

HP DiagTools for NetServers Error Reference and User Guide



**HEWLETT®
PACKARD**

Printed in August 1999

Notice

The information contained in this document is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

This document contains proprietary information that is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Hewlett-Packard Company.

Pentium II[®] is a registered trademark of Intel Corporation.

Windows[®] is a registered trademark of Microsoft in the U.S. and other countries.

CompuServe[™] is a U.S. trademark of CompuServe, Inc.

Hewlett-Packard Company
Network Server Division
P.O. Box 58059, Technical Marketing
Santa Clara, CA 95052-8059 USA

© Copyright 1999, Hewlett-Packard Company.

Audience Assumptions

The guide is for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes you are qualified in the following areas:

- you are qualified in the servicing of computer equipment
- you are trained in recognizing hazards in products with hazardous energy levels
- you are familiar with weight and stability precautions for rack installations.

Contents

1	DiagTools Overview	1
	Introduction to Hardware Diagnostic Tools	1
	DiagTools Requirements and Capabilities	1
	DiagTools Requirements	1
	DiagTools Capabilities	2
	DiagTools User Interface Modes: Graphical or Text-Based	3
	Hardware Detection	3
	Overview of Configuration Detection	3
	What is Detected	3
	About Error Messages	3
	Advantages and Limitations of Hardware Diagnostics	3
	Latest Version of the Software and the Documentation	4
2	Preparing to Run DiagTools	5
	Begin with Simple Troubleshooting	5
	Starting Troubleshooting	5
	Preparations for Running DiagTools	5
	DiagTools Is Installed with the Utility Partition	5
	Preparing for Remote Operation	6
	How to Make DiagTools Diskettes with a Windows System	6
	Shall I Use the Diskette or the Utility Partition?	6
3	Running DiagTools in the Graphical Mode (from Diskette)	9
	Bring the NetServer Down	9
	Starting the Graphical Mode from Diskette	9
	Starting Configuration Detection	10
	Running the Basic Tests	10
	Interpreting Basic Test Results	10
	Create Support Ticket	10
	Use the Error Code Viewer to Review Corrective Actions	11
	Running the Advanced System Tests	12
	Advanced System Test Menus and Options	12
	Two Ways to Review Results	13
	Error Message Viewer	13
	Reviewing Results: Saving and Printing the Support Ticket	13
	To Create A Support Ticket	14
	Troubleshooting When Devices are not Detected	14
	Processor and Memory Non Detected Troubleshooting	14
	SCSI Device Non Detected Troubleshooting	15
4	Running DiagTools in the Text Mode (from the Utility Partition)	17
	Preparation in Advance	17
	Before You Begin: A Note on Running DiagTools on a Distant Server	17
	Accessing the Utility Partition	17
	Select the Utility Partition	18
	Main Menu in Text Mode	18
	Running the Basic Tests	18

Interpreting Basic Test Results	18
Running the Advanced System Tests	19
Advanced System Test Menus and Options.....	19
Reviewing Results: Running the Viewers	20
Reviewing Results: Saving and Printing the Support Ticket	20
To Create A Support Ticket	21
Troubleshooting When Devices are not Detected	21
Processor and Memory Non Detected Troubleshooting.....	21
SCSI Device Non Detected Troubleshooting.....	22
5 Error Message Reference	23
Error Messages and Their Sources	23
The System Tests.....	23
Memory Test Menu.....	41
FDD (Flexible Disk Drive or Floppy) Tests.....	46
KBD (Keyboard) Tests	49
SCSI Device Tests	50
Misc Tests	55
Video Test	57
IDE CD-ROM.....	57
Multiprocessor Test	58
A Test Menus	67
Basic Test Menus	67
Advanced System Tests	68
B Test Descriptions	69
Test Descriptions	69
System Test Menu.....	69
Memory Test Menu.....	70
FDD (Flexible Disk Drive or Floppy) Tests.....	71
KBD (Keyboard) Tests	71
SCSI Device Tests	72
SCSI Disk Tests	72
SCSI Tape Unit Tests.....	72
SCSI CDROM Tests	72
Misc Tests	73
Video Test	73
IDE CD-ROM.....	73
Index.....	77

1 DiagTools Overview

Introduction to Hardware Diagnostic Tools

The purpose of hardware diagnostic software is to provide tools for checking serious hardware problems. By design, offline diagnostics execute simple tests of each hardware component in turn. Usually, such tests confirm that hardware is not the source of system problems. This allows the user to focus energy on configuration problems, network problems, and software problems.

If hardware problems are confirmed, diagnostic tools can sometimes detect and diagnose their source. In addition, diagnostic tools capture information that allows support agent to quickly assess the condition of the system.

To be most effective, offline diagnostics must be used as a part of trouble-shooting procedure. (See Chapter 2 for more information on troubleshooting.)

DiagTools Requirements and Capabilities

DiagTools Requirements

Running DiagTools requires a system which is capable of booting up from a flexible diskette (floppy drive). Three blank, formatted flexible diskettes may be required. Two diskettes are needed to run DiagTools in graphical mode, and for use in saving the Support Ticket.

Systems Supported

DiagTools for HP NetServers is supplied on the HP NetServer Navigator CD-ROM ¹:

Table 1-1 NetServer Models and DiagTools Versions

DiagTools Version	DT 1.00 and DT 1.02	DT 2.00
HP NetServer Navigator CD ROM Version	L.14.00 - L.15.15 E.10.00, E.10.05	L.16.05
Systems Supported	E45, E50, E60 LC 3 LH 3 and 3r, LH 4 and 4r LPr LXr 8000	LC 3 LH 3 and 3r, LH 4 and 4r LPr LXr 8000

Notes ¹If a system is not supported, when you attempt to run DiagTools, a message is displayed:

System Not Supported

²Consult the readme file named readme.txt (on the DiagTools diskette or use the MISC menu in the Advanced screen), to determine which systems (and corresponding BIOS versions) are supported by a particular version of DiagTools. (See “How to Make a DiagTools Diskette with a Windows System” in Chapter 2.)

DiagTools Capabilities

DiagTools for HP NetServers is a set of off-line diagnostic tests, including tests for system and processor components, memory and storage elements, ports, and input/output devices. The DiagTools files are located on the HP NetServer Navigator. To prepare DiagTools for use, the user may either

- transfer it to diskette and restart the server from the floppy drive (see Chapter 3)
- install the Utility Partition and run DiagTools from the hard disk, which also reboots the server, (see Chapter 4)

DiagTools checks key NetServer components, and a menu of Advanced System Tests is available for individual and batch testing. DiagTools has the capability to check the functionality of the components listed in Table 1-1.

Table 1-2. Components Checked by DiagTools

• system board	• processors (CPUs) and caches
• memory modules	• hard disk modules & associated controllers
• flexible disks & controller	• keyboard controller and mouse
• video cards	• parallel ports & controller
• tape drives & associated controllers	• CD-ROM drives & controller

Since DiagTools is an off-line diagnostic test series, it does not use the main network operating system (NOS) of the HP NetServer. The alternate DiagTools OS has far fewer features than the full-fledged NOS. Thus, its capabilities are limited to a set of basic tests and a series of more advanced tests. (DiagTools does not, for instance, allow user access to NOS error logs.) In addition, DiagTools does not use any tests which might write over and thus destroy user data. Tests which require user inputs or decisions are left to the advanced series.

You can use DiagTools to support trouble-shooting to carry out the tasks listed below:

- view a high-level list of hardware (the "Configuration Description") detected in the system under test
- save and print a detailed list of hardware components
- conduct a basic test of components as detected in the system
- display "PASSED" or "FAILED" overall results of basic tests
- record detailed test results of basic system tests to a file called the Support Ticket
- display a menu of Advanced System Tests
- select and run one or a series of Advanced System Tests
- record detailed results of Advanced System Tests to the Support Ticket
- view a list to locate the meaning of a specific error code
- view one or more steps to help confirm and isolate error conditions
- view or print the Support Ticket, which contains the detailed inventories and test results

If you have TopTools remote management software installed and configured for use with DiagTools, you can accomplish any of the above tasks remotely. In order to do so, use the text-based DiagTools installed on the Utility Partition of the system to be tested, and use ERA and RMC to access the partition and redirect the console.

Note When MC is used, colors are not standard VGA, so text may not be readable.

DiagTools User Interface Modes: Graphical or Text-Based

DiagTools has two different types of interface modes. The graphical interface operates from a DiagTools diskette made while HP NetServer Navigator is running. The text-based mode operates when the Utility Partition is installed. In order for DiagTools to be run remotely, it must be installed on the Utility Partition of the NetServer. For more details, see the section of chapter 2 entitled “Preparing for Remote Operation” and the section of chapter 4 entitled “Before You Begin . . .”

Hardware Detection

Overview of Configuration Detection

Configuration detection determines which tests are appropriate for your HP NetServer. For example, if your server has an IDE or SCSI hard disk, the boot sector of the disk will be checked as part of the basic system test.

In the Advanced System Tests, some functions will be disabled if they are not appropriate for your NetServer. For example, if you do not have a SCSI controller (or if your SCSI controller is not responding), the SCSI menu in the Advanced System Tests will be disabled.

What is Detected

A list of items detected is shown in Table 1-2.

About Error Messages

Each error message in DiagTools is designated by a hexadecimal number, a short note on the type of error, and a list of one or more steps the user can take in response. When you run a test, it exercises many aspects of the hardware, so the number of possible error messages exceeds 300. Most of these are encountered rarely, if ever.

You can view error codes on line from the Misc Menu of the Advanced System Tests, or you can refer to Chapter 5 of this guide, which lists the error messages in alphanumeric order.

