

# SmartStart Scripting Toolkit Best Practices



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## About This Guide

This guide describes the implementation of the SmartStart Scripting Toolkit server deployment utilities.

### Audience Assumptions

This guide is intended for experienced network administrators. Some of the utilities in the Toolkit can cause a loss of data if used incorrectly. Thus, a clear understanding of these utilities is critical. Be sure that all mission-critical systems will remain active in the event of a system failure before using the utilities.

### Where to Go for Additional Help

For issues or problems not addressed by this guide, refer to the following resources for more information.

### Online Documentation

Refer to the following SmartStart Scripting Toolkit documentation at

[www.hp.com/servers/sstoolkit](http://www.hp.com/servers/sstoolkit)

- *Next Generation Server Deployment Tools: SmartStart Scripting Toolkit* white paper
- *SmartStart Scripting Toolkit User Guide*
- *SmartStart Scripting Toolkit General FAQs*
- *SmartStart Scripting Toolkit Troubleshooting FAQs*
- *SmartStart Scripting Toolkit Support Matrix*

## HP Technical Support

HP offers standard email support for the Toolkit through questions submitted to [support@compaq.com](mailto:support@compaq.com)

Technical support specialists provide the following services:

- Diagnosis of problems related to the functionality of the utilities in the Toolkit
- Advice about proper installation and setup of the software configuration parameters
- Solutions to known Toolkit problems

Technical support specialists do not provide the following services:

- Loading software applications
- Walk-through installations of the Toolkit
- Batch file creation, scripting development, unattended installation processes, or debugging
- Third-party software support

Be sure that you have the following information available before sending a technical support request:

- Technical support registration number (if applicable)
- Hardware product serial numbers (if applicable)
- Hardware product model names and numbers (if applicable)
- Applicable error messages
- Add-on boards or hardware (if applicable)
- Third-party hardware or software (if applicable)
- Operating system type and Toolkit revision level
- Detailed questions

## Website Resources

For troubleshooting tips, refer to the SmartStart Scripting Toolkit Troubleshooting Guide at [www.hp.com/servers/sstoolkit](http://www.hp.com/servers/sstoolkit)

For information on other topics, visit the websites under the following headings.



## Leading Operating System Manufacturers

[www.microsoft.com](http://www.microsoft.com)

[www.novell.com](http://www.novell.com)

[www.redhat.com](http://www.redhat.com)

## Unattended Installation Help

[www.microsoft.com/ntserver/techresources/deployment/default.asp](http://www.microsoft.com/ntserver/techresources/deployment/default.asp)

[www.microsoft.com/technetwin2000/win2ksrv/technote/unattend.asp](http://www.microsoft.com/technetwin2000/win2ksrv/technote/unattend.asp)

[www.novell.com/documentation/lg/nw51/othr\\_enu/data/a2zj6s4.html](http://www.novell.com/documentation/lg/nw51/othr_enu/data/a2zj6s4.html)

[www.novell.com/documentation/lg/nw6p/index.html?othr\\_enu/data/a2zj6s4.html](http://www.novell.com/documentation/lg/nw6p/index.html?othr_enu/data/a2zj6s4.html)

This document is also available as Technical Information Document number 10055290.

[www.linux.org/docs/ldp/howto/HOWTO-INDEX/index.html](http://www.linux.org/docs/ldp/howto/HOWTO-INDEX/index.html)

## DOS Boot Disk Help

For Microsoft help with creating a Network DOS boot diskette, visit:

[ftp.microsoft.com/bussys/clients/msclient](ftp://ftp.microsoft.com/bussys/clients/msclient)

For additional help with creating a Network DOS boot diskette, visit:

[www.compaq.com/support/files/desktops/us/download/6682.html](http://www.compaq.com/support/files/desktops/us/download/6682.html)

## HP Server Support Software

For information on support software, refer to the following website:

[www.compaq.com/support/files/index.shtml](http://www.compaq.com/support/files/index.shtml)

## Customer Feedback

Submit support questions about the Toolkit to

[support@compaq.com](mailto:support@compaq.com)

## Telephone Numbers

For the name of your nearest HP authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.

For HP technical support:

- In the United States and Canada, call 1-800-652-6672.
- Outside the United States and Canada, refer to [www.hp.com](http://www.hp.com)

## Best Practices

“Best practice” refers to an accepted method of performing a task or finding the best way to do something that fits a particular situation. The best practices for the SmartStart Scripting Toolkit utilities include planning and designing the operating system deployment to minimize problems before they occur.

Best practices also include organizing installation files into folders, editing and commenting the server batch file, and performing the deployment. These are a set of operational procedures that, when strictly followed, help reduce errors by standardizing deployment procedures.

The chapters that follow provide examples of best practices for implementing the Toolkit utilities, along with the sample script files and server batch files that launch the server deployment by using a CD or across a network.



**CAUTION:** Because of the potential risk of data loss, be sure that all necessary precautions are taken so that mission-critical systems are not disrupted if a failure occurs.

All of the best practices examples presented in these chapters assume that the target servers are ProLiant ML, DL, or BL servers. The CONREP utility is used to build the hardware configuration script file for these servers.

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**IMPORTANT:** All the best practices examples presented in these chapters are tested on specific server configurations and should not be used in a general sense. Using these examples without modifications for a specific environment will result in failed installations. The batch files are intended to illustrate the server configuration and operating system installation process. There are multiple ways to use the Toolkit utilities.

# Deployment Overview

Figure 1-1 illustrates the basic deployment strategies discussed in this guide. For more information, refer to Table 1-1 in the *SmartStart Scripting Toolkit User Guide*.

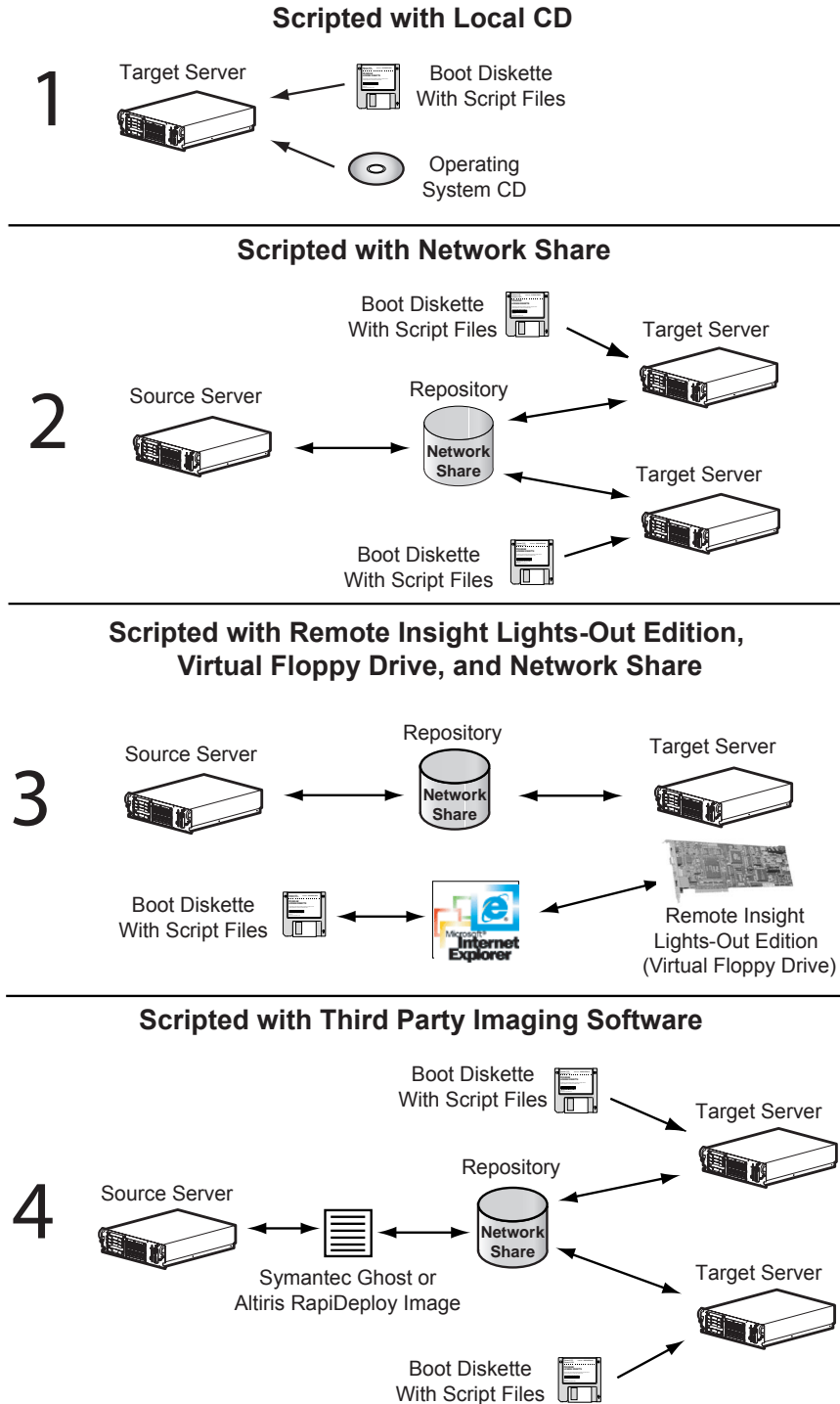


Figure 1-1: Server deployment strategies

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## Minimum Requirements

**IMPORTANT:** Before beginning the deployment process, be sure that you have sufficient software rights to install the operating system and software applications on the target server.

Have the following items available before starting:

- *SmartStart Scripting Toolkit User Guide*
- SmartStart 6.00 or later (kit or CDs)
- Management CD 6.00 or later
- Network operating system software and documentation
- Bootable MS-DOS version 6.22 or 7.0 and documentation

**IMPORTANT:** Be sure that sufficient free memory is available in DOS after all the required device drivers are loaded. The Toolkit utilities use the DOS operating system, which is limited to 640 KB of addressable memory. The examples provided for creating bootable network diskettes may create situations where there is not enough memory to execute the Toolkit utilities.

**NOTE:** For more information about basic DOS commands, refer to the DOS documentation.

## New Features in Release 1.9 of the Toolkit

The Toolkit now includes the following new features:

- Expanded support for HP ProLiant ML, DL, and BL servers, HP storage controllers, and the HP Remote Insight Lights-Out Edition II (RILOE II) board
- Additional Configuration Replication utility options

Due to new architecture in SmartStart 6.0 and later, SmartStart Scripting Toolkit 1.8 and later no longer require the following tools, which have been removed from the Toolkit:

- The Configuration Replication Utility for Pre-ML/DL Servers (CF\_REP)
- The System Partition Enabling Utility (SYSPART)
- The Populate System Partition Utility (PSYSPART)



**CAUTION:** Deletion of the preceding utilities and changes to the directory structure on the SmartStart CD require changes to the script files. Script files from release 1.7 and earlier of the Toolkit will not work properly with SmartStart 6.0 or later.

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**IMPORTANT:** SmartStart Scripting Toolkit 1.8 and later are optimized for SmartStart 6.00 and later. SmartStart Scripting Toolkit 1.7 and earlier align to SmartStart 5.x releases. For additional information, refer to the SmartStart Scripting Toolkit website at

[www.hp.com/servers/sstoolkit](http://www.hp.com/servers/sstoolkit)

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## Microsoft Windows NT 4.0 Deployment

This chapter provides best practice scenarios for using the Toolkit to deploy the Microsoft Windows NT 4.0 operating system with a CD or across a network.

Samples of the script files described in this chapter are available in the /toolkit/samples directory that is created when you download and expand the SmartStart Scripting Toolkit. For more information on the SmartStart Scripting Toolkit, refer to the HP website at

<http://www.hp.com/servers/sstoolkit>

## CD-Based Deployment

This scenario illustrates the deployment of Windows NT 4.0 by using a CD that contains the files necessary to set up the target server. This CD is created by the user and includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

**NOTE:** CD-based server deployments can be lengthy, depending on the speed of the CD-ROM drive, the cleanliness of the CD, and the presence of CD-caching software.

## Deployment Process Overview

The general CD-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette
2. Creating the server profile script files
3. Creating the server batch file
4. Creating the installation CD
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette

Create a bootable server configuration diskette used to initiate the server deployment process.

To create the bootable server configuration diskette by using DOS 6.22 or 7.0:

1. Format a 1.44-MB diskette using the DOS `FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Create a `CONFIG.SYS` file that loads the drivers required for the target server devices. A typical `CONFIG.SYS` file is similar to the following:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=himem.sys
device=setver.exe
device=cpqidecd.sys /d:cpqcdrom
device=ifshlp.sys
REM *** Establish default shell to use
shell=command.com /p
```

**NOTE:** Refer to the server documentation for information about which devices to load through the `CONFIG.SYS` file, depending on the server configuration.

3. Be sure that all files referenced in the `CONFIG.SYS` file are copied to the server configuration diskette.
4. Create an `AUTOEXEC.BAT` file that will load the drivers necessary for the CD-ROM and launch the server deployment process. A typical `AUTOEXEC.BAT` file is similar to the following:

```
path=a:\;s:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /l:s
REM *** Loads the disk caching program
smartdrv.exe /u /v
REM *** Switch to the CD drive and installation directory
s:
cd \cpq
REM *** Start the scripted server deployment by calling the
REM *** configuration batch file
call a:\dl380nt.bat
```



If the System Type (SYSTYPE) utility is used to enable branching from within the AUTOEXEC.BAT file, a typical startup file will be similar to the following text:

```
path=a:\;s:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /l:s
REM *** Loads the drive caching program
smartdrv.exe /u/v
REM *** Switch to the CD drive and installation directory
s:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the server-specific server
REM *** batch file. Although this example shows the batch files
REM *** in subdirectories on the A: drive, the files can be
REM *** placed in any location accessible by the target server
REM *** (or on s:\servers\dl580\dl580nt.bat on the network share
REM *** repository).
REM *** -----

s:\cpq\systype ssstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call a:\dl580\dl580nt.bat
goto end

:DL380
call a:\dl380\dl380nt.bat
goto end

:ML530
call a:\ml530\ml530nt.bat
goto end

:ML350
call a:\ml350\ml350nt.bat
goto end

cd \

:end
```

5. Be sure that all files referenced in the AUTOEXEC.BAT file are copied to the server configuration diskette (if not using a network share).
6. Sign the server configuration diskette with the Sign Disk utility (SIGNDISK) by copying the utility to the diskette and typing SIGNDISK at the A:\ prompt. Signing the server configuration diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are five script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)
- HYPERCFG.CFG—Array configuration script file generated by HYPERCFG (required by ProLiant servers that have AMI ATA RAID controllers)

### Primary Configuration Script Files

To generate the primary script files on the source server:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NT.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NT.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NT.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NT.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NT.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NT.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

## Optional Configuration Script Files

Generate the optional script files on the source server:

1. Generate the RILOE, RILOE II, or Integrated Lights-Out (iLO) configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at [www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)
2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL380NT.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL380NT.CFG.

## Unattended Installation File

When the server profile script files are generated and modified for the target server, modify and save a copy of the UNATTEND.TXT file on the server configuration diskette. Refer to the last section of this chapter for a typical unattended installation file for the Windows NT 4.0 operating system.

**NOTE:** Refer to the operating system documentation for a complete description of the options that can be modified in the operating system-dependent unattended installation file to customize the installation of Windows NT 4.0.

Using a standard text editor, edit the following three additional files for the Windows NT 4.0 operating system unattended install.

1. Edit the \Toolkit\CPQNT4\%OEM%\C\CMD.TXT file to install and configure HP programs.

**IMPORTANT:** HP ProLiant Support Packs require Microsoft Internet Explorer 5.5 or later and Microsoft XML Parser version 3 or later.

**NOTE:** CMD.TXT is a script file executed by the SmartStart GUICMD.EXE utility. GUICMD.EXE is copied to the target system and executed by the Windows NT 4.0 installer during the graphical portion of the operating system installation process.

The CMD.TXT file is similar to the following for SmartStart 6.00:

```
C:\cpqbfile.exe
del file C:\UNATTEND.TXT
del file C:\cpqbfile.exe
del dir C:\NTCSP
del dir C:\QUICKLCH
del dir C:\DRIVERS
del dir C:\i386
```

**IMPORTANT:** GUICMD.EXE is located in the \COMPAQ\INSTALL\NT\POSTINST subdirectory on SmartStart. The command does not accept any arguments but expects the following structure in the CMD.TXT data file:

- The first line must be the progress dialog title.
- The second line must be the progress dialog message.
- Commands must have an EXE or COM extension. GUICMD.EXE does not run files with CMD or BAT extensions.
- GUICMD.EXE accepts the following internal commands in the Windows NT 4.0 operating system:

```
DELFILE [DRIVE:][PATH]FILENAME1[DRIVE:][PATH]
FILENAME2[DRIVE:][PATH]FILENAME3

DELDIR [DRIVE:][PATH1] [DRIVE:][PATH2] [DRIVE:][PATH3]

COPYFILE [SOURCE DRIVE:][PATH]FILENAME]
[DESTINATION DRIVE:][PATH][OPTIONAL FILENAME]

RENAME [DRIVE:][PATH]OLDFILENAME NEWFILENAME
```

- GUICMD.EXE does not use operating system wildcards and does not prompt when replacing or deleting information.

2. Edit the \Toolkit\CPQNT4\%OEM%\CMDLINES.TXT file with the following text:

```
[Commands]
"attrib.exe -r c:\guicmd.exe"
"c:\guicmd.exe"
```

**NOTE:** CMDLINES.TXT is an input file of commands that is run by the operating system.

3. Edit the \Toolkit\CPQNT4\%OEM%\TXTSETUP.OEM file, adding all driver files required for text mode setup. The TXTSETUP.OEM file is similar to the following:

```
[Disks]
d1 = "CPQ CPQ CPQ32FS2",\,\
d2 = "CPQ CPQ CPQARRAY2",\,\
d3 = "CPQ CPQ CPQARRAY",\,\
d4 = "CPQ CPQ CPQSMGRK",\,\
d5 = "CPQ CPQ ADPU160M",\,\
d6 = "CPQ CPQ CPQCISSM",\,\
d7 = "CPQ CPQ CSA64xx",\,\
d8 = "AMI MegaRAID IDE Driver",\,\

[Defaults]
scsi = cpq32fs2

[SCSI]
cpqarray = "Compaq Drive Array"
cpqarray2 = "Compaq Integrated Smart Array 42xx Controllers"
cpq32fs2 = "Compaq 32-Bit SCSI-2 Controllers"
cpqsmgrk = "Compaq Service Manager"
adpul60m = "Compaq Ultra 160m PCI SCSI Controller (NT 4.0)"
cpqciissm = "Compaq Smart Array 53xx Controller"
csa64xx = "Compaq CMD 0649 Ultra DMA IDE Controller"
MegaIDE100_NT4C = "Integrated Ultra ATA-100 Dual Channel
Controller (Windows NT)"
```

```
MegaIDE100_NT4L = "Integrated Ultra ATA-100 IDE RAID Controller
(Windows NT)"

[Files.scsi.cpq32fs2]
driver = d1,cpq32fs2.sys, cpq32fs2
inf = d1,fastscsi.inf

[Config.cpq32fs2]
value = "",tag,REG_DWORD,1A

[Files.scsi.cpqarray2]
driver = d2,cpqarray2.sys,cpqarray2
inf = d2,cpqarray2.inf

[Config.cpqarray2]
value = "",tag,REG_DWORD,102

[Files.scsi.cpqarray]
driver = d3,cpqarray.sys,cpqarray
inf = d3,cpqarray.inf

[Config.cpqarray]
value = "",tag,REG_DWORD,100

[Files.scsi.cpqsmgrk]
driver = d4,cpqsmgrk.sys,cpqsmgrk

[Config.cpqsmgrk]
value = "",tag,REG_DWORD,C8

[Files.scsi.adpul60m]
driver = d5,adpul60m.sys, adpul60m
inf = d5,adpul60m.inf

[Config.adpul60m]
value = "",tag,REG_DWORD,20

[Files.scsi.cpqcisssm]
driver = d6,cpqcisssm.sys,cpqcisssm
inf = d6,cpqcisssm.inf

[Config.cpqcisssm]
value = "",tag,REG_DWORD,103

[Files.scsi.csa64xx]
driver = d7,csa64xx.sys,csa64xx
inf = d7,cmdide.inf

[Config.csa64xx]
value = "",Type,REG_DWORD,1
value = "",Start,REG_DWORD,0
value = "",Group,REG_SZ,"SCSI miniport"
value = "",ErrorControl,REG_DWORD,0

[Files.scsi.MegaIDE100_NT4C]
driver = d8,MegaIDE.sys,MegaIDE
inf = d8, MegaIDE.inf

[Config.MegaIDE]
value = "", Tag,REG_DWORD,1

[Files.scsi.MegaIDE100_NT4L]
driver = d8,MegaIDE.sys,MegaIDE
inf = d8, MegaIDE.inf
```

## Creating the Server Batch File

The server batch file typically resides on the server configuration diskette and launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files that are run by the server configuration file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If a file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

### Example 2-1: Creating a log file

```
S:\CPQ\CONREP -L A:\DL380NT.HWR > A:\LOGS\DL380NT.LOG
```

This command creates the file DL380NT.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command S:\CPQ\CONREP -L A:\DL380NT.HWR to the DL380NT.LOG file.

### Example 2-2: Appending a log file

```
S:\CPQ\ACR /I A:\DL380NT.ARY >> A:\LOGS\DL380NT.LOG
```

This command appends any console feedback generated by the command S:\CPQ\ACR /I A:\DL380NT.ARY to the file DL380NT.LOG in the \LOGS subdirectory on the A drive.

**NOTE:** If deploying a ProLiant server with an embedded AMI ATA RAID controller, use HYPERCFG to generate a non-editable array configuration data file. Do not use ACR.

```
S:\CPQ\CPQDISK /R A:\DL380NT.PRT >> A:\LOGS\DL380NT.LOG
```

This command appends any console feedback generated by the command S:\CPQ\CPQDISK /R A:\DL380NT.PRT to the file DL380NT.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the configuration batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities from a CD and the configuration script files from the server configuration diskette is similar to the following:

```
@echo off
cls
echo [ SCRIPT FOR REMOTE INSTALL OF WINDOWS NT 4.0 ON ML570G3 ]

s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase
REM *** Remove this initial pause when the batch file has been
REM *** fully tested and debugged
rem pause
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
echo Running Configuration Replication Utility...
s:\cpq\conrep -l a:\ML570G3.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

:State1
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file and stamping
REM *** it onto the array controllers of the target server
echo Configuring the Array Controllers...
s:\cpq\acr /i a:\ML570G3.ary
REM *** ECHO Configuring the RAID Controllers...
REM *** Remove REM to configure RAID Controllers
REM *** s:\CPQ\hypercfg /s /l /@a:\ML570G3.cfg
echo Setting State Information...
s:\cpq\statemgr /w Phase 2
REM *** Reboot to A
s:\cpq\reboot A:

:State2
REM *** Create partition by reading content of the script file and
REM *** stamping the configuration onto the hard drive in the
REM *** target server
echo Creating Disk Partition...
s:\cpq\cpqdisk /w a:\ML570G3\ML570G3.prt
echo Setting State Information...
s:\cpq\statemgr /w Phase 3
```

```
REM *** Reboot to A
s:\cpq\reboot A:

:State3
REM *** Format the boot partition and populate
echo Formatting the First Disk Partition as DOS...
s:\cpq\cpqfmt c:
REM *** Copy Microsoft Windows NT 4.0 operating system files and
REM *** OEM driver files from the CD to the hard drive of the
REM *** target server, creating subdirectories as needed
echo Creating Driver Directory and Copying Drivers...
s:\cpq\filecopy /s:s:\i386 /d:c:\i386 /s /e /f:*.*
s:\cpq\filecopy /s:s:\cpqnt4\soem$ /d:c:\i386\soem$ /s /e /f:*.*
rem pause
REM *** Copy the customized UNATTEND.TXT file from the system
REM *** configuration diskette to the root directory of the target
REM *** server's hard drive
copy a:\unattend.txt c:\
rem pause
echo Setting State Information...
s:\cpq\statemgr /w Phase 4

:State4
REM *** Copy operating system files to the boot partition
echo Setting the state to allow diskette removal during the
installation of Windows NT
s:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
REM *** Locking the target drive before running WINNT.EXE
c:
cd \i386
echo Y | lock c:\ > nul
REM *** Start installation of the operating system from the hard
REM *** drive of the target system, reading unattended
REM *** installation instructions from the C:\UNATTEND.TXT file
winnt /s:c:\i386 /u:c:\unattend.txt

:State5
REM *** Resets state variable to 6 to allow operating system
REM *** reboot without removing the diskette
s:\cpq\statemgr /w Phase 5
echo The Windows NT installation will continue after the reboot...

REM *** Turn off the Virtual Floppy
s:\cpq\vflop /b:never /p:off

REM *** Disable PXE
REM s:\cpq\pxeboot /disable

REM *** Reboot to drive C:
s:\cpq\reboot c:

REM *** Unused states
REM *** Installation of other utilities and agents may be placed
REM *** here

:State10
:State9
:State8
:State7
```



## Creating the Installation CD

Creating an installation CD for a Windows NT 4.0 server deployment is optional. However, this step provides full control over installation of the operating system and other utilities on the target server. When creating the CD, an organized directory structure is critical.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before creating a custom installation CD, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the CD with the server batch file.

1. Do not place any files in the root directory of the installation CD.
2. Create an \I386 subdirectory and copy the contents of the Windows NT 4.0 CD \I386 subdirectory into the installation CD \I386 subdirectory.
3. Create a \CPQ subdirectory and copy all of the Toolkit utilities into the subdirectory.
4. Create a \CPQNT4\%OEM% subdirectory and copy all .OEM extension operating system files and drivers into this subdirectory.
5. Create a batch file (using the DOS utilities XCOPY and EXPAND) similar to the following text to automate the preparation of the \I386 and \CPQNT4\%OEM% subdirectories.

**IMPORTANT:** The following example uses the DOS XCOPY command to copy the necessary drivers and support files. XCOPY is DOS-version dependent and does not work if there are version differences. If the DOS COPY command is used instead of XCOPY, be sure that the destination directories are created before copying files to the directories. Also, be sure that the correct drive designations and paths specific to the configuration are included in the server batch file.

This example works in SmartStart 6.00.

```
REM Set SOURCE TO CD or file path with SmartStart CD image
SET SOURCE=D:

REM Set NTFILES TO Microsoft NT 4.0 folder.
SET NTFILES=F:\NT4ss6

REM Set OEM TO %OEM% files for Microsoft NT 4.0 OEM driver files.
SET OEM=F:\NT4ss6\CPQNT4\%OEM%

SET SYSTEM32=%OEM%\$$\SYSTEM32
SET COMPAQ=%OEM%\C
SET NET=%OEM%\C\DRIVERS\NET
SET NTCSP=%OEM%\C\NTCSP\*. *
SET TEXTMODE=%OEM%\TEXTMODE

ECHO Updating Compaq Files: %OEM%
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\COMPAQ.BMP
%OEM%\COMPAQ.BMP /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CMDLINES.TXT
%OEM%\CMDLINES.TXT /C /F /H /R /K

ECHO Updating Compaq Files: %OEM%\$$\SYSTEM32
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\NETOEMDH.INF
```

```
%SYSTEM32%\NETOEMDH.INF /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\OEMNADZZ.INF
%SYSTEM32%\OEMNADZZ.INF /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\MSNCDET.DLL
%SYSTEM32%\MSNCDET.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\NETSETUP.DLL
%SYSTEM32%\NETSETUP.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\TCPCFG.DLL
%SYSTEM32%\TCPCFG.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\FTDISK.SYS
%SYSTEM32%\FTDISK.SYS /C /F /H /R /K

ECHO Updating Compaq Files: $OEM$\C
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CMD.TXT
%COMPAQ%\CMD.TXT /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\GUICMD.EXE
%COMPAQ%\GUICMD.EXE /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CPQBFILE.EXE
%COMPAQ%\CPQBFILE.EXE /C /F /H /R /K

ECHO Updating NET Drivers: $OEM$\C\DRIVERS\NET
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\NC_NICS\*. *
%NET%\NC_NICS\*. * /S /E /C /F /H /R /K

ECHO Updating Windows NT 4.0 NTCSP: $OEM$\C\NTCSP
ECHO A | XCOPY %SOURCE%\COMPAQ\CSP\NT\*. * %NTCSP% /S /E /C /F /H
/R /K

ECHO Updating OEM Boot Files: $OEM$\TEXTMODE
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\ADPU160M\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQARRAY\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQARRY2\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQ32FS2\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQCISSM\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQCISSE\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CMDIDE\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\AMIATA\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\MEGAIDE\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K

ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\TXTSETUP.OEM
%TEXTMODE%\TXTSETUP.OEM /C /F /H /R /K
```

**NOTE:** Be sure that you are using SmartStart 6.00 or later to obtain supported drivers for new hardware devices. Also, add lines to copy the new devices and add the new devices to the UNATTEND.TXT and TXTSETUP.OEM files.

6. If multiple server profiles form part of the installation CD, create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on. Copy the three server profile script files and the customized operating system-dependent unattended installation file into each server profile subdirectory. If SYSTYPE is used to enable branching from the AUTOEXEC.BAT file, copy the server-specific configuration batch file into each server subdirectory.
7. Create additional subdirectories to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.

**IMPORTANT:** When the directory structure of the installation CD is determined, be sure that the server batch file runs all programs and utilities from the CD.

## Deploying the Target Server

To begin a new server deployment with the installation CD:

1. Insert the server configuration diskette into the target server.
2. Power up the target server and insert the CD.
3. Supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Network-Based Deployment

This scenario illustrates the deployment of the Windows NT 4.0 operating system across a network. A shared network drive that contains the files necessary to set up the target server must be available to the target server. The shared drive contains:

- Operating system files
- HP drivers, utilities, and management agents
- Toolkit utilities
- Server profile script files arranged in folders

Network-based server deployments can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (and faster) networks only.

### Deployment Process Overview

The general network-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Creating the server batch file
4. Preparing the network software repository
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

### Creating the Bootable Server Configuration Diskette with Network Software

Follow these steps to create a bootable server configuration diskette for booting the target server and loading the Microsoft Networking protocol stack. Loading the network protocol stack enables the target server to connect to a network share and initiate the server deployment process over the network.

**IMPORTANT:** Create the bootable server configuration diskette by using DOS version 6.22 or later.

**NOTE:** Refer to Appendix A for an alternate procedure to create a basic network boot diskette using a Microsoft Network Client 3.0 set of diskettes for DOS.

1. Format a 1.44-MB diskette using the `DOS FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Be sure that the latest NIC drivers are available for the server on which the Windows NT 4.0 operating system will be installed. In this case, an Ethernet NIC is installed.

- Using a Windows NT Server 4.0 machine, start the Network Client Administrator tool and click **Make Network Installation Startup Disk**.

**NOTE:** For information about using the Network Client Administrator, refer to the online documentation for the utility.

- Select **Network Client v3.0 for MS-DOS and Windows**.
- Select any of the NICs from the list.
- When prompted, supply the **Computer name, User name, Domain, and Network protocol**. In this sample, Transmission Control Protocol/Internet Protocol (TCP/IP) and Dynamic Host Configuration Protocol (DHCP) are being used.
- Copy the proper DOS NDIS driver into the A:\NET directory of the server configuration diskette.
- Modify the SYSTEM.INI file in the A:\NET directory so that it contains the following line:

```
NETCARD=FILENAME.DOS

[network]
preferredredir=BASIC
autostart=BASIC
```

**NOTE:** FILENAME.DOS is the name of the DOS NDIS driver file copied to the server configuration diskette, for example, N100.DOS.

- Modify the PROTOCOL.INI file in the A:\NET directory so that it contains the following line:

```
DRIVERNAME=FILENAME$
```

**NOTE:** FILENAME\$ is the name of the DOS NDIS driver name, for example, N100\$.

- Edit the CONFIG.SYS file on the server configuration diskette so that it loads the drivers required for the target server devices. A typical CONFIG.SYS file is similar to the following:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=a:\dos\himem.sys
device=a:\dos\setver.exe
device=a:\net\ifshlp.sys
dos=high
buffers=30
files=40
stacks=9,256
switches=/f
lastdrive=z:
REM *** Establish default shell to use
shell=command.com /p
```

**NOTE:** Refer to the server documentation for information about which devices to load through the CONFIG.SYS file, depending on the server configuration.

11. Be sure that all files referenced in the CONFIG.SYS file are copied to the server configuration diskette in the appropriate subdirectories.
12. Edit the AUTOEXEC.BAT file to remove the line that runs SETUP.EXE and add a line that maps a drive letter to the network share. For example, add the line:

```
NET USE S: \\DEPLOY\SHAREVOL /YES
REM *** where S=mapped drive, DEPLOY=server name, and
REM *** SHAREVOL=network share on the server
```

A typical AUTOEXEC.BAT file is similar to the following:

```
@echo off

set wattcp.cfg =a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net
smartdrv.exe /u /v

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start

REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:

REM *** Start the scripted server deployment by calling the
REM *** configuration batch file that resides in the shared
REM *** network directory
call s:\dl380nt.bat
```

If the SYSTYPE utility is used to enable branching from within the AUTOEXEC.BAT file, a typical startup file will be similar to the following text:

```
@echo off

set wattcp.cfg=a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net
smartdrv.exe /u /v

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start
```

```
REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the server-specific
REM *** configuration batch file.
REM *** -----

s:\cpq\systype sstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call s:\dl580nt.bat
goto end

:DL380
call s:\dl380nt.bat
goto end

:ML530
call s:\ml530nt.bat
goto end

:ML350
call s:\ml350nt.bat
goto end

cd \

:end
```

13. Sign the server configuration diskette with SIGNDISK, which is included in the Toolkit. Signing the server configuration diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

There are five script files that can be generated on the source server, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)
- HYPERCFG.CFG—Array configuration script file generated by HYPERCFG (required by ProLiant servers that have AMI ATA RAID controllers)

### Primary Configuration Script Files

To generate the primary configuration script files:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NT.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NT.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NT.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NT.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NT.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NT.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.



## Optional Configuration Script Files

To generate the optional configuration script files:

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide* or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL380NT.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL380NT.CFG.

## Unattended Installation File

When the server profile script files are generated and modified for the target server, save a copy of the UNATTEND.TXT file on the server configuration diskette. Refer to the end of this chapter for a typical unattended installation file for the Windows NT 4.0 operating system.

**NOTE:** Refer to the operating system documentation for a complete description of the options that can be modified in the operating system unattended installation file to customize the installation of Windows NT 4.0.

Using a standard text editor, edit the following three additional Toolkit files for the Windows NT 4.0 operating system unattended install.

1. Edit the \Toolkit\CPQNT4\%OEM%\C\CMD.TXT file to install and configure HP programs.

**IMPORTANT:** HP ProLiant Support Packs require Microsoft Internet Explorer 5.5 or later and Microsoft XML Parser version 3 or later.

**NOTE:** CMD.TXT is a script file executed by the GUICMD.EXE SmartStart utility. GUICMD.EXE is copied to the target system and executed by the Windows NT 4.0 operating system installer during the graphical portion of the operating system installation process.

