

December 1998
ECG034/1298

Prepared by Windows NT
Integration Group

Compaq Computer Corporation

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Migrating Compaq Servers in a Windows NT 4.0 Environment

Abstract: The purpose of this white paper is to provide standard procedures and information necessary when migrating Compaq Server hardware platforms with the Windows NT operating system installed.

The information presented in this document is intended for system, hardware, field service and/or network engineers and administrators involved in migrating or upgrading Compaq servers running Windows NT.

This document provides:

- Migration checklist and example migration data form to assist with the migration/upgrade.
- Step-by-Step instructions necessary to prepare your software for the migration/upgrade process.
- Step-by-Step instructions necessary to prepare your system or hardware for the migration/upgrade process.
- Troubleshooting strategies and sample error messages that may occur during or after a hardware migration.

This white paper is intended for use in conjunction with information and documentation specific to the Compaq server migration being performed. It can be used as a guideline and does not provide specific information for a particular migration or upgrade. Before using this white paper search for documentation specific to your needs.

Note: All results are based on Windows NT 4.0, results may or may not be applicable on other versions of Windows NT.

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Migrating Compaq Servers in a Windows NT 4.0 Environment
White Paper prepared by Windows NT Integration Group

First Edition (December 1998)
Document Number ECG034/1298

Executive Overview

Compaq customers are assured investment protection for their enterprise servers today and in the future for the ProLiant line of servers. Today's computing environments call for systems built for high performance, high availability and high scalability. Compaq provides the highest levels of scalability in the industry on Intel platforms. In an effort to provide cost-effective, high performance, next generation servers Compaq routinely provides opportunities for you to upgrade in-chassis or migrate to new chassis from your existing server platforms.

This white paper will provide you with general software preparation and restoration procedures necessary to upgrade or migrate your hardware in a Windows NT 4.0 environment. This white paper will assist you in upgrading components in the same chassis or migrating to a new chassis from your existing server platform.

Before You Begin

When performing an upgrade or migration you may need the following items:

- Compaq SmartStart and Support Software CD (latest version.)
- Compaq Insight Management CD (latest version.)
- Compaq Systems RomPaq Firmware Upgrade Diskette (latest version.)
- Compaq System Configuration utility (latest version.)
- Windows NT 4.0 CD-ROM or Windows NT 4.0 CD-ROM with latest Service Pack.

Note: The information in this white paper was tested on the current version at the time of release. Compaq SmartStart and Support Software CD v4.2, Compaq Insight Management CD v4.1, and Compaq Systems RomPaq Firmware Upgrade Diskette v3.15. When performing the migration or upgrade you should obtain the latest version at that time.

If you have a problem you can get further information and other help, latest drivers, and FlashROM images from the Compaq website at www.compaq.com.

Migration Planning

Before migrating or upgrading a new or existing platform, complete a thorough planning session to outline objectives, develop a migration/upgrade strategy, anticipate unexpected issues and develop a contingency plan. This white paper can be used as a guide when performing Compaq hardware migrations or upgrades. Before using this white paper you should always search for other white papers specific to your migration configuration. For the remainder of this document the term migration will be used to identify either a migration or upgrade.

To assist with the migration the following migration checklist (Table 1) has been developed as a guide to identify incompatible items that may require updating. You should research these items to identify whether an update is available and/or required. The information gained through your research should be used to complete and modify the table. The completed table can be used as a checklist for the migration, however it is not all-inclusive for every migration configuration.

Table 1: Migration Checklist

Component	Description	Version	Requires Update	Update Available
Operating System				
Processor(s)				
Memory				
SCSI Controller(s)				
Network Card(s)				
Windows NT Support Software (NT SSD)				
Compaq Insight Manager Agents				

Table 2 is an example of a completed migration checklist. It should be used as a reference only. Version numbers for components used are based on current versions that were available at the time this white paper was developed; later versions will probably be available.

Table 2: Completed Migration Checklist

Component	Description	Version	Requires Update	Update Available
Operating System	Windows NT	4.0 SP3	Optional	NT 4.0 SP4
Processor(s)	Pentium Pro	N/A	Optional	Pentium II Xeon
Memory	256 MB EDO (DIMM)	N/A	No	
SCSI Controller(s)	Compaq Smart 2DH	3.16	Optional	3.19
Network Card(s)	Compaq NetFlex 3/P and Netelligent PCI controller	4.26	No	
Windows NT Support Software (NT SSD)	Windows NT SSD	2.08	Yes	2.10
Compaq Insight Manager Agents	Compaq Insight Agents	3.5x	Yes	4.10

Table 3 Migration Data Form can be used to assist with planning the migration configuration. The original configuration for the server should be listed in one column and the desired migrated configuration in the other. Fill in the blanks for all components that may be affected.

