

Installing LANtastic for DOS/Windows

Performance Objectives

When you have completed this module, you will be able to walk a user through the following:

- Installing LANtastic version 5.0 and 6.0 and Simply LANtastic using DOS and Windows.
- Upgrading to LANtastic version 6.0 across a network using Install Services.
- Installing LANtastic version 6.0 to a floppy.
- Configuring LANtastic for sharing disk drives and printers.
- Configuring a CD-ROM drive for network availability.

Installing LANtastic Ethernet Hardware

1. Install a Noderunner NR2000SI/A or NR2000/A in a computer in accordance with the instructions on the fan-fold brochure that accompanies the product. Insert the card in a 16-bit slot.

Note The NR2000 will automatically sense if it is in an 8-bit slot and reconfigure itself accordingly.

Note The SI model of a Noderunner card can be identified by a red or yellow sticker on the outside of the metal mounting bracket.

2. Make sure the card is fully inserted throughout its length. Because Noderunners are half the height of a typical adapter card, they tend to lift up at the back. This is a common cause of a "No Noderunner Hardware Found At This Address" error.
3. Vanilla the machine so you can configure the card. The configuration program writes to an EEPROM on the card so it is a good idea not to have any TSRs in memory when you perform this operation. You can vanilla a machine in one of three ways.
 - a. **Rename the CONFIG.SYS and AUTOEXEC.BAT files with a different extension.** On the phone you should use your initials to help you remember what you named them, unless of course your name is Elizabeth Xaviera Eastman.
 - b. **If you have DOS 6.0 or higher, reboot and when you see the "Starting MSDOS" message on the screen, tap the F5 key.** You will see a message, "MSDOS is bypassing your CONFIG.SYS and AUTOEXEC.BAT files."

Note These two methods cannot be used if you plan on loading REDIR. You will not have enough file handles and the machine will lock. Also, you will need HIMEM.SYS to load Windows.

- c. If you need to load REDIR, first rename the CONFIG.SYS and AUTOEXEC.BAT files then build a bare CONFIG.SYS with nothing more than:

```
FILES=100  
BUFFERS=32  
LASTDRIVE=Z  
FCBS=16,8
```

- d. If a customer is, um, shall we say, a bit awkward around a keyboard, consider using the LED program that ships with LANtastic version 6.0 and Simply.
 - 1) Run LED and press Enter to get past the advisory message.
 - 2) Select *(U)tilities* then *(V)anilla*. This will automatically rename the files with an LED extension and build a simple CONFIG.SYS and AUTOEXEC.BAT.

- 4. To configure the adapter, put the driver disk that came with the card in a floppy drive. If the card is a regular NR2000, then run NRCONFIG. If the card is an NR2000SI (System Independent), then run NRSETUP.

Note NRSETUP will also work with regular NR2000 Noderunners.

- 5. If the default IObase of 300h conflicts with another adapter so that NRSETUP will not load or the other adapter stops functioning, proceed as follows:

- a. Reboot the machine using the vanilla method of your choice.
- b. Run the NRMOVE program that comes on the Noderunner driver disk. This will temporarily change the IObase. The syntax is

```
NRMOVE IOBASE=320 (or 340 or 360)
```

You will get a message stating that the IOBASE has been temporarily moved.

- c. Now run NRSETUP and specify the IOBASE as follows:

```
IOBASE=320 (or 340 or 360).
```

- d. You will need to permanently change the IOBASE once the configuration program loads.

- 6. From the Noderunner Configuration menu select *Manual Setup* and configure the card to the following settings:

```
IObase:      300  
IRQ:         15  
IOCS16 Timing: Normal  
Connector:   Coax  
Mode:        Artisoft
```

7. Install an AE-3 card in a second computer in accordance with the instructions in the booklet that accompanies the card. Set the jumpers as follows:

W5 – (A)rtisoft or (N)ovell: A
W5 – 8 or 16 bit mode: 16
W4 – IOBASE: A and B (300)
W2 – DMA: no jumpers installed
(DMA not implemented)
W1 – IRQ: 15
W8 – Non-standard bus timing: A
W10 – TPI or AUI: AUI (AE3 cards only)
W6 – remote boot jumpers: no jumpers installed
W7 – extended length jumper: A
W9 – coax jumper: C-NET (cheapernet)

8. Cable the cards together and verify the following:
- You are using supported ethernet cable. Write down the cable type: _____
 - You are using proper t's and terms. Write down the required resistance of the terms: _____
 - The cable length meets ethernet requirements. Write down the approx length of the cable and the maximum length allowed: _____/ _____
 - The number of network nodes meets ethernet specs. Write down the maximum number of nodes: _____
9. Boot the machines and make note of the following information:
- The version of DOS on both machines including any silent release upgrades. Use VER /R: _____/ _____
 - The amount of free memory available and the drivers currently in memory. Pipe this information to a file named MEMORY.TXT as follows:

MEM/C > MEMORY.TXT

- Edit MEMORY.TXT and see what drivers are loaded and how much free memory you have available.

Note The install program for LANtastic version 6.0 requires 510K of conventional memory to run.

- The remaining hard drive space in true megabytes. Use CHKDSK.
Machine 1: _____ Machine 2: _____
10. Verify that Windows 3.1 is installed but not running.

11. On each machine, make a blank subdirectory off the root called COMPARE and copy the following files to it:

- CONFIG.SYS
- AUTOEXEC.BAT
- SYSTEM.INI (from the WINDOWS directory)
- MEMORY.TXT

Installing LANtastic Version 6.0

1. Perform a standard Windows installation of LANtastic version 6.0 using the documentation accompanying the product. Select the following options when prompted:

- Machine Name: NOS6
- Adapter Type: Artisoft Noderunner
- Sharing: Yes
- Exchange Mail: No
- Permanent Connections: No
- Client to Novell Server: No
- Client to SMB Server: No
- Install Services: Yes

2. When the installation is complete, reboot the machine. Observe the screen carefully to watch the network drivers load.
3. When the boot has finished, run MEM/C and pipe it to a file named MEMORY-1.TXT.
4. Compare the contents of the following files with the ones you saved in the COMPARE directory,

- CONFIG.SYS
- AUTOEXEC.BAT
- SYSTEM.INI
- MEMORY-1.TXT

5. Browse through the following directories to see the files that were put there. Some of them may be hidden. Use DIR /A to see everything.