Advantages and Limitations of Hardware Diagnostics

Off-line diagnostic software is useful in making sure that hardware has been eliminated as the cause for possible system problems. Such diagnostic tools are easy to use. However, diagnostic software should only be used by experienced personnel who can take a wider view of its limitations, which include:

- rebooting the server one or more times whenever off-line diagnostics are run
- an offline diagnostic runs on the system under test, meaning it cannot control and observe all aspects of that system

- no access to network operating system error logs, since the NOS is not operating at the same time as the diagnostic tools
- ability to test only a single component at a time (batch testing overcomes this to some degree)
- use of only non-destructive tests limits the exercising of system components, especially storage devices
- inability to indicate problems with wrongly configured systems or the network
- inability to boot to systems that cannot boot DOS

Latest Version of the Software and the Documentation

You can get information about the latest version of the software as well as the most current documentation at the following web address:

www.hp.com/go/netserver

2 Preparing to Run DiagTools

Begin with Simple Troubleshooting

Generally, you use DiagTools during installation to ensure that hardware components are fully functional. You may also use DiagTools if you are having problems with a particular server. For instance, you might use DiagTools to check whether the server's detectable components are all found by DiagTools.

CAUTION DiagTools can only be used off-line. This means you must reboot the HP NetServer you will be running DiagTools on. If possible, alert users and gracefully shut down network operations before rebooting.

Starting Troubleshooting

Before you reboot your server to use DiagTools, do the steps listed below:

1. Log onto the network operating system, if possible, and check the NOS Event or Message Log. If there are error messages, use the NOS documentation or support facilities to find out what the messages mean. Take corrective action on network operating system errors before taking the other troubleshooting steps below.
2. If you have HP TopTools or HP OpenView, check the event (alarm) logs and ensure you have taken corrective action if required.
3. Consult the HP Documentation CD which came with your system. It contains HP Information Assistant, including the system user manual (with a troubleshooting chapter) and a generic troubleshooting checklist. Ensure you have followed the recommendations in these two sources.
4. Finally, if you have not located the trouble in one of these steps, you may wish to run DiagTools. To do so, follow the steps in the detailed descriptions in the next two sections. These steps include:
 - ◇ Use HP Navigator to create a DiagTools flexible diskette, unless it is installed on the Utility Partition
 - ◇ Run DiagTools from the flexible diskette, or from the Utility Partition (either way involves rebooting the server)
 - ◇ Review results by recording and viewing (or printing) a Support Ticket (this can be done at various points during testing)

Preparations for Running DiagTools

To make sure DiagTools runs correctly, be sure you have the latest update to your BIOS.

DiagTools Is Installed with the Utility Partition

The Utility Partition (with DiagTools) is installed by default from the HP NetServer Navigator CD-ROM.

Once the installation is complete, the Utility Partition (with DiagTools included) will be ready for use. See chapter 4, "Running DiagTools in the Text Mode" for information on how to run DiagTools from the Utility Partition.

Preparing for Remote Operation

If you want to operate DiagTools across the network on a distant machine, prepare for operation by setting up the Utility Partition on the distant machine and installing pcANYWHERE on your system.

Accessing the Utility Partition on a Local Machine

In order to use DiagTools on a NetServer running in a remote location, you need

- A Utility Partition, installed during the setup of the NetServer, which has DiagTools as an option (See the *HP Remote Administrator Guide*)
- one of the options outlined in Table 2-1.

Table 2-1. Top Tools RMC or Integrated RA Options

Option	Console (Near)	NetServer (Far)	Program	Location
Top Tools Remote Management Card	Modem	Modem	Web Browser Windows NT or 95 with Dialup Networking	installed and running on the Console
Integrated Remote Assistant (Integrated RA)	Modem	Modem connected to the Management Port on the System Board	pcANYWHERE32	installed and running on the Console

How to Make DiagTools Diskettes with a Windows System

If you want to operate DiagTools without rebooting to the Utility Partition, make a set of two diskettes from the Diskette Library of the HP NetServer Navigator CD ROM.

Two blank formatted flexible diskettes are required to run HP DiagTools. A third diskette can be used to save your test results in a Support Ticket file. Create your diskettes as follows:

1. Insert the *HP NetServer Navigator CD-ROM* if it is not already in place, and power on the NetServer.
2. Choose **NetServer Utilities** from the Main Menu of the NetServer Navigator.
3. Choose **DiagTools Diskette** from the NetServer Utilities menu.
4. Follow the instructions on the screen to create both HP DiagTools diskettes.
5. Label the diskettes *HP DiagTools Diskette #1* and *HP DiagTools Diskette #2*.
6. Remove the *HP NetServer Navigator CD-ROM* and insert *HP DiagTools Diskette #1*.

Shall I Use the Diskette or the Utility Partition?

Generally, you use the diskettes for a nearby machine and the Utility Partition version of DiagTools on a remote system.

When you use DiagTools from a diskette, the interface is graphical. The text is easier to read and more colorful. When you use DiagTools from the Utility Partition (including remotely), you are presented with a text-based interface. Though DiagTools operates equally well with either interface, most users prefer the convenience and usability advantages of running DiagTools from the diskette.

Remotely, DiagTools only runs from the Utility Partition on the NetServer under test.

3 Running DiagTools in the Graphical Mode (from Diskette)

Once you have completed the steps in chapter 2 under “How to Make DiagTools Diskettes,” you can start the graphical mode by rebooting the server with the DiagTools diskette in the floppy drive.

NOTE For basic information on DiagTools and its latest release notes, use a text editor to open the file "readme.txt".

Bring the NetServer Down

CAUTION	DiagTools can only be used off-line. This means you must reboot the HP NetServer that will be running DiagTools. If possible, alert users and gracefully shut down network operations before rebooting.
----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Starting the Graphical Mode from Diskette

Running the Basic System Test has two parts:

- In Configuration Detection, DiagTools identifies all installed components.
- The Basic System Test gives pass/fail results on each detected component.

To run the Basic System Test:

1. Insert *HP DiagTools Diskette #1* and restart the NetServer if you haven't done so already.
The Welcome screen appears.

NOTE The mouse driver is not enabled in some screens of DiagTools. If you find that you cannot use the mouse or the keyboard's arrow and tab keys, use the function keys as instructed on the screen.

If DiagTools does not start, check for these possible problems:

- ◇ You may have an IRQ sharing problem. Run Setup and ensure your IRQs are properly configured.
- ◇ The Setup utility may not be configured to start from a flexible diskette. Enable **Start from Flexible Disk** in the Hardware Security submenu of the Security menu of the Setup utility.
- ◇ The Setup utility may not be configured to start enable the flexible disk controller. Enable **Flexible Disk Controller** in the Flexible Disk Drive submenu of the Configuration menu of the Setup utility.
- ◇ There may be a problem with the flexible disk drive or its cable connections.
- ◇ A message such as
Non-system disk or disk error
Replace and press any key when ready

means that either the wrong diskette is in the drive, or the diskette may be damaged or corrupted.

Starting Configuration Detection

2. Press **F2** and follow the instructions on the screen to begin Configuration Detection.

HP DiagTools scans the NetServer and identifies all installed components, such as processors, memory, and SCSI devices.

Table 3-1. List of Items that DiagTools can Detect

<ul style="list-style-type: none"> • product name 	<ul style="list-style-type: none"> • serial number
<ul style="list-style-type: none"> • HP BIOS version 	<ul style="list-style-type: none"> • processor type, version, and speed
<ul style="list-style-type: none"> • cache memory type and size 	<ul style="list-style-type: none"> • total main memory
<ul style="list-style-type: none"> • active graphics adapter card including vendor, product name, and capacity 	<ul style="list-style-type: none"> • list of flexible disk drives, with drive letter and capacity
<ul style="list-style-type: none"> • keyboard and keyboard controller 	<ul style="list-style-type: none"> • SCSI device list, with drive letter, device type, and capacity

3. Scroll through the list of detected components, and make note of any items that were not detected. HP DiagTools cannot test components it has not detected.

NOTE HP DiagTools does not list the CD-ROM drive on the Configuration Detection screen.

HP DiagTools is not designed to handle hot swapping. If you hot swap any components while HP DiagTools is running, you must restart DiagTools and perform a new Configuration Detection.

Running the Basic Tests

4. Press **F2** and follow the instructions on the screen to start the Basic System Test.

Interpreting Basic Test Results

The screen displays the tests and results as they are performed. When the test is complete, you see a summary of the results.

- ◇ If all tests passed, you can either exit DiagTools or view or print your results by following the instructions in the section "Create a Support Ticket."
- ◇ If any of your tests failed, view or print your results by following the instructions in the section "Create a Support Ticket" then look up the error codes by following the instructions in the section "Error Code Viewer."

Create Support Ticket

The Support Ticket lets you save the results to a file so you can either view or print them.

1. Press **F4** (Ticket) from the Basic System Test Results screen.
2. Press **F4** (Ticket) again to continue.

You are asked where you want to write the Support Ticket file. You can write the file to a floppy disk or to a temporary area in memory.

3. To change where you will save your file, press **F12** (Change Selection).
4. If you are saving your file to a flexible diskette, remove *HP DiagTools Diskette #1* and insert a newly formatted diskette.
5. Press **F4** (Write to File) to create your Support Ticket.
6. View or print your Support Ticket as follows:
 - ◇ If you want to print your Support Ticket, remove your Support Ticket diskette and insert it in any system that can open and print text files.
 - ◇ If you want to view your Support Ticket, press **F7** (View Ticket).

NOTE Use the keyboard with the Support Ticket Viewer. It does not support a mouse.

Use the Error Code Viewer to Review Corrective Actions

If any of the Basic System Tests have failed, you should view or print the Support Ticket file, locate the failed test, and record the four-digit error code.

You can look up the error code as follows:

1. Return to the Basic System Test Result screen. You may need to press **F2** (Back) one or more times.
2. From the Basic System Test Result screen, press **F2** (Advanced) and follow the instructions on the screen.

3. Insert *HP DiagTools Diskette #2*, when prompted, and press **F2**.

The Advanced System Tests menu appears. After various tests are initialized, the System Test submenu appears.

NOTE Use the keyboard with the Advanced System Tests menus. They do not support a mouse.

4. Use the right arrow key to select **Misc.** from the Main menu.
5. Use the down arrow key to select **Error Code Viewer** and press **Enter**.
You are prompted for the error code.
6. Type the error code identified in the Support Ticket and press **Enter**.
The name of the error is displayed along with possible corrective actions.
7. Press **Esc** to return to the Advanced System Tests menu.