Table 3: Migration Data Form

Hardware and Software	Original Configuration	Migrated Configuration
System Processor(s)		
Memory		
Controllers		
Slot 1		
Slot 2		
Slot 3		
Slot 4		
Slot 5		
Slot 6		
Slot 7		
Slot 8		
Slot 9		
Slot 10		
Slot 11		
Embedded SCSI Port 1		
Embedded SCSI Port 2		
Embedded SCSI Port 3		
Internal Drive Configuration		
Drive Cage 1 (Bottom)	6 – 9.1 GB	6 – 9.1 GB
Drive Cage 2 (Middle)	6 – 9.1 GB	6 – 9.1 GB
Drive Cage 3 (Top)		
Hardware Fault Tolerance		
RAID 1 (Mirroring)		
RAID 5		
Software Fault Tolerance		
Mirror		
Stripe Set with Parity		
Volume Set		
Operating System		
File System(s)		
Software		

Software Preparation

This section provides step-by-step instructions for various phases needed to prepare for migrating the operating system. These steps are not provided as a replacement for official documentation, however it can be used as a reference.

Back-Up the System

Use the Windows NT Backup program or a third-party backup program to create a tape archive of the system you are upgrading. If you are migrating a domain controller, use Server Manager to synchronize the domain before performing the backup.

IMPORTANT: Make certain that you verify the backup before proceeding.

If you use a third-party backup program that does not have the option to back up the registry, back up the contents of the following directory:

`<%systemroot%>\system32\config`

where `<%systemroot%>` is the directory that contains Windows NT files.

Make certain that files associated with SAM.* and SECURITY.* have been selected.

Prepare for Recovery

Complete the following steps to create software tools for recovery should migration or upgrade problems arise.

Create an Emergency Repair Diskette

A Windows NT emergency repair diskette can facilitate recovery after some installation problems. If you have not already done so, create an emergency repair diskette with the Repair Disk Utility (rdisk.exe) that ships with the operating system. To create an emergency diskette:

1. Click Start→Run.
2. Type “RDISK /S” and click OK.
3. Click Yes to create a new Emergency Repair Disk.
4. Insert a new diskette into drive A: then click OK.
5. Click Exit and close the RDISK utility program.

Refer to the Troubleshooting chapter of the Microsoft Windows NT Installation Guide for more details on creating Emergency Repair Diskettes.

Create a Windows NT Boot Diskette

The boot diskette will allow access to a drive with a faulty boot sequence, such as a corrupted boot sector, corrupted master boot record (MBR), or corrupted boot files. The boot diskette will allow you to boot from the shadow of a broken mirror. Use the boot diskette if problems arise.

To create a Windows NT Boot Disk:

1. Under Windows NT 4.0, format a blank diskette if you have not already done so.
Note: Make sure the disk has been formatted under Windows NT. You will be able to successfully copy the files onto a pre-formatted DOS diskette but you will not be able to boot using it.

2. Copy the NTLDR, NTDETECT.COM, and BOOT.INI files from your server boot drive to the diskette.

NOTE: If the ARC path of your BOOT.INI begins with the multi() syntax instead of scsi() you do not need the NTBOOTDD.SYS file. NTBOOTDD.SYS is only required if you are using the scsi() syntax in the BOOT.INI file. For example, the following sample BOOT.INI file does not need NTBOOTDD.SYS.

```
[boot loader]
timeout=5
default=multi(0)disk(0)rdisk(0)partition(4)\WINNT40

[operating systems]
multi(0)disk(0)rdisk(0)partition(4)\WINNT40="Windows NT Server Version 4.00"
C:\="MS-DOS"
```

3. If you boot from a SCSI controller, locate the driver for the SCSI controller that you boot from and copy this driver to the diskette as NTBOOTDD.SYS.

For example, for the Compaq SMART-2 Array Controller, type:

```
COPY <drive> SYSTEM32\DRIVERS\CPQARRAY.SYS a:\NTBOOTDD.SYS
```

where <drive> is your local drive.

OR

if you boot from a non-Compaq controller such as an Olicom PCI 10/100 Adapter, type:

```
COPY <drive>SYSTEM32\DRIVERS\OCE4XMP.SYS a:\NTBOOTDD.SYS
```

where <drive> is your local drive.

However, if NTBOOTDD.SYS already exists on your hard drive, copy the existing file. You can find the driver name by clicking Start→Control Panel→SCSI Adapters. Click the Device tab. Select the adapter, then click the Driver tab.

NOTE: The driver names are usually similar to the manufacturer name. For example:

3COM Etherlink PCI Adapter (3C590) = 3C59X.SYS.

Cabletron E22XX Ethernet Adapter = CTE22.SYS

IBM 10/100 PCI Ethernet Adapter = IBMFE.SYS

UltraStor 14F/14FB/34F = ULTRA14F.SYS

NOTE: If you are unsure which device is your boot device, unable to find the correct driver, or are using different types of controllers, you can use the Compaq Boot Partition and Boot Driver Detection Utility. For a copy of the driver and information on using it, see the Compaq Internet site at:

<http://www.compaq.com/partners/microsoft/sysadm.html>

OR

Search for Boot Partition and Boot Driver Detection.

IMPORTANT: Make certain you verify the boot disk before proceeding. To verify the boot disk, insert the boot diskette into the diskette drive and restart the operating system.

