

Xerox Network Services

Network Administration Library

Test and Diagnostic Tools

Basic Network Troubleshooting

Network Administration Library Basic Network Troubleshooting: Test and Diagnostic Tools

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1.

Introduction

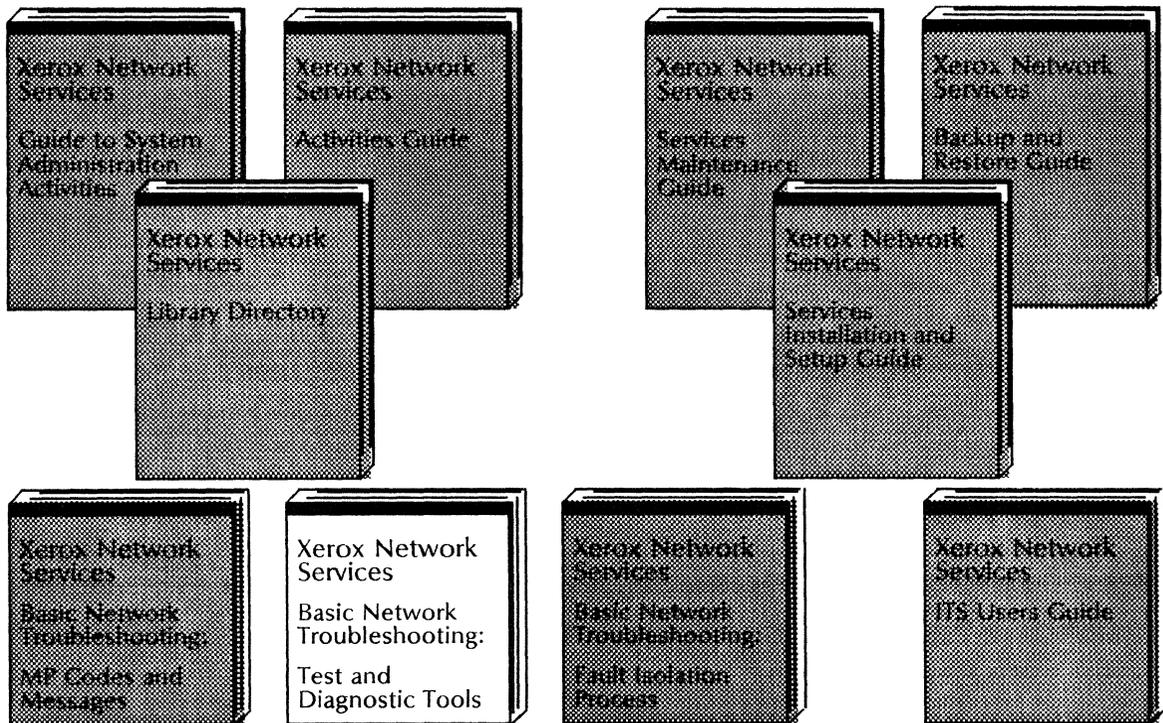
Test and Diagnostic Tools contains diagnostic and test procedures you use to clarify and solve problems with your network.

Each procedure provides analysis of the test results. If further action seems necessary, the procedure directs you to *MP Codes and Messages* or to *Fault Isolation Process*.

Network Administration Library organization

Test and Diagnostic Tools is one of the three troubleshooting books that make up *Basic Network Troubleshooting* in the Network Administration Library, as shown in Figure 1-1.

Figure 1-1. Network Administration Library organization



Basic network troubleshooting

Basic Network Troubleshooting consists of three books:

- *MP Codes and Messages*
- *Fault Isolation Process*
- *Test and Diagnostic Tools*

These books are designed to help you:

- identify and locate a network services problem
- clearly describe the problem
- solve the problem
- prepare to contact Service or the Systems Customer Support Center

Identifying a problem

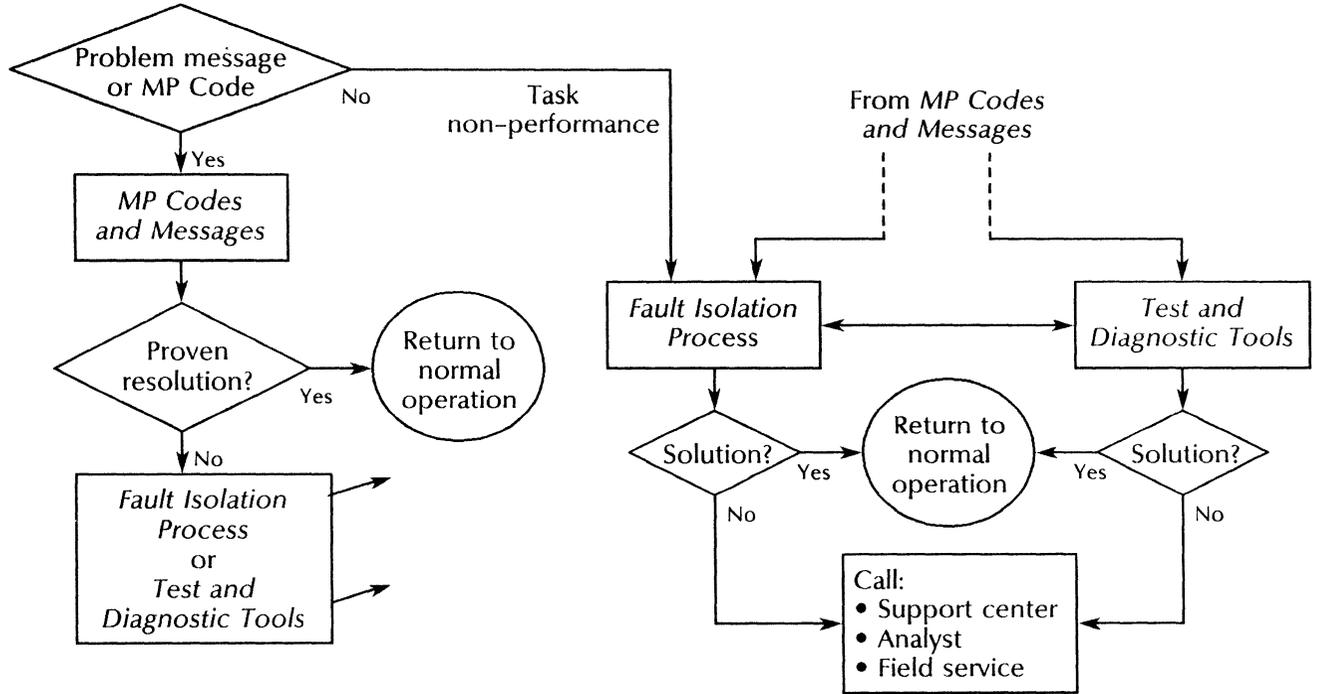
As System Administrator, your tasks include identifying a problem, locating its source, solving the problem, and keeping clear and accurate records of both the problem and the solution. To identify a problem, you first analyze its indicators or symptoms. There are three types of indicators:

- Maintenance panel codes
- Problem messages
- Task non-performance

Maintenance panel codes and problem messages may include symptoms of task non-performance.

Figure 1-2 shows the basic strategies you can use to research a problem. You can research each problem message and MP code in *MP Codes and Messages*. The listing in *MP Codes and Messages* always directs you to a solution. You may need to use both *Fault Isolation Process* and *Test and Diagnostic Tools* to further pinpoint and solve the problem.

Figure 1-2. Basic research strategies



You may find evidence of one or more problem indicators. You need to record and analyze all indicators to solve the problem. Occasionally, you could receive false indicators. For example, an error message may appear even though the task was performed. Or, the task is not performed and a message does not appear to indicate this.

As you identify the problem, it is important that you record all indicators on the Problem Report Form. This form is located in the *Guide to System Administration Activities*. Make copies of the Problem Report Form and record any difficulties with the network that require research. Store the completed Problem Report Forms in the *Activities Guide*. The completed forms create a permanent record of the operational history of your system.

Problem messages

Problem messages may display on the server terminal, banner sheet, or workstation.

Messages that display at the server terminal describe network hardware and software problems. Messages that appear on a banner sheet may describe problems in printing a document. Messages that display at a ViewPoint or other workstation describe problems related to the workstation's interaction with network services, ViewPoint Software, and the workstation hardware.

Always refer to *MP Codes and Messages* to research a problem message before analyzing it as a symptom of task non-performance in *Fault Isolation Process* or performing a procedure in *Test and Diagnostic Tools*.

Maintenance panel codes

MP codes display on the maintenance panel located at the front of the server and are indicators of hardware operation. They can indicate normal operation, a software loading sequence, a hardware problem, or identify the diagnostics test that is running.

Always research an MP code in *MP Codes and Messages*. You will be directed to a solution, which may include calling Service or the Systems Customer Support Center.

Task non-performance

Since you may not see actual evidence of task non-performance, your records should include a complete description of the circumstances surrounding the attempted task. Specifically, list what you tried to do and how the task failed.

Solving a problem

After you have identified a problem, you need to find the most direct solution to it.

You can quickly solve most problems by noting the MP code number or message, referring to its listing in *MP Codes and Messages*, and performing the steps described.

If your actions do not solve the problem, you are directed to perform a procedure in this book or to conduct research in *Fault Isolation Process*.

Test and Diagnostic Tools includes procedures for diagnosing a problem and for recovery. Test results are a valuable source of information and may provide additional problem indicators. Based on the results, it may be necessary to further analyze the indicators through *Fault Isolation Process*. Be sure to record all results on the Problem Report Form.

Fault Isolation Process provides general and specific techniques to isolating a problem based on symptoms you observe and other diagnostic findings. Always record the problem, the actions taken, and the results on the Problem Report Form.

Documentation conventions

These conventions are used in *Test and Diagnostic Tools* to help you recognize information.

 This symbol means “press RETURN.” When you see it after a procedural step, press the RETURN key on the terminal keyboard.

BREAK Words appearing in all capital letters represent the keys or switches on your equipment.

<service name> Words appearing in angled brackets represent system-supplied information.



WARNING: Warnings appear immediately before any action that may be physically harmful to you or your equipment. Make sure you understand the warning before you perform the action.



CAUTION: Cautions appear immediately before any action that may destroy the data stored on your network. Make sure you understand the potential impact of the action before you perform it.



Notes are helpful hints that help you perform a task or understand the text.



This symbol means that you can perform the procedure from a workstation using Remote System Administration (RSA). If you need to record any information while performing the procedure, you can use the Make Document or Make Screen feature.

2.

Preliminary diagnostics

This chapter contains the boot diagnostics procedure you perform to analyze hardware problems with the medium capacity 8000 (10, 29, and 42 Mb) server drives, the large capacity 8000 (80 and 300 Mb) server drives, and the low capacity 8090 (25 and 85 Mb) server drives. These diagnostics are run automatically and can help you analyze problems with the:

- Processor hardware components – including the central processor, input/output processor, disk controller, memory, and maintenance panel
- Server – terminal connection
- Server – Ethernet connection

If the indicators are maintenance panel codes or messages, first try to solve the problem using *MP Codes and Messages*.