- LANTASTI
- LANTASTI.NET
- LANTASTI\INSTALL

6. In the LANTASTI directory, find a file named STARTNET.BAT. This is the file that loads the network. Edit it and take a look at the contents.

```
@echo off
rem LANTastic Version 6.00 installed 94/10/16 15:30:44
rem (for DOS)
C:
cd C:\LANTASTI
SET LAN_CFG=C:\LANTASTI
```

This environment variable specifies where to find the Server program.

If the user has a limited environment space, this variable or the others that come after it might be truncated. This overrun of the environment will cause an error "Out of environment space" when STARTNET runs. Increase the environment space by adding or modifying the SHELL statement in the CONFIG.SYS file as follows:

```
SHELL=C:\DOS\COMMAND.COM /E:512 /P
```

In addition, if the user is loading STARTNET by shelling to DOS (look for a COMMAND.COM on the STARTNET line in the AUTOEXEC.BAT file) then the environment will be limited to 20 bytes. Have the user modify the line to use a regular CALL statement.

```
rem If LANTastic is disabled, skip everything.
IF EXIST DISABLED GOTO :STARTNET_DONE
```

One of the features of a program called LANSETUP that we will examine later is to temporarily disable the network without forcing the user to edit the AUTOEXEC.BAT and remark out the call to STARTNET. This feature will put a zero-byte file named DISABLED in the LANTASTI directory.

```
@echo ===== Begin LANTastic configuration =====
PATH C:\LANTASTI;%PATH%
```

The path to the network directory is appended to the front of the existing path. The %PATH% token will expand to the PATH variable currently stored in the environment.

If LANTASTI is not in the path ahead of Windows, you may get an error "Unable to find LPICALLW" when loading Windows.

Solve this error by editing the AUTOEXEC.BAT and hardwiring the network path into the PATH statement.

```
SET LAN_DIR=C:\LANTASTI.NET
```

This variable tells Server and NET_MGR where to find the control directory.

```
LOADHIGH NR
```

NR is the driver for the adapter card. If this were a standard Artisoft Noderunner, you would load the NODERUN driver. Although install only loads the card driver high, **all network drivers can be loaded high.**

ALLANBIO @STARTNET.CFG

This is Artisoft's NetBIOS driver. The "@STARTNET.CFG" refers to a configuration file containing switches for this and the other network drivers. We'll examine that file in the Performance module.

By the way, the @ sign is not part of the file name.

REDIR CLEO @STARTNET.CFG

This is the network Redirector, the heart of the network, or more accurately, the hippocampus. REDIR (pronounced REE-DUR) grabs the DOS calls for drives and printers and other interrupts that involve network equipment and makes sure they get to the right server. It also receives data back from those servers and hands it over to DOS.

The name that follows REDIR (in this case, CLEO) is the *machine name*. This is the name that the machine will use when communicating to servers on the network unless another name is substituted using the NET USER command.

IF EXIST NOSHARE GOTO :NOSHARE

The LANSETUP program can also temporarily disable Server. Rather than remark out the SERVER line just below here, a zero-byte file named NOSHARE is added to the LANTASTI directory. This is not a commonly used feature.

SERVER D:\LANTASTI.NET @STARTNET.CFG

This is the butler of the network. It makes sure the resources of this machine are at the beck and call of other workstations that request them, as long as certain security requirements are met. Server can be configured using the NET_MGR program. We'll take a look at this in a few minutes.

NET LOGIN \\CLEO

It is not a strict necessity for a server to log into itself, but install adds this line as a matter of course to check that the server responds. A server that cannot log into itself has severe problems. More than likely the control directory, LANTASTI.NET, has become corrupted. You'll learn how to solve this and other network catastrophes in the Troubleshooting LANtastic Software module.

GOTO :CONTINUE

This is a bit of spaghetti code to skip the NOSHARE label.

:NOSHARE

@echo LANtastic server was installed but turned off.

This is the message the user would see on the screen if Server had been deliberately disabled.

```

:CONTINUE
rem If CONNECT.BAT exists, run it to set up connections.
IF EXIST CONNECT.BAT GOTO :CONNECT
rem Otherwise set up connections specified during
install.
    NET LOGIN and NET USE statements make connections and use
    resources on other servers. These can be listed in the
    STARTNET.BAT file, or placed in a separate CONNECT.BAT file.

NET USE LPT1: \\CLEO\@PRINTER
    It's important for a server to NET USE its own printer. If it doesn't,
    once a workstation prints to this printer, the server will no longer
    be given access.

NET LPT TIMEOUT 10
    This important line prevents a print job that originates from an
    application that doesn't close the print file from hanging forever in
    the print queue. You'll see how this works in the Printing module.

GOTO :CONNECT_DONE
    Another strand of spaghetti.

:CONNECT
@echo Setting up LANtastic connections from CONNECT.BAT
rem Build CONNECT.BAT like this: "NET SHOW/BATCH >
D:\LANTASTI\CONNECT.BAT"
rem (or run the batch file SETNET.BAT)
call CONNECT.BAT
    These instructions tell you how to build a CONNECT.BAT file.
    We'll do this in a few minutes.

:CONNECT_DONE
NET POSTBOX
    This command will poll all running servers to see if they have any
    new mail for this machine. If they do, the name of the server and a
    brief description of the message will display.

@echo ===== End LANtastic configuration =====
    This will display on the screen, telling the user that the
    STARTNET.BAT file has completed its mission and will now return
    you to the regularly scheduled programming.

:STARTNET_DONE
cd \
    A couple of final notes on the STARTNET.BAT file. This format is
    new to LANtastic. It is complex and difficult to diagnose errors
    over the phone. It's often easier to rename it and make a quick
    and dirty STARTNET if the user has hosed up the original. Keep in
    mind that the LANSETUP program will not give access to all
    features if the STARTNET.BAT file is not in the new format.

```

7. In addition to the STARTNET.BAT file, there are other valuable sources of information about the configuration of the network. From the command prompt, run NET SHOW. Each of the lines you see are valuable for troubleshooting:

LANTastic (R)Connection Manager V6.00-(C)Copyright 1994
ARTISOFT Inc.

This is one way of finding out which version of the NOS is loaded.
Entering REDIR at the command line is another way that works better because the network does not have to be loaded.

Machine NOS6 is being used as a Redirector and a Server
This indicates that the server program is loaded.

File and record locking is currently ENABLED

This indicates that SHARE is loaded. This will show enabled if either DOS SHARE or Server's internal SHARE is in memory.

Unsolicited messages will BEEP, POP-UP and SPEAK

This indicates that notifications such as server shutdowns and print completions will make a beep, put a message on the screen, and, if a sound board is installed, will make a possibly appropriate noise.

LPT notification is ENABLED

This indicates that a popup message will appear when a print job has completed.