Save the Disk Configuration

Use the Windows NT Disk Administrator to save the disk configuration to a diskette. To save the disk configuration:

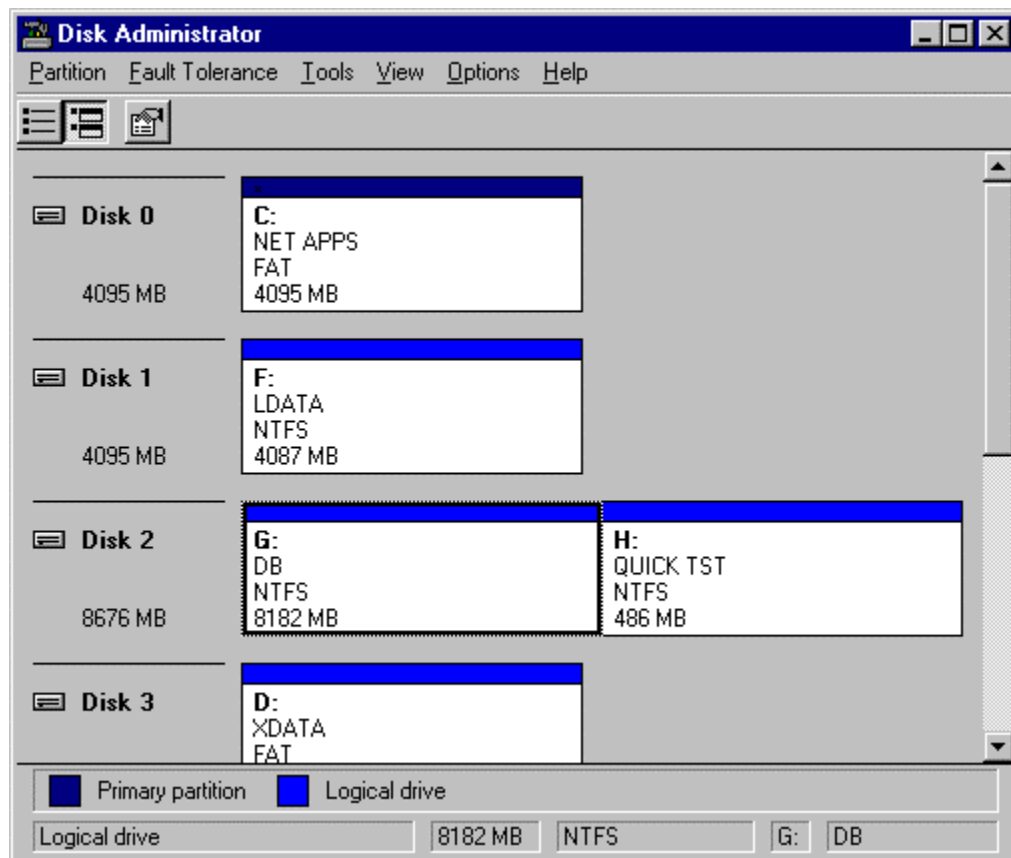
1. Click Start→Programs→Administrative Tools→Disk Administrator.
2. Click Partition menu→Configuration→Save.
3. Insert the new formatted diskette into the diskette drive and click OK.

NOTE: Running the Disk Administrator will write a signature to the disk to help ensure that the proper drive letter and order is retained. You can also use Disk Administrator to save and print the disk configuration to preserve valuable hard drive information in case the need to restore arises.

Print the Disk Configuration

Create a printout of the Disk Administrator screen to save a paper copy of the hard drive configuration information. To print the Disk Administrator screen:

1. Click Start→Programs→Administrative Tools→Disk Administrator. Choose Yes if prompted to write a signature to the Disk. The following screen will appear:



2. Select the View menu→Disk Configuration.
3. Adjust the screen size to view as much disk data as possible.
4. Press and hold down the Alt + Print Scrn key to copy data to the clipboard.

5. Open Microsoft WordPad, Microsoft Paint, or other word processor software. From the Edit menu, select Paste.
NOTE: WordPad is recommended for capturing data on the clipboard.
6. Save and Print the document for later reference.
7. If additional drive data is in Disk Administrator, scroll/adjust the screen to display additional data, then repeat steps 2 d - f. Repeat this process until all the data has been captured. Data can be saved in one file.
8. To obtain a print out in volumes view, select the View menu, then Volumes and repeat steps 2 c - f.

Update Support Software, Insight Agents and Install HAL Recovery

If you are currently using Compaq Support Software or Compaq Insight Agents update to the latest versions. You should also install the latest version of the HAL Recovery utility to assist should problems arise during the migration. If you are not updating the support software complete steps 1, 2, and 3 under the Update Support Software section and then skip to step 5 under the section entitled "Install HAL Recovery".

Update Support Software

To update to Compaq Support Software for Windows NT 4.0 version 2.08 or higher from the Compaq SmartStart Software Support CD v4.20 or later; complete the following steps:

1. Insert the Compaq SmartStart and Support Software CD.
2. Click Start→Run.
3. Enter <drive>:\CPQSUPSW\NTSSD\SETUP.EXE
where <drive> is the drive letter of your CD-ROM drive.
4. Select the installed option(s) under Computer Name and click Update, if applicable.