If the problem persists, perform the procedure “Running boot diagnostics” in this chapter.

Procedure

This section contains this procedure for analyzing 8000 and 8090 server hardware problems:

Running boot diagnostics

Use this procedure to verify the operation of the maintenance panel functions, server components, server processor, memory boards, and fixed disk drives.

Running boot diagnostics

The boot diagnostics include pre-boot and boot tests. The boot diagnostic tests verify the operation of the server processor, memory boards, and fixed disk drives.

You can run diagnostics automatically from a fixed disk and from the Boot Service. You can run diagnostics manually from a floppy disk or cartridge tape.



Boot diagnostic tests are also referred to as “Boot-5 diagnostics.”

The boot diagnostic tests isolate the cause of a system crash related to a fixed disk. The procedure also tries to fix a physical volume problem which may have resulted from a problem with the storage medium. If boot diagnostics cannot fix the problem, it displays various indicators that alert you to call the Systems Customer Support Center.

Boot diagnostics only test the disk controller for 8090 basic and high capacity disks.



Always perform boot diagnostics when you suspect a hardware problem with the fixed disk. Do not call the Systems Customer Support Center unless this procedure fails.

The tests take about 4 minutes and 15 seconds to run. They may run over 3 hours if they detect a problem.

Prerequisites

- Have handy the appropriate diagnostic medium for your configuration:
 - The floppy disk labeled “8000 Series Rigid Disk Diagnostics (10, 29, and 42 Mb)”
 - The floppy disk labeled “8000 Series Rigid Disk Diagnostics (80 and 300 Mb)”
 - The cartridge tape labeled “8090 Server Diagnostics”
- Have handy the Problem Report Form.

Step-by-step

1. Press and release the Boot Reset button.
2. When the maintenance panel displays 0399, insert the appropriate diagnostic medium into the server drive:
 - For 8000 server medium capacity drives, use the floppy disk labeled “8000 Series Rigid Disk Diagnostics (10, 29, and 42 Mb).”

- For 8000 server large capacity drives, use the floppy disk labeled “8000 Series Rigid Disk Diagnostics (80 and 300 Mb).”
 - For 8090 server drives, use the cartridge tape labeled “8090 Server Diagnostics.”
3. Boot the server:
- a. Hold down the Boot Reset (B RESET) and Alternate B (ALT B) buttons at the same time.
 - b. Release the Boot Reset (B RESET) button.
 - c. When the maintenance panel displays 0005, release the Alternate B (ALT B) button.

Messages display on the server screen to indicate what diagnostic test has completed. The MP code displayed depends on the size of the fixed disk.

```
> Fault Analysis
MP code: <number>
Examining physical volume
> Media Scan
> List New bad Pages
No new pages
Successful completion
>
```

Wrap-up

When you see the message “Successful completion,” the diagnostic test procedure has finished. The maintenance panel displays:

- 1199 for 10 Mb drives
- 1799 for 29 Mb drives
- 1499 for 42 Mb drives
- 4799 for 25 Mb drives
- 5799 for 85 Mb drives

Record the date and results of the diagnostic test procedure on the Problem Report Form.

Test indicators

When the diagnostic test procedure identifies a problem, the maintenance panel alternately displays the test numbers or report code and an error code. The display eventually stops at the error code. Look up the error code in *MP Codes and Messages*.

- A problem during the memory test (MP code in the 0600s) causes the test number to remain on the maintenance panel while an error log is created. When the error log is completed, the maintenance panel displays MP code 0699.

- A problem during the fault analysis test causes the failing MP code to display on the screen as well as on the maintenance panel. The screen also shows the prompt “Loop until error? Y/N.”
- If the diagnostic test media scan test finds bad pages not listed in the bad page table, the screen displays the page numbers with a warning message to contact the Systems Customer Support Center.

3. Online diagnostics - 8000 and 8090 servers

This chapter contains the online procedures for both the 8000 and 8090 servers. Online procedures are stored on the server's fixed disk and are available through the **Test** command.

8000 and 8090 server procedures

This section contains all common 8000 and 8090 procedures. The procedures related to the **Floppy** command, the **Cartridge Tape** command, and the **High Capacity Tape** command are detailed in separate sections that follow the common procedures.

This section contains these procedures for testing the server:

Accessing online diagnostics

Use this procedure to access all available Test commands.

Listing registered servers

Use this procedure to list all the servers registered in a Clearinghouse database.

Showing Ethernet statistics

Use this procedure to display network statistics to diagnose server communication problems.

Testing a Communication Interface Unit

Use this procedure to check the operation of a 873 Communication Interface Unit (CIU).

Testing an autodialer

Use this procedure to check the operation of an autodialer.

Testing an internetwork communications path

Use this procedure to check the state of an internetwork communications path.

Testing an RS232C port

Use this procedure to check the operation and performance of an RS232C port.

Accessing online diagnostics

Use this procedure to enter the Test context and access the commands you use to run online diagnostics.

Prerequisite

Have handy the Problem Report Form.

Step-by-step

1. Log on and enable.
2. Type **Test** ↵.

Test!

3. Type **?** ↵.

If you are using an 8000 server, you see these commands:

CIU, Dialer, Echo, Floppy, List, RS232C, Show

If you are using an 8090 server, you see these commands:

Cartridge, CIU, Dialer, Echo, List, RS232C, Show

If you are using an 8090 high-capacity server, you see these commands:

Cartridge, CIU, Dialer, Echo, High, List, RS232C, Show

Wrap-up

Now you can perform any of the procedures in this chapter.

Listing registered servers

Use this procedure to identify all servers registered in a Clearinghouse Service domain. The list includes server names, descriptions, and addresses (in decimal, octal, and hexadecimal format). You can use this information to select a destination server for the echo test you run during the procedure "Testing an internetwork communications path."

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. Type **List Servers** **↵**.

Pattern:

2. Type the exact server name or a pattern to display a specific list of servers and press RETURN. Use the pattern to specify a particular Clearinghouse organization or domain and organization. The defaults are the local domain and organization.

```
Pattern: *:OurDomain:OurOrganization
Servers matching " *:OurDomain:OurOrganization"
Press break key to cancel.
Enquiring Network Servers form Clearinghouse....
Servers in OurDomain:OurOrganization
< name > ( < description > )
    = < addresses >
Done.
```

Wrap-up

When you see the message "Done," the listing procedure is complete. Record the information on the Problem Report Form.

Showing ethernet statistics

Use this procedure to analyze relative communication activity of an individual server by displaying various network statistics. Before monitoring a server's communication activity, use this procedure to reset statistics counters to zero.



The system cannot gather incremental network statistics over separate remote executive (Remote System Administration or RSA) sessions. The system can gather statistics only since the statistics counter was reset during a particular remote session. When you use RSA to reset the statistics counter, the system records baseline statistical information with the current executive and uses it to calculate incremental statistics. When you end the session, the baseline information is lost because the remote executive no longer exists.

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. Type **Show Ethernet Statistics** .

Interval choices

- 1 Statistics since server was booted
- 2 Incremental statistics since reset
- 3 Reset statistics counters

Enter choice number:

2. Type the number for the statistics option you want \leftarrow].
 - 1 Displays statistics of network activity since the server was last booted.
 - 2 Displays statistics of network activity since the statistics counters were reset. Regularly reset the counters to have a consistent period of server activity as a basis for your analysis.
 - 3 Resets statistics counters to zero.

Statistics at < date > < time > < interval choice >
< # > days, < # > hours, < # > minutes, < # > seconds, since < date > < time >
< ---. statistics .--- >
Done
Test >

Wrap-up

When you see the message "Done," the listing is complete.

Test indicators

This procedure may display the following statistics. Any problems identified are noted in a message. See the entry level chapter of *Fault Isolation Process* for problem solving guidelines.

Bad Alignment, CRC OK -- The number of packets received that were not aligned on a byte boundary; the cyclic redundancy check (CRC) was normal. A number more than 5 percent of the packets received may indicate a problem.

Bad CRC, Bad Alignment -- The number of packets received with bad alignment; the cyclic redundancy check (CRC) was abnormal, usually due to a collision. A number more than 5 percent of the packets received (particularly if the count does not follow collisions) may indicate a problem.

Bad Receive Status -- The total number of packets received with bad status, which may include bad CRC, bad alignment, packet too long, and receive overrun. A number more than 5 percent of the packets received may indicate a problem.

Bad Send Status -- The number of packets not transmitted due to an excessive number of collisions or because the sending hardware could not maintain a transmission speed of 10 megabits per second. A number more than 5 percent of the packets sent may indicate a problem.

Echo server packets echoed -- The number of packets echoed by the built-in echo server.

Echo server bytes echoed -- The number of 16-bit words echoed by the built-in echo server.

Ethernet Quiet -- The number of 5-second periods during which no packet passed over the network. Normally, packets are always passing over the network.

Hardware Receive OverRun -- The number of packets that could not be received because the system is too busy. A number more than 5 percent of the packets received may indicate a problem.

Hardware Send UnderRun -- The number of packets not transmitted because the sending hardware was too busy and could not maintain a transmission speed of 10 megabits per second. A number more than 5 percent of the packets sent may indicate a problem.

Late Collision -- The number of packets in which a collision occurred during the latter part of the packet transmission. Generally, a late collision occurs because a station fails to identify that the network is busy. A number more than 1 percent of the packets sent may indicate a problem.

Packets Forwarded -- The number of packets the Internetwork Routing Service forwarded to other networks.

Packet longer than 600 bytes -- The number of packets received that are longer than the normal packet length. (The Ethernet specification has a 600 byte limit.) Identify the transmitter vendor. If the vendor is different from that expected or you cannot determine the vendor's identity, treat the condition as a problem.

Packets Received -- The number of packets, including broadcast packets, destined for this station and successfully received.

Packets Sent -- The number of packets transmitted successfully from the options board. This number does not indicate that the packets were actually transmitted to the network.

Packets Sent after <n> collision(s) -- The number of packets transmitted successfully after one or more collisions. This number indicates the amount of traffic the network is handling when all components are operating properly. Collisions commonly occur on a busy network. A number more than 10 percent of the packets sent for fewer than 50 stations on the network may indicate a problem.

Packets With Bad CRC -- The number of packets received showing a cyclic redundancy check (CRC) error. Normally this occurs due to a collision and the number will increase with an increased number of collisions. A number more than 5 percent of the packets received, especially if the count does not correspond to the number of collisions, may indicate a problem.

Software Receive Overrun -- The number of packets this station could not receive due to insufficient buffering. An overrun generally occurs when a station is too busy, especially during bursts of heavy traffic. An overrun number more than 5 percent may indicate a problem.