LPT timeout in seconds: 10

This indicates that the NET LPT TIMEOUT command has been run, usually from the STARTNET.BAT file, with a value of 10 seconds. This is necessary so that unterminated print jobs won't stall in the print queue on the server.

Autologin is ENABLED with username NOS6

This indicates that either the machine name or another name chosen by the NET USER command will be used automatically when logging onto a server. If the server has that name in its access list, and there is no password associated with the account, then the user will be granted immediate access.

Logged into Server \\NOS6 on adapter 1

This indicates that this particular server is logged into itself. If you had set up permanent redirections during the install, those logins would also be listed.

If you were on a larger network, you would also be shown a list of other servers on the net. The length of this list is limited by the "Logins=" switch on the REDIR line (or in the @STARTNET.CFG file.) By default, this is 15 for NOS6 and 3 for NOS5.

8. Run MEM/C/P (use the |MORE filter for DOS 5) and jot down the memory usages of the various network drivers and look at overall memory availability. Compare this with the memory availability before the network was loaded by typing out the contents of the MEMORY.TXT file.

NR _____

AILANBIO _____

REDIR _____

SERVER _____

Largest Executable Program Size _____

Largest Available Upper Memory Block _____

NOTE UMB availability information is not available when using third-party memory managers or if running MEM in a Windows DOS session.

9. Edit the STARTNET.CFG file to see the contents. We won't discuss the individual switches right now. It's enough to know that each of the drivers has a separate heading in the file.

```
;STARTNET.CFG - LANtastic switch settings
```

```
[AILANBIO]
```

```
MAX_NCBS=44
```

```
NCBS=44
```

```
MAX_SESSIONS=38
```

```
SESSIONS=38
```

```
[REDIR]
```

```
LOGINS=15
```

```
[SERVER]
```

10. Configure STARTNET.BAT to load all network drivers high (put an LH at the beginning of each driver line) then reboot and check memory again. There should now be enough conventional memory to run most DOS program.

Review of Default Server Settings

1. Run NET_MGR from the command line.
2. Select *Individual Account*. Note that there are no entries on the list.
3. Add an account as follows:
 - a. Press Ins.
 - b. Enter the name JETSON.
 - c. Enter the password STOPTHISCRAZYTHING. Note that you cannot enter this long a password. Change it to STOPHISTHING.
 - d. Enter an optional description. Be creative.

- e. Accept the default *Concurrent Login* of 1. More than one login will allow the user with that account to log into this server from more than one machine at the same time.
 - f. Press Enter on the *New Account* item. You will get detailed information on the JETSON account. This screen will be covered in greater detail in the Account and Security module.
 - g. Escape back to the main menu.
4. Select *Wildcard Account*.
- a. Note that an asterisk is the only account on list. This is a wildcard account. It will permit anyone to log into this server. This is important to remember. **LANTastic ships with full access rights**. It is up to the user to restrict access as he or she chooses.
 - b. Press Enter on the asterisk. You will get detailed Account Information for the wildcard account. Note the following:
 - 1) The number of concurrent logins is set for 255. This is the maximum number of sessions that the netbios (ALANBIO) will support.
 - 2) There are no superuser privileges granted by default. Repeat. **There are NO superuser privileges granted by default**.
 - c. Escape back to the main menu.
5. Select *ACL Group Accounts*.
- a. This feature permits groups of users to be granted similar access rights. This will be covered in more detail in the Account and Security module.
 - b. Note that no ACL groups are set up by default.
 - c. Escape back to the main menu.
6. Select *Shared Resource Management*. Note that several default resources were created during installation. Resources with an @ sign are spooled resources such as printers and console controls. Resources that begin with a letter or number are drive resources. Here is a brief description of the functions of each default resource.
- “. => C:\LANTASTI.NET” – the network control directory itself.
 - C-DRIVE** – Note that the true path for the C-DRIVE resource is “C:”. A resource can also point to a subdirectory.
 - @PRINTER** – Note that the true path is LPT1. You can point at other parallel or COM ports. The method will be covered in a moment.
 - @MAIL** – Resource for depositing message sent via the normal NOS mail system. This is not used for Exchange mail.
 - @SCREEN** and **@SCREEN.BIN** – These resources permit viewing this machine’s screen from another machine.
 - @KEYBD** and **@KEYBD.BIN** – These resources permit controlling this machine’s keyboard from another machine.

@BATCH — note that the true path for this resource is a spooled keyboard. Batch files can be sent to this resource that will stuff themselves into the keyboard as if they were typed at the local console. Use of delayed batch files and Net Run commands will be covered in a later module.

LANTASTI.SHR — the repository for cut-and-paste from the Windows clipboard. This is used for sharing these metafiles across the network.

7. Add a resource as follows:
 - a. Press *Ins*.
 - b. Enter **TEST**. Because the name starts with a letter instead of the @ sign, **NET_MGR** assumes you want to set up a drive resource.
 - c. When prompted for a true path, enter **C:\DOS**.
 - d. Press *Enter* on the new resource to see the *Detail* screen.
 - e. Press *Enter* on the *Local Path* line and change to **C:\WINDOWS**.
 - f. Press *Enter* on the *Drive Type* line. You are presented with a list of possible alternative drive formats. The most commonly used options are CD-ROM and OS/2. A non-DOS resource requires a file lookup cache. This cache acts as an on-the-fly translator between the "find first/find next" file lookup of DOS and other forms of file lookups. CD-ROM installations will be covered later in this module.
 - g. Escape back to the *Detail* screen. *File Level Security and Access Control Lists* will be covered in the Security module.
 - h. Escape back to the *Shared Resource* list.
8. Delete a resource as follows:
 - a. Highlight the *C-DRIVE* resource and press *Del*.
 - b. Press *Enter* to confirm the deletion.
 - c. Reinstall the *C-DRIVE* resource.
 - d. Escape back to the *Shared Resource* List.
9. Copy an existing resource to a new resource as follows:
 - a. Highlight the *@PRINTER* resource.
 - b. Press *C* to copy the resource. When presented with the popup screen, enter *@MATRIX* under "To Resource:".
 - c. Press *F10* to execute the copy then escape to get back to the *Shared Resource* list. Note that the new resource is at the bottom of the list.
 - d. Select the *@MATRIX* resource to show the *Detail* screen.
 - e. Change the output to *COM1*. Note that serial port settings get added to the lower part of the screen.
10. Select *Server Startup Parameters*. You will be prompted for the full path to the Server program. In your default installation, Server will be in the **LANTASTI** directory. Press *Enter* again to get the parameter list.