NOTE: The Express option rapidly updates all support software.

Install HAL Recovery

Complete steps 5-7 to install the HAL Recovery option. This will assist with troubleshooting should problems arise.

5. Select the HAL Recovery Option, then click the Install button.

NOTE: The following step requires a Windows NT Server CD or disk with the Windows NT HAL and kernel files.

6. Select Multiprocessor HAL and Kernel, then click the Downgrade button.
7. From the Main menu, select Exit. Select Yes to reboot the server.

Update Insight Manager Agents

Compaq Insight Manager (CIM) Agents are upgraded using the Compaq Management CD. To upgrade Insight Agents for Windows NT using the Compaq Management CD:

1. Insert the Compaq Management CD into the CD-ROM drive.
2. Using Windows NT 4.0, click Start→Run.
3. Enter <drive>:\AGENTS\WIN-NT\ENG\SETUP
where <drive> is the CD-ROM drive.
4. A dialog box containing the Update option and Remove and Reinstall option displays. Select the Update button.
5. Follow the instructions on the screen. If needed, press F1 for online help.

Document Operating System Settings

Recording the network settings before upgrading or migrating can be useful after the upgrade or migration to restore the system to its original configuration. You should perform this step if your upgrade or migration requires you to add, rearrange or remove SCSI or network controllers. Two methods exist to record this information, however Method 1 is recommended. Instructions on using Method 1 have been provided below.

Method 1: Save network settings to a file on the System Settings diskette(s) as text or screen shots cut and pasted to a word processing application.

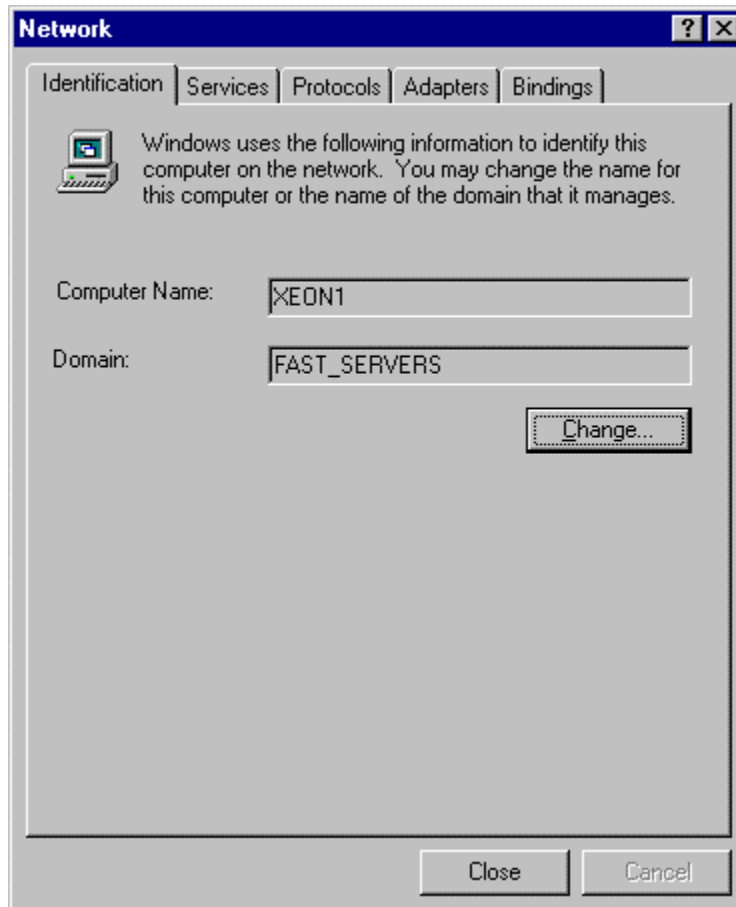
Method 2: Record network settings specific to each network interface controller port on paper.

Note: If you are adding, rearranging or removing SCSI or network controllers, at minimal you should document (write down) the network controller number and it's associated IP address. This will help ensure that the system has been properly restored and/or used to restore the network settings should problems arise. To do so click Start→Settings→Control Panel→Network icon→Protocol tab→TCP/IP Protocol→Properties, write down the network adapter number, name and specified TCP/IP address. For example:

