WHITE PAPER

[February 1998]

Prepared By
Windows NT Integration

Compaq Computer Corporation

CONTENTS

Remote Driver and Utility Installation with Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01

This document introduces the new Setup features in the Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01 and later, which allow users to perform remote installation, update, removal, and configuration of drivers and utilities across the network. The two main features this paper discusses are the new graphical user interface and command line interface.

The intended audience for this White Paper is system engineers and network administrators who perform installation and configuration of Compaq software and hardware components in a Microsoft Windows NT 4.0 environment.

Help us improve our technical communication. Let us know what you think about the technical information in this document. Your feedback is valuable and will help us structure future communications. Please send your comments to: CompaqNT@compaq.com

COMPAQ

NOTICE

The information in this publication is subject to change without notice.

COMPAQ COMPUTER CORPORATION SHALL NOT BE LIABLE FOR TECHNICAL OR EDITORIAL ERRORS OR OMISSIONS CONTAINED HEREIN, NOR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS MATERIAL.

This publication does not constitute an endorsement of the product or products that were tested. The configuration or configurations tested or described may or may not be the only available solution. This test is not a determination of product quality or correctness, nor does it ensure compliance with any federal, state or local requirements. Compaq does not warrant products other than its own strictly as stated in Compaq product warranties.

Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

Compaq, Contura, Deskpro, Fastart, Compaq Insight Manager, LTE, PageMarq, Systempro, Systempro/LT, ProLiant, TwinTray, ROMPaq, LicensePaq, QVision, SLT, ProLinea, SmartStart, NetFlex, DirectPlus, QuickFind, RemotePaq, BackPaq, TechPaq, SpeedPaq, QuickBack, PaqFax, Presario, SilentCool, CompaqCare (design), Aero, SmartStation, MiniStation, and PaqRap, registered United States Patent and Trademark Office.

Netelligent, Armada, Cruiser, Concerto, QuickChoice, ProSignia, Systempro/XL, Net1, LTE Elite, Vocalyst, PageMate, SoftPaq, FirstPaq, SolutionPaq, EasyPoint, EZ Help, MaxLight, MultiLock, QuickBlank, QuickLock, UltraView, Innovate logo, Wonder Tools logo in black/white and color, and Compaq PC Card Solution logo are trademarks and/or service marks of Compaq Computer Corporation.

Other product names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

Microsoft, Windows, Windows NT, Windows NT Server and Workstation, Microsoft SQL Server for Windows NT are trademarks and/or registered trademarks of Microsoft Corporation.

Remote Driver and Utility Installation with Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01

Second Edition (February 1998)
Document Number: ECG031/0298

Note: *This version of the white paper replaces "Remote Driver and Utility Installation with Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01", November 1997, DOC ID ECG009.1197.*

The following items are new in this white paper:

- *Updated sections with information about the new VERSION command for the command line interface.*
- *Updated information in the "Performance Impact" section.*
- *A new section "Preparing for Setup with the Command Line Interface".*

REMOTE SETUP OVERVIEW

The Compaq Support Software Setup Program, shipped with SSD 2.01 and later versions, features two new interfaces which give users the ability to perform remote driver and utility installations, updates, removals, and configurations across a network. The remote Setup functionality uses a "push" implementation in which drivers and utilities are "pushed" from the local computer to the remote computer. This implementation allows administrators to configure one or more remote computers connected within a network, from a local computer.

The two new types of interfaces and their features, are the following:

- **Graphical User Interface (GUI)** provides a visual representation of SSD Setup components relative to hardware present in the system. The GUI interface allows users to install, update, and remove components through either an Express or Custom Setup process. Custom is the default Setup configuration. Both local and remote component modifications are possible, however only one computer at a time can be modified.
- **Command Line Interface** allows users to install, remove and update SSD Setup components via the command line. The command line interface is useful for silent and batch installations or updates to Setup components. The batch ability allows for simultaneous update of Setup components on several computers. Command line activities are reported to a log file instead of to the screen.

Note: *The new Setup features described in this document are available for Windows NT 4.0 only.*

The options available for local setups on previous versions of the SSD are now also available for remote setups. This paper will explain the requirements for use of the Setup Program, as well as how to use the Setup Program options and how to generate reports.

HARDWARE AND SOFTWARE SUPPORT REQUIREMENTS

The following hardware and software requirements must be met to use the Setup Program with remote capabilities:

Software Requirements

- Microsoft Windows NT 4.0
- Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01 or later, to invoke the new Setup Program
- A routable network protocol that supports Windows Sockets, such as TCP/IP or NWLINK IPX/SPX

Hardware Requirements

- A Compaq server or workstation from the following list:
  - Compaq ProLiant Family of Servers
  - Compaq ProSignia Family of Servers
  - Compaq Professional Workstations

Support Limitations

Both local and remote component modifications can be performed using the new Setup GUI and command line interface. Only one remote computer at a time can be modified using the Setup GUI. However, more than one remote computer can be modified using the command line interface. Also, the remote computer(s) must have an administrator account with the same username and password as the account on the local computer. For further information, refer to the "GUI Support for Remote Functionality" and "Command Line Support for Remote Functionality" sections in this document.

GUI SUPPORT FOR REMOTE FUNCTIONALITY

The following section describes how to perform remote Setup functions using the new graphical user interface. The functionality available with this type of setup is very similar to the functionality on previous SSD versions, but with a slightly different user interface. This section also indicates features common to both local and remote Setup.

Invoking the Setup GUI

To begin a Setup session with a remote computer, the user must first invoke the Setup GUI on the local computer. This task can be accomplished in the following two ways:

1. Insert Diskette 1 of the Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01 or later, and execute the SETUP.EXE file in the root directory.
2. Execute one of the following commands, depending on the version of the Compaq SmartStart CD used:
   - From the Compaq SmartStart for Workstations CD, release 1.20 or later: <CD Drive>:\NTSSD\SETUP.EXE
   - From the Compaq SmartStart for Servers CD, release 3.41 or later: <CD Drive>:\CPQSUPSW\NTSSD\SETUP.EXE

The initial Setup screen displayed is the Main Setup Window as shown in the example below:

Note: *The initial screen of the new Setup GUI is referred to as the* Main Setup *or* Custom Setup *window.*

