Control Directory Maintenance and Remote Server Control Techniques

Performance Objectives

When you have completed this module, you will be able to:

- Rebuild a corrupt control directory for LANtastic version 5.0 and 6.0.
- Make changes to a server's control directory from a workstation.
- Remotely control the screen and keyboard of a LANtastic server.
- Send commands to a LANtastic server for immediate or delayed action.

Prerequisites

1. Obtain two computers 386sx or higher with Windows and DOS installed.
2. Install LANtastic version 5.0 on one machine. Configure it as a server with the name WATERGATE.
3. Install LANtastic version 6.0 on the second machine. Configure it as a server with the name LIDDY.
4. Cable the two machines together using supported coax.
5. Use Lancheck to verify that the machines communicate.

Overview of Control Directory Structure

The server program needs certain information to do its job. This includes:

- Settings for the various startup parameters
- Account names and their privileges
- Resources and their settings and access control lists
- Print queue control information
- Temporary storage for spooled print files and mail
- Audit information
- Net Manager password
- Image and bootstrap files for remote booting

The server program stores this information in special files within the network control directory. By default, this directory is named LANTASTI.NET. It can have any name, though, as long as Server knows where to find it.

1. At machine WATERGATE, change directory to the LANTASTI.NET directory.
2. This directory contains several hidden files and directories. Display a listing of all the files, hidden or not, by entering the command DIR /A. The list you get will look similar to the following:

Here are the contents of a sample control directory with default resources. Some of the directories and files are hidden. (Your list may differ.)

Sample Network Control Directory

```
Directory of C:\LANTASTI.NET
SYSTEM   NET <DIR>        10-26-94  10:34a
SPOOL    NET <DIR>        10-26-94  10:34a
LANTASTI SHR <DIR>        10-26-94  10:34a
A-DRIVE      <DIR>        10-26-94  10:34a
C-DRIVE      <DIR>        10-26-94  10:34a
LINKACL            707 10-26-94  10:34a
@MAIL              707 10-26-94  10:34a
@PRINTER           707 10-26-94  10:34a
@KEYBD             707 10-26-94  10:34a
@KEYBD   BIN       707 10-26-94  10:34a
@SCREEN            707 10-26-94  10:34a
@SCREEN  BIN       707 10-26-94  10:34a
@BATCH             707 10-26-94  10:34a
```

Note that each resource has a separate directory with the same name as the resource. This is the reason resource names must be 8 characters or fewer.

Here are the contents of a few of those directories.

Sample Resource Directories

```
Directory of C:\LANTASTI.NET\A-DRIVE
LINKACL             707 10-26-94  10:34a

Directory of C:\LANTASTI.NET\C-DRIVE
LINKACL             707 11-18-94  10:02a

Directory of C:\LANTASTI.NET\LANTASTI.SHR
LINKACL             707 10-26-94  10:34a
```

Note that each directory contains a LINKACL file. This file contain information pertaining to the resource, such as where it points, who has access rights, etc.

If the LINKACL for a particular resource gets damaged, it can render the resource useless even though it still displays because the directory is still there.

Here is the content of the hidden SYSTEM.NET directory. Most of the names are self-explanatory.

- The first five files support remote booting. Note that their time stamp matches the version of the NOS, in this case version 6.0.

- The ALIASES file holds information needed by the Exchange Mail program..

Sample SYSTEM.NET directory

```
Directory of C:\LANTASTI.NET\SYSTEM.NET
BOOT     IMD         41 03-01-94   6:00a
IBMBOOT  TYP        126 03-01-94   6:00a
FFRPL    TYP        121 03-01-94   6:00a
FFRAMRPL BST      1,040 03-01-94   6:00a
FFRAMRPL BSD         59 03-01-94   6:00a
CONFIG             314 11-18-94  10:01a
ACCOUNTS         5,248 11-19-94   6:22a
ALIASES          5,248 11-18-94  10:02a
ACLGROUP         8,192 11-18-94  10:02a
```

Here are the contents of the hidden SPOOL.NET directory.

Sample SPOOL.NET directory

```
Directory of C:\LANTASTI.NET\SPOOL.NET
LINKACL                   707 10-26-94  10:34a
QCONTROL                1,428 11-19-94   5:49a
0          _SP          4,544 11-12-94  10:45a
1          _SP         13,780 11-12-94  12:18p
2          _SP         88,871 11-12-94  12:23p
3          _SP         88,871 11-12-94  12:25p
4          _SP         88,871 11-12-94  12:27p
5          _SP         88,843 11-12-94  12:27p
6          _SP          3,762 11-12-94  12:28p
7          _SP          3,748 11-12-94  12:29p
```

This directory holds print jobs and the LINKACL for printing rights.

The QCONTROL file holds information on what jobs are in the queue, how to divvy up the printing priorities, and tracks timeouts.

A corrupt QCONTROL file can cause erratic, slow, or no printing. It can also disrupt the rest of the control directory, causing a general corruption, like an abcessed tooth swelling the gums until they... well, I'm sure you get the picture.

QCONTROL will increase in size depending on the number of print jobs it has handled, and how those jobs printed. One indication of corruption is a wildly huge QCONTROL file, upwards of hundreds and maybe thousands of kilobytes.

QCONTROL is set back to normal each time the machine reboots. If it is corrupted, this may not work.

One way to restore a corrupt QCONTROL to normal is to use the *Queue Maintenance* feature in NET_MGR. This feature will sweep out the old dead print files as well as reset the QCONTROL.

E-mail is also stored in the SPOOL.NET directory. If you choose the Clear All Entries option in NOS 6.0 or the Clear Print Spool option in NOS 5.0, the stored mail will be lost.