Stuck Output -- The number of packets not transmitted because the network appeared continuously busy for a 2.5-second period. A number more than 1 percent of the packets sent may indicate a problem.

Too Many Collisions -- The number of packets that could not be transmitted because of excessive collisions. A number more than 10 percent of the packets sent for fewer than 50 stations on a network may indicate a problem.

Words Forwarded -- The number of 16-bit words forwarded to other networks by the Internetwork Routing Service.

Words Received -- The number of 16-bit words, including broadcast packets, destined for this station and successfully received.

Words Sent -- The number of 16-bit words transmitted successfully.

Testing a communication interface unit



Use this procedure to check the operation of an 873 Communication Interface Unit (CIU).

CAUTION: Booting the CIU, which this procedure requires, causes any RS232C connections to be dropped. This may result in data loss if a line is in use. Boot the CIU only when its ports are not in use.

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. Type **CIU** \leftarrow .

Now manually boot the unit. The test will take 2 minutes.
Press Break key to abort.

2. Reset the CIU by turning the key on the front of the unit or by switching the power off and then on.

The following is the CIU's processor number:
< numbers >
The boot request was for run files.
The 873 will be booted.

Wrap-up

When you see the message "The 873 will be booted," the CIU test is complete. Record the date and test results on the Problem Report Form.

Test indicators

The message "No boot request was received within the time limit" indicates that you did not reset the CIU within a few minutes. Retry the operation.

Testing an autodialer

Use this procedure to check the operation of an autodialer. This unit is connected to the server's RS366 port or to an RS232C port on a Communication Interface Unit controlled by the server.

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. Type **Dialer** ↵.

Select dialer to be tested:

1 <name description>

2 <name description>

Enter choice number:

2. Type the number for the autodialer you want to test ↵.

Will you be calling an Auto-answer modem? (Y/N):

3. Type **Y** or **N** at the "Will you be calling an auto-answer modem?" prompt \Leftarrow .
Y Checks the auto dialer directly. **Continue with step 4.**
N Checks the auto dialer by calling a number you specify. **Skip to step 5.**

Enter the number of Auto-answer modem:

4. Type the number of the modem \Leftarrow .

Enter the number of a nearby telephone to be called:

5. Type the number of a nearby telephone \Leftarrow .

NOTE

Calling a nearby telephone tests the autodialer's dialing capability, but does not test its answer-back tone detection capability.

Wrap-up

When you see the message "Done," the test is complete. Record the date and test results on the Problem Report Form.

Test indicators

This message indicates that no autodialers are registered with the External Communication Service or that service is not started:

The Auto-dialer reports the Auto-dialer did not respond or is not present. Please check the ACU hardware.

Testing an internetwork communications path

Use this procedure to run the echo test, which checks the state of an internetwork's communication path. The path includes servers, Communication Interface Units (CIU's), networked 860, 6085, and 8010 workstations, and telephone lines.

For example, assume you suspect a problem with a communications path between servers. You can use this procedure to check the connection between the destination (receiving) server and the source (sending) server.

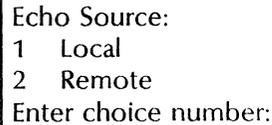
The echo test sends data packets of different sizes from the source test partner to the destination test partner. The test starts with the minimum packet size you can specify, gradually increasing the packet size to the maximum you specify, then repeats.

Prerequisites

- Suspect a problem with a network communications path.
- If you are running the echo test using the CIU as the test partner, ensure that the External Communication Service has booted the CIU.
- Perform the procedure “Accessing online diagnostics.”
- Use the **List Servers** command to identify possible destination partners.
- Have handy the Problem Report Form.

Step-by-step

1. Type **Echo** .



```
Echo Source:
1 Local
2 Remote
Enter choice number:
```

2. Type **1** or **2** to specify your echo source .
- 1** Indicates a local echo source.
- 2** Indicates a remote echo source.

Echo destination name or address:

3. Type the network address of the destination test partner and press RETURN. The domain and organization default to those of the partner server's name.

NOTE

Enter the name registered in the Clearinghouse Service or enter the network and host address. For workstations, you must enter the network address. You can enter addresses in decimal, octal, or hexadecimal notation. Examples of the standard notation (network number) (host address) are:

- Decimal: 1-345-64-128-241
- Octal: 2501B.364502361B
- Hexadecimal: 541H.3D284F1H

Display real-time feedback? (Y/N):

4. Type **Y** or **N** at the "Display real-time feedback?" prompt \leftarrow .
 - Y** The echo test displays intermediate results every 45 seconds.
 - N** Final results are displayed at the end of the test.

Data pattern:

- 1 Incrementing
- 2 All 0's
- 3 All 1's
- 4 Constant

Enter choice number:

5. Type the number for the data pattern you want the test to use ↵.

Enter constant value (0..255):

- a. If you selected constant for the data pattern, type the value and press RETURN. Otherwise, **continue with step 6**.

Minimum packet size in bytes (2..512): 2

6. Type the number for the smallest packet size you want the test to use ↵.

Maximum packet size in bytes (2..512): 512

7. Type the number for the largest packet size you want the test to use ↵.

Wait for response before sending next packet? (Y/N):

8. Type **Y** or **N** at the “Wait for response before sending next packet?” prompt ↵.

Y Sends each packet when you respond to a prompt.

N Sends each packet automatically, delaying each transmission by the value you enter.

The echo test parameters display immediately:

```
< date > < time > Echo test parameters
Local network address: < address >
Echo source: < existing >
Echo source is local.
Echo destination: < address >
Echo partners are on different networks
Data pattern: < pattern >
Minimum packet size in bytes: < number >
Maximum packet size in bytes: < number >
The test < will or will not > wait for a response before sending the next packet.
Echo test is started. Press Break key to stop.
```

NOTE

Press the BREAK key at any point to stop the echo test.

When the test is finished, the results are displayed:

Final Results:

< number > Total number of packets attempted

< number > Total number of good packets received

< number > Number of timed-out packets (displayed if > 0)

< number > Number of late packets (displayed if > 0)

< number > Number of unexpected packets (displayed if > 0)

< number > Average round trip delay in milliseconds

< number > Percent packets transmitted that were received correctly

Done.

Test indicators

Check the final results to determine the percentage of attempted packets that were received correctly. When you run the echo test between devices on your network, the effectiveness should exceed 96 percent. When you conduct the echo test over telephone lines, the effectiveness may be less than 96 percent.

If the percentage of packets received correctly is less than 95 percent, there may be a problem with the communications path. Perform the procedures “Testing a Communication Interface Unit” and “Testing an RS232C port” to further isolate the problem.

This message indicates that the source and destination addresses are the same:

```
Echo to self not allowed.
```

This message indicates that the source or destination address is not valid:

```
Network address invalid.
```

Perform the “Listing registered servers” procedure to display server names, descriptions, and addresses.

Wrap-up

When you see the message “Done,” the echo test is complete. Record the date and test results on the Problem Report Form.

Testing an RS232C port

Use this procedure to check the operation and performance of an RS232C port. The port may be on a server or on a Communication Interface Unit (CIU). A server controls the CIU port through the communication service using the port.

Prerequisites

- For asynchronous mode, install a loopback plug on the RS232C port to be tested.
- For synchronous mode, set the modem on the RS232C port to be tested to Analog Loopback mode. The Data Set Ready signal must also be supplied by the modem or data to be transmitted. Not all modems can provide this signal. Some modems must be explicitly configured to supply the signal.
- Have handy the Problem Report Form.
- Log on and enable in the context of the communication service that uses the port you want to check.



If the External Communication Service IBM 3270 emulation controls the RS232C port you are testing, use the **Stop IBM 3270 Emulation** command to terminate communication with the host. Use the **Start 3270 Emulation** command to restart the communication after the test.

If the Internetwork Routing Service uses the RS232C port you are testing, use the **Stop Circuit** command to terminate the communication with the remote network. Use the **Start Circuit** command to restart communication after the test.

- Perform the procedure “Accessing online diagnostics.”

Step-by-step

1. Type **RS232C** ↵.

Choose RS232C port to be tested:

1 <name> <description>

2 <name> <description>

Enter choice number:

2. Type the number for the port you want to test .

```
Properties of the selected port:
< name > < description >
Port use: < service >
Line speed: < speed >
< type > port: < number >
Synchronous capability: < existing >
Choose mode:
1 Asynchronous
2 Bit-Synchronous
3 Byte-Synchronous
Enter choice number: < existing >
```

3. Type the number for the communication mode you want the test to use .

```
Data pattern:
1 Incrementing
2 All 0's
3 All 1's
4 Constant
Enter choice number:
```

4. Type the number for the data pattern you want the test to use \leftarrow .

Enter constant value (0..255):

- a. If you selected constant for the data pattern, type the constant value and press RETURN. Otherwise, **continue with step 5.**

Minimum packet size in bytes (2..600):

5. Type a number for the smallest packet size you want the test to use \leftarrow .

Maximum packet size in bytes (2..600):

6. Type a number for the largest packet size you want the test to use \leftarrow .

NOTE

If you are testing the server's local RS232C port, messages display at the beginning of the test to indicate the port received the Data Set Ready (DSR) and Clear to Send (CTS) signals.

If you are testing a CIU port, intermediate results display every 45 seconds to indicate the number of correct transmissions.



Press the BREAK key at any point to stop the test.

Test indicators

Check the final results to determine the percentage of packets sent that were received correctly. If the percentage of packets received correctly is 97 percent or better, the Ethernet link and phone lines are operating. If the percentage of packets received correctly is less than 97 percent, call the Systems Customer Support Center.

Wrap-up

When you see the message "Done," the RS232C test is complete.

Floppy disk procedures

This section contains these procedures for testing the floppy disk drive on an 8000 server:

Accessing floppy disk drive diagnostics

Use this procedure to access the comprehensive tests of the floppy disk drive.

Testing the floppy disk drive

Use this procedure to perform a standard test of the floppy disk drive.

Displaying the summary error log

Use this procedure to display the results of the most recent standard test or exercise of the floppy disk unit.

Formatting a floppy disk

Use this procedure to prepare a floppy disk for use.

Exercising the floppy disk unit

Use this procedure to test the floppy disk unit by randomly reading, writing, and verifying data.

Accessing floppy disk drive diagnostics

Use this procedure to access the floppy disk drive diagnostics. Always perform floppy disk drive diagnostics when you suspect a hardware problem with the floppy disk drive. Do not call the Systems Customer Support Center unless one of these diagnostic procedures fails.

Prerequisites

- Suspect a problem with the floppy disk drive.
- Have handy the Problem Report Form.
- Perform the procedure “Accessing online diagnostics.”