11. The parameter list is divided into two parts: *Configuration Parameters* and *Performance Parameters*. Within each list are selections that might have additional menus behind them.
In most cases, if a feature is disabled, the entire module is not loaded, thereby saving memory.
Go through each one and jot down the default settings in this workbook. These settings will be discussed more fully in the Performance module; however, certain key problems are noted here.

The list begins on the next page.

Configuration Parameters

Configuration Type: _____

Maximum Users: _____

If this value is less than the total number of users on the network, the extra users will get a "Too Many Redirections Or Logins" error.

Number of Adapters: _____

This may cause trouble if a user has set it for 1 then later installs a second adapter.

Maximum Open Files: _____

If any value at all is specified here, all the files specified in CONFIG.SYS will be given over to the local machine. For this reason, make this number large enough to accommodate all the network users. Precise values can't be specified, but 40 per user should be sufficient.

Printing

Printing: _____

If printing is disabled, LANtastic mail will also be disabled.

Printer Tasks: _____

You only need to increase this number if the user wants to print **simultaneously** to more than one printer. It can slow printing throughput, though, because the server must monitor that second task even if nothing is going on.

Printer Buffer: _____

The default is generally good enough. A larger buffer may help a laser printer with a large buffer, but the payoff is the memory lost to the buffer.

Initial Despooling: _____

Periodic Maintenance: _____

The spooler is handled by a queue control file. This file is rebuilt each time the Server program loads. If a user keeps a server on all the time, this feature will rebuild the queue control file every once in a while to keep it from getting too unwieldy.

RPS Support: _____

The *Remote Print Server* feature permits a workstation to share its printer by despooling from a server.

Printer Streams: _____

Print jobs can be sent to specific print streams that can be stopped and started conveniently to make best use of a printer. This is not a commonly used feature.

Immediate Despooling: _____

A print job can be sent immediately to a printer before it finishes despooling. This setting enables this feature, but an individual print resource must also be configured to use it.

Security and Send ID

Send Server ID: _____

A server will broadcast its name intermittently. Workstations use this name to build lists of servers for NET.

Login Accounts: _____

This feature permits the use of individual login accounts.

Account Servers: _____

This feature permits another server to hold the login account information for this server. Remote account servers greatly simplifies the management of a large network with lots of servers.

Access Control Lists: _____

This feature and the two that follow permits the server to use ACL groups for file and resource-level security.

File Level ACLs: _____

Group ACLs: _____

Server Control and Run Buffer Size

Server Control: _____

This feature permits a workstation to take control of this server across the network and manipulate its keyboard and view its screen.

Run Buffer Size: _____

The NET RUN command will send command line orders to a server. This value sets the size of the longest command that can be sent.

Auditing

All of these features will be discussed in detail in the Special LANtastic Configuration module.

Server Up: _____

Logins: _____

Logouts: _____

Queuing: _____

Printing: _____

Disk Space: _____

Space Threshold: _____

CPU Use: _____

CPU Threshold: _____

User Entry: _____

Access Allowed: _____

Access Denied: _____

Notification

These settings determine what kind of information will pop up on the screen of a workstation logged into this server.

Notification: _____

Logins: _____

Logouts: _____

Queuing: _____

Printing: _____

Disk Space: _____

Space Threshold: _____

CPU Use: _____

CPU Threshold: _____

Floppy Direct: _____

This feature permits a server to have direct access to its own floppy drive without going through the redirector. This permits formatting a floppy.

Remote Booting: _____

This feature permits a diskless workstation to boot from an image on this server. The network adapter in the workstation must be equipped with a boot ROM.

NON-DOS Disk Support: _____

This feature builds a cache of file handles for disk types that use a different lookup than the standard DOS Find First/Find Next.

Performance Parameters

Network Buffer: _____

This sets the size of a buffer that will receive the NetBIOS packets arriving for the server. A large buffer will improve performance but take more memory.

Request Size: _____

By default, the first NetBIOS request that comes to a server is just large enough to hold the request. If the INITIAL SEND SIZE switch at ALLANBIO is set to the maximum of 1500 bytes, then this parameter will need to be set for 1500 also so the box will fit the boxcar.

Network Tasks: _____

This sets up one network buffer for each simultaneous network task from different workstations. Even large networks aren't likely to need many tasks because there is little chance of a simultaneous request at the server.

Run Burst: _____

Server pops up every once in a while, takes over the machine, and deals with its tasks. This parameter determines how long Server will hang around when it's busy. Setting this to the maximum of 255 will give maximum time to the network, but will significantly slow down the foreground tasks, including printing.

Cached Resources: _____

Every time a workstation makes a request involving a resource, Server must check the access rights. This involves a seek of the hard drive. Performance can be improved by holding those access rights in memory. That's what this cache does. Count one cache for each resource that is normally used.

Seek Cache Size: _____

Server can keep track of non-sequential file accesses by holding the position of the file pointer in memory. This parameter can be set high, up to 64K, and will improve performance on database lookups and other random seek operations.

Lock Hold Time: _____

When a workstation opens a file, it must first get a lock. If there are no locks available, the request will need to be sent again and again until the lock is available. Network traffic can be reduced by holding this request at the server and trying it a few times before giving up.

Some applications don't like waiting for a lock. Disabling this feature may improve their performance.

Internal SHARE: _____

The SHARE program that ships with DOS is limited to a single 64K segment, which gives an effective limit of about 1100 and a 22K frame size. If more locks are needed, or if an application will be speeded up by not requiring a separate call to DOS to get the lock, then the internal share program will help.

12. Escape back to the parameter list. Skip *Audit Trail Maintenance*. This will be covered in the Special Configurations module.
13. Skip *Queue Maintenance*. This will be covered in the Network Printing module.
14. Select Password Maintenance.
 - a. Select Enable from the menu.
 - b. Enter a password of SWORDFISH (Passwords can be a maximum of 16 letters, numbers, or characters. It is not case sensitive.)
 - c. Escape back to the command line.
 - d. Run NET_MGR. You will be prompted for a password. Enter TUNA. Note the error.
 - e. Enter SWORDFISH. You should get access.
 - f. If the customer forgets or loses the Net Manager password, Artisoft policy is that the control directory must be renamed or deleted and the software reinstalled. This will be covered in a later module.
 - g. Select Password Maintenance. You will be prompted for the password again. Enter your password then disable it.
15. Skip *Remote Boot Maintenance*. This will be covered in the Remote Boot module.

16. Skip *Management Utilities*. This will be covered in the Accounts and Security module.
17. Skip *Control Directory Maintenance*. This will be covered later in this module.
18. Escape to the command prompt and proceed to the next section.