Here's the contents of the SPOOL.NET listed above after clearing the print queue:

SPOOL.NET After Clearning Print Spooler

```
Directory of C:\LANTASTI.NET\SPOOL.NET
LINKACL                   707 10-26-94  10:34a
QCONTROL                  132 11-19-94   7:48a
```

Recognizing Corrupt Control Directories

If the LINKACLs or other files in the control directory become damaged or currupt, any of following errors and symptoms can occur:

- "Invalid username or password" but Net Manager shows that the account exists.
- An otherwise inexplicable failure to print or agonizlingly slow printing.
- "Path not found" when attaching a resource but Net Manager shows the resource exists.
- "Server not listening" error when logging into a server but Net Show indicates that server is loaded.
- Changes made in Net Manager are not retained.
- "Duplicate redirection or login" error when logging in for the first time.
- Chinese characters and smiley faces in the Net Manager menu fields.
- Very slow server performance after verifying all other setup parameters correct.
- "Resource already exists" error but resource does not appear in Net Manager.
- "Cannot find server configuration file" when loading server and the proper directory is specified either on the command line or using environment variables. (This will be explained in more detail in this module.)
- "Waiting for server _____ to come on line" error at the console of the server.
- "Main store directory invalid" when saving an Exchange mail message.
- Server shutdown takes much longer than a second or two.
- Server can't log into itself.
- "Cannot locate network name" when logging into server but server's name shows on Net Show.

These errors could have more mundane causes, though, so don't immediately diagnose a corrupt control directory until you've exhausted other possible avenues.

A corrupt control directory can't be healed. It must be surgically removed and replaced with a new control directory.

It is nearly always preferable to rename rather than delete a suspect control directory. This makes it possible to copy account information and startup parameters from the old directory, if necessary.

If for some reason you decide to delete the control directory rather than rename it, avoid using the *Delete Control Directory* option in Net Manager. This will often fail to completely delete a corrupt control directory so that the next control directory will remain corrupted.

Renaming a Control Directory -- DOS 6.x

Use the following technique for machines with DOS 6.x.

1. At machine WATERGATE, remove server from memory using SERVER/REM.

   You will not be able to build a new control directory if Server is in memory.

2. Change to the root directory.

3. Enter the command: `MOVE LANTASTI.NET LAN.OLD`.

4. You will get the message

   ```
   C:\LANTASTI.NET => C:\LAN.OLD [ok]
   ```

5. Do a directory to verify the name change.

Renaming a Control Directory -- DOS 4.01 and 5.0

1. At machine LIDDY, remove Server from memory using SERVER/REM.

2. From the root directory, run DOSSHELL.

3. Once the program has loaded and has finished reading the files and directories, tap the Tab key once then cursor down to the LANTASTI.NET directory.

4. Tap the *Alt* key then *F-File* then *N-Rename*.

5. Enter *LAN.OLD*.

6. Check the directory list to verify that the name change took effect.

7. Press *Alt-F4* to exit.

8. Do a directory from the root to verify the name change.

Building a New Control Directory

Once you have renamed or deleted a corrupt control directory, there are several ways to build a new one:

- Full reinstallationl from floppy or install server
- Using Net Manager
- Using LANSETUP (NOS 6.0 only)
- Using INSTALL (NOS 4.x and 5.0)

Building A New Control Directory Using A Full Reinstallation

We will not perform this procedure in this workshop because you have installed the network already. There are two key items to remember:

- Reinstallation will not replace an old control directory. If you did not rename or delete the corrupt directory, the new directory will also be corrupted.
- Reinstallation will not replace the existing STARTNET.BAT file unless you choose that option. This means the existing connections and redirections don't have to be redone to rebuild the control directory.

Building A New Control Directory Using Net Manager

The method in this section uses the *Create Control Directory* feature in Net Manager. This is not the preferable option because it will not build default accounts and resources.

Building resources manually takes time and can be frustrating, especially when it comes to building oddball resources like @SCREEN.BIN and the like. You should have this method in your arsenal, though, because the two shortcuts might not work.

1. At machine WATERGATE, change to the LANTASTI directory.

2. Run NET_MGR and select *Control Directory Maintenance*. The CONTROL DIRECTORY MAINTENANCE menu appears.

3. Select *Create Control Directory*.

4. You'll be prompted with the path and file name of the default control directory, LANTASTI.NET. Note that you do not have the ability to change the name from this screen.

5. Instead of accepting this default, escape out to the command prompt.

6. Enter the following SET command to put a new environment variable for the control directory in memory (this will work for NOS 5.0 and up):

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

7. Run NET_MGR again. Note at the menu contains one item, *Create Control Directory*, and that you are managing the *C:\LANTESTI.NET* directory.

8. Press *Enter* on *Create Control Directory*. You'll be prompted for a path and file name corresponding to the directory name you entered using SET.

9. Press *Enter* to accept this default. Virtually immediately you'll be returned to the CONTROL DIRECTORY MAINTENANCE menu but now it has a full suite of choices.

10. Escape once to the main Net Manager menu. Select *Shared Resources Management.* Note that you have no resources other than the dot resource for the control directory's own directory.

11. Escape once and select *Wildcard Account Management.* Note that you do not have a wildcard account. If you build a control directory in this manner, you'll need to build a wildcard account before anyone can log in.

12. Escape out to the command prompt.

Shortcut To Building A New Control Directory For LANtastic 5.0

You're telling yourself that there must be a better way, and there is. Here's a shortcut that works for NOS 5.0 (and 4.1, too.)