Step-by-step

1. Type **Floppy** .

Choose test to be performed:

- 1 Clean Read/Write Heads
- 2 Standard Test
- 3 Display Summary Log
- 4 Format Diskette
- 5 Exercise Floppy

Enter choice number:

Wrap-up

When you see the test menu, you can perform any of the procedures in this section.



Although the Clean Read/Write Heads test is displayed on this menu, it is a maintenance procedure rather than a diagnostic procedure. Thus, it is documented in Appendix A of the *Services Maintenance Guide*.

Testing the floppy disk drive

Use this procedure to perform a standard test of the floppy disk drive. The procedure checks the read, write, and seek functions of the drive. It requires a diagnostic floppy diskette and takes about one minute to perform.

Prerequisites

- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing floppy disk drive diagnostics.”
- Have handy a diagnostic diskette or scratch disk.

NOTE

If you do not have a diagnostic diskette, create one by performing the procedure “Exercising the floppy disk unit,” later in this chapter.

- Have handy the Problem Report Form.

Step-by-step

1. At the floppy disk drive test menu, type **2** for the Standard Test option .

Please insert the Diagnostic Diskette.

Note: Any other diskette will cause erroneous results.

Type any character when this is done.

2. Insert the diagnostic diskette into the floppy disk drive. Then press any key.

NOTE

If you use a double-sided floppy diskette during the standard test, you must boot the server to use a single-sided diskette again during normal operation.

Test completed normally.
No error was found.

Test indicators

This message indicates a problem with the floppy disk drive:

Test failed.
Run Display Error Log for more data.
An error was found.

Perform the “Displaying the summary error log” procedure to analyze the problem.

Wrap-up

When you see the message “No error was found,” you have successfully completed the standard test. Record the date and results of the test on the Problem Report Form.

Displaying the summary error log

Use this procedure to display the results of the most recent standard test or exercise floppy disk test.

In addition to the summary log, you can display the address log. The address log helps you identify whether a problem is associated with a particular head or track. A problem with a single track generally indicates a problem with the floppy disk used in the standard test or exercise procedure.

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Perform the procedure "Accessing floppy disk drive diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. At the floppy disk drive test menu, type **3** for the "Display Summary Log" option **↵**.

Summary Error Log

	Read Status	Seek/Verify	Read Sector	Write Sectors	Write Deleted Sectors
TIMES EXECUTED	< number >	< number >	< number >	< number >	< number >
Good Completion	< number >	< number >	< number >	< number >	< number >
Disk Changed	< number >	< number >	< number >	< number >	< number >
Not Ready	< number >	< number >	< number >	< number >	< number >
Seek Error	< number >	< number >	< number >	< number >	< number >
Deleted Sector	< number >	< number >	< number >	< number >	< number >
Record Not Found	< number >	< number >	< number >	< number >	< number >
Header Error	< number >	< number >	< number >	< number >	< number >
Data Error	< number >	< number >	< number >	< number >	< number >
Data Lost	< number >	< number >	< number >	< number >	< number >
Write Protected	< number >	< number >	< number >	< number >	< number >
Other Error	< number >	< number >	< number >	< number >	< number >
Display the address log? (Y/N): N					

2. Type **Y** or **N** at the “Display the address log?” prompt \Leftarrow .
 - Y** Displays the address log; then returns you to the Test context.
 - N** Returns you immediately to the Test context.

Wrap-up

The system returns you to the Test context after displaying the summary error log, and, if requested, the address log. Record the date and relevant log information on the Problem Report Form.

Formatting a floppy disk

Use this procedure to format a disk with the standard Xerox format. You must format a floppy disk to prepare it to store data.

Formatting a double-sided floppy disk takes about 4 minutes. Formatting a single-sided floppy disk takes about 2 minutes.



If you format a double-sided floppy disk, you must boot the server to use a single-sided disk again.

Prerequisites

- Perform the procedure "Accessing online diagnostics."
- Perform the procedure "Accessing floppy disk drive diagnostics."
- Have handy one or more floppy disks you want to format.
- Have handy the Problem Report Form.

Step-by-step

1. At the floppy disk drive test menu, type **4** for the “Format Diskette” option

Warning: Formatting will destroy the contents of the diskette.
Do you still wish to continue? (Y/N): N

2. Insert the disk you want to format in the disk drive and close the drive door.



CAUTION: Formatting destroys all data written on a floppy disk. Be sure the disk does not contain data you want to keep.

3. Type **Y** or **N** at the “Do you still wish to continue?” prompt .
Y Confirms the formatting.
N Cancels the formatting.

Are you still sure? (Y/N): N

4. Type **Y** or **N** at the "Are you still sure?" prompt .

Y Reconfirms the formatting.

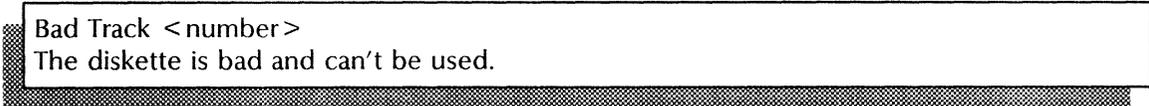
N Cancels the formatting.



Formatting in progress . . .
done.

Test indicators

This message indicates that the formatting has failed:



Bad Track <number >
The diskette is bad and can't be used.

Format a different floppy disk.

Wrap-up

When you see the message "Done," the floppy disk has been formatted.

Exercising the floppy disk unit

Use this procedure to test the floppy disk unit by randomly writing, reading, and verifying data on a floppy disk. The procedure creates a diagnostic disk for use in the standard test of the floppy disk drive. You can use any formatted floppy disk to create the diagnostic disk.



CAUTION: This procedure destroys all data on the floppy disk. Use a floppy disk that does not contain data you need.

Creating a double-sided diagnostic disk takes about 4 minutes. Creating a single-sided diagnostic disk takes about 2 minutes.

Prerequisites

- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing floppy disk drive diagnostics.”
- Have handy a formatted floppy disk.

Step-by-step

1. At the floppy disk drive test menu, type **5** for the “Exercise Floppy” option .

Warning: This test will destroy the contents of the diskette
Do you still wish to continue? (Y/N): N

2. Insert the floppy disk into the floppy drive.



CAUTION: All data on the disk will be destroyed. Do not use a disk that contains data that you will need later.

3. Type **Y** or **N** at the "Do you still wish to continue?" prompt .
 - Y** Confirms that you want to create a diagnostic disk.
 - N** Cancels the process.

Are you still sure? (Y/N): N

4. Type **Y** or **N** at the "Are you still sure?" prompt .
 - Y** Reconfirms that you want to create a diagnostic disk.
 - N** Cancels the process.



If you use a double-sided disk, you must boot the server to use a single-sided floppy disk again.

This is a <double/single> sided diskette.

Test indicators

This message indicates that no errors occurred during the procedure:

Test completed normally.

This message indicates that an error occurred during the procedure:

A hard error has occurred.
Check the MP Code and the Error Summary Log.

Record the maintenance panel code on the Problem Report Form. See *MP Codes and Messages*.

Perform the "Displaying the summary error log" procedure described earlier in this chapter to examine the results of the exercise procedure.

If you are unable to correct the error, call the Systems Customer Support Center.

Wrap-up

When you see the message “Test completed normally,” you have prepared the floppy disk as a diagnostic disk.

Cartridge tape procedures

This section contains these procedures for preparing 8090 server cartridge tapes for use and for analyzing tape problems:

Accessing cartridge tape utilities

Use this procedure to access the Cartridge Tape Online Utility menu.

Retensioning a cartridge tape

Use this procedure to adjust a cartridge tape to the proper tension.

Erasing a cartridge tape

Use this procedure to delete all data from a cartridge tape.

Formatting a cartridge tape

Use this procedure to format a cartridge tape, and prepare it to receive data.

Verifying a read operation

Use this procedure to isolate problems caused by the tape media from those caused by the tape drive.

Displaying the bad sector table

Use this procedure to check the number of bad sectors on a tape.

Scavenging a cartridge tape

Use this procedure to repair the basic data structures on a cartridge tape.

Accessing cartridge tape utilities

Use this procedure to access the cartridge tape diagnostic utilities. Always perform these tests when you suspect a problem. Do not call the Systems Customer Support Center unless one of these diagnostic procedures fails.

Prerequisites

- Suspect a problem with the cartridge tape.
- Have handy the Problem Report Form.
- Perform the procedure "Accessing online diagnostics."

Step-by-step

1. Type **Cartridge Tape** ⇐.

Choose which Cartridge Tape Online Utility

- 1 Retension
 - 2 Erase
 - 3 Format
 - 4 Verify Read Operation
 - 5 Log Bad Sector
 - 6 Display Bad Sector Table
 - 7 Scavenge
- Enter choice number:

Wrap-up

When you see the Cartridge Tape Online Utility menu, you can perform any of the procedures in this section.

Retensioning a cartridge tape

Use this procedure to set a tape to the proper tension in an effort to correct read errors. Read errors may occur when a cartridge tape is wound too tightly. A tape may not be properly tensioned if it has been stored for a long time, or if it is new.

Prerequisites

- Notice read errors occurring.
- Suspect a problem with the cartridge tape.
- Have handy the cartridge tape you want to retention.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”

Step-by-step

1. At the Cartridge Tape Online Utility menu, type **1** for the “Retention” option .

Insert cartridge in tape drive.
Type any character when this is done.

2. Insert the cartridge tape into the server and type any character to begin retention.
The process takes about 3 minutes.

<Time> Retention started.

Wrap-up

When you see the message “Successful completion,” the tape retensioning is complete.

Test indicators

These messages indicate that the tape retensioning procedure failed:

- The tape drive is not ready
- The tape drive is in use by some other application
- Tape media problem
- Hardware problem or unexpected error

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Erasing a cartridge tape

Use this procedure to delete existing data from the tape so you can reuse it.



You must reformat a Xerox software or font tape if you want to use it for backup.

Prerequisites

- Have handy the cartridge tape you want to reuse.
- Be sure you no longer need the data.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”

Step-by-step

1. At the Cartridge Tape Online Utility menu, type **2** for the “Erase” option **↵**.

Warning: Erasing will destroy any data on this tape cartridge.
Do you still wish to continue? (Y/N)

2. Type **Y** or **N** at the “Do you still wish to continue?” prompt **↵**.
 - Y** Continues the erasing process.
 - N** Cancels the erasing process.

Are you sure? (Y/N)

3. Type **Y** or **N** at the “Are you sure?” prompt **↵**.
Y Continues the erasing process.
N Cancels the erasing process.

Insert write-enabled cartridge in tape drive.
Type any character when this is done.

4. Insert a write-enabled cartridge tape into the server and type any character to continue.

Enter label for this tape cartridge:

5. Type the name for the cartridge tape **↵**.

Successful completion.
Please remove the tape cartridge from the drive.