The CMD.TXT is similar to the following for SmartStart 6.00:

```
C:\cpqbf.exe
del file C:\UNATTEND.TXT
del file C:\cpqbf
del dir C:\NTCSP
del dir C:\QUICKLCH
del dir C:\DRIVERS
del dir c:\i386
```

**IMPORTANT:** GUICMD.EXE is located in the \COMPAQ\INSTALL\NT\POSTINST subdirectory on SmartStart. The command does not accept any arguments but expects the following structure in the CMD.TXT data file:

- The first line must be the progress dialog title.
- The second line must be the progress dialog message.
- Commands must have an EXE or COM extension. GUICMD.EXE will not run files with CMD or BAT extensions.
- GUICMD.EXE accepts the following internal commands in the Windows NT 4.0 operating system:

```
DELFILE [DRIVE:][PATH]FILENAME1[DRIVE:][PATH]
FILENAME2[DRIVE:][PATH]FILENAME3

DELDIR [DRIVE:][PATH1] [DRIVE:][PATH2] [DRIVE:][PATH3]

COPYFILE [SOURCE DRIVE:][PATH]FILENAME]
[DESTINATION DRIVE:][PATH][OPTIONAL FILENAME]

RENAME [DRIVE:][PATH]OLDFILENAME NEWFILENAME
```

- GUICMD.EXE does not use operating system wildcards and does not prompt when replacing or deleting information.

2. Edit the \Toolkit\CPQNT4\%OEM%\CMDLINES.TXT file with the following text:

```
[Commands]
"attrib.exe -r c:\guicmd.exe"
"c:\guicmd.exe"
```

3. Edit the \Toolkit\CPQNT4\%OEM%\TXTSETUP.OEM file, adding all driver files required for text mode setup. The TXTSETUP.OEM file is similar to the following:

```
[Disks]
d1 = "CPQ CPQ CPQ32FS2",\,\
d2 = "CPQ CPQ CPQARRAY2",\,\
d3 = "CPQ CPQ CPQARRAY",\,\
d4 = "CPQ CPQ CPQSMGRK",\,\
d5 = "CPQ CPQ ADPU160M",\,\
d6 = "CPQ CPQ CPQCISSM",\,\
d7 = "CPQ CPQ CSA64xx",\,\
d8 = "AMI MegaRAID IDE Driver",\,\

[Defaults]
scsi = cpq32fs2

[SCSI]
cpqarray = "Compaq Drive Array"
cpqarray2 = "Compaq Integrated Smart Array 42xx Controllers"
cpq32fs2 = "Compaq 32-Bit SCSI-2 Controllers"
cpqsmgrk = "Compaq Service Manager"
adpu160m = "Compaq Ultra 160m PCI SCSI Controller (NT 4.0)"
cpqciissm = "Compaq Smart Array 53xx Controller"
csa64xx = "Compaq CMD 0649 Ultra DMA IDE Controller"
MegaIDE100_NT4C = "Integrated Ultra ATA-100 Dual Channel
Controller (Windows NT)"
MegaIDE100_NT4L = "Integrated Ultra ATA-100 IDE RAID Controller
(Windows NT)"
```

```
[Files.scsi.cpq32fs2]
driver = d1,cpq32fs2.sys, cpq32fs2
inf = d1,fastscsi.inf

[Config.cpq32fs2]
value = "",tag,REG_DWORD,1A

[Files.scsi.cpqarray2]
driver = d2,cpqarray2.sys, cpqarray2
inf = d2,cpqarray2.inf

[Config.cpqarray2]
value = "",tag,REG_DWORD,102

[Files.scsi.cpqarray]
driver = d3,cpqarray.sys, cpqarray
inf = d3,cpqarray.inf

[Config.cpqarray]
value = "",tag,REG_DWORD,100

[Files.scsi.cpqsmgrk]
driver = d4,cpqsmgrk.sys, cpqsmgrk

[Config.cpqsmgrk]
value = "",tag,REG_DWORD,C8

[Files.scsi.adpul60m]
driver = d5,adpul60m.sys, adpul60m
inf = d5,adpul60m.inf

[Config.adpul60m]
value = "",tag,REG_DWORD,20

[Files.scsi.cpqcisssm]
driver = d6,cpqcisssm.sys, cpqcisssm
inf = d6,cpqcisssm.inf

[Config.cpqcisssm]
value = "",tag,REG_DWORD,103

[Files.scsi.csa64xx]
driver = d7,csa64xx.sys, csa64xx
inf = d7,cmdide.inf

[Config.csa64xx]
value = "",Type,REG_DWORD,1
value = "",Start,REG_DWORD,0
value = "",Group,REG_SZ,"SCSI miniport"
value = "",ErrorControl,REG_DWORD,0

[Files.scsi.MegaIDE100_NT4C]
driver = d8,MegaIDE.sys, MegaIDE
inf = d8, MegaIDE.inf

[Config.MegaIDE]
value = "", Tag,REG_DWORD,1

[Files.scsi.MegaIDE100_NT4L]
driver = d8,MegaIDE.sys, MegaIDE
inf = d8, MegaIDE.inf
```

## Creating the Server Batch File

In the case of network installations, the server batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files run by the server batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

For example:

```
S:\CPQ\CONREP -L A:\DL380NT.HWR > A:\LOGS\DL380NT.LOG
```

This command creates the file DL380NT.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command S:\CPQ\CONREP -L A:\DL380NT.HWR to the DL380NT.LOG file.

```
S:\CPQ\ACR /I A:\DL380NT.ARY >> A:\LOGS\DL380NT.LOG
```

This command appends any console feedback generated by the command S:\CPQ\ACR /I A:\DL380NT.ARY to the file DL380NT.LOG in the \LOGS subdirectory on the A drive.

**NOTE:** If deploying a ProLiant server with an embedded AMI ATA RAID controller, use HYPERCFG to generate a non-editable array configuration data file. Do not use ACR.

```
S:\CPQ\CPQDISK /W A:\DL380NT.PRT >> A:\LOGS\DL380NT.LOG
```

This command appends any console feedback generated by the command S:\CPQ\CPQDISK /R A:\DL380NT.PRT to the file DL380NT.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the configuration batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls
echo [ SCRIPT FOR REMOTE INSTALL OF WINDOWS NT 4.0 ON ML570G3 ]

s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase
REM *** Remove this initial pause when the batch file has been
REM *** fully tested and debugged
rem pause
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
echo Running Configuration Replication Utility...
s:\cpq\conrep -l s:\servers\ML570G3\ML570G3.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

:State1
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file and stamping
REM *** it onto the array controllers of the target server
echo Configuring the Array Controllers...
s:\cpq\acr /i s:\servers\ML570G3\ML570G3.ary
REM *** ECHO Configuring the RAID Controllers...
REM *** Remove REM to configure RAID Controllers
REM *** s:\CPQ\hypercfg /s /l /@s:\servers\ML570G3\ML570G3.cfg
echo Setting State Information...
s:\cpq\statemgr /w Phase 2
REM *** Reboot to A
s:\cpq\reboot A:

:State2
REM *** Create partition by reading content of the script file and
REM *** stamping the configuration onto the hard drive in the
REM *** target server
echo Creating Disk Partition...
s:\cpq\cpqdisk /w s:\servers\ML570G3\ML570G3.prt
echo Setting State Information...
s:\cpq\statemgr /w Phase 3
REM *** Reboot to A
s:\cpq\reboot A:
```

```
:State3
REM *** Format the boot partition and populate
echo Formatting the First Disk Partition as DOS...
s:\cpq\cpqfmt c:
REM *** Copy Microsoft Windows NT 4.0 operating system files and
REM *** OEM driver files from the CD to the hard drive of the
REM *** target server, creating subdirectories as needed
echo Creating Driver Directory and Copying Drivers...
s:\cpq\filecopy /s:s:\i386 /d:c:\i386 /s /e /f:*. *
s:\cpq\filecopy /s:s:\cpqnt4\%oem$ /d:c:\i386\%oem$ /s /e /f:*. *
rem pause
REM *** Copy the customized UNATTEND.TXT file to the root
REM *** directory of the target server's hard drive
copy s:\servers\ML570G3\unattend.txt c:\
rem pause
echo Setting State Information...
s:\cpq\statemgr /w Phase 4

:State4
REM *** Copy operating system files to the boot partition
echo Setting the state to allow diskette removal during the
installation of Windows NT
s:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
REM *** Locking the target drive before running WINNT.EXE
c:
cd \i386
echo Y | lock c:\ > nul
REM *** Start installation of the operating system from the hard
REM *** drive of the target system, reading unattended
REM *** installation instructions from the C:\UNATTEND.TXT file
winnt /s:c:\i386 /u:c:\unattend.txt

:State5
REM *** Resets state variable to 6 to allow operating system
REM *** reboot without removing the diskette
s:\cpq\statemgr /w Phase 5
echo The Windows NT installation will continue after the reboot...

REM *** Turn off the Virtual Floppy
s:\cpq\vflop /b:never /p:off

REM *** Disable PXE
REM s:\cpq\pxeboot /disable

REM *** Reboot to drive C:
s:\cpq\reboot c:

REM *** Unused states
REM *** Installation of other utilities and agents may be placed
REM *** here

:State10
:State9
:State8
:State7
```

## Preparing the Network Software Repository

When creating the network software repository, it is important to organize the directory structure.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with read-only access to the software image files in the software repository.
2. Place only configuration batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create an \I386 subdirectory and copy the contents of the Windows NT 4.0 operating system CD \I386 subdirectory into the software repository \I386 subdirectory.
4. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
5. Create a \CPQNT4\%OEM% subdirectory and other %OEM% subdirectory structures and copy all HP .OEM extension operating system files and drivers into the appropriate subdirectories.
6. Create a batch file similar to the following text (using the DOS utilities XCOPY and EXPAND) to automate the preparation of the \I386 and \CPQNT4\%OEM% subdirectories.

**IMPORTANT:** The following example batch file uses the DOS XCOPY command to copy the necessary drivers and support files. XCOPY is DOS-version dependent and does not work if there are version differences. If the DOS COPY command is used instead of XCOPY, be sure that the destination directories are created before copying files to the directories. Also, be sure that the correct drive designations and paths specific to your configuration are included in the batch file.

This example works in SmartStart 6.00.

```
REM Set SOURCE TO CD or file path with SmartStart CD image
SET SOURCE=D:

REM Set NTFILES TO Microsoft NT 4.0 folder.
SET NTFILES=F:\NT4ss6

REM Set OEM TO %OEM% files for Microsoft NT 4.0 OEM driver files.
SET OEM=F:\NT4ss6\CPQNT4\%OEM%

SET SYSTEM32=%OEM%\$$\SYSTEM32
SET COMPAQ=%OEM%\C
SET NET=%OEM%\C\DRIVERS\NET
SET NTCSP=%OEM%\C\NTCSP\*. *
SET TEXTMODE=%OEM%\TEXTMODE
```

```

ECHO Updating Compaq Files: $OEM$
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\COMPAQ.BMP
%OEM%\COMPAQ.BMP /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CMDLINES.TXT
%OEM%\CMDLINES.TXT /C /F /H /R /K

ECHO Updating Compaq Files: $OEM$\$\SYSTEM32
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\NETOEMDH.INF
%SYSTEM32%\NETOEMDH.INF /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\OEMNADZZ.INF
%SYSTEM32%\OEMNADZZ.INF /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\MSNCDET.DLL
%SYSTEM32%\MSNCDET.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\NETSETUP.DLL
%SYSTEM32%\NETSETUP.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\TCPCFG.DLL
%SYSTEM32%\TCPCFG.DLL /C /F /H /R /K
ECHO F | XCOPY
%SOURCE%\COMPAQ\INSTALL\NT\POSTINST\MICROSOFT\FTDISK.SYS
%SYSTEM32%\FTDISK.SYS /C /F /H /R /K

ECHO Updating Compaq Files: $OEM$\C
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CMD.TXT
%COMPAQ%\CMD.TXT /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\GUICMD.EXE
%COMPAQ%\GUICMD.EXE /C /F /H /R /K
ECHO F | XCOPY %SOURCE%\COMPAQ\INSTALL\NT\POSTINST\CPQBFILE.TXT
%COMPAQ%\CPQBFILE.TXT /C /F /H /R /K

ECHO Updating NET Drivers: $OEM$\C\DRIVERS\NET
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\NC_NICS\*. *
%NET%\NC_NICS\*. * /S /E /C /F /H /R /K

ECHO Updating Windows NT 4.0 NTCSP: $OEM$\C\NTCSP
ECHO A | XCOPY %SOURCE%\COMPAQ\CSP\NT\*. * %NTCSP% /S /E /C /F /H
/R /K

ECHO Updating OEM Boot Files: $OEM$\TEXTMODE
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\ADPU160M\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQARRAY\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQARRY2\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQ32FS2\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQCISSM\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CPQCISSE\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\CMDIDE\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\AMIATA\*. *
%TEXTMODE%\*. * /S /E /C /F /H /R /K

```



```
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\MEGAIDE\*.*
%TEXTMODE%\*.* /S /E /C /F /H /R /K
```

```
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\NT\TXTSETUP.OEM
%TEXTMODE%\TXTSETUP.OEM /C /F /H /R /K
```

**NOTE:** Be sure that you are using SmartStart 6.00 or later to obtain supported drivers for new hardware devices. Also, add lines to copy the new devices and add the new devices to the UNATTEND.TXT and TXTSETUP.OEM files.

7. Create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on.
8. Copy the three server profile script files from the server configuration diskette and the customized operating system-dependent unattended installation file into each server profile subdirectory.

**NOTE:** If using SYSTYPE to enable branching from the AUTOEXEC.BAT file, also copy the server-specific configuration batch file into each server subdirectory.

9. Create additional subdirectories to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.

**IMPORTANT:** When the directory structure of the network software repository is determined, be sure that the configuration batch file runs all programs and utilities correctly from the network location.

## Deploying the Target Server

To begin a new server deployment over the network:

1. Insert the bootable server configuration diskette into the target server.
2. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which connects the target server to the network share and starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Windows NT 4.0 UNATTEND.TXT Sample File

The operating system-dependent, unattended installation file is not created by the Toolkit utilities. The user must create the file separately.

Refer to the operating system documentation for a complete description of the options that can be modified in the operating system-dependent unattended installation file to customize the installation of Microsoft Windows NT 4.0. More information can be found in the *Microsoft Windows NT Server 4.0 Resource Kit* or in the *Deployment Resources Roadmap: A Guide to Deploying Windows NT Server 4.0* document, available on the Microsoft website:

[www.microsoft.com/ntserver/nts/deployment/planguide/DeployRoadmap.asp](http://www.microsoft.com/ntserver/nts/deployment/planguide/DeployRoadmap.asp)

Bold lines indicate modifications made to fully automate the installation of the operating system.

```
[Network]
  InstallAdapters=SelectedAdaptersSection
  InstallInternetServer=InternetParamSection
  InstallProtocols=ProtocolsSection
  InstallServices=ServicesSection
  JoinWorkgroup="Workgroup"

[SelectedAdaptersSection]
  Q57NT4=OEMCardParameters, C:\i386\%OEM%\C\DRIVERS\NET\NC_NICS

[MassStorageDrivers]
  "IDE CD-ROM (ATAPI 1.2)/PCI IDE Controller"=RETAIL
  "Compaq Integrated Smart Array 42xx Controllers"=OEM
  "Compaq 32-Bit SCSI-2 Controllers"=OEM
  "Compaq Drive Array"=OEM
  "Compaq Service Manager"=OEM
  "Compaq Ultra 160m PCI SCSI Controller (NT 4.0)"=OEM
  "Compaq Smart Array 53xx Controller"=OEM
  "Compaq CMD 0649 Ultra DMA IDE Controller"=OEM
  "Integrated Ultra ATA-100 Dual Channel Controller (Windows
NT)"=OEM
  "Integrated Ultra ATA-100 IDE RAID Controller (Windows NT)"=OEM

[Display]
  AutoConfirm=1
  BitsPerPel=8
  ConfigureAtLogon=0
  VRefresh=60
  XResolution=640
  YResolution=480
```

```
[OEMBootFiles]
  cpqarry2.sys
  adpul60m.sys
  MegaIDE.sys
  cpqcissm.sys
  cpq32fs2.sys
  txtsetup.oem
  cpqarray.sys
  cpqsmgrk.sys
  csa64xx.sys

[OEM_ADS]
  LOGO="COMPAQ.BMP"

[InternetParamSection]
  FTPRoot=C:\INETSRV\FTPROOT
  GopherRoot=C:\INETSRV\GOPHERROOT
  InstallADMIN=1
  InstallDir=C:\Inetsrv
  InstallFTP=1
  InstallGOPHER=1
  InstallHTMLA=1
  InstallINETSTP=1
  InstallW3SAMP=1
  InstallWWW=1
  WWWRoot=C:\INETSRV\WWWROOT

[ProtocolsSection]
  NBF="NetBUIParameters"
  TC="TCPIPPParameters"

[TCPIPPParameters]
  DHCP="Yes"
  DNSName=" "
  DNSServer=" "

[Unattended]
  ConfirmHardware=no
  ExtendOemPartition=0
  FileSystem=ConvertNTFS
  KeyboardLayout="US"
  NoWaitAfterGUIMode=1
  NoWaitAfterTextMode=1
  NtUpgrade=no
  OemPreinstall=Yes
  OemSkipEula=Yes
  OverWriteOemFilesOnUpgrade=No
  TargetPath=WINNT
  UnattendMode=FullUnattended
  Win31Upgrade=no
  OemPnPDriversPath=C:\i386\%OEM$

[ServicesSection]
  SNMP=SNMPParamSection

[SNMPParamSection]
  Accept_CommunityName=public
  Send_Authentication=yes
  Any_Host=yes
  Service=Applications, Internet, EndToEnd
```

```
[GuiUnattended]
  OEMBlankAdminPassword=1
  AdvServerType=SERVERNT
  AutoLogon=Yes
  AutoLogonCount=1
  OEMSkipRegional=1
  OemSkipWelcome=1
  TimeZone="(GMT-06:00) Central Time (US & Canada)"

[LicenseFilePrintData]
  AutoMode=PERSERVER
  AutoUsers=5

[UserData]
  ComputerName="DL320G2"
  FullName="DL320G2"
  OrgName="HP"
  ProductId="XXX-XXXXXXX"
```

The server deployment configuration and operating system installation process is complete.

---

## Microsoft Windows 2000 Deployment

This chapter provides best practice scenarios for using the Toolkit to deploy the Microsoft Windows 2000 Server and Windows 2000 Advanced Server operating systems with a CD or across a network.

Samples of the script files described in this chapter are available in the /toolkit/samples directory that is created when you download and expand the SmartStart Scripting Toolkit. For more information on the SmartStart Scripting Toolkit, refer to the HP website at

<http://www.hp.com/servers/sstoolkit>

## CD-Based Deployment

This scenario illustrates the deployment of Windows 2000 by using a CD that contains the files necessary to set up the target server. This CD is created by the user and includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

**NOTE:** CD-based server deployment speed varies depending on the speed of the CD-ROM drive, the cleanliness of the CD, and the presence of CD-caching software.

## Deployment Process Overview

The general CD-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette
2. Creating the server profile script files
3. Creating the server batch file
4. Creating the installation CD
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette

Create a bootable server configuration diskette used to initiate the server deployment process.

To create the bootable server configuration diskette by using DOS 6.22 or 7.0:

1. Format a 1.44-MB diskette using the DOS `FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Create a `CONFIG.SYS` file that loads the drivers required for the target server devices. A typical `CONFIG.SYS` file is similar to the following:

```
REM *** Load special memory and DOS devices required by the target
REM *** server
device=himem.sys
device=setver.exe
device=cpqidecd.sys /d:cpqcdrom
device=ifshlp.sys
REM *** Establish default shell to use
shell=command.com /p
```

**NOTE:** Refer to the server documentation for information about which devices to load through the `CONFIG.SYS` file, depending on the server configuration.

3. Be sure that all files referenced in the `CONFIG.SYS` file are copied to the server configuration diskette.
4. Create an `AUTOEXEC.BAT` file that will load the drivers necessary for the CD-ROM and optionally launch the server deployment process. A typical `AUTOEXEC.BAT` file is similar to the following:

```
path=a:\;s:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /l:s
REM *** Loads the disk caching program
smartdrv.exe /u /v
REM *** Switch to the CD drive and installation directory
s:
cd \cpq
REM *** Start the scripted server deployment by calling the
REM *** configuration batch file
call a:\dl380w2k.bat
```

If SYSTYPE is used to enable branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```
path=a:\;s:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /l:s
REM *** Loads the disk caching program
smartdrv.exe /u /v

REM *** Switch to the CD drive and installation directory
s:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and
REM *** calling the server-specific configuration batch file.
REM *** Although this example shows the configuration batch files
REM *** in subdirectories on the A: drive, they can be placed in
REM *** any location that is accessible by the target server.
REM *** -----

s:\cpq\systype sstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call a:\dl580\dl5802k.bat
goto end

:DL380
call a:\dl380\dl3802k.bat
goto end

:ML530
call a:\ml530\ml5302k.bat
goto end

:ML350
call a:\ml350\ml3502k.bat
goto end

cd \

:end
```

5. Be sure that all files referenced in the AUTOEXEC.BAT file are copied to the server configuration diskette (if not using a network share).
6. Sign the server configuration diskette with SIGNDISK by copying the utility to the diskette and typing SIGNDISK at the A:/ prompt. Signing the server configuration diskette stamps the diskette with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the server configuration diskette.



## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are five script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)
- HYPERCFG.CFG—Array configuration script file generated by HYPERCFG (required by ProLiant servers that have AMI ATA RAID controllers)

### Primary Configuration Script Files

To generate the primary script files on the source server:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL3802K.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL3802K.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL3802K.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL3802K.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL3802K.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL3802K.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

### Optional Configuration Script Files

1. Generate the RILOE, RILOE II, or Integrated Lights-Out (iLO) configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at [www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)
2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:  

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.
3. Generate the NIC teaming script file. This is an optional step for the Windows 2000 operating system.

### Unattended Installation File

When the server profile script files are generated and modified for the target server, save a copy of the UNATTEND.TXT file to the server configuration diskette. Refer to the end of this chapter for a typical unattended installation file for the Windows 2000 operating system.

**NOTE:** Refer to the operating system documentation for a complete description of the options that can be modified in the operating system-dependent unattended installation file to customize the installation of Windows 2000.

Using a standard text editor, create the following three additional Toolkit files for the Windows 2000 unattended install.

1. Edit the \Toolkit\CPQW2K\%OEM%\\$1\CMD.TXT file to install ProLiant Support Packs for Windows 2000.

**NOTE:** CMD.TXT is a script file executed by the GUICMD.EXE SmartStart utility. GUICMD.EXE is copied to the target system and executed by the Windows 2000 installer during the graphical portion of the operating system installation process.

The CMD.TXT is similar to the following:

```
HP Installation Utility
Installing and configuring HP programs. Please wait...
C:\ntcsp\setupc.exe /f /silent /use-latest /use-location:c:\ntcsp
waitonprocess SETUP50.EXE 120
C:\CMSISU.EXE
C:\cpqbfile.exe
C:\CPQclean.cmd
del file C:\CMSISU.EXE
del file C:\UNATTEND.TXT
del file C:\CMDLINES.TXT
del file C:\cpqclean.cmd
del file C:\cpqbfile.exe
del file C:\CMDLINES.TXT
del dir C:\NTCSP
del dir C:\QUICKLCH
```

```
deldir C:\Drivers
deldir C:\$OEM$
C:\winnt\system32\rundll32.exe setupapi,InstallHinfSection
DefaultInstall 129 c:\reboot.inf
```

**IMPORTANT:** CMSISU.EXE is located in the \COMPAQ\INSTALL\W2K\POSTINST subdirectory on the SmartStart CD. The command does not accept any arguments and performs the following functions on Microsoft Windows 2000 platforms:

- Restores the Quick Launch buttons on the Windows taskbar.
- Removes unnecessary hardware from the Windows registry.

**IMPORTANT:** GUICMD.EXE is located in the SmartStart \COMPAQ\INSTALL\W2K\POSTINST subdirectory. The command does not accept any arguments but expects the following structure in the CMD.TXT data file:

- The first line must be the progress dialog title.
- The second line must be the progress dialog message.
- Commands must have an EXE or COM extension. GUICMD.EXE does not run files with CMD or BAT extensions.
- GUICMD.EXE accepts the following internal commands in the Windows 2000 operating system:

```
DELFILE [DRIVE:][PATH]FILENAME1 [DRIVE:][PATH]FILENAME2
[DRIVE:][PATH]FILENAME3
```

```
DELDIR [DRIVE:][PATH1] [DRIVE:][PATH2] [DRIVE:][PATH3]
```

```
COPYFILE [SOURCE DRIVE:][PATH]FILENAME [DESTINATION
DRIVE:][PATH][OPTIONAL FILENAME]
```

```
RENAME [DRIVE:][PATH]OLDFILENAME NEWFILENAME
```

```
WAITONPROGRESS [PROCESS NAME] [TIMEOUT IN SECONDS]
```

- GUICMD.EXE does not use operating system wildcards and does not prompt when replacing or deleting information.

2. Edit the \Toolkit\CPQW2K\%OEM%\CMDLINES.TXT file. The format of the CMDLINES.TXT file is similar to the following:

```
[Commands]
"Command1"
"Command2"
```

**NOTE:** CMDLINES.TXT is an input file of commands that is run by the operating system. CMDLINES.TXT is not required in Windows 2000.

3. Edit the following files, adding all driver files required for text mode setup:

- \Toolkit\CPQW2K\%OEM%\TXTSETUP.OEM
- \Toolkit\CPQW2K\%OEM%\\$1\%WIN\_NT\$.~LS\TXTSETUP.OEM
- \Toolkit\CPQW2K\%OEM%\\$1\DRIVERS\SCSI\TXTSETUP.OEM

The TXTSETUP.OEM file will be similar to the following text:

```
[Disks]
d1 = "Compaq Smart Array Controllers Driver for Windows
2000",..\disk1,..
d2 = "Compaq Drive Array Controllers Driver for Windows
2000",..\disk2,..
d3 = "Compaq SCSI Controllers Driver for Windows 2000",..\disk3,..
d4 = "Adaptec Ultra160 Family Manager Set (Win 2000)",..\disk4,..
d5 = "Compaq Smart Array 53xx Driver Diskette for Windows
2000",..\disk5,..
d6 = "AMI MegaRAID IDE Driver",..\disk6,..

[Defaults]
SCSI = cpq32fs2_000A

[SCSI]
cpqarray = "Compaq Drive Array Controllers"
cpqarray2 = "Compaq Smart Array Controllers"
cpq32fs2_000A = "Compaq Integrated Dual Channel Wide Ultra2 SCSI
Controller"
cpq32fs2_0012 = "Compaq Integrated Wide Ultra2 SCSI Controller"
adpul60m = "Adaptec Ultra160 Family Manager Set"
cpqcissm = "Compaq Smart Array 53xx Controller"
borg = "Compaq Smart Array 5i Controller/Compaq Smart Array 532
Controller"
MegaIDE100_NT5C = "Integrated Ultra ATA-100 Dual Channel
Controller (Windows 2000)"
MegaIDE100_NT5L = "Integrated Ultra ATA-100 IDE RAID Controller
(Windows 2000)"

[Files.SCSI.cpq32fs2_000A]
driver = d3,cpq32fs2.sys,cpq32fs2
inf = d3,cpq32fs2.inf
catalog = d3,cpq32fs2.cat

[Files.SCSI.cpq32fs2_0012]
driver = d3,cpq32fs2.sys,cpq32fs2
inf = d3,cpq32fs2.inf
catalog = d3,cpq32fs2.cat
```

```
[Files.SCSI.cpqarray]
driver = d2,cpqarray.sys,cpqarray
inf    = d2,cpqarray.inf
catalog = d2,cpqarray.cat

[Files.SCSI.cpqarry2]
driver = d1,cpqarry2.sys,cpqarry2
inf    = d1,cpqarry2.inf
catalog = d1,cpqarry2.cat

[Files.scsi.adpul60m]
driver = d4,adpul60m.sys, aic7899
inf    = d4,adpul60m.inf
catalog = d4,adpul60m.cat

[Files.scsi.cpqcissm]
driver = d1,cpqcissm.sys,cpqcissm
inf    = d1,cpqcissm.inf
catalog = d1,cpqcissm.cat

[Files.scsi.borg]
driver = d1,cpqcissm.sys,cpqcissm
inf    = d1,cpqcissm.inf
catalog = d1,cpqcissm.cat

[Files.scsi.MegaIDE100_NT5C]
driver = d1, MegaIDE.sys, MegaIDE
inf    = d1, MegaIDE.inf
catalog = d1, Mega2k.cat

[Files.scsi.MegaIDE100_NT5L]
driver = d1, MegaIDE.sys, MegaIDE
inf    = d1, MegaIDE.inf
catalog = d1, Mega2k.cat

[Config.cpq32fs2]
value = "",tag,REG_DWORD,1A
value = Parameters\PnpInterface,2,REG_DWORD,1
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters,LegacyAdapterDetection,REG_DWORD,1

[Config.cpqarray]
value = "",tag,REG_DWORD,100
value = Parameters\Device,NumberOfRequests,REG_DWORD,80
value = Parameters\PnpInterface,2,REG_DWORD,1
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters,LegacyAdapterDetection,REG_DWORD,1

[Config.cpqarry2]
value = "",tag,REG_DWORD,102
value = Parameters\Device,NumberOfRequests,REG_DWORD,80
value = Parameters\PnpInterface,5,REG_DWORD,1

[Config.adpul60m]
value = "",tag,REG_DWORD,20

[Config.cpqcissm]
value = "",tag,REG_DWORD,103
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters\Device,NumberOfRequests,REG_DWORD,ff
```

```
[Config.MegaIDE]
value = "", Tag, REG_DWORD, 1

[HardwareIds.scsi.cpq32fs2_000A]
id = "PCI\VEN_1000&DEV_000A", "cpq32fs2"

[HardwareIds.scsi.cpq32fs2_0012]
id = "PCI\VEN_1000&DEV_0012", "cpq32fs2"

[HardwareIds.scsi.cpqarray]
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40300E11", "cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40310E11", "cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40320E11", "cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40330E11", "cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40340E11", "cpqarray"

[HardwareIds.scsi.cpqarray2]
id = "PCI\VEN_1000&DEV_0010&SUBSYS_40400E11", "cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40500E11", "cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40510E11", "cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40580E11", "cpqarray2"

[HardwareIds.scsi.adpul60m]
id = "PCI\VEN_9005&DEV_00C0", "adpul60m"
id = "PCI\VEN_9005&DEV_0080", "adpul60m"

[HardwareIds.scsi.cpqcissm]
id = "PCI\VEN_0E11&DEV_B060", "cpqcissm"

[HardwareIds.scsi.borg]
id = "PCI\VEN_0E11&DEV_B178", "cpqcissm"

[HardwareIds.scsi.MegaIDE100_NT5C]
id="PCI\VEN_1095&DEV_0649&SUBSYS_005D0E11", "MegaIDE"

[HardwareIds.scsi.MegaIDE100_NT5L]
id="PCI\VEN_1095&DEV_0649&SUBSYS_007E0E11", "MegaIDE"
```

## Creating the Server Batch File

The server batch file typically resides on the server configuration diskette but may reside on a network share or CD. The server batch file launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files that are run by the configuration batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files of the console feedback to be logged.

### Example 3-1: Creating a log file

```
S:\CPQ\CONREP -L A:\DL3802K.HWR > A:\LOGS\DL3802K.LOG
```

This command creates the file DL3802K.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command S:\CPQ\CONREP -L A:\DL3802K.HWR to the DL3802K.LOG file.

### Example 3-2: Appending a log file

```
S:\CPQ\ACR /I A:\DL3802K.ARY >> A:\LOGS\DL3802K.LOG
```

This command appends any console feedback generated by the command S:\CPQ\ACR /I A:\DL3802K.ARY to the file DL3802K.LOG in the \LOGS subdirectory on the A drive.

**NOTE:** If deploying a ProLiant server with an embedded AMI ATA RAID controller, use HYPERCFG to generate a non-editable array configuration data file. Do not use ACR.

```
S:\CPQ\CPQDISK /R A:\DL3802K.PRT >> A:\LOGS\DL3802K.LOG
```

This command appends any console feedback generated by the command S:\CPQ\CPQDISK /R A:\DL3802K.PRT to the file DL3802K.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the configuration batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable. Reboot if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities from a CD and the configuration script files from the server configuration diskette is similar to the following:

```
@echo off
cls
echo [ SCRIPT FOR REMOTE INSTALL OF WIN2K ON ml570g3 ]

s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase
REM *** Remove this initial pause when the batch file has been
REM *** fully tested and debugged

if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file

echo Running Configuration Replication Utility...
s:\cpq\conrep -l a:\ml570g3.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

:State1
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file and stamping
REM *** it onto the array controllers of the target server

echo Configuring the Array Controllers...
s:\cpq\acr /i a:\ml570g3.ary
REM *** ECHO Configuring the RAID Controllers...
REM *** Remove REM to configure RAID Controllers
REM *** s:\CPQ\hypercfg /s /l /@a:\ML570G3.cfg
echo Setting State Information...
s:\cpq\statemgr /w Phase 2
REM *** Reboot to A:
s:\cpq\reboot A:

:State2
REM *** Create partition by reading content of the script file and
REM *** stamping the configuration onto the hard drive in the
REM *** target server

echo Creating Disk Partition...
s:\cpq\cpqdisk /w a:\ml570g3.prt
echo Setting State Information...
s:\cpq\statemgr /w Phase 3
```



```
REM *** Reboot to A:
s:\cpq\reboot A:

:State3
REM *** Format the boot partition and populate
echo Formatting the First Disk Partition as DOS...
s:\cpq\cpqfmt c:
REM *** Copy OEM driver files from the CD to the hard drive of the
REM *** target server, creating subdirectories as needed
echo Creating Driver Directory and Copying Drivers...
s:
s:\cpq\filecopy /s:s:\cpqw2k\%oem% /d:c:\%oem% /s /e /f:*. *

REM *** Copy the customized UNATTEND.TXT file from the system
REM *** configuration diskette to the root directory of the target
REM *** server's hard drive

copy a:\unattend.txt c:\

echo Setting State Information...
s:\cpq\statemgr /w Phase 4

:State4
REM *** Copy operating system files to the boot partition

echo Setting the state to allow diskette removal during the
installation of Windows 2000
s:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
s:
cd \i386
REM *** Start installation of the operating system using the
REM *** unattended installation instructions from the
REM *** C:\UNATTEND.TXT file
winnt /s:s:\i386 /u:c:\unattend.txt

:State5
REM *** Resets state variable to 6 to allow operating system
REM *** reboot without removing the diskette

s:\cpq\statemgr /w Phase 5
echo The Windows 2000 installation will continue after the
reboot...
REM *** Turn off the Virtual Floppy
s:\cpq\vflop /b:never /p:off
REM *** Disable PXEBoot
s:\cpq\PXEBoot /disable
REM *** Reboot to drive C:
s:\cpq\reboot c:

REM *** Unused states
REM *** Installation of other utilities and agents may be placed
REM *** here

:State10
:State9
:State8
:State7
```

## Creating the Installation CD

Creating an installation CD for a Windows 2000 server deployment is optional. However, this step provides full control over installation of the operating system and other utilities to the target server. When creating the CD, an organized directory structure is critical.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before creating a custom installation CD, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the CD with the server batch file.