13. At machine WATERGATE, change to the LANTASTI directory.

14. Run *INSTALL.* A purple information screen appears.

15. Press *Enter.* An install screen appears.
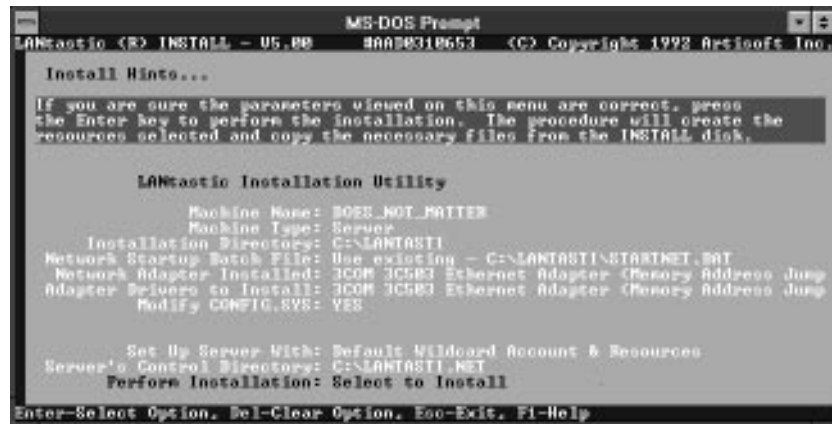
16. Enter a machine name. It doesn't have to be the original machine name because Install will not replace the old STARTNET.BAT file.

17. Highlight *Machine Type* and press *Enter* to toggle *Workstation* to *Server.*

18. Cursor down past the remaining lines ("Yes, sir, all of them.") to *Perform Installation.* Press Enter.

19. When prompted to confirm, press *Enter.* You will get an error message because there are files in the LANTASTI directory.

20. Press *Escape.* Install will initialize a LANTASTI.NET control directory with a full set of default resources.

21. When Install finishes, escape out to the command prompt.

22. Change to the root directory and do a DIR to verify that you have a new LANTASTI.NET directory.

23. Run NET_MGR and note that the default resources and wildcard accounts are present.

24. Escape out to the command prompt.

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25. Run SERVER. Note that it loads without error.

Shortcut To Building A New Control Directory For LANtastic version 6.0

You cannot simply run INSTALL like you did for LANtastic 5.0. The new install engine will copy over all the files even if they already exist.

The program LANSETUP (which is really just INSTALL with a different name) has a feature for building a new control directory and adding default resources to it. Before this feature will work, several prerequisites must be met.

Prerequisites For Using LANSETUP

A "new style" STARTNET.BAT file must exist in the network directory. A "new style" STARTNET.BAT contains the following as a minimum:

- A least three REM lines

- The line `IF EXIST DISABLED` must be in upper case.

The network directory (usually LANTASTI) must contain the following:

- LANSETUP.EXE and LANSETUP.DAT must be in the network directory.

- SERVER.EXE and an \ARTIDOCS sub-dir must be in the network directory.

- If the network directory is named anything other than LANTASTI, then you must set an environment variable called LAN_CFG equal to the network directory as follows:

```
SET LAN_CFG=C:\NET_DIR
```

Install puts this command in the STARTNET.BAT file by default.

If the machine runs out of environment space when loading the network, the contents of the LAN_CFG variable could get truncated or lost altogether. This would cause an error: OUT OF ENVIRONMENT SPACE, but machines boot too quickly to see the error.

26. At machine LIDDY, verify that you have met these prerequisites.

27. Remove the server from memory using SERVER/REM.

28. From the root directory, run LANSETUP/DOS. The SETUP MENU appears.
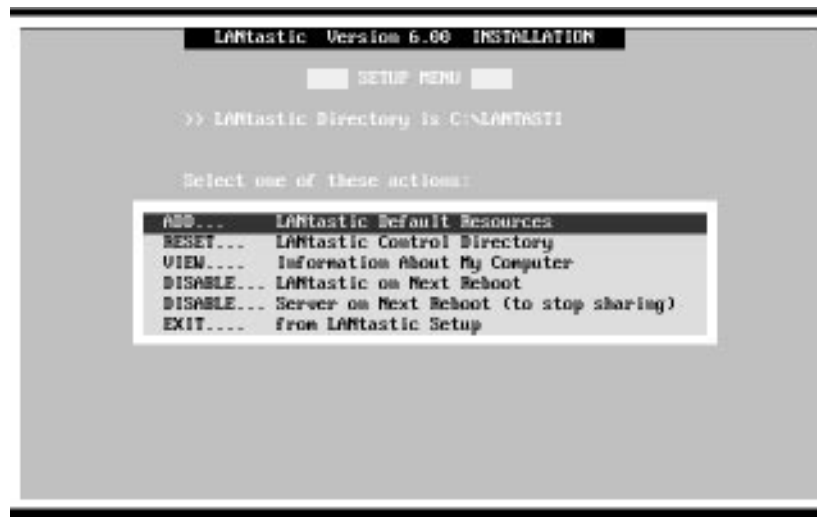
29. Select *ADD... LANtastic Default Resources. An explanatory screen will appear.*
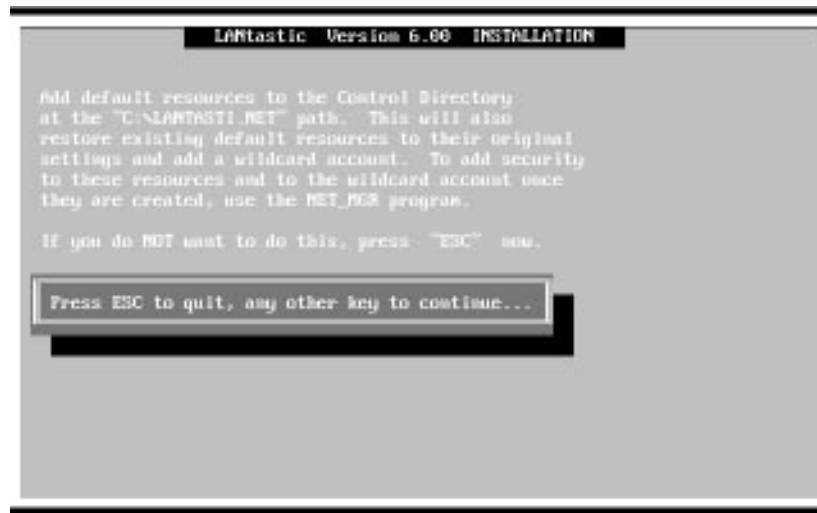
30. Press *Enter* to proceed. You'll get a short message telling you that the Control Directory is initializing and the resources are being built. Then you'll be returned to the SETUP MENU screen. Select *EXIT* to return to the command prompt.