6. Remove the cartridge tape from the drive and close the drive door.

Wrap-up

When you see the message "Successful completion," the tape has been erased.

Test indicators

You may receive the message "Erase failed" along with one of the following messages:

- The tape drive is not ready
- The tape is write protected
- The tape drive is in use by some other application
- The tape is not formatted
- Tape media problem
- Hardware problem or unexpected error

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Formatting a cartridge tape

Use this procedure to prepare a cartridge tape to receive data. You cannot format a tape if any communication services are active on the server.



Preformatted cartridge tapes are available from Xerox.

Prerequisites

- Have handy the tape cartridge you want to format.
- Perform the procedure "Accessing online diagnostics."
- Perform the procedure "Accessing cartridge tape utilities."

Step-by-step

1. At the Cartridge Tape Online Utility menu, type **3** for the "Format" option .

Warning: Formatting will destroy any data on this tape cartridge.
Do you still wish to continue? (Y/N):

2. Type **Y** or **N** at the "Do you still wish to continue?" prompt .
- Y** Continues the formatting process.
- N** Cancels the formatting process.

Are you sure? (Y/N):

3. Type **Y** or **N** at the "Are you sure?" prompt \Leftarrow .
 - Y** Continues the formatting process.
 - N** Cancels the formatting process.

Insert write-enabled cartridge in tape drive.
Type any character when this is done.

4. Insert a write-enabled cartridge tape into the server and type any character to continue.

Enter label for this tape cartridge:

5. Type a name for the cartridge tape \Leftarrow .

Warning: This cartridge tape is already formatted. Formatting will destroy any existing data.

This tape cartridge is labeled: <TAPE NAME>

Do you still wish to continue? (Y/N):

6. If the tape is already formatted, type **Y** or **N** at the "Do you still wish to continue?" prompt. If the tape is not already formatted, **skip to Wrap-up or Test Indicators**.
 - Y** Reconfirms the formatting process.

N Cancels the formatting process.

Are you sure? (Y/N):

7. Type **Y** or **N** at the “Are you sure?” prompt .

Y Formats the tape.

N Cancels the formatting process.

NOTE

The tape formats in background mode so you can access other commands.

Wrap-up

When you see the message “Cartridge Tape Format - Successful completion,” the tape formatting is complete.

Test indicators

You may receive the message “Format failed” along with one of the following messages:

- The tape drive is not ready
- The tape is write protected
- The tape drive is in use by some other application

- Tape media problem
- Hardware problem or unexpected error

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Verifying a read operation

Use this procedure to determine whether a problem was caused by the tape media or by the tape drive.

Prerequisites

- Suspect a problem with the cartridge tape.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”
- Have handy the cartridge tape labeled “8090 Server Diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. At the Cartridge Tape Online Utility menu, type **4** for the “Verify Read Operation” option .

Insert special tape cartridge labeled ‘8090 Server Diagnostics’ in the tape drive.
Warning: Use of any other tape cartridge will cause the test to fail and to report erroneous results.
Type any character when this is done.

2. Insert the diagnostics tape into the server and type any character to begin the operation.

Positioning tape to read Bad Sector Table.

Wrap-up

When you see the message “Verify Read Operation completed,” the read verifying operation is complete.

Test indicators

You may receive the message "Verify read operation failed" along with one of the following messages:

- The tape drive is not ready
- The tape is write protected
- The tape drive is in use by some other application
- The tape is not formatted
- Tape media problem
- Hardware problem or unexpected error
- Too many soft errors
- Hard error on sector: <sector number>

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Displaying the bad sector table

Use this procedure to display the bad sector table. From this table you can identify and record the number of bad sectors.

Prerequisites

- Suspect a problem with the cartridge tape.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”
- Have handy the cartridge tape containing the Cartridge Tape Offline Diagnostics.
- Have handy the Problem Report Form.

Step-by-step

1. At the Cartridge Tape Online Utility menu, type **6** for the “Display Bad Sector Table” option **↵**.

Insert cartridge in tape drive.
Type any character when this is done.

2. Insert the cartridge tape into the drive and type any character to display the bad sector table.

Positioning tape to read Bad Sector Table.

Wrap-up

When you see the message "Successful completion," the bad sector table has been displayed.

Test indicators

You may receive the message "Display Bad Sector Table failed" along with one of the following messages:

- The tape drive is not ready
- The tape is write protected
- The tape drive is in use by some other application
- The tape is not formatted
- Tape media problem
- Hardware problem or unexpected error

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Scavenging a cartridge tape

Use this procedure to repair the basic data structure of a cartridge tape.

Prerequisites

- Have handy the cartridge tape you want to scavenge.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”

Step-by-step

1. At the Cartridge Tape Online Utility menu, type 7 for the “Scavenge” option \leftarrow .

<Time> Scavenging tape.

2. Insert a write-enabled cartridge tape into the server and type any character to begin the tape scavenging.

Insert write-enabled cartridge in tape drive.
Type any character when this is done.

Wrap-up

When you see the message "Successful repair," the tape scavenging is complete.

Test indicators

You may receive the message "Scavenge failed" along with one of the following messages:

- The tape drive is not ready
- The tape write protected
- The tape drive is in use by some other application
- The tape is not formatted
- Tape media problem
- Hardware problem or unexpected error

Follow the instructions given. If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

High capacity cartridge tape procedures

This section contains these procedures for preparing 8090 server high capacity cartridge tapes for use and for analyzing tape problems:

Accessing high capacity cartridge tape utilities

Use this procedure to access the High Capacity Cartridge Tape menu.

Initializing a high capacity cartridge tape

Use this procedure to initialize a high capacity cartridge tape.

Erasing a high capacity cartridge tape

Use this procedure to delete all data from a high capacity cartridge tape.

Running the confidence test

Use this procedure to isolate problems caused by the tape media from problems caused by the tape drive.

Scavenging a high capacity cartridge tape

Use this procedure to repair the basic data structures on a high capacity cartridge tape.

Creating a high capacity diagnostic cartridge tape

Use this procedure to create a high capacity diagnostic tape.

Accessing high capacity cartridge tape utilities

Use this procedure to access the High Capacity Cartridge Tape Utility menu. The utilities do not require the user to be logged on. Always use these utilities when you want to prepare a tape for use or reuse, or suspect a problem with the high capacity tape cartridge or drive. Do not call the Systems Customer Support Center unless one of these utilities fails.

Prerequisites

- Have handy the cartridge tape to be initialized or erased.
- Or, suspect a problem with the tape cartridge or drive.
- Have handy the Problem Report Form.
- Perform the procedure “Accessing online diagnostics.”

Step-by-step

Type **High Capacity Tape** .

Choose which High Capacity Cartridge Tape Utility

- 1 Initialize
- 2 Erase
- 3 Confidence Test
- 4 Scavenge
- 5 Save Valid Files

Enter choice number:

Wrap-up

When you see the High Capacity Cartridge Tape Utility menu, you can perform any of the procedures in this section.

NOTE

Although the Save Valid Files option appears on the High Capacity Cartridge Tape Utility menu, it is not included in the current software release. Therefore, it is not documented here.

Initializing a high capacity cartridge tape

This procedure initializes a new or used high capacity cartridge tape to prepare it for use.

Prerequisites

- Have handy the high capacity cartridge tape you want to initialize.
- Have handy the Problem Report Form.
- Perform the procedure "Accessing online diagnostics."
- Perform the procedure "Accessing high capacity cartridge tape utilities."

Step-by-step

1. At the High Capacity Cartridge Tape Utility menu, type **1** for the "Initialize" option .

```
Select tape unit
1  Tape drive <number>
2  Tape drive <number>
Enter choice number:
```

If you have one high capacity cartridge tape drive, **skip to step 3**. If you have more than one high capacity cartridge tape drive, **continue with step 2**.

2. Type the number for the drive you want to use to initialize the tape \Leftarrow .

Please insert the High Capacity Tape Cartridge into drive <number>
Type any character when this is done.

3. Insert the high capacity cartridge tape into the drive and type any character to continue.

Warning: This tape cartridge is already initialized and labelled <oldtapename >
Initialization will destroy any data on the tape cartridge.
Do you still wish to continue? (Y/N)

4. Type **Y** or **N** at the "Do you still wish to continue?" prompt \Leftarrow .
If the tape is not already initialized, this message does not appear. **Skip to step 6**.
Y Continues the initialization.
N Cancels the initialization.

Are you sure? (Y/N)

5. Type **Y** or **N** at the "Are you sure?" prompt \Leftarrow .

- Y** Initializes the tape.
- N** Cancels the initialization.

Enter label for this tape cartridge:

6. Type a name for the cartridge tape .

NOTE

The tape name may be from 1 to 100 characters long. It may not contain multinational characters.

Wrap-up

When you see the message "Initialize operation completed," the tape has been initialized.

Test indicators

You may receive the message "Initialize operation failed" along with one of the following messages:

- Tape drive <number> is not ready
- The cartridge in tape drive <number> is write protected
- The tape drive is in use by some other application
- The tape drive is not available

- Cartridge tape media problem
- The tape needs scavenging
- Unknown tape hardware or software problem
- Hardware problem
- Unexpected error

Check the tape cartridge or drive to correct the problem. Then, repeat the procedure.

If you suspect a tape media problem, perform the procedure “Scavenging a high capacity cartridge tape.”

If you suspect a hardware problem, perform the procedure “Running the confidence test.”

If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Erasing a high capacity cartridge tape

Use this procedure to delete existing data from the tape so you can reuse it.

Prerequisites

- Have handy the high capacity cartridge tape you want to reuse.
- Be sure you no longer need the data it contains.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing high capacity cartridge tape utilities.”

Step-by-step

1. At the High Capacity Cartridge Tape Utility menu, type **2** for the “Erase” option **↵**.

Select tape unit

1 Tape drive < number >

2 Tape drive < number >

Enter choice number:

If you have one high capacity cartridge tape drive, **skip to step 3**. If you have more than one high capacity cartridge tape drive, **continue with step 2**.

2. Type the number for the drive you want to use to erase the tape .

Please insert the High Capacity Tape Cartridge into drive

< number >

Type any character when this is done.

3. Insert the high capacity cartridge tape into the drive and type any character to proceed.

Warning: This tape cartridge is already initialized and labelled < oldtapename >

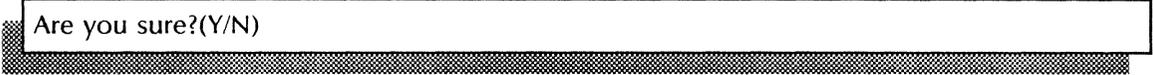
Erasing will destroy any data on this tape cartridge.

Do you still wish to continue? (Y/N)

4. Type **Y** or **N** at the "Do you still wish to continue?" prompt .

Y Continues the erasing process.

N Cancels the erasing process.