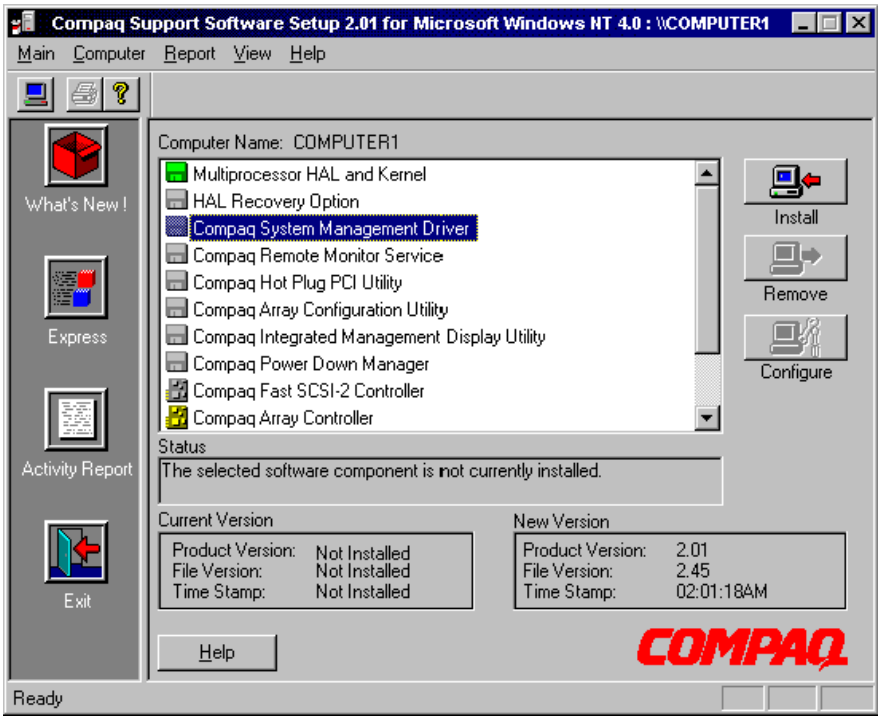

Figure 1: *The Setup Main Window on the local computer.*

The example above shows the Setup Main Window for a local computer named COMPUTER1.

Main Setup Options

There are several options available in the Setup Main Window shown in Figure 1. The options are displayed as selectable buttons on the left side of the window, and also from the main menus. These options are described below:

- **What's New** - The *What's New* option allows users to view the specific features, additions, and improvements which are specific to the current release of Setup.
- **Express** - The *Express* option allows users to install and update Setup components with minimal user intervention. *Express* Setup relies on logic defined within Setup to determine the necessary components to install and/or update. Components can then be updated or installed with a single command.
- **Activity Report** - The *Activity Report* option allows users to view Setup component activities that have been performed during the session. Users have the ability to save and print the activity report. This feature is useful for accumulating a history of hardware and software component modifications made to the system.
- **Exit** - The *Exit* option allows users to exit from Setup and return to Windows NT. If any modifications have been made which require the system to restart, the user will be presented with the option to reboot the system.

Setup Components

In the Setup Main Window shown in Figure 1, several Setup components are available for configuration on the local computer. The colored icons to the left of the components indicate the current status of the components. The different colors have special significance, as described below:

- A gray icon indicates that the component is currently not installed. Setup will recommend that the component be installed.
- A yellow icon indicates that the component is currently installed, but is not the latest version. Setup will recommend that the component be updated.
- A green icon indicates that the component is currently installed and is the latest version. Setup will recommend that no action is necessary.

Note: *In addition to the color and shape of the status icon, a status text box will also reflect more specific information concerning the hardware and software component status. The status line shown in Figure 1 is for the Compaq System Management Driver.*

The shape of the icon identifies the type of component, as described below:


The icon shaped like an adapter represents a driver associated with a specific hardware component.


The icon shaped like a diskette represents a software component that is a form of application or a generic piece of software. This component may or may not be dependent on the hardware present.

For example, Figure 1 shows that the Compaq System Management driver is one of the software components not currently installed and the Compaq Array driver is currently installed, but not the latest version.

The following section discusses the Setup Main Window after connecting to a remote computer. The information displayed is the same type described above but reflects the status of hardware and software components on the remote computer.

Connecting to a Remote Computer

To connect to a remote computer on the network, click on the *New Computer* icon in the tool bar on the upper left-hand corner of the Setup Main Window. This option is also available from the main menu, by selecting *Computer→ Select* (*Computer→ New* in version 2.02 or earlier of the SSD). This process opens the Network Browse Dialog as shown in Figure 2.

Note: *To run Setup remotely, the user must have an administrative account on the remote system to which a configuration change is being made.*

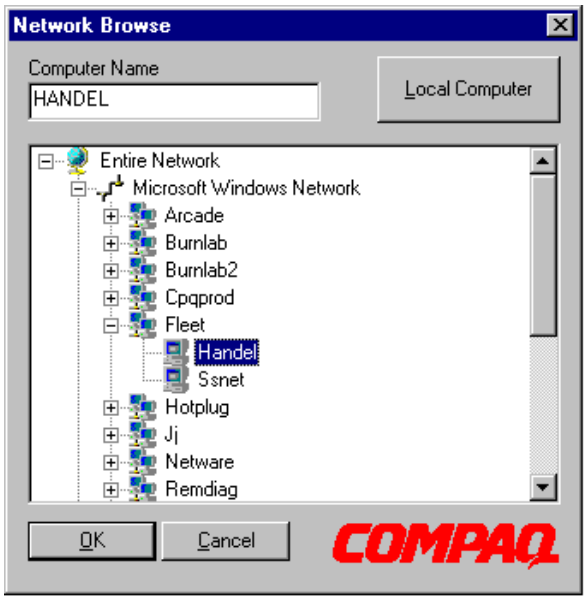

Figure 2*: The Network Browse Dialog.*

From the dialog shown in Figure 2, the user can connect to a remote computer in one of two ways:

1. Specify the remote computer name by typing the name in the *Computer Name* edit box.
2. "Browse" the network by selecting the appropriate network, domain, and computer name so that it appears in the *Computer Name* edit box.

Once a connection is established with the selected remote computer, and privileges have been verified, the components are displayed in the Setup Main Window based on the hardware detected on the remote system. The remote computer named HANDEL is selected in this example. The Setup Main Window for HANDEL is shown in Figure 3.