1. Do not place any files in the root directory of the installation CD.
2. Create an \I386 subdirectory and copy the contents of the Windows 2000 CD \I386 subdirectory into the installation CD \I386 subdirectory.
3. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
4. Create a \CPQW2K\%OEM% subdirectory and other %OEM% subdirectory structures, then copy all .OEM extension operating system files and drivers into the appropriate subdirectories.
5. Create a batch file (using the DOS utilities XCOPY and EXPAND) similar to the following text to automate the preparation of the \I386 and \CPQW2K\%OEM% subdirectories:

**IMPORTANT:** The example uses the DOS XCOPY command to copy the necessary drivers and support files. XCOPY is DOS-version dependent and does not work if there are version differences. If you use the DOS COPY command instead of XCOPY, be sure that you create the destination directories before copying files to the directories. Also, be sure that the correct drive designations and paths specific to your configuration are included in the batch file.

```
REM Set SOURCE TO CD or file path with SmartStart CD image
SET SOURCE=D:

SET OEM=F:\w2k\CPQW2K\%OEM%
SET TEXTMODE=%OEM%\TEXTMODE\*. *
SET SCSI=%OEM%\$1\DRIVERS\SCSI\*. *
SET NET=%OEM%\$1\DRIVERS\NET\*. *
SET NTCSP=%OEM%\$1\NTCSP\*. *

ECHO Updating OEM Boot Files: %OEM%\TEXTMODE
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY2\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
```

```

ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM %TEXTMODE%
/C /F /H /R /K

ECHO Updating SCSI Drivers: $OEM$\$1\DRIVERS\SCSI
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRY2\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSM\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. * %SCSI% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. * %SCSI% /S /E
/C /F /H /R /K

ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM %SCSI% /C
/F /H /R /K

ECHO Updating NET Drivers: $OEM$\$1\DRIVERS\NET
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\INT100\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\INT1000\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\Q57W2K\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\NETFLX3\*. * %NET% /S /E
/C /F /H /R /K

ECHO Updating Windows 2000 Support Paq: $OEM$\$1\NTCSP
ECHO A | XCOPY %SOURCE%\COMPAQ\CSP\NT\*. * %NTCSP% /S /E /C /F /H
/R /K

ECHO Updating Compaq Files: $OEM$\$1
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY2\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K

```

```

ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSM\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM
%OEM%\$1\$WIN_NT$.~LS\TXTSETUP.OEM /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\QUICKLCH\*. *
%OEM%\$1\QUICKLCH\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CMSISU.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CPQBFILE.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\GUICMD.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\REBOOT.INF
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CPQCLEAN.CMD
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CMDLINES.TXT
%OEM%\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\COMPAQ.BMP
%OEM%\ /C /F /H /R /K

ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\CMD.TXT %OEM%\$1\ /C /F
/H /R /K

```

**NOTE:** Be sure that you are using SmartStart 6.00 or later to obtain supported drivers for new hardware devices. Also, add lines to copy the new devices and add the new devices to the UNATTEND.TXT and TXTSETUP.OEM files.

**NOTE:** CPQBFILE.EXE is located in the SmartStart \COMPAQ\INSTALL\W2K\POSTINST subdirectory. The command removes the Windows boot option from the Windows 2000 BOOT.INI file.

6. If multiple server profiles form part of the installation CD, create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on. Copy the three server profile script files and the customized operating system-dependent unattended installation file into each server profile subdirectory.

If using SYSTYPE to enable branching from the AUTOEXEC.BAT file, also copy the server-specific configuration batch file into each server subdirectory.

7. Create additional subdirectories to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.

**IMPORTANT:** When the directory structure of the installation CD is determined, be sure that the server batch file runs all programs and utilities from the CD.

## Deploying the Target Server

To begin a new server deployment with the installation CD:

1. Insert the bootable server configuration diskette into the target server.
2. Power up the target server and insert the CD.
3. Supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which then starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Network-Based Deployment

This scenario illustrates the deployment of the Windows 2000 operating system over the network. A shared network drive that contains the files necessary to set up the target server must be available to the target server. This shared drive includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

Network-based server deployments can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (and faster) networks only.

## Deployment Process Overview

The general network-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Creating the server batch file
4. Preparing the network software repository
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette with Network Software

Create a bootable server configuration diskette (using DOS version 6.22 or 7.0) for booting the target server and loading the Microsoft Networking protocol stack. Loading the network protocol stack allows the target server to connect to a network share and initiate the server deployment process over the network.

**NOTE:** Refer to Appendix A for an alternate procedure to create a basic network boot diskette using a Microsoft Network Client 3.0 set of diskettes for DOS.

1. Format a 1.44-MB diskette using the `DOS FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Be sure that the latest Network Interface Controller (NIC) drivers are available for the server on which Windows 2000 will be installed. In this case, an Ethernet NIC is installed.
3. Using a Windows 2000 machine, start the **Network Client Administrator** tool and select **Make Network Installation Startup Disk**.

**NOTE:** For information about using the Network Client Administrator, refer to the online documentation for the utility.

4. Select **Network Client v3.0 for MS-DOS and Windows**.
5. Select any of the NICs from the list.
6. When prompted, supply the **Computer name, User name, Domain, and Network protocol**. This document assumes that both Transmission Control Protocol/Internet Protocol (TCP/IP) and Dynamic Host Configuration Protocol (DHCP) are being used.
7. Copy the proper DOS NDIS driver into the A:\NET directory of the server configuration diskette.
8. Modify the SYSTEM.INI file in the A:\NET directory so that it contains the following line:

```
NETCARD=FILENAME.DOS  
  
[network]  
preferredredir=BASIC  
autostart=BASIC
```

where FILENAME.DOS is the name of the DOS NDIS driver file copied to the server configuration diskette, for example, N100.DOS.

9. Modify the PROTOCOL.INI file in the A:\NET directory so that it contains the following line:

```
DRIVERNAME=FILENAME$
```

**NOTE:** FILENAME\$ is the name of the DOS NDIS driver name, for example, N100\$.

10. Edit the CONFIG.SYS file on the server configuration diskette so that it loads the drivers required for the target server devices. A typical CONFIG.SYS file is similar to the following:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=a:\dos\himem.sys
device=a:\dos\setver.exe
device=a:\net\ifshlp.sys
dos=high
buffers=30
files=40
stacks=9,256
switches=/f
lastdrive=z:
REM *** Establish default shell to use
shell=command.com /p
```

**NOTE:** Refer to the server documentation for information about which devices to load through the CONFIG.SYS file, depending on the server configuration.

11. Be sure that all files referenced in the CONFIG.SYS file are copied to the server configuration diskette in the appropriate subdirectories.
12. Edit the AUTOEXEC.BAT file to remove the line that runs SETUP.EXE and add a line that maps a drive letter to the network share. For example, add the line:

```
NET USE S: \\DEPLOY\SHAREVOL /YES
REM *** where S=mapped drive, DEPLOY=server name, and
SHAREVOL=network share on the server
```

A typical AUTOEXEC.BAT file is similar to the following:

```
@echo off

set wattcp.cfg =a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net
smartdrv.exe /u /v

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start

REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:

REM *** Start the scripted server deployment by calling the
REM *** configuration batch file that resides in the shared
REM *** network directory
call s:\dl380w2k.bat
```

If the SYSTYPE utility is used to allow branching from within the AUTOEXEC.BAT file, a typical startup file will be similar to the following text:

```
@echo off

set wattcp.cfg =a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net
smartdrv.exe /u /v

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start

REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:

cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the appropriate sever batch
REM *** file.
REM *** -----

s:\cpq\systype ssstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call s:\dl15802k.bat
goto end

:DL380
call s:\dl13802k.bat
goto end
```



```
:ML530
call s:\ml5302k.bat
goto end

:ML350
call s:\ml3502k.bat
goto end

cd \

:end
```

13. Sign the server configuration diskette with SIGNDISK, which is included in the Toolkit. Signing the server configuration diskette stamps the diskette with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the server configuration diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are five script files that can be generated, depending on your system. Generate the three primary script files on the source server by using the following procedure.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)
- HYPERCFG.CFG—Array configuration script file generated by HYPERCFG (required by ProLiant servers that have AMI ATA RAID controllers)

### Primary Configuration Script Files

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL3802K.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL3802K.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL3802K.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL3802K.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL3802KT.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL3802K.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

### Optional Configuration Script Files

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.

### Unattended Installation File

After the server profile script files are generated and modified for the target server, save a copy of the UNATTEND.TXT file on the server configuration diskette. Refer to the end of this chapter for a typical unattended installation file for Windows 2000.

**NOTE:** Refer to the operating system documentation for a complete description of the options that can be modified in the operating system unattended installation file to customize the installation of Windows 2000.

Using a standard text editor, create the following three additional Toolkit files for Windows 2000 unattended install.

1. Edit the \Toolkit\CPQW2K\%\$OEM%\\$1\CMD.TXT file to install Support Paqs for Windows 2000.

**IMPORTANT:** CMD.TXT is a script file that is executed by the GUICMD.EXE SmartStart utility. GUICMD.EXE will be copied to the target system and executed by the Windows 2000 installer during the graphical portion of the operating system installation process.

The CMD.TXT is similar to the following:

```
HP Installation Utility
Installing and configuring HP programs. Please wait...
C:\ntcsp\setupc.exe /f /silent /use-latest /use-location:c:\ntcsp
waitonprocess SETUP50.EXE 120
C:\CMSISU.EXE
C:\cpqbfile.exe
C:\cpqclean.cmd
del file C:\CMSISU.EXE
del file C:\UNATTEND.TXT
del file C:\CMDLINES.TXT
del file C:\cpqclean.cmd
del file C:\cpqbfile.exe
del file C:\CMDLINES.TXT
del dir C:\NTCSP
del dir C:\QUICKLCH
del dir C:\Drivers
del dir C:\$OEM$
C:\winnt\system32\rundll32.exe setupapi,InstallHinfSection
DefaultInstall 129 c:\reboot.inf
```

**IMPORTANT:** CMSISU.EXE is located in the \COMPAQINSTALL\W2K\POSTINST subdirectory on SmartStart. The command does not accept any arguments and performs the following functions on Windows 2000 platforms:

- Restores the Quick Launch buttons on the Windows taskbar.
- Removes unnecessary hardware from the Windows registry.

**IMPORTANT:** GUICMD.EXE is located in the \COMPAQ\INSTALL\W2K\POSTINST subdirectory on the SmartStart CD. The command does not accept any arguments but expects the following structure in the CMD.TXT data file:

- The first line must be the progress dialog title.
- The second line must be the progress dialog message.
- Commands must have an EXE or COM extension. GUICMD.EXE will not run files with CMD or BAT extensions.
- GUICMD.EXE accepts the following internal commands in Microsoft Windows 2000:

```
DELFILE [DRIVE:][PATH]FILENAME1 [DRIVE:][PATH]FILENAME2
[DRIVE:][PATH]FILENAME3
```

```
DELDIR [DRIVE:][PATH1] [DRIVE:][PATH2] [DRIVE:][PATH3]
```

```
COPYFILE [SOURCE DRIVE:][PATH]FILENAME [DESTINATION
DRIVE:][PATH][OPTIONAL FILENAME]
```

```
RENAME [DRIVE:][PATH]OLDFILENAME NEWFILENAME
```

```
WAITONPROGRESS [PROCESS NAME] [TIMEOUT IN SECONDS]
```

- GUICMD.EXE does not use operating system wildcards and does not prompt when replacing or deleting information.

2. Edit the \Toolkit\CPQW2K\%SOEM%\CMDLINES.TXT file. The format of the CMDLINES.TXT file is similar to the following:

```
[Commands]
"Command1"
"Command2"
```

**NOTE:** CMDLINES.TXT is an input file of commands that are run by the operating system. CMDLINES.TXT is not necessary in Windows 2000.

3. Edit the following files, adding all driver files required for text mode setup:

- \Toolkit\CPQW2K\%SOEM%\TXTSETUP.OEM
- \Toolkit\CPQW2K\%SOEM%\\$1\%WIN\_NT\$.~LS\TXTSETUP.OEM
- \Toolkit\CPQW2K\%SOEM%\\$1\DRIVERS\SCSI\TXTSETUP.OEM

The TXTSETUP.OEM file will be similar to the following text:

```
[Disks]
d1 = "Compaq Smart Array Controllers Driver for Windows
2000",.\disk1,.
d2 = "Compaq Drive Array Controllers Driver for Windows
2000",.\disk2,.
d3 = "Compaq SCSI Controllers Driver for Windows 2000",.\disk3,.
d4 = "Adaptec Ultra160 Family Manager Set (Win 2000)",.\disk4,.
d5 = "Compaq Smart Array 53xx Driver Diskette for Windows
2000",.\disk5,.
d6 = "AMI MegaRAID IDE Driver",.\disk6,.

[Defaults]
SCSI = cpq32fs2_000A
```

```
[SCSI]
cpqarray = "Compaq Drive Array Controllers"
cpqarry2 = "Compaq Smart Array Controllers"
cpq32fs2_000A = "Compaq Integrated Dual Channel Wide Ultra2 SCSI
Controller"
cpq32fs2_0012 = "Compaq Integrated Wide Ultra2 SCSI Controller"
adpul60m = "Adaptec Ultra160 Family Manager Set"
cpqcissm = "Compaq Smart Array 53xx Controller"
borg = "Compaq Smart Array 5i Controller/Compaq Smart Array 532
Controller"
MegaIDE100_NT5C = "Integrated Ultra ATA-100 Dual Channel
Controller (Windows 2000)"
MegaIDE100_NT5L = "Integrated Ultra ATA-100 IDE RAID Controller
(Windows 2000)"

[Files.SCSI.cpq32fs2_000A]
driver = d3,cpq32fs2.sys,cpq32fs2
inf     = d3,cpq32fs2.inf
catalog = d3,cpq32fs2.cat

[Files.SCSI.cpq32fs2_0012]
driver = d3,cpq32fs2.sys,cpq32fs2
inf     = d3,cpq32fs2.inf
catalog = d3,cpq32fs2.cat

[Files.SCSI.cpqarray]
driver = d2,cpqarray.sys,cpqarray
inf     = d2,cpqarray.inf
catalog = d2,cpqarray.cat

[Files.SCSI.cpqarry2]
driver = d1,cpqarry2.sys,cpqarry2
inf     = d1,cpqarry2.inf
catalog = d1,cpqarry2.cat

[Files.scsi.adpul60m]
driver = d4,adpul60m.sys, aic7899
inf     = d4,adpul60m.inf
catalog = d4,adpul60m.cat

[Files.scsi.cpqcissm]
driver = d1,cpqcissm.sys,cpqcissm
inf     = d1,cpqcissm.inf
catalog = d1,cpqcissm.cat

[Files.scsi.borg]
driver = d1,cpqcissm.sys,cpqcissm
inf     = d1,cpqcissm.inf
catalog = d1,cpqcissm.cat

[Files.scsi.MegaIDE100_NT5C]
driver = d1, MegaIDE.sys, MegaIDE
inf     = d1, MegaIDE.inf
catalog = d1, Mega2k.cat

[Files.scsi.MegaIDE100_NT5L]
driver = d1, MegaIDE.sys, MegaIDE
inf     = d1, MegaIDE.inf
catalog = d1, Mega2k.cat
```

```

[Config.cpq32fs2]
value = "",tag,REG_DWORD,1A
value = Parameters\PnpInterface,2,REG_DWORD,1
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters,LegacyAdapterDetection,REG_DWORD,1

[Config.cpqarray]
value = "",tag,REG_DWORD,100
value = Parameters\Device,NumberOfRequests,REG_DWORD,80
value = Parameters\PnpInterface,2,REG_DWORD,1
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters,LegacyAdapterDetection,REG_DWORD,1

[Config.cpqarray2]
value = "",tag,REG_DWORD,102
value = Parameters\Device,NumberOfRequests,REG_DWORD,80
value = Parameters\PnpInterface,5,REG_DWORD,1

[Config.adpul60m]
value = "",tag,REG_DWORD,20

[Config.cpqcissm]
value = "",tag,REG_DWORD,103
value = Parameters\PnpInterface,5,REG_DWORD,1
value = Parameters\Device,NumberOfRequests,REG_DWORD,ff

[Config.MegaIDE]
value = "", Tag, REG_DWORD, 1

[HardwareIds.scsi.cpq32fs2_000A]
id = "PCI\VEN_1000&DEV_000A","cpq32fs2"

[HardwareIds.scsi.cpq32fs2_0012]
id = "PCI\VEN_1000&DEV_0012","cpq32fs2"

[HardwareIds.scsi.cpqarray]
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40300E11","cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40310E11","cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40320E11","cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40330E11","cpqarray"
id = "PCI\VEN_0E11&DEV_AE10&SUBSYS_40340E11","cpqarray"

[HardwareIds.scsi.cpqarray2]
id = "PCI\VEN_1000&DEV_0010&SUBSYS_40400E11","cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40500E11","cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40510E11","cpqarray2"
id = "PCI\VEN_1011&DEV_0046&SUBSYS_40580E11","cpqarray2"

[HardwareIds.scsi.adpul60m]
id = "PCI\VEN_9005&DEV_00C0","adpul60m"
id = "PCI\VEN_9005&DEV_0080","adpul60m"

[HardwareIds.scsi.cpqcissm]
id = "PCI\VEN_0E11&DEV_B060","cpqcissm"

[HardwareIds.scsi.borg]
id = "PCI\VEN_0E11&DEV_B178","cpqcissm"

[HardwareIds.scsi.MegaIDE100_NT5C]
id="PCI\VEN_1095&DEV_0649&SUBSYS_005D0E11", "MegaIDE"

[HardwareIds.scsi.MegaIDE100_NT5L]
id="PCI\VEN_1095&DEV_0649&SUBSYS_007E0E11", "MegaIDE"

```

## Creating the Server Batch File

In the case of network installations, the configuration batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

**IMPORTANT:** If you want to log the console feedback of the deployment process, redirect the console feedback of the executable files run by the server batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files with the console feedback you want to log.

### Example 3-3: Creating a log file

```
S:\CPQ\CONREP -L A:\DL3802K.HWR > A:\LOGS\DL3802K.LOG
```

This command creates the file DL3802K.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command S:\CPQ\CONREP -L A:\DL3802K.HWR to the DL3802K.LOG file.

### Example 3-4: Appending a log file

```
S:\CPQ\ACR /I A:\DL3802K.ARY >> A:\LOGS\DL3802K.LOG
```

This command appends any console feedback generated by the command S:\CPQ\ACR /I A:\DL3802K.ARY to the file DL3802K.LOG in the \LOGS subdirectory on the A drive.

**NOTE:** If deploying a ProLiant server with an embedded AMI ATA RAID controller, use HYPERCFG to generate a non-editable array configuration data file. Do not use ACR.

```
S:\CPQ\CPQDISK /W A:\DL3802K.PRT >> A:\LOGS\DL3802K.LOG
```

This command appends any console feedback generated by the command S:\CPQ\CPQDISK /R A:\DL3802K.PRT to the file DL3802K.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the server batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls
echo [ SCRIPT FOR REMOTE INSTALL OF WIN2K ON ml570g3 ]

s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase
REM *** Remove this initial pause when the batch file has been
REM *** fully tested and debugged

if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file

echo Running Configuration Replication Utility...
s:\cpq\conrep -l s:\servers\ML570G3\ML570G3.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

:State1
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file and stamping
REM *** it onto the array controllers of the target server

echo Configuring the Array Controllers...
s:\cpq\acr /i s:\servers\ML570G3\ML570G3.ary
REM *** ECHO Configuring the RAID Controllers...
REM *** Remove REM to configure RAID Controllers
REM *** s:\CPQ\hypercfg /s /l /@s:\servers\ML570G3\ML570G3.cfg
echo Setting State Information...
s:\cpq\statemgr /w Phase 2
REM *** Reboot to A:
s:\cpq\reboot A:

:State2
REM *** Create partition by reading content of the script file and
REM *** stamping the configuration onto the hard drive in the
REM *** target server

echo Creating Disk Partition...
s:\cpq\cpqdisk /w s:\servers\ML570G3\ML570G3.prt
echo Setting State Information...
s:\cpq\statemgr /w Phase 3
```



```
REM *** Reboot to A:
s:\cpq\reboot A:

:State3
REM *** Format the boot partition and populate
echo Formatting the First Disk Partition as DOS...
s:\cpq\cpqfmt c:
REM *** Copy OEM driver files from the CD to the hard drive of the
REM *** target server, creating subdirectories as needed
echo Creating Driver Directory and Copying Drivers...
s:
s:\cpq\filecopy /s:s:\cpqw2k\%oem% /d:c:\%oem% /s /e /f:*.*

REM *** Copy the customized UNATTEND.TXT file to the root
REM *** directory of the target server's hard drive

copy s:\servers\ML570G3\unattend.txt c:\

echo Setting State Information...
s:\cpq\statemgr /w Phase 4

:State4
REM *** Copy operating system files to the boot partition

echo Setting the state to allow diskette removal during the
installation of Windows 2000
s:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
s:
cd \i386
REM *** Start installation of the operating system using the
REM *** unattended installation instructions from the
REM *** C:\UNATTEND.TXT file.
winnt /s:s:\i386 /u:c:\unattend.txt

:State5
REM *** Resets state variable to 6 to allow operating system
REM *** reboot without removing the diskette

s:\cpq\statemgr /w Phase 5
echo The Windows 2000 installation will continue after the
reboot...
REM *** Turn off the Virtual Floppy
s:\cpq\vflop /b:never /p:off
REM *** Disable PXEBoot
s:\cpq\PXEBoot /disable
REM *** Reboot to drive C:
s:\cpq\reboot c:

REM *** Unused states
REM *** Installation of other utilities and agents may be placed
REM *** here

:State10
:State9
:State8
:State7
```

## Preparing the Network Software Repository

When creating the network software repository, it is important to organize the directory structure.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with read-only access to the software image files in the software repository.
2. Place only configuration batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create an \I386 subdirectory and copy the contents of the Windows 2000 CD \I386 subdirectory into the software repository \I386 subdirectory.
4. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
5. Create a \CPQW2K\%OEM% subdirectory and other %OEM% subdirectory structures and copy all operating system files and drivers with an .OEM extension into the appropriate subdirectories.
6. Using the DOS utilities XCOPY and EXPAND, a batch file similar to the following text can be used to automate the preparation of the \I386 and \CPQW2K\%OEM% subdirectories:

**IMPORTANT:** The example batch file uses the DOS XCOPY command to copy the necessary drivers and support files. XCOPY is DOS-version dependent and will not work if there are version differences. If the DOS COPY command is used instead of XCOPY, create the destination directories before copying files to the directories. Also, be sure that the correct drive designations and paths specific to your configuration are included in the batch file.

```
REM Set SOURCE TO CD or file path with SmartStart CD image
SET SOURCE=D:

SET OEM=F:\w2k\CPQW2K\%OEM%
SET TEXTMODE=%OEM%\TEXTMODE\*. *
SET SCSI=%OEM%\$1\DRIVERS\SCSI\*. *
SET NET=%OEM%\$1\DRIVERS\NET\*. *
SET NTCSP=%OEM%\$1\NTCSP\*. *

ECHO Updating OEM Boot Files: %OEM%\TEXTMODE
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRY2\*. * %TEXTMODE%
/S /E /C /F /H /R /K
```

```

ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSM\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. * %TEXTMODE%
/S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM %TEXTMODE%
/C /F /H /R /K

ECHO Updating SCSI Drivers: %OEM%\$1\DRIVERS\SCSI
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY2\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSM\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. * %SCSI% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. * %SCSI% /S
/E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. * %SCSI% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM %SCSI% /C
/F /H /R /K

ECHO Updating NET Drivers: %OEM%\$1\DRIVERS\NET
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\INT100\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\INT1000\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\Q57W2K\*. * %NET% /S /E
/C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\NETFLX3\*. * %NET% /S /E
/C /F /H /R /K

ECHO Updating Windows 2000 Support Paq: %OEM%\$1\NTCSP
ECHO A | XCOPY %SOURCE%\COMPAQ\CSP\NT\*. * %NTCSP% /S /E /C /F /H
/R /K

ECHO Updating Compaq Files: %OEM%\$1
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\AMIATA\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY2\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQARRAY\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\MEGAIDE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K

```

```

ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\ADPU160M\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQ32FS2\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSM\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CPQCISSE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\DRIVERS\W2K\CMDIDE\*. *
%OEM%\$1\$WIN_NT$.~LS\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\TXTSETUP.OEM
%OEM%\$1\$WIN_NT$.~LS\TXTSETUP.OEM /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\QUICKLCH\*. *
%OEM%\$1\QUICKLCH\*. * /S /E /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CMSISU.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CPQBFILE.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\GUICMD.EXE
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\REBOOT.INF
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CPQCLEAN.CMD
%OEM%\$1\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\CMDLINES.TXT
%OEM%\ /C /F /H /R /K
ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\POSTINST\COMPAQ.BMP
%OEM%\ /C /F /H /R /K

ECHO A | XCOPY %SOURCE%\COMPAQ\INSTALL\W2K\CMD.TXT %OEM%\$1\ /C /F
/H /R /K

```

**NOTE:** Be sure that you are using SmartStart 6.00 or later to obtain supported drivers for new hardware devices. Also, add lines to copy the new devices and add the new devices to the UNATTEND.TXT and TXTSETUP.OEM files.

**NOTE:** CPQBFILE.EXE is located in the \COMPAQ\INSTALL\W2K\POSTINST subdirectory on the SmartStart CD. The command removes the Microsoft Windows boot option from the Windows 2000 BOOT.INI file.

7. Create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on. Copy the three server profile script files from the server configuration diskette and the customized operating system-dependent unattended installation file into each server profile subdirectory.

**NOTE:** If using SYSTYPE to enable branching from the AUTOEXEC.BAT file, also copy the server-specific configuration batch file into each server subdirectory.

8. Create additional subdirectories to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.

**IMPORTANT:** After the directory structure of the network software repository is determined, be sure that the server batch file runs all programs and utilities correctly from the network location.

## Deploying the Target Server

To begin a new server deployment over the network:

1. Insert the bootable server configuration diskette into the target server.
2. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which connects the target server to the network share and starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Windows 2000 UNATTEND.TXT Sample File

The operating system-dependent unattended installation file is not created by the Toolkit utilities. The user must create the file separately.

Refer to the operating system documentation for a complete description of the options that can be modified in the operating system-dependent unattended installation file to customize the installation of Microsoft Windows 2000. More information can be found in the *Microsoft Windows 2000 Server Resource Kit* or in the *Microsoft Windows 2000 Guide to Unattended Setup*, available on the Microsoft website:

[www.microsoft.com/technet/treeview/default.asp?url=/technet/prodtechnol/windows2000p/ro/deploy/unattend/sp1unatd.asp](http://www.microsoft.com/technet/treeview/default.asp?url=/technet/prodtechnol/windows2000p/ro/deploy/unattend/sp1unatd.asp)

Bold lines indicate modifications made to fully automate the installation of the operating system.

```
[Data]
  AutoPartition=1
  MsDosInitiated="0"
  UnattendedInstall="Yes"

[Display]
  AutoConfirm=1
  BitsPerPel=16
  ConfigureAtLogon=0
  VRefresh=60
  Xresolution=800
  Yresolution=600

[GuiRunOnce]
  "C:\guicmd.exe"

[MassStorageDrivers]
  "Adaptec Ultra160 Family Manager Set"=OEM
  "Compaq Smart Array 53xx Controller"=OEM
  "Compaq Smart Array 5i Controller/Compaq Smart Array 532
  Controller"=OEM
  "Compaq Drive Array Controllers"=OEM
  "Compaq Integrated Dual Channel Wide Ultra2 SCSI
  Controller"=OEM
```

```
"Compaq Integrated Wide Ultra2 SCSI Controller"=OEM
"Compaq Smart Array Controllers"=OEM
"Integrated Ultra ATA-100 Dual Channel Controller (Windows
2000)"=OEM
"Integrated Ultra ATA-100 IDE RAID Controller (Windows
2000)"=OEM
"Symbios Logic C8100 PCI SCSI Host Adapter"=RETAIL
"Symbios Logic C896 PCI SCSI Host Adapter"=RETAIL
"Symbios Logic C8xx PCI SCSI Host Adapter"=RETAIL
"IDE CD-ROM (ATAPI 1.2)/PCI IDE Controller"=RETAIL

[NetOptionalComponents]
    SNMP=1

[Networking]
    InstallDefaultComponents=Yes

[OEM_Ads]
    Logo=Compaq.bmp

[OEMBootFiles]
    ADPU160M.SYS
    CPQ32FS2.SYS
    CPQARRAY.SYS
    CPQARRAY2.SYS
    CPQCISSM.SYS
    MegaIDE.sys
    TXTSETUP.OEM

[Identification]
    JoinWorkgroup=Workgroup

[Unattended]
    DriverSigningPolicy=Ignore
    NtUpgrade=No
    OemFilesPath=C:
    OemPnPDriversPath=drivers\net
    OemPreinstall=Yes
    OemSkipEula=Yes
    OverwriteOemFilesOnUpgrade=No
    TargetPath=\WINNT
    UnattendMode=DefaultHide
    Win9xUpgrade=No
    ExtendOemPartition=1
    FileSystem=ConvertNTFS

[GuiUnattended]
    AdminPassword=password
    AutoLogon=Yes
    AutoLogonCount=1
    OEMSkipRegional=1
    OemSkipWelcome=1
    TimeZone=20

[LicenseFilePrintData]
    AutoMode=PerServer
    AutoUsers=16
```

```
[UserData]
  FullName="HP"
  OrgName="HP"
  ComputerName=DL380g3
  ProductID=XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

[RegionalSettings]
  Language=00000409
  LanguageGroup=1

[Proxy]
  Proxy_Enable=0
  Use_Same_Proxy=0
```

**NOTE:** Be sure that you are using SmartStart 6.00 or later to obtain supported drivers for new hardware devices. Also, add lines to copy the new devices and add the new devices to the UNATTEND.TXT and TXTSETUP.OEM files.

The server deployment configuration and operating system installation process is complete.

---

## Novell NetWare 5.1 Deployment

This chapter provides best practice scenarios for using the Toolkit to deploy the Novell NetWare 5.1 operating system with a CD or across a network.

Samples of the script files described in this chapter are available in the /toolkit/samples directory that is created when you download and expand the SmartStart Scripting Toolkit. For more information on the SmartStart Scripting Toolkit, refer to the HP website at

<http://www.hp.com/servers/sstoolkit>



## CD-Based Deployment

This scenario illustrates the deployment of NetWare 5.1 by using a CD that contains the files necessary to set up the target server. This CD is created by the user and includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

**NOTE:** CD-based server deployment speeds vary depending on the speed of the CD-ROM drive, the cleanliness of the CD, and the presence of CD-caching software.

## Deployment Process Overview

The general CD-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette
2. Creating the server profile script files
3. Creating the server batch file
4. Creating the installation CD
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette

Create a bootable server configuration diskette (using Caldera DOS 7.02) used to initiate the server deployment process:

**IMPORTANT:** The Compaq Disk Formatting utility in the Toolkit is not fully compatible with Caldera DOS 7.02 or later. If Caldera DOS is used instead of DOS 6.22 or DOS 7.0, replace the Compaq Disk Formatting utility in the server batch file with the DOS `FORMAT` command.

To create the bootable server configuration disk:

1. Format a 1.44-MB diskette using the DOS `FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Create a `CONFIG.SYS` file that loads the drivers required for the target server devices. A typical `CONFIG.SYS` file is similar to the following:

```
REM *** Load special memory and DOS devices required by
REM *** the target server
device=himem.sys
device=cpqidecd.sys /d:cpqcdrom
files=40
buffers=30
dos=high,umb
lastdrive=z:
```

**NOTE:** Refer to the server documentation for information about which devices to load through the `CONFIG.SYS` file, depending on your server configuration.