A screenshot of a terminal window with a white background and a black border. The text "Are you sure?(Y/N)" is displayed in the center of the window. The area below the window has a grey, textured background.

Are you sure?(Y/N)

5. Type **Y** or **N** at the “Are you sure?” prompt .

Y Erases the tape.

N Cancels the erasing process.

Wrap-up

When you see the message “Erase operation completed,” the tape has been erased.

Test indicators

You may receive the message “Erase operation failed” along with one of the following messages:

- Tape drive <number> is not ready
- The cartridge in tape drive <number> is write protected
- The tape drive is in use by some other application

- The tape drive is not available
- The tape is not initialized
- Cartridge tape media problem
- The tape needs scavenging
- Unknown hardware or software problem
- Hardware problem
- Unexpected error

Check the tape cartridge or drive to correct the problem. Then, repeat the procedure.

If you suspect a tape media problem, perform the procedure "Scavenging a high capacity cartridge tape."

If you suspect a hardware problem, perform the procedure "Running the confidence test."

If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Running the confidence test

Use this procedure to determine whether a problem was caused by the tape media or by the tape drive.

Prerequisites

- Suspect a problem with the tape drive.
- Have handy the High Capacity Diagnostic cartridge tape.
- Have handy the Problem Report Form.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing high capacity cartridge tape utilities.”

Step-by-step

1. At the High Capacity Cartridge Tape Utility menu, type **3** for the “Confidence Test” option ↵.

```
Select tape unit
1  Tape drive <number>
2  Tape drive <number>
Enter choice number:
```

If you have one high capacity cartridge tape drive, **skip to step 3**. If you have more than one high capacity cartridge tape drive, **continue with step 2**.

2. Type the number for the drive you want to test ↵.

```
Please insert special High Capacity Diagnostic Tape cartridge into drive <number> .
Warning: Use of any other tape will cause the test to fail and to report erroneous results.
Type any character when this is done.
```

3. Insert the High Capacity Diagnostic cartridge tape into the drive and type any character to begin the test.

Wrap-up

When you see the following message, you have successfully completed the test:

Confidence Test passed. No errors detected.
Please remove the tape cartridge from drive <number> .

Test indicators

You may be directed to call Service for assistance if you receive one of these messages:

- Too many read errors detected
- Hardware error detected

You may receive the message "Confidence Test failed" along with one of the following messages:

- Tape drive <number> is not ready
- The cartridge in tape drive <number> is write protected
- The tape drive is in use by some other application
- The tape drive is not available
- The tape is not initialized
- Cartridge tape media problem
- Unknown tape hardware or software problem
- Hardware problem

- Unexpected error

Check the tape cartridge or drive to correct the problem. Then, repeat the procedure.

If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Scavenging a high capacity cartridge tape

Use this procedure to repair the basic data structure of a high capacity cartridge tape. If a tape writing operation is interrupted, a partially written file may exist at the logical end of the tape. Scavenging the tape removes this file and prepares the tape for normal tape writing.

Prerequisites

- Suspect a problem with the cartridge tape.
- Have handy the Problem Report Form.
- Perform the procedure “Accessing online diagnostics.”
- Perform the procedure “Accessing high capacity cartridge tape utilities.”

Step-by-step

1. At the High Capacity Cartridge Tape Utility menu, type **4** for the “Scavenge” option .

```
Select tape unit
1  Tape drive <number>
2  Tape drive <number>
Enter choice number:
```

If you have one high capacity cartridge tape drive, **skip to step 3**. If you have more than one high capacity cartridge tape drive, **continue with step 2**.

2. Type the number for the drive you want to use to scavenge the tape.

```
Please insert the High Capacity Tape cartridge into drive <number>.
Type any character when this is done.
```

3. Insert the high capacity cartridge tape into the drive and type any character to proceed.

```
Warning: Scavenge may remove the last file on the tape cartridge in drive <number>.
Do you still wish to continue? (Y/N):
```

4. Type **Y** or **N** at the "Do you still wish to continue?" prompt ↵.
Y Scavenges the tape.
N Cancels the process.

Wrap-up

When you see the message “Scavenge completed” followed by “No errors detected” or “Successful repair,” the tape scavenging has completed successfully.

Test indicators

You may see this message:

- Scavenge completed. Unsuccessful repair

This message indicates that the data on the tape can no longer be read. However, you can reuse the tape media by erasing the tape with the procedure “Erasing a high capacity cartridge tape.”

Or, you may receive the message “Scavenge failed” along with one of the following messages:

- Tape drive <number> is not ready
- The cartridge in tape drive <number> is write protected
- The tape drive is in use by some other application
- The tape drive is not available
- The tape is not initialized
- Cartridge tape media problem

- Unknown tape hardware or software problem
- Hardware problem
- Unexpected error

Check the tape cartridge or drive to correct the problem. Then, repeat the procedure.

If you suspect a hardware problem, perform the procedure "Running the confidence test."

If the message displays again, record the information in the Problem Report Form and call the Systems Customer Support Center.

Creating a high capacity diagnostic cartridge tape

Use this procedure to create a high capacity diagnostic tape. This tape will enable you to run the Confidence test when the online version of the test is not available. You should create this tape at some point during server installation.



CAUTION: Use the password provided in this procedure **ONLY** to create a high capacity diagnostic tape. **DO NOT** attempt to perform any of the other tests available with this password. Any other operation may destroy your data, and should be run only by a Systems Analyst or a qualified Xerox Service Representative.

Step-by-step

1. Insert the High Capacity Diagnostic Tape into the tape drive

2. Boot the server **↵**.
 - a. Hold down the B RESET and ALT B buttons at the same time.
 - b. Release the B RESET button.
 - c. When the maintenance panel displays 0002, release the ALT B button.

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HIGH CAPACITY UTILITIES AND DIAGNOSTICS 1.0 of (date)

A '?' will further explain the menu options.

A 'BREAK' will return to the prior menu.

PERSON RUNNING THE DIAGNOSTIC

1. User
2. System Administrator
3. Service Rep

Enter choice number:

3. Type **3** for "Service Rep" **↵**.

Service Rep
PASSWORD:

4. Type **cixcos** for the Service Rep password **↵**.

HIGH CAPACITY UTILITIES AND DIAGNOSTICS
SCSI CONFIGURATION DISPLAY

ID 7: < disk drive number, type OR empty >
ID 6: < disk drive number, type OR empty >
ID 5: < disk drive number, type OR empty >
ID 4: < disk drive number, type OR empty >
ID 3: < disk drive number, type OR empty >
ID 2: < disk drive number, type OR empty >
ID 1: < disk drive number, type OR empty >
ID 0: Processor

Is the above configuration correct? (Yes/No):

5. Type **Y** at the "Is the above configuration correct" prompt **⇐|**.
 - Y** The system configuration values are correct.
 - N** The configuration for the tape drives has not yet been set up. You will get an MP code and an error message if you type **N**.



Your system configuration must have already been set up by your Systems Analyst. The disk drive numbers and types must have values on the screen. If all ID numbers read "Empty," or you are in doubt, contact your Systems Analyst before proceeding.

HIGH CAPACITY UTILITY AND DIAGNOSTIC SELECTION

1. SCSI Configuration Utility
2. High Capacity Disk Utilities
3. High Capacity Disk Diagnostics
4. High Capacity Cartridge Tape Diagnostics
5. Exit

Enter choice number:

6. Type **4** for the High Capacity Cartridge Tape Diagnostics option .

HIGH CAPACITY CARTRIDGE TAPE DIAGNOSTIC**TEST SELECTION**

1. Confidence Test
2. Exerciser
3. Write Known Data
4. Read Known Data
5. Display Options
6. Command File Options
7. Subtest Options
8. Create diagnostic tape
9. Exit

Enter choice number:

7. Type **8** to create a diagnostic tape **↵**.

CREATE DIAG TAPE

DRIVE TO BE SELECTED

1. First Drive
2. Second Drive
3. Third Drive
4. Fourth Drive
5. Exit

Enter choice number:

8. Insert a blank high capacity cartridge tape into the drive.
9. Type the drive number you will be using and press RETURN. Only the available drives are displayed.

This command will destroy the contents of the tape.

Do you still wish to continue? (Yes/No):

10. Type **Y** to continue the process **↵**.
 - Y** Continues the process.
 - N** Returns you to the High Capacity Cartridge Tape Diagnostics Test Selection menu.

Are you still sure? (Yes/No):

11. Type **Y** at the “Are you still sure” prompt **⇐|**.

Y Continues the process.

N Returns you to the High Capacity Cartridge Tape Diagnostics Test Selection menu.

The utility title (Create diag tape) and the drive number are displayed on the screen. The title of each subtest, while running, is also displayed.

Wrap-up

When you see the message “Successful completion,” the tape has been created. Remove the tape from the drive, label it, and store it in a safe place.

4.

Offline diagnostics - 8000 servers

This chapter contains the diagnostic procedures you perform to analyze problems with the fixed disk or the floppy disk drive on an 8000 server.

The diagnostic procedures you perform for a fixed disk depend on the drive type. There are two types of drives available for the 8000 server:

- Medium capacity (fixed disk) drives - 10, 29, or 42 Mb
- Large capacity (removable disk) drives - 80, 300 (315) Mb

This chapter contains some restricted diagnostic procedures. To perform these procedures, you must obtain a password from the Systems Customer Support Center (SCSC).

Medium capacity (fixed disk) procedures

This section contains these procedures to analyze 8000 server medium capacity fixed disk problems.

Accessing medium capacity disk diagnostics

Use this procedure to access the commands you use to run 8000 medium capacity offline diagnostics.

Running the disk exerciser test

If directed to do so by the Systems Customer Support Center, use this procedure to identify hardware errors on the fixed disk.

Running fault analysis tests

Use this procedure to run individual tests that identify errors in the fixed disk drive and drive assembly.

Running the media scan test

If directed to do so by the Systems Customer Support Center, use this procedure to identify errors on the fixed disk.

Listing bad pages

If directed to do so by the Systems Customer Support Center, use this procedure to identify the bad pages already logged on the bad page table.

Logging bad pages manually

If directed to do so by the Systems Customer Support Center, use this procedure to manually log bad pages into the bad page table.

Testing bad pages

Use this procedure to manage and repair bad disk pages.

Accessing medium capacity disk diagnostics

Use this procedure to display the list of commands available to analyze 8000 server medium capacity fixed disk problems. Some of the diagnostic procedures are password-restricted to Service Representatives or Analysts. To obtain the required password to access these procedures, contact the Systems Customer Support Center.

Prerequisites

- Suspect a hardware problem with the medium capacity drive.
- Have handy the floppy disk labeled "8000 Series Rigid Disk Diagnostics (10, 29, and 42 Mb)."
- If you are going to use a procedure that requires you to log on as a Service Representative or Analyst, call the Systems Customer Support Center to obtain the required password.
- Have handy the Problem Report Form.

