Establishing FTP Services on a NetWare 4 Server

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The NetWare FTP Service allows users from any platform that provides the FTP utility to access the NetWare file system.

THE NetWare FTP Service allows your users to access the NetWare file system using the common FTP utility, and it provides many facilities to monitor and manage your FTP server. Users from any platform that provides an FTP utility will be able to access the files on your NetWare server. The NetWare FTP Service uses the information stored in the NDS to restrict file system access for each user in your network. You can also enable the "Anonymous" user account to allow users to access your NetWare files without needing a unique userid and password.

This article will present the steps necessary to install, test, manage and monitor the NetWare FTP Service.

REQUIREMENTS

Several requirements must be met in order to implement the NetWare FTP Service. The following sections will explore these requirements in detail.

Requirement #1: TCP/IP Must Be Loaded

The NetWare FTP Service requires that the TCP/IP protocol be loaded on your NetWare file server. The commands in Figure 1 can be placed in the AUTOEXEC.NCF file to load TCP/IP on your NetWare 4.x server. Their functions are as follows:

◆ The first set of load/bind commands loads the LAN adapter driver with the 802.3 protocol and binds IPX to that driver.

◆ The second set of load/bind commands loads the LAN adapter driver with the 802.2 protocol and binds IPX to that driver.

◆ The next command loads the TCPIP.NLM module, and the last set of load/bind commands loads the LAN adapter driver with the Ethernet_II protocol and binds IP to that driver.

Requirement #2: The Server Must Be Running NetWare 4.1 or Higher

The NetWare FTP Service is only supported on file servers running NetWare 4.1 or higher. NetWare 3.x servers are not supported since the NetWare FTP Service requires the NDS to administer security for the service.

Requirement #3: DOS Must Not Be Removed

The DOS operating system must be resident on the server. Many network administrators remove DOS using the REMOVE DOS command from the NetWare system console; however, in order to install the NetWare FTP Service, DOS must be resident.

Requirement #4: Minimum RAM and Disk Requirements Must Be Followed

The file server must have at least 12MB of RAM and 5MB of available disk space. The RAM requirement is not an absolute value. Your server may have more than 12MB of RAM but still not be able to support the FTP Service. You can ensure that your server has available RAM by checking the "Total Cache Buffers" value from the MONITOR utility.

INSTALLING THE FTP SERVICE

The NetWare FTP Service is included on the FTP Services for IntranetWare CD-ROM that came with NetWare version 4.11. You

Figure 1: Commands to Load TCP/IP

```
LOAD 3C5X9 INT=3 PORT=300 FRAME=Ethernet_802.3  NAME=3C5X9_1_E83
BIND IPX 3C5X9_1_E83 NET=5D856319
LOAD 3C5X9 INT=3 PORT=300 FRAME=Ethernet_802.2  NAME=3C5X9_1_E82
BIND IPX 3C5X9_1_E82 NET=3E9F3366
load tcpip rip=yes forward=yes
LOAD 3C5X9 INT=3 PORT=300 FRAME=ETHERNET_II  NAME=E2
bind ip to E2 ADDR=172.16.100.5 GATEWAY=172.16.100.2 MASK=255.255.0.0
```

Figure 2: Prompt for Booting NetWare
DOS must be resident on the server to allow the install program to update the boot partition.
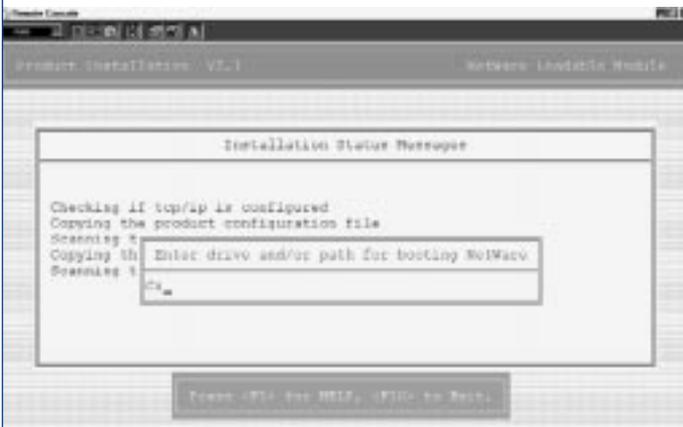