3. Be sure that all files referenced in the `CONFIG.SYS` file are copied to the server configuration diskette.
4. Create an `AUTOEXEC.BAT` file that will load the drivers necessary for the CD-ROM and optionally launch the server deployment process. A typical `AUTOEXEC.BAT` file is similar to the following:

```
path=a:\;a:\novell;f:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /v /m:50 /l:f
REM *** Switch to the CD drive and installation directory
f:
cd \cpq
REM *** Start the scripted server deployment by calling
REM *** the configuration batch file
call a:\dl380nw.bat
```

If SYSTYPE is used to enable branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```
path=a:\;a:\novell;f:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /v /m:50 /l:f
REM *** Switch to the CD drive and installation directory
f:
cd \cpq
REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and REM *** calling the
REM *** server-specific server batch file. Although this
REM *** example shows the server batch files in
REM *** subdirectories on the A: drive, the files can be placed
REM *** in any location that is accessible by the target
REM *** server.
REM *** -----
f:\cpq\systype ssstksys.ini
if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350
:DL580
call a:\dl580\dl580nw.bat
goto end
:DL380
call a:\dl380\dl380nw.bat
goto end
:ML530
call a:\ml530\ml530nw.bat
goto end
:ML350
call a:\ml350\ml350nw.bat
goto end
cd \
:end
```

5. Be sure that all files referenced in the AUTOEXEC.BAT file are copied to the server configuration diskette (if not using a network share).
6. Sign the server configuration diskette with SIGNDISK by copying the utility on the diskette and typing SIGNDISK at the A:\ prompt. Signing the server configuration diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are four script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)

### Primary Configuration Script Files

Generate the three primary script files on the source server by following these steps:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NW.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NW.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NW.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NW.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NW.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NW.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

### Optional Configuration Script File

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.

### Unattended Installation File

When the server profile script files are generated and modified for the target server, save a copy of the RESPONSE.NI file as RESPONSE.TXT on the server configuration diskette. If NetWare 5.1 software is already installed on a similar server, a copy of the RESPONSE.NI file is found on SYS:NI\DATA. Refer to the end of this chapter for a typical unattended installation file for NetWare 5.1.

Refer to the NetWare document *Automating the NetWare 5 Installation with a Response File* for a complete description of how to automate the installation of NetWare 5.1. The document can be found on the Novell website at

[www.novell.com/documentation/lg/nw51/othr\\_enu/data/a2zj6s4.html](http://www.novell.com/documentation/lg/nw51/othr_enu/data/a2zj6s4.html)

This document is also available as Technical Information Document number 10055290.

## Creating the Server Batch File

The server batch file typically resides on the server configuration diskette but may reside on a network share or CD. The server batch file launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files that are run by the configuration batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log file, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

### Example 4-1: Creating a log file

```
F:\CPQ\CONREP -L A:\DL380NW.HWR > A:\LOGS\DL380NW.LOG
```

This command creates the file DL380NW.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command F:\CPQ\CONREP -L A:\DL380NW.HWR to the DL380NW.LOG file.

### Example 4-2: Appending a log file

```
F:\CPQ\ACR /I A:\DL380NW.ARY >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command F:\CPQ\ACR /I A:\DL380NW.ARY to the file DL380NW.LOG in the \LOGS subdirectory on the A drive.

```
F:\CPQ\CPQDISK /R A:\DL380NW.PRT >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command F:\CPQ\CPQDISK /R A:\DL380NW.PRT to the file DL380NW.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the server batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities from a CD and the configuration script files from the server configuration diskette is similar to the following:

```
@echo off
cls
REM *** -----
REM *** Change to the CD drive and get the current state
REM *** -----
f:
cd \cpq
echo Retrieving State Information...
f:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
REM *** pause
REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** A:\DL380NW.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
f:\cpq\conrep -l a:\dl380nw.hwr
echo Setting State Information...
f:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----
```

```

:State1
REM *** -----
REM *** Second state
REM *** Configure the arrays by reading the configuration
REM *** information in the script file A:\DL380NW.ARY and
REM *** stamping it onto the array controllers of the target
REM *** server.
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
f:\cpq\acr /i a:\dl380nw.ary /o
REM *** ECHO Configuring the RAID Controllers
REM *** Remove REM to configure RAID Controllers
REM *** f:\CPQ\hypercfg /s /l /@a:dl380nw.cfg
echo Setting State Information...
f:\cpq\statemgr /w Phase 2

REM *** -----
REM *** Reboot to drive A:
REM *** -----
f:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Create partition by reading content of the A:\DL380NW.PRT
REM *** script file and stamping the configuration onto the hard
REM *** drive in the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Creating Disk Partition...
f:\cpq\cpqdisk /w a:\dl380nw.prt
echo Setting State Information...
f:\cpq\statemgr /w Phase 3
REM *** -----
REM *** Reboot to drive A:
REM *** -----
f:\cpq\reboot a:

:State 3
REM *** -----
REM *** Fourth state
REM *** Format the boot partition and populate
REM *** Increase the state variable
REM *** -----
echo Formatting the First Disk Partition as DOS...
REM *** -----
REM *** If using Caldera DOS 7.02 or later, use the Caldera DOS
REM *** command FORMAT C: /X /S /QUIET /V: on the following line
REM *** instead of CPQFMT C:
REM *** -----
REM *** f:\cpq\cpqfmt c:
a:
cd \
format c: /x /s /quiet /v:

```



```
REM *** -----
REM *** Change to the root directory of drive C: to create a
REM *** drivers directory and copy files
REM *** -----
c:
cd \
echo Creating Driver Directory and Copying Drivers and Files...
echo Copying final autoexec.bat, config.sys and drivers to c:\
copy f:\cpq\rootc\*.c:\
md dos
cd dos
copy f:\cpq\dos\*.c:\
cd \
md nwupdate
cd nwupdate

copy f:\compaq\drivers\nw5\*.c:\
copy f:\cpq\script\java.nlm
copy f:\cpq\script\langsel.nlm
copy f:\cpq\script\other.ics
cd\
md compaq
cd compaq
copy f:\cpq\script\extra.ics
copy f:\compaq\csp\nw\*.c:\
f:

REM *** -----
REM *** Copy the customized RESPONSE.TXT file from the system
REM *** configuration diskette to the \NWUPDATE directory on the
REM *** target server
REM *** -----
copy a:\response.txt c:\nwupdate
echo Setting State Information...
f:\cpq\statemgr /w Phase 4:

REM *** If using the Remote Insight Lights-Out Edition, this
REM *** command ensures that the server reboots to the C drive
REM *** instead of the virtual floppy drive
REM *** -----
REM *** Turn off the Virtual Floppy
REM *** -----
f:\cpq\vflop /b:never /p:off

:State4
REM *** -----
REM *** Fifth state
REM *** Start the installation process by reading the RESPONSE.TXT
REM *** file
REM *** Increase the state variable
REM *** -----
f:
cd \
f:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
install /rf=c:\nwupdate\response.txt
```

```

REM *** -----
REM *** Unused states
REM *** Installation of other utilities and agents software may be
REM *** placed here
REM *** -----
:State5

f:\cpq\reboot c:
:state6
:State7
:State8
:State9
:State10

```

## Creating the Installation CD

Creating an installation CD for a NetWare 5.1 server deployment is optional. However, this step provides full control over installation of the operating system and HP utilities on the target server. When creating the CD, an organized directory structure is critical.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before creating a custom installation CD, refer to the terms of the software license agreement.

**NOTE:** If using an international version of a NetWare 5.1 CD to create an installation CD, there will not be sufficient disk space to include the HP system partition files and Toolkit utilities. It may be necessary to delete some files from the installation CD.

The following guidelines provide a means of creating, maintaining, and using the CD with the server batch file.

1. Be sure that the volume label of the installation CD is NW51.
2. Avoid placing unnecessary files in the root directory of the installation CD. The root directory should only contain two marker files required by the NetWare 5.1 operating system.
3. Copy the contents of the NetWare 5.1 CD into the installation CD root directory.
4. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
5. Create a \CPQ\ROOTC subdirectory and copy the files to be placed in the root directory of the target server C drive. For example, copy the AUTOEXEC.BAT, CONFIG.SYS, CPQIDCD.SYS, FW2ASPI.SYS, and FW2CD.SYS files.
6. Create a \CPQ\DOS subdirectory and copy the DOS files to be placed in the \DOS subdirectory of the target server C drive.
7. For a totally automated installation, be sure that appropriate sections to select these nodes are also included in the RESPONSE.TXT file. For more information, refer to the “NetWare 5.1 RESPONSE.NI Sample File for SmartStart 6.00 or Later” section in this chapter.

8. Create a \CPQ\SCRIPT subdirectory and copy the EXTRA.ICS file from \COMPAQ\INSTALL\NW on the SmartStart CD 6.00 or later.  
Copy the JAVA.NLM, LANGSEL.NLM, and OTHER.ICS files from the \COMPAQ\INSTALL\NW51\NOVELL directory on the SmartStart CD 6.00 or later.
9. Create a \COMPAQ\DRIVERS\NW5 subdirectory and copy the \COMPAQ\DRIVERS\NW5 subdirectory contents from the SmartStart CD 6.00 or later.
10. Create a \COMPAQ\CSP\NW subdirectory and copy the \COMPAQ\CSP\NW subdirectory contents from the SmartStart CD 6.00 or later.

11. Be sure that the response file has the following section:

```
[NWI: Install Script]
Close script=c:\COMPAQ\extra.ics e=c:\cpqerr.log
Script Location=c:\nwupdate\other.ics
```

**NOTE:** The EXTRA.ICS file is used to launch the ProLiant Support Pack at the end of the network installation. The OTHER.ICS file is used to copy SYMCJIT.NLM to correct an issue running NetWare 5.1 on Pentium 4 servers.

12. If multiple server profiles form part of the installation CD, create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on. Copy the three server profile script files and the customized operating system unattended installation file into each server profile subdirectory.

**IMPORTANT:** When the directory structure of the installation CD is determined, be sure that the server batch file runs all programs and utilities correctly from the CD.

**NOTE:** If using SYSTYPE to enable branching from the AUTOEXEC.BAT file, also copy the server-specific server batch file into each server subdirectory.

## Deploying the Target Server

To begin a new server deployment with the installation CD:

1. Insert the server configuration diskette into the target server.
2. Power up the target server and insert the CD.
3. Supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which then starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Network-Based Deployment

This best practice scenario focuses on the deployment of NetWare 5.1 software over the network. A shared network drive that contains the files necessary to set up the target server must be available to the target server. This shared drive includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

**NOTE:** Network-based server deployment can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (or faster) networks only.

## Deployment Process Overview

The general network-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Creating the server batch file
4. Preparing the network software repository
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette with Network Software

Create a bootable server configuration diskette (Caldera DOS 7.02) for booting the target server and loading the Novell Client for DOS and Windows 3.1x. Loading the Novell DOS client network protocol stack enables the target server to connect to a network share and to initiate the server deployment process over the network.

The Novell Client for DOS and Windows 3.1x is an IPX-only application. For more information about the DOS and Windows client, refer to DOSWIN.TXT on the Novell NetWare 5.1 Client CD. For IP-only network connections, refer to the DOS\_IP.TXT file located in the \PRODUCTS\DOSWIN32\NLS\ENGLISH directory on the NetWare 5.1 Client CD.

**IMPORTANT:** The Disk Formatting utility in the Toolkit is not fully compatible with Caldera DOS 7.02 or later. If Caldera DOS is used instead of DOS 6.22 or 7.0, replace the Disk Formatting utility in the server batch file with the DOS FORMAT command.

To create the bootable server configuration disk with network software:

1. Format a 1.44-MB diskette using the DOS FORMAT /S command. This command transfers the system files that make the diskette bootable.
2. Be sure that the latest NIC drivers are available for the server on which NetWare 5.1 will be installed. These drivers are on the SmartStart 6.00 CD.
3. Install the Novell Client for DOS and Windows 3.1x on a workstation and, when prompted, supply the required Novell network information.

**NOTE:** For information about the Novell Client for DOS and Windows 3.1x, refer to the software documentation.

4. Create a \NOVELL subdirectory on the server configuration diskette and copy the following files in the \NOVELL\CLIENT32 subdirectory on the Novell DOS Client workstation into the subdirectory.

```
CLIENT32.NLM
CMSM.NLM
ETHERTSM.NLM
IPX.NLM
LSLC32.NLM
N100.LAN
NBIC32.NLM
NIOS.EXE
SPX_SKTS.NLM
STARTNET.BAT
TRANNTA.NLM
NET.CFG
```

5. Be sure that the correct NIC driver for the target server NIC is in the \NOVELL subdirectory. This example uses the N100.LAN NIC driver.

6. Edit the STARTNET.BAT file on the bootable server configuration diskette so that it loads the appropriate NIC driver, frame, and slot parameter. A typical STARTNET.BAT file is similar to the following:

```
cls
set nwlanguage=english
if exist a:\nbihw.cfg del a:\nbihw.cfg
a:\novell\nios.exe
load a:\novell\nbic32.nlm
load a:\novell\lsic32.nlm
load a:\novell\cmsm.nlm
load a:\novell\ethertsm.nlm
load a:\novell\n100.lan frame=ethernet_ii slot=10008
load a:\novell\trannta.nlm
load a:\novell\ipx.nlm
load a:\novell\spx_skts.nlm
load a:\novell\client32.nlm
```

**NOTE:** Editing the STARTNET.BAT file ensures that there will be no prompts for the slot when the target server reboots.

7. Be sure that the network information in the NET.CFG file on the bootable server configuration diskette is correct. A typical NET.CFG file is similar to the following:

```
NetWare DOS Requester
FIRST NETWORK DRIVE G
NETWARE PROTOCOL NDS BIND
PREFERRED SERVER=USERSELECTED
PREFERRED TREE=USERSELECTED_TREE
NAME CONTEXT=OU=COMPAQ.O=ADMIN
MAX CACHE SIZE=0
FILE CACHE LEVEL=0

Protocol IPX
IPX SOCKETS 40
BIND N100
```

8. Create a \LICENSE subdirectory on the server configuration diskette and copy the NetWare licenses into the subdirectory.

**NOTE:** Be sure that the Novell NetWare RESPONSE.TXT file has a license section that points to the location of the license files.

9. Edit the CONFIG.SYS file on the server configuration diskette so that it loads the drivers required for the target server devices. A typical CONFIG.SYS file is similar to the following text:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=himem.sys /testmem:off
device=cpqidecd.sys /d:cpqcdrom
files=40
buffers=30
dos=high,umb
lastdrive=z:
```

**NOTE:** Refer to the server documentation for information about which devices to load through the CONFIG.SYS file, depending on your server configuration.

10. Be sure that all files referenced in the CONFIG.SYS file are copied to the appropriate subdirectories on the server configuration diskette.
11. Modify the AUTOEXEC.BAT file in the A:\ directory so that it contains the following:

```
call a:\novell\startnet
g:
login nwserver/username
map h:=voll:\
REM *** where nwserver is a NetWare server, username is the
REM *** server login name, h: is a specified drive, and voll:\ is
REM *** a NetWare volume where NWSERVER is an example NetWare
REM *** server and USERNAME is the user name used to log on to
REM *** the server. H is an example drive letter mapped to the
REM *** NetWare volume VOL1:\.
```

A typical edited AUTOEXEC.BAT file is similar to the following text:

```
@echo off
path=a:\;a:\novell
REM *** Load CD-ROM driver
mscdex /d:cpqcdrom /v /m:50 /l:f

REM *** Start the network software
call a:\novell\startnet

REM *** Log in to the server and NetWare share
g:
login nwserver/username

REM *** Map a shared network drive to a drive letter
map h:=voll:\
h:

REM *** Start the scripted server deployment by calling the
REM *** configuration batch file that resides in the network
REM *** directory
call h:\servers\d1380\d1380nw.bat
```

If SYSTYPE is used to allow branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```
@echo off
path=a:\;a:\novell
REM *** Load CD-ROM driver
mscdex /d:cpqcdrom /v /m:50 /l:f

REM *** Start the network software
call a:\novell\startnet

REM *** Log in to the server and NetWare share
g:
login nwserver/username

REM *** Map a shared network drive to a drive letter
map h:=voll:\
h:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the
REM *** server-specific configuration batch file.
REM *** -----

h:\cpq\systype ssstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call h:\dl580nw.bat
goto end

:DL380
call h:\dl380nw.bat
goto end

:ML530
call h:\ml530nw.bat
goto end

:ML350
call h:\ml350nw.bat
goto end

cd \
:end
```

12. Sign the server configuration diskette with SIGNDISK by copying the SIGNDISK utility to the diskette and typing SIGNDISK at the A:\ prompt. Signing the diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.



## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are four script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)

### Primary Configuration Script Files

Generate the three primary script files on the source server by following these steps:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NW.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NW.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NW.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NW.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NW.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NW.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

## Optional Configuration Script File

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.

## Unattended Installation File

After the server profile script files are generated and modified for the target server, save a copy of the RESPONSE.NI file as RESPONSE.TXT to the server configuration diskette or network directory. If NetWare 5.1 is already installed on a similar server, a copy of the RESPONSE.NI file is found in SYS:NI\DATA. Refer to the end of this chapter for a typical unattended installation file for NetWare 5.1.

Refer to the NetWare document *Automating the NetWare 5 Installation with a Response File* for a complete description of how to automate the installation of NetWare 5.1. The document is located at

[www.novell.com/documentation/lg/nw51/othr\\_enu/data/a2zj6s4.html](http://www.novell.com/documentation/lg/nw51/othr_enu/data/a2zj6s4.html)

This document is also available as Technical Information Document number 10055290.

## Creating the Server Batch File

In the case of network installations, the server batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

To log the console feedback of the deployment process, redirect the console feedback of the executable files run by the server batch file to a log file. If the file already exists, “>” replaces the file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log.

To append to an existing log file, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

**Example 4-3: Creating a log file**

```
H:\CPQ\CONREP -L A:\DL380NW.HWR > A:\LOGS\DL380NW.LOG
```

This command creates the file DL380NW.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command H:\CPQ\CONREP -L A:\DL380NW.HWR to the DL380NW.LOG file.

**Example 4-4: Appending a log file**

```
H:\CPQ\CPQDISK /R A:\DL380NW.PRT >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command H:\CPQ\CPQDISK /R A:\DL380NW.PRT to the file DL380NW.LOG in the \LOGS subdirectory on the A drive. If a file already exists, ">" replaces the file.

For maximum configuration flexibility, the server batch file executes the following steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls
REM *** -----
REM *** Change to the mapped shared network drive and get the
REM *** current state
REM *** -----
h:
cd \cpq
echo Retrieving State Information...
h:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
REM *** pause
REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
```

```

if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** H:\SERVERS\DL380\DL380NW.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
h:\cpq\conrep -l h:\servers\dl380\dl380nw.hwr
echo Setting State Information...
h:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----

:State1
REM *** -----
REM *** Second state
REM *** Configure the arrays by reading the configuration
REM *** information in the script file
REM *** H:\SERVERS\DL380\DL380NW.ARY and stamping it onto
REM *** the array controllers of the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
h:\cpq\acr /i h:\servers\dl380\dl380nw.ary /o
REM *** ECHO Configuring the RAID Controllers
REM *** Remove REM to configure RAID Controllers
REM *** f:\CPQ\hypercfg /s /l /@h:\servers\dl380\dl380nw.cfg
echo Setting State Information...
h:\cpq\statemgr /w Phase 2
REM *** -----
REM *** Reboot to drive A:
REM *** -----
h:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Create partitions by reading content of the
REM *** H:\SERVERS\DL380\DL380NW.PRT
REM *** script file and stamping the configuration onto the hard
REM *** drive in the target server
REM *** Increase state variable and reboot
REM *** -----
echo Creating Disk Partitions...
h:\cpq\cpqdisk /w h:\servers\dl380\dl380nw.prt
echo Setting State Information...
h:\cpq\statemgr /w Phase 3

```

```
REM *** -----
REM *** Reboot to drive A:
REM *** -----
h:\cpq\reboot a:

:State3
REM *** -----
REM *** Fourth State
REM *** Format the boot partition and populate
REM *** Increase the state variable
REM *** -----
echo Formatting the First Disk Partition as DOS...
REM *** If using Caldera DOS 7.02 or later, use the Caldera DOS
REM *** command
REM *** FORMAT C: /X /S /QUIET /V: on the following line instead
REM *** of CPQFMT C:
REM *** h:\cpq\cpqfmt c:
a:
cd \
format c: /x /s /quiet /v:

REM *** -----
REM *** Change to the root directory of drive C: to create a
REM *** drivers directory and copy files
REM *** -----
c:
cd \
echo Creating Driver Directory and Copying Drivers and Files...
echo Copying final autoexec.bat, config.sys, and driver file to
c:\
copy h:\cpq\rootc\*. * c:\
md dos
cd dos
copy h:\cpq\dos\*. *
cd \
md nwupdate
cd nwupdate

copy h:\compaq\drivers\nw5\*. *
copy h:\cpq\script\java.nlm
copy h:\cpq\script\langsel.nlm
copy h:\cpq\script\other.ics
cd\
md compaq
cd compaq
copy h:\cpq\script\extra.ics
copy h:\compaq\csp\nw\*. *
h:

REM *** -----
REM *** Copy the customized RESPONSE.TXT file from the shared
REM *** network location to the \NWUPDATE directory on the target
REM *** server
REM *** -----
copy h:\servers\dl380\response.txt c:\nwupdate
echo Setting State Information...
h:\cpq\statemgr /w Phase 4
```

```

REM *** -----
REM *** Turn off the Virtual Floppy
REM *** -----
h:\cpq\vflop /b:never /p:off

:State4
REM *** -----
REM *** Fifth state
REM *** Start the installation process by reading the
REM *** RESPONSE.TXT file
REM *** Increase the state variable and reboot
REM *** -----
h:
cd \
h:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
h:
cd h:\nw51
install /rf=c:\nwupdate\response.txt

REM *** -----
REM *** Unused states
REM *** Installation of other utilities and agents software may
REM *** be placed here
REM *** -----
:State5

h:\cpq\reboot c:
:State6
:State7
:State8
:State9
:State10

```

## Preparing the Network Software Repository

When creating the network software repository, it is important to organize the directory structure.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with read-only access to the software image files in the repository.
2. Place the server batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create a \NW51 subdirectory and copy the contents of the Novell NetWare 5.1 CD into the subdirectory.

4. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
5. Create a \CPQ\ROOTC subdirectory and copy the files to be placed in the root directory of the target server C drive. For example, copy the AUTOEXEC.BAT, CONFIG.SYS, CPQIDECD.SYS, FW2ASPI.SYS, and FW2CD.SYS files.
6. Create a \CPQ\DOS subdirectory and copy the DOS files to be placed in the \DOS subdirectory of the target server C drive.
7. For a totally automated installation, be sure that appropriate sections to select these nodes are also included in the RESPONSE.TXT file. For more information, refer to the “NetWare 5.1 RESPONSE.NI Sample File for SmartStart 6.00” section in this chapter.
8. Create a \CPQ\SCRIPT subdirectory and copy the EXTRA.ICS file from \COMPAQ\INSTALL\NW on the SmartStart CD 6.00 or later.  
  
Copy the JAVA.NLM, LANGSEL.NLM, and OTHER.ICS files from the \COMPAQ\INSTALL\NW51\NOVELL directory on the SmartStart CD 6.00 or later.
9. Create a \COMPAQ\DRIVERS\NW5 subdirectory and copy the \COMPAQ\DRIVERS\NW5 subdirectory contents from the SmartStart CD 6.00 or later.
10. Create a \COMPAQ\CSP\NW subdirectory and copy the \COMPAQ\CSP\NW subdirectory contents from the SmartStart CD 6.00 or later.
11. Be sure that the response file has the following section:

```
[NWI: Install Script]
Close script=c:\COMPAQ\extra.ics e=c:\cpqerr.log
Script location=c:\nwupdate\other.ics
```

**NOTE:** The EXTRA.ICS file is used to launch the ProLiant Support Pack at the end of the network installation. The OTHER.ICS file is used to copy SYMCJIT.NLM to correct an issue running NetWare 5.1 on Pentium 4 servers.

12. Create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380 and \SERVERS\ML330. Copy the three server profile script files from the server configuration diskette and the customized operating system-dependent unattended installation file into each server profile subdirectory.

**IMPORTANT:** When the directory structure of the network software repository is determined, be sure that the server batch file runs all programs and utilities correctly from the network location.

## Deploying the Target Server

To begin a new server deployment over the network:

1. Insert the bootable server configuration diskette into the target server.
2. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which then connects the target server to the network share and starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## NetWare 5.1 RESPONSE.NI Sample File for SmartStart 6.00 or Later

The operating system-dependent unattended installation file is not created by the Toolkit utilities. The user must create the file separately.

For a complete description of how to automate the installation of Novell NetWare 5.1, refer to the Novell NetWare document *Automating the NetWare 5 Installation with a Response File*, available at

[www.novell.com/documentation/lq/nw51/othr\\_enu/data/a2zj6s4.html](http://www.novell.com/documentation/lq/nw51/othr_enu/data/a2zj6s4.html)

This document is also available as Technical Information Document number 10055290.

**NOTE:** Bold lines indicate modifications made to fully automate the installation of the operating system. Be sure to modify server-specific settings such as server name and IP address for each server being deployed.

```
[NWI:Language]
Prompt=FALSE
Server Language=4

[NWI:Install Options]
Prompt=FALSE
Upgrade=FALSE
Startup Directory=C:\NWSERVER
Server Boot Directory=C:\NWSERVER\
Allow User Response File=TRUE

[NWI:Locale]
Prompt=FALSE
Country Code=001
Code Page=437
Keyboard=United States
Uses Vgadisp=false
Replace DOS Config Files=False
Allow User Response File=False

[NWI:Product Information]
Major Version=NetWare 5
Minor Version=10

[NWI:NDS]
Admin Password=admin
Schema Extensions=sys:/system/schema/NLS.SCH,
    sys:/system/schema/AUDITING.SCH,
    sys:/system/schema/NWADMIN.SCH, sys:/system/schema/NRD.SCH,
    sys:system/schema/SAS.SCH, sys:/system/schema/NDSPKI.SCH,
    sys:/system/schema/MASV.SCH, sys:/system/schema/SLP.SCH,
    sys:system/schema/CATALOG.SCH, sys:system/schema/WANMAN.SCH,
    sys:system/schema/SMS.SCH, sys:system/schema/NDPS100.SCH,
    sys:system/schema/NDPS200.SCH, sys:system/schema/SVC.SCH
Schema Extensions Pre DS=sys:/system/schema/NDS500.SCH,
    sys:/system/schema/NLS.SCH
Schema Extensions LDAP=sys:system/schema/LDAP.SCH,
    sys:system/schema/LDAPUPDT.SCH
Schema Extensions LDAP NDS8=sys:system/schema/nds8/LDAP.SCH
```



```
Schema Extensions LDAP
  NDSJUL99=sys:system/schema/ndsjul99/LDAP.SCH,
  sys:system/schema/ndsjul99/LDAPUPDT.SCH,
  sys:sys:system/schema/ndsjul99/NDSPKI.SCH
Schema Extensions LDAP
  NDSAPR99=sys:system/schema/ndsapr99/LDAP.SCH,
  sys:system/schema/ndsapr99/LDAPUPDT.SCH
Admin Language=4
Tree Name=dl5801
Server Context=0=dl5802
New Tree=true
Admin Login Name=admin
Admin Context=0=dl5802
Display Summary=false
Prompt=false

[Settings]
Novell:NOVELL_ROOT:1.0.0=NONE
Novell:NetWare5OS:5.0.0=Novell:DST:1.0.0
Novell:PROTOCOLS:1.0.0=Novell:DST:1.0.0
Novell:DS_INSTALL:1.0.0=Novell:DST:1.0.0
Novell:Disk Carver:1.0.0=Novell:DST:1.0.0
Novell:NDPS:2.1.2=Novell:DST:1.0.0

[Selected Nodes]
prompt=false
Novell:NetWare5:1.0.0=Novell:NetWare5OS:5.1.0,
  Novell:Products:1.0.0,Novell:NWUpdateGroup:1.0.0
Novell:NetWare5OS:5.1.0=Novell:Disk Carver:1.0.0,
  Novell:Protocols:1.0.0,Novell:Time Zone:1.0.0,
  Novell:DS_Install:1.0.0,Novell:LicensePrompt:1.0.0,
  Novell:NICI:1.0.0,Novell:NW:1.0.0
Novell:NW:1.0.0=Novell:Startup:1.0.0,Novell:SYS:1.0.0,
  Novell:DriverFiles:1.0.0,Novell:Rconjzip:1.0.0,
  Novell:Perl5zip:1.0.0,Novell:beanszip:1.0.0,
  Novell:nscriptzip:1.0.0,Novell:scripteszip:1.0.0,
  Novell:Console1:1.0.0,Novell:console1zip:1.0.0,
  Novell:ldapzip:1.0.0,Novell:nwadminzip:5.1.9,
  Novell:wanmanzip:1.0.0
Novell:Startup:1.0.0=Novell:StartupDirectory:1.0.0
Novell:SYS:1.0.0=Novell:SYSDirectory:1.0.0,
  Novell:ConfigDirectory:1.0.0,Novell:PROFINST_NODE:1.0.0
Novell:DriverFiles:1.0.0=Novell:LANFiles:1.0.0,
  Novell:SBDFiles:1.0.0
Novell:Products:1.0.0=Novell:Novell Certificate Server:2.0.0,
  Novell:LdapInstall:1.0.0,NOVELL:Portal:1.0.1,Novell:SMS:1.0.4,
  Novell:NDPS:2.1.2,Novell:Netscape Enterprise Server for
  NetWare:3.5.2,Novell:Netscape Administration Server for
  NetWare:3.5.2,NOVELL:FTP Server:1.0.1
Product Selection=default
Novell:Novell Certificate Server:2.0.0=Novell:CertServ System
  Files:2.0.0,Novell:CertServ Public Files:2.0.0
Novell:LdapInstall:1.0.0=Novell:Ldap8:3.16.0
NOVELL:Portal:1.0.1=Novell:portalzip:1.0.0
Novell:SMS:1.0.4=Novell:SMSSystemFiles:1.0.4,
  Novell:SMSPublicFiles:1.0.4
```

```

Novell:NDPS:2.1.2=Novell:NDPS Server Files:1.0.0,
    Novell:NDPS Resource Files:1.0.0
Novell:NDPS Server Files:1.0.0=Novell:NDPS System:1.0.0,
    Novell:NDPS Public:1.0.0,Novell:Epson Files:1.0.0
Novell:NDPS Resource Files:1.0.0=Novell:NDPS Banner:1.0.0,
    Novell:NDPS Font:1.0.0,Novell:NDPS Prndef:1.0.0,
    Novell:NDPS Prndrv:1.0.0
Novell:NDPS Prndrv:1.0.0=Novell:NDPS Prndrv W95:1.0.0,
    Novell:NDPS Prndrv NT4:1.0.0,Novell:NDPS Prndrv W2K:1.0.0
Novell:Netscape Enterprise Server for NetWare:3.5.2=
    Novell:WebConfig:3.5.2
Novell:WebConfig:3.5.2=Novell:Web_Always:3.5.2,
    Novell:WEB_NovonyxConfigZip:3.5.2,Novell:Web-NLS:3.5.2
Novell:Web_Always:3.5.2=Novell:WEB_NovonyxNonConfigZip:3.5.2,
    Novell:Other_Sys_RootZip:3.5.2,Novell:NOVL_WebStuffZip:3.5.2,
    Novell:NVX_WebStuffZip:3.5.2,Novell:WEB_ServletGW:3.5.2,
    Novell:Ndo_nsp_Stuffzip:3.5.2,Novell:Sqlc_StuffZIP:3.5.2
Novell:Web-NLS:3.5.2=NONE
Novell:Netscape Administration Server for
    NetWare:3.5.2=Novell:AdminConfig:3.5.2
Novell:AdminConfig:3.5.2=Novell:ADM-NLS:3.5.2,
    Novell:Admin_Always:3.5.2,Novell:AdminNovonyxConfigZip:3.5.2
Novell:ADM-NLS:3.5.2=NONE
Novell:Admin_Always:3.5.2=Novell:AdminNovonyxNonConfigZip:3.5.2,
    Novell:NOVL_AdminStuffZip:3.5.2,Novell:NVX_AdminStuffZip:3.5.2
NOVELL:FTP Server:1.0.1=Novell:FTP Server Files:1.0.0,
    Novell:FTP Server CFG Files:1.0.0,
    Novell:FTP Admin Html Files:1.0.0,
    Novell:FTP Admin Icons Files:1.0.0,
    Novell:FTP Admin Help Lang4 Files:1.0.0
Novell:NWUpdateGroup:1.0.0=Novell:NWUpdate:1.0.0

[NWI:Server Settings]
Prompt=FALSE
Load Server at Reboot=FALSE
NDS Version=8
CD-ROM Driver=NetWare

[NOVELL:NOVELL_ROOT:1.0.0]
showWelcomeScreen=false
welcomeScreen=com.novell.application.install.Welcome
choiceScreen=com.novell.application.install.ChoicePanel
summaryScreen=com.novell.application.install.Summary
licenseAgreementScreen=com.novell.application.install.
    ProductLicenseAgreement
languageScreen=com.novell.application.install.SelectLanguage
customChoiceScreen=com.novell.application.install.
    CustomChoicePanel
wizardScreen=com.novell.application.install.WizardFrame
licenseEnvelopeScreen=com.novell.application.install.
    LicenseEnvelope
;closeScreen=NWICloseScreen
closeScreen=SilentCloseScreen
silent=false
installSilentModeOverwrite=true
installSilentModeOverwriteConfigFile=true
allowCustomization=true

```

```
allowSummary=true
allowReadme=true
allowCloseScreen=true
allowStatusBar=true
allowLicenseAgreement=true
welcomeScreenText=Welcome to the Novell installation. This program
will install the following selected programs on your computer.
welcomeScreenTitle=Novell Product Installation
customizeScreenTitle=Product Customization
defaultImage=Novell.gif
licenseAgreeFile=license.txt
readmeFile=readme.html
licensePath=none
welcomeScreenHelp=welcome.html
summaryScreenHelp=summary.html
licAgreeScreenHelp=licAgree.html
choiceScreenHelp=choice.html
filterScreenHelp=filter.html
licEnvScreenHelp=license.html
customizeScreenHelp=custom.html
locationScreenHelp=location.html
licEnvScreenTitle=Licenses
summaryScreenTitle=Summary
licAgreeScreenTitle=License Agreement
locationScreenTitle=Location
choiceScreenTitle=Components
installMode=1
overWriteNewerFile=false
overWriteNewerFilePrompt=false
reboot=true

[Initialization]
Version=Novell:NetWare5:1.0.0
SPLocation=SYS:/ni/update/bin/../../data/local.db
NISubdirectory=update
DisplayLanguage=en_US
InstallationMode=Silent
SummaryPrompt=false

[NWI:License]
prompt=false
Display License Agreement=FALSE
NICI Foundation Key File=a:\license\86419866.nfk
License File=a:\license\86419866.nlf

[NWI:Install Script]
Script Location=c:\nwupdate\other.ics
Close Script=c:\compaq\extra.ics e=c:\error.log

[NWI:Mouse and Video]
Prompt=FALSE
Mouse=PS/2
Use Super Vga=TRUE

[NWI:Product Information]
Major Version=NetWare 5
Minor Version=10
```

```
[NWI:Language]
Server Language=4

[NWI:NDS]
Schema Extensions=sys:/system/schema/NLS.SCH,
  sys:/system/schema/AUDITING.SCH,
  sys:/system/schema/NWADMIN.SCH,sys:/system/schema/NRD.SCH,
  sys:system/schema/SAS.SCH,sys:/system/schema/NDSPKI.SCH,
  sys:/system/schema/MASV.SCH,sys:/system/schema/SLP.SCH,
  sys:system/schema/CATALOG.SCH,sys:system/schema/WANMAN.SCH,
  sys:system/schema/SMS.SCH,sys:system/schema/NDPS100.SCH,
  sys:system/schema/NDPS200.SCH,sys:system/schema/SVC.SCH,
  sys:system/schema/NDPS201.SCH
Schema Extensions Pre DS=sys:/system/schema/NDS500.SCH,
  sys:/system/schema/NLS.SCH
Schema Extensions LDAP=sys:system/schema/LDAP.SCH,
  sys:system/schema/LDAPUPDT.SCH
Schema Extensions LDAP NDS8=sys:system/schema/nds8/LDAP.SCH
Schema Extensions LDAP
NDSJUL99=sys:system/schema/ndsjul99/LDAP.SCH,
  sys:system/schema/ndsjul99/LDAPUPDT.SCH,
  sys:sys:system/schema/ndsjul99/NDSPKI.SCH
Schema Extensions LDAP
NDSAPR99=sys:system/schema/ndsapr99/LDAP.SCH,
  sys:system/schema/ndsapr99/LDAPUPDT.SCH

[NWI:Old Products]
Product 1=NWSB411
Product 2=IWSB411

[Settings]
Novell:NOVELL_ROOT:1.0.0=NONE
Novell:NetWare5OS:5.0.0=Novell:DST:1.0.0
Novell:PROTOCOLS:1.0.0=Novell:DST:1.0.0
Novell:DS_INSTALL:1.0.0=Novell:DST:1.0.0
Novell:Disk Carver:1.0.0=Novell:DST:1.0.0

[Selected Nodes]
Prompt=true
Novell:NetWare5:1.0.0=ALL

[NOVELL:NOVELL_ROOT:1.0.0]
ShowWelcomeScreen=No
LogLevel=DEBUG_DETAIL

[Initialization]
Version=Novell:NETWARE 5:5.0.0
SPLocation=../data/local.db
NISubdirectory=update

[NWI:Install Script]
Support Pack Script=c:/spack/silent.ics

[Locations]
Novell:DST%Startup:1.0.0=

[Novell:SRC:1.0.0]
path=F:
```

```
[NWI:File Server]
Prompt=false
Servername=dl580
Server Id Number=9D644CB

[NWI:Hardware]
PSM Detection=TRUE
Storage Detection=TRUE
Network Detection=TRUE
Prompt=FALSE

[NWI:Add To Startup]

[Novell:DST%Startup:1.0.0_Location]
Path=file:///C:\NWSERVER
User=

[NWI:File System]
Prompt=FALSE
ALLOW VOLUME PROPERTIES=TRUE
GUI Prompt=false

[NWI:Partition 0]
Device Name=[V503-A0-D0:0] Compaq Integrated Smart Slot 0 Disk 1
NFT
PARTITION TYPE=NSS
PARTITION SIZE=4010
PARTITION HOTFIX SIZE=4
START SECTOR=489600

[NWI:Volume 0]
VOLUME NAME=SYS
SEGMENT 1 SIZE=4005
SEGMENT 1 PARTITION=0
FILE SYSTEM TYPE=NSS
COMPRESSION=FALSE

[LDAP]
adminID=.CN=admin.O=dl5802
prompt=false

[Novell:DST:1.0.0_Location]
Path=file:///SYS:
User=

[Novell:Languages:1.0.0]
LangID1=false
LangID4=true
LangID6=false
LangID7=false
LangID8=false
LangID9=false
LangID10=false
LangID12=false
LangID13=false
LangID14=false
LangID16=false
LangID99=false
LangID100=false
```

```
[Advertisement]
AD ID#0=SYS:\NI\DATA\ad1.gif,60
AD ID#1=SYS:\NI\DATA\ad2.gif,60
AD ID#2=SYS:\NI\DATA\ad3.gif,60
AD ID#3=SYS:\NI\DATA\ad4.gif,60
AD ID#4=SYS:\NI\DATA\ad5.gif,60

[Licenses]
Novell:FCLLic:1.0.0=

[Novell:FCLLic:1.0.0_License]
fileName0=sys:\ni\update\lic0001.lic
activationKey0=7DDAE9F75969E5F8
context0=0=dl5802
fileName1=sys:\ni\update\lic0002.lic
activationKey1=7DDAE9F75969E5F8
context1=0=dl5802
licCnt=2

[NWI:PROTOCOLS]
Prompt=false

[NWI:TCPIP]
Logical Name 1=q57_1_EII
IP Address 1=192.168.102.34
Subnet Mask 1=255.255.255.0