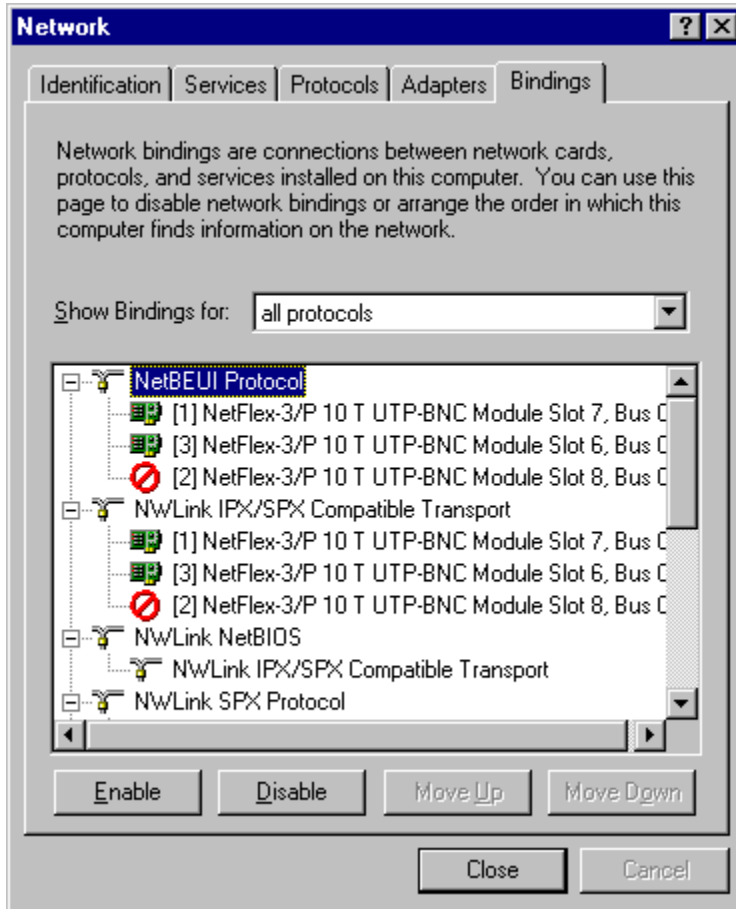
Adapter #	Adapter Name/Description	TCP/IP address
[1]	NetFlex 3/P 10 T UTP –BNC Module Slot 7 Bus	127.0.0.1
[2]	NetFlex 3/P 10 T UTP –BNC Module Slot 6 Bus	255.255.255.0

The following steps will capture all data that can be referenced for recovery of network settings, if problems arise.

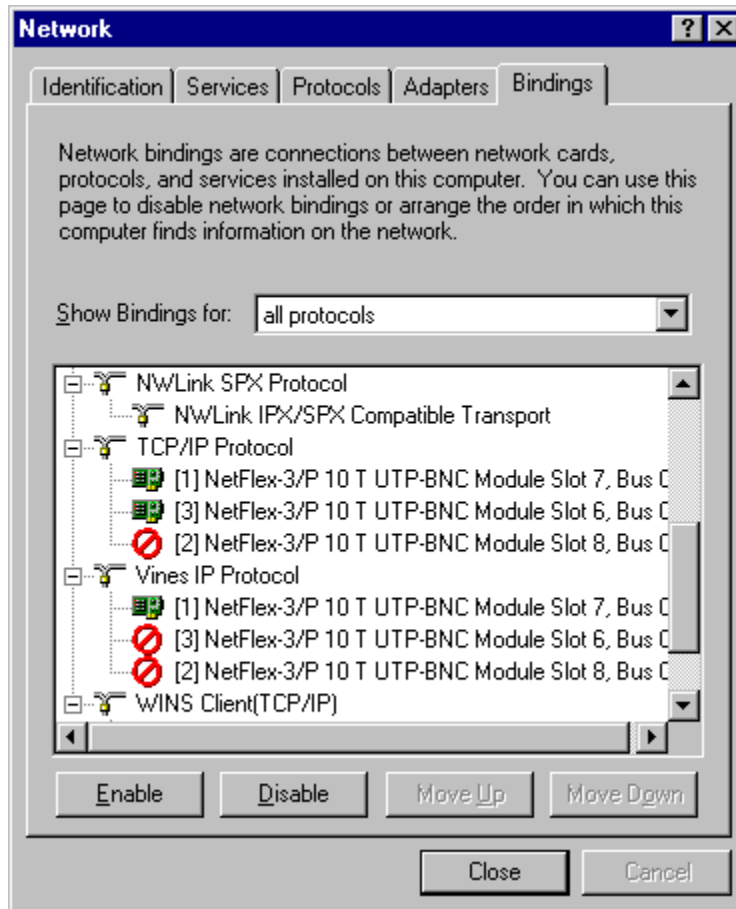
1. Click Start→Settings→Control Panel→Network icon.
2. Select the Identification tab. The following screen appears:



3. Press and hold down the Alt + Print Scrn keys; this will copy the data to your clipboard.
NOTE: Do not close the dialog box; minimize if necessary.
4. Open Microsoft WordPad, Microsoft Paint, or other word processor installed on your system. From the Edit menu, select Paste.
NOTE: WordPad is recommended for capturing data on the clipboard.
5. Save the file. Press the End key, then press the Enter key twice to add space for the next screen capture.
6. Return to the Network dialog box.
7. Press the Protocols tab, select the first protocol on the list, and then click the Properties button if it is available. Copy and paste all information to the file saved in Step 5.
8. Repeat step 7 for all protocols.
9. Select the Bindings tab. For Show Bindings click All Protocols. Expand each protocol and scroll to the top of the dialog box. Copy and paste all Bindings information to the file.



It may be necessary to scroll down to display remaining Bindings information, continue this process until all data has been captured and saved. See the following example.