Installing LANtastic Version 5.0

1. Perform an installations of LANtastic version 5.0 for DOS on the second machine by following just the screen prompts. This is a superceded version and users are likely to have lost their manuals. Use the following parameters:

Machine Name:	NOS5
Machine Type:	Server
Installation Directory:	Default
Network Startup Batch File:	Default
Network Adapter Installed:	AE2
Adapter Drivers to Install:	Artisoft AE2/AE3
Modify CONFIG.SYS:	YES
Printer Connections:	NONE
Disk Drive Connections:	YES (use drive D and server NOS6 and pick the C-DRIVE resource.)

NOTE Although LANtastic version 5.0 and 6.0 will communicate, it is a good idea to copy the most current version of AILANBIO.EXE to every machine. This precludes any communication problems caused by unsupported netbios calls.

2. After the installations is complete and you have rebooted the machine, review the changes made to the following files. Note that NOS 5.0 does not use a CONNECT.BAT nor a STARTNET.CFG file.

CONFIG.SYS
AUTOEXEC.BAT
STARTNET.BAT

3. Use MEM/C to find the sizes of the various network drivers and jot them down. Compare them to version 6.0.
 - NR _____
 - ALLANBIO _____
 - REDIR _____
 - SERVER _____
 - Largest Executable Program Size _____
 - Largest Available Upper Memory Block _____
4. Run Lancheck on both machines. Lancheck is a diagnostic program designed to evaluate network communications.
5. Lancheck will display all the machines on the network that are currently running Lancheck. The error percentages are calculated based on transmission errors, collisions, CRC errors, and other symptoms of communication problems.
6. Lancheck will also display additional details for a node. Press Enter on one of the machines on the screen. Note that a busy network may have a fairly high number of CRC and transmission errors. This is not necessarily indicative of a faulty cable or adapter. Lancheck will also poll information from a machine that is not running Lancheck as long as the network drivers are loaded on the machine.
7. Escape out of Lancheck on machine NOS5.
8. At machine NOS6, press Ins. Enter NOS5 when prompted for a machine name.
9. Note that you get the same Adapter Status information you got when the same machine was running Lancheck.
10. Escape back to the command line on both machines.

Using NET To Log Onto A Server

NOTE The NET program makes **temporary** redirections to another server's resources. These redirections will be lost when the machine reboots.

1. Run NET on machine NOS5.
2. Select Login or Logout. You will get a popup list of servers. Note that server NOS6 is listed with a double backslash. This means that you are logged in.
3. Select server NOS6. You will be prompted for a user name and password. Enter the wrong name deliberately to see the result, then log in with the name of NOS5 and the password NOS5. Say NO when prompted to synchronize your clock.

NOTE This clock synchronization feature is valuable for data entry environments or point-of-sale applications where a single source of correct time helps keep track of entries.

4. Log out of server NOS6 by pressing Del. Note that the symbols on the server list change from \\ to ().

5. Escape to the command prompt.
6. Type NET LOGIN \\NOS6 NOS5 SWORDFISH
7. Type NET SHOW to verify that you are logged in.
8. Type NET LOGOUT \\NOS6
9. Type NET SHOW to verify that you are logged out. Note that server NOS6 still shows as available.
10. Type NET LOGIN \\NOS6 and verify with NET SHOW.
11. Type NET LOGOUT * and verify with NET SHOW that you are logged out. If you had been logged into more than one server, this would have broken all connections.

7.Using NET to Access Drive Resources

1. At machine NOS5, Run NET and select Connect to Other Computers' Drives.
2. Note on the list of available drives that the physical drives are identified to discourage mapping over them.

NOTE The list of available logical drives will end at the setting of the LASTDRIVE statement in CONFIG.SYS. If you have no LASTDRIVE statement, the DOS default is E.

3. Select drive E and press Enter. You will be presented with a list of servers.
4. Notice that the server name NOS6 is in parentheses. This means that you are not logged in.
5. Select NOS6. Notice that you are automatically logged in.
6. Select the C-DRIVE resource from the resource list. Note that the spooled resources are filtered out.
7. You now show a redirection for the logical E drive. Escape out to the command prompt.
8. Change to the E drive and do a directory. You can see by the drive light on NOS6 that you are accessing its drive.
9. Verify that you can transfer data as follows:
 - a. Make a directory off the root of E called XFERTEST.
 - b. Change to the XFERTEST directory.
 - c. Go to the C drive.
 - d. Change to the DOS directory.
 - e. XCOPY all the files in the DOS directory to drive E.
 - f. When the copy has finished, go to the console of server NOS6.
 - g. Change to the XFERTEST directory.
 - h. Do a directory and see that the files are there.

- i. From NOS5, change to the E drive and go to the root directory and delete the XFERTEST directory using DELTREE.
- j. Change back to the C drive.
10. Run NET and select Connect to Other Computers' Drives.
11. Cursor down to the logical E drive and tap the Del key to break the redirection then Enter to confirm.
12. Escape out to the command prompt.
13. Type NET USE E: \\NOS6\C-DRIVE.
14. Type NET SHOW to verify that the redirection took effect.
15. Change to the E drive and do a directory then go back to C.
16. Type NET UNUSE E:
17. Type NET SHOW to verify that the redirection was cancelled.
18. Type NET USE D: \\NOS6\A-DRIVE.
19. Put a floppy disk into the A drive of server NOS6.
20. Go to the D drive of NOS5 and do a directory. The drive light on the floppy drive will show that you have access.
21. Go to the C drive.
22. Type NET LOGOUT *.
23. Use NET SHOW to verify that you have broken connection and canceled the redirection.

Using NET to Access Printer Resources

1. Run NET and press enter on Connect to Other Computer's Printers
2. Select LPT1 from the list of logical printer ports and press Enter.
3. Select server NOS6 from the pop-up list.
4. Select the @PRINTER resource from the resource list. (Note that the drive resources are filtered out.)
5. Escape back to the command prompt.
6. Use NET SHOW to verify the printer redirection.
7. At server NOS6, use NET SHOW to verify that you have LPT1 redirected to \\NOS6\@PRINTER. Note: it is important for a server to redirect its own printer port. We'll see why in a moment.
8. Make sure that the printer connected to server NOS6 is turned on and on line and properly connected.
9. At NOS5, from the command line in the root directory, type COPY AUTOEXEC.BAT PRN. You will get a "One File Copied" message.
10. The printer should print out the file.
11. At server NOS6, copy the AUTOEXEC.BAT file to PRN. You will get a "One File Copied" message and the printer should print out the file.