[NWI:IPCMD]
IPX Compatibility=True

[NWI:DNS]
Prompt=false

[NWI:Host Name]
Prompt=false
IP Address 1=192.168.102.34

[NWI:Time Zone]
Use Daylight Saving Time=true
Time Zone=CST
Prompt=false

[Novell:Novell Certificate Server:2.0.0]
Prompt=False
Create Organizational CA=True
Organizational CA Name=dl5801 Organizational CA
Create Server Certificates=True
IP Server Certificate Name=SSL CertificateIP
DNS Server Certificate Name=SSL CertificateDNS
Export Trusted Root=True
Trusted Root Name=sys:/public/RootCert.der

[Novell:SMS:1.0.4]
treeName=dl5801
queueVolume=CN=dl580.O=dl5802
queueContext=CN=dl580 Backup Queue.O=dl5802
smdrContext=0=dl5802
```

```
[NWI:MISC]
relogin password=""

[Novell:NDPS:2.1.2]
LocalBrokerName=null
LocalBrokerLoaded=false
LocalBrokerSRSState=disabled
CreateBroker=true
NewBrokerName=d1580_BROKER.d15802
EnableSRS=true
EnableENS=true
EnableRMS=true
adminUserName=.CN=admin.O=d15802

[Novell:DST%ndps%resdir:1.0.0_Location]
Path=file:///SYS:\ndps\resdir
User=

[Novell:WebConfig:3.5.2]
WebPort=80
SecureWebPort=443
KeepWebSettings=True
TuneWeb=False
MSFrontPage=False

[Novell:AdminConfig:3.5.2]
AdminPort=2200
KeepAdminSettings=True
```

**IMPORTANT:** The relogin password specifies the password for the user connection used when installing the file across the network. When the password section of this file is used correctly, the installation bypasses an authentication screen after loading the LAN driver and before installing the file copy. The double quotation marks specify a user connection without a password. If a password is required, it should be relogin password=pswd where pswd is the password.

The server deployment configuration and operating system installation process is complete.

---

## Novell NetWare 6 Deployment

This chapter provides best practice scenarios for using the Toolkit to deploy the Novell NetWare 6 operating system with a CD or across a network.

Samples of the script files described in this chapter are available in the /toolkit/samples directory that is created when you download and expand the SmartStart Scripting Toolkit. For more information on the SmartStart Scripting Toolkit, refer to the HP website at

<http://www.hp.com/servers/sstoolkit>



## CD-Based Deployment

This scenario illustrates the deployment of NetWare 6 by using a CD that contains the files necessary to set up the target server. This CD is created by the user and includes:

- Operating system files.
- HP drivers, utilities, and management agents.
- Toolkit utilities.
- Server profile script files arranged in folders.

**NOTE:** CD-based server deployment speeds vary depending on the speed of the CD-ROM drive, the cleanliness of the CD, and the presence of CD-caching software.

## Deployment Process Overview

The general CD-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette
2. Creating the server profile script files
3. Creating the server batch file
4. Creating the installation CD
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

## Creating the Bootable Server Configuration Diskette

Create a bootable server configuration diskette (using Caldera DOS 7.02) used to initiate the server deployment process:

**IMPORTANT:** The Compaq Disk Formatting utility in the Toolkit is not fully compatible with Caldera DOS 7.02 or later. If Caldera DOS is used instead of DOS 6.22 or 7.0, replace the Compaq Disk Formatting utility in the server batch file with the DOS `FORMAT` command.

To create the bootable server configuration disk:

1. Format a 1.44-MB diskette using the DOS `FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Create a `CONFIG.SYS` file that loads the drivers required for the target server devices. A typical `CONFIG.SYS` file is similar to the following:

```
REM *** Load special memory and DOS devices required by
REM *** the target server
device=himem.sys
device=cpqidecd.sys /d:cpqcdrom
files=40
buffers=30
dos=high,umb
lastdrive=z:
```

**NOTE:** Refer to the server documentation for information about which devices to load through the `CONFIG.SYS` file, depending on your server configuration.

3. Be sure that all files referenced in the `CONFIG.SYS` file are copied to the server configuration diskette.
4. Create an `AUTOEXEC.BAT` file that will load the drivers necessary for the CD-ROM and optionally launch the server deployment process. A typical `AUTOEXEC.BAT` file is similar to the following:

```
path=a:\;a:\novell;f:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /v /m:50 /l:f
REM *** Switch to the CD drive and installation directory
f:
cd \cpq
REM *** Start the scripted server deployment by calling
REM *** the configuration batch file
call a:\dl380nw.bat
```

If SYSTYPE is used to enable branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```
path=a:\;a:\novell;f:\cpq
REM *** Loads the CD-ROM driver
mscdex.exe /d:cpqcdrom /v /m:50 /l:f
REM *** Switch to the CD drive and installation directory
f:
cd \cpq
REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and REM *** calling the
REM *** server-specific server batch file. Although this
REM *** example shows the server batch files in
REM *** subdirectories on the A: drive, the files can be placed
REM *** in any location that is accessible by the target
REM *** server.
REM *** -----
f:\cpq\systype ssstksys.ini
if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350
:DL580
call a:\dl580\dl580nw.bat
goto end
:DL380
call a:\dl380\dl380nw.bat
goto end
:ML530
call a:\ml530\ml530nw.bat
goto end
:ML350
call a:\ml350\ml350nw.bat
goto end
cd \
:end
```

5. Be sure that all files referenced in the AUTOEXEC.BAT file are copied to the server configuration diskette (if not using a network share).
6. Sign the server configuration diskette with SIGNDISK by copying the utility on the diskette and typing SIGNDISK at the A:\ prompt. Signing the server configuration diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are four script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)

### Primary Configuration Script Files

Generate the three primary script files on the source server by following these steps:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NW.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NW.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NW.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NW.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NW.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NW.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

### Optional Configuration Script File

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.

### Unattended Installation File

When the server profile script files are generated and modified for the target server, save a copy of the RESPONSE.NI file as RESPONSE.TXT on the server configuration diskette. If NetWare 6 software is already installed on a similar server, a copy of the RESPONSE.NI file is found on SYS:NI\DATA. Refer to the end of this chapter for a typical unattended installation file for NetWare 6.

Refer to the NetWare document *Automating the NetWare 6 Installation with a Response File* for a complete description of how to automate the installation of NetWare 6. The document can be found on the following website:

[www.novell.com/documentation/lg/nw6p/index.html?page=/documentation/lg/nw6p/othr\\_enu/data/hz8pck9v.html](http://www.novell.com/documentation/lg/nw6p/index.html?page=/documentation/lg/nw6p/othr_enu/data/hz8pck9v.html)

### Creating the Server Batch File

The server batch file typically resides on the server configuration diskette but may reside on a network share or CD. The server batch file launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files that are run by the configuration batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

**Example 5-1: Creating a log file**

```
F:\CPQ\CONREP -L A:\DL380NW.HWR > A:\LOGS\DL380NW.LOG
```

This command creates the file DL380NW.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command F:\CPQ\CONREP -L A:\DL380NW.HWR to the DL380NW.LOG file.

**Example 5-2: Appending a log file**

```
F:\CPQ\ACR /I A:\DL380NW.ARY >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command F:\CPQ\ACR /I A:\DL380NW.ARY to the file DL380NW.LOG in the \LOGS subdirectory on the A drive.

```
F:\CPQ\CPQDISK /R A:\DL380NW.PRT >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command F:\CPQ\CPQDISK /R A:\DL380NW.PRT to the file DL380NW.LOG in the \LOGS subdirectory on the A drive.

For maximum configuration flexibility, the server batch file executes these steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities from a CD and the configuration script files from the server configuration diskette is similar to the following:

```
@echo off
cls
REM *** -----
REM *** Change to the CD drive and get the current state
REM *** -----
f:
cd \cpq
echo Retrieving State Information...
f:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
REM *** pause
```

```
REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** A:\DL380NW.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
f:\cpq\conrep -l a:\dl380nw.hwr
echo Setting State Information...
f:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----

:State1
REM *** -----
REM *** Second state
REM *** Configure the arrays by reading the configuration
REM *** information in the script file A:\DL380NW.ARY and
REM *** stamping it onto the array controllers of the target
REM *** server.
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
f:\cpq\acr /i a:\dl380nw.ary /o
REM *** ECHO Configuring the RAID Controllers
REM *** Remove REM to configure RAID Controllers
REM *** f:\CPQ\hypercfg /s /l /@a:dl380nw.cfg
echo Setting State Information...
f:\cpq\statemgr /w Phase 2

REM *** -----
REM *** Reboot to drive A:
REM *** -----
f:\cpq\reboot a:
```

```

:State2
REM *** -----
REM *** Third state
REM *** Create partition by reading content of the A:\DL380NW.PRT
REM *** script file and stamping the configuration onto the hard
REM *** drive in the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Creating Disk Partition...
f:\cpq\cpqdisk /w a:\dl380nw.prt
echo Setting State Information...
f:\cpq\statemgr /w Phase 3
REM *** -----
REM *** Reboot to drive A:
REM *** -----
f:\cpq\reboot a:

:State 3
REM *** -----
REM *** Fourth state
REM *** Format the boot partition and populate
REM *** Increase the state variable
REM *** -----
echo Formatting the First Disk Partition as DOS...
REM *** -----
REM *** If using Caldera DOS 7.02 or later, use the Caldera DOS
REM *** command FORMAT C: /X /S /QUIET /V: on the following line
REM *** instead of CPQFMT C:
REM *** -----
REM *** f:\cpq\cpqfmt c:
a:
cd \
format c: /x /s /quiet /v:

REM *** -----
REM *** Change to the root directory of drive C: to create a
REM *** drivers directory and copy files
REM *** -----
c:
cd \
echo Creating Driver Directory and Copying Drivers and Files...
echo Copying final autoexec.bat, config.sys and drivers to c:\
copy f:\cpq\rootc\*.*c:\
md dos
cd dos
copy f:\cpq\dos\*.*
cd \
md nwupdate
cd nwupdate

```



```
REM *** -----
REM *** The following copy commands are for SmartStart 6.00 or
REM *** later.
REM *** -----
copy f:\compaq\drivers\nw6\*. *
cd\
md compaq
cd compaq
copy f:\cpq\script\extra.ics
copy f:\compaq\csp\nw\*. *
f:
REM *** -----

REM *** -----
REM *** Copy the customized RESPONSE.TXT file from the system
REM *** configuration diskette to the \NWUPDATE directory on the
REM *** target server
REM *** -----
copy a:\response.txt c:\nwupdate
echo Setting State Information...
f:\cpq\statemgr /w Phase 4:

REM *** If using the Remote Insight Lights-Out Edition, this
REM *** command ensures that the server reboots to the C drive
REM *** instead of the virtual floppy drive
REM *** -----
REM *** Turn off the Virtual Floppy
REM *** -----
f:\cpq\vflop /b:never /p:off

:State4
REM *** -----
REM *** Fifth state
REM *** Start the installation process by reading the RESPONSE.TXT
REM *** file
REM *** Increase the state variable
REM *** -----
f:
cd \
f:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
install /rf=c:\nwupdate\response.txt

REM *** -----
REM *** Unused states
REM *** Installation of other utilities and agents software may be
REM *** placed here
REM *** -----
:State5

f:\cpq\reboot c:
:State6
:State7
:State8
:State9
:State10
```

## Creating the Installation CD

Creating an installation CD for a NetWare 6 server deployment is optional. However, this step provides full control over installation of the operating system and HP utilities on the target server. When creating the CD, an organized directory structure is critical.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before creating a custom installation CD, refer to the terms of the software license agreement.

**NOTE:** If using an international version of a NetWare 6 CD to create an installation CD, there will not be sufficient disk space to include the HP system partition files and Toolkit utilities. It may be necessary to delete some files from the installation CD.

The following guidelines provide a means of creating, maintaining, and using the CD with the server batch file.

1. Be sure that the volume label of the installation CD is NetWare 6.
2. Avoid placing unnecessary files in the root directory of the installation CD. The root directory should only contain two marker files required by the NetWare 6 operating system.
3. Create a \CPQ\SCRIPT subdirectory and copy the EXTRA.ICS file from \COMPAQ\INSTALL\NW on the SmartStart 6.00 or later CD.
4. Create a \COMPAQ\DRIVERS\NW6 subdirectory and copy the \COMPAQ\DRIVERS\NW6 subdirectory contents from the SmartStart 6.00 or later CD.
5. Create a \COMPAQ\CSP\NW subdirectory and copy the \COMPAQ\CSP\NW subdirectory contents from the SmartStart CD 6.00 or later.
6. Be sure that the response file has the following section:

```
[NWI: Install Script]
Close script=c:\COMPAQ\extra.ics e=c:\cpqerr.log
```

**NOTE:** The EXTRA.ICS file is used to launch the ProLiant Support Pack at the end of the network installation.

7. Copy the contents of the NetWare 6 CD into the installation CD root directory.
8. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
9. Create a \CPQ\ROOTC subdirectory and copy the files to be placed in the root directory of the target server C drive. For example, copy the AUTOEXEC.BAT, CONFIG.SYS, CPQIDECD.SYS, FW2ASPI.SYS, and FW2CD.SYS files.
10. Create a \CPQ\DOS subdirectory and copy the DOS files to be placed in the \DOS subdirectory of the target server C drive.

11. If multiple server profiles form part of the installation CD, create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on. Copy the three server profile script files and the customized operating system unattended installation file into each server profile subdirectory.

**IMPORTANT:** When the directory structure of the installation CD is determined, be sure that the server batch file runs all programs and utilities correctly from the CD.

**NOTE:** If using SYSTYPE to enable branching from the AUTOEXEC.BAT file, also copy the server-specific server batch file into each server subdirectory.

## Deploying the Target Server

To begin a new server deployment with the installation CD:

1. Insert the server configuration diskette into the target server.
2. Power up the target server and insert the CD.
3. Supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which then starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Network-Based Deployment

This best practice scenario focuses on the deployment of NetWare 6 over the network. A shared network drive that contains the files necessary to set up the target server must be available to the target server. This shared drive includes:

- Operating system files
- HP drivers, utilities, and management agents
- Toolkit utilities
- Server profile script files arranged in folders

**NOTE:** Network-based server deployment can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (or faster) networks only.

## Deployment Process Overview

The general network-based server deployment process includes:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Creating the server batch file
4. Preparing the network software repository
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

### Creating the Bootable Server Configuration Diskette with Network Software

Create a bootable server configuration diskette (with DOS 6.22 or 7.0) for booting the target server and loading the Novell IP Server Connection Utility. Loading the Novell IP Server Connection Utility enables the target server to connect to a network share and to initiate the server deployment process over the network. For information about the IP Server Connection Utility, refer to the SVRINST\IPCONN.txt file on the NetWare 6 Client CD.

The IP Server Connection Utility provides a basic connection in an IP-only environment to complete an across-the-wire server installation.

**NOTE:** The Disk Formatting utility in the Toolkit is not fully compatible with Caldera DOS 7.02 or later. If Caldera DOS is used instead of DOS 6.22 or 7.0, replace the Disk Formatting utility in the server batch file with the DOS FORMAT command.

To create the bootable server configuration disk with network software:

1. Format a 1.44-MB diskette using the DOS FORMAT /S command. This command transfers the system files that make the diskette bootable.
2. Be sure that the latest NIC drivers are available for the server on which NetWare 6 software will be installed. These drivers are on the NetWare 6 Client CD or provided by the vendor.

**NOTE:** For information about the Novell IP Server connection utility, refer to the software documentation.

3. Create a \NOVELL subdirectory on the server configuration diskette and copy the following files from the \SVRINST\FILES subdirectory on the NetWare 6 Client CD into the subdirectory.

```
CLIENT32.NLM
CMSM.NLM
ETHERTSM.NLM
LSLC32.NLM
N100.LAN
NBIC32.NLM
NIOS.EXE
SRVLOC.NLM
TCPIP.NLM
TRANNTA.NLM
NET.CFG
```

4. Be sure that the correct NIC driver for the target server NIC is in the \NOVELL subdirectory. This example uses the N100.LAN NIC driver.
5. Create the STARTNET.BAT file on the bootable server configuration diskette so that it loads the appropriate NIC driver, frame, and slot parameter. A typical STARTNET.BAT file is similar to the following.

```
cls
set nwlanguage=english
if exist a:\nbihw.cfg del a:\nbihw.cfg
a:\novell\nios.exe
load a:\novell\nbic32.nlm
load a:\novell\lslc32.nlm
load a:\novell\cmsm.nlm
load a:\novell\ethertsm.nlm
load a:\novell\n100.lan frame=ethernet_ii slot=10008
load a:\novell\tcpip.nlm
load a:\novell\trannta.nlm
load a:\novell\srvloc.nlm
load a:\novell\client32.nlm
```

**NOTE:** Editing the STARTNET.BAT file to include the slot information ensures that there will be no prompts for the slot when the target server reboots.

6. Verify that the network information in the NET.CFG file on the bootable server configuration diskette is correct. A typical NET.CFG file is similar to the following:

```
NetWare DOS Requester
  FIRST NETWORK DRIVE G
  NETWARE PROTOCOL NDS BIND
  PREFERRED SERVER=USERSELECTED
  ;or PREFERRED SERVER = XX.XX.XX.XX
  PREFERRED TREE=USERSELECTED_TREE
  NAME CONTEXT=USERSELECTED
  MAX CACHE SIZE=0
  FILE CACHE LEVEL=0
```

```
Protocol TCPIP
  ; for DHCP
  ;IF_CONFIGURATION DHCP_LAN_NET
  ;PATH TCP_CFG A:\

  ; for STATIC addressing
  IF_CONFIGURATION STATIC_LAN_NET
  IP_ADDRESS xx.xx.xx.xx
  ;IP_ROUTER XX.XX.XX.XX
  IP_NETMASK 255.255.0.0
  PATH TCP_CFG A:\Novell
```

```
Link Driver N100
  FRAME Ethernet_II
```

7. Create a \LICENSE subdirectory on the server configuration diskette and copy the NetWare licenses into the subdirectory.

**NOTE:** Be sure that the Novell NetWare RESPONSE.TXT file has a license section that points to the location of the license files.

8. Edit the CONFIG.SYS file on the server configuration diskette so that it loads the drivers required for the target server devices. A typical CONFIG.SYS file is similar to the following text:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=himem.sys /testmem:off
device=cpqidecd.sys /d:cpqcdrom
files=40
buffers=30
dos=high,umb
stacks=9,256
lastdrive=z:
```

**NOTE:** Refer to the server documentation for information about which devices to load through the CONFIG.SYS file, depending on your server configuration.

9. Be sure that all files referenced in the CONFIG.SYS file are copied to the appropriate subdirectories on the server configuration diskette.

## 10. Modify the AUTOEXEC.BAT file in the A:\ directory so that it contains the following:

```

call a:\novell\startnet
g:
login nwserver/username
map h:=voll:\
REM *** where nwserver is a NetWare server, username is the
REM *** server login name, h: is a specified drive, and voll:\ is
REM *** a NetWare volume where NWSERVER is an example NetWare
REM *** server and USERNAME is the user name used to log on to
REM *** the server. H is an example drive letter mapped to the
REM *** NetWare volume VOL1:\.

```

A typical edited AUTOEXEC.BAT file is similar to the following text:

```

@echo off
path=a:\;a:\novell
REM *** Load CD-ROM driver
mscdex /d:cpqcdrom /v /m:50 /l:f

REM *** Start the network software
call a:\novell\startnet

REM *** Log in to the server and NetWare share
g:
login nwserver/username

REM *** Map a shared network drive to a drive letter
map h:=voll:\
h:

REM *** Start the scripted server deployment by calling the
REM *** configuration batch file that resides in the network
REM *** directory
call h:\servers\d1380\d1380nw.bat

```

If SYSTYPE is used to allow branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```

@echo off
path=a:\;a:\novell
REM *** Load CD-ROM driver
mscdex /d:cpqcdrom /v /m:50 /l:f

REM *** Start the network software
call a:\novell\startnet

REM *** Log in to the server and NetWare share
g:
login nwserver/username

REM *** Map a shared network drive to a drive letter
map h:=voll:\
h:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the
REM *** server-specific configuration batch file.
REM *** -----

```

```

h:\cpq\systype ssstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call h:\dl580nw.bat
goto end

:DL380
call h:\dl380nw.bat
goto end

:ML530
call h:\ml530nw.bat
goto end

:ML350
call h:\ml350nw.bat
goto end

cd \
:end

```

11. Sign the server configuration diskette with SIGNDISK by copying the SIGNDISK utility to the diskette and typing SIGNDISK at the A:\ prompt. Signing the diskette stamps it with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

### Server Configuration Files

There are four script files that can be generated, depending on your system.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- SERVER.HWR—Hardware configuration script file generated by CONREP
- SERVER.ARY—Array configuration script file generated by ACR
- SERVER.PRT—Partition configuration script file generated by CPQDISK
- SERVER.RLO—RILOE configuration file generated by CPQLODOS (optional)



## Primary Configuration Script Files

Generate the three primary script files on the source server by following these steps:

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380NW.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to A:\DL380NW.HWR.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380NW.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to A:\DL380NW.ARY.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380NW.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to A:\DL380NW.PRT.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

## Optional Configuration Script File

1. Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

2. Generate the array configuration script file for ProLiant servers with an AMI ATA RAID controller using the following command:

```
HYPERCFG /S /L /FA:\DL3802K.CFG
```

This command reads the array configuration on the source servers and writes the array configuration script file to A:\DL3802K.CFG.

## Unattended Installation File

After the server profile script files are generated and modified for the target server, save a copy of the RESPONSE.NI file as RESPONSE.TXT on the server configuration diskette or network directory. If NetWare 6 is already installed on a similar server, a copy of the RESPONSE.NI file is found in SYS:NI\DATA. Refer to the end of this chapter for a typical unattended installation file for NetWare 6.

Refer to the NetWare document *Automating the NetWare 6 Installation with a Response File* for a complete description of how to automate the installation of NetWare 6. The document is located at

[www.novell.com/documentation/lg/nw6p/index.html?page=/documentation/lg/nw6p/other/enu/data/hz8pck9v.html](http://www.novell.com/documentation/lg/nw6p/index.html?page=/documentation/lg/nw6p/other/enu/data/hz8pck9v.html)

## Creating the Server Batch File

In the case of network installations, the server batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files run by the server batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

### Example 5-3: Creating a log file

```
H:\CPQ\CONREP -L A:\DL380NW.HWR > A:\LOGS\DL380NW.LOG
```

This command creates the file DL380NW.LOG in the \LOGS subdirectory on the A drive and sends any console feedback generated by the command H:\CPQ\CONREP -L A:\DL380NW.HWR to the DL380NW.LOG file.

### Example 5-4: Appending a log file

```
H:\CPQ\CPQDISK /R A:\DL380NW.PRT >> A:\LOGS\DL380NW.LOG
```

This command appends any console feedback generated by the command H:\CPQ\CPQDISK /R A:\DL380NW.PRT to the file DL380NW.LOG in the \LOGS subdirectory on the A drive. If a file already exists, “>” replaces the file.

For maximum configuration flexibility, the server batch file executes the following steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls
REM *** -----
REM *** Change to the mapped shared network drive and get the
REM *** current state
REM *** -----
h:
cd \cpq
echo Retrieving State Information...
h:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
REM *** pause
REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0
```

```

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** H:\SERVERS\DL380\DL380NW.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
h:\cpq\conrep -l h:\servers\dl380\dl380nw.hwr
echo Setting State Information...
h:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----

:State1
REM *** -----
REM *** Second state
REM *** Configure the arrays by reading the configuration
REM *** information in the script file
REM *** H:\SERVERS\DL380\DL380NW.ARY and stamping it onto
REM *** the array controllers of the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
h:\cpq\acr /i h:\servers\dl380\dl380nw.ary /o
REM *** ECHO Configuring the RAID Controllers
REM *** Remove REM to configure RAID Controllers
REM *** f:\CPQ\hypercfg /s /l /@h:\servers\dl380\dl380nw.cfg
echo Setting State Information...
h:\cpq\statemgr /w Phase 2
REM *** -----
REM *** Reboot to drive A:
REM *** -----
h:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Create partitions by reading content of the
REM *** H:\SERVERS\DL380\DL380NW.PRT
REM *** script file and stamping the configuration onto the hard
REM *** drive in the target server
REM *** Increase state variable and reboot
REM *** -----
echo Creating Disk Partitions...
h:\cpq\cpqdisk /w h:\servers\dl380\dl380nw.prt
echo Setting State Information...
h:\cpq\statemgr /w Phase 3
REM *** -----
REM *** Reboot to drive A:
REM *** -----
h:\cpq\reboot a:

```

```
:State3
REM *** -----
REM *** Fourth State
REM *** Format the boot partition and populate
REM *** Increase the state variable
REM *** -----
echo Formatting the First Disk Partition as DOS...
REM *** If using Caldera DOS 7.02 or later, use the Caldera DOS
REM *** command
REM *** FORMAT C: /X /S /QUIET /V: on the following line instead
REM *** of CPQFMT C:
REM *** h:\cpq\cpqfmt c:
a:
cd \
format c: /x /s /quiet /v:

REM *** -----
REM *** Change to the root directory of drive C: to create a
REM *** drivers directory and copy files
REM *** -----
c:
cd \
echo Creating Driver Directory and Copying Drivers and Files...
echo Copying final autoexec.bat, config.sys, and driver file to
c:\
copy h:\cpq\rootc\*. * c:\
md dos
cd dos
copy h:\cpq\dos\*. *
cd \
md nwupdate
cd nwupdate

REM *** -----
REM *** The following copy commands are for SmartStart 6.00 or
REM *** later.
REM *** -----
copy h:\compaq\drivers\nw6\*. *
cd\
md compaq
cd compaq
copy h:\cpq\script\extra.ics
copy h:\compaq\csp\nw\*. *
h:
REM *** -----

REM *** -----
REM *** Copy the customized RESPONSE.TXT file from the shared
REM *** network location to the \NWUPDATE directory on the target
REM *** server
REM *** -----
copy h:\servers\dl380\response.txt c:\nwupdate
echo Setting State Information...
h:\cpq\statemgr /w Phase 4
```

```
REM *** -----
REM *** Turn off the Virtual Floppy
REM *** -----
h:\cpq\vflop /b:never /p:off

:State4
REM *** -----
REM *** Fifth state
REM *** Start the installation process by reading the
REM *** RESPONSE.TXT file
REM *** Increase the state variable and reboot
REM *** -----
h:
cd \
h:\cpq\statemgr /w Phase 5
echo Starting operating system installation...
h:
cd h:\nw6
install /rf=c:\nwupdate\response.txt

REM *** -----
REM *** Unused states
REM *** Installation of other utilities and agents software may
REM *** be placed here
REM *** -----
:State5

h:\cpq\reboot c:
:State6
:State7
:State8
:State9
:State10
```

## Preparing the Network Software Repository

When creating the network software repository, it is important to organize the directory structure.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with read-only access to the software image files in the repository.
2. Place the server batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create an \NW6 subdirectory and copy the contents of the Novell NetWare 6 CD into the subdirectory.
4. Create a \CPQ subdirectory and copy the Toolkit utilities into the subdirectory.
5. Create a \CPQ\ROOTC subdirectory and copy the files to be placed in the root directory of the target server C drive. For example, copy the AUTOEXEC.BAT, CONFIG.SYS, CPQIDECD.SYS, FW2ASPI.SYS, and FW2CD.SYS files.
6. Create a \CPQ\DOS subdirectory and copy the DOS files to be placed in the \DOS subdirectory of the target server C drive.
7. Create a \CPQ\SCRIPT subdirectory and copy the EXTRA.ICS file from \COMPAQ\INSTALL\NW on the SmartStart 6.00 or later CD.
8. Create a \COMPAQ\DRIVERS\NW6 subdirectory and copy the \COMPAQ\DRIVERS\NW6 subdirectory contents from the SmartStart 6.00 or later CD.
9. Create a \COMPAQ\CSP\NW subdirectory and copy the \COMPAQ\CSP\NW subdirectory contents from the SmartStart CD 6.00 or later.
10. Be sure that the response file has the following section:

```
[NWI: Install Script]
Close script=c:\COMPAQ\extra.ics e=c:\cpqerr.log
```

**NOTE:** The EXTRA.ICS file is used to launch the ProLiant Support Pack at the end of the network installation.

11. Create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380 and \SERVERS\ML330. Copy the three server profile script files from the server configuration diskette and the customized operating system-dependent unattended installation file into each server profile subdirectory.

**IMPORTANT:** When the directory structure of the network software repository is determined, be sure that the server batch file runs all programs and utilities correctly from the network location.

## Deploying the Target Server

Complete the following steps to begin a new server deployment over the network:

1. Insert the bootable server configuration diskette into the target server.
2. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which then connects the target server to the network share and starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## NetWare 6 RESPONSE.NI Sample File for SmartStart 6.00 or Later

The operating system-dependent unattended installation file is not created by the Toolkit utilities. The user must create the file separately.

For a complete description of how to automate the installation of Novell NetWare 6, refer to the Novell NetWare document *Automating the NetWare 6 Installation with a Response File*, available at

[www.novell.com/documentation/lq/nw6p/index.html?page=/documentation/lq/nw6p/other/enu/data/hz8pck9v.html](http://www.novell.com/documentation/lq/nw6p/index.html?page=/documentation/lq/nw6p/other/enu/data/hz8pck9v.html)

**NOTE:** Bold lines indicate modifications made to fully automate the installation of the operating system. Be sure to modify server-specific settings such as server name and IP address for each server being deployed.

You can remove all server-specific hardware information from the response file and turn on hardware detection by changing values from false to true. Refer to **[NWI:Hardware]** in the following example. This creates a more generic response file for use on multiple servers.

```
[NWI:Product Information]
Major Version=NetWare 6
Minor Version=00

[NWI:Language]
Server Language=4
Prompt=FALSE
Additional Languages=4
```



```
[NWI:NDS]
Admin Password=admin
Schema Extensions=sys:/system/schema/NLS.SCH,
  sys:/system/schema/AUDITING.SCH,
  sys:/system/schema/NWADMIN.SCH, sys:/system/schema/NRD.SCH,
  sys:system/schema/SAS.SCH, sys:/system/schema/NDSPKI.SCH,
  sys:/system/schema/MASV.SCH, sys:/system/schema/SLP.SCH,
  sys:system/schema/CATALOG.SCH, sys:system/schema/WANMAN.SCH,
  sys:system/schema/SMS.SCH, sys:system/schema/NDPS100.SCH,
  sys:system/schema/NDPS200.SCH, sys:system/schema/SVC.SCH,
  sys:system/schema/NDSCOMM.SCH, sys:system/schema/NOV_INET.SCH,
  sys:system/schema/NSSFS.SCH
Schema Extensions TAO=sys:/system/schema/NDS500.SCH,
  sys:/system/schema/NDSPKIS.SCH
Schema Extensions Pre DS=sys:/system/schema/NDS500.SCH,
  sys:/system/schema/NLS.SCH
Schema Extensions LDAP=sys:system/schema/LDAP.SCH,
  sys:system/schema/LDAPUPDT.SCH
Schema Extensions LDAP NDS8=sys:system/schema/nds8/LDAP.SCH
Schema Extensions LDAP
  NDSJUL99=sys:system/schema/ndsjul99/LDAP.SCH,
  sys:system/schema/ndsjul99/LDAPUPDT.SCH,
  sys:sys:system/schema/ndsjul99/NDSPKI.SCH
Schema Extensions LDAP
  NDSAPR99=sys:system/schema/ndsapr99/LDAP.SCH,
  sys:system/schema/ndsapr99/LDAPUPDT.SCH
Admin Language=4
Tree Name=ml3501
Server Context=0=ml3502
New Tree=true
Admin Login Name=admin
Admin Context=0=ml3502
Display Summary=false
Prompt=false

[NWI:Old Products]
Product 1=NWSB411
Product 2=IWSB411
Product 3=NWSB420
Product 4=NWGB420
Product 5=NSBS

[Settings]
Novell:NOVELL_ROOT:1.0.0=NONE
Novell:NetWare5OS:5.0.0=Novell:DST:1.0.0
Novell:PROTOCOLS:1.0.0=Novell:DST:1.0.0
Novell:DS_INSTALL:1.0.0=Novell:DST:1.0.0
Novell:Disk Carver:1.0.0=Novell:DST:1.0.0
Novell:AFP:1.0.1=
Novell:CIFS:1.0.1=
```

```

[NOVELL:NOVELL_ROOT:1.0.0]
showWelcomeScreen=false
LogLevel=DEBUG_DETAIL
welcomeScreen=com.novell.application.install.Welcome
choiceScreen=com.novell.application.install.ChoicePanel
summaryScreen=com.novell.application.install.server.cobra.
    CustomSummary
licenseAgreementScreen=com.novell.application.install.
    ProductLicenseAgreement
languageScreen=com.novell.application.install.SelectLanguage
customChoiceScreen=com.novell.application.install.
    CustomChoicePanel
wizardScreen=com.novell.application.install.WizardFrame
licenseEnvelopeScreen=com.novell.application.install.
    LicenseEnvelope
;closeScreen=NWICloseScreen
closeScreen=SilentCloseScreen
silent=false
installSilentModeOverwrite=true
installSilentModeOverwriteConfigFile=true
allowCustomization=true
allowSummary=true
allowReadme=true
allowCloseScreen=true
allowStatusBar=true
allowLicenseAgreement=true
welcomeScreenText=Welcome to the Novell installation. This program
will install the following selected programs on your computer.
welcomeScreenTitle=Novell Product Installation
customizeScreenTitle=Product Customization
defaultImage=banner5.gif
licenseAgreeFile=nwlic.txt
readmeFile=readme.html
licensePath=none
welcomeScreenHelp=welcome.html
summaryScreenHelp=summary.html
licAgreeScreenHelp=licAgree.html
choiceScreenHelp=choice.html
filterScreenHelp=filter.html
licEnvScreenHelp=license.html
customizeScreenHelp=custom.html
locationScreenHelp=location.html
licEnvScreenTitle=Licenses
summaryScreenTitle=Summary
licAgreeScreenTitle=License Agreement
locationScreenTitle=Location
choiceScreenTitle=Components
installMode=2
overWriteNewerFile=false
;overWriteNewerFilePrompt=true
overWriteNewerFilePrompt=false
copyToRemoteDestination=true
pdbDirectory=server;products
reboot=true

```

```

[Initialization]
Version=Novell:NetWare5:1.0.0
SPLocation=SYS:\ni\update\bin\../data/local.db
NISubdirectory=update
Install Zip Path=sys:ni/data
DisplayLanguage=en_US
InstallationMode=Silent
SummaryPrompt=false

[NWI:Install Script]
Support Pack Script=c:/spack/spack.ips e=c:\spackerr.log
s=c:\spack
Close Script=C:\compaq\extra.ics e=c:\cpqerr.log