Note: *Refer to the "Troubleshooting Tips" section later in this document if a problem is encountered while connecting to a remote computer.*

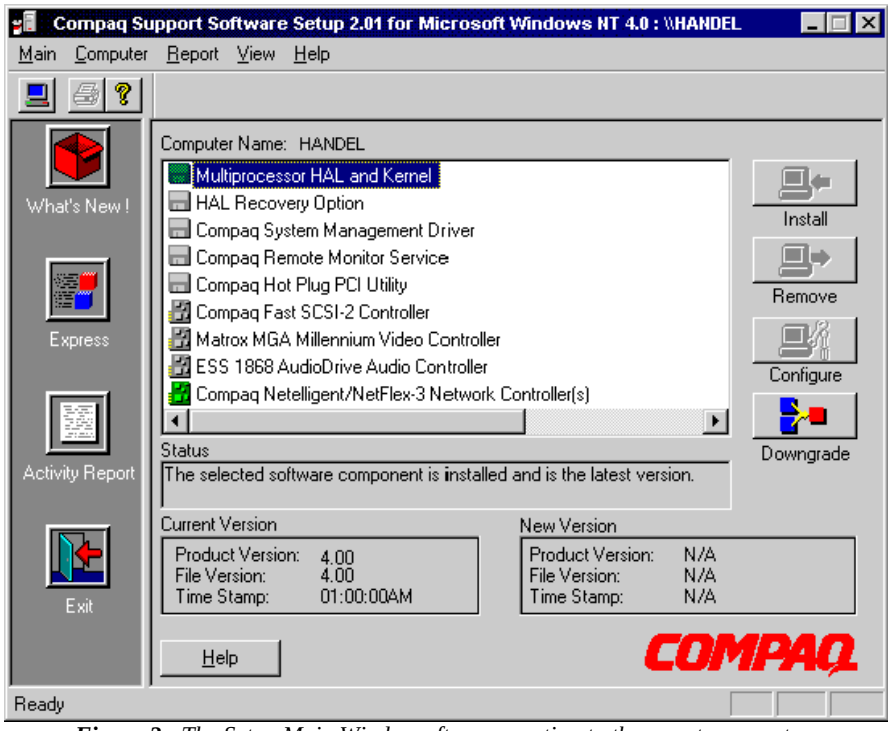

Figure 3: *The Setup Main Window after connecting to the remote computer.*

At this point, the user can perform a Custom or Express Setup on the remote computer as described in the following sections.

Custom Setup

A Custom Setup allows individual components to be installed, removed, or updated by selecting the appropriate enabled button on the right side of the Setup Main Window. In addition, for some hardware and software components, the user will have the option to modify specific hardware configuration attributes. Also, for a Multiprocessor or Uniprocessor HAL and Kernel, the user might have the option to downgrade or upgrade, respectively.

Note: *The following Setup components cannot be installed or removed remotely, they can be only* ***updated*** *remotely:*

- *The Compaq Remote Insight Management Board WAN driver*
- *The Compaq Remote Insight Board driver (if the WAN driver is installed)*
- *The Compaq NetFlex-3 driver*

In the example shown in Figure 3, there are many components that are not installed on the remote computer. To install the Compaq Fast SCSI-2 driver, select the Compaq Fast SCSI-2 Controller listed in the Setup Main Window and click on the *Install* button. After installing the Compaq Fast SCSI-2 driver, the Setup Main Window will resemble the window shown in Figure 4.

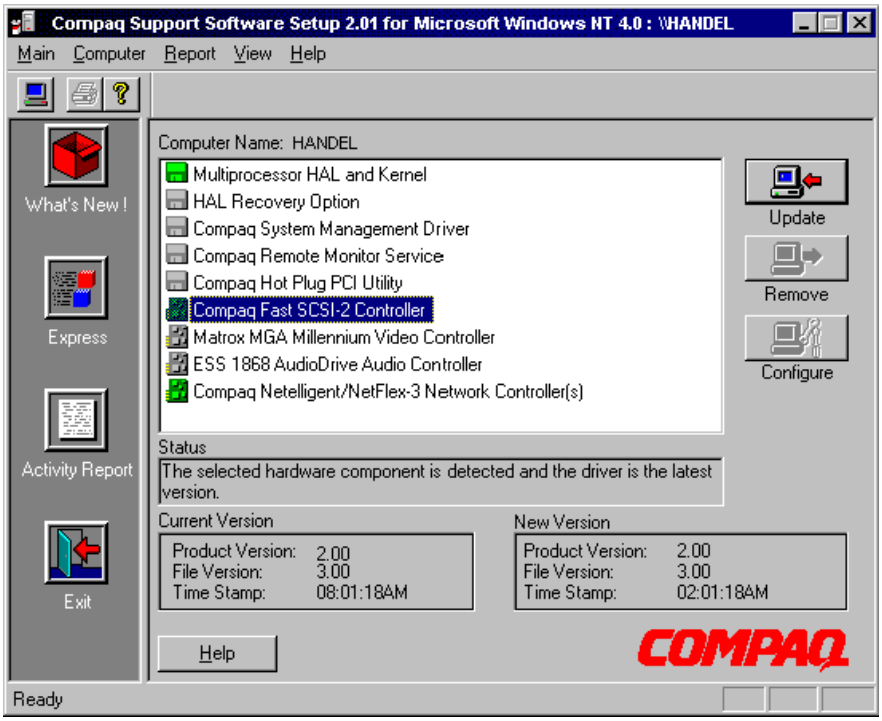

Figure 4: *The Setup Main Window after installation of the Compaq Fast SCSI-2 Driver.*

To install or update the remainder of the components, the user can select the Express Setup. The Express Setup option is discussed in the following section.

Express Setup

Note: *Installing and updating components with the Custom or Express Setup is exactly the same, whether the target computer is local or remote.*

The Express Setup mode identifies all of the components that need to be updated or installed on the target system then gives the user the option to update. If the *Update* option is selected, Express Setup will automatically update or install the selected Setup components on the system.

For the example in Figure 4, select the *Express* Setup option on the left of the Setup Main Window to update or install all the necessary Setup components on HANDEL. The Express Setup window will resemble the one shown in Figure 5.

***Note**: If the Setup application detects any controllers on the target system that have drivers that are not currently installed or need updating, Setup displays a list of these drivers with a checkmark beside them. To forgo the update, deselect any item that appears in the list by clicking on the check-marked box.*