12. At server NOS6, type NET UNUSE LPT1. Use NET SHOW to verify that the redirection is canceled.
13. Once again, copy the AUTOEXEC.BAT file to PRN. You will get a "Not Ready Writing Device LPT1" error or something along that line depending on which one DOS gets first out of the grab bag. The error happens because the hardware port is now controlled by the server and you do not have a redirection in place.
14. At NOS5, copy the AUTOEXEC.BAT file to PRN again. It will work because it is going through the network.
15. At NOS5, type NET UNUSE *. Use NET SHOW to verify that the redirections are canceled.
16. Type NET USE COM1 \\NOS6\@PRINTER and verify using NET SHOW.
17. Copy the AUTOEXEC.BAT file to COM1. Note that it prints normally, proving that COM port redirections behave in the same way as LPT port redirections. For this reason you can have as many as eight different printing resources defined for a single machine.
18. At NOS6, type PRINT AUTOEXEC.BAT PRN. You will get a message, "Cannot use print – Use NET PRINT." The DOS PRINT command is blocked by the network because it insists on writing directly to the hardware port.
19. Redirect the LPT1 port to NOS6\@PRINTER again then type NET PRINT AUTOEXEC.BAT PRN. The file should print.

9.Using LANtastic Mail

1. Run NET and select Send and Receive LANtastic Mail
2. Select NOS6 server from the popup list.
3. At the main Mail screen, press Ins to enter a message.
4. Select Using the LANtastic Editor from the popup menu.
5. Enter a short message at the editing screen then press F2 to send it. Address the message to NOS5 and give it a short comment and send it. Note the immediate popup you get saying that you have mail.
6. Escape past the popup and note the mail that shows as waiting for you. (NOTE: This is your only notification about waiting mail. It also only shows the mail that resides on server NOS6. To poll every server you're logged into to find out if you have mail waiting, use the NET POSTBOX command.)
7. Press TAB to go to the bottom half of the screen then press Enter on the mail line. Note the options on the Popup menu.

Read Mail
 Forward Copy of Mail
 Copy Mail to File
 Print Mail
 Delete Mail

8. Press Enter on Read Mail. Note that you have access to the message.
9. Escape back to the Net menu.

Communicating With Another Network User With Chat

1. Run NET and select Chat With Another User.
2. Press Ins to start a chat session.

NOTE CHAT require eight netbios sessions and will only work on adapter 0. Installing multiple adapters is covered in a later module.

3. Enter NOS6 as the machine to chat to. This is the name of the machine from the REDIR line, not the user name, if they are different.
4. At NOS6, note that the CHAT popup comes on screen. Escape past the popup and type NET CHAT at the command line. Wait a few moments for the chat session to start, then type a line or two on each terminal to see how the messages go back and forth.
5. Press Esc on both machines to get back to the command line.
6. Account Management will be covered in the Account and Security module.

Using NET to Evaluating Network Activity

1. At machine NOS6, run NET and select Monitor & Manage Network Activity. This will query (ping) each machine on the network and collect their names. On a large or busy network this list will take a while to display.

NOTE If the network is too busy, the pings will time out without getting responses and you will get a "Network Busy" message.

2. Press F4, Watch. Note the bar graph. The level of activity in your two node network will be minimal.
3. Skip Monitor & Manage Server Activity. This NOS 6.0 feature will be covered in the Special LANtastic Configurations module.
4. Skip View Print Jobs. This feature will be covered in the Network Printing With LANtastic module.

Using NET to Build a CONNECT.BAT file (version 6.0 feature)

1. At the command line of machine NOS6, type NET SHOW. Note the drive and printer redirections that are currently in effect.
2. Establish the following redirections using the appropriate NET commands:
 - a. Redirect logical F: to server NOS5's C-DRIVE.
 - b. Redirect logical G: to server NOS5's C-DRIVE\WINDOWS.
 - c. Redirect logical LPT2: to server NOS5's @PRINTER.
 - d. Redirect logical COM2: to server NOS5's @PRINTER.

3. Type NET SHOW to verify that these redirections are in effect.
4. Remember that NET only makes temporary redirections. The user would have to type these commands in each time. There's a better way.
5. Type NET SHOW/B. Note that the normal output has been changed into a series of net commands.
6. Type NET SHOW/B > CONNECT.BAT to save these connections to a CONNECT.BAT file.
7. Edit the CONNECT.BAT file and verify that the redirections you typed at the command line are implemented. Note that the user will be prompted for a password. This can be manually deleted if the user has no security. Note also that there is no /WAIT on the login statements. This will cause logins to fail if machines are turned on at the same time.
8. Close the CONNECT.BAT file and edit the STARTNET.BAT file. Note the IF EXIST CONNECT.BAT statement and follow the flow of the logic. It's good to recall that this batch file will take over if it exists. This is something that's easy to forget on the phone.
9. Reboot the machine. Note that the CONNECT.BAT file loads.
10. Type NET SHOW to verify that the redirections took effect.

Installing LANtastic Version 6.0 Across A Network

1. From NOS5, use NET SHOW to verify login to server NOS6.
2. Remove server from memory on NOS5 using the SERVER/REM.
3. Use DELTREE to delete the LANTASTI.NET control directory. This feature is only present on DOS 6.0 or higher.
4. Redirect drive E to the INSTALL resource on NOS6. (Note: This puts the INSTALL subdirectory in the root of the redirected drive. This is necessary for the installation program to work correctly.)
5. Perform a DOS install of version 6.0 via this redirected drive using the command INSTALL/DOS/WIN. This will update the Windows files without loading Windows.
6. Choose the *Replace Existing Setup with New Style* option then configure the machine as follows:

Machine Name:	UPGRADE
Sharing:	Yes
Max computer connections:	10
Exchange Mail:	Yes, Mail Client
Post Office Name:	NOS6
Adapter:	AE2
Permanent Connections:	No
Client to Novell Server:	No
Client to SMB Server:	No
Install Services:	Yes

7. When the installation is complete, reboot and load Windows. Note that the *LANtastic NET* program loads and the *Program Manager* updates with the new icons.
8. The WNET interface is only a shell to the underlying network.



Select the various buttons as follows to see how their function resembles the NET menu functions under DOS.

- a. Use the Computers button to log into server NOS6.
- b. Use the Drives button to redirect logical drive D to the NOS6 C-DRIVE resource.
- c. Use the Printers button to redirect logical LPT1 to the NOS6 @PRINTER resource.
- d. Look at the Options menu and discuss the effects of Restore Settings on Startup.