Running the Advanced System Tests

Advanced System Test Menus and Options

The graphical interface of the Advanced System Tests displays a color screen and initializes the various tests. This may take a few minutes. The Advanced System Tests are listed across the top of the screen (and in the list shown below). Use the arrow keys to highlight the type of tests you want to run.

```
System
Memory
IDE
FDD (Flexible Disk Drive)
SCSI
KBD (Keyboard)
Video
Misc
Batch
```

Drop-down menus will display the available individual tests.

Once the Advanced System Tests are displayed, press F9 for a list of available options:

1. When the Basic System Tests are completed, you may want to run Advanced System Tests. To do so, be sure that HP DiagTools Diskette #2 is in the drive.
2. Tests can be run individually or in batches.

NOTE For information about using Batch mode when DiagTools is running, choose **Batch Help** on the Batch submenu.

To run any of the tests in the Advanced System Test menu take the following steps:

- a. To select an individual test, use the arrow keys to highlight that test. Then press F5 to select it.
- b. To select a series of tests, highlight the item to be tested on the Main Menu. Then press the F6 function key. Check marks appear next to all tests in the highlighted menu, indicating that those tests are selected. You can use F5 to deselect any single test.

- c. Press the F10 function key to start the test or a series of tests.
- d. Repeat these steps to run any test you need.

NOTE Do NOT use the **Erase Errors List** command that appears briefly during test operation. It would erase the error list needed to create a Support Ticket.

3. To view all the test results, view or save the Support Ticket. Press "T" in the Advanced menu.
4. Press the F3 function key to exit DiagTools.
5. Remove the flexible diskette from the drive.
6. If you need to take corrective action, be sure to power down the NetServer before you remove covers.
7. If you need to contact an HP customer support representative, save your Support Ticket diskette.

Two Ways to Review Results

The Advanced Menu allows you to review results in two ways:

- the Error Message Viewer
- the Support Ticket

Error Message Viewer

To discover the meaning of error messages and receive recommendations on what to do in each case by selecting Misc and highlighting Error Message Viewer. Enter the hexadecimal number of any error code to view identifying information and appropriate responses. The error messages are also listed in Chapter 5 of this guide in alphanumeric order.

Reviewing Results: Saving and Printing the Support Ticket

Another option for reviewing test results is to view the Support Ticket and save it to your diskette. To do so, press "T" in the Advanced System Tests. You can also use a text editor to open and read it as a text file.

NOTE By default, the Support Ticket text file will be written to the flexible diskette in the drive. HP recommends that you use a newly formatted diskette to save your results. This ensures there is enough space on the floppy to save the entire Support Ticket.

About the Support Ticket

The Support Ticket is a text file you can create using DiagTools. It lists the hardware detected and the test results. It includes the following sections:

- **Introduction** including an explanation of the Support Ticket's importance
- **System Information**, including the detected hardware configuration
- **Test Report**, showing the results of the Basic System Test and Advanced System Tests, as run
- **Administration Report**, showing the DiagTools version and session information
- **Your Comments** including a place to add your comments (you must use a text editor to add comments)

When you create a Support Ticket, you can enter a path where you want it saved. Its default filename and location appear on the screen.

Each time you create a Support Ticket, it overwrites the previous one. To preserve a Support Ticket, copy its file elsewhere, rename it, or remove the diskette it is located on from the drive.

You can view a Support Ticket with a text editor. You can also use the text editor to add your comments to the Support Ticket.

Save Support Tickets you think contain important information for future reference. Supply the relevant Support Ticket when you communicate with your support provider.

To Create A Support Ticket

1. When Basic System Tests are completed, press the F4 function key twice to create a Support Ticket. When Advanced System Tests have been run, press Esc to return to the previous menu, and follow directions for creating a Support Ticket. In both cases, the Support Ticket lists the hardware detected and the results of the Basic System Test and of any Advanced System Tests you ran.

The Support Ticket text file will be written to the flexible diskette in the drive, which can be either the DiagTools flexible diskette or another formatted flexible diskette. If you have a large configuration or plan on looping tests HP recommends that you use a newly formatted diskette to ensure there is enough space on the floppy to save the entire Support Ticket.

For information about the Support Ticket, see "About the Support Ticket."

2. Use a text editor to view the Support Ticket file to determine which tests were failed.

For the failed tests, do the following:

- a. Note the error codes associated with these tests.
- b. Open the Error Code Viewer by selecting the Misc menu on the Advanced System Test Main Menu and then choosing Error Code Viewer. Or, consult the list of error codes in Chapter 3 of this *Guide*.
- c. Look up each error code to find its meaning and suggested corrective actions.

Troubleshooting When Devices are not Detected

If any processors, memory, or SCSI devices were **not** detected (see Table 3-1), save and print a Support Ticket. Record this ticket for later use by saving it to its own newly formatted diskette.

Processor and Memory Non Detected Troubleshooting

If processors or memory were not detected, redo the installation of the NetServer. To do so, press the F3 function key to exit DiagTools. Refer to the NetServer Documentation CD included with the unit. Shut down the NetServer, redo the installation, and replace all covers. Redo the system installation using the Setup utility on the HP NetServer Navigator CD-ROM. Then run DiagTools again to see whether all components are detected.

- If (after reconfiguring the NetServer and booting up with DiagTools) all components are detected, then rerun the basic tests. See "Running the Basic Tests."
- If any processors, memory or SCSI devices (listed in Table 3-1) are still **not** detected, it is recommended that you run the Basic System Tests and create a Support Ticket anyway. Doing so may give more information to help diagnose the problem.

SCSI Device Non Detected Troubleshooting

If one or more SCSI device is not detected during the hardware inventory, check the following:

- Rerun the test and observe the activity lights, if the SCSI device has them. No activity lights indicate a drive may not be responding. Replace the affected drive and rerun the test.
- Check cables and termination to ensure they are correct. Refer to the documentation and the technical reference label or card which accompany the unit.
- Check to ensure each device has a unique SCSI ID.
- Find out whether you have an unsupported SCSI controller.
- Check to see your ASPI driver software was correctly loaded.

If you locate and correct a difficulty, rerun the DiagTools tests to verify your corrective action.

4 Running DiagTools in the Text Mode (from the Utility Partition)

Preparation in Advance

Once you have completed the steps in chapter 2 under “DiagTools Is Installed with the Utility Partition,” you can start the text-based mode by rebooting to the Utility Partition.

NOTE Once DiagTools is Running,, you can get basic information and the latest release notes, by choosing 5. View DiagTools Readme.

If you want to run DiagTools in text mode from the Utility Partition on a local machine without a remote connection, skip ahead to the section “Select the Utility Partition.”

Before You Begin: A Note on Running DiagTools on a Distant Server

DiagTools can be run remotely. Used in conjunction with other NetServer Tools, you can get system configurations and check to see whether hardware is sound.

Accessing the Utility Partition

In order to use DiagTools on a NetServer running in a remote location, you need

- A Utility Partition, installed during the setup of the far NetServer. DiagTools is an option offered during boot up. (See the *HP Remote Administrator Guide*.)
- On the near server, pcANY-WHERE32 running and connected by modem and phone lines to the Management Port on the System Board of the far server, which must have Integrated Remote Assistant (Integrated RA).

Rebooting the NetServer Remotely

1. Make the connection between your console and the NetServer to be tested.

<p>CAUTION Before you reboot the server be sure users have been warned and network operations shut down gracefully, if possible.</p>

2. Reboot the NetServer and watch the console screen for the Utility Partition Prompt. When you see the prompt, press F12 to enter the Utility Partition. Confirm the command if requested.
3. A list of options is presented in the menu. Use the keyboard arrow keys to highlight “HP DiagTools for NetServers” on that list. Press Enter. Then, find and read the section below entitled to “Main Menu in Text Mode.”

Select the Utility Partition

CAUTION	DiagTools can only be used off-line. This means you must reboot the HP NetServer that will be running DiagTools. If possible, alert users and gracefully shut down network operations before rebooting.
----------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Reboot your HP NetServer. As the boot screens roll by, watch for an opportunity to select the choice to boot from the Utility Partition (by pressing function key F12). A list of options is presented in the menu. Use the keyboard arrow keys to highlight “HP DiagTools for NetServers” on that list. Press Enter.

Main Menu in Text Mode

You can select from the following choices once DiagTools is running:

1. **Run Basic Systems Tests**
2. **Go to Advanced to select individual tests**
3. **Misc Menu**
4. **Exit DiagTools**

You can see results of tests by selecting "2," then pressing "T" to create a Support Ticket.

Running the Basic Tests

1. Select
 1. **Run Basic Systems Tests**to run the first series of tests.
2. When the test is completed, a message will be displayed at the top of the screen informing you of the result. When the result is “passed” you may press any key to use any other feature of DiagTools.

When the result is “failed” you are prompted to look at test results. To do so, you will press any key, then select
 2. Go to Advanced . . .then press "T" to see the Support Ticket.

Interpreting Basic Test Results

If the Basic System Test result is “**failed**”, determine details of the problem as follows:

- a. Check to see whether there is an error message in the Support Ticket. To do so, press "T" in the Advanced menu to view the Support Ticket. Check the Support Ticket for the words “TEST FAILED” followed by an error code (For example: TEST FAILED 0601h).
- b. If there is an error code, get corrective action steps for it. To do so, press the Esc key on the keyboard to return to the Advanced System Test Menu, then select Misc again and select
 3. **Error Code Viewer**

Type the number of the error code (for instance 0601 or 0601h) and press Enter to view its type and recommended corrective actions. Follow the recommendations.

Once corrective actions have been taken, you can verify their effectiveness. Go to “Running the Advanced System Tests.” To do so, choose

6. Return to Main Menu

Then select

2. Go to Advanced to select individual test

- If the Basic System Test is “**passed**”, the hardware has been verified. Do the following:
 - a. If required, you can record the results by using the Advanced menu to create the Support Ticket.
 - b. To leave DiagTools, select
 - 6 Return to Main Menu
 - 4 Exit DiagTools
 - c. Remove the flexible diskette from the drive. Then bring up the server. If the result of the Basic Systems Test is “passed,” DiagTools has verified basic hardware components. If trouble continues, you may want to turn your attention to software and network diagnosis, which is beyond the scope of DiagTools.