Step-by-step

1. Insert the floppy disk labeled "8000 Series Rigid Disk Diagnostics (10, 29, and 42 Mb)" into the drive.
2. Boot the server:
 - a. Hold down the B RESET and ALT B buttons at the same time.
 - b. Release the B RESET button.
 - c. When the maintenance panel displays 0002, release the ALT B button.
3. Type **Logon** .

Enter user name:

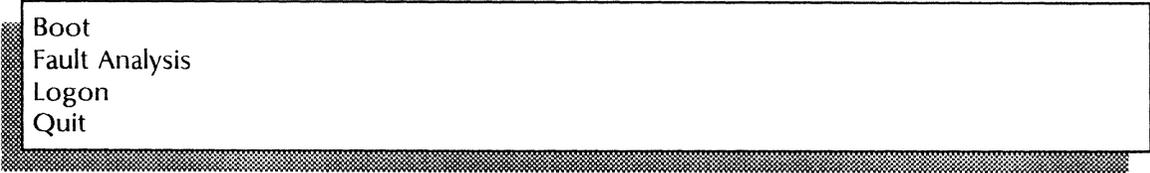


Type a question mark (?) at any prompt requiring a response other than "yes" or "no" to display help information.

4. Type **Xerox** .

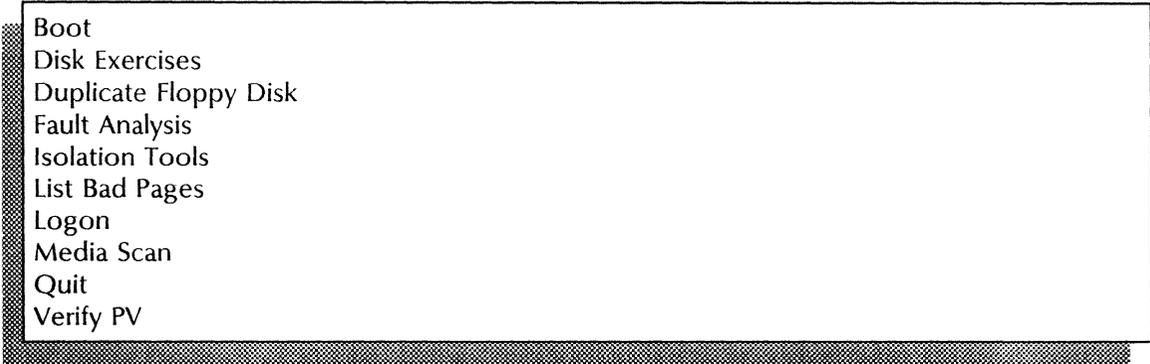
Enter password:

5. To log on as a System Administrator, type **STSNEP** .



```
Boot
Fault Analysis
Logon
Quit
```

To log on as a Service Representative or Analyst, call the Systems Customer Support Center to obtain the required password. Then, type the password



```
Boot
Disk Exercises
Duplicate Floppy Disk
Fault Analysis
Isolation Tools
List Bad Pages
Logon
Media Scan
Quit
Verify PV
```

Wrap-up

When you see the commands list, you can perform the remaining procedures in this chapter.



Some of the commands on the Service Representative menu are available to System Administrators. These procedures are included in this chapter. Only use those commands that the Systems Customer Support Center has authorized you to use. Under no circumstances should you use a command without instructions from the Systems Customer Support Center.

Running the disk exerciser test



CAUTION: Do not attempt to perform this procedure unless directed to by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

The disk exerciser test performs these functions:

- It reads from random locations, and writes and reads on the diagnostic cylinder.
- It detects intermittent disk errors, but does not perform any fault isolation.
- It outputs results in the form of an error log.

Each pass made by the test consists of a series of reads to random disk locations interspersed with non-destructive writes and reads on the diagnostic cylinder. The non-destructive write portion of the test is included only if it is considered to be low risk. If the program determines that risk is too great, the message, “Writing disabled due to excessive risk,” displays.

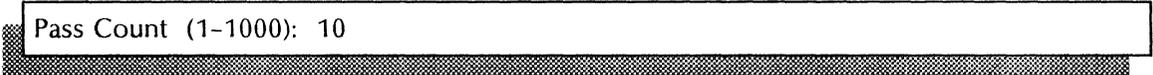
Because of the lengthy execution time for each pass, the program indicates the current pass number on the maintenance panel. The program displays an entry for each error it detects.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a Service Representative or Analyst.
- Have handy the Problem Report Form.

Step-by-step

1. Type **Disk Exerciser** .



Pass Count (1-1000): 10

2. Type the number of passes and press RETURN; or press RETURN to use the default value of 10.



NOTE

Five passes are usually sufficient.

Wrap-up

When you see the message “Done,” the disk exerciser procedure is complete.

Test indicators

The information on the screen changes as the test progresses. Record the page number, head number, and whether the error is soft (recoverable) or hard (not recoverable) indication on the Problem Report Form. Then call the Systems Customer Support Center.

successful							
page accesses/seek							
before error	Page	Cyl	Hd	Sec	Error Status	Soft/Hard	
XXXXX/XXXX							

The “successful...before error” field lets you determine the percentage of failing disk operations. This field updates frequently to give an indication of progress. The location of the error is given both as a page number and as a disk address (cylinder, head, sector). If the error occurred on the diagnostic cylinder, the abbreviation “dia” is listed in the cylinder field.

This list describes the comments that may appear in the error status field:

Header CRC:	CRC error on the header field
Label CRC:	CRC error on the label field
Data CRC:	CRC error on the data field
Header Verify:	Verify error on the header field
Label Verify:	Verify error on the label field
Data Verify:	Verify error on the data field
Overrun error:	The processor is unable to keep up with the disk
Recal Error:	A recalibrate command failed

Seek Timeout:	The disk is unable to complete a seek command
Wrong Cylinder:	Seek error
Wrong Head:	Head select error
Wrong Sector:	Wrong sector selected
Unknown:	Error does not fall into one of the above categories

If the possibility exists that the error may be caused by the write circuitry, the letter W appears with the error status.

The “Soft/Hard” field indicates whether the error was recoverable. If the error was recoverable (soft), two numbers appear, separated by a colon. The first number indicates the successful retry attempt. The last number indicates the maximum number of retries allowed for the given type of error. If the error was not recoverable (hard), only the last number is applicable.

Running fault analysis tests

The fault analysis diagnostic tests detect, isolate, and report errors in the fixed disk drive and drive assembly. These tests may be run automatically through the boot diagnostics procedure. The tests take about 1 minute and 20 seconds to run. They may take longer if they detect an error.

You can also manually run individual fault analysis tests and you can repeat a test until it detects an error. You should run the tests manually only at the direction of a Service Representative.

Prerequisites

- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a System Administrator.
- Successfully run boot diagnostics.
- Have handy the Problem Report Form.

Step-by-step

1. Type **Fault Analysis** .

Enter MP code (< number range >):

2. Type the number for the test you want to run 
 - 1010 - 1199 for 10 Mb drives
 - 1610 - 1799 for 29 Mb drives
 - 1310 - 1499 for 42 Mb drives

NOTE

To stop fault analysis at any point, press the BREAK key.

3. Type **Y** or **N** at the “Loop until error?” prompt .

Loop until error (Y/N):

- Y** Repeats the test, until it finds an error or you press the BREAK key.
- N** Stops the test and displays the ">" prompt.

Wrap-up

When you see the ">" prompt, you have successfully completed the fault analysis tests. The maintenance panel displays:

- 1199 for 10 Mb drives
- 1799 for 29 Mb drives
- 1499 for 42 Mb drives

If the test(s) indicate you need to take additional action, explanatory messages follow warnings.

Record the date and test results on the Problem Report Form.

Now, you can perform one of several actions:

- To boot the server for more diagnostics, press **B RESET**.
- To boot the server to run an application, use the **Boot** command.
- To stop diagnostics without booting the server, use the **Quit** command.

Test indicators

If a test fails, an MP code displays on the maintenance panel and on the server terminal screen. See *MP Codes and Messages* for more information.

Running the media scan test



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

This command initiates a scan of the entire disk for a user-specified number of times. You can also specify the retry count. Pages with hard read errors (cannot be read successfully within the given retry count) and soft read errors (can be read with a retry) are listed as they are found. The output of a media scan is a listing very similar to that of **Disk Exerciser**, except that only errors with a status of Header CRC, Label CRC, and Data CRC are shown. After media scan has completed, the **List Bad Pages** command is automatically invoked.

Prerequisites

- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a Service Representative or Analyst.
- Have handy the Problem Report Form.

Step-by-step

1. Type **Media Scan** .

Pass count (1-1000): 5

 **NOTE**

If media scan finds any errors, the **List Bad Pages** command is automatically run after the media scan completes.

2. Type the number of passes and press RETURN; or press RETURN to use the default value of 5.

 **NOTE**

Five passes are recommended.

Retry count (0-20): 2

3. Type the number of retries and press RETURN; or press RETURN to use the default value of 2. Two retries allow you to collect comparative data.

```
successful
page accesses/seeks
before error      Page      Cyl      Hd      Sec      Error Status      Soft/Hard
XXXXX/XXXX
<number> Soft errors
<number> Hard errors
> |
```

Wrap-up

When you see the ">" prompt, the media scan procedure is complete.

Test indicators

The information on the screen changes as the test progresses. Record the page number and the head numbers on the Problem Report Form. Then, call the Systems Customer Support Center.



You can obtain the cumulative results of the media scan by performing the "Listing bad pages" procedure.

If an internal bad page table overflow message displays, call the Service Representative.

Listing bad pages



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. The Systems Customer Support Center will provide the required password.

This command refers to the bad page table and internal bad page table. The bad page table is a data structure stored on the fixed disk that contains the page numbers of “bad” pages. Bad pages have or are suspected to have defects. The manufacturer or an Analyst logs the page numbers into the bad page table. The internal bad page table is a temporary data structure which the Extended Isolation (EI) Disk utility uses to track information about the bad pages. This temporary structure exists only during an EI Disk session.

You use this procedure to list the pages in the internal bad page table along with additional information. Pages are internally logged if they are read from the bad page table on the disk or if they are scanned bad (both soft and hard errors) during media scan and destructive media scan. If the EI Disk utility has not read the bad page table during the current session, you are given the option to read it.

