.
- Use the IPCONFIG utility to view configured IP parameters.
- Use the PING utility to test TCP/IP communications.

Before You Begin

To complete this lab, you need a computer with Microsoft Windows NT Workstation or Microsoft Windows NT Server installed.

You will also need the information contained in the following table and the information included under "Classroom Configuration."

When this information is required	Use
Host ID	131.107.2.1*xx* where *xx* is assigned by your instructor. Note that your instructor may also prefer you to use a totally different IP address, depending on lab setup.
Subnet Mask	255.255.255.0 unless otherwise directed by your instructor

Classroom Configuration

The classroom configuration is set up as a single physical segment. The instructor's station has an IP address of 131.107.2.200 with subnet mask of 255.255.255.0.

For this lab, each student will bring up his or her computer as a workstation. The only protocol preinstalled on the workstation is NWLink.

The purpose of this lab is for each student to configure his or her Windows NT Workstation with a static IP address of 131.107.2.1*xx* with subnet mask of 255.255.255.0 where *xx* is assigned by the instructor.

Estimated time to complete this lab: 15 minutes

Exercise 1
Installing and Configuring TCP/IP

In this exercise, you will install and configure Microsoft TCP/IP. First you will remove the NWLink IPX/SPX transport from your workstation configuration.

▶ **To install TCP/IP**

1. Log on as Administrator with password **password**

2. On the Start menu, point to Settings and then click Control Panel.

   The Control Panel appears.

3. Double-click Network.

   The Network dialog box appears.

4. Document the network services and protocols installed on your workstation. You will reference them later in the exercise.

   _____

   _____

   _____

5. On the Protocols tab, select NWLink IPX/SPX Compatible Transport Protocol, and then click Remove.

   A warning box confirms the operation.

6. Click Yes.

   The NWLink IPX/SPX Compatible Transport no longer appears.

7. Click Add.

   The Select Network Protocol dialog box appears.

8. In the Select Network Protocol box, select TCP/IP Protocol and then click OK.

   The TCP/IP Setup dialog box appears, prompting you to install using DHCP.

9. Click No.

   The Windows NT Setup box appears, prompting you for the full path of the Windows NT distribution files.

10. Type **c:\ntsrv\i386** and then click Continue.

    The appropriate files are copied to your workstation.

▶ **To configure TCP/IP**

1. In the Network dialog box, click Close.

   Windows NT will display binding information and then the Microsoft TCP/IP Properties dialog box appears.

2. Type the following configuration information (refer to the "Before You Begin" section of this lab for your host ID):

In this box	Type
IP Address	*host_id*
Subnet Mask	**255.255.255.0**
Default Gateway	(leave blank)

3. Click OK.

   A Network Settings Change dialog box appears indicating the computer needs to be restarted to initialize the new configuration.

4. Click No.

Important Do not shut down your computer. If you shut down and restart your computer, the following exercise will not work.

Exercise 2
Testing the TCP/IP Configuration

In this exercise, you will use the IPCONFIG utility to view an IP configuration and the PING utility to test your workstation configuration and connections to other TCP/IP hosts. You will see PING fail and succeed.

▶ **To test the configuration without initializing TCP/IP**

In this procedure, use the IPCONFIG utility to view the TCP/IP configuration when TCP/IP has not been initialized.

1. At a command prompt, type **ipconfig** and then press ENTER.

   Notice that the response is an empty table.

2. Ping the loopback address.

   Type **ping 127.0.0.1** and then press ENTER.

3. Document the error message.

   _____

4. Shut down and restart your computer.

▶ **To test the configuration with TCP/IP initialized**

1. Log on to the computer as Administrator, and open a command prompt.

2. Use the IPCONFIG utility to view the TCP/IP configuration.

3. Document the information that is supplied by the IPCONFIG utility.

_____

_____

4. Ping the loopback IP address to verify that the bindings for TCP/IP are correct:

   Type **ping 127.0.0.1** and then press ENTER.

5. Could you ping successfully?

_____

6. Ping the IP address of your workstation to verify that it was configured correctly.

   Type **ping 131.107.2.**z, where z is your assigned host ID, and then press ENTER.

7. Could you ping successfully?

_____

8. Try to ping the IP address of another student.

   Type **ping 131.107.2.**z, where z is the host ID assigned to the other student, and press ENTER.

9. Ping an IP address that is not in use to see the error message.

   Type **ping 131.107.200.200** and press ENTER.

10. Document the error message.

_____

Summary

This objective...	Was met by...
To install TCP/IP.	Using the Control Panel Network tool to install TCP/IP on your workstation.
To manually configure TCP/IP parameters.	Assigning a static IP address, subnet mask, and default gateway parameters to your workstation.
To use the IPCONFIG utility to view configured IP parameters.	Verifying the IP parameters that were configured for a workstation.
To use the PING utility to test TCP/IP communications.	Verifying that TCP/IP was initialized with the correct bindings, the workstation and default gateway addresses were configured correctly, and the workstation could communicate with other TCP/IP hosts.

Lab 3: Designing a Multiple Master Domain Model

Objectives

After completing this lab, you will be able to:

- Design a multiple master domain model.
- Implement trust relationships with other domains according to the domain model that you designed.
- Implement administration requirements for the domain model that you designed.

Before You Begin

This is an instructor-led lab. You will design a multiple master domain model based on the domains in your classroom. Two or more of your domains will be master/account domains, and one or more will be resource domains. After you have designed the domain model, you will design administration for your domain model based on three criteria. After the design is complete, you will implement your model. The implementation will take coordination among all domains and administrators in the classroom.

To complete the lab, you will need the following information from the instructor.

When this information is required	Use this
Instructor's domain name	
First Master/account domain name	
Second Master/account domain name	
Third Master/account domain name (optional)	
Fourth Master/account domain name (optional)	
First Resource domain name	
Second Resource domain name	
Third Resource domain name	
Fourth Resource domain name	

Prerequisites

This lab requires that the classroom have at least three domains so that you can design and implement multiple domain models.

Estimated time to complete this lab: 60 minutes