Running the Advanced System Tests

Advanced System Test Menus and Options

To run the Advanced System Tests, return to the DiagTools Main Menu. Then select

2. Go to Advanced to select individual test

The text-based interface of the Advanced System Tests displays a color screen and initializes the various tests. This may take a few minutes. The Advanced System Tests are listed across the top of the screen (and in the list shown below). Use the arrow keys to highlight the type of tests you want to run.

```

System
Memory
IDE
FDD (Flexible Disk Drive)
SCSI
KBD (Keyboard)
Video
Misc
Batch
  
```

A drop-down menu will display the available individual tests.

Once the Advanced System Tests are displayed, press F9 for a list of available options.

1. When the Basic System Tests are completed, you may want to run Advanced System Tests. To do so, navigate back to the Advanced System Test menu.
2. Tests can be run individually or in batches.

NOTE For information about using Batch mode when DiagTools is running, choose **Batch Help** on the Batch submenu.

To run any of the tests in the Advanced System Test menu take the following steps:

- a. Highlight the item you to be tested on the Main Menu. Then press the F6 function key. Check marks appear next to all tests in the highlighted menu, indicating that those tests are selected.
- b. Press the F10 function key to start the tests.

- c. Repeat these steps to run any of the tests you need:

NOTE Do NOT use the **Erase Errors List** command that appears briefly during test operation. It would erase the error list needed to create a Support Ticket.

3. To view all the test results, press "T" in the Advanced menu to create, view and save a Support Ticket..

4. To end the testing session, choose

4. **Exit DiagTools**

from the main menu.

5. Remove the flexible diskette from the drive.
6. If no further corrective actions are required, proceed with normal operation.
7. If (after corrective action) you still receive unsatisfactory test results, contact your in-house information technology department or support provider.

Reviewing Results: Running the Viewers

The Advanced Systems Test Menu allows you to see test results screen by screen by selecting the Misc menu and choosing

2. **View Test Results.**

You can also discover the meaning of error messages and receive recommendations on what to do in each case by selecting Misc and choosing

3. **Error Code Viewer.**

Enter the hexadecimal number of the error code to view identifying information and appropriate responses. The error messages are also listed in Chapter 5 of this guide in alphanumeric order.

Reviewing Results: Saving and Printing the Support Ticket

Another option for reviewing test results is to save the Support Ticket to your diskette and to read it as a text file.

NOTE The Support Ticket text file will be written to the flexible diskette in the drive. Be sure to replace the DiagTools program diskette with a newly formatted, diskette.

About the Support Ticket

The Support Ticket is a text file you can create using DiagTools. It lists the hardware detected and the test results. It includes the following sections:

- **Introduction** including an explanation of the Support Ticket's importance
- **System Information**, including the detected hardware configuration
- **Test Report**, showing the results of the Basic System Test and Advanced System Tests, as run
- **Administration Report**, showing the DiagTools version and session information
- **Your Comments** including a place to add your comments (you must use a text editor to do so)

When you create a Support Ticket, its filename and location appear on the screen.

Each time you create a Support Ticket, it overwrites the previous one. To preserve a Support Ticket, copy its file elsewhere, rename it, or remove the diskette where it is located from the drive.

You can view a Support Ticket with a text editor. You can also use the text editor to add your comments to the Support Ticket.

Save Support Tickets you think contain important information for future reference. Supply the relevant Support Ticket when you communicate with your support provider.

To Create A Support Ticket

1. When Basic System Tests are completed, select
 2. **Go to Advanced and select individual tests..**

Then press "T" to view the Support Ticket.

When Advanced System Tests have been run, press Esc to return to the previous menu first. The Support Ticket lists the hardware detected and the results of the Basic System Test and of any Advanced System Tests you ran.

2. Replace the DiagTools diskette with a newly formatted one and select
 4. **Save Support Ticket to floppy**

The Support Ticket text file will be written to the flexible diskette in the drive.

2. Use a text editor to view the Support Ticket file to determine which tests failed.

For the failed tests, do the following:

- a. Note the error codes associated with these tests.
- b. Open the Error Code Viewer by selecting the **Misc** menu on the Advanced System Test Menu and then choosing **Error Code Viewer**. Or, consult the list of error codes in Chapter 5 of this *Guide*.
- c. Look up each error code to find its meaning and take suggested corrective actions.

Troubleshooting When Devices are not Detected

If any processors, memory, or SCSI devices were **not** detected (see Table 4-2), save and print a Support Ticket. Record this ticket for later use by saving it to its own newly formatted diskette.

Processor and Memory Non Detected Troubleshooting

If processors or memory were not detected, redo the installation of the NetServer. To do so, press the F3 function key to exit DiagTools. Refer to the NetServer Documentation CD included with the unit. Shut down the NetServer, redo the installation, and replace all covers. Redo the system installation using the Setup utility on the HP NetServer Navigator CD-ROM. Then run DiagTools again to see whether all components are detected.

- If (after reconfiguring the NetServer and booting up with DiagTools) all components are detected, then rerun the basic tests. See "Running the Basic Tests."
- If any processors, memory or SCSI devices (listed in Table 4-2) are still **not** detected, it is recommended that you run the Basic System Tests and create a Support Ticket anyway. Doing so may give more information to help diagnose what the problem is.

SCSI Device Non Detected Troubleshooting

If one or more SCSI device is not detected during the hardware inventory, check the following:

- Rerun the test and observe the activity lights, if the SCSI device has them. No activity lights indicate a drive may not be responding. Replace the drive and rerun the test.
- Check cables and termination to ensure they are correct. Refer to the documentation and the technical reference label or card which accompany the unit.
- Check to ensure each device has a unique SCSI ID.
- Find out if you have an unsupported SCSI controller.
- Check to see your ASPI driver loaded.

If you locate and correct a difficulty, rerun the DiagTools tests to verify your corrective action.

5 Error Message Reference

Error Messages and Their Sources

Errors are designated by a hexadecimal number. These numbers are listed in this chapter with a simple description of their meaning and some actions the user can take to try to isolate the source of the error. Brief descriptions of the tests which generate each type of error are listed within the error message table.

The System Tests

The tests included in the System Test Menu exercise the basic functionality of the CPU, ensuring that the registers, the flags, and both the basic and protected instructions work as expected. It includes tests of the chip speed as well as the operation of integrated controllers for coprocessing, DMA, interrupts, and the timers and clock functionality. Specialized tests for PCI devices, Plug and Play devices, and MMX instructions are also included.

Code	Description	Recommended Action
0001h	Cannot load the Machine Status Word.	Make sure the CPU is seated properly. If the test still shows failure, replace the CPU.
0002h	Cannot load the Global Descriptor Table Register	Make sure the CPU is seated properly or replace the CPU.
0003h	Cannot load the IDT(Interrupt Descriptor Table) Register.	Make sure the CPU is seated properly or replace the CPU.
0004h	ARPL instruction execution error.	Make sure the CPU is seated properly or replace the CPU.
0005h	Load Access Rights Byte instruction execution error.	Make sure the CPU is seated properly or replace the CPU.
0006h	Load Segment Limit execution error.	Make sure the CPU is seated properly or replace the CPU.
0007h	Verify a Segment for Reading) instruction execution error.	Make sure the CPU is seated properly or replace the CPU.
0008h	VERW (Verify a Segment for Writing instruction execution error.)	<ol style="list-style-type: none">1. Take ESD precautions and make sure the system board is seated.2. Check the seating of the voltage regulator module (VRM) if present.3. Be sure the processor board (if any) is seated.4. Make sure the CPU chip is seated.5. Make sure the memory elements (DIMMs) are properly seated.6. Check system fans. If overheating occurs, chip may shut down.7. If the system ran with temperature high, let it cool for 30 minutes, then restart.8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.

Code	Description	Recommended Action
0009h	Cannot enable the A20 line.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0010h	32-bit register read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0011h	PUSHA(D) or POPA(D) execution error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0012h	Cannot access data through the FS or GS registers.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0013h	BSF or BSR execution error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart.

Code	Description	Recommended Action
		8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0014h	FLAG Register Set or Reset error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0015h	Protected mode instruction execution error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0016h	32-bit multiplication error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
001Eh	The detected CPU Speed is not the same as specified.	Check jumpers or switches on the system board to be sure they are set properly according to the technical reference label or card.
0020h	NDP not ready.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0021h	Cannot reset the NDP.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0022h	NDP control word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0023h	NDP control word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0024	NDP control word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0025h	NDP control word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.

Code	Description	Recommended Action
0026h	Cannot reset the NDP control word.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0027h	NDP Tag word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0028h	NDP stack read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0029h - 002Ah	NDP operation status has failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
002Bh	Integer load or store error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart.

Code	Description	Recommended Action
		8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
002Ch	NDP Tag word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
002Dh	NDP stack pop error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
002Eh - 002Fh	NDP Tag word read or write error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0030h	Read/Write test on DMA controller 1 failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0031h	Read/Write test on DMA controller 2 failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0032h	Read/Write test on page registers failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0040h	Read/Write test on PIC ports failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0041h	Stray or unrecognized interrupts detected.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0050h	The Timer Periodic Interrupt is not being generated.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0051h	The Timer is counting at a slower rate.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0052h	The Timer is counting at a faster rate.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0060h	The Real Time Clock Periodic Interrupt is not being generated.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0061h	The Real Time Clock is running at a slower rate.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0062h	The Real Time Clock is running at a faster rate.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0063h	The date and time read from Real Time	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated.