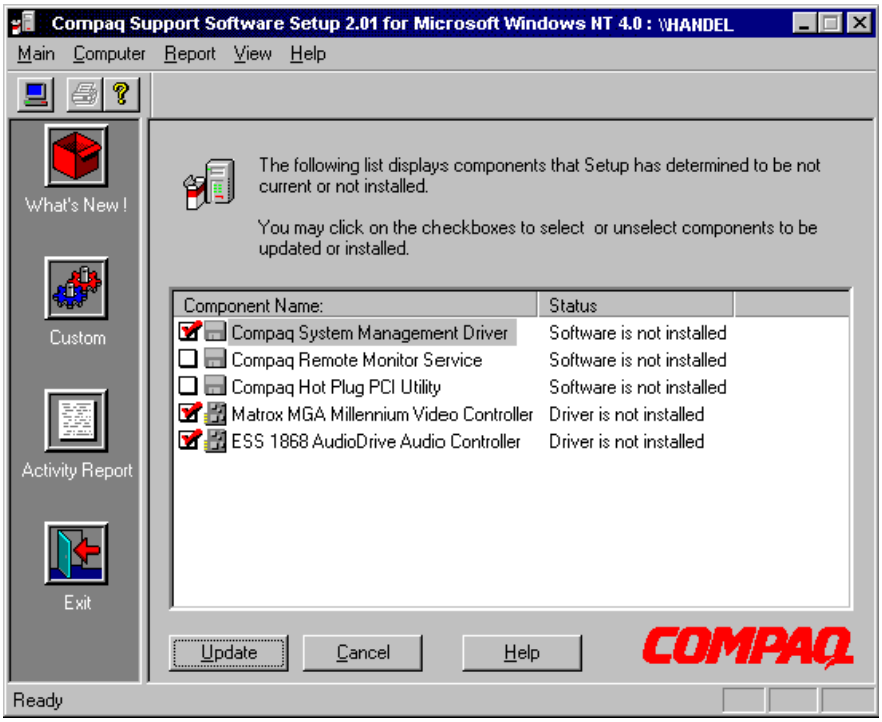

***Figure 5:** The Express Window listing components on the remote system.*

To go back to Main Setup without making any changes in Express Setup, click on the *Cancel* button or the *Custom* button on the left. Select the *Update* button to install the default-selected drivers on the remote system. From the example shown in Figure 5, the Compaq System Management driver, the Matrox Millennium driver, and the ESS 1868 driver will be installed on HANDEL. The Compaq Remote Monitor Service and the Compaq PCI Hot Plug Utility are optional and may be installed if desired. Follow the instructions (if any) provided on the screen during the Update process.

Once all of the selected components have been updated, the Express installation is complete. If a component is installed, updated or removed in Express Setup, Express Setup will return the user to the Setup Main Window. The Setup Main Window will display the installed components with the updated status icons.

Activity Report

The Activity Report can be viewed after all necessary drivers are installed on the remote system. This report lists all of the components installed, updated, or removed using the local computer. The contents of the Activity Report are cumulative with respect to the current Setup session on the local computer and displays activities performed on both the local computer and the remote computer. To view the Activity Report, click on the *Activity Report* icon on the left side of the Main Setup Window shown in Figure 5. The Activity Report for the example discussed in the previous sections is shown in Figure 6.

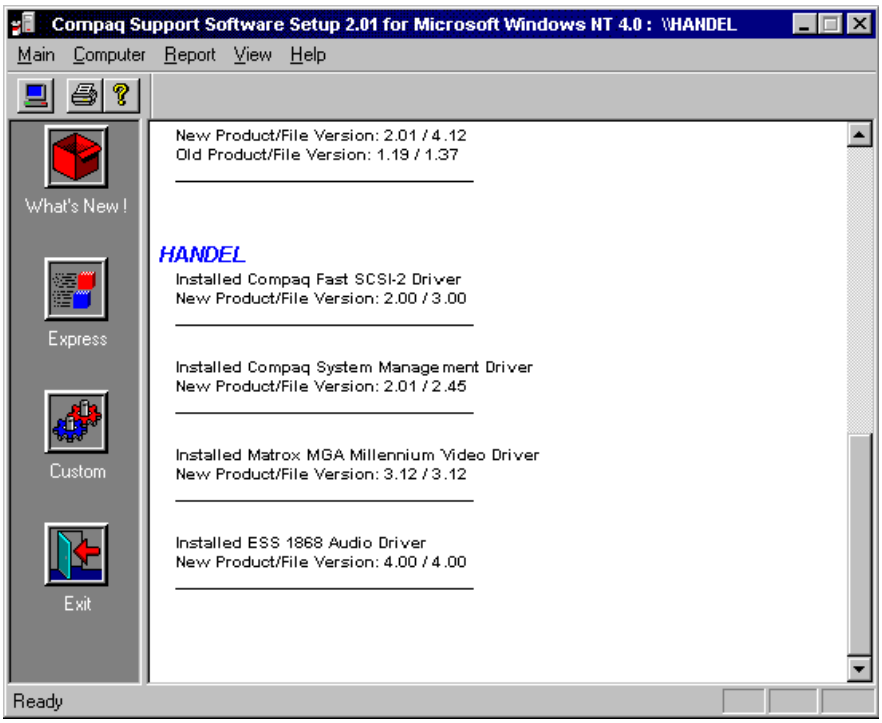

Figure 6: *The Activity Report after installation of software and hardware components on the remote system.*

The Activity Report can also be saved to a text file or printed by selecting the desired option in the *Report* menu. If the Activity Report is saved to a file using a filename that already exists, Setup appends the new Activity Report to the existing Activity Report already on the local system. Using a new filename to generate an Activity Report produces a new log report listing only current changes. The benefit of appending allows users to view the history of all modifications made to the local and remote systems. Also, appending allows users to reference the Activity Report on the local computer to determine what version of the drivers and utilities are currently installed on the remote computers, without having to connect to each remote computer.

Exiting Setup

Exit Setup after performing all desired Setup component activities. From the Setup Main Window, click on the *Exit* button. If drivers are installed on the remote computer, or if Setup determines that a restart of the remote computer is necessary, the Reboot Dialog will appear on the local computer as shown in Figure 7. Reboot the remote computer from this Reboot Dialog so the drivers can become active on the remote system.

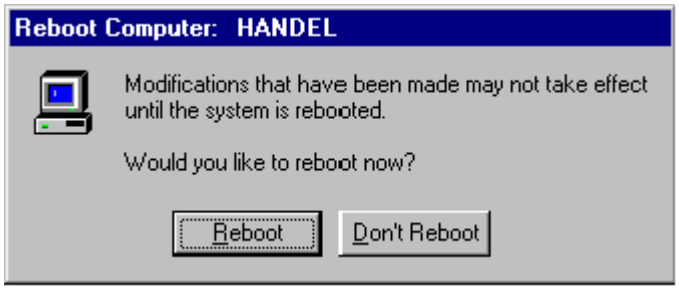

Figure 7: *The Reboot Dialog for the remote computer.*

After selecting to reboot the remote computer, a dialog box appears on the remote system that counts down for 30 seconds, allowing any user currently logged on the computer to prepare for shutdown. Upon system reboot, the newly installed drivers are enabled on the remote computer.

COMMAND LINE SUPPORT FOR REMOTE FUNCTIONALITY

The following section describes how to perform remote Setup functions using the command line interface. The command line interface allows users to modify hardware and software components without any user interaction or graphical user interface. This method is useful for performing batch operations on one or more computers at the same time. The command line interface gives users the ability to install, update, and remove components, all in one step.