31. Do a directory of the root to verify that the LANTASTI.NET directory is present.

32. Run SERVER and verify that it loads with no error.

This is the end of this section. Please perform the following before proceeding:

•   Get the LANtastic 6.0 disks and upgrade WATERGATE. Select *Replace Existing LANtastic Setup with New Style* when prompted.

•   After the reboot following the installation, leave the machine at the command prompt with the network loaded.
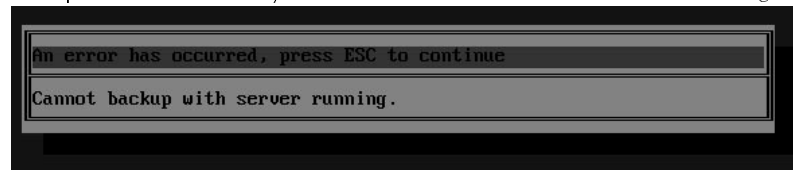
Backing Up and Restoring A Control Directory

Ideally, it should not be necessary to build a new control directory. You should have a backup of the old directory, hopefully free from corruption. This is especially handy if you have to rekey 200 accounts and special server startup parameters once you've built the new directory.

1. Obtain a blank formatted floppy.

2. At WATERGATE, put the floppy in the appropriate floppy drive.

3. Run NET_ MGR and select *Control Directory Maintenance*. The CONTROL DIRECTORY MAINTENANCE screen appears.

Control Directory Maintenance

Change Control Directory
Backup Control Directory
Restore Control Directory
Delete Control Directory
Create Control Directory

4. Select *Backup Control Directory*. An error occurs because Server is running.

An error has occurred, press ESC to continue

Cannot backup with server running.

5. Escape out to the command line.

6. Remove Server from memory using SERVER/REM.

7. Run NET_MGR again and select *Control Directory Maintenance.*

8. Select *Backup Control Directory.* You'll be prompted for a path.

Enter the Path of the Backup File:
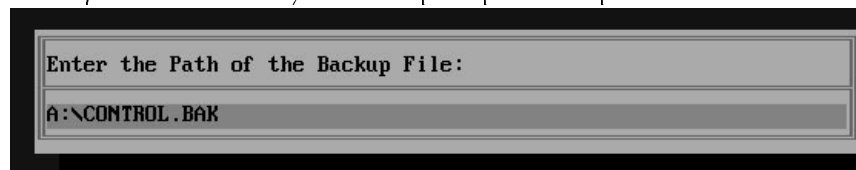
A:\CONTROL.BAK

9. Enter the following path and filename (you should include an extension, too):

        A:\CONTROL.BAK

10. When the backup is complete, you'll be returned to the CONTROL DIRECTORY MAINTENANCE menu.

11. Escape out to the command prompt. Do a directory of the A drive. Note the size of the backup file. It's not too big considering all the gems inside.

12. Change back to the C drive and go to the root directory.

13. Use DELTREE to delete the LANTASTI.NET directory.

14. Run NET_MGR. Note that you only have one selection, *Control Directory Maintenance.* Make that selection. The CONTROL DIRECTORY MAINTENANCE menu appears.
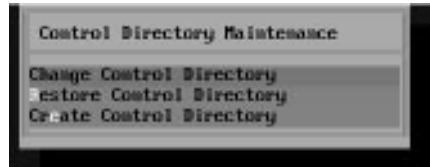
15. Select *Restore Control Directory.* You'll be prompted for the path and name of the backup file. Enter the following:

   A:\CONTROL.BAK

16. You'll be prompted for the name of the control directory to restore. The default will be LANTASTI.NET. Accept the default.

17. When the restore has completed, you'll be returned to the CONTROL DIRECTORY MAINTENANCE menu.

18. Press *Esc* once to see the main Net Manager menu. Note that you now have a full menu.

19. Select *Shared Resources Management.* Note that you have all the resources you started with.

This is the end of this section. In the next section, you'll find out what to do if you don't have a backup of a good control directory.

Changing a Control Directory Across A Network

There are several situations when it's impossible to change the control directory settings locally at the machine.

- CorStream dedicated servers because they can't run DOS programs.

- The Server program may be so large that NET_MGR can't load.

- The server is not physically accessible. It's either locked up for physical security or it's in the boss' office with the door closed or it's on the third floor and you're on the first.

In cases like this, the control directory can be changed from a workstation in one of several ways.

1. Changing A Control Directory By Running Net Manager From A Network Drive

    a. At the command prompt of server WATERGATE, type SET and press *Enter.*

    b. If LAN_DIR=C:\LANTASTI.NET is in the list of variables, remove it by typing SET LAN_DIR= (Leave the right side of the equal side blank.)

    c. Use SET again to verify that the variable is gone.