10. Print the file if a printer is available, then copy the file to diskette and place it in a safe place.

Verify Proper Operation

After completing all of the above procedures, restart your software operating system and applications to verify that they are operating properly.

CAUTION: Do not proceed to the system preparation section unless the software and server are operating properly.

If the server is operating properly, power it off and proceed with the system preparation portion of this document.

System Preparation

This section will provide information on updating your firmware, system partition files and utilities, recording your system configuration using the Compaq System Configuration Utility, and documenting and printing system configuration reports.

Update Firmware

Compaq servers and most Compaq options have onboard firmware (operating program in ROM). Updating firmware is done by flashing the ROM using a special Compaq utility called a ROMPaq to replace the existing contents of the ROM with another version stored in a file on a floppy diskette.

There are two ROMPaq utilities:

- System ROMPaq Used for updating the system ROM in all Compaq servers supporting Flash ROM. Use System ROMPaq when upgrading Compaq hardware to be sure that the server can utilize all the capabilities of the new hardware.
- Option ROMPaq Used for updating the onboard ROM on all Compaq options that support flashing. Use Option ROMPaq when new versions of Compaq options firmware become available to take advantage of expanded capabilities.

Note: Before you install the new hardware in your server, you must run System ROMPaq to update the system firmware. This will ensure that the server will recognize the new hardware and not hang on boot.

ROMPaq Diskettes

The ROMPaq utilities must be run from diskette. The latest version of the ROMPaq diskettes may be created from the SmartStart and Support Software CD that was supplied with your new Compaq hardware. We recommend that you initially use this version of ROMPaq because it is the latest one that supports your new Compaq equipment.

To run the System ROMPaq:

1. Place the System ROMPaq diskette in the server diskette drive.
2. Boot the server by turning on the power.
3. Press Enter at the Welcome screen.
4. At the Select A Device screen, select the server from the list of programmable devices. This may be the only item in the list. Press Enter.
5. At the Select An Image screen you will see:

Device to reprogram:	<i>your server</i>
Current ROM revision:	<i>date of existing ROM version</i>
Select Firmware Images:	<i>date of latest ROM version</i>

Press Enter.

6. Review the information on the Caution screen:

Device to reprogram:	<i>your server</i>
Current ROM revision:	<i>date of existing ROM version</i>
Select Firmware Images:	<i>date of latest ROM version</i>

7. Press Enter to reprogram the system ROM or **Esc** to discontinue reprogramming and return to the Select An Image screen.

“Reprogramming Firmware” indicates that the system ROM is being reprogrammed. DO NOT INTERRUPT.

Note: Do not interrupt this cycle. Interrupting the ROM reprogramming will leave the firmware in an unknown state. You may not be able to boot the server if this happens. You will be notified that reprogramming is completed.

8. When ROMPaq is finished reprogramming the system ROM, press Esc to exit the System ROMPaq Utility.
9. Remove the System ROMPaq diskette and reboot the server by cycling the power (cold boot).

Update Your System Partition

If a system partition is not present then skip the “Update Your System Partition” section. Proceed to “Recording Your Configuration Using the Configuration Utility” section.

There are two methods to update your system partition on a configured system that has a system partition, you can update from CD or diskette. This white paper will only discuss updating from CD you should be using the Compaq SmartStart and Support Software CD version 4.1 or later.

To update using the Compaq SmartStart Software Support CD:

1. Insert the Compaq SmartStart Software Support CD into the CD-ROM drive and restart your system.
2. Select Update System Partition from the Compaq System Utilities menu. Click Next then Continue, which restarts the system.
3. After the system restarts, select Compaq System Configuration from the Upgrade Utility Selection Panel. This copies the new information onto the system partition. The system will restart and display the Smart Start screen.
4. Click Exit SmartStart, Next, Continue.
5. Power off the system.

Record Your System Configuration

Follow these steps to document the system configuration using the Compaq System Configuration Utility. Accurately recording your system configuration is crucial to the successful operation of your server after hardware upgrade procedures have been performed. Manually recording your server configuration settings will aid you in the event that the settings recorded by the configuration utility become damaged.

1. Insert the Compaq SmartStart Software Support CD into the CD-ROM drive and restart your system.
2. Select Run System Configuration Utility and choose Next, then Continue.
3. Select System Configuration from the Main menu.
4. Select Configure Hardware and then press enter. Select Review or modify hardware settings.
5. Select Step 4: Examine switches and print report from the Steps in configuring your computer menu and press enter.
6. Press F7 and select either Print All Configuration Settings, if a printer is attached, and/or Print All Configuration Settings to a File, which you can print at a later time. Follow the instructions on the screen. Save the print-out for future reference. Choose F10 to return to the Steps in configuring your computer menu.

7. Choose View or Edit details and then press enter. Page Down to each embedded controller to document (write down) the controller order and briefly describe any attached devices. This will assist in differentiating between multiple connectors on a given SCSI controller expansion board.

IMPORTANT: It is not necessary to record all attached devices. Pay close attention to the installed devices to verify settings to restore your server to its original configuration.