[Locations]
Novell:DST%Startup:1.0.0=

[Selected Nodes]
prompt=true
Novell:NetWare5:1.0.0=Novell:NetWare:5.1.0,Novell:Products:1.0.0,
  Novell:NWUpdateGroup:1.0.0
Novell:NetWare:5.1.0=Novell:NetWare6OS:6.0.0,Novell:NICI:1.0.0,
  Novell:Disk Carver:1.0.0,Novell:Protocols:1.0.0,
  Novell:Time Zone:1.0.0,Novell:DS_Install:1.0.0,
  Novell:LicensePrompt:1.0.0,Novell:NW:1.0.0
Novell:NW:1.0.0=Novell:Startup:1.0.0,Novell:SYS:1.0.0,
  Novell:DriverFiles:1.0.0,Novell:Rconjzip:1.0.0,
  Novell:Perl5zip:1.0.0,Novell:beanszip:1.0.0,
  Novell:nscriptzip:1.0.0,Novell:scripteszip:1.0.0,
  Novell:nwadminzip:5.1.9
Novell:SYS:1.0.0=Novell:SYSDirectory:1.0.0,
  Novell:ConfigDirectory:1.0.0,Novell:PervasiveDirectory:1.0.0
Novell:DriverFiles:1.0.0=Novell:LANFiles:1.0.0,
  Novell:SBDFiles:1.0.0
Novell:Products:1.0.0=Novell:Novell Certificate Server:2.0.0,
  Novell:6pkLdap:3.20.0,Novell:Imonitor:1.5.0,
  NOVELL:Portal:1.0.1,Novell:SMS:1.0.8,
  Novell:ConsoleOne Products:1.3.2,
  Novell:Netscape Administration Server for NetWare:3.6.0,
  Novell:Novell NMAS Install:2.0.0,
  Novell:Native File Services:1.0.1,
  Novell:NAAS:1.0.0,Novell:emFrame:1.0.0,
  Novell:PortRes:1.0.0
Non-Changeable Products=Imonitor,Portal,ConsoleOne Products,
  NWLdap,SMS,Novell Certificate Server,Novell NMAS Install,
  RAS,Netscape Administration Server for NetWare,PortRes,emFrame
Default=Novell Certificate Server,NWLdap,Portal,SMS,
  ConsoleOne Products,NDPS,Netscape Enterprise Server for
  NetWare,Collabra Server,Netscape Administration Server for
  NetWare,NIS SERVICES,FTP Server,NFS Server,
  NetWare Web Search,RAS,ipWanMan,Novell NMAS Install,PortRes
Novell:Novell Certificate Server:2.0.0=Novell:CertServ System
  Files:2.0.0,Novell:CertServ Public Files:2.0.0
Novell:Imonitor:1.5.0=Novell:imonitor_DFG:1.5.0,
  Novell:imonitor_en_DFG:1.5.0
NOVELL:Portal:1.0.1=Novell:portalzip:1.0.0
Novell:SMS:1.0.8=Novell:SMSSystemFiles:1.0.4,
  Novell:SMSPublicFiles:1.0.4,Novell:SMSNsnFiles:1.0.4

```

```

Novell:ConsoleOne Products:1.3.2=Novell:ConsoleOne:1.3.2,
  Novell:Reporting Snapin:1.3.0
Novell:ConsoleOne:1.3.2=Novell:c1_core:1.0.0,Novell:
  c1_win32:1.0.0,Novell:c1_nw.zip:1.0.0
Novell:Reporting Snapin:1.3.0=Novell:c1_rpt:1.0.0
Novell:Netscape Administration Server for NetWare:3.6.0=Novell:
  Admin_Always:3.6.0,Novell:ADM-NLS:3.6.0,
  Novell:AdminNovonyxConfigZip:3.6.0
Novell:Admin_Always:3.6.0=Novell:AdminNovonyxNonConfigZip:3.6.0,
  Novell:NOVL_AdminStuffZip:3.6.0,
  Novell:NVX_AdminStuffZip:3.6.0,
  Novell:Apache_AdminZip:3.6.0,
  Novell:WebAdmin_Zip:3.6.0,Novell:NWTomcat_Zip:3.6.0,
  Novell:NWTC33_Zip:3.3.0
Novell:ADM-NLS:3.6.0=Novell:WadNLS4Zip:3.6.0
Novell:Novell NMAS Install:2.0.0=Novell:NMAS Server
  Components:2.0.0,Novell:NMAS Server System Files:2.0.0
Novell:Native File Services:1.0.1=Novell:AFP:1.0.1,
  Novell:CIFS:1.0.1,Novell:NFSNIS:1.1.0
Novell:AFP:1.0.1=Novell:AFP-NLMs:1.0.1
Novell:CIFS:1.0.1=Novell:CIFS-NLMs:1.0.1
Novell:NFSNIS:1.1.0=Novell:NFSNIS-NLMs:1.1.0
Novell:NAAS:1.0.0=Novell:AGENT_ZIP:1.0.0,
  Novell:SERVER_ZIP:1.0.0,Novell:UTIL_ZIP:1.0.0
Novell:eMFrame:1.0.0=Novell:eMFrame install module:1.0.0
Novell:eMFrame install module:1.0.0=Novell:eMFrame zip file:1.0.0,
  Novell:Tomcat config zip file:1.0.0,
  Novell:NDPS extra zip file:1.0.0,
  Novell:NDPS snapin zip file:1.0.0,
  Novell:NLS snapin zip file:1.0.0,
  Novell:DNSDHCP snapin zip file:1.0.0
Novell:PortRes:1.0.0=Novell:PortRes install module:1.0.0
Novell:PortRes install module:1.0.0=Novell>Welcome Page
  zip file - English:1.0.0
Novell:NWUpdateGroup:1.0.0=Novell:NWUpdate:1.0.0

[NWI:Locale]
Prompt=FALSE
Country Code=001
Keyboard=United States
Code Page=437
Uses Vgadisp=false
[NWI:Mouse and Video]
Mouse=Auto
Video Type=PlugNPlay
Prompt=FALSE

[NWI:Install Options]
Upgrade=FALSE
Migration=FALSE
Express=FALSE
Prompt=FALSE
Startup Directory=C:\NWSERVER
Allow User Response File=TRUE

```

```
[NWI:Server Settings]
Prompt=FALSE
Load Server at Reboot=FALSE
NDS Version=8
CD-ROM Driver=NetWare

[NWI:License]
Prompt=False
Display License Agreement=FALSE
NICI Foundation Key File=a:\License\90360394.nfk
License File=a:\License\90360394.nlf

[Novell:SRC:1.0.0]
path=F:

[NWI:File Server]
Prompt=false
Servername=ml350
Server Id Number=B65B1D8

[NWI:Hardware]
PSM Detection=TRUE
Storage Detection=TRUE
Network Detection=TRUE
Prompt=FALSE

[NWI:Add To Startup]

[Novell:DST%Startup:1.0.0_Location]
path=file:///C:\NWSERVER

[NWI:File System]
Prompt=FALSE
ALLOW VOLUME PROPERTIES=TRUE
GUI Prompt=false

[NWI:Partition 0]
Device Name=[V504-A1-D0:0] Compaq Smart Array 5i Slot 0 ID 0 LUN 0
PARTITION TYPE=NSS
PARTITION SIZE=4010
PARTITION HOTFIX SIZE=4
START SECTOR=416160

[NWI:Volume 0]
VOLUME NAME=SYS
SEGMENT 1 SIZE=4005
SEGMENT 1 PARTITION=0
FILE SYSTEM TYPE=NSS
COMPRESSION=FALSE

[Novell:PortRes:1.0.0]
Enterprise.NISname=Netscape Enterprise Server for NetWare
Apache.NISname=Netscape Administration Server for NetWare
Apache.subNISnames=iStorage, NWWA, NetWare Web Search
Apache.ipaddress=192.168.102.28
Apache.hostname=192.168.102.28
Apache.port=80
Apache.port.secure=443
Apache.ipaddress.2=192.168.102.28
Apache.hostname.2=192.168.102.28
Apache.port.2=51080
```

```
Apache.port.secure.2=51443
iFolder.NISname=iFolder
iPrint.NISname=NDPS
showAlways=false
configtype=single
prompt=false

[Novell:DST:1.0.0_Location]
Path=file:/sys:
User=

[Novell:Languages:1.0.0]
LangID1=false
LangID4=true
LangID6=false
LangID7=false
LangID8=false
LangID9=false
LangID10=false
LangID12=false
LangID13=false
LangID14=false
LangID16=false
LangID99=false
LangID100=false

[Advertisement]
AD ID#0=SYS:\NI\DATA\ad1.gif,60
AD ID#1=SYS:\NI\DATA\ad3.gif,60
AD ID#2=SYS:\NI\DATA\ad4.gif,60
AD ID#3=SYS:\NI\DATA\ad5.gif,60
AD ID#4=SYS:\NI\DATA\ad6.gif,60
AD ID#5=SYS:\NI\DATA\ad2.gif,60

[Licenses]
Novell:FCLLic:1.0.0=

[Novell:FCLLic:1.0.0_License]
fileName0=sys:\ni\update\lic0001.lic
activationKey0=C612C4858123D66E
context0=0=ml3502
licCnt=1

[NWI:PROTOCOLS]
Prompt=false

[NWI:TCPIP]
Logical Name 1=Q57_1_EII
IP Address 1=192.168.102.28
Subnet Mask 1=255.255.255.0

[NWI:IPCMD]
IPX Compatibility=False

[NWI:DNS]
Prompt=false

[NWI:Host Name]
Prompt=false
Verify=False
IP Address 1=192.168.102.28
```

```
[NWI:Time Zone]
Use Daylight Saving Time=true
Time Zone=CST
Prompt=false

[NWI:Time Synchronization]
Time Server Type=SINGLE

[Novell:Novell Certificate Server:2.0.0]
Prompt=False
Create Organizational CA=True
Organizational CA Name=ml3501 Organizational CA
Create Server Certificates=True
IP Server Certificate Name=SSL CertificateIP
DNS Server Certificate Name=SSL CertificateDNS
Export Trusted Root=True
Trusted Root Name=sys:/public/RootCert.der

[NWI:LdapConfig]
Prompt=true
ClearText=false

[Novell:SMS:1.0.8]
treeName=ml3501
queueVolume=CN=ml350.O=ml3502
queueContext=CN=ml350 Backup Queue.O=ml3502
smdrContext=O=ml3502

[NWI:MISC]
;relogin password=toolkit
relogin password=""

[Novell:Netscape Administration Server for NetWare:3.6.0]
Prompt=false
AdminPort=2200
AdminIP=
AdminHost=
ApacheServicesPort=80
ApacheServicesSecurePort=443

[NFAM: AFP Contexts]
context0=ml3502

[NFAW: CIFS Server Properties]
servername=ml350_W
servercomment=
unicode=false

[NFAW: CIFS Authentication]
domain=local
wkgrpName=workgroup
pdc=
pdcaddr=
wins=

[NFAW: CIFS IP Addresses]
enableAllAddresses=true
```

```
[NFAW: CIFS Share All]
shareAllVolumes=true

[NFAW: CIFS Contexts]
context0=ml3502

[Novell:eMFrame:1.0.0]
rbsTreeName=ml3501
rbsContext=ml3502
rbsContainerName=Role Based Service
prompt=false
```

The server deployment configuration and operating system installation process is complete.



---

## Red Hat Linux 7.3, Red Hat Linux 8.0, and Advanced Server 2.1 Deployment

This chapter provides best practice scenarios for using the Toolkit to deploy the Red Hat Linux 7.3, Red Hat Linux 8.0, and Advanced Server 2.1 operating systems to a target server across a network connection.

Samples of the script files described in this chapter are available in the `/toolkit/samples` directory that is created when you download and expand the SmartStart Scripting Toolkit. For more information on the SmartStart Scripting Toolkit, refer to the HP website at

<http://www.hp.com/servers/sstoolkit>

## Network-Based Deployment

This scenario illustrates the deployment of Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 over the network. A shared network directory on a Linux-based server must contain the files necessary to set up the target server and must be available to the target server across a network connection. This shared directory must include:

- Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 operating system files
- Customized Red Hat Linux boot image file
- Toolkit utilities
- Server profile script files arranged in directories

**IMPORTANT:** Some hardware may require that specific parameters and/or patches be applied to the Linux kernel. For more information, visit the Linux website at

[www.compaq.com/products/servers/linux/linux-drivers.html](http://www.compaq.com/products/servers/linux/linux-drivers.html)

**NOTE:** Network-based server deployments can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (or faster) networks only.

## Deployment Process Overview

The general network-based server deployment process consists of the following steps:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Customizing the Linux boot image file
4. Creating the server batch file
5. Preparing the network software repository
6. Deploying the target server

Each of these steps is described in more detail in the following sections.

**NOTE:** For more information, refer to the README.TXT file on the Red Hat Linux CD.

## Creating the Bootable Server Configuration Diskette with Network Software

Create a bootable server configuration diskette (using DOS 6.22 or 7.0) for booting the target server and loading the Microsoft Networking protocol stack. Loading the protocol stack allows the target server to connect to a shared network directory and initiate the server deployment process over the network.

**NOTE:** Refer to Appendix A for an alternate procedure to create a basic network boot diskette using a Microsoft Network Client 3.0 set of diskettes for DOS.

1. Format a 1.44-MB diskette using the DOS `FORMAT /S` command. This command transfers the system files that make the diskette bootable.
2. Be sure that the latest NIC drivers are available for the server on which Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 will be installed.

**NOTE:** For information about using the Network Client Administrator, refer to the online documentation for the utility.

3. Using a Windows NT Server 4.0 server, start the Network Client Administrator tool and select **Make Network Installation Startup Disk**.
4. Select **Network Client v3.0 for MS-DOS and Windows**.
5. Select any of the NICs from the list.
6. When prompted, supply the **Computer name**, **User name**, **Domain**, and **Network protocol**. In this case, TCP/IP and DHCP are being used.
7. Copy the proper DOS Network Device Interface Specification (NDIS) driver into the A:\NET directory of the server configuration diskette.
8. Modify the SYSTEM.INI file in the A:\NET directory so that it contains the following:

```
NETCARD=FILENAME.DOS
PREFERREDREDIR=BASIC
AUTOSTART=BASIC
REM *** where FILENAME.DOS=DOS NDIS driver file name copied to the
REM *** server configuration diskette.
REM *** For example, N100.DOS.
```

9. Modify the PROTOCOL.INI file in the A:\NET directory so that it contains the following:

```
DRIVERNAME=FILENAME$
REM *** FILENAME$ is the DOS NDIS driver file name.
REM *** For example, N100$.
```

10. Edit the CONFIG.SYS file on the server configuration diskette so that it loads all of the drivers required for the target server devices. A typical CONFIG.SYS file is similar to the following:

```
REM *** Load special memory and DOS devices required by the
REM *** target server
device=a:\dos\himem.sys/testmem:off
device=a:\dos\setver.exe
device=a:\net\ifshlp.sys
REM *** Loading RAMDRIVE is necessary for Linux installations
devicehigh=a:\dos\ramdrive.sys /E 2048
dos=high,umb
buffers=30
files=40
stacks=9,256
switches=/f
lastdrive=z:
```

**NOTE:** Refer to the server documentation for information about which devices to load through the CONFIG.SYS file for your server configuration.

11. Edit the AUTOEXEC.BAT file to remove the line that runs SETUP.EXE and add a line that maps a drive letter to the network share. For example, add:

```
NET USE S: \\DEPLOY\SHAREVOL /YES
REM *** where S=mapped drive, DEPLOY=server name, and
REM *** SHAREVOL=network share on the server
```

A typical AUTOEXEC.BAT file is similar to the following:

```
@echo off

set wattcp.cfg =a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\umb.com
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start
set path=a:\;a:\dos;a:\net;s:\cpq;s:\dosutils

REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:

REM *** Start the scripted server deployment by calling the
REM *** configuration batch file that resides in the shared
REM *** network directory
call s:\dl380lnx.bat
```

If SYSTYPE is used to allow branching from within the AUTOEXEC.BAT file, a typical startup file is similar to the following:

```
@echo off

set wattcp.cfg =a:\net
set hard_reset=-hr
set path=a:\;a:\dos;a:\net

REM *** Login
REM *** Change to the \net subdirectory and load network stacks
cd a:\net
a:\net\net initialize
a:\net\umb.com
a:\net\netbind.com
a:\net\tcptsr.exe
a:\net\tinyrfc.exe
a:\net\nmtsr.exe
a:\net\emsbfr.exe
a:\net\net start
set path=a:\;a:\dos;a:\net;s:\cpq;s:\dosutils

REM *** Map a shared network drive to a drive letter
net use s: \\deploy\sharevol /yes
s:
cd \cpq

REM *** -----
REM *** Start the scripted server deployment by determining the
REM *** target system and calling the server-specific
REM *** configuration batch file.
REM *** -----

s:\cpq\systype sstksys.ini

if errorlevel 53 goto DL580
if errorlevel 50 goto DL380
if errorlevel 49 goto ML530
if errorlevel 47 goto ML350

:DL580
call s:\dl580lnx.bat
goto end

:DL380
call s:\dl830lnx.bat
goto end

:ML530
call s:\ml530lnx.bat
goto end

:ML350
call s:\ml350lnx.bat
goto end

cd \

:end
```

12. Sign the server configuration diskette with SIGNDISK by copying the utility to the diskette and typing `SIGNDISK` at the `A:\` prompt. Signing the server configuration diskette stamps the diskette with information required to bypass the F1/F10 setup prompt on unconfigured systems restarted with the diskette.

## Creating the Server Profile Script Files

The Toolkit utilities require a server profile consisting of three generated script files and an operating system-dependent unattended installation file to fully configure the target server and deploy the operating system.

**IMPORTANT:** The server profile scripts cannot be generated on a Linux source system running an MS-DOS emulator such as `dosemu`. The server profile scripts must always be generated on a source system running DOS 6.22 or 7.0.

## Server Configuration Files

There are four script files that can be generated, depending on your system. Generate the three primary script files on the source server by using the following steps.

**IMPORTANT:** The Toolkit requires that all script file names follow the DOS 8.3 file naming convention. No other restrictions are placed on script file naming. However, if script files for various servers are placed on an installation CD-ROM, store each server profile in its own directory and standardize the script file naming. For example:

- `SERVER.HWR`—Hardware configuration script file generated by `CONREP`
- `SERVER.ARY`—Array configuration script file generated by `ACR`
- `SERVER.PRT`—Partition configuration script file generated by `CPQDISK`
- `SERVER.RLO`—RILOE configuration file generated by `CPQLODOS` (optional)

### Primary Configuration Script Files

1. Generate the hardware configuration script data file with the following command:

```
CONREP /S A:\DL380LNX.HWR
```

This command reads the current configuration on the source server and writes the hardware configuration script file to `A:\DL380LNX.HWR`.

2. Generate the array configuration script file with the following command:

```
ACR /C A:\DL380LNX.ARY
```

This command reads the array configuration on the source server and writes the array configuration script file to `A:\DL380LNX.ARY`.

3. Generate the partition configuration script file with the following command:

```
CPQDISK /R A:\DL380LNX.PRT
```

This command reads the partition configuration on the source server and writes the partition configuration script file to `A:\DL380LNX.PRT`.

If necessary, use any text editor to make changes to the configuration script files so that they conform to the target server.

### Optional Configuration Script File

Generate the RILOE, RILOE II, or iLO configuration script file. For examples of the command line parameters, refer to the “Compaq Lights-Out DOS Utility” appendix of the *Remote Insight Lights-Out Edition User Guide*, the *Remote Insight Lights-Out Edition II User Guide*, or the *Integrated Lights-Out User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

**IMPORTANT:** Be sure that only the system partition is defined in the partition configuration script file.

If any DOS partitions are defined, remove the additional [Partition#] section headings and partition definition entries. Leave only the system partition section heading and its partition definition entries and rename the system partition section heading.

The following is an example of a partition configuration script file for deployment on a Linux-based target server:

```

; Note: The active partition has been changed to Primary DOS
; Note: partition.
; Note: Partitions over 4 GB have been changed to 4 GB.

[General Parameters]
Overwrite=True

; This is the system partition
; For Linux deployments, the heading can be [Partition1],
; [Partition2], or [Partition3].
; The heading cannot be [Partition0]

[Partition3]
Size=40
Type=12
Active=False

```

### Unattended Installation Files

When the server profile script files are generated and modified for the target server, save a copy of Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 kickstart file (ks.cfg) on the server configuration diskette. Refer to the end of this chapter for a typical unattended installation.

**NOTE:** The ks.cfg file is generated on a Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 system by using the installable mkkickstart utility. Refer to the operating system documentation or to *RedHat Linux KickStart HOWTO* for a complete description of options that can be modified in the ks.cfg unattended installation file to customize the installation of Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1. This document is located at

[www.linux.org/docs/ldp/howto/KickStart-HOWTO.html](http://www.linux.org/docs/ldp/howto/KickStart-HOWTO.html)

## Customizing the Linux Boot Image File

By default, the installation of Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 requires two diskettes. The first is the DOS-based diskette that launches the deployment process. The second is a Linux boot diskette that loads the operating system.

During the deployment process, avoid swapping between DOS-based and Linux-based diskettes by adding steps in the server batch file to replace the contents of the DOS-based diskette with a customized Linux boot image file stored in the software repository. Because the file replacement process is destructive, create an image file of the DOS-based bootable server configuration diskette with network software before using the diskette the first time.

On Red Hat Linux 7.3-, Red Hat Linux 8.0-, or Advanced Server 2.1-based systems, use the `dd` command to create an image file of the DOS-based bootable server configuration diskette with network software. Additional information about the `dd` command is available by referring to the operating system documentation or consulting the *man* pages.

For creating image files in Windows NT 4.0 or Windows 2000, refer to Chapter 7, “Third-Party Imaging Software Deployment.”

Use a system running Linux to create the customized Linux boot image file. To create the image file:

1. Create a Linux boot diskette using the Linux `dd` command to write the image file `bootnet.img` on the Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 media to a standard 1.44-MB diskette.

If using a DOS-based system to create the Linux boot diskette, use the Linux RaWrite utility for DOS to write the image file `bootnet.img` on the Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 media to a standard 1.44-MB diskette. The RaWrite utility for DOS cannot be used to create the customized Linux boot image file from the data on the diskette.

**NOTE:** Additional information about the RaWrite utility is available by referring to the operating system documentation or by using the `-h` argument on the command line.

2. Recover space on the diskette by deleting all `.MSG` files from the diskette.
3. Edit the `sysLinux.cfg` file on the diskette with any Linux text editor so that it is similar to the following text:

```
default ks
prompt 1
timeout 15
label ks
kernel vmlinuz
append ks=floppy initrd=initrd.img network
```

4. Copy the `ks.cfg` file modified under “Unattended Installation Files” of the “Creating the Server Profile Script Files” section to the diskette.
5. Using the Linux `dd` command, create the customized Linux boot image file from the data on the diskette.



**IMPORTANT:** On DOS-based and Windows-based systems, other diskette imaging utilities are used to create the customized Linux boot image file from the data on the diskette. Do not use the Remote Insight Diskette Image Utility to create the customized Linux boot image file.

## Creating the Server Batch File

In the case of network installations, the server batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files run by the configuration batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the executable files whose console feedback you want to log.

### Example 6-1: Creating a log file

```
S:\CPQ\CONREP -L A:\DL380LNX.HWR > D:\LOGS\DL380LNX.LOG
```

This command creates the file DL380LNX.LOG in the \LOGS subdirectory on the D drive and sends any console feedback generated by the command S:\CPQ\CONREP -L A:\DL380LNX.HWR to the DL380LNX.LOG file.

### Example 6-2: Appending a log file

```
S:\CPQ\ACR /I A:\DL380LNX.ARY >> D:\LOGS\DL380LNX.LOG
```

This command appends any console feedback generated by the command S:\CPQ\ACR /I A:\DL380LNX.ARY to the file DL380LNX.LOG in the \LOGS subdirectory on the D drive.

```
S:\CPQ\CPQDISK /R A:\DL380LNX.PRT >> D:\LOGS\DL380LNX.LOG
```

This command appends any console feedback generated by the command S:\CPQ\CPQDISK /R A:\DL380LNX.PRT to the file DL380LNX.LOG in the \LOGS subdirectory on the D drive.

For maximum configuration flexibility, the server batch file executes the following steps:

1. Reads a server state variable
2. Checks the error level that is returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

**IMPORTANT:** Because this is a destructive process, be sure that you have created an image file of the DOS-based bootable server configuration diskette with network software before attempting to use the diskette for the first time.

For creating image files in Windows NT 4.0 or Windows 2000, refer to Chapter 7, "Third-Party Imaging Software Deployment."

Alternatively, on Red Hat Linux 7.3-, Red Hat Linux 8.0-, or Advanced Server 2.1-based systems, use the `dd` command to create an image file of the DOS-based bootable server configuration diskette with network software. Additional information about the `dd` command is available by referring to the operating system documentation or consulting the *man* pages.

**NOTE:** This sample server batch file shows how to convert the DOS-based bootable server configuration diskette with network software to a customized Linux boot diskette for installation of the operating system.

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls
REM *** -----
REM *** Ensure that the shared network directory is used and get
REM *** the current state
REM *** Samba and NFS services must have been started on the
REM *** Linux server
REM *** -----
s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
pause
REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0
```

```

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** S:\SERVERS\DL380\DL380LNX.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
s:\cpq\conrep -l s:\servers\dl380\dl380lnx.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----

:State1
REM *** -----
REM *** Second state
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file
REM *** S:\SERVERS\DL380\DL380LNX.ARY and stamping it onto
REM *** the array controllers of the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
s:\cpq\acr /i s:\servers\dl380\dl380lnx.ary /o
echo Setting State Information...
s:\cpq\statemgr /w Phase 2

REM *** -----
REM *** Reboot to drive A:
REM *** -----
s:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Create partition by reading content of the
REM *** S:\SERVERS\DL380\DL380LNX.PRT
REM *** script file and stamping the configuration onto the hard
REM *** drive in the target server
REM *** Prepare for system partition population
REM *** Increase state variable and reboot
REM *** -----
echo Creating Disk Partition...
s:\cpq\cpqdisk /w s:\servers\dl380\dl380lnx.prt
echo Setting State Information...
s:\cpq\statemgr /w Phase 3

REM *** -----
REM *** Reboot to drive A:
REM *** -----
s:\cpq\reboot a:

```

```
:State3
REM *** -----
REM *** Fourth state
REM *** There is no operating system partition at this point
REM *** The ramdrive is labeled c: by default
REM *** Operating system files are copied to the ramdrive from
REM *** the diskette and the shared network directory to prepare
REM *** the Linux boot diskette
REM *** -----
c:
REM *** Copy COMMAND.COM to c:\
copy a:\command.com
REM *** Reassign the COMSPEC environment variable to c:\
set comspec=c:\command.com
REM *** Copy files in the shared network directory to the
REM *** ramdrive
copy s:\tools\rawrite.exe
copy s:\servers\dl380\cpqboot.img

REM *** -----
REM *** This process creates the Linux boot diskette
REM *** The process is destructive because it replaces the
REM *** content of the configuration diskette with the content of
REM *** a Linux image file
REM *** Ensure that an image file of the original configuration
REM *** diskette exists
REM *** The Linux boot diskette is created by using the RaWrite
REM *** Linux utility on the ramdrive
REM *** -----
rawrite -f cpqboot.img -d a: -n
REM *** Boot to drive A: from the network location
s:\cpq\reboot a:

REM *** -----
REM *** Unused states
REM *** -----
:State4
:State5
:State6
:State7
:State8
:State9
:State10
```

In the server batch file example, the name of the customized Linux boot image file is `cpqboot.img`. Because `ks.cfg` in the `cpqboot.img` file is typically server specific, a copy of the `cpqboot.img` file is stored for each server profile in the server profile subdirectories of the network software repository.

## Preparing the Network Software Repository

In this sample, the software repository is located on a Linux-based server. The Server Message Block (SMB) and Network File Service (NFS) protocols must be started on the Linux-based server before the repository can be accessed by the DOS-based bootable server configuration diskette.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement. SMB shares are provided by Samba software.

## Organizing the Repository

It is important to organize the directory structure when creating the repository.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with access to the software image files in the software repository.
2. Place only configuration batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create a master SMB directory to organize all of the files required for deployment. For example, create a master SMB directory called /SHAREVOL.

**IMPORTANT:** Be sure that ownership of the /SHAREVOL directory and all subdirectories under the directory is set to the account that will be used to access the directories.

4. Under the Linux /SHAREVOL subdirectory, create a /RedHatCD subdirectory and copy the contents of the Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 CD into the directory.

**IMPORTANT:** The /SHAREVOL/RedHatCD subdirectory must be shared as an NFS volume.

Refer to the README file on the Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 CD1 for directions about how to copy the necessary files from both the Linux CDs to the network share.

5. Create Linux configuration files for Samba and NFS and place both files in the Linux/etc subdirectory.

**NOTE:** Using the Linux/etc subdirectory for the Samba and NFS configuration files follows standard Linux conventions. Using this subdirectory is not a requirement.

6. Create the /SHAREVOL/CPQ subdirectory and copy all of the Toolkit utilities into the subdirectory.
7. Create the /SHAREVOL/SERVERS subdirectory containing a subdirectory for each server profile. For example, create /SHAREVOL/SERVERS/DL380, /SHAREVOL/SERVERS/ML330, and so on.

8. Copy the three server profile script files from the server configuration diskette and the customized Linux boot image cpqboot.img file into each server profile subdirectory.
9. Create additional subdirectories under /SHAREVOL to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.
10. If the system partition on the target server will be populated, copy the subdirectories /SYSCFG, /DIAGS, /DIFDATA, and /CPQSUPSW/ROMPAQ from SmartStart to the /SHAREVOL subdirectory of the software repository.

**IMPORTANT:** After the directory structure of the network software repository is determined, be sure that the server batch file runs all programs and utilities correctly from the network location.

## Samba Configuration File

The configuration file for Samba is called smb.conf and is similar to the following:

```
[global]
workgroup=WORKGROUP
# Samba can only belong to one workgroup at a time
netbios name=NETBIOSNAME
client code page=437
guest account=sambauser
browseable=yes
guest ok=yes

[SHAREVOL]
comment=SmartStart Scripting Toolkit Share
path=/SHAREVOL
valid users=sambauser, otheruser1, otheruser2
read only=No
guest ok=Yes
```

**NOTE:** For additional information and configuration parameters of the smb.conf file, refer to the Samba website at

[www.samba.org](http://www.samba.org)

or, refer to the *SMB HOWTO* document, available at

[www.Linux.org/docs/ldp/howto/SMB-HOWTO.html](http://www.Linux.org/docs/ldp/howto/SMB-HOWTO.html)

## NFS Configuration File

The configuration file for NFS is called exports and must contain the following text:

```
/SHAREVOL/RedHatCD *(ro)
```

**NOTE:** For additional information and configuration parameters of the exports file, refer to the *NFS HOWTO* document, available at

[www.Linux.org/docs/ldp/howto/NFS-HOWTO.html](http://www.Linux.org/docs/ldp/howto/NFS-HOWTO.html)

## Deploying the Target Server

To begin a new server deployment over the network:

1. Be sure that Samba and NFS services are started on the Linux server containing the software repository.
2. Insert the bootable server configuration diskette into the target server.
3. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file. The AUTOEXEC.BAT file connects the target server to the network share, then starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 ks.cfg Sample File

The operating system-dependent unattended installation file is not created by the Toolkit utilities. The user must create the file separately.

The ks.cfg file is generated on a Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1 system with the installable mkkickstart utility. The ks.cfg file duplicates the operating system installation of one system on another system.

Refer to the operating system documentation or the *RedHat Linux KickStart HOWTO* document for a complete description of the options that can be modified in the ks.cfg unattended installation file to customize the installation of Red Hat Linux 7.3, Red Hat Linux 8.0, or Advanced Server 2.1. The *HOWTO* document is located at

[www.linux.org/docs/ldp/howto/KickStart-HOWTO.html](http://www.linux.org/docs/ldp/howto/KickStart-HOWTO.html)

**NOTE:** Bold lines indicate modifications made to fully automate installation of the operating system.

```
lang en_US

REM *** Modify the network settings to reflect required network
REM *** settings.

network --bootproto dhcp

REM *** The IP address should be the address of the Linux
REM *** repository server. The /SHAREVOL/RedHatCD must be shared
REM *** as an NFS volume.

nfs --server 192.1.1.3 --dir /SHAREVOL/RedHatCD

device ethernet eepro100

keyboard "us"

zerombr yes
clearpart --Linux
part /boot --size 30
part swap --size 128
part / --size 100 --grow
install

mouse genericps/2

timezone Etc/GMT-6

#xconfig --server "Mach64" --monitor "generic monitor"
skipx

rootpw iscrypted $1$ltK6jzho$7pPbE8WPNAeg44U1XqG27

auth --useshadow --enablemd5

lilo --location partition

%packages
ElectricFence
setup
filesystem
basesystem
ldconfig
glibc
shadow-utils
mkkickstart
mktemp
termcap
libtermcap
bash
MAKEDEV
SysVinit
XFree86-Mach64
ncurses
info
grep
XFree86-libs
chkconfig
XFree86-xfs
anacron
anonftp
fileutils
mailcap
```



```
textutils  
apache  
apmd  
arpwatch  
ash  
at  
authconfig  
autoconf  
automake
```

**NOTE:** The preceding example contains a limited list of packages to be installed. Add to this section any other packages to be installed.

```
yp-tools  
ypbind  
ypserv  
zlib  
zlib-devel  
%post
```

The server deployment configuration and operating system installation process is complete.

---

## Third-Party Imaging Software Deployment

This chapter provides best practices for using the Toolkit to deploy a target server across a network using Symantec Ghost or Altiris RapiDeploy imaging software.

## Network-Based Deployment Using Symantec Ghost

This best practice scenario focuses on using the Toolkit utilities in conjunction with Ghost images to deploy a target server over a network connection.

A slightly modified procedure can be used when deploying with a CD that you create. The user-generated installation CD must contain the files necessary to set up the target server. Refer to the information in this section along with the procedures in the CD installation sections of the other chapters in this document to set up the installation CD containing Ghost and to structure the server batch file.



**CAUTION:** Because of the potential risk of data loss, only individuals experienced with Ghost should perform deployments. Before using Ghost with the Toolkit utilities, take all necessary precautions to be sure that mission-critical systems are not disrupted if a failure occurs.

---

For additional information about using this product to create image files of source system software, refer to the software documentation for each product or to the Symantec website at [www.symantec.com](http://www.symantec.com)

Because a Ghost image is used to duplicate the operating system and other software of an optimally configured source server on a target server, the shared network drive must contain:

- Toolkit utilities.
- Server profile script files and the Ghost image files arranged in folders.
- Ghost software.

**NOTE:** Network-based server deployments can be lengthy. Because performance decreases dramatically over a 10-Mb/s network, HP recommends network-based deployments over 100-Mb/s (or faster) networks only.

## Deployment Process Overview

The general network-based server deployment process includes the following steps:

1. Creating the bootable server configuration diskette with network software
2. Creating the server profile script files
3. Creating the server batch file
4. Preparing the network software repository
5. Deploying the target server

Each of these steps is described in more detail in the following sections.

### Creating the Bootable Server Configuration Diskette with Network Software

Create a bootable server configuration diskette for booting the target server and loading the Microsoft Networking protocol stack by following the specific directions provided in this section for the Windows NT 4.0 and Windows 2000 operating systems. Loading the network protocol stack enables the target server to connect to a network share and to initiate the server deployment process across the network.

### Creating the Server Profile Script Files

When using Ghost, the Toolkit utilities require a server profile consisting of two generated script files and a Ghost image file to fully configure the target server and deploy the operating system.

The required script files are:

- Hardware configuration script file generated by CONREP.
- Array configuration script file generated by the ACR utility.

**NOTE:** The partition configuration script file generated by the Disk Partition Creation utility is not necessary. Ghost duplicates the source system partition configuration, operating system, and other software on the target system.

To create the server profile:

1. Generate the required script files on the source server by following the specific directions provided in Chapters 2 or 3.

The server profile files include the following:

- DL3802K.HWR—Hardware configuration script file generated by CONREP
  - DL3802K.ARY—Array configuration script file generated by ACR
2. After the server profile script files are created and modified for the target server, generate the Ghost image file (DL3802K.GHO) of the partition information, the operating system, and other software duplicated on the target server.

## Creating the Server Batch File

In this sample, the Windows 2000 operating system is being deployed on the target server.

In the case of network installations, the server batch file typically resides in the root directory of the shared network drive and launches the server deployment process.

**IMPORTANT:** To log the console feedback of the deployment process, redirect the console feedback of the executable files run by the server batch file to a log file.

To create the log file, use the DOS “>” redirection character followed by the destination log file name after the first executable file whose console feedback you want to log. If the file already exists, “>” replaces the file.