NOTE If network connection is lost under Windows, such as a cable break or a broken NetBIOS connection, the screen response is likely to get VERY slow and erratic. The mouse will move, stop, wait a long time, then begin moving again as Windows searches for the network like a frantic parent.

- Return to the *Program Manager*, open the LANtastic group and launch the *LANtastic Network Manager*.



- WNET_MGR performs exactly the same functions as its DOS counterpart. Click on the buttons and check out the way the options are layed out, then close the window. Any changes you make will affect the network in both Windows and DOS.

Installing LANtastic Version 6.0 To A Floppy -- Method 1 - Install Services

- You will be constructing a floppy that will boot a workstation into the network and log into the server. On the server, enter REDIR and verify that there are sufficient licenses to support the number of floppy workstations that will be booting from the copies of this floppy. For example, if you have a single server and four floppy workstations, you will need at least a five-license copy of REDIR.

NOTE The floppy used for this procedure should be a high density 1.2M 5-1/4 or 1.44M 3-1/2 inch diskette.

- Format a bootable floppy (FORMAT A: /S) of the same type and density as the A drive of the floppy-only machine.
- Use the SUBST command to make a logical drive that looks at the install subdirectory. (eg: SUBST Z: C:\LANTASTI\INSTALL)
- Change to the redirected drive.
- Issue the following command: INSTALL/DOS/FLOPPY.

6. Proceed with the install. Select the following options:

Machine Name:	FLOPPY
Machine Type:	Workstation
Installation Directory:	Default
Network Startup Batch File:	Default
Network Adapter Installed:	Noderunner
Adapter Drivers to Install:	NODERUN
Modify CONFIG.SYS:	YES
Printer Connections:	YES (redirect LPT1 to NOS6's @PRINTER resource)
Disk Drive Connections:	YES (redirect the C: drive to server NOS6's C-DRIVE resource.)
7. Because you did not already have a CONFIG.SYS or an AUTOEXEC.BAT file on the floppy, the installation program will add them with parameters sufficient to start the network. You can modify these files if you need to load drivers high or run Windows across the network. Discuss these options with your instructor.
8. Once the installation is complete, use the floppy to boot the second machine.

Installing LANtastic Version 6.0 To A Floppy -- Method 2 - Manual Floppy Install

1. Copy the necessary network files to the floppy from the LANTASTI directory.
 - NR.EXE
 - AILANBIO.EXE
 - REDIR.EXE
 - NET.EXE
 - LANCHECK.EXE
 - NRMOVE.EXE
2. Build a CONFIG.SYS on the floppy that will support network operations.
 - FILES=50
 - BUFFERS=32
 - LASTDRIVE=Z
 - FCBS=16,8

3. Build an AUTOEXEC.BAT on the floppy that will load the network and log into the server and use the server's drive and printer.

```
@ECHO OFF
PROMPT $P$G
NR
AILANBIO
REDIR FLOPPY1
NET LOGIN/WAIT \\SERVER ?"ENTER YOUR NAME: " ^"ENTER
YOUR PASSWORD: "
NET USE C: \\SERVER\C-DRIVE
NET USE LPT1: \\SERVER\@PRINTER
NET LPT TIMEOUT 10
```

4. Boot the floppy workstation using this disk and verify that there are no errors and that all redirections have taken effect.

Running Applications Across The Network

1. Most any application can be run across the network. It does not have to be designed as a network app. For example:
 - a. At server UPGRADE, open the File Manager. Look at the drive icon bar. See that the redirection you did for drive D is listed there. Click on this icon.
 - b. Click on the Drive D icon. The folders and files on the hard drive of the server will be listed. Navigate through the directory tree to find the LANTASTI\NDISDOCS subdirectory.
 - c. Double click on the ARTIDOCs icon. This will load the program across the network. (Note: this particular document is a good reference for learning about using third party adapters with LANtastic.)
 - d. Press escape twice to exit the program.
2. A sharing violation may result if a program is accessed by more than one user. Solve this by using the ATTRIB command to make the file read-only. SHARE will allow multiple copies of read-only files to be opened. Use the following syntax:

```
ATTRIB *.EXE +R
ATTRIB *.COM +R
ATTRIB *.OVL +R
```
3. A program may become confused when a user accesses it across the network from a redirected drive that uses a different letter than the drive on which it is installed. For example, a database program that keeps its data in the C:\DATA directory on the server might give an error when a user runs the program from a network drive of H. Resolve this as follows:

- a. Reinstall or reconfigure the application to use the network drive letter. In this case, the application would think it's on the H drive. At this point, you will be able to access it across the network. But what about running it at the server?
- b. At the server, place the following line in the AUTOEXEC.BAT file before the network loads:

```
SUBST H: C:\.
```

The drive letter is the same as the network drive. The backslash with C:\ is important. Access the program via the substituted drive on the server.

NOTE SUBST is preferable to NET USE for redirecting the local drive to itself. Windows will lock in Enhanced Mode if a drive is NET USE'd to itself.

4. A user may get experience medium to large slowdowns of their foreground applications when the network is busy. There is a compromise between the amount of CPU time the network uses and the amount it gives to the applications. The issue will be discussed more thoroughly in the Performance module. For now, you should verify the following:
 - a. The user has installed a disk cache (LanCache, Smartdrive, or any other cache with good performance) with enough RAM set aside for the cache to hold a considerable portion of the disk traffic. There is no general rule of thumb, but disk cache sizes above 6 Meg on a DOS machine generally do not yield significant performance improvement.
 - b. The user has a machine in a class capable of handling the expected functions. 386/12 clones with RLL hard drives won't do a good job of serving a 20 node AutoCAD network.
 - c. The server's RUN BURST parameter has not been set too high. This is set using NET_MGR in *Server Startup Parameters*. A good value for Run Burst is 30 for normal applications. It can go as low as 2 if network performance is not critical and as high as 255 for a dedicated file server with no printer attached. **Printing is a foreground application that will also be slowed down by a high Run Burst setting.**

Installing Simply LANtastic

Product Overview

Simply LANtastic is a pared-down version of the full network operating system designed for those users with small office/home office (SOHO) environments that have no need for the higher-end security and network management features.

Simply LANtastic is designed to be paired with special adapters that are also designed for simplicity of installation and use. These adapters, both internal and external, are designed for use with special coax cabling, RG-174A/U, and standard 3.5mm phone jacks. The features and

specifications for these adapters is covered in the Artisoft/Eagle Ethernet Hardware and Special Networking Products module.