Figure 3: Initial UNICON Screen

can also obtain the FTP Services product for NetWare 4.1 servers by ordering IntraNetWare Print Services 2.3 for UNIX, part number 00662644160177. The list price for this product is $995.

To install the NetWare FTP Service, perform the following steps:

1. Insert the FTP Services for IntranetWare CD-ROM in the file server's CD-ROM drive.

2. From Command Prompt, enter LOAD INSTALL.

3. Select Product Options from the Installation Options menu.

4. Select "Install a product not listed" from the "Other Installation Actions" screen.

5. Press the F3 key to change the path to d:\NWUXPS (where d: is the drive letter of your NetWare server's CD-ROM drive).

You will receive a message stating that the install program found a README.TXT file.

6. Press Escape to continue.

7. You should now receive a message asking if you wish to view the README.TXT file. Highlight NO, then press Enter.

8. Next, you will be prompted to enter a Local Host Name. Enter the name of the NetWare 4.x server to which you wish to load the FTP Service.

9. Now you will receive a prompt asking you to "Enter drive and/or path for booting NetWare," as shown in Figure 2. In most cases, this path will be C:\NWSERVER. Enter the path, and then press Enter.

10. The installation program will ask if you wish to install the Online Documentation. Select Yes, and then press Enter. You will see many files being copied to your NetWare server's hard drive.

11. A warning message will appear stating that SYS:\ETC\DNS\ HOSTS.DB does not exist. Press any key to clear this message. The HOSTS.DB is used by the NetWare Domain Name System (DNS).

    Tip: *You are not required to run DNS in order to run the FTP Service.*

    After the installation program copies all of the files onto your NetWare server, the UNICON utility will automatically be started. You will use UNICON to configure and enable the FTP service.

12. The UNICON utility will prompt you to log into the NDS tree. You must use an Admin level account for this login.

13. Once logged into the NDS, UNICON will present the "Available Name Service Options" screen, as shown in Figure 3. In the Available Name Services Options screen, you will see several local and remote DNS and NIS options. The FTP Service does not require DSN or NIS, so choose the "No DNS and Remote NIS" option.

14. UNICON will then issue a warning stating that using a remote NIS and no DNS will result in UNIX users and groups and Host management being read-only. Press the Enter key to continue.

15. The UNICON setup screen will display the NIS Domain and NIS Server TCP/IP address as shown in Figure 3. Accept the default values and press the Escape key to continue.

16. A message will be displayed asking if you wish to continue the installation. Select Yes and press the Enter key.

17. The Product Initialization Status screen will be displayed. When you see the message "Product Initialization Complete," press the Escape key to continue.