    This step is necessary because the environment variable will override the default search scheme when Net Manager runs across the network.

   d. Load Server if it is not already loaded then run the ALONE program.

    It isn't necessary for a dedicated server to run ALONE. By definition, a dedicated peer server is a server that isn't doing anything else. We're using ALONE to simulate an inaccessible server.

    e. At machine LIDDY, delete the LAN_DIR variable by entering SET LAN_DIR= (Once again, leave the right side of the equal sign blank.)

    f. Log into WATERGATE.

    g. Redirect the Z drive to WATERGATE's C-DRIVE resource as follows:

    ```
    NET USE Z: \\WATERGATE\C-DRIVE
    ```

    h. Change to the Z drive and run *NET_MGR.* The main NETWORK MANAGER screen appears.
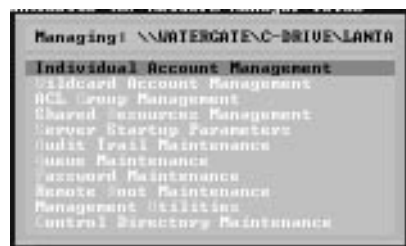
    i. Note that the *Managing:* line indicates you are looking at the control directory on *\\WATERGATE.* Any changes you make will be saved in the LANTASTIC.NET directory on that server.

    j. Select *Shared Resources Management.*

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k. Add a new resource called *@SNEAKY* and point it at LPT1. This will be the breadcrumb that will tell us if we come back to this part of the forest.

l. Escape out to the command prompt.

2. Changing A Control Directory By Using The Net Manager Command Line

a. Change to the C drive at LIDDY.

b. Issue the following command:

```
NET_MGR /CONTROL=\\WATERGATE\C-DRIVE\LANTASTI.NET
```

c. You must use the full UNC (Universal Naming Convention) name so that Net Manager will know where to find the directory.

d. Note at the top of the Network Manager menu box that you're managing the control directory on WATERGATE.

e. Select *Shared Resources Management* and verify that the *@SNEAKY* resource is there.

f. Escape out to the command prompt.

3. Changing A Control Directory By Using The Net Manager Menu

a. Run *NET_MGR*. Note at the top of the Net Manager menu that you're managing the control directory on LIDDY.

b. Select *Control Directory Maintenance*. A screen by the same name appears.

c. Select *Change Control Directory*. When offered to enter the path to the new control directory, enter the UNC name for WATERGATE:

```
\\WATERGATE\C-DRIVE\LANTASTI.NET
```

d. The CONTROL DIRECTORY MAINTENANCE screen comes back but now, along the top of the screen, note that you are looking at WATERGATE.

e. Escape back to the command prompt.

4. Changing A Control Directory Using The Windows Interface

   a. Run Windows and launch the LANtastic Network Manager from the LANtastic group.

   b. Select *Control Dir.* The SELECT CONTROL DIRECTORY box appears.

   c. Enter the UNC name to the server:

   ```
   \\WATERGATE\C-DRIVE\LANTASTI.NET
   ```

   d. You will return to the main Network Manager window. Note that the name of the control directory in the bottom of the window is now the UNC name for WATERGATE.

   e. Exit WNETMGR and then close Windows.

   This is the end of this section. Leave both machines at the command prompt and proceed to the next section.

Remote Server Control Using NET Menus

1. At server WATERGATE, run NET_MGR and select *Wildcard Account Management.*

2. Press *Enter* on the asterisk. The ACCOUNT INFORMATION screen appears.

3. Cursor down to *Privileges* and add the *S* privilege. This will give you the System Manager privileges you will need for server control.

    Under normal circumstances, you would only want to give the S privilege to the office guru who thinks he or she knows how the network works.

4. Escape to the main Net Manager menu and select *Server Startup Parameters.*

5. Select *Server Control.* Verify that the *Server Control* feature is enabled. If not, press *Enter* on that line to toggle the setting to *Enabled.*

6. The *Run Buffer* selection sets the maximum size of a DOS command that can be sent to a server using a NET RUN command. We will use this feature a little later in the module.

7. Escape out to the command prompt. Flush caches if prompted.

8. Remove server from memory using SERVER/REM and reload SERVER.

9. Still at WATERGATE, from the command prompt, add another login name as follows:

    ```
    NET LOGIN \\WATERGATE JOHN_DEAN
    ```

10. At machine LIDDY, run NET. Select MONITOR AND MANAGE SERVER ACTIVITY.

11. Select \\WATERGATE from the list of servers. A screen showing list of users on server WATERGATE appears.

    This screen is similar to the ALONE screen with the exception that no details of the individual machines can be viewed.

    Note the bottom of the screen has an option for *Del-Terminate.* This will not display unless you have the *S* privilege.

    Note also that you have the *F2-Control* option. This will not display unless Server Control is enabled at the server you're looking at.

12. Highlight the JOHN_DEAN entry and press *Del-Terminate.* You'll be prompted to enter a delay time. Leave the entry at *0* and press *Enter.*

---

13. At server WATERGATE, you'll get a popup message informing you that you have been logged off.

14. Press *F2-Control.* The SERVER CONTROL OPTIONS menu appears.

This screen gives a menu alternatives to various command-line NET commands for controlling a server. We'll explore those in a moment. First, let's pick the most spectacular option, direct server control.

15. Select *Control the Server.* The screen will repaint to show what is now on the screen of server WATERGATE.

    The blue bar across the top of the screen indicates the Universal Naming Convention (UNC) name for the server you're controlling and the resource that's being used. This should be \\WATERGATE\@SCREEN.BIN

16. At server WATERGATE, note that there is a red asterisk in the upper right corner of the screen. This indicates that the machine is under remote control.