Code	Description	Recommended Action
	Clock CMOS RAM are different from that of written.	<ol style="list-style-type: none"> 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0070h	The battery backup unit that powers CMOS RAM has no power.	Replace battery, if one is present. (Check technical reference label or card.)
0071h	Bad CMOS RAM checksum detected.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
0072h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0073h	CMOS RAM memory size	Run BIOS Setup-- If problem persists replace battery, if present. Then replace the system board.
0074h	CMOS RAM time is invalid.	Run BIOS Setup if problem persists replace battery, if present. Then replace the system board.
0075h	Time-base frequency divider set at incorrect value.	Reset the system and set BIOS Setup parameter. If the problem persists--replace CMOS RAM and the battery.
0076h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0077h	Periodic time update cycle not occurring.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0078h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0079h	CMOS RAM fails to hold data.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
0080h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0081h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0082h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0083h	PCI System Bus scan test failed.	<ol style="list-style-type: none"> 1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace PCI Card and system board.
0084h	Cannot access PCI devices through the FIND_PCI_DEVICE call.	<ol style="list-style-type: none"> 1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down.

Code	Description	Recommended Action
		8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace PCI Card and system board.
0085h	Reading configuration space registers on boundary conditions failed.	1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace PCI Card and system board.
0086h	Consistency checking of PCI configuration space failed.	1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace PCI Card and system board.
0087h	GENERATE_SPECI AL_CYCLE check failed.	1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace PCI Card and system board.
0088h	BIOS32 service directory integrity check failed.	Update the System BIOS.
0089h	PCI bus transfer using standard PCI cycles failed.	1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down.

Code	Description	Recommended Action
		<p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace PCI Card and system board.</p>
008Ah	BCI bus transfer using PCI bus master cycles failed.	<p>1. Remove all unnecessary PCI cards and try the test again. If it still fails, make sure all PCI connectors are seated.</p> <p>2. Make sure the system board is seated.</p> <p>3. Check the seating of the voltage regulator module (VRM) if present.</p> <p>4. Be sure the processor board (if any) is seated.</p> <p>5. Make sure the CPU chip is seated. (Take ESD precautions.)</p> <p>6. Make sure the memory elements (DIMMs) are properly seated.</p> <p>7. Check system fans. If overheating occurs, chip may shut down.</p> <p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace PCI Card and system board.</p>
0090h	PnP function 00 failed.	<p>1. Clear CMOS per instructions on technical reference label or card.</p> <p>2. Run Configuration Assistant from the Navigator CD-ROM.</p> <p>3. Check BIOS version and update the BIOS.</p> <p>4. Change the system boards.</p>
0091h	PnP Function 01 failed.	<p>1. Clear CMOS per instructions on technical reference label or card.</p> <p>2. Run Configuration Assistant from the Navigator CD-ROM.</p> <p>3. Check BIOS version and update the BIOS.</p> <p>4. Change the system boards.</p>
0094h	Number of system device nodes is not same as reported.	<p>1. Clear CMOS per instructions on technical reference label or card.</p> <p>2. Run Configuration Assistant from the Navigator CD-ROM.</p> <p>3. Check BIOS version and update the BIOS.</p> <p>4. Change the system boards..</p>
0095h	One or more nodes have larger than reported size.	<p>1. Clear CMOS per instructions on technical reference label or card.</p> <p>2. Run Configuration Assistant from the Navigator CD-ROM.</p> <p>3. Check BIOS version and update the BIOS.</p> <p>4. Change the system boards.</p>
0096h	ISA bus detected twice.	Replace System BIOS.
0097h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0098h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0099h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
009Ah	PnP function 40 failed.	Replace System BIOS.
009Bh	Invalid number of PnP cards.	Update System BIOS.
009Ch	One or more	Check all PnP devices.

Code	Description	Recommended Action
	unknown PnP cards.	
009Dh	No PCI bus system device Node.	<ol style="list-style-type: none"> 1. If necessary, update the BIOS. 2. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 3. Make sure the system board is seated. 4. Check the seating of the voltage regulator module (VRM) if present. 5. Be sure the processor board (if any) is seated. 6. Make sure the CPU chip is seated. (Take ESD precautions.) 7. Make sure the memory elements (DIMMs) are properly seated. 8. Check system fans. If overheating occurs, chip may shut down. 9. If the system ran with temperature high, let it cool for 30 minutes, then restart. 10. If system repeatedly shows this error, replace the element with the CMOS.
009Eh	Too many PCI busses.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
009Fh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
00A0h	PnP function 41 failed.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A1h	NVRam buffer size is too big	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical

Code	Description	Recommended Action
		<p>reference label or card.</p> <ol style="list-style-type: none"> 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A2h	ESCD size is too small.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A3h	ESCD Size is too big.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A4h	NVRam base address is invalid.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.)

Code	Description	Recommended Action
		8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A5h	PnP function 42 failed.	1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A6h	PnP function 43 failed.	1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00A7h	NVRAM test failed.	1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.

Code	Description	Recommended Action
00B1h	PNP header not found	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00B2h	PNP function 50h execution failed.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00B3h	PNP function 51h execution failed.	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated. 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00B4h	PNP function returning data more than DMI buffer size	<ol style="list-style-type: none"> 1. Run the BIOS Setup program and reconfigure all settings. 2. If necessary, update the BIOS. 3. Clear the CMOS and rerun configuration. See directions on the technical reference label or card. 4. Make sure the system board is seated.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 5. Check the seating of the voltage regulator module (VRM) if present. 6. Be sure the processor board (if any) is seated. 7. Make sure the CPU chip is seated. (Take ESD precautions.) 8. Make sure the memory elements (DIMMs) are properly seated. 9. Check system fans. If overheating occurs, chip may shut down. 10. If the system ran with temperature high, let it cool for 30 minutes, then restart. 11. If system repeatedly shows this error, replace the element with the CMOS.
00C0h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
00C1h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
00C2h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
00C3h	MMX Regs. Read/Write failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C4h	Wraparound Arithmetic test failed	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C5h	Saturation Arithmetic test failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C6h	Pack with signed saturation failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C7h	Pack with unsigned saturation failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C8h	Unpack high packed data failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00C9h	Unpack low packed data failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00CAh	Exit MMX state instruction(EMMS) failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.

Code	Description	Recommended Action
00CBh	Matrix transpose test failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00CCh	MMX Performance failed	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
00FFh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.

Memory Test Menu

The Memory Test Menu includes tests that exercise all aspects of the storage media and key memory locations of the system. The functionality of the boot ROM, parity over the whole memory space, patterns, addressing, refresh functions, and the data bus have specific tests included in the menu. Specialized testing for memory caching, performance, and proprietary L2 Cache are included.

Code	Description	Recommended Action
0100h	ROM read error.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
0101h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0102h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0120h	Parity error at absolute memory	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number.

Code	Description	Recommended Action
	location XXXXXXXXXh.	<ol style="list-style-type: none"> 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0130h	The pattern written at XXXXXXXXh was qqqqh. The pattern read back from that address was pppph.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0131h	Parity failure at XXXXXXXXh during pattern test.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0132h	Faulty Memory Chip is on DIMM socket YYYY.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0135h	ECC Correctable Error in DIMM socket YYYY.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0136h	ECC Uncorrectable Error in	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number.

Code	Description	Recommended Action
	SIMM/DIMM socket XXXX/YYYY.	<ol style="list-style-type: none"> 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0137h	Error occurred on bank XXXX interleave YYYY.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0140h	Failure at address XXXXXXXXh--bit position bbh.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0150h	Failure at XXXXXXXXh bit position bbh..	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
0160h	There is an address short between bit xxh and yyh.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located. 8. Change the memory board. 9. Change the system board.

Code	Description	Recommended Action
0170h	RAM Refresh is not working.	<p>10. Change the board where the DIMMs are located.</p> <ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located. 8. Change the memory board. 9. Change the system board. 10. Change the board where the DIMMs are located.
0171h	RAM Refresh is slower than expected	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located. 8. Change the memory board. 9. Change the system board. 10. Change the board where the DIMMs are located.
0172h	RAM Refresh is faster than expected	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located. 8. Change the memory board. 9. Change the system board. 10. Change the board where the DIMMs are located.
0180h	The pattern written at address XXXXXXXXh was qqqqh The pattern read back from that address was pppph.	<ol style="list-style-type: none"> 1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the

Code	Description	Recommended Action
		test. 7. Build up the system by halves until the failure is located.
0181h	No Active External Cache Memory.	Enable external cache memory through the BIOS Setup utility first.
0182h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0183h	No detected extended memory. In the basic test this is a DiagTools Error. If this result comes from an advanced test, it is a user error.	If a basic test error, contact you HP Response center to get the latest copy of DiagTools. Parameter out of range. Reenter and rerun the test.
0184h	Data Bus Test failed.	1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located. 8. Change the memory board. 9. Change the system board. 10. Change the board where the DIMMs are located.
0190h	Test failed at address xxxxxxxh.	1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
01A0h	The pattern written at address XXXXXXXXh was qqqqh The pattern read back from that address was pppph.	1. Visually inspect the memory board to ensure proper seating. 2. Check to see all DIMMs are the correct HP part number. 3. Visually inspect DIMM units to ensure they are properly seated. 4. Check the positions of DIMMs to see that positioning matches that on the technical reference label or card. 5. Examine the support ticket and check for failures. 6. Bring the system down to its minimum memory configuration and rerun the test. 7. Build up the system by halves until the failure is located.
01A1h	Configuration Access Mechanism Test Failed.	1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
01A2h	TagRAM Control Register Test Failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
01A4h	L2 cache Commands Test Failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Check system fans. If overheating occurs, chip may shut down. 6. If the system ran with temperature high, let it cool for 30 minutes, then restart. 7. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
01A3h	L2 cache Commands Test Failed.	<ol style="list-style-type: none"> 1. Take ESD precautions and make sure the system board is seated. 2. Check the seating of the voltage regulator module (VRM) if present. 3. Be sure the processor board (if any) is seated. 4. Make sure the CPU chip is seated. 5. Make sure the memory elements (DIMMs) are properly seated. 6. Check system fans. If overheating occurs, chip may shut down. 7. If the system ran with temperature high, let it cool for 30 minutes, then restart. 8. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.