Document (write down) the controller order and slot numbers for remaining SCSI controllers and Fibre channel controllers to aid in the restoration of your server to its original configuration.

8. Press F10 to return to the Steps in configuring your computer menu.
9. Select Step 5: Save and Exit from the Steps In Configuring Your Computer menu.
10. Select Save the Configuration, and Restart the Computer and press enter.
11. Remove the CD from the drive and press enter at the reboot message, then power off the server.

Verify Proper Operation

After completing all of the above procedures, restart your software operating system and applications to verify that they are operating properly.

CAUTION: Do not proceed to upgrade your hardware unless the software and server are operating properly.

If the server is operating properly, power it off and proceed with the hardware upgrade or migration.

Software Restoration

This section provides steps to restore your system and operating system settings. After you hardware or component migration has been completed, you may use one or all of these steps to restore your operating system to its original state.

Restore the System

Use the System Configuration Utility restore your system. This step will ensure that the controller order is set properly to allow the operating system to load

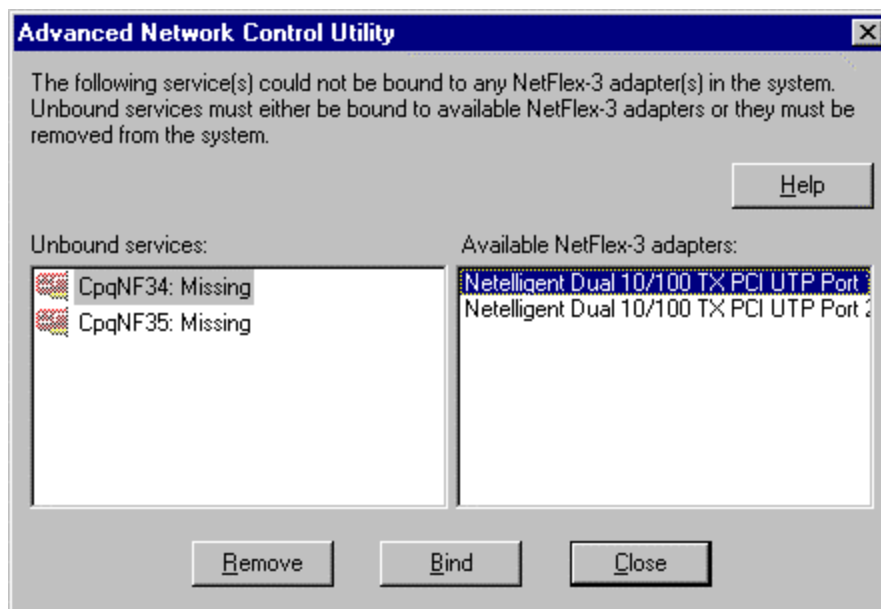
1. Insert the Compaq SmartStart Software Support CD into the CD-ROM drive and restart your system.
2. Select Run System Configuration Utility and choose Next, then Continue.
3. Select System Configuration from the Main menu.
4. Select Configure Hardware and press enter. Select Review or modify hardware settings.
5. Choose View or Edit details and press enter. Page Down to each controller and verify that the controller order is correct. Use the information documented during the "Record Your System Configuration" section of this white paper and/or the migrated configuration column in Table 3: Migration Data Sheet.
6. Press F10 to return to the Steps in configuring your computer menu.

7. Select Step 5: Save and Exit from the Steps In Configuring Your Computer menu.
8. Select Save the Configuration, and Restart the Computer and press enter.
9. Remove the CD from the drive and press enter at the reboot message, and then power off the server.

Restore Network Settings

This section provides steps to restore your network card settings. The order in which these steps should be used will vary according to the migration or upgrade you are performing. Network drivers for Network Interface Controllers (NICs) may become unbound if you have added a bridged controller of any type. If you are unsure use the steps below to verify whether or not the NIC has become unbound. You can use the Compaq Advanced Network Control Utility or the Microsoft Network Application located in the Control Panel to reinstall or re-bind the drivers. Additional installation instructions can be found in the Windows NT documentation or the NIC documentation.

1. Load Windows NT.
2. Choose the Start menu -> Settings -> Control Panel -> Compaq Net icon to launch the Advanced Network Control Utility. Proceed to step 3 if you are not using a Compaq NetFlex-3 driver, are using non-Compaq drivers, or the following steps were unsuccessful. The Unbound Services screen will be displayed when a change is made to the configuration that affects the network bindings.



To correct the problem you may be able to bind the registry entry using the following steps:

- a. Highlight the listing under Unbound services and the first adapter under Available adapters.
- b. Click the Bind button to attach the driver to the controllers.
- c. When the configuration is complete, and you are prompted to reboot, choose Yes to reboot the server. This shutdown will simplify troubleshooting should problems arise.