Note: *The command line interface executes in silent mode, which is intended to eliminate any input dialogs or prompts on the computer that initiated Setup. Because of this constraint, installing or updating components that have files located on a diskette other than the one in the drive (i.e. diskette number one) cannot be performed. Only components that have files on the diskette in the drive at the time of the install can be installed. Network and CD installations work fine because the complete flat structure of all component files are available.*

Preparing for Setup with the Command Line Interface

To perform Setup functions from the command line, the user must open a command prompt window and perform one of the following:

1. Change to the root directory on the Compaq Support Software for Microsoft Windows NT 4.0 (SSD), diskette number one.
2. Change to the NTSSD directory on the SmartStart CD.
3. Change to the NTSSD directory on the network path.

After locating the appropriate directory containing the Setup execution file (*SETUP.EXE*), the user is ready to begin executing Setup commands as described in the following sections.

General Syntax

The command line interface is primarily based on keywords and component names. The general syntax format for the command line interface is as follows:

SETUP [COMPUTER "X1" "X2"…] [INSTALL C1 C2 C3…] [UPDATE C1 C2 C3…] [REMOVE C1 C2 C3…] [UPGRADE C1] [DOWNGRADE C1] [EXPRESS] [REBOOT] [VERSION C1 C2 C3…]

X1 and X2 are the names of the computers on which modifications will take place. C1, C2, and C3 are particular component names. The syntax format for commands is not case sensitive.

If a computer name is not specified, Setup will perform all activities on the local computer. Specifying a computer name will modify Setup configuration options on the particular computer that was selected. If a remote computer is specified, administrative privileges on the remote computer are required for the same user name and password account active on the local computer.

The following table lists a sample of the commands supported by the SSD Setup 2.01 command line interface.

Table 1
Commands Supported by the SSD Setup 2.01 Command Line Interface

Command Syntax	Description
UPGRADE HAL	Upgrades the current Uniprocessor HAL to multiprocessor HAL. This upgrade is only allowed on systems that have more than one processor and the Uniprocessor HAL installed.
DOWNGRADE HAL	Downgrades the current multiprocessor HAL to Uniprocessor HAL. This downgrade is only allowed if the multiprocessor HAL installed.
UPDATE SYSMGMT	Updates the Compaq System Management driver.
INSTALL HOTPLUG	Installs the Compaq PCI Hot Plug Utility.
REMOVE HOTPLUG	Removes the Compaq PCI Hot Plug Utility.
COMPUTER "X"	Selects a remote computer named X to perform Setup activities on. The user must have administrative privileges.
EXPRESS	Installs and updates components that Setup determines necessary. Works like the GUI Express mode but is silent.
REBOOT	Reboots the computer after indicated operations are performed.
VERSION	Updates the Activity Log with the version information of the specified component. This command is available on the Compaq SSD for Windows NT 4.0, Version 2.05 or later.

Note: *The general syntax format of the command line interface can be displayed by typing either of the following commands at the command line:*

SETUP /?

SETUP /HELP
(This feature is not available on SSD Version 2.02)

Refer to the help file on the Compaq SSD for Windows NT 4.0, Version 2.01 or later, for a complete list of commands supported by the Setup command line interface.

Activity Log

Setup generates an Activity Log after each Setup session using the command line interface. If Setup activities were performed on one or more remote computers, then a log file will be created on the local computer, and one on each remote computer. The name of the log file on the local and remote computers is CPQNTSSD.LOG and is located in the %SYSTEMROOT%\SYSTEM32 path. If the file did not previously exist, Setup creates one. If the file did previously exist, Setup appends the new modifications to the bottom of the file. This creation or modification of the log file allows a history of component modifications to be maintained. If modifications are appended to the same file, the Activity Log on the local computer can be referenced to determine what version of the drivers and utilities are currently installed on the remote computers without having to execute the Setup GUI for each remote computer. For more information about the Activity Log, refer to the "Remote Setup Using the Command Line Interface" and "Batch Setup Using the Command Line Interface" sections that follow.

Remote Setup Using the Command Line Interface

Note: *For the examples in this section, the "source" computer represents the local computer and the "target" computer represents the remote computer.*

This section contains three examples demonstrating how various Setup activities can be performed on a single remote computer. The process is similar to a *Custom* or *Express* Setup using the GUI, but without the user interface. The Activity Log generated by Setup is displayed after each example. The examples presented in this section are the following:

- Verifying Version Information on a Remote Computer Using the Command Line Interface
- Installing a Single Component on a Remote Computer Using the Command Line Interface
- Installing and Updating Several Components on a Remote Computer Using Command Line Express

Verifying Version Information on a Remote Computer Using the Command Line Interface

Note: *The VERSION command is available on the Compaq SSD for Windows NT 4.0, Version 2.05 or later.*

The following example shows the command line syntax used for verifying version information about the Compaq System Management Driver and the Compaq Netflex-3 Driver installed on a remote computer named HANDEL. To perform this operation from the local computer, type the following at the command line:

SETUP COMPUTER "HANDEL" VERSION SYSMGMT NETFLEX3

The *VERSION* command will display version information for the selected drivers and utilities installed on the remote computer. This command is useful in determining whether or not the drivers and utilities currently installed on the remote computer need to be updated with those available on the most recent SSD.

The Activity Log on the local and remote computer after the *VERSION* command is executed will resemble the screen text shown in Figure 8. The local computer in this example is named COMPUTER1.

```
============================================================
Compaq Support Software Setup 2.05 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
14:50:25  Monday, January 5, 1998
Source Computer Name:  COMPUTER1
Target Computer Name:  HANDEL
============================================================
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
======================================================
Component Name:  Compaq System Management Driver
======================================================
Target:
Product Version: 2.04
File Version: 2.57
Time Stamp: 02:04:30AM
------------------------------------------------------
Source:
Product Version: 2.05
File Version: 2.57
Time Stamp: 02:05:14AM
======================================================
------------------------------------------------------
======================================================
Component Name:  Compaq NetFlex-3 Driver
======================================================
Target:
Product Version: 2.04
File Version: 4.23
Time Stamp: 02:04:30AM
------------------------------------------------------
Source:
Product Version: 2.05
File Version: 4.25
Time Stamp: 02:05:14AM
======================================================
------------------------------------------------------
* Setup Session Complete *
------------------------------------------------------
```

Figure 8: *The Activity Log on the local and remote computer after execution of the VERSION command.*

The Activity Log will list the version information for the components currently installed on the remote computer (Target) and the version information for the components on the latest SSD available (Source). In this example, the *VERSION* command shows that the Compaq System Management Driver and the Compaq Netflex-3 Driver currently installed on HANDEL (Target) are older than the versions available on the current SSD (Source).