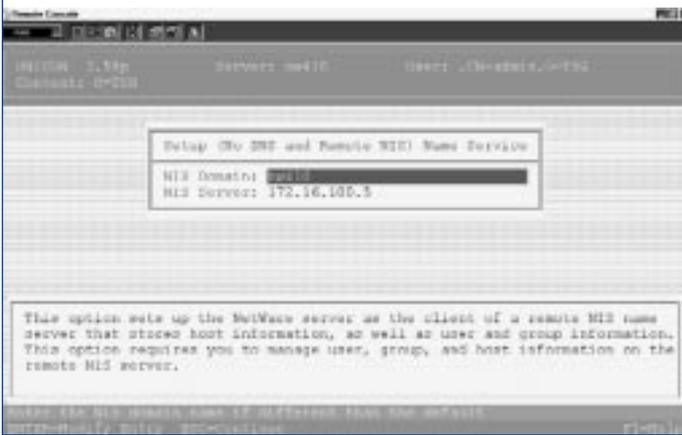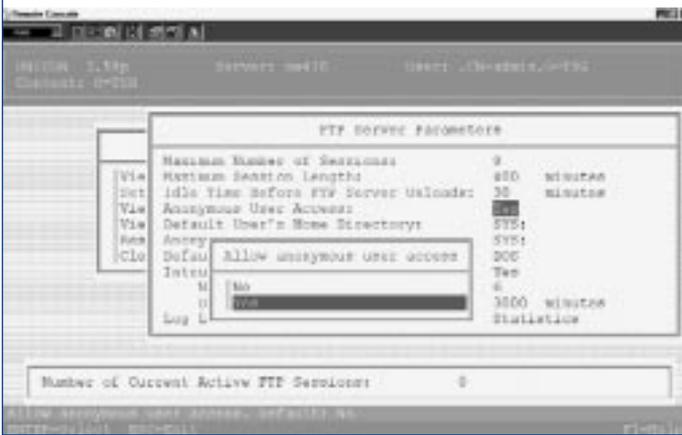Figure 4: Accept the Default Values for the NIS Parameters

Figure 6: Viewing Statistics of an FTP User

Figure 5: Enabling Anonymous Access

You will then be returned to the "ftp>" prompt where you should enter the following:

```
DIR
```

You should see the file structure of your NetWare's SYS: volume. From this point, you can issue the CD command to change directories and the GET command to transfer files from the server to your workstation.

Tip: *If you have a DNS server in operation on your network, you should add a record for your NetWare server. If needed, you can then access the server using its name rather than specifying its TCP/IP address.*

THE UNICON UTILITY

The UNICON.NLM utility is used to configure and monitor the NetWare FTP Service. From UNICON, you can modify several parameters, including:

◆ maximum number of sessions
◆ maximum session length
◆ idle time before FTP service unloads
◆ anonymous user access
◆ default user's home directory
◆ anonymous user's home directory
◆ default name space
◆ intruder detection
◆ log level

To configure the above parameters, perform the following:

1. Enter LOAD UNICON from the system console.
2. Select "Manage Services."
3. Select "FTP Server."
4. Select "Set Parameters."
5. Select the entry you wish to modify and press Enter. You will be presented with a pull-down menu to select a value for the parameter being modified.

The following will explore some of the parameters listed above and their effects on the FTP Service. We will also learn

18. Next, the Running Services dialog box will be displayed. Press the Insert key, then select "FTP Server" and press Enter.

19. You should now see the FTP Server in the Running Services dialog box. Press Escape several times to back out of the installation screens. The FTP Service is now installed on your NetWare server.

TESTING THE FTP SERVICE

You are now ready to test the FTP service. From a Windows 95 or Windows NT Workstation, open a Command Prompt and enter the following command:
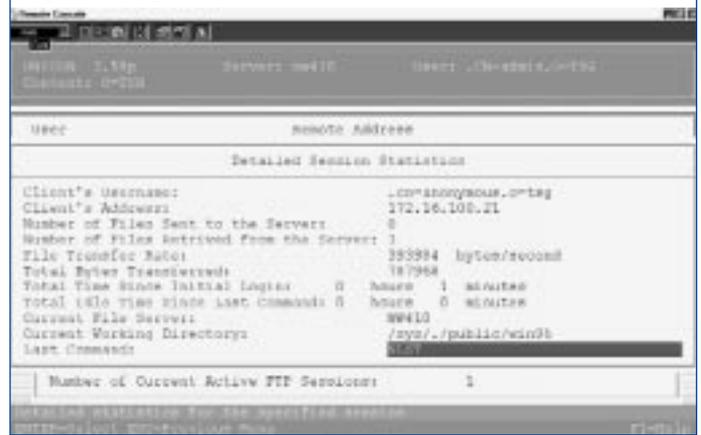
```
FTP
```