17. At machine LIDDY, do a directory of the C drive. Compare the two displays. Note that the file list on LIDDY passes by in a jerky fashion. The screen information must be collected and passed along the wire, so there is going to be some fits and starts in the remote screen.

18. Change to the \LANTASTI\ARTIDOCS directory. Run ARTIDOCS. The welcome screen appears.
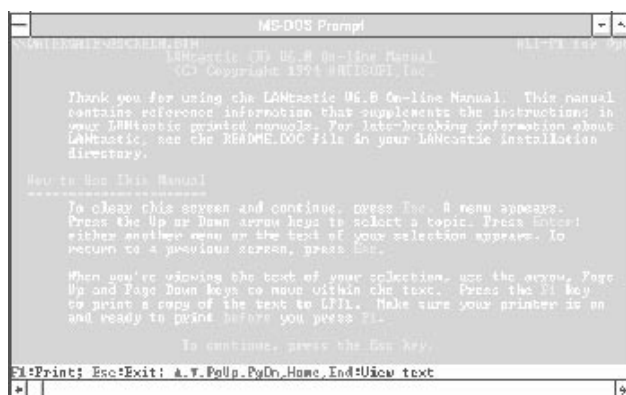
19. Press *Esc* then select *Using Control Directories with DOS.* Page down a few times to see how the screen responds.

20. Press *Alt F1-Control Options.* The CONTROL OPTIONS menu appears.

Note that this menu only appears on LIDDY's screen.

21. Select *Change Refresh Rate.* When the popup appears, change the rate from 6 to 1 and press *Enter.*

22. Press *Esc* to return to the main screen.

23. When you return to the menu, press *Esc.*

24. Page up and down again. Note that the difference isn't remarkable. If a user needs faster response, and more features, he or she should purchase The Network Eye.

25. Press *Alt-F1*again and this time select *Read from the Server.* A list of the screen resources on server WATERGATE appears.
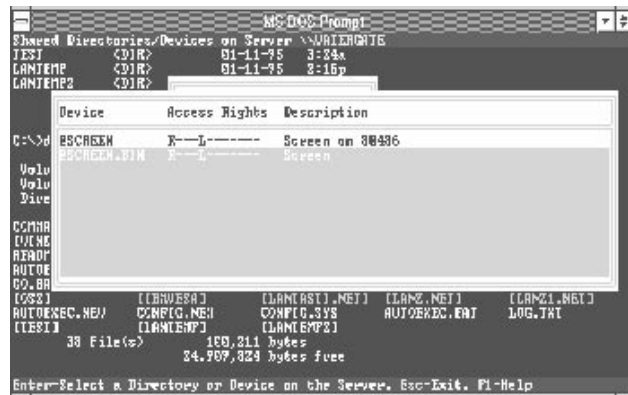
These two resources collect the screen information you see during remote control. Note that this popup does not appear on WATERGATE's screen.

26. Select the @*SCREEN* resource. The DEVICE READ OPTIONS menu appears.

These menu options will take the screen of information you see behind the popup and write it to a device such as a file or a printer.

27. Select *Copy Device To File.* You'll be prompted for a path to the file name. Don't be confused. It wants the file name as well.

28. Type in C:\SCRNDUMP.TXT and press *Enter.* You'll be returned to the CONTROL OPTIONS menu.

29. Select *Exit Control.* You'll return to the command prompt of workstation LIDDY. Note that the red asterisk disappears from server WATERGATE.

30. At WATERGATE, from the root directory, use TYPE to look at the SCRNDUMP.TXT file. Note that it contains the same text as the original screen but no colors.

31. At LIDDY, run NET and take control of server WATERGATE using the technique you just learned.

32. Press *Alt-F1 Control Options.*

33. Select *Write to the Server.* The DEVICE WRITE OPTIONS menu appears.

34. Select *Use Screen Editor.* The LANTASTIC TEXT EDITOR appears.

If you've worked with LANtastic Mail before, you'll recognize this editor. It's a full-screen line editor, a cross between EDIT and EDLIN.

35. You can use this editor to send commands to the server you're controlling. Try this.

a. At the editor, type DIR and press enter.

b. On the second line, type DIR/W and press enter.

c. Watch the screen at WATERGATE and press *F2, Send* at LIDDY. You'll see WATERGATE do the two directory lookups.

d. Note that you're returned to the CONTROL OPTIONS menu at LIDDY, but the background has not changed to reflect the new screen at WATERGATE.

e. Press *Escape.* The screen will now update to match WATERGATE.

36. Press *Alt-F1, Control* and select *Exit Control.* You'll return to the SERVER CONTROL OPTIONS menu.

37. Select *Schedule Server Shutdown.* The SCHEDULE SERVER SHUTDOWN menu appears.

38. Select *Minutes Until Shutdown* and enter *2.*

39. Press *Enter* on *After Shutdown* to see the various options then leave it at *REBOOT.*

40. Leave *Notify Users* at *YES.*

41. At *Warning Message,* note that there is a variable, #, for the minutes based on your entry in the first field and another variable, $, to make the word plural, if required. Third grade teachers have a profound impact on software design.

42. Press *F2-Execute.* You'll get a warning message from WATERGATE about the impending shutdown.

43. After one minute, you'll get another warning message.

44. After two minutes, there'll be one last message then server on WATERGATE will remove itself from memory and the machine will reboot.