1. Install a Simply Lantastic internal adapter in a machine and use NRSETUP to configure it as follows:
 - IRQ -- 5
 - IObase -- 320
2. Install a Simply Lantastic external adapter on the LPT1 port of a second machine. Be absolutely certain you use the correct power supply. The adapter requires a 5V, 400ma supply.
3. Use Debug to verify that the LPT1 port uses the standard IObase as follows:
 - a. Boot vanilla.
 - b. Run Debug.
 - c. At the - prompt, type "d 0:400". You will get a table of numbers.
 - d. Find the 0400 line and follow it out to the dash. The two pairs of number to the right of the dash are the address for LPT1. Reverse them to get the address. (DOS uses big-endian addressing.)
 - e. The address should be 378. If it is different, you will need to put an IOBASE= switch on the NRP driver line.
4. Connect the two adapters using supported cable. The cable specs are as follows:
 - 1) Maximum length -- 200 feet
 - 2) Maximum nodes -- 20
 - 3) Maximum Simply=>10base2 connectors per network -- 1
5. Perform a Windows install of Simply on both machines. On the machine with the external adapter, be sure to use the disk that accompanied the adapter. This disk has the NRP driver required for the external adapter. Also, it has a later version of ALLANBIO. The ALLANBIO that comes with the internal adapter will not load on top of NRP. Configure the machines as follows:

Machine Name:	SIMPLY_IN and SIMPLY_EX
Adapter Type:	Internal or External as appropriate
Sharing:	Yes
Perm Connections:	No
6. After installation, boot both machines into DOS.
7. Use LED to look at the STARTNET.BAT file. Note that there are only a few differences between this file and LANtastic 6.0.

8. Run NET. Note the following differences between Simply and NOS version 6.0:
 - 1) The menu wording is slightly different.
 - 2) The menu contains options for sharing the drives and printers on this machine. This is the only Net Manager feature present in Simply. There is no NET_MGR program in Simply. The structure of the control directory is the same, however.
 - 3) There are no server control features. This machine cannot control a regular NOS server and a NOS workstation cannot control a Simply server.
 - 4) There is no support for Chat.
 - 5) There is no performance module. If a user wants faster performance than the default parameters of Server, then it's time to upgrade.
 - 6) There is no separate security module. There is access security along with all-or-nothing resource security but no file-level security and no ACL groups.

Using Simply LANtastic

1. With the Simply LANtastic drivers loaded, run NET from the command line.
2. From the menu, select *Share My Printers and Drives*.
3. Select the *C-DRIVE* resource.
4. Select *Drive Type*. Note that only DOS and CDROM drives are supported by Simply.
5. Cursor down to *Access List*. Note along the bottom of the screen that there are only three levels of security.
 - Full Access
 - Read-Only Access
 - No Access
6. Press *Ins*. Add an account named SIMPLY* and set the rights to *Full Access*. Set the rights for the wildcard account to *No Access*.
7. Exit to the command prompt and remove and reinstall Server.
8. At SIMPLY2, log into SIMPLY1 with a user name of HAROLD as follows:
NET LOGIN \\SIMPLY1 HAROLD.
9. Type NET USE E: \\SIMPLY1\C-DRIVE. You will be denied access.
10. Type NET LOGOUT *. Verify using NET SHOW that all connections are broken.
11. Type NET USER SIMPLY2.
12. Type NET USE E: \\SIMPLY1\C-DRIVE. You will be given access.

Using the Simply LANtastic Windows Interface

1. Load Windows. The Simply Net interface should load automatically via a RUN statement in the WIN.INI file. Double click on the desktop icon and review the functions of the various buttons with the instructor.
2. Close Windows.

Accessing CD-ROM Drives Across The Network

Discussion

The installation program for a CD-ROM typically installs the BIOS drivers in the CONFIG.SYS file and a copy of MSCDEX.EXE in the AUTOEXEC.BAT file. MSCDEX acts as a redirector and will cause our REDIR program to error out if it is loaded prior to the network.

Once the CD-ROM and the network have been set up to coexist harmoniously, it must be set up as a shared resource. Because the file access times are generally slow for CD-ROM drives, Server keeps a file lookup cache in memory. There are 100 handles in this cache by default.

1. Load LANtastic version 6.0 on a machine with a CD-ROM attached. Configure the machine as a server but do not choose to add any additional resources during the install.
2. When you reboot and the network attempts to load, you will get an error telling you that a CD-ROM driver or other redirector is in memory. Edit the AUTOEXEC.BAT file and jot down the MSCDEX line. Be sure to get all the slashes and colons. When you're satisfied, remark out the line.
3. Insert the same line, without the REM of course, in the STARTNET.BAT file after REDIR and before SERVER. MSCDEX will work if loaded after SERVER but the results can be inconsistent.
4. Reboot the machine and verify that there are no network errors and that the CD-ROM can be accessed from the command line. Make note of the drive letter it uses.
5. Run NET SHOW. You will see that the drive occupied by the CD-ROM gives strange readings. This is due to the redirector-like actions of MSCDEX. It will not affect the operation of the network.
6. Run NET_MGR and select Shared Resources Management.
7. Tap *Ins* to add a new resource. Name it CD-ROM or some other appropriate name rather than a drive designation like E-DRIVE. This will be the name that the workstations will see when they use NET to make connections and it generally is better to let them know that this is a CD-ROM.
8. Point the resource at the logical drive used by the CD-ROM.
9. Press Enter on the new resource line. A details screen will appear.

10. Press Enter on the *Drive Type* line. Pick CD-ROM from the list.
11. Note that when you make this change, you are notified that a *File Lookup Cache* is required for non-DOS drives and that a suitable cache has been set up automatically. Server must be cycled out and back to have this change take effect.
12. A hint for users with WORM drives. It's usually better to try a CD-ROM drive type first. Some magneto-optical drives will not work with a WORM drive type but be perfectly content with CD-ROM.
13. A hint for users with CD-ROM juke boxes. It can take several seconds for disks to swap in and out of the platter. The network might time out. Try increasing the size of the file lookup cache. It **might** help.

Summary

Congratulations. You've installed most of the flavors of LANtastic that you are likely to encounter on the phone. Users have a lot of places to go wrong. Most of these will be covered in the Troubleshooting LANtastic Software and the Troubleshooting Artisoft Hardware modules. The key thing to remember is that the network works. It works on millions of nodes in hundreds of thousands of different configurations. It is the single largest selling peer-to-peer network in the world. If a customer has troubles, we will solve them. If a customer is willing to work with us, we don't give up. We will get their network up and functioning.

Installing and Using LANtastic for DOS/Windows

**Training Workbook
Module NOS01
Revision 3
2/10/95**

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