Installing a Single Component on a Remote Computer Using the Command Line Interface

The following example shows the command line syntax necessary for installing the Compaq System Management driver on a remote computer named HANDEL. To perform this operation from the local computer, type the following at the command line:

SETUP COMPUTER "HANDEL" INSTALL SYSMGMT

This command line sequence connects to the remote computer named HANDEL and installs the Compaq System Management Driver. After the driver is installed, Setup generates two Activity Log files, one on each of the local and remote computers.

Note: Remote Procedure Call *(RPC) is a calling standard that permits client-server applications to communicate over a network. RPC requires the availability of a routable network protocol, such as TCP/IP.*

The Activity Log on the local computer, named COMPUTER1 in this example, will resemble the screen text shown in Figure 9. The log file lists the time and date, followed by the source and target computer names used during the Setup session. The next couple of lines indicate that the CPQSETUP.EXE file was copied to the target computer. The CPQSETUP.EXE file is the Remote Procedure Call (RPC) Service, which Setup uses to accomplish remote operations. The log file then lists the components that were installed or updated on the target system for the current Setup session.

```
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
14:54:02  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  HANDEL
============================================================
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq System Management Driver
Installing: Compaq System Management Driver
Copy Successful!: SYSMGMT.SYS -> SYSMGMT.SYS
Copy Successful!: SYSDOWN.EXE -> SYSDOWN.EXE
The component was successfully installed!
------------------------------------------------------
* Setup Session Complete *
------------------------------------------------------
```

Figure 9: *The Activity Log on the local computer after installation of a single component on a remote computer.*

The Activity Log on HANDEL will list components modified with respect to the remote computer only. In this example, it will look exactly like the log file shown above.

Installing and Updating Several Components on a Remote Computer Using Command Line Express

The following example shows the command line syntax used for installing or updating all the necessary components on a remote computer, in only one step. Following the previous example, the remainder of the components necessary can be installed or updated on the remote computer

named HANDEL. To perform this operation, type the following at the command line on the local computer:

SETUP COMPUTER "HANDEL" EXPRESS REBOOT

The *REBOOT* keyword at the end of the line is optional and tells Setup to reboot the remote computer after all component modifications are complete.

The Activity Log on the local and remote computers after the *EXPRESS* installation will resemble the screen text shown in Figure 10.

```
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
14:59:02  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  HANDEL
============================================================
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq Array Driver
Installing: Compaq Array Driver
Copy Successful!: CPQARRAY.SYS -> CPQARRAY.SYS
Copy Successful!: CPQARRAY.INF -> CPQARRAY.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was installed successfully
------------------------------------------------------
Component Name:  Compaq Integrated Management Display Utility
Installing: Compaq Integrated Management Display Utility
Copy Successful!: CPQLCD.EXE -> CPQLCD.EXE
Copy Successful!: CPQLCD.HLP -> CPQLCD.HLP
Copy Successful!: CPQHPL.CPL -> CPQHPL.CPL
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq Fast SCSI-2 Driver
Installing: Compaq Fast SCSI-2 Driver
Copy Successful!: CPQ32FS2.SYS -> CPQ32FS2.SYS
Copy Successful!: FASTSCSI.INF -> FASTSCSI.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq Standby Recovery
Installing: Compaq Standby Recovery
Copy Successful!: CPQRSYS.EXE -> CPQRSYS.EXE
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq NetFlex-3 Driver
Updating: Compaq NetFlex-3 Driver
Copy Successful!: NETFLX3.SY_ -> NETFLX3.SYS
Copy Successful!: NETFLX3.DLL -> NETFLX3.DLL
Copy Successful!: NETFLX3.EX_ -> NETFLX3.EXE
Copy Successful!: NETFLX3.CP_ -> NETFLX3.CPL
Copy Successful!: NETFLX3.HL_ -> NETFLX3.HLP
Copy Successful!: CQRNICMN.DLL -> CQRNICMN.DLL
Copy Successful!: OEMSETUP.INF -> OEMNAD0.INF
The component was successfully updated!
------------------------------------------------------
Rebooted system
* Setup Session Complete *
------------------------------------------------------
```

Figure 10: *The Activity Log after the EXPRESS installation.*

The Activity Log is cumulative and will contain information from the previous installation of the Compaq System Management Driver as shown in Figure 9. Figure 10 only shows the *EXPRESS* Setup portion of the Activity Log.

Batch Setup Using the Command Line Interface

The following section contains three examples, which demonstrate how to perform Setup functions on multiple remote computers using the command line interface. This method is useful and convenient for system administrators to remotely install or update components on several computers, based on the system's individual hardware and software configurations.

The following two examples are presented in this section:

- Verifying Version Information on Multiple Remote Computers Using the Command Line Interface
- Installing a Single Component on Multiple Remote Computers Using the Command Line Interface
- Installing and Updating Several Components on Multiple Remote Computers Using the Command Line Interface

Verifying Version Information on Multiple Remote Computers Using the Command Line Interface

The following example shows the command line syntax necessary for verifying version information about the Compaq System Management Driver and the Compaq Netflex-3 Driver installed on the remote computers named HANDEL and BACH. To perform this operation from the local computer, type the following at the command line:

SETUP COMPUTER "HANDEL" "BACH" VERSION SYSMGMT NETFLEX3

The *VERSION* command will display version information for the selected drivers and utilities installed on the remote computers specified. Using the SSD Setup GUI would require connecting to each remote computer separately to verify SSD component version information. With the command line interface, SSD component version information on one or more remote computers is available in one step by executing the *VERSION* command.

The Activity Log on the remote computer named BACH after the *VERSION* command is executed will resemble the screen text shown in Figure 11.

```
============================================================
Compaq Support Software Setup 2.05 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
18:56:09  Monday, January 5, 1998
Source Computer Name:  COMPUTER1
Target Computer Name:  BACH
============================================================
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
======================================================
Component Name:  Compaq System Management Driver
======================================================
Target:
Product Version: 2.04
File Version: 2.57
Time Stamp: 02:04:30AM
------------------------------------------------------
Source:
Product Version: 2.05
File Version: 2.57
Time Stamp: 02:05:14AM
======================================================
------------------------------------------------------
======================================================
Component Name:  Compaq NetFlex-3 Driver
======================================================
Target:
Product Version: 2.04
File Version: 4.23
Time Stamp: 02:04:30AM
------------------------------------------------------
Source:
Product Version: 2.05
File Version: 4.25
Time Stamp: 02:05:14AM
======================================================
------------------------------------------------------
* Setup Session Complete *
------------------------------------------------------
```

Figure 11: *The Activity Log on the remote computer BACH after execution of the VERSION command.*

The Activity Log on the remote computers will list version information relevant to each computer only, as shown in Figure 11 for the remote computer BACH. The Activity Log on the remote computer HANDEL will look exactly like the one shown in Figure 8. The log file on the local computer will contain the component version information gathered for all remote computers. For this example, the Activity Log on the local computer COMPUTER1 will contain the combined information displayed in Figure 8 and Figure 11.