You should receive the "ftp>" prompt. From the "ftp>" prompt, enter:

```
OPEN 172.16.100.5
```

(where 172.16.100.5) is the TCP/IP address of the NetWare server containing the FTP Service. You will be prompted for a userid and password. You must enter the distinguished userid at the user prompt, such as in this example:

```
.cn=username.ou=Accounting.o=AcmeOrg
```
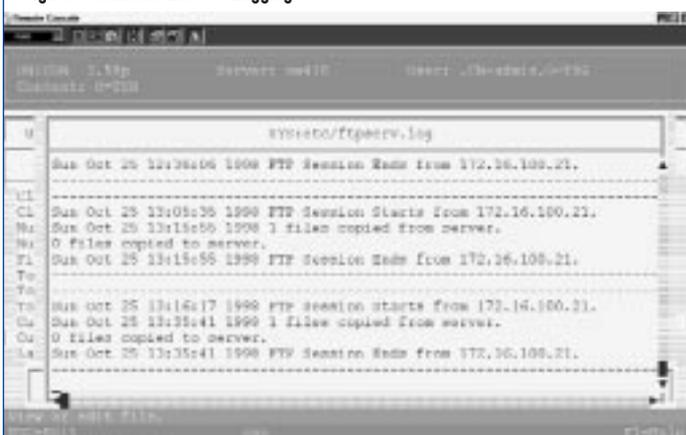
Figure 7: Statistics Level of Logging

Figure 8: Editing the RESTRICT.FTP File to Restrict a User's Access

how to use UNICON to monitor and manage the NetWare FTP Service.

FTP SERVICE FACILITIES

The NetWare FTP Service provides several facilities to manage your FTP service. These facilities can be accessed and configured using the UNICON utility:

◆ anonymous account access
◆ viewing and managing current users
◆ viewing and configuring FTP session statistics
◆ restricting FTP access

Anonymous Account Access

Many FTP sites allow users to access certain files using the "anonymous" account. To configure the NetWare FTP Service to accept anonymous access, perform the following:

1. From the UNICON utility, select: Manage Services > FTP Server > Set Parameters.

2. Tab down to the "Anonymous User Access" entry and press Enter.

3. The screen shown in Figure 5 will be displayed. Select "Yes" and press Enter.

4. Press Escape. You will be prompted to save your changes.

The installation program should have created the "Anonymous" user object in the root of your NDS tree. You can manipulate the "Anonymous" user object just like any other user object. A password and password restrictions can (and should!) be enabled.

Tip: *The NetWare FTP Service uses the user account and file system rights already in place in the NDS tree. You must use the NetWare Administrator utility to give your FTP users, including Anonymous, access to the directories and files on your file system that you wish to be made available to them.*

Viewing and Managing Current Users

The NetWare FTP Service provides the facilities to monitor and manage the active FTP users on your system. The following facilities are at your disposal:

◆ viewing statistics on active users
◆ disconnecting an active user
◆ limiting the number of active users

Viewing Statistics on Active Users

To view the currently active FTP users, perform the following from the UNICON utility:

Select Manage Services > FTP Server > View Current FTP Sessions. A list showing the current active users and the TCP/IP address of the workstation they are using to access the system is displayed. If you select one of these users and press Enter, you will be presented with a Detailed Session Statistics panel, as shown in Figure 6.

From the Detailed Session Statistics screen you can see several pieces of information, including the user's TCP/IP address, total number of bytes transferred, file transfer rate, current file server and directory, and the last command the user executed.

Disconnecting an Active User

To disconnect an active FTP user, perform the following from UNICON:

1. Select Manage Services > FTP Server > View Current FTP sessions. The list of active users will be displayed.

2. Highlight the user you wish to disconnect and press Delete. You will then be prompted for confirmation to "delete" the user.