To append to an existing log, use the DOS “>>” redirection character followed by the destination log file name after the subsequent executable files whose console feedback you want to log.

For maximum configuration flexibility, the server batch file executes the following steps:

1. Reads a server state variable
2. Checks the error level returned by the server state variable and branches to the appropriate configuration process
3. Runs the commands in the configuration process and increases the server state variable, rebooting if necessary
4. Repeats step 1

A typical server batch file that runs the Toolkit utilities and the configuration script files from a shared network location is similar to the following:

```
@echo off
cls

REM *** -----
REM *** Ensure that the shared network directory is used and get
REM *** the current state
REM *** -----
s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
pause

REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 10 goto State10
if errorlevel 9 goto State9
if errorlevel 8 goto State8
if errorlevel 7 goto State7
if errorlevel 6 goto State6
if errorlevel 5 goto State5
if errorlevel 4 goto State4
if errorlevel 3 goto State3
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** S:\SERVERS\DL380\DL3802K.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
s:\cpq\conrep -l s:\servers\dl380\dl3802k.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----
```

```
:State1
REM *** -----
REM *** Second state
REM *** Configure the array controllers by reading the
REM *** configuration information in the script file
REM *** S:\SERVERS\DL380\DL3802K.ARY and stamping it onto the
REM *** array controllers of the target server
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
s:\cpq\acr /i s:\servers\dl380\dl3802k.ary /o
echo Setting State Information...
s:\cpq\statemgr /w Phase 2

REM *** -----
REM *** Reboot to drive A:
REM *** -----
s:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Create the necessary partitions on the target system's
REM *** hard drive and copy the operating system
REM *** and other software onto the target server using Norton
REM *** Ghost with unattended parameters from the Ghost
REM *** documentation. The Norton Ghost image used is:
REM *** S:\SERVERS\DL380\DL3802K.GHO.
REM *** The system automatically reboots when the imaging is
REM *** complete.
REM *** -----
echo Preparing to Image the System...
s:\cpq\statemgr /w Phase 3
s:\ghost\ghost.exe -
clone,mode=load,src=s:\servers\dl380\dl3802k.gho,
    dst=1 -rb -sure -quiet -fx

:State3
REM *** -----
REM *** Second third state
REM *** Resets state variable to 3 to allow the operating system
REM *** on the target to reboot without removing the diskette
REM *** -----
s:\cpq\statemgr /w Phase 3
echo The installation finishes after a reboot...

REM *** -----
REM *** Turn off the Virtual Floppy
REM *** -----
s:\cpq\vflop /b:never /p:off

REM *** -----
REM *** Reboot to drive C:
REM *** -----
s:\cpq\reboot c:\
```

```

REM *** -----
REM *** Unused states
REM *** Installation of other utilities and agents may be placed
REM *** here
REM *** -----
:State4
:State5
:State6
:State7
:State8
:State9
:State10

```

## Preparing the Network Software Repository

When creating the network software repository, it is important to organize the directory structure.

**IMPORTANT:** Software is generally furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement. Before copying software to a network software repository, refer to the terms of the software license agreement.

The following guidelines provide a means of creating, maintaining, and using the repository with the server batch file.

1. Create an account with read-only access to the software image files in the software repository.
2. Place only server batch files for each type of server in the root directory of the software repository. Because these files are server specific, they may also be placed in the subdirectories containing the server profiles.
3. Create a \GHOST subdirectory that contains all files required to run the Ghost program over a network connection.
4. Create a \CPQ subdirectory and copy all of the Toolkit utilities into the subdirectory.
5. Create a \SERVERS subdirectory containing a subdirectory for each server profile. For example, create \SERVERS\DL380, \SERVERS\ML330, and so on.
6. Copy the two server profile script files from the server configuration diskette and the Ghost image file into each server profile subdirectory.
7. Create additional subdirectories to copy all other user-selected utilities and management agents available on the SmartStart and Management CDs.

**IMPORTANT:** When the directory structure of the network software repository is determined, be sure that the server batch file runs all programs and utilities correctly from the network location.



## Deploying the Target Server

To begin a new server deployment over the network:

1. Insert the server configuration diskette into the target server.
2. Power up the target server and supervise the deployment process.

The target server boots from drive A and runs the AUTOEXEC.BAT file, which connects the target server to the network share then starts the server batch file. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

## Network-Based Deployment Using Altiris RapiDeploy

This best practice scenario focuses on using the Toolkit utilities in conjunction with RapiDeploy images to deploy a target server over a network connection. In this case, a network server is configured with RapiDeploy software and Altiris Boot Disk Creator is used to create a bootable diskette.

RapiDeploy is a tool for creating and sending disk partition images to re-create or replicate configurations quickly. As with any imaging tool, disk images are not intended for use on hardware dissimilar from the hardware on which the image was captured. That is, an assumption should not be made that an image from a ProLiant ML330 server will work on a ProLiant DL360 server.

This sample describes how to use the command line functionality of RapiDeploy with the Toolkit.

For a detailed explanation of the RapiDeploy command line switches, refer to the “RapiDeploy Technical Reference” on the Altiris website at

[www.altiris.com/support/documentation/index.asp](http://www.altiris.com/support/documentation/index.asp)

## Creating the Server Configuration Diskette

If a bootable server configuration diskette is not already created, use the Altiris Boot Disk Creator to create the diskette. Be sure that the Network Boot Disk option is used so that the Bootwork program is not loaded as a hidden partition on the hard drive.

## Creating a Disk Image

Because the disk image created contains all the partition sizes, structure, and contents, CPQDISK is not required to gather the partition configuration information. Instead, run the IBMASTER program to create the image.

Edit the AUTOEXEC.BAT file as shown in the following text. In this sample, the RapiDeploy server is named DEPLOY, the share is named ALTIRIS, and the RapiDeploy images are stored on the DEPLOY server.

```
@echo off
cls

REM *** -----
REM *** Insert the commands necessary to load the network stack
REM *** and connect to the S: drive (Toolkit share) here.
REM *** -----

REM *** -----
REM *** Ensure that the shared network directory is used and get
REM *** the current state
REM *** -----
s:
cd \cpq
echo Retrieving State Information...

REM ***-----
REM *** Get the Array configuration data and save it to a file
REM ***-----
S:\CPQ\ACR /C S:\DL380\DL380NT.ARY

REM *** -----
REM *** Get the Hardware configuration data and save it to a file
REM *** -----
S:\CPQ\CONREP /SH S:\DL380\DL380NT.HWR

REM *** -----
REM *** Create the image using RapiDeploy
REM *** -----
net use R: \\deploy\altiris /yes
R:
ibmaster -mu -fR:\DL380\DL380NT.IMG
s:\cpq\reboot C:
```

## Deploying a Disk Image

Copying a disk image (which already has partition information) on the server does not require CPQDISK or any other partition-related Toolkit utilities. After the system configuration and array configuration are set with CONREP and ACR, copy the image to the target server.

Edit the AUTOEXEC.BAT file as shown in the following text. In this sample, the RapiDeploy server is named DEPLOY, the share is named ALTIRIS, and the RapiDeploy images are stored on the DEPLOY server.

```
@echo off
cls

REM *** -----
REM *** Insert the commands necessary to load the network stack
REM *** and connect to the S: drive (Toolkit share) here.
REM *** -----

REM *** -----
REM *** Ensure that the shared network directory is used and get
REM *** the current state
REM *** -----
s:
cd \cpq
echo Retrieving State Information...
s:\cpq\statemgr /r phase

REM *** -----
REM *** Remove this initial pause when the batch file has been
REM *** full tested and debugged
REM *** -----
pause

REM *** -----
REM *** Establish DOS error levels and branching in declining
REM *** order
REM *** -----
if errorlevel 2 goto State2
if errorlevel 1 goto State1
if errorlevel 0 goto State0

:State0
REM *** -----
REM *** First state
REM *** Configure the target server hardware by reading the
REM *** configuration information in the script file
REM *** S:\SERVERS\DL380\DL380NT.HWR
REM *** Increase the state variable
REM *** -----
echo Running Configuration Replication Utility...
s:\cpq\conrep -l s:\dl380\dl380nt.hwr
echo Setting State Information...
s:\cpq\statemgr /w Phase 1

REM *** -----
REM *** No reboot is necessary
REM *** -----
```

```
:State1
REM *** -----
REM *** Second state
REM *** Configure the array controllers by reading the
REM *** configuration information
REM *** in the script file S:\SERVERS\DL380\DL380NT.ARY and
REM *** stamping it onto the array controllers of the target
REM *** server
REM *** Increase the state variable and reboot
REM *** -----
echo Configuring the Array Controllers...
s:\cpq\acr /i s:\dl380\dl380nt.ary /o
echo Setting State Information...
s:\cpq\statemgr /w Phase 2

REM *** -----
REM *** Reboot to drive A:
REM *** -----
s:\cpq\reboot a:

:State2
REM *** -----
REM *** Third state
REM *** Land the RapiDeploy image file R:\DL380\DL380NT.IMG.
REM *** The image includes all partition information so creating
REM *** and formatting a partition is not necessary.
REM *** Reboot when done
REM *** -----
echo Landing Disk image...
net use R: \\deploy\altiris /yes
R:
ibmaster -md -rc -rb -fR:\DL380\DL380NT.IMG

REM *** -----
REM *** Reboot to drive C:
REM *** -----
s:\cpq\reboot C:
```

**NOTE:** A significant portion of the typical Toolkit AUTOEXEC.BAT file is not required with RapiDeploy.

---

## Deployment Using the Remote Insight Lights-Out Edition

This best practice scenario focuses on using the Toolkit with the latest version of the Remote Insight Lights-Out Edition (RILOE) firmware to deploy a target server remotely. For the latest firmware, visit the HP website at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

**IMPORTANT:** This procedure is to be used for Windows-based and NetWare-based deployments. The procedure cannot be used for Linux-based deployments.

The following RILOE features are used during the operating system installation process:

- Virtual Floppy Drive, to upload the server configuration diskette image to the remote server
- Reset Server, to force hardware-level remote server resets
- Remote Console, to remotely monitor the deployment process of the operating system
- Compaq Lights-Out DOS Utility (CPQLODOS)

## Installation Prerequisites

Successful remote server deployment using the Toolkit and the Virtual Floppy Drive requires:

- A target server with a Remote Insight Board (RIB) installed and accessibility to the administrative console over an IP connection.

**NOTE:** Refer to the RILOE documentation for information about correctly configuring the RIB.

- A network share available to the remote target server. During the installation process, the target server accesses the network share to obtain the operating system files and the HP drivers required to achieve full installation of the operating system.
- A DHCP server at the remote location so that the RIB can automatically obtain an IP address from the DHCP server.

**NOTE:** If a DHCP server is not available at the remote location, the RIB can be configured to use a static IP address.

- An IP connection between the Web browser and the RIB.
- A remote target server and source server of an identical ProLiant brand with similar internal hardware.

## Deployment Process Overview

The general deployment process includes:

1. Configuring the RIB on the target server by using CPQLODOS
2. Creating the bootable server configuration diskette with network software
3. Creating the server profile script files
4. Creating the server batch file
5. Creating the shared network drive

**NOTE:** Steps 6 and 7 are described in more detail in the following sections.

6. Creating the bootable server configuration diskette image file for use with the Virtual Floppy Drive
7. Using the RIB to access the remote target server and launch the server deployment process using the Toolkit utilities

Because remote deployment with the RIB occurs over a network connection for steps 1 through 5, refer to the “Network-Based Deployment” section of any of the chapters specific to the operating system to be installed on the target server.

## Configuring the RILOE Board on the Target Server Using CPQLODOS

For examples of CPQLODOS scripting, refer to the *Remote Insight Lights-Out Edition User Guide* at

[www.hp.com/servers/lights-out](http://www.hp.com/servers/lights-out)

## Creating the Bootable Server Configuration Diskette Image File

When the bootable server configuration diskette with network software is ready, create a Virtual Floppy image file of the diskette using the Diskette Image Utility available at

[www.compaq.com/manage/lightsout-downloads.html](http://www.compaq.com/manage/lightsout-downloads.html)

Download the Diskette Image Utility to a directory on the administrative console and run the file CPQIMAGE.EXE. A window similar to Figure 8-1 is displayed.

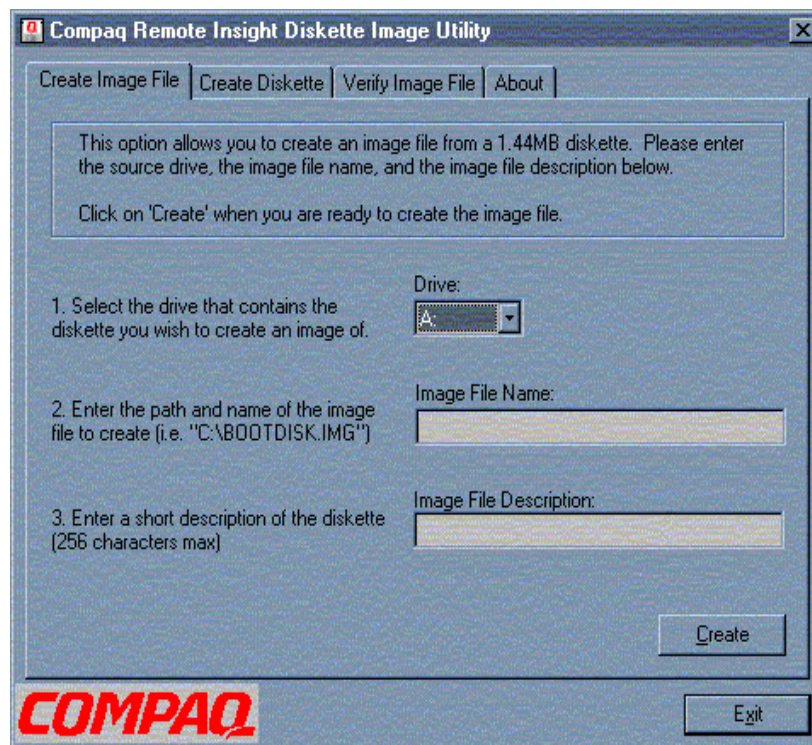


Figure 8-1: Diskette Image Utility main screen

Enter the necessary information in each field and save the diskette image on the system used to access the RIB. The diskette image is downloaded to the Virtual Floppy Drive of the remote server through a Web browser, and the image is used to start the server deployment process with the Toolkit utilities.

**IMPORTANT:** If present, remove the following line from the CONFIG.SYS file on the server configuration diskette:

```
DEVICE=EMM386.EXE
```

The Virtual Floppy Drive works correctly with an operating system that only accesses diskette drives through standard BIOS Interrupt 13 calls. The Virtual Floppy Drive is not compatible with protected-paging mode applications such as EMM386.

## Using RILOE to Access and Deploy the Remote Server

Every RIB is preconfigured to use DHCP by default, with a preset user name, password, and Domain Name Server (DNS) name. This configuration provides Web-enabled administrative functions on every board. A tag with the following preset values is attached to every board:

- User name: Administrator
- Password: The last four digits of the serial number
- DNS name: RIBxxxxxxxxxxx where the 12 x's are the MAC address of the RIB

To access the RIB using a Web browser:

**IMPORTANT:** If the RILOE board is already configured and the name and password are changed, use the new user name and password instead of the default information in the following steps.

1. Open any Web browser and enter the factory-preset DNS name of the RIB. For example, enter `http://RIB00508BA33C7D` in the address bar of the Web browser. If the name is not recognized, enter the IP address of the RIB.
2. Enter the factory-preset user name and password, then click **OK**.

**IMPORTANT:** The user name and password are case-sensitive.

3. After the user name and password are verified, the RILOE summary home page and navigation frame open.
4. Scroll down the RIB navigation frame on the left side of the screen to locate the Virtual Floppy Drive section.
5. Click **Insert Virtual Floppy** and enter the name and path of the server configuration diskette image file that is uploaded to the Virtual Floppy Drive.
6. When the image file name and path are in the field, click **Insert Virtual Floppy** to begin uploading the image file to the Virtual Floppy Drive.
7. Select **Boot Always** on the **Virtual Floppy Status** screen and be sure that the Virtual Floppy Drive is not write protected.



8. Click **Submit Changes**.
9. Click **Reset Server** in the Power section in the RIB navigation frame.
10. Click **Reboot Server**, then click **Confirm** to reset the remote server. The remote server reboots and the **Remote Console** screen displays to the right of the RIB navigation frame.

When the remote server completes the reboot cycle, the remote target server boots from the Virtual Floppy Drive and runs the AUTOEXEC.BAT file, which then connects the target server to the network share, which then starts the server batch file in the root directory of the share. Control then passes to the server batch file and the Toolkit utilities run from the batch file.

**NOTE:** Deployment of the remote target server can be monitored and controlled through the RIB graphical Remote Console window.

The remote target server deployment configuration and operating system installation process is complete.

---

# Creating a Network Boot Diskette

## Introduction

When a Windows NT 4.0 Server system is unavailable for creating a network boot diskette for network-based Windows NT 4.0, Windows 2000, and Red Hat Linux 6.2 or 7.x deployments, this appendix provides alternate instructions for creating a basic network boot diskette using the Microsoft Network Client 3.0 files.

After the network boot diskette is created, additional files must be added to the diskette and modified to fully configure the diskette for use with the Toolkit. The network-based configuration sections for the Windows NT 4.0, Windows 2000, and Red Hat Linux 6.2 or 7.x operating systems in this document provide the additional information required to fully configure the boot diskette.

**IMPORTANT:** For network-based NetWare 5.1 deployments, follow the instructions in the “Network-Based Deployment” section in Chapter 4 of this guide.

**NOTE:** Configure the network boot diskette at a standard DOS 6.22 or 7.0 prompt. This procedure also works in Windows 95 or Windows 98 DOS emulation.

The Network Client 3.0 files are self-extracting executable files available on the Microsoft FTP website at

<ftp.microsoft.com/bussys/clients/msclient>

The file set consists of two files: DSK3-1.EXE and DSK3-2.EXE. These files can also be found on the Windows NT 4.0 Server CD in the \CLIENTS\MSCLIENT directory.

After the files are downloaded, copy each file to a standard 1.44-MB diskette and update the files with the latest NDIS2 drivers available on SmartStart 4.80 or later. The DSK3-1.EXE and DSK3-2.EXE files may also be copied to separate subdirectories on a hard drive.

**IMPORTANT:** The Network Client 3.0 file set provides only a limited selection of network card drivers and must be updated to support new network cards.

## Updating the Network Client 3.0 Files

To add an updated NDIS2 driver to the Network Client 3.0 files:

1. Obtain and open the SoftPaq file containing updated DOS NDIS2 drivers for your network card at:  
[www.compaq.com/support](http://www.compaq.com/support)
2. Open the OEMSETUP.INF file of the NDIS2 driver using any text editor.
3. Copy the information in the [netcard] section from the OEMSETUP.INF file to the [netcard] section of the WCNET.INF file on the first diskette of the Microsoft Network Client 3.0 set of diskettes.

For example, Figure A-1 and Figure A-2 show the information that is copied from the [netcard] section of the OEMSETUP.INF file to the [netcard] section of the WCNET.INF file for the Fast Ethernet NIC driver.

```

Oemsetup.inf - Notepad
File Edit Search Help
; OEMSETUP.INF for Lan Server 4.0 DOS client

[disks]
1 = \DOS, "Compaq Configuration and Driver Disk", N100_1

[netcard]
a$N100="Compaq Ethernet or Fast Ethernet NIC",0,ndis,ethernet,real,a$N100,a$N100_nif

[a$N100]
devdir=1:N100.dos
device=N100.dos,@devdir\N100.dos

[a$N100_nif]
Drivername=N100$
param=Speed,"Line Speed (Mbits/sec)",text,"Auto-Speed,10,100","Auto-Speed",0x3c
param=ForceDuplex,"Force Duplex Mode",text,"Auto,1,2","Auto",0x3c
    
```

Figure A-1: [netcard] information in OEMSETUP.INF

```

Wcnet.inf - Notepad
File Edit Search Help
[trans_specific]
transport=ms$nwlink,ms$nwlinknb

; NCD-detected values
[ncd_card_specific]
243=TRANSCEIVER
301=IOCHRDY

; NCD-detected values
[ncd_trans_specific]
101=MediaType

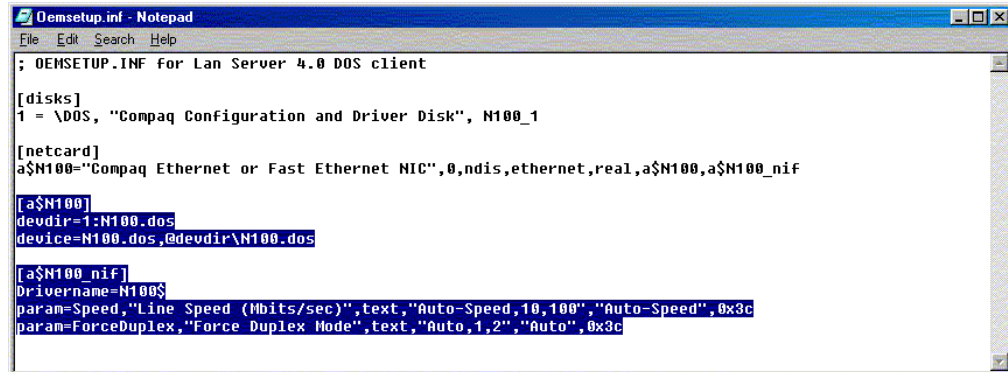
[trans_update]
transport=dis_pkt.gup

[netcard]
; key = description, MSID, type, media, mode, install, protini, style
a$N100="Compaq Ethernet or Fast Ethernet NIC",0,ndis,ethernet,real,a$N100,a$N100_nif
ms$e1nk="3Com EtherLink",242,ndis,ethernet,0x01,ms$e1nk,ms$e1nk_nif
ms$e1nk16="3Com EtherLink 16",246,ndis,ethernet,0x01,ms$e1nk16,ms$e1nk16_nif
ms$e1nkii="3Com EtherLink II or IITP (8 or 16-bit)",243,ndis,ethernet,0x01,ms$e1nkii,ms$e1nkii_nif
ms$e1nk3="3Com EtherLink III",247,ndis,ethernet,0x01,ms$e1nk3,ms$e1nk3_nif
ms$e1nkc="3Com EtherLink/MC",104,ndis,ethernet,0x01,ms$e1nkc,ms$e1nkc_nif
ms$e1nkpl="3Com EtherLink Plus",241,ndis,ethernet,0x01,ms$e1nkpl,ms$e1nkpl_nif
ms$toklnk="3Com TokenLink",244,ndis,tokenring,0x01,ms$toklnk,ms$toklnk_nif
ms$am2100="Advanced Micro Devices AM2100/AM1500T",561,ndis,ethernet,0x01,ms$am2100,ms$am2100_nif,0x2000
ms$am210xt="Amplificard AC 210/XT",321,ndis,ethernet,0x01,ms$ne1000,ms$ne1000_nif
ms$am210at="Amplificard AC 210/AT",322,ndis,ethernet,0x01,ms$ne2000,ms$ne2000_nif
    
```

Figure A-2: [netcard] information in WCNET.INF

4. Append the NDIS2 driver header and NIF sections from the OEMSETUP.INF file to the end of the WCNET.INF file.

For example, Figure A-3 and Figure A-4 show the information appended from the driver header and NIF sections of the OEMSETUP.INF file to the WCNET.INF file for the Fast Ethernet NIC driver.



```

Oemsetup.inf - Notepad
File Edit Search Help
; OEMSETUP.INF for Lan Server 4.0 DOS client

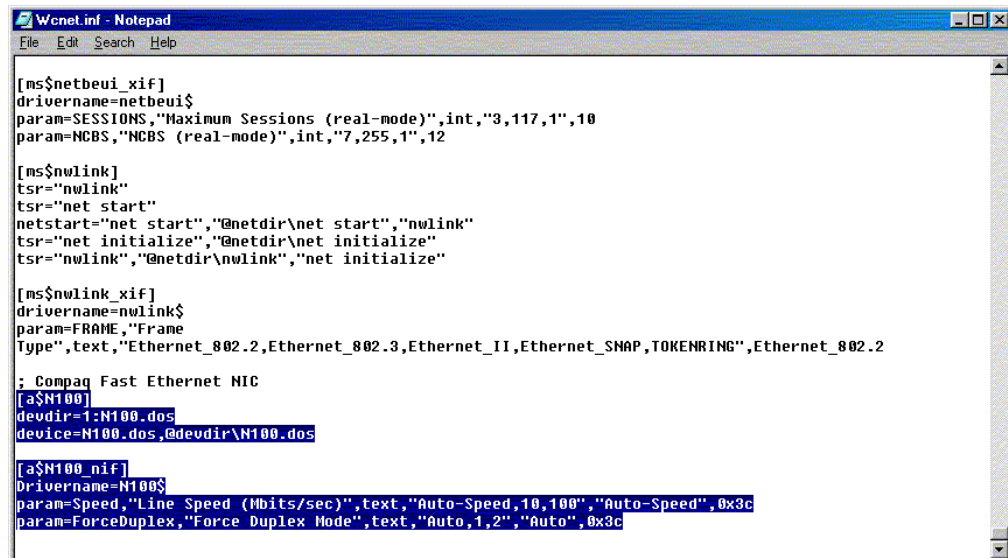
[disks]
1 = \DOS, "Compaq Configuration and Driver Disk", N100_1

[netcard]
a$N100="Compaq Ethernet or Fast Ethernet NIC",0,ndis,ethernet,real,a$N100,a$N100_nif

[a$N100]
devdir=1:N100.dos
device=N100.dos,@devdir\N100.dos

[a$N100_nif]
Drivername=N100$
param=Speed,"Line Speed (Mbits/sec)",text,"Auto-Speed,10,100","Auto-Speed",0x3c
param=ForceDuplex,"Force Duplex Mode",text,"Auto,1,2","Auto",0x3c
  
```

Figure A-3: Driver header and NIF sections in OEMSETUP.INF



```

Wcnet.inf - Notepad
File Edit Search Help

[ms$netbeui_xif]
drivername=netbeui$
param=SESSIONS,"Maximum Sessions (real-mode)",int,"3,117,1",10
param=NCBS,"NCBS (real-mode)",int,"7,255,1",12

[ms$nwlink]
tsr="nwlink"
tsr="net start"
netstart="net start","@netdir\net start","nwlink"
tsr="net initialize","@netdir\net initialize"
tsr="nwlink","@netdir\nwlink","net initialize"

[ms$nwlink_xif]
drivername=nwlink$
param=FRAME,"Frame
Type",text,"Ethernet_802.2,Ethernet_802.3,Ethernet_II,Ethernet_SNAP,TOKENRING",Ethernet_802.2

; Compaq Fast Ethernet NIC
[a$N100]
devdir=1:N100.dos
device=N100.dos,@devdir\N100.dos

[a$N100_nif]
Drivername=N100$
param=Speed,"Line Speed (Mbits/sec)",text,"Auto-Speed,10,100","Auto-Speed",0x3c
param=ForceDuplex,"Force Duplex Mode",text,"Auto,1,2","Auto",0x3c
  
```

Figure A-4: Driver header and NIF sections appended to WCNET.INF

5. Remove the devdir= and device= lines in the appended driver header section of the WCNET.INF file, then add the line `ndis2=1:Drivername.dos` in the driver header section as shown in Figure A-5, and save the WCNET.INF file.

**NOTE:** DRIVERNAME.DOS is the DOS file name of the NDIS2 driver.

```

Wcnet.inf - Notepad
File Edit Search Help
ndis2=x:*netbeui

[ms$netbeui_xif]
drivername=netbeui$
param=SESSIONS,"Maximum Sessions (real-mode)",int,"3,117,1",10
param=NCBS,"NCBS (real-mode)",int,"7,255,1",12

[ms$nwlink]
tsr="nwlink"
tsr="net start"
netstart="net start","@netdir\net start","nwlink"
tsr="net initialize","@netdir\net initialize"
tsr="nwlink","@netdir\nwlink","net initialize"

[ms$nwlink_xif]
drivername=nwlink$
param=FRAME,"Frame
Type",text,"Ethernet_802.2,Ethernet_802.3,Ethernet_II,Ethernet_SNAP,TOKENRING",Ethernet_802.2

; Compaq Fast Ethernet NIC
[a$N100]
ndis2=1:N100.dos

[a$N100_nif]
Drivername=N100$
param=Speed,"Line Speed (Mbits/sec)",text,"Auto-Speed,10,100","Auto-Speed",0x3c
param=ForceDuplex,"Force Duplex Mode",text,"Auto,1,2","Auto",0x3c
    
```

**Figure A-5: NDIS2 DOS file name specified in the driver header section of WCNET.INF**

6. Copy the NDIS2 driver and NIF files to the first diskette of the Network Client 3.0 set of diskettes. For example, for the Fast Ethernet NIC, copy the N100.DOS and N100EDS.NIF files to the first diskette of the Network Client 3.0 set of diskettes.

The Network Client 3.0 files are now updated with a new NDIS2 driver. The driver is an available option when the Network Client 3.0 setup program is started.

## Creating a Network Boot Diskette

After the Network Client 3.0 files are updated with the latest NDIS2 drivers, create a basic network boot diskette that uses TCP/IP as the network protocol.

**IMPORTANT:** Because the default Network Client 3.0 file selection does not fit entirely on a standard 1.44-MB diskette, this procedure uses the local hard drive of the system on which the procedure is run as temporary storage for the \NET directory, AUTOEXEC.BAT, and CONFIG.SYS files. If a \NET directory already exists on the local hard drive, be sure that it is temporarily renamed so that files in the existing subdirectory are not replaced.

Also, back up any existing AUTOEXEC.BAT and CONFIG.SYS files before starting this procedure so that the original AUTOEXEC.BAT and CONFIG.SYS files can be restored when this procedure is completed.

To create a basic network boot diskette:

1. Format a standard 1.44-MB diskette using the `DOS FORMAT /S` command. This command transfers the system files that make the network boot diskette bootable.
2. Insert the first diskette of the Network Client 3.0 set of diskettes.
3. Change to the diskette drive and launch the setup file from the diskette drive by entering `SETUP` at the DOS prompt. A screen similar to Figure A-6 is displayed.

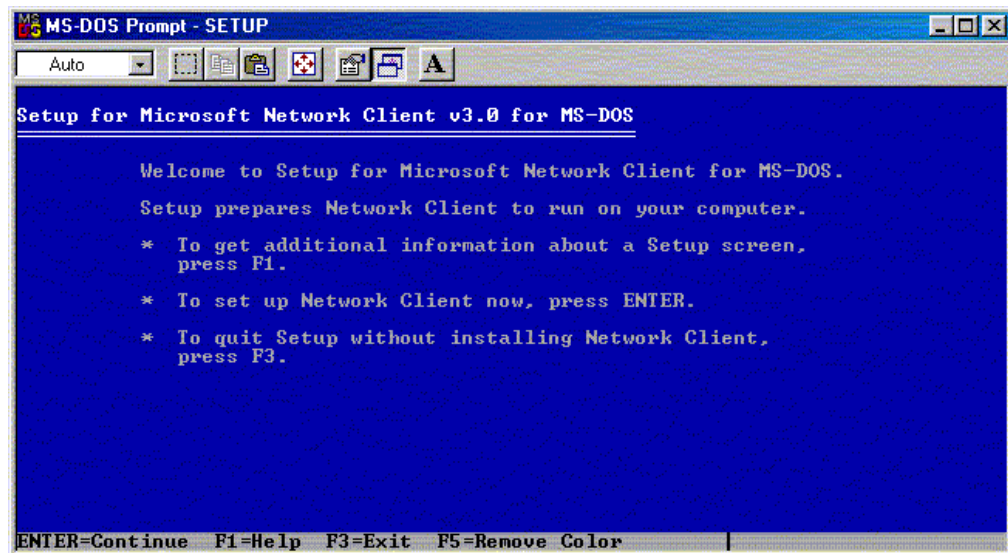


Figure A-6: Initial Network Client 3.0 installation screen

- Press the **Enter** key to continue. A screen that indicates the default installation directory for network files is displayed, as shown in Figure A-7. The network files default installation directory is \NET on the local hard drive.

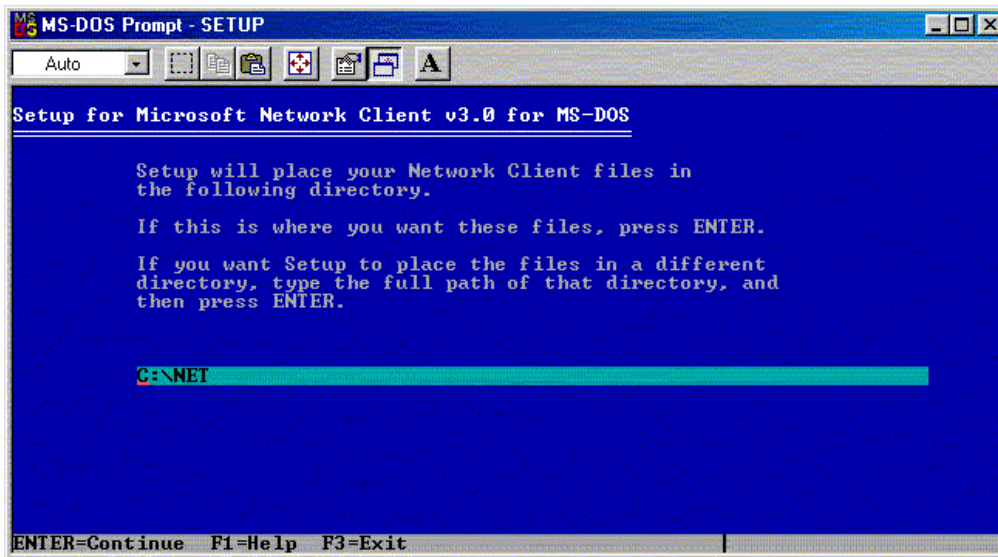


Figure A-7: Default installation directory for network files

- Accept the default installation directory and press the **Enter** key to continue. The Network Client 3.0 determines the drivers that are available for installation and displays a selection screen similar to Figure A-8.

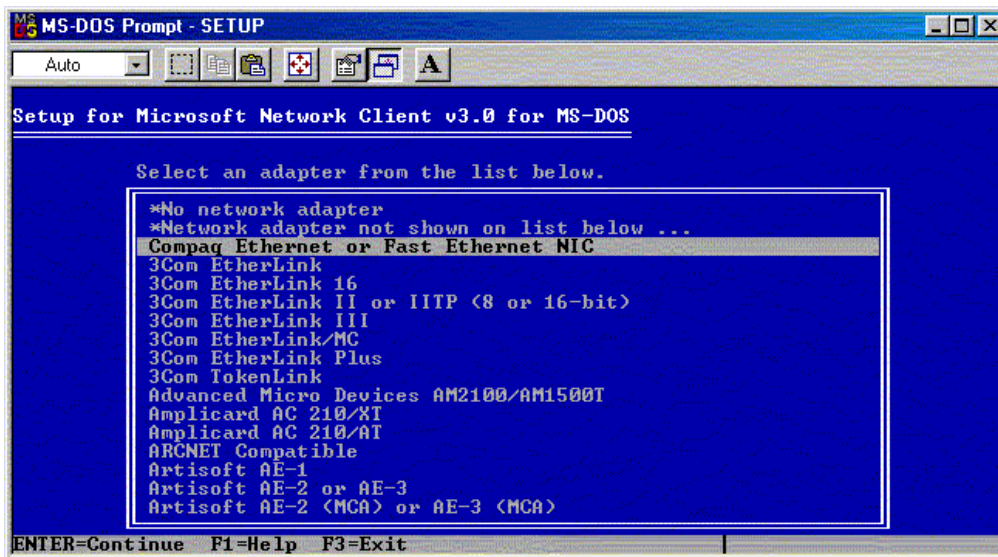


Figure A-8: Network adapter selection

- Select the network driver that is appropriate for the system and press the **Enter** key to continue. A screen that sets network buffers is displayed.