FDD (Flexible Disk Drive or Floppy) Tests

Flexible Disk Drives are tested for rotational speed, elevator, and seek channel.

Code	Description	Recommended Action
0301h	Undefined or invalid command.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive.

Code	Description	Recommended Action
		4. Change the system board.
0302h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0303h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0304h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0305h	Reset failed. DiagTools issued a reset command and it was not accepted or confirmed by the floppy disk controller.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0307h	Drive parameter activity failed.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy and the system board. 3. Change the floppy drive. 4. Change the system board.
0308h	DMA Overrun error.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy and the system board. 3. Change the floppy drive. 4. Change the system board.
0309h	Attempt to DMA at 64 KB boundary.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy and the system board. 3. Change the floppy drive. 4. Change the system board.
030Ah	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0310h	Floppy CRC or ECC data error.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0311h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0321h	The circuit that detects changed diskettes is not working.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0322h	Floppy Speed Error.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0340h	Seek operation failed.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive.

Code	Description	Recommended Action
		4. Change the system board.
0341h	Undefined or invalid command in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0342h	Address mark not found in Random Test	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0344h	Requested sector not found in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0345h	Reset failed in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0347h	Drive parameter activity failed in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0348h	DMA overrun error in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0349h	Attempt to DMA at 64 KB boundary in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0350h	CRC or ECC data error in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0360h	Seek operation failed in Random Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
03FEh	Diskette data read/write error in Sequential Test.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
0380h	Drive not ready.	<ol style="list-style-type: none"> 1. Try a different diskette.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
03AAh	Drive not ready.	<ol style="list-style-type: none"> 1. Try a different diskette. 2. Check the cable between the floppy drive and the system board. 3. Change the floppy drive. 4. Change the system board.
03CCh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
03EEh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
03FFh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.

KBD (Keyboard) Tests

The KBD Test Menu includes testing the keyboard controller, scanning, LEDs, clock line, and data line for proper functionality.

Code	Description	Recommended Action
0400h	DiagTools received an Keyboard Controller interface error.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0401h	DiagTools issued commands to Keyboard Controller and received improper responses.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0410h	Keyboard clock line is stuck low/high.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0411h	Keyboard clock line is stuck low/high.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0412h	Keyboard data stuck low/high.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0413h	Keyboard data stuck low/high.	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0414h	DiagTools issued a	<ol style="list-style-type: none"> 1. Power down the system. (Caution, keyboards are not hot-swappable. A

Code	Description	Recommended Action
	command to the keyboard and either did not receive a response or received an improper response.	keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0415h	Keyboard LED could not be turned on.	1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0416h	Keyboard diagnostic echo failed.	1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.
0417h	Keyboard is not responding to command.	1. Power down the system. (Caution, keyboards are not hot-swappable. A keyboard swap with power on may damage the system board.) 2. Replace the keyboard and rerun the test. 3. Replace the system board.

SCSI Device Tests

The SCSI Test Menu exercises all SCSI devices (disk drives, CD-ROM drives, and tape drives) with buffer, and self-test,; it also includes functions unique to a particular device, including play and rewind.

Code	Description	Recommended Action
0500h	Error in SCSI device.	1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent. 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0501h	Data compare failed.	1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent. 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0502h	SCSI device read error.	1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0503h	SCSI disk read timed out.	<ol style="list-style-type: none"> 1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent. 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0504h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0505h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0506h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0507h	SCSI disk buffer error.	<ol style="list-style-type: none"> 1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent. 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0508h	SCSI disk random read error.	<ol style="list-style-type: none"> 1. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 2. Inspect SCSI pins to ensure none are bent. 3. Check seating of board or SCSI card. 4. Check for proper termination, using technical reference card or label. 5. Check system fans 6. Check firmware version of drive and update if necessary. 7. Replace the drive 8. Change the card or board that has the drive's controller.
0509h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
050Ah	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you

Code	Description	Recommended Action
		get the same error, call the HP Customer Care Center.
050Bh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
050Ch	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
050Dh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
050Eh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
050Fh	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0510h	No Tape in unit.	<ol style="list-style-type: none"> 1. Use a cleaning cartridge to make sure heads are clean. 2. Replace the tape. 3. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 4. Inspect SCSI pins to ensure none are bent. 5. Check seating of board or SCSI card. 6. Check for proper termination, using technical reference card or label. 7. Check system fans 8. Check firmware version of drive and update if necessary. 9. Replace the drive 10. Change the card or board that has the drive's controller.
0511h	Positioning failed on tape drive.	<ol style="list-style-type: none"> 1. Use a cleaning cartridge to make sure heads are clean. 2. Replace the tape. 3. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 4. Inspect SCSI pins to ensure none are bent. 5. Check seating of board or SCSI card. 6. Check for proper termination, using technical reference card or label. 7. Check system fans 8. Check firmware version of drive and update if necessary. 9. Replace the drive 10. Change the card or board that has the drive's controller.
0512h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0514h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0515h	Tape Selftest error.	<ol style="list-style-type: none"> 1. Use a cleaning cartridge to make sure heads are clean. 2. Replace the tape. 3. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 4. Inspect SCSI pins to ensure none are bent. 5. Check seating of board or SCSI card.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 6. Check for proper termination, using technical reference card or label. 7. Check system fans 8. Check firmware version of drive and update if necessary. 9. Replace the drive 10. Change the card or board that has the drive's controller.
0516h	Tape buffer error.	<ol style="list-style-type: none"> 1. Use a cleaning cartridge to make sure heads are clean. 2. Replace the tape. 3. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 4. Inspect SCSI pins to ensure none are bent. 5. Check seating of board or SCSI card. 6. Check for proper termination, using technical reference card or label. 7. Check system fans 8. Check firmware version of drive and update if necessary. 9. Replace the drive 10. Change the card or board that has the drive's controller.
0520h	No CD in drive.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0522h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0521h	CD-ROM read error.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0523h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you

Code	Description	Recommended Action
		get the same error, call the HP Customer Care Center.
0524h	CD Selftest error.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0525h	CD Open error.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0526h	CD Close error.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0527h	CD Buffer error.	<ol style="list-style-type: none"> 1. Insert a CD in the CD-ROM drive, or replace the existing CD. 2. Check cables and connections: a) to SCSI components, b) to power source, c) between cards and backplane. 3. Inspect SCSI pins to ensure none are bent. 4. Check seating of board or SCSI card. 5. Check for proper termination, using technical reference card or label. 6. Check system fans 7. Check firmware version of drive and update if necessary. 8. Replace the drive 9. Change the card or board that has the drive's controller.
0528h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0550h	SCSI read timed out.	<ol style="list-style-type: none"> 1. Check cables and connections: a) to SCSI components, b) to power source, c)

Code	Description	Recommended Action
		<p>between cards and backplane.</p> <ol style="list-style-type: none"> Inspect SCSI pins to ensure none are bent. Check seating of board or SCSI card. Check for proper termination, using technical reference card or label. Check system fans Check firmware version of drive and update if necessary. Replace the drive Change the card or board that has the drive's controller.
0560h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0580h	DOS Memory Allocation Error.	<p>The SCSI diagnostic does not have enough memory to run. This is generally caused by having multiple types of SCSI controller in the system--for instance, Adaptec, Symbios, and NetRAID. Each controller type requires a separate driver to be loaded in memory.</p> <p>Reduce the number of different types of SCSI controller active in the system--either by disabling internal controllers via Setup, or by removing any plug-in SCSI controllers, or by removing all NetRAID cards. Then rerun the test.</p>
0590h	SCSI command not supported by this device.	The device you are testing does not support the SCSI commands required by this diagnostic. If the device is an HP-supported device, report the error to an HP Customer Care Center.

Misc Tests

The Misc Test Menu includes testing of the serial port with a series of tests designed to ensure complete functionality is present. A similar specific set of tests is present for parallel ports.

Code	Description	Recommended Action
0601h	Serial Port Test Failed	Possible system board failure.
0602h	Interrupt identification register test failed.	Possible system board failure.
0603h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0604h	Line status register test failed at port XXXXh.	Possible system board failure.
0605h	Interrupt activation test failed at port XXXXh.	Possible system board failure.
0606h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0607h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0608h	FIFO register test failed at port XXXXh.	Possible system board failure.
0609h	FIFO trigger level test failed at port XXXXh.	Possible system board failure.
0610h	FIFO character timeout indication	Possible system board failure.

Code	Description	Recommended Action
	test failed at port XXXXh.	
0611h	FIFO data transfer test failed at port XXXXh.	Possible system board failure.
0612h	Baud rate speed test failed.	Possible system board failure. If the test is running on a 16650 UART, make sure that the clock frequency selected in the menu matches the jumper settings on the card.
0613h	Infrared Register test failed at port XXXXh.	Possible system board failure.
0614h	Infrared Interrupt ID test failed at port XXXXh.	Replace the system board
0615h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0616h	Infrared Line Status test failed at port XXXXh.	Replace the system board
0617h	Infrared Data Transfer test failed at port XXXXh.	The test indicates that the system board is not working properly. Contact your support provider for more details.
0701h	Parallel Port Test Failed	Possible system board failure.
0702h	IRQ Activation test failed at port XXXXh.	Possible system board failure.
0704h	A register Write/Read test failed at port XXXXh.	Possible system board failure.
0705h	A register FIFO test failed at port XXXXh.	Possible system board failure.
0706h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0707h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0708h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0801h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0802h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0803h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0804h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0805h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0806h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0810h	Speaker test failed	Make sure the Speaker is properly connected. Run the test again. If it fails, replace the drive. Replace the Speaker if it fails this test repeatedly.
0811h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0812h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0813h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.

Code	Description	Recommended Action
0814h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0815h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0816h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.
0830h	DiagTools Error	Report error to HP Customer Care Center and get the latest version of DiagTools.

Video Test

The Video Test Menu includes functional exercising of the video memory.

Code	Description	Recommended Action
0900h	Video adapter memory read or write test failed	<ol style="list-style-type: none"> 1. Try another monitor. Rerun the test. 2. If the technical reference label or card on your NetServer shows a separate video board, change it. 3. If the test still shows failing condition, change the system board.