Tip: *Deleting a user does not actually delete the FTP user account. The Delete User function simply disconnects the selected user from the FTP service.*

Limiting the Number of Active Users

The NetWare FTP Service allows you to limit the number of concurrently active users on your system. To modify this parameter, perform the following from the UNICON utility:

1. Select Manage Services > FTP Server > Set Parameters.

2. Highlight the "Maximum Number of Sessions" entry and press enter. This parameter specifies the maximum number of sessions

that can be active concurrently. The default value is nine users. If you expect that more than nine concurrent users will be accessing your FTP server, you should modify this parameter accordingly. Of course, the more active users accessing the server, the more demands will be placed on your NetWare servers resources.

Viewing and Configuring FTP Session Statistics

The NetWare FTP Service provides four levels of logging:

◆ None   ◆ Logins
◆ Statistics   ◆ File

To change the logging level, perform the following from the UNICON utility: Select Manage Services > FTP Server > Set Parameters > Log Level. Each logging level is supposed to provide an increasing level of information. For example, the File logging is supposed to include information on the files accessed by the user as well as the information included in the Logins and Statistics logging levels.

Tip: *I've experimented with the different logging levels and found no difference in the information logged when switching between the various logging levels.*

To view the current FTP log, perform the following from the UNICON utility: Select Manage Services > FTP Server > View FTP Log File. The log file shows the date and time the FTP session started and ended, the TCP/IP address of the workstation and the number of files copied to and from the server, as shown in Figure 7.

Restricting FTP Access

The NetWare FTP Service provides a facility to restrict users access to the FTP service. This is accomplished by editing the SYS:\ETC\RESTRICT.FTP file. You can place the following restrictions on your FTP users:

◆ deny access
◆ restrict access to the user's home directory
◆ restrict the user to the local server
◆ restrict the user from storing any files on the server

To edit the RESTRICT.FTP file, perform the following from the UNICON utility: Select Manage Services > FTP Server > Restrict FTP Access. The screen shown in Figure 7 will be displayed. You should add lines to the end of this file to perform the restrictions desired. The following sections provide examples of each type of restriction available.

Denying Access

The following commands can be used to deny users or groups of users from accessing the FTP server:

```
.capulet.ou=writers.o=tsg ACCESS=DENY
```

This command restricts the user "capulet" who resides in the "writers" OU in the "tsg" Organization from accessing the FTP service.

Tip: *You must stop, then restart the FTP Server for modifications to the RESTRICT.FTP file to take affect. Use the Start/Stop Services option from UNICON to stop and start the FTP Server.*

The following command will restrict all users in the "writers" OU from accessing the FTP service:

```
*.ou=writers.o=tsg ACCESS=DENY
```

Restricting Access to the User's Home Directory

A handy restriction available to you, the network administrator, is the ability to restrict a user or group of users to accessing only their Home Directory via the FTP service. The following command restricts the user "Montague" to accessing only his home directory:

```
Montague.ou=writers.o=tsg ACCESS=GUEST
```

Restrict the User(s) to the Local Server

You can prevent a user or group of users to only being allowed to access the local server. These users will not be able to access any remote servers. The following command restricts all users in the Writers OU from accessing remote FTP servers:

```
*.ou=writers ACCESS=NOREMOTE
```

Restrict the User From Storing Any Files on the Server

You can also restrict users from storing data on your FTP server. This is a very useful parameter and can be used to prevent users who use the anonymous account from storing files on your server. The following command restricts the anonymous account from storing files:

```
.anonymous.o=tsg ACCESS=READONLY
```

CONCLUSION

Implementing the NetWare FTP Service is one method that allows you to make your NetWare server more "Internet friendly." Users on many different platforms will be able to access the files on your NetWare server using the common FTP utility. If your NetWare server is accessible via the Internet, you should pay close attention to the security and file system rights granted to the Anonymous account. You can also use the RESTRICT.FTP file to further enhance the security of your FTP service. **ts**

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