Installing a Single Component on Multiple Remote Computers Using the Command Line Interface

Using the Setup command line interface to modify a component on more than one remote computer is similar to using it to modify a component on a single remote computer. After the *COMPUTER* keyword, it is necessary to give a list of all computers on which the component modifications will take place. For example, to install the Compaq Fast SCSI-2 Driver on two remote computers named HANDEL and BACH, type the following at the command line on the local computer:

SETUP COMPUTER “HANDEL” “BACH” INSTALL FASTSCSI

When the installation is complete, the text shown in Figure 12 will be appended to the Activity Log on the local computer named COMPUTER1.

```
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
15:15:19  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  HANDEL
============================================================
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq Fast SCSI-2 Driver
Installing: Compaq Fast SCSI-2 Controller
Copy Successful!: CPQ32FS2.SYS -> CPQ32FS2.SYS
Copy Successful!: FASTSCSI.INF -> FASTSCSI.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was successfully installed!
------------------------------------------------------
* Setup Session Complete *
------------------------------------------------------
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
15:15:32  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  BACH
============================================================
Copy Successful!: SYSMGMT.SYS -> SYSMGMT.SYS
Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq Fast SCSI-2 Driver
Installing: Compaq Fast SCSI-2 Controller
Copy Successful!: CPQ32FS2.SYS -> CPQ32FS2.SYS
Copy Successful!: FASTSCSI.INF -> FASTSCSI.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was successfully installed!
------------------------------------------------------
* Setup Session Complete *
------------------------------------------------------
```

Figure 12: *The Activity Log on the local computer after installation of a single component on two remote computers.*

The Activity Log on the remote computers will contain modifications relevant only to each computer. The Activity Log on HANDEL will contain only the top half of the screen text shown in Figure 12 and the log file on BACH will contain the information on the bottom half.

Installing and Updating Several Components on Multiple Remote Computers Using the Command Line Interface

This example demonstrates how to perform a silent *EXPRESS* Setup on two remote computers, HANDEL and BACH from the previous example, and reboot them so that the new drivers can load. Type the following text at the command line on the local computer to perform this operation:

SETUP COMPUTER “HANDEL” “BACH” EXPRESS REBOOT

After the operation is complete, the drivers are enabled on the remote computers named HANDEL and BACH. The Activity Log on HANDEL and BACH contains modifications relevant to each

computer. The log file on the remote computer named HANDEL is shown in Figure 13. The local computer is named COMPUTER1 as in the previous example.

```
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
15:18:06  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  HANDEL
============================================================

Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq System Management Driver
Installing: Compaq System Management Driver
Copy Successful!: SYSMGMT.SYS -> SYSMGMT.SYS
Copy Successful!: SYSDOWN.EXE -> SYSDOWN.EXE
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq Array Driver
Updating: Compaq Array Driver
Copy Successful!: CPQARRAY.SYS -> CPQARRAY.SYS
Copy Successful!: CPQARRAY.INF -> CPQARRAY.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was successfully updated!
------------------------------------------------------
Rebooted system
* Setup Session Complete *
------------------------------------------------------
```

Figure 13: *The Activity Log on the remote computer named HANDEL after an EXPRESS Setup.*

Similarly, the Activity Log on BACH will list the components modified with respect to that computer, as shown in Figure 14.

```
============================================================
Compaq Support Software Setup 2.01 for Microsoft Windows NT 4.0
Copyright (c) 1994-1997
Compaq Computer Corporation
All Rights Reserved
15:18:24  Saturday, October 11, 1997
Source Computer Name:  COMPUTER1
Target Computer Name:  BACH
============================================================

Copy Successful!: CPQSETUP.EXE -> CPQSETUP.EXE
Detecting Hardware, Please Wait ....
------------------------------------------------------
Component Name:  Compaq System Management Driver
Installing: Compaq System Management Driver
Copy Successful!: SYSMGMT.SYS -> SYSMGMT.SYS
Copy Successful!: SYSDOWN.EXE -> SYSDOWN.EXE
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq Array Driver
Installing: Compaq Array Driver
Copy Successful!: CPQARRAY.SYS -> CPQARRAY.SYS
Copy Successful!: CPQARRAY.INF -> CPQARRAY.INF
Copy Successful!: CQRSCSMN.DLL -> CQRSCSMN.DLL
The component was installed successfully
------------------------------------------------------
Component Name:  Compaq Proliant Storage System Driver
Installing: Compaq Proliant Storage System Driver
Copy Successful!: PRLNTSS.SYS -> PRLNTSS.SYS
The component was successfully installed!
------------------------------------------------------
Component Name:  Compaq NetFlex-3 Driver
Updating: Compaq NetFlex-3 Driver
Copy Successful!: NETFLX3.SY_ -> NETFLX3.SYS
Copy Successful!: NETFLX3.DLL -> NETFLX3.DLL
Copy Successful!: NETFLX3.EX_ -> NETFLX3.EXE
Copy Successful!: NETFLX3.CP_ -> NETFLX3.CPL
Copy Successful!: NETFLX3.HL_ -> NETFLX3.HLP
Copy Successful!: CQRNICMN.DLL -> CQRNICMN.DLL
Copy Successful!: OEMSETUP.INF -> OEMNAD0.INF
The component was successfully updated!
------------------------------------------------------
Rebooted system
* Setup Session Complete *
------------------------------------------------------
```

Figure 14: *The Activity Log on the remote computer named BACH after an EXPRESS Setup.*

The Activity Log on the local computer named COMPUTER1 will list the component modifications made on both of the remote computers. The log file on COMPUTER1 will contain the combined screen text shown in Figure 13 and Figure 14.

PERFORMANCE IMPACT

Note: *Chariot version 2.0 by Ganymede Software was used to create the network traffic described in this section.*

*A **low workload** network is defined as a network with 20% utilization, which is typical in most corporate environments. A **heavy workload** network is defined as a network with a 96% sustained utilization, which is a worst case scenario in most corporate environments.*

Various comparison tests were performed to determine the impact on network throughput during a remote SSD Setup session. Each test trial measured the elapsed execution time of a remote SSD installation, consisting of multiple transactions between the server and the client. Separate tests were executed on low and heavy workload networks. The tests were based on only one Microsoft Windows NT 4.0 client updated with the Compaq SSD for Windows NT Setup on a 10 Mbps Ethernet LAN topology. The results presented here should not be extrapolated beyond this point.