> *Why would someone want to do this? The user might have made changes to an inaccessible server that requires it to be rebooted. The server probably has an AUTOEXEC.BAT that brings it back up to ALONE, so rebooting is a handy way to reinitialize.*

45. At LIDDY, escape to the command prompt.

46. At server WATERGATE, run NET_MGR and select *Server Startup Parameters.*

47. Select *Server Control* and toggle *Server Control* to *DISABLED.*

48. Escape back to the main Net Manager menu and select *Wildcard Account Management.*

49. Press *Enter* on the asterisk then take away the S privilege.

50. Escape out to the command prompt.

51. Remove server using SERVER/REM and reload.

52. At LIDDY, run NET and select *Monitor and Manage Server Activity.*

53. Select WATERGATE from the list of servers. The login list screen appears.

54. Note along the bottom of the screen that *Del-Terminate* and *F2-Control* no longer display. You no longer have the ability to control this server.

This is the end of this section. Put both machines at the command prompt and proceed to the next section.

Remote Server Control Using the NET Command Line

There are NET commands for virtually all the actions you took using the NET menus in the last section.

1. Forcing A Logout

   At this point, the wildcard account on server WATERGATE does not have the S priviledge and remote server control is disabled. Let's first see how that affects using the command line.

   a. At WATERGATE, issue the following login command:

      ```
      NET LOGIN \\WATERGATE SPIRO
      ```

   b. At LIDDY, log into WATERGATE as follows:

      ```
      NET LOGIN \\WATERGATE LIDDY
      ```

c. Run ALONE on WATERGATE and note that both names are on the login list with GET ACCOUNT as the last command.

d. At LIDDY, issue the following command:

```
NET TERMINATE  \\WATERGATE SPIRO
```

You get the error: `You have been denied access on server WATERGATE. TERMINATE has failed.`

You got this error because you don't have the S privilege.

e. At WATERGATE, run NET_MGR and select *Wildcard Account Management.*

f. Press *Enter* on the asterisk then add the *S* privilege at the ACCOUNT DETAILS screen.

g. Escape to the command prompt. Note that you're now prompted to flush the server buffers. This is another feature of having the S privilege.

h. We don't trust buffer flushes, do we? Reset the server using SERVER/REM then reload.

i. At WATERGATE, issue the following login command:

```
NET LOGIN \\WATERGATE SPIRO
```

j. At LIDDY, log into WATERGATE as follows:

```
NET LOGIN \\WATERGATE LIDDY
```

k. Run ALONE and note that both names are on the login list with GET ACCOUNT as the last command.

l. At LIDDY, issue the following command:

```
        NET TERMINATE  \\WATERGATE SPIRO
```

You get a new error: `Required system component not installed. TERMINATE has failed.`

You got this error because remote server control is still disabled.

m. At WATERGATE, run NET_MGR and select *Server Startup Parameters.*

n. Select *Server Control* and toggle the status to *Enabled.*

o. Escape to the command prompt.

p. Reset the server using SERVER/REM then reloading server.

q. At WATERGATE, issue the following login command:

```
NET LOGIN \\WATERGATE SPIRO
```

r. At LIDDY, log into WATERGATE as follows:

```
NET LOGIN \\WATERGATE LIDDY
```

s. Run ALONE on WATERGATE and note that both names are on the login list with GET ACCOUNT as the last command.

t. At LIDDY, issue the following command:

```
NET TERMINATE  \\WATERGATE SPIRO
```

FINALLY, it works. At WATERGATE, you get a popup saying the the user has been logged off. (Yes, Virginia, popups will work with ALONE.)

u. At WATERGATE, press *Escape* to get rid of the popup. Note that SPIRO is gone and the last command for LIDDY was *TERMINATE USER.*

v. At WATERGATE, escape from ALONE.

w. Log back into WATERGATE as SPIRO.

x. At LIDDY, issue the following command:

```
NET TERMINATE \\WATERGATE SPIRO * 1
```

This will give a one minute warning to SPIRO before the ax falls.

It's possible that SPIRO logged into WATERGATE from several machines. The asterisk will force a logout from every one of those machines. A specific machine could replace the asterisk.

Wait for a while. Be patient. It will take LIDDY a while to convince WATERGATE to initiate the logout sequence.

You will eventually get a popup warning on WATERGATE notifying the user that the party's over in one minute, and then a minute later the host turns off the lights and closes the refrigerator door.

There is no way to change your mind and cancel the termination.

2. Forcing A Server Shutdown

a. At LIDDY, issue the following command:

```
NET SHUTDOWN \\WATERGATE
```

Note that WATERGATE immediately shuts down. This might be disconcerting to users, especially someone who had just spent three hours building an AutoCad drawing.

b. At WATERGATE, reload server.

c. At LIDDY, issue the following command:

```
NET SHUTDOWN \\WATERGATE 2 "You're toast in # minute$."
```

This is a little more polite. Honk the horn before you run the guy off the freeway.

d. Wait for WATERGATE to finish shutting down then reload server.

e. At LIDDY, issue the following command:

```
NET SHUTDOWN/HALT \\WATERGATE
```

Not only does the server program at WATERGATE immediately shutdown, the machine will now accept only one local command: the three finger salute.

f. Reboot WATERGATE and verify that the network reloads.

g. At LIDDY, issue the following command:

```
NET SHUTDOWN/REBOOT \\WATERGATE 5 "Siyonara, sucker, in # minute$."
```

h. Your phone rings. It's the boss, who just happened to work late tonight and doesn't appreciate both your humor and the fact that he has a 2 meg Excel spreadsheet that's currently recalculating.

i. At LIDDY, you hurriedly enter the following command:

```
NET SHUTDOWN/CANCEL \\WATERGATE
```

j. A popup announces that the shutdown is canceled (Note the misspelling. Third grade teachers aren't **that** powerful.)

k. Next time, you'll add the "/SILENT" switch to the shutdown command and blame the outage on the network.