IDE CD-ROM

The IDE Tests include exercising of the CD-ROM tray response, data, and audio if present.

Code	Description	Recommended Action
0A00h	No CD in drive.	<ol style="list-style-type: none"> 1. Insert a different data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A01h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0A02h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0A03h	Sequential Data Read Test Failed.	<ol style="list-style-type: none"> 1. Insert a different data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A04h	Sequential Data Test Failed. No CD in Drive.	<ol style="list-style-type: none"> 1. Insert a different data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A05h	Play test failed at Drive x in Sector y.	<ol style="list-style-type: none"> 1. Insert a different data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A06h	Random data test failed. No CD in drive.	<ol style="list-style-type: none"> 1. Insert a data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A07h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.

Code	Description	Recommended Action
0A08h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0A09h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0A10h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0A11h	Data Integrity test failed.	<ol style="list-style-type: none"> 1. Insert a different data CD in the drive. 2. Check the cable between the CD and its controller. 3. Change the CD drive. 4. Change the board where the controller for the CD drive is located.
0A12h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C01h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C02h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C03h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C04h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C05h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C06h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
0C07h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.

Multiprocessor Test

This test works on Multiprocessor systems only. This test detects all the processors in the system and then checks if all the processors are able to communicate among themselves. It also checks ability to access the system memory and devices concurrently.

Code	Description	Recommended Action
1000h	Multi Processor Failure. Processors don't have unique IDs.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1001h	Multi Processor Failure. Processor X failed to interrupt	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card.

Code	Description	Recommended Action
	processor X.	<ol style="list-style-type: none"> 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1002h	Multi Processor Failure. IPI physical mode test failed on processor X.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1008h	Multi Processor Failure. MPI arbitration test failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1009h	Multi Processor Failure. Cache coherency test failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Ah	Multi Processor Failure. Memory consistency test	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card.

Code	Description	Recommended Action
	failed.	<ol style="list-style-type: none"> 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Bh	Multi Processor Failure. I/O access test failed on processor X at port XXXXh.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Ch	Multi Processor Failure. Memory map I/O access test failed on processor X at address XXXXXXXXh.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Dh	Multi Processor Failure. Application processors were not detected.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Eh	Multi Processor Failure. CPU speed error	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card.

Code	Description	Recommended Action
		<ol style="list-style-type: none"> 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
100Fh	Multi Processor Failure. CPU count error	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1010h	Multi Processor Failure. Configuration Access Mechanism Test Failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1011h	Multi Processor Failure. TagRAM Control Register Read Failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1012h	Multi Processor	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference

Code	Description	Recommended Action
	Failure. TagRAM Control Register Write Failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1013h	Multi Processor Failure. Value read back from TagRAM Control Register is not same as the value written.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1014h	Multi Processor Failure. L2 cache Commands Test Failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1015h	Multi Processor Failure. The pattern read back from the cache is not same as the pattern written.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart.

Code	Description	Recommended Action
		9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1016h	Multi Processor Failure. Tag Write with Data Read command failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1017h	Multi Processor Failure. Tag Read with Data Read command failed.	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1030h	Multi Processor Failure. L2 Cache Pattern error	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated. 7. Check system fans. If overheating occurs, chip may shut down. 8. If the system ran with temperature high, let it cool for 30 minutes, then restart. 9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.
1031h	Multi Processor Failure. L2 Cache Parity error	<ol style="list-style-type: none"> 1. Reduce the system to its minimum configuration per the technical reference label or card. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated. 5. Make sure the CPU chip is seated. (Take ESD precautions.) 6. Make sure the memory elements (DIMMs) are properly seated.

Code	Description	Recommended Action
		<p>7. Check system fans. If overheating occurs, chip may shut down.</p> <p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.</p>
1081h	Multi Processor Failure. No Active External Cache Memory.	<p>1. Reduce the system to its minimum configuration per the technical reference label or card.</p> <p>2. Make sure the system board is seated.</p> <p>3. Check the seating of the voltage regulator module (VRM) if present.</p> <p>4. Be sure the processor board (if any) is seated.</p> <p>5. Make sure the CPU chip is seated. (Take ESD precautions.)</p> <p>6. Make sure the memory elements (DIMMs) are properly seated.</p> <p>7. Check system fans. If overheating occurs, chip may shut down.</p> <p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.</p>
1082h	Multi Processor Failure. No extended memory available from HIMEM.SYS.	<p>1. Reduce the system to its minimum configuration per the technical reference label or card.</p> <p>2. Make sure the system board is seated.</p> <p>3. Check the seating of the voltage regulator module (VRM) if present.</p> <p>4. Be sure the processor board (if any) is seated.</p> <p>5. Make sure the CPU chip is seated. (Take ESD precautions.)</p> <p>6. Make sure the memory elements (DIMMs) are properly seated.</p> <p>7. Check system fans. If overheating occurs, chip may shut down.</p> <p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.</p>
1083h	Multi Processor Failure. No detected extended memory.	<p>1. Reduce the system to its minimum configuration per the technical reference label or card.</p> <p>2. Make sure the system board is seated.</p> <p>3. Check the seating of the voltage regulator module (VRM) if present.</p> <p>4. Be sure the processor board (if any) is seated.</p> <p>5. Make sure the CPU chip is seated. (Take ESD precautions.)</p> <p>6. Make sure the memory elements (DIMMs) are properly seated.</p> <p>7. Check system fans. If overheating occurs, chip may shut down.</p> <p>8. If the system ran with temperature high, let it cool for 30 minutes, then restart.</p> <p>9. If system repeatedly shows this error, replace the CPU chip or board, as appropriate.</p>
1201h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1202h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.

Code	Description	Recommended Action
1203h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1205h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1206h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1301h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1302h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1303h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1304h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1305h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1306h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1312h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1500h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1501h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1502h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
1503h	DiagTools Error	Download a new version of DiagTools from the HP web site and run it. If you get the same error, call the HP Customer Care Center.
8000h	Fails in executing an external program	<ol style="list-style-type: none"> 1. Make the DiagTools Diskettes again. Rerun DiagTools. 2. Make sure the system board is seated. 3. Check the seating of the voltage regulator module (VRM) if present. 4. Be sure the processor board (if any) is seated.

A Test Menus

Basic Test Menus

NOTE	DiagTools will run a different selection basic tests depending upon the type of hardware components present.
-------------	--------------------------------------------------------------------------------------------------------------

Listed below is an example of the basic test set run each time DiagTools is used:

System Test Script

- Processor Test
- DMA Controller Test
- Interrupt Controller Test
- Timer Test
- Real Time Clock Test
- CMOS Validity Test
- MMX Test
- Multi Processor Test
- DMI Test

Memory Test Script

- BIOS ROM Test
- Parity Test
- Address Test
- Refresh Test
- Data Bus Test
- Cache Memory Test
- L2 Cache Memory Test

Keyboard Tests

- Keyboard Controller Test
- Keyboard Clock Test
- Keyboard Data Line Test

SCSI Test Script

- SCSI Disk Buffer Test
- SCSI Disk Read Test

Miscellaneous Test Script

- DMI Test
- Serial Port Test
- Parallel Port Test

DiagTools may run additional basic tests for optional components which may be installed in some HP NetServers.

Advanced System Tests

You may select Advanced System Tests by pressing F2 after completion of Basic Tests. When advanced tests are run, the following menus are available:

Advanced System Test Menus

- System
- Memory
- IDE
- FDD (Flexible Disk Drive)
- SCSI
- KBD (Keyboard)
- Video
- Misc (Miscellaneous)
- Batch

B Test Descriptions

Test Descriptions

System Test Menu

The tests included in the System Test Menu exercise the basic functionality of the CPU, ensuring that the registers, the flags, and both the basic and protected instructions work as expected. It includes tests of the chip speed as well as the operation of integrated controllers for coprocessing, DMA, interrupts, and the timers and clock functionality. Specialized tests for PCI devices, Plug and Play devices, and MMX instructions are also included.

Basic Functionality Test

This test checks the 32-bit registers, 32 bit flags, and specific processor instructions.

CPU Protected Mode Test

This test checks if all protected mode special instructions are working properly.

Processor Speed Test

This test determines and displays the CPU clock speed. If you provide a specific clock speed to compare it with, this test will report error if the expected speed and detected speed does not match.

Coprocessor Test

The tests include loading and storing the control and status word, data transfer between CPU and NPX, and exception checking while the data transfer is in progress.

DMA Controller Test

The DMA Controller Test is a series of read/write tests on the memory address and page registers of DMA controllers 1 and 2.

Interrupt Controller Test

This test performs a series of read/write tests on interrupt mask registers of the interrupt controller. It also checks for stray interrupts.

Timer Test

This test checks the accuracy of the timer count by calibrating it against the periodic interrupt of the real time clock (RTC).

Real Time Clock Test

This test checks the accuracy of the real time clock by calibrating it against the system timer. It also does a pattern test on RTC.

CMOS Validity Test

This test checks the condition of AT CMOS RAM (non-volatile memory). The test assures that the CMOS battery is in good condition and that the CMOS RAM checksum is correct.

Speaker

This tests checks the functionality of your Speaker by playing a short song.

PCI System Test

This test scans the PCI bus and finds out all the PCI devices. Then it uses alternative procedures to find out the same device. It checks for all valid combinations of PCI bus number, device number and function number. It also checks validity of PCI BIOS32 service directories, and the generation of PCI special cycles.

Multiprocessor Test

This test works on Multiprocessor systems only. This test detects all the processors in the system and then checks if all the processors are able to communicate among themselves. It also checks ability to access the system memory and devices concurrently.

Plug and Play Test

This test works on Plug and Play systems only. This test detects all Plug and Play devices and checks if they are configured properly. It then does a pattern test on each Plug and Play device's configuration space.

MMX Test

This test runs only on CPUs with MMX made by Intel and AMD. MMX specific registers, instructions and arithmetic operations are tested. Matrix transpose test is carried out to assess MMX performance.