- d. After you reboot the server verify that the network adapter numbers and TCP/IP addresses match what was documented in the Document Operating System Settings section of this white paper.
3. Choose the Start menu -> Settings -> Control Panel -> Network icon. Choose the Adapters tab and choose the Add button and select the appropriate driver from the list to re-add NICs previously installed. Highlight the NIC that did not load and select the Remove option.
Use the captured data from the floppy or print-out to restore all settings in the Network settings dialog box.
4. When the configuration is complete and you are prompted to do so, choose Yes to reboot the server. This shutdown will simplify troubleshooting should problems arise.

Upgrade the HAL

If you downgraded the HAL in Phase 2 and are using multiple processors complete the following steps to upgrade HAL from uniprocessor to multiprocessor:

1. Insert the Compaq SSD for Windows NT Diskette #1 into the diskette drive.
2. Click Start→Run.
3. Type a:\SETUP (where a: is the letter of the diskette drive), and click OK.
4. Select Multiprocessor HAL and Kernel, then click the Upgrade button.
5. Choose the Main menu and Exit; click Yes to Reboot so that the modifications will take effect.

Verify System Operation

After completing configuration of your software, restart your server and verify that your software, applications, and server are operating properly. Check network connections, Event Viewer and data for functionality.

Troubleshooting

This section provides troubleshooting information specifically related to Windows NT.

Errors, Issues, and Workarounds

Table 4 provides error messages, issues, and workarounds to problems that may be encountered when performing the migration.

Table 4: Errors, Issues, and Workarounds

Error/Symptom(s)	Workarounds
Server cannot load operating system/ Windows NT does not boot. Non-system disk error.	<p>Controller order incorrect. If problem occurs after the hardware replacement process:</p> <p>Run the System Configuration Utility and check the controller order for the boot device. Make sure the boot device controller order is set too first.</p> <p>If problem occurs before the hardware replace process:</p> <p>Make sure all floppy disks have been remove from a:.</p>

	Run the Emergency Repair Disk. See the Windows NT documentation for additional instructions. Document any error messages and changes since the last successful boot.
Windows NT Service Control Manager error: At least one drive failed during system startup.	Video driver and/or network drivers did not start. Check Event Viewer and record the Event ID and the Description. See specific Event Ids listed below.
Event ID: 7026 Description: The following boot-start or system start driver(s) failed to load:<device or driver name>	This driver or device may no longer be used. If this is the case go to Settings, Control Panel, Devices, select <device name> and choose the Startup button. Change the startup to disabled.
Event ID: 4105 Description: <Adapter name>: Network link is down. or Event ID: 5003 Description: <Adapter Name>: Could not find an adapter	The PCI bus number may have changed. The driver may have become unbound. You must reinstall the network drivers. Use the Advanced Network Control Utility, Start menu, Settings, Control Panel, Compaq Net icon or Start menu, Settings, Control Panel, Network icon.
System slow, applications almost halt system.	Swap/page file may be corrupt. Use the System applet in Control Panel to create a new one..
NTFS.sys or other file missing or corrupt	Run the ERD to replace the file, if that does not work run complete options from the ERD.
NT blue screens with a Stop error or hangs after or during logon.	Make sure all Compaq Insight Manager (CIM) agents and Support Software have been updated to the latest version.

Basic Troubleshooting Strategy

This section lists basic methodology to use when troubleshooting. First you need to gather problem/symptom(s), to allow you to isolate and resolve the issue. In doing so, the following questions should be asked:

- Is the problem reproducible or random?
- What hardware and/or software are involved?
- Were any errors made in implementing steps? Was more than one variable changed at a time? Watch for and record any mistakes made while executing the steps or the action plan.
- If applicable does the problem occur on the server or is it just client specific?
- Were any steps skipped or completed out of order? Look for skipped steps or steps executed out of order. Circle the steps not executed and number the true order the steps were executed.
- Were any steps accidentally added? Were any steps added intentionally to complete or correct another step? Place checkmarks against the steps as they are/were executed to avoid this. If steps had to be added on the fly in order to proceed, record why and where.
- Disable all services not necessary to run the OS and add them back one at a time. To determine if one of them is the culprit.

After the above questions have been asked you can complete the following steps to resolve the issue:

1. Decide on one cause and possible solution at a time. Make appropriate modifications and then test those modifications. Try to minimize the number of things you change between tests.

2. Test each modification to see if it fixed the problem.
3. Write down all symptoms, causes, and solutions. Having a written record makes an excellent reference for future troubleshooting.
4. Install new copy of the OS into a different directory. Does the problem still occur? Add software and disable all services not mandatory to run the OS. Add services and software one at a time to isolate the problem.

Summary

This white paper provides step-by-step instructions, sample migration scenarios, and troubleshooting tips to successfully upgrade your Compaq ProLiant 6000 or 7000 Pentium Pro server to Pentium II Xeon technology. Used in conjunction with the Compaq ProLiant 6000 and ProLiant 7000 Pentium II Xeon Upgrade guide, this white paper details information for the Windows NT software preparation and restoration procedures necessary to upgrade. Detailed instructions on removing and restoring the server's hardware and installing upgrade parts are provided in the Compaq ProLiant 6000 and ProLiant 7000 Pentium II Xeon Upgrade guide. The upgrade guide also provides instructions for upgrading servers with other operating systems installed.