3. Sending Commands to a Server

a. At LIDDY, issue the following command:

```
NET RUN \\WATERGATE DIR
```

Note that WATERGATE does a DIR of the current directory.

b. Watch the screen at WATERGATE when you issue the following command:

```
NET RUN \\WATERGATE "CD C:\LANTASTI\ARTIDOCS"
```

Note that this feature essentially acts as a keyboard stuffer. The length of the command that can be placed on the line is set by the *Request Size* parameter. This defaults to 32, which should be long enough for most commands.

These individual NET RUN commands can be included in batch files, which makes it easy for a user to orchestrate a particular task to run at a certain time or circumstance.

But what if you have several commands you'd like to run in sequence? And you want to run them at some ungodly hour like 2:00am to do a tape backup or launch a long print job?

The secret to this trick is the @BATCH resource and the NET PRINT command.

c. At WATERGATE, change to the LANTASTI directory and use EDIT or COPY CON to build a file called GOTCHA.BAT with the following contents.

```
ECHO I AM NOT A CROOK
```

d. Save this file. Change directory to the root directory.

e. At LIDDY, change to the root directory.

f. Use EDIT or COPY CON to build a file named SMOKEGUN.TXT with the following contents:

```
DIR
DIR/W
CD \DOS
DIR *.EXE
CD \LANTASTI
GOTCHA.BAT
CD \
```

g. Save this file.

h. At LIDDY, redirect the LPT4 port to the @BATCH resource on WATERGATE.

i. Use NET SHOW to verify that the redirection is in place.

j. At LIDDY, enter the following command and watch the screen at WATERGATE:

```
NET PRINT SMOKEGUN.TXT LPT4
```

Note that the commands are carried out one after the other just as they did when you used the menus in NET.

Note also that you were able to run a batch file on the server by sending over a batch file from the workstation. This batch file could just as easily be a tape backup program or a print job. But how do you run it at 2:00am?
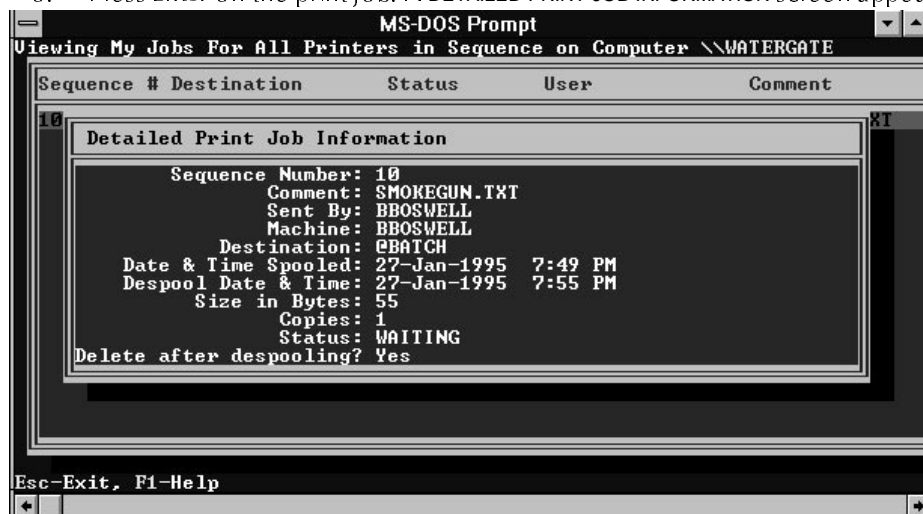
k. At LIDDY, enter the following command:

```
NET PRINT/TIME=07:55PM SMOKEGUN.TXT LPT4
```

l. You will return to the command prompt once the print job gets sent.

m. Run NET and select *View Print Jobs.*

n. Select *WATERGATE* from the list of servers. A list of the pending print jobs appears. Your print job to @BATCH will be waiting on that list.
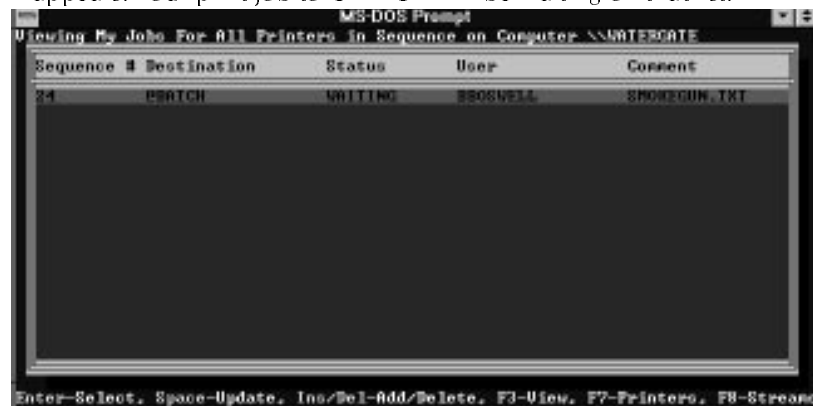
o. Press *Enter* on the print job. A DETAILED PRINT JOB INFORMATION screen appears.

Note that the despool date and time is the time you specified on the NET PRINT line. Also note that the job status is *WAITING.*

p. At WATERGATE, from the command prompt, enter the following command:

```
TIME 19:54:45
```

q.   Now wait and watch WATERGATE's screen. In minute or so you'll see the commands take off. This is how you'd schedule that tape backup.

This technique also works well if the server must be shutdown to run a local tape backup. Because the batch file runs locally, you can remove server, run TAPE, then reload server, which you wouldn't be able to do with the NET SHUTDOWN command.

This is the end of this workshop. Please return all hardware and software to the instructor.

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