- **Low Workload** — In this test, a network running Ganymede Software's Chariot Credit Checks script at about 20% network utilization, experienced a 19% degradation in throughput (Kbytes/Sec) during a remote SSD installation. The total execution time for the remote SSD installation was up to 27 seconds slower than the execution time for the installation performed on a network with no workload.
- **Heavy Workload** — In this test, a network running Ganymede Software's Chariot File Send script at about 96% network utilization, experienced a 1% degradation in throughput (Kbytes/Sec) during a remote SSD installation. The total execution time for the remote SSD installation was up to 250 seconds slower than the execution time for the installation performed on a network with no workload.

TROUBLESHOOTING TIPS

This section contains information about error messages a user might encounter during a Setup session while using the GUI or command line interface. Table 2 lists possible reasons and corrective actions to take if any of these error messages are encountered.

Table 2
SSD Setup Error Messages

Description of Error Message	Corrective Action
The component was not installed successfully. The selected hardware or software component was not installed on the target computer because of insufficient disk space or incorrect file access permission.	Check for disk space, and verify file access permission on the target computer.
The component was not updated successfully. The selected hardware or software component was not updated on the target computer because of insufficient disk space or incorrect file access permission.	Check for disk space, and verify file access permission on the target computer.
The component was not removed successfully. The selected hardware or software component was not removed on the target computer because of insufficient disk space or incorrect file access permission.	Check for disk space, and verify file access permission on the target computer.
The component was not upgraded successfully. The selected hardware or software component was not upgraded on the target computer because of insufficient disk space or incorrect file access permission.	Check for disk space, and verify file access permission on the target computer.
The component was not downgraded successfully. The selected hardware or software component was not downgraded on the target computer because of insufficient disk space or incorrect file access permission.	Check for disk space, and verify file access permission on the target computer.

Table 2 (*cont'd)*
SSD Setup Error Messages

Description of Error Message	Corrective Action
Unable to find the file "SSDSETUP.INI". Setup cannot continue. The SSD source is missing the "SSDSETUP.INI" file.	Obtain SSD diskette or SmartStart CD containing "SSDSETUP.INI". Rerun "SETUP.EXE".
Setup was unable to install/start the System Management Driver. Setup cannot continue. Insufficient disk space to install the Compaq System Management Driver in detect mode, or unable to register and start the Compaq System Management Driver with the Service Control Manager.	On the target computer, check for disk space, attempt to start the Compaq System Management Service through the Services applet, and check the Event Viewer System Log.
The component cannot be installed. The selected component cannot be installed remotely or silently.	Install the selected component locally or using the Custom Setup Mode.
The component cannot be updated. The selected component cannot be updated remotely or silently.	Update the selected component locally or using the Custom Setup Mode.
The component cannot be removed. The selected component cannot be removed because of its importance.	If necessary, remove other components dependent on the selected component first.
The component cannot be upgraded. The HAL cannot be upgraded.	Only a uniprocessor HAL with more than one processor is upgradeable.
The component cannot be downgraded. The HAL cannot be downgraded.	Only a multiprocessor HAL is downgradeable.
Unable to connect to computer: X. Cannot connect to target computer named "X" because access is denied, the network is down, or the system has been powered off.	Verify that the administrative login and password on the remote computer match the ones on the local computer. Check the network connection. Use the "ping" command to check if the remote computer can be reached. Verify that the remote computer is powered on.
System not configured. Attempted to upgrade to multiprocessor HAL and Kernel, but the system has not been configured.	Configure the system with the Compaq System Configuration Utility for servers, or Computer Setup for Workstations (ie. F10 setup).
Setup is unable to start the Support Software Setup service. There is insufficient disk space to install the Compaq Setup Service. Unable to register and start the Compaq Setup Service with the Service Control Manager.	Check for disk space on the target computer, and check the Event Viewer System Log.
Setup is unable to initialize the RPC interface. Setup cannot continue. Setup failed to initialize the Remote Procedure Call (RPC) interface because it received an invalid or unsupported protocol sequence.	Verify that the administrative login and password on the remote computer match the ones on the local computer. Check the network connection. Use the "ping" command to check if the remote computer can be reached. Verify that the remote computer is powered on.

Table 2 (*cont'd*)
SSD Setup Error Messages

Description of Error Message	Corrective Action
Setup is unable to initialize the Setup components for hardware detection. Setup cannot continue. Setup is unable to make Remote Procedure Calls (RPC) to the target computer.	Verify that the administrative login and password on the remote computer match the ones on the local computer. Check the network connection. Use the "ping" command to check if the remote computer can be reached. Verify that the remote computer is powered on.
Unable to Install Controller. The driver has been marked for deletion.	The system must be rebooted before the driver may be re-installed.
Setup is unable to initialize the System Management driver. Setup cannot continue. Insufficient disk space to install the Compaq System Management Driver in detect mode, or unable to register and start the Compaq System Management Driver with the Service Control Manager.	On the target computer, check for disk space, attempt to start the Compaq System Management Service through the Services applet, and check the Event Viewer System Log.
Network Support Not Installed. Networking support has not been installed on target computer.	Install networking support using the Network applet in the Control Panel.
Error opening file for writing. Cannot open or create a report file.	Check for disk space, and verify file access permission on the target computer.
Error writing file. Cannot write to the report file.	Check for disk space, and verify file access permission on the target computer.
RPC Call Failed. Setup is unable to make a Remote Procedure Call (RPC) to the target computer.	Verify that the administrative login and password on the remote computer match the ones on the local computer. Check the network connection. Use the "ping" command to check if the remote computer can be reached. Verify that the remote computer is powered on.
The WAN driver cannot be installed on remote computers. Dialogs cannot be displayed on the remote computer for WAN driver installation.	Install the WAN driver locally using Setup.
A Netelligent/NetFlex-3 controller is detected, but not installed. Network controllers cannot be installed on remote computers. Dialogs cannot be displayed on the remote computer for the Compaq Netflex-3 driver installation.	Install the Compaq Netflex-3 driver locally using Setup.

SUMMARY

The new remote Setup features on the Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01 and later, provide a greatly simplified means for administrators to perform remote installation, update, removal, and configuration of Setup components across the network. The new graphical user interface and command line interface allows a user to sit at the convenience of one computer and perform a Setup configuration on one or more computers connected to the network. For further information about the new remote capabilities and other Setup features, refer to the help file on the Compaq Support Software for Microsoft Windows NT 4.0 (SSD), Version 2.01 or later.