7. Press the **Enter** key to set the network buffers for optimal performance. A screen similar to Figure A-9 is displayed and prompts for the network logon user name.

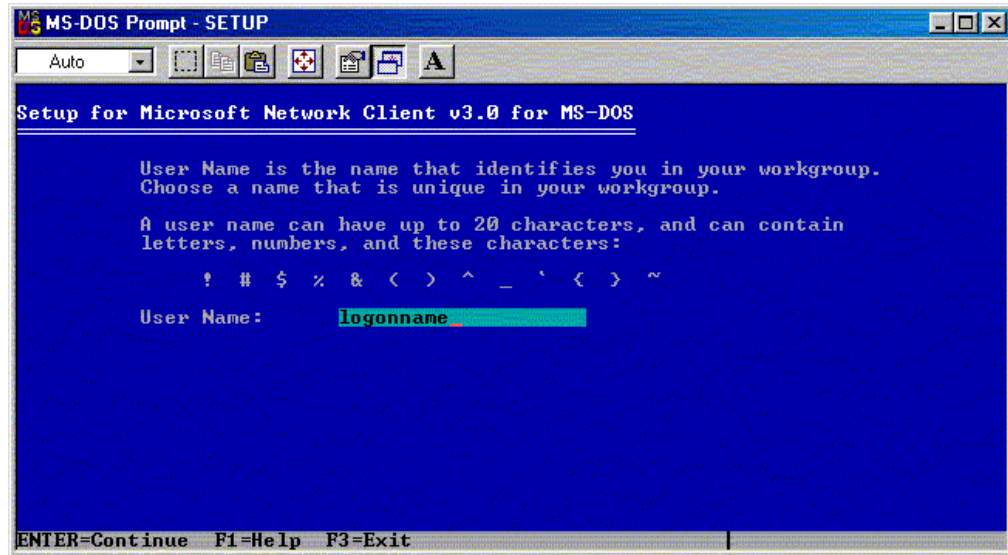


Figure A-9: User name specification

8. Enter the network logon user name. A screen similar to Figure A-10 displays the default Network Client 3.0 settings.

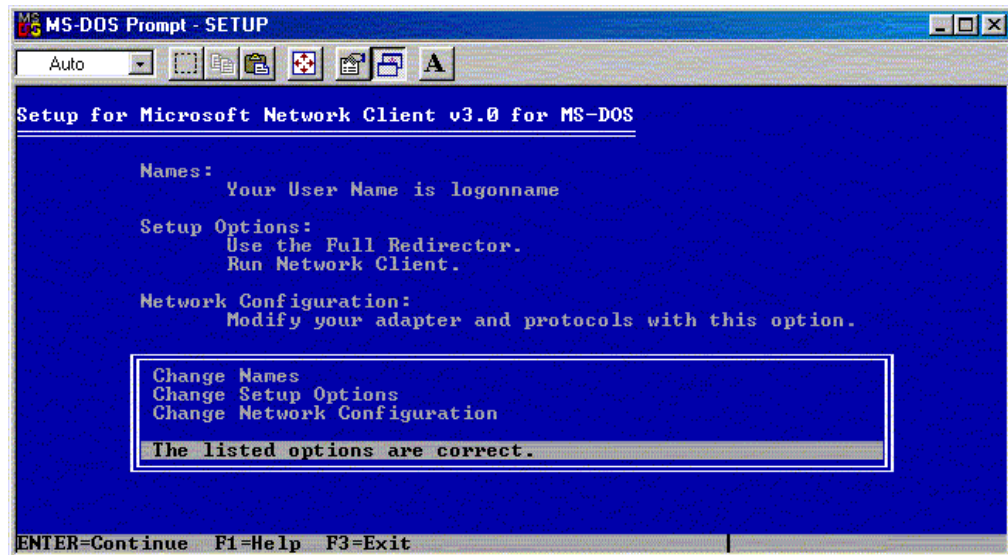


Figure A-10: Default Network Client 3.0 settings



9. Highlight **Change Network Configuration** and press the **Enter** key. A screen similar to Figure A-11 is displayed and shows the network protocols that are currently bound to the network driver.

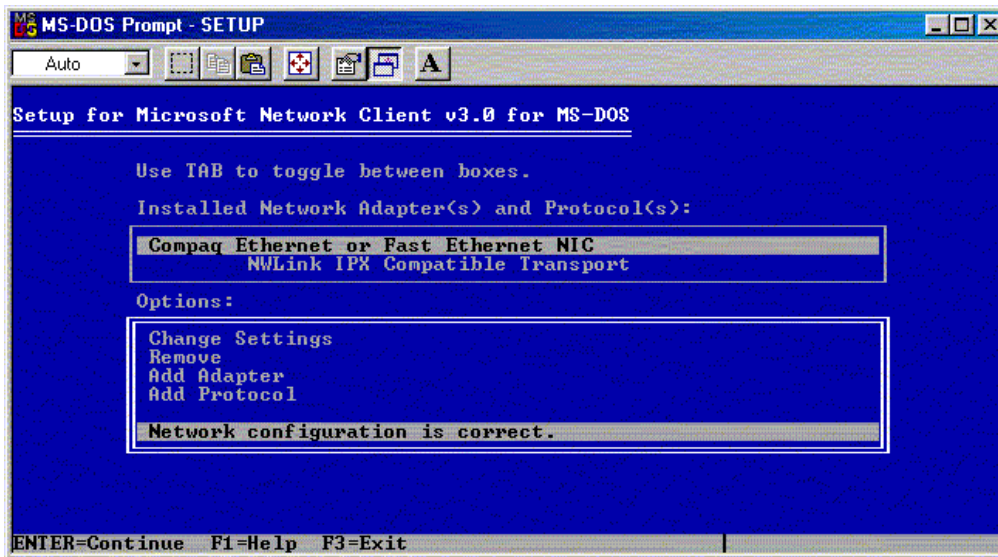


Figure A-11: Network protocols bound to the network driver

10. To add the TCP/IP protocol, select **Add Protocol**, then press the **Enter** key. A screen similar to Figure A-12 is displayed and shows all available network protocols.

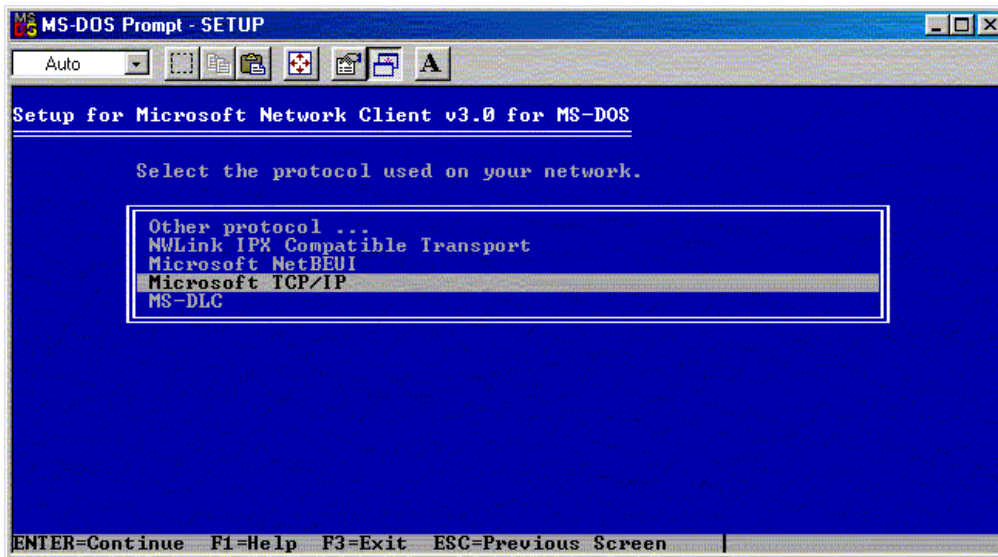
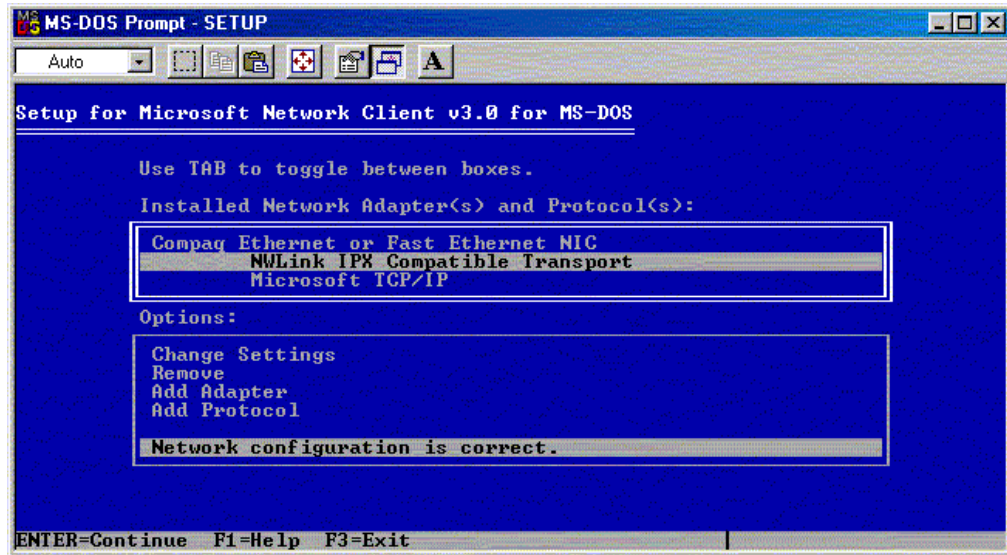


Figure A-12: Available network protocols

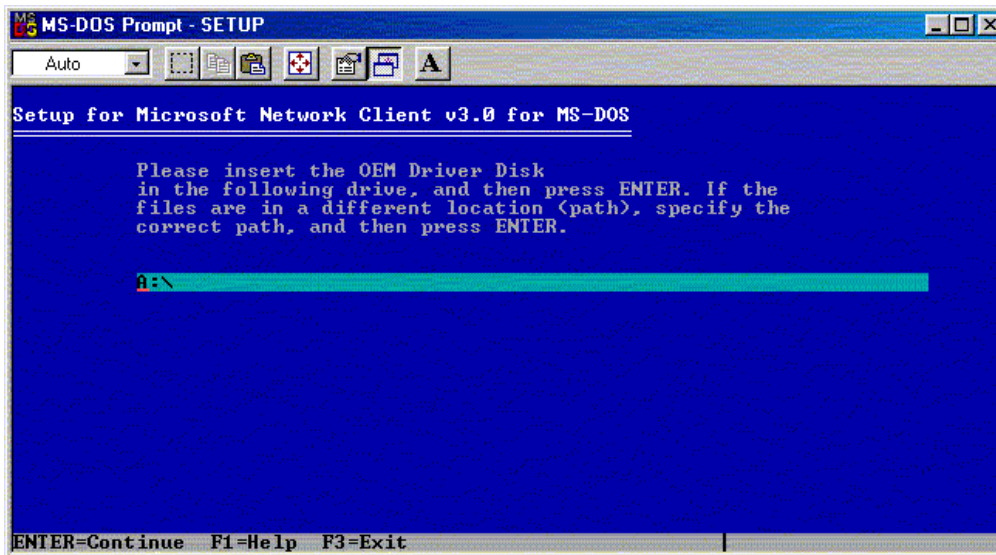
11. Highlight **Microsoft TCP/IP** and press the **Enter** key to add the protocol. A screen similar to Figure A-13 is displayed and shows the recently added protocol.



**Figure A-13: Protocol adapter bindings**

12. Perform the following to remove the NWLink IPX Compatible Transport protocol from the Installed Network Adapter(s) and Protocol(s) list:
  - a. Press the tab key to move the highlight from the Options list to the Installed Network Adapter(s) and Protocol(s) list.
  - b. Highlight the **NWLink IPX Compatible Transport** protocol.
  - c. Press the tab key to move the highlight from the Installed Network Adapter(s) and Protocol(s) list to the Options list.
  - d. Highlight **Remove** and press the **Enter** key.
13. If specific IP addresses must be assigned for network connectivity, modify the TCP/IP settings using the Change Settings option in the Options list. Follow the instructions that are displayed on the screen when this option is highlighted and the **Enter** key is pressed. Otherwise, highlight **Network configuration is correct** and press the **Enter** key.

14. Press the **Enter** key again at the Network Client 3.0 settings screen (Figure A-10), and a prompt for the OEM Driver Disk is displayed, similar to Figure A-14.



**Figure A-14: Default location prompt for the OEM Driver Disk**

15. Insert the second diskette of the Network Client 3.0 set of diskettes into the specified drive and press the **Enter** key. Required TCP/IP files are copied into the \NET subdirectory of the local hard drive and network drivers are configured. After all necessary files are copied, another screen prompts to insert the Network Client for MS-DOS Disk into the diskette drive.

16. Reinsert the first diskette and press the **Enter** key. A progress bar similar to Figure A-15 is displayed.

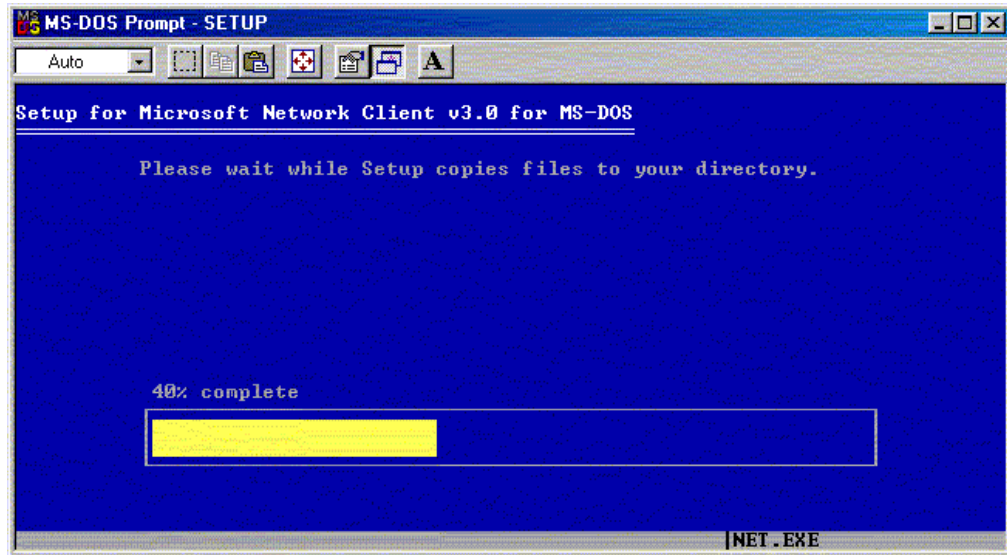


Figure A-15: File copy progress bar

17. Press the **F3** key to return to the DOS prompt after the file copy and configuration processes complete. A final status screen similar to Figure A-16 is displayed.



**CAUTION:** Do not press the **Enter** key at this point. Configuration of the network boot diskette is not complete. Pressing the **Enter** key causes the system to reboot and use the newly created AUTOEXEC.BAT files, which can jeopardize system integrity.

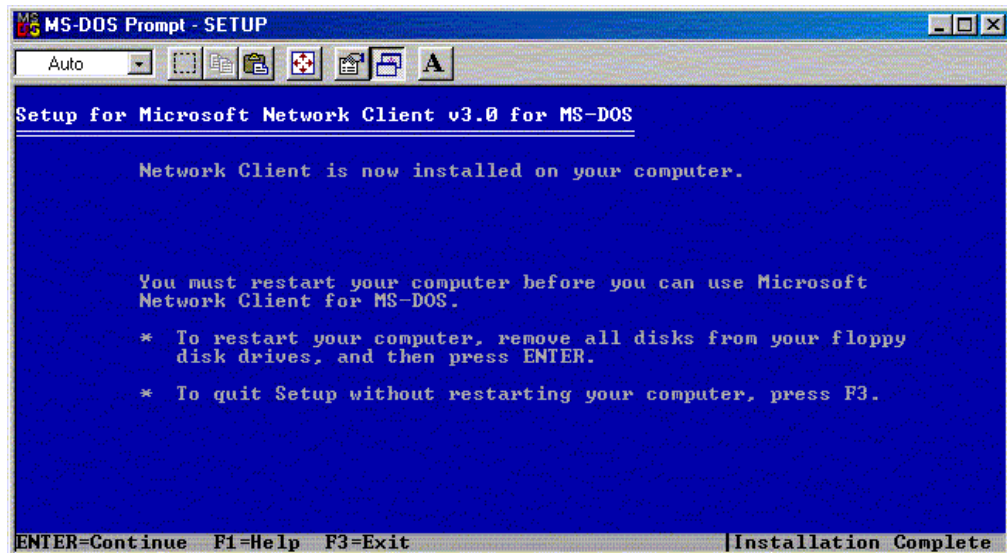


Figure A-16: Final Network Client 3.0 status screen

18. Insert the network boot diskette prepared in step 1 into the diskette drive.

19. Copy the AUTOEXEC.BAT and CONFIG.SYS files from the local hard drive root directory to the root directory of the network boot diskette.
20. Restore the AUTOEXEC.BAT and CONFIG.SYS files on the local hard drive with the previously made backup copies. If these two files are not required on the local hard drive, delete the files after they are copied to the root directory of the network boot diskette.
21. Create a \NET subdirectory on the network boot diskette and change to that subdirectory.
22. Copy the following files from the \NET subdirectory on the local hard drive to the \NET subdirectory on the network boot diskette.

Required network files:

EMSBFR.EXE  
IFSHLP.SYS  
LMHOSTS  
NEMM.DOS  
NET.EXE  
NET.MSG  
NETBIND.COM  
NETH.MSG  
NETWORKS  
NMTSR.EXE  
PROTMAN.DOS  
PROTMAN.EXE  
PROTOCOL  
PROTOCOL.INI  
SETUP.INF  
SYSTEM.INI  
TCPDRV.DOS  
TCPTSR.EXE  
TCPUTILS.INI  
TINYRFC.EXE  
UMB.COM  
WCSETUP.INF  
WFWSYS.CFG

Required NDIS2 driver files and NIF files:

N100.DOS  
N100EDS.NIF

**NOTE:** Files with the NIF extension are obtained from the first diskette of the Network Client 3.0 set of diskettes or from the downloaded SoftPaq.

23. Delete the \NET subdirectory on the network boot subdirectory after all required files are copied from the \NET subdirectory on the local hard drive.
24. If a previously existing \NET subdirectory on the local hard drive was renamed, be sure that the subdirectory is renamed to its original name.

25. Open the AUTOEXEC.BAT file on the network boot diskette with any text editor, replace all instances of C:\NET\ with \NET\, and save the file. The final basic AUTOEXEC.BAT file should be similar to the following:

```
SET PATH=\NET
\NET\net initialize
\NET\netbind.com
\NET\umb.com
\NET\tcptsr.exe
\NET\tinyrfc.exe
\NET\nmtsr.exe
\NET\emsbfr.exe
\NET\net start
```

26. Open the CONFIG.SYS file on the network boot diskette with any text editor, replace all instances of C:\NET\ with \NET\, and save the file. The final basic CONFIG.SYS file should be similar to the following:

```
FILES=20
device=\NET\ifshlp.sys
LASTDRIVE=Z
```

27. Open the SYSTEM.INI file on the network boot diskette with any text editor, replace all instances of C:\NET\ with \NET\, and save the file. Depending on network options chosen during the configuration of the Network Client 3.0, the final basic SYSTEM.INI file may be similar to the following:

```
[network]
sizworkbuf=1498
filesharing=no
printsharing=no
autologon=yes
computername=LOGONNAME
lanroot=\NET
username=LOGONNAME
workgroup=WORKGROUP
reconnect=yes
dospophotkey=N
lmlogon=0
logondomain=WORKGROUP
preferredredir=BASIC
autostart=BASIC
maxconnections=8

[network drivers]
netcard=N100.dos
transport=tcdrv.dos,nemm.dos
devdir=\NET
LoadRMDrivers=yes

[386enh]
TimerCriticalSection=5000
UniqueDosPSP=TRUE
PSPIncrement=2
```

The basic network boot diskette is now ready. However, additional operating system device files must be copied to the basic network boot diskette to allow the target system to access its storage and memory devices.

Common additional operating system files copied to the basic network boot diskette include:

HIMEM.SYS  
RAMDRIVE.SYS  
FWS2ASPL.SYS  
CPQIDECD.SYS  
FWS2CD.SYS  
SETVER.EXE  
MSCDEX.EXE  
SMARTDRV.EXE

Complete the configuration of the network boot diskette for the Windows NT 4.0, Windows 2000, and Red Hat Linux 6.2 or 7.x operating systems by editing the startup and configuration files on the diskette. For additional information, see the “Creating the Bootable Server Configuration Diskette with Network Software” section appropriate to each operating system in this document.

---

## Command Line Unattended Erase

This appendix describes how to create a command line unattended server erase script.



**CAUTION:** Using this command will erase all data on the system. To prevent data loss, be sure that all appropriate backups have been made before using the information in this appendix.

---

### Overview

A command line unattended erase provides a method for administrators to return a ProLiant server back to the original “clean” state, erasing hard drives and clearing system BIOS settings.

In this appendix, HP provides the information necessary to create a boot configuration and diskette that performs a system erase. This diskette was not included in the default set of HP provided diskettes, because this diskette could possibly erase large numbers of systems accidentally. However, creating this diskette is simple, and if you need an unattended command line erase utility, all the required information is available.



**CAUTION:** WHEN RUN, THIS SCRIPT WILL ERASE EVERYTHING ON THE SERVER WITHOUT ANY PROMPTS OR WARNING.

---

### Requirements

To create a command line unattended erase diskette, you need:

- System Erase utility 1.68 or later (ERASE.EXE)
- Reboot utility (REBOOT.EXE)
- Fast-Wide SCSI-2 ASPI driver (FWS2ASPI.SYS)
- ASPI driver (ASPICPQ.SYS)



## Unattended Command Line Erase Utility Details

The unattended command line erase process includes the following tasks:

- Erasing all data from the server hard drive
- Returning the system BIOS settings to system defaults

## Configuring Necessary Files

The files created in this section are used to create a scripted system erase utility.

### Step 1—Gather the System Erase Utility Files

Create a bootable diskette.

The System Erase Utility 1.68, is available on the Diskette Builder of SmartStart 5.4 or later. These files can also be downloaded as a SoftPaq from the HP website at

[www.hp.com](http://www.hp.com)

Copy the following files from the erase diskette to the bootable diskette:

- ERASE.EXE
- REBOOT.EXE
- ASPICPQ.SYS
- FWS2ASPI.SYS

### Step 2—Create the Unattended Erase Batch File (SYSERASE.BAT)



**CAUTION:** THIS SCRIPT ERASES EVERYTHING ON THE SERVER WITHOUT ANY PROMPTS OR WARNINGS.

---

Create a batch file named SYSERASE.BAT with the following commands:

```
ERASE.EXE -nolockup -jdmsaysnoui  
REBOOT
```

**NOTE:** STATEMGR.EXE will not work after ERASE.EXE has been executed. The system needs to be in a configured state before STATEMGR.EXE will function properly.

### Step 3—Execute the Scripted Erase Batch File (SYSERASE.BAT)



**CAUTION:** Using this command erases all data on the system. To prevent data loss, be sure that all appropriate backups have been made before using the information in this appendix.

---

## Sample Files

### CONFIG.SYS

The CONFIG.SYS file on the server boot device should have the following device drivers loaded:

```
lastdrive=z  
device = \fws2aspi.sys  
device = \aspicpq.sys /d  
STACKS = 9,256
```

### AUTOEXEC.BAT

```
call syserase.bat
```

---

## Network Teaming and Configuration

The Network Teaming and Configuration Utility enables configuration of network adapters (NICs) and teams of network adapters. The scripting feature of the utility enables adapter configuration using a batch process.

Scripting functionality enables configuration of a target system based on configuration information saved from a source server. The target system is not required to be identical to the source server. The configuration of the source server may not be duplicated in its entirety on the target system.

Both NICs and teams of NICs can be configured on the target system. When scripting is run, the NIC properties specified in the data file from the source server are used to modify the configuration of the NICs on the target system.

### Introduction

When using scripting to configure the target systems, NICs are identified by their relative order in the system. The relative order is determined by the slot and port order in the system. NICs on the system board are assigned the lowest numbers, followed by NICs ordered by their slot number, lowest slot number first. Multiported NICs are ordered by ascending port number within each slot.

NICs on the target system are configured to match the corresponding NIC number on the host system. The first NIC on the target system is configured using data from the first NIC on the source server, the second NIC on the target system is configured according to the saved data for the second NIC on the source server, and so on. If the target system has more NICs than the source server, then the extra NICs retain their current settings. If the target system has fewer NICs than the source server, data for additional NICs on the source server is ignored.

Corresponding NICs on the source and target systems do not have to be of the same type since the only properties that are configured from the source data are properties that are common to all NICs.

The target system will be configured with the same number of teams that were present on the source server.

Teams are created on the target system consisting of the same relative NICs that were teamed on the source server. For example, if NICs 3 and 5 were teamed on the source server, then that teaming information is saved in the data file, and NICs 3 and 5 are teamed on the target system during the scripted configuration. In general, the NICs on the team on the target system do not have to be the same type of NICs that were teamed on the source server. However, some NICs cannot be teamed and if an attempt is made to form a team with invalid combinations of NICs, an error will occur. For example, teams with no common speed capabilities cannot be teamed on a load balancing team and Netelligent NICs can only be teamed with other Netelligent NICs.

An error will occur in the configuration if the NICs forming the team on the source server are not present on the target system. For example, if NICs 3 and 5 are teamed on the source server but the target system has only four NICs, an error will be reported and the configuration will fail.

When teams are configured on the target system, the team properties will be set to the values read from the data file for the corresponding team on the source server. Properties not specified in the data file (and properties specified with invalid data values) will be configured using their default settings.

If no teams were configured on the source server, no teaming information will be written to the data file and configuration of the target system will consist only of configuring individual NICs.

## Scripting Application (CQNICCMD)

CQNICCMD is a Windows 2000 utility that processes a network adapter configuration script file to duplicate the NIC Teaming configuration of a source ProLiant ML/DL server on a target server. The utility can be run from the command line in a DOS window, from the **Run** option on the Windows Start menu, or from a Windows command file.

**NOTE:** The CQNICCMD utility is installed with the Network and Teaming Configuration Component for Windows 2000 that ships on SmartStart 5.40 and later. To execute the CQNICCMD utility from the command line, the Network and Teaming Configuration Utility must be closed.

HP recommends that you use this application as part of the SmartStart Scripting Toolkit (SSST) deployment. However, the application can be used outside of this environment, and these steps should be followed when using the scripting application.

1. Configure NIC teaming on the source server.
2. Generate a script file on the source server by clicking **Save** in the Network Teaming Configuration user interface or selecting **CQNICCMD /S** in the Command Line utility.
3. Modify the script file as necessary.

**IMPORTANT:** If you modify the script file, HP recommends that you run CQNICCMD /P to check the syntax of the modified file and check the log file for errors and warnings. The default location of the log file is `\\cpqsystem\log\cpqteam.log` on the system drive. The syntax of the /P option is `cqniccmd /pfilename`.

4. Install the Network Teaming and Configuration Utility on the target system.

5. Run the Command Line utility with the following syntax:  
`cqniccmd /cfilename`
6. Check the log file for errors and warnings. The default location of the log file is `\cpqsystem\log\cpqteam.log` on the system drive.

## Command Line Syntax

The configuration option to be performed is specified by command line switches. Only one of the following configuration options can be specified at a time.

`/S`

`/D`

`/C`

`/P`

The following options may be specified with any of the configuration options.

`/L`

`/F`

## Command Line Arguments

`/S`

This configuration option causes the source server configuration to be saved. The name of the XML configuration data file must be specified and the path to the data file must exist. This option is identical to saving the source server configuration using the **Save** button in the Network Teaming Configuration user interface.

`/D`

This configuration option causes all teams on the target server to be dissolved. No additional arguments are required or allowed with this option.

`/C`

This configuration option applies the configuration specified in the data file to the target system. An existing XML configuration data file must be specified following the target switch. A space following the switch is optional.

`/P`

This option is identical to the `/C` option, except that the configuration options are not applied to the target system. This is useful for syntax checking the XML data file.

/L

This option can be used to change the name and location of the cpqteam.log default log file that is created in \cpqsystem\log on the system drive, for example, C:. The supplied path must exist. An invalid log file name will cause the configuration to terminate with no changes; HP recommends this option only in batch files. This option can be specified on the command line with any of the configuration options.

/F

This option causes all errors, including those errors normally treated as non-fatal errors, to be treated as fatal errors. This option applies only to the /C option.

## Command Line Example

/S

```
cqniccmd /Sc:\Compaq\teamcfg.xml
```

```
cqniccmd /S c:\Compaq\teamcfg.xml
```

```
cqniccmd /S"c:\Compaq\teamcfg.xml"
```

/D

```
cqniccmd /D
```

/C

```
cqniccmd /Cc:\Compaq\teamcfg.xml
```

```
cqniccmd /C c:\Compaq\teamcfg.xml
```

```
cqniccmd /C'c:\Compaq\teamcfg.xml'
```

/P

```
cqniccmd /Pc:\Compaq\teamcfg.xml
```

```
cqniccmd /P c:\Compaq\teamcfg.xml
```

```
cqniccmd /P'c:\Compaq\teamcfg.xml'
```

/L

```
cqniccmd /Cc:\Compaq\teamcfg.xml /Lc:\Compaq\config.log
```

```
cqniccmd /C c:\Compaq\teamcfg.xml /L c:\Compaq\config.log
```

```
cqniccmd /C'c:\Compaq\teamcfg.xml' /L'c:\Compaq\config.log'
```

/F

```
cqniccmd /F /C c:\Compaq\teamcfg.xml
```

## Usage Example

To use the CQNICCMD utility in Microsoft Windows 2000 unattended installs, insert the command line into the CMD.TXT file as shown in the following example.

```
REM *** The file names are dependent on the version of SmartStart
REM *** that is used.
c:\ntcsp\setupc /use-latest
waitonprocess setup50.exe 120
REM *** The optional cqniccmd command line allows for
REM *** NIC team configuration during Windows 2000
REM *** unattended install
c:\winnt\system32\cqniccmd /c c:\teamcfg.xml
c:\cmsisu.exe
delfile c:\cmsisu.exe
delfile c:\unattend.txt
deldir c:\ntcsp
deldir c:\quicklch
```

Refer to Chapter 3 for further information on using CMD.TXT.

## Configuration Properties

The XML data file contains configuration properties for NICs and teams.

### NIC Configuration Properties

The properties that are configured on the target server NICs from the source server data are properties that are common to all HP NICs. These properties include:

- **SpeedDuplex**—Possible values include Auto/Auto, 10/Half, 10/Full, 100/Half, 100/Full, and 1000/Full. The value must be valid on the target system.
- **NetworkAddress**—This value is written only for NICs that are not teamed. It allows the burned-in address to be overridden with a locally administered address. A null value will always be written to the XML data file because locally administered addresses must be unique. A null value is valid; the network address will be the burned-in address. This value must be a valid unicast address if it is edited.

## Team Configuration Properties

The team configuration properties that are configured on the target server include:

- **TeamName**—Determines the unique identifier for the NIC team. Each team name on the target system must be unique.
- **OpMode**—Determines the team operating mode. Possible values are Manual, FailOnFault, SmartSwitch, TransmitLoadBalancing, and SwitchAsstLoadBalancing.
- **LoadBalAlgorithm**—Determines the team load-balancing algorithm. Possible values are MACAddress and IPAddress.
- **PreferredPrimaryNIC**—Establishes the Initial Primary NIC for Manual, FailOnFault, and TransmitLoadBalancing or the Preferred Primary NIC for SmartSwitch. This configuration property is not applicable to Switch-Assisted Load Balancing teams. The value must be a non-zero integer that corresponds with one of the NICs on the team.
- **TeamNetworkAddress**—Establishes the MAC address for the NIC team. A null value will always be written to the XML data file. A null value is valid and will cause a default address to be computed. This value must be a valid unicast address if it is edited.
- **HeartBeatMode**—Enables or disables the heartbeat signal between the team NICs. Possible values are Enabled or Disabled.
- **HeartBeatInterval**—Determines how frequently the heartbeat signals are transmitted. The range of acceptable values is 3000 to 60000. Values less than 3000 will be set to 3000, while values greater than 60000 will be set to 60000.



## XML Script File

The XML data file consists of three the following XML elements:

- `<teamingconfig>`—Brackets the entire data file and is required.
- `<nic>`—Defines NIC properties.
- `<team>`—Defines teams and their properties.

The “relnics” attribute of the `<team>` element lists the NICs that are to be configured on the team.

The following example is a typical NIC teaming script.

### Example C-1:

```

<teamingconfig>
<!-- The comment lines in this file make it convenient -->
<!-- to reference <nic> and <team> elements within the -->
<!-- file. It is recommended that these comment lines -->
<!-- remain unchanged if the user edits the file. -->
<!-- Adapter Data -->
<!-- Adapter Data -->
<!-- <nic> element 1 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!-- <nic> element 2 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!-- <nic> element 3 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!-- <nic> element 4 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!-- <nic> element 5 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
<property id='NetworkAddress' value='' />
</nic>
<!-- <nic> element 6 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
<property id='NetworkAddress' value='' />
</nic>
<!-- <nic> element 7 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
<property id='NetworkAddress' value='' />
</nic>

```

```
<!-- <nic> element 8 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
<property id='NetworkAddress' value='' />
</nic>
<!-- <nic> element 9 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!-- <nic> element 10 -->
<nic>
<property id='SpeedDuplex' value='Auto/Auto' />
</nic>
<!--          -->
<!--      Team Data      -->
<!--          -->
<!-- <team> element 1 -->
<team relnics='1 2'>
<property id='TeamName' value='Compaq Network Team #1' />
<property id='PreferredPrimaryNIC' value='1' />
<property id='OpMode' value='FailOnFault' />
<property id='LoadBalAlgorithm' value='MACAddress' />
<property id='HeartbeatInterval' value='3000' />
<property id='HeartbeatMode' value='Enabled' />
<property id='TeamNetworkAddress' value='' />
</team>
<!-- <team> element 2 -->
<team relnics='3 4'>
<property id='TeamName' value='Compaq Network Team #2' />
<property id='PreferredPrimaryNIC' value='3' />
<property id='OpMode' value='FailOnFault' />
<property id='LoadBalAlgorithm' value='MACAddress' />
<property id='HeartbeatInterval' value='3000' />
<property id='HeartbeatMode' value='Enabled' />
<property id='TeamNetworkAddress' value='' />
</team>
<!-- <team> element 3 -->
<team relnics='9 10'>
<property id='TeamName' value='Compaq Network Team #3' />
<property id='PreferredPrimaryNIC' value='9' />
<property id='OpMode' value='FailOnFault' />
<property id='LoadBalAlgorithm' value='MACAddress' />
<property id='HeartbeatInterval' value='3000' />
<property id='HeartbeatMode' value='Enabled' />
<property id='TeamNetworkAddress' value='' />
</team>
</teamingconfig>
```

## Error Handling and Reporting

Errors can occur for a variety of reasons including differences between the source and target system NICs or because of errors introduced by editing the XML data file. The software performs extensive error checking as the XML data file is read and processed.

When invalid property values are detected, a warning error message will be written to a log file and configuration will continue with either default or existing values.

The configuration software returns a completion code as an error level that can be examined in a Windows command file. Successful completion returns an error level of 0. Non-fatal errors return a completion code of 1. An invalid log file returns an error level of 2. Other fatal errors return a completion code of 3 or greater. The specifics about all errors can be determined by viewing the log file.

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