DMI Test

This test will verify that the DMI functions will return the DMI information correctly.

Memory Test Menu

The Memory Test Menu includes tests that exercise all aspects of the storage media and key memory locations of the system. The functionality of the boot ROM, parity over the whole memory space, patterns, addressing, refresh functions, and the data bus have specific tests included in the menu. Specialized testing for memory caching, performance, and the proprietary Pentium II L2 Cache are included.

BIOS ROM Test

The BIOS ROM test checks the data path of the BIOS ROM and also assures that the ROM is write-protected.

Parity Test

This test reads all memory locations and checks for parity errors in the entire memory space. When the CPU accesses a memory location that has a parity error, a bit is set in a specific register and an NMI (non-maskable interrupt) is generated. DiagTools' parity test captures the interrupt so that the system does not crash even when a parity error is encountered. It then reads the entire memory region for errors.

Pattern Test

This test performs a comprehensive read/write test on entire memory space, using worst-case bit patterns such as AA55. This test will identify most memory problems.

Extended Pattern Test

This test performs a comprehensive write/read test on extended memory using several different scientifically proven worst-case test patterns.

Walking 1's Test

Walking 1's test writes a walking 1s pattern in memory, i.e. it first writes 1, then 2,4,8,16 etc., so that in the written data, only one bit is on at a time.

Walking 0's Test

Walking 0's test writes a walking 0s pattern in memory, i.e. it first writes FE, then FD,FB etc., so that in the written data, only one bit is 0 at a time.

Random Memory Test

This test uses a pseudo-random number generator to generate random addresses spread over the whole memory area, and then writes random data to the location, reads it back and compares the data read with the data written.

Address Test

The address test writes a value in one location of memory and then scans the entire memory to find out a reflection of that value.

Refresh Test

This test makes sure the refresh circuitry is functioning and measures the refresh interval. An error is reported if this interval is not within +/- 5 percent of the standard refresh interval of 15 microseconds.

Data Bus Test

This test will check the data bus for a short.

Cache Memory Test

If DiagTools detects cache memory in the system, it will display the external cache size and test all of it.

Pentium II L2 Cache Test

The Pentium II processor provides a cache configuration mechanism for accessing the L2 cache controller and data RAM. Supported L2 Commands may be initiated on the cache bus via this mechanism and Tag, state, data, and ECC bits may be written to the L2 and read back.

If DiagTools detects Pentium II processor in the system and the L2 cache is enabled, it performs several tests to verify that the cache configuration mechanism, cache controller, TagRAM, data RAM and the L2 commands are performing as expected.

FDD (Flexible Disk Drive or Floppy) Tests

Flexible Disk Drives are tested for rotational speed, read/write ability (both random and sequential), elevator, and seek channel.

Drive Speed Test

This test determines the rotational speed of the floppy drive.

Random R/W Test

This test checks the random seek, read, and write capability of the floppy drive. The diskette used in this test must be formatted.

Sequential R/W Test

This test checks the sequential seek, read, and write capability of the floppy drive. The diskette used in this test must be formatted.

Elevator seek Test

This test verifies the track-to-track seeking capability of the floppy drive. This test is sometimes called a butterfly test.

Disk Change Line Test

This test verifies the change line capability of the floppy drive.

KBD (Keyboard) Tests

The KBD Test Menu includes testing the keyboard controller, scanning, LEDs, clock line, and data line for proper functionality.

Controller Test

The controller test issues a Self Test command to the keyboard controller and checks for an OK response. Then it sends the diagnostic echo command to the keyboard and waits to get back the echo from the keyboard.

Keyboard LED Test

This test checks the functionality of the keyboard LED lights - Num Lock, Caps Lock, and Scroll Lock.

Keyboard Clock Line Test

The Keyboard Clock Line Test verifies that the keyboard clock line is working properly (it is not stuck at high or low).

Keyboard Data Line Test

The Keyboard Data Line Test verifies that the keyboard data line is working properly (it is not stuck at high or low).Another

SCSI Device Tests

The SCSI Test Menu exercises all SCSI devices (disk drives, CD-ROM drives, and tape drives) with buffer, self-test, and read tests; it also includes functions unique to a particular device, including play, and rewind.

SCSI Disk Tests**SCSI Disk Buffer Test**

This test writes data, reads back and compares with the data written to the internal buffer on the SCSI Disk. The media is not accessed so data remains unaffected.

SCSI Disk Read Test

This test reads logical blocks from the SCSI disk. If the starting logical block number and end logical block number fields are not specified, the test starts reading from block 0 and terminates at the last block of the disk.

SCSI Tape Unit Tests**SCSI Tape Buffer Test**

This test writes data, reads back and compares with the data written to the internal buffer on the SCSI Tape Unit. The media is not accessed so data remains unaffected.

SCSI Tape Self Test

This will send Self Diagnose command to SCSI Hard Tape.

SCSI Tape Rewind Test

This command rewinds the SCSI tape using the SCSI rewind command.

SCSI CDROM Tests**SCSI CDROM Buffer Test**

This test writes data, reads back and compares with the data written to the internal buffer on the SCSI CDROM.

SCSI CDROM Self Test

This will send Self Diagnose command to SCSI CDROM. A CD platter must be present for this test to work.

SCSI CDROM Read Test

This test reads logical blocks from the SCSI CDROM. If the starting logical block number and end logical block number fields are not specified, the test starts reading from block 0 and terminates at the last block of CDROM. This test will fail if an audio CD is inserted inside the drive.

Misc Tests

The Misc Test Menu includes testing of the serial port with a series of tests designed to ensure complete functionality is present. A similar specific set of tests is present for parallel ports.

Serial Port

A maximum of four serial ports (COM1 through COM4) are tested. All parameters i.e. number of data bits, number of stop bits, parity type etc. can be individually selected for each port. The tests that are performed on the serial ports include: Register test, Interrupt ID test, Internal loopback test, Line status test, Modem control register test, Data transfer test (at baud rates from 300 BPS to 115.2KBPS and FIFO test.

Parallel Port

A maximum of three parallel ports (LPT1 through LPT3) are tested. The test parameter window asks the user whether a printer or a loopback plug is connected. If these are not connected, only the register read/write test is performed. Otherwise, the following tests are performed: Register test, IRQ activation test, Pattern printing, Bold letter printing, Compressed mode printing, Printer form feed test, and ECP test.

Video Test

The Video Test Menu includes functional exercising of the video memory.

Video Memory Test

The Video Memory Test checks the base 256k of video memory for integrity by performing a memory pattern test.

IDE CD-ROM

The IDE Tests include exercising of the CD-ROM tray response, data, and audio if present.

IDE CD Data Test

This test reads logical blocks from the CDROM. If the starting logical block number and end logical block number fields are not specified, the test starts reading from block 0 and terminates at the last block of CDROM. This test will fail if an audio CD is inserted inside the drive.

C Batch Menu

Batch Menu

The Batch Menu allows users to specify what tests to run as well as how many times to repeat a particular test.

Edit Batch Parameters

Selecting this option is the same as pressing <F2> from the main menu. This option allows you to specify different groups of parameters: Parameters for all tests, Repeat Counts, and Batch mode parameters. Repeat count applies to the count each test will be run on a per pass bases. For example if you had the Serial Port Test's repeat count = 5, and you had the total passes = 3, the test would run 15 times.

Load Batch Parameters

Selecting this option is the same as pressing <F3> from the main menu. This option allows you to load previously saved batch parameters in an ASCII file with an .INI file extension. The parameters that are loaded include information on the tests that have been selected for batch mode execution, the batch mode run time option (time bound, pass bound, or continuous), the error logging option, the error log file name and heading, and other test parameters.

Save Batch Parameters

Selecting this option is the same as pressing <F4> from the main menu. This option allows you to save your current configuration parameters in an ASCII file with an .INI file extension. These parameters can later be loaded and executed from within DiagTools or from a command line as follows -

AMIDIAG /R AMIDIAG.INI

With the /R parameter, DiagTools will automatically execute the batch, then return to the command line once the batch has been completed. The parameters that are saved include information on the tests that have been selected for batch mode execution, the batch mode run time option (time bound, pass bound, or continuous), the error logging option, the error log file name and heading, and other test parameters. Please note that a test must be selected for parameter information to be saved on that test.

Run Batch

Selecting this options is the same as pressing <F10> from the main menu. This option allows you to run all of the selected tests in batch mode.

Batch Help

This option will display detailed messages on batch function.

Index

A

Advanced System Tests
 menus, 68

B

basic tests
 memory, 67
 miscellaneous, 67
 SCSI, 67
 system, 67
 what is included, 67

C

capability of DiagTools, 2

D

diagnostic tools
 purpose, 1
DiagTools
 problems, 9
 when to use, 5
Diskette
 How to Make a Boot Diskette, 6
 Rebooting with DiagTools, 9

E

Error Code Viewer, DiagTools, 14, 21
error messages
 description of format, 3
 flexible disk or floppy, 46
 keyboard, 49
 memory, 41
 multiprocessor, 58
 port and speaker, 55
 processor, 23
 SCSI, 50
 system, 23
 video, 57
Error Messages
 Categories, 23

I

interfaces

graphical, 9

K

keyboard tests, 67

O

off-line diagnostic tests, 2, 5, 9, 18
 limitations of, 3

R

Remote Management
 Using DiagTools Remotely, 6, 17
Running DiagTools
 graphical mode, 9

S

Setup utility
 Flexible Disk Controller, 9
 Start from Flexible Disk, 9
Support Ticket, 13, 14, 20, 21
system requirements, 1
System Test, DiagTools, 12, 19
systems supported, 1

T

test descriptions
 floppy, 46, 71
 IDE CD-ROM, 57, 73
 keyboard, 49, 71
 memory, 41, 70
 multiprocessor, 58
 port and speaker, 55, 73
 SCSI devices, 50, 72
 system, 23, 69
 video, 57, 73
Test Descriptions, 23
troubleshooting
 how to begin, 5

W

Where to Begin, 5