The bad page table column headings provide the following types of information:

- BPT** Indicates if the page is in the bad page table (BPT) on the disk. Pages previously entered into the bad page table or entered during the current EI Disk session appear in this column.
- Hard---Soft** The columns indicate, respectively, the number of hard errors, almost-hard errors, and soft errors. Totals are kept on CRC errors based on the hardness of the read errors. Hard errors indicate that all read retries were unsuccessful. Almost-hard errors are those instances when the total number of read errors falls within two retries of being declared hard. For example, a page with 8 to 9 read errors out of a retry count of 10 would qualify as an almost-hard error. Soft read errors are those with less errors than almost-hard error counts.
- Page** Lists the page number of the bad page.
- Cyl Hd Sec** Provides the disk address of the bad page.
- Area** Provides the field in which the first CRC error occurred. It can be either Header, Label, or Data. If the page was not scanned bad during the current EI Disk session, this field is blank.
- Volume** Identifies the logical volume containing the bad page. If the page does not reside in a logical volume, the physical volume is given. If EI Disk cannot determine the state of the physical volume, *Unknown* appears. If no volumes exist, the field is blank.
- M S** Indicates the reason why the bad page is in the bad page table. An X in the M column indicates the page is in the bad page table because you or another user (M)anually entered it during this session using the **Manual Entry** command. An X in the S column indicates the page is in the bad page table because it was (S)canned bad and you marked it as a bad page with the **Mark Bad** subcommand of the **Test Bad Pages** command. A hyphen (-) indicates that a page that was scanned bad is not logged in the bad page table. A question mark (?) indicates the reason is unknown. This is not unusual because the bad page table cannot retain this information.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a Service Representative or Analyst.
- Have handy the Problem Report Form.

Step-by-step

Type **List Bad Pages** .

BPT...	Hard---	Soft	....Page....	Cyl	Hd	Sec....	Area...	Volume....	M	S
....	< numbers >	....	....	....	....	....	....	....	....	....

Wrap-up

When you see the “>” prompt, the list bad pages procedure is complete.

Test indicators

Record the page number and the volume of the bad page tables that do not have an X. Call the Systems Customer Support Center.

The following example shows a list bad pages display after a media scan (five total scans) has completed:

BPT...	Hard	---	Soft	....Page....	Cyl	Hd	Sec....	Area...	Volume....	M	S
X	0	0	0	....267....	0001	01	15....	....	system		?
....	0	0	1	....30394....	0158	00	02...	Label....	user....		-
X	5	0	0	....35618....	0159	00	02...	Header..	user....	X	

The example indicates that page 267 was read from the bad page table. In addition, it was not bad (0 errors) during any of the scans of the disk for this session so no CRC field area can be given. Page 30394 had one soft read error in the label field during the scan. The hyphen in the M S column indicates the page was not marked as bad. Page 35618 was manually entered during this session (X under the S) because it was bad (hard read errors) on all five scans. The errors occurred in the header field.

Logging bad pages manually



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

Use this procedure to enter pages into the bad page table manually. The pages can be in any of the following formats:

Page Number

Disk Address (Cylinder, Head, Sector)

Shugart or Quantum error Map (Cylinder, Head, Byte–offset, Bits)



CAUTION: Pages containing data files should only be marked bad as a last resort. Currently there is no non–destructive way of removing a page from the bad page table.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a Service Representative or Analyst.
- Have handy the Problem Report Form.

Step-by-step

1. Type **Manual Entry** .

Bad spot format
1 Page number
2 Disk address
3 Error Map
Enter Choice number:

2. Type **1** to select Page number .

NOTE

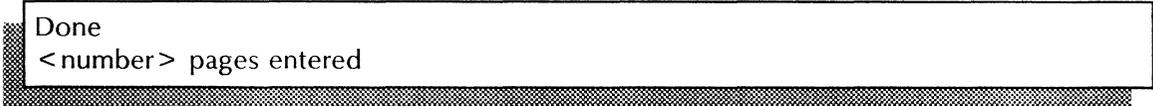
To terminate **Manual Entry**, delete the default entry and press RETURN.

Page <number>:

3. Type the number of the bad page you want to enter .

Confirm? (Y/N):

4. Type **Y** or **N** at the “Confirm?” prompt .
 - Y** Enters the bad page into the bad page table.
 - N** Cancels the command.



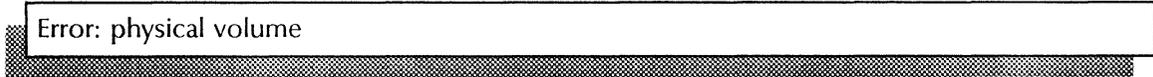
```
Done
<number> pages entered
```

Wrap-up

When you see the message “Done,” the manual entry test procedure is complete. Use the **List Bad Page Table** command to confirm that the pages were entered successfully.

Test indicators

This message indicates that the physical volume is inconsistent.



```
Error: physical volume
```

Record this information on the Problem Report Form and call Service.

To verify the hardware, always run boot diagnostics before entering any bad pages in the bad page table. When boot diagnostics identify a bad page, it is not always necessary or desirable to enter it in the bad page table. Certain hardware failures may cause a page or pages to appear bad when they are not. When boot diagnostics report new bad pages, always verify them by running a non-destructive **Media Scan** or the **Test Bad Pages/Scan** subcommand before entering the page(s) into the bad page table. Use the default number of passes (with 10 retries when using the **Test Bad Pages/Scan** subcommand). Random hard errors that occur during these scan passes may indicate a possible hardware problem. You should also consider other factors such as the disk's bad page history and any unusual operating environment such as changes in room temperature or electrical power.

You may be able to repair bad pages by using the **Test Bad Pages/Repair** subcommand, running a scavenge utility, performing the Fix Headers routine, or by installing software.

When using the **Test Bad Pages**, a page has only soft errors and their percentage is less than 5%, the user can probably ignore the page. Otherwise, use the **Repair** subcommand enabling the overwrite option. If the message "Page not repaired" appears, call the Systems Customer Support Center for assistance.

Use Table 1 to determine the location of the bad page. Repair the pages in the cylinder and system volumes before repairing the user volume.



CAUTION: The underlined pages are specific page numbers which you must not enter into the bad page table.

Header CRC errors You can use the **Test Bad Pages/Repair** subcommand or the Fix Headers routine to try to fix header CRC errors. However, for a 10 or 42 Mb drive to repair a broken header, the entire track must be rewritten. The system will attempt to save the user data from the track on the diagnostic cylinder, but this is not always successful and may result in a loss of some user files. The only other way to fix a broken header is to format the disk, in which case all user files will be lost. It is best to use the **Repair** subcommand or the Fix Headers routine.

Table 1. **Fixed Disk Layout**

	Cylinder 0	Backstop	System	User
10Mb Server	00000-00127	<u>00128-04628</u>	<u>04629-10629</u>	<u>10630-16138</u>
29Mb Server	00000-00223	<u>00224-04724</u>	<u>04725-10725</u>	<u>10726-45022</u>
42Mb Server	00000-00127	<u>00128-04628</u>	<u>04629-12629</u>	<u>12630-65406</u>
80Mb Server	00000-00149	<u>00150-04650</u>	<u>04651-15651</u>	<u>15652-122098</u>
300Mb Server	00000-00569	<u>00570-05070</u>	<u>05071-30071</u>	<u>30072-463979</u>

Repair subcommand or Fix Headers if the header CRC error appears in the initial microcode, backstop, or system volume, after you run the software. User files will not be damaged. If the header CRC error was in the user volume, you may need to run scavenge and restore user files from backup.

If after running the Repair subcommand or Fix Headers routine again, the header CRC error still exists, you need to enter the page in the bad page table (except in the initial microcode volume). If the bad page was in the initial microcode volume, you cannot enter it in the bad page table. If the bad page was in the user volume, run scavenge after you enter it in the

bad page table. If the bad page was in the user volume, run scavenge after you enter the page in the bad page table. Some user files may be lost and you may need to restore them using backup files.

If the bad page was in the backstop or system volume, install software after you enter the page in the bad page table.

Label or data CRC errors

You may need to use the **Test Bad Pages/Repair** subcommand or install software to repair a label or data CRC error in the initial microcode, backstop, or system volume. Installing software is non-destructive to user files as long as the disk is not partitioned first. It should not be necessary to partition the disk for a label or data CRC error.

If after you use the **Test Bad Pages/Repair** subcommand or install software, the label or data CRC error still exists, you need to enter the page in the bad page table (except in the initial microcode volume). If the bad page was in the initial microcode volume, you cannot enter it in the bad page table. If the bad page was in the backstop or system area, install software after entering the page into the bad page table.

You can use **Test Bad Pages/Repair** subcommand or run scavenge to repair label or data CRC errors in the user volume. If the error still exists, call the Systems Customer Support Center for assistance. Some user files may be lost and you may need to restore them using backup files.

Testing bad pages



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

Use this procedure to scan bad pages, attempt to repair them and to enter new, potential bad pages in the bad page table. New pages are those that have been scanned bad during the current EI Disk session and were not previously in the bad page table. They are suspect pages with CRC read errors in the header, label, or data areas, and are contained in the internal bad page table (see **List Bad Pages** command).

This procedure presents the four subcommands of the **Test Bad pages** command in the order in which you would use them.



Run times for the **Test Bad Pages** command varies according to the individual subcommand options you run.

You cannot run this test unless you performed the procedure “Running the media scan test,” immediately before this procedure and bad pages are found.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing medium capacity disk diagnostics,” logging on as a Service Representative or Analyst.

The page to be tested should be scanned first to determine the degree of readability.

Pass count (1-1000):

4. Type the number of passes (100 is recommended) \leftarrow |.

Retry count (0-20):

5. Type the number of retries or press RETURN for the default of 2.

NOTE

A retry count of 10 is recommended to give the best Hard to Soft range. Record the data from the following screen.

Count = <#> Hard = <#>% Almost hard = <#>% Soft = <#>% Okay = <#>%

6. Type **Test** \leftarrow |.

Test

- 1 Scan
- 2 Repair
- 3 Mark bad
- 4 Next page

Enter choice number:

7. Type **2** to select "Repair" .

Overwrite page? (Y/N):

8. Type **Y** to overwrite the page .

NOTE

Always respond to the "Overwrite page?" prompt with a **Y**. The program ignores the response if it has no difficulty reading the data and overwrites the page anyway.

- Y** Overwrites page.
- N** Cancels the command.

Status = <data >
Action = <data >
Contents Reliable = <data >
File = <number >
File Page = <number >
File Type = <number >
Page (not) repaired

9. **Repeat steps 3, 4, and 5** to verify that the Repair was successful. Check that the percent of okay pages have increased. Then, **continue with step 10**.

Test
1 Scan
2 Repair
3 Mark bad
4 Next page
Enter choice number:

10. Type **4** to select the next page **↵**.
11. **Repeat steps 1 through 10** until all the bad pages have been tested.
12. Hold down the CTRL key and type **C** to exit.

Wrap-up

When you see the ">" prompt, the test bad pages procedure is complete.

Large capacity (removable disk) procedures

This section contains these procedures to analyze 8000 server large capacity (80 and 300 Mb) disk problems.

Accessing large capacity disk diagnostics

Use this procedure to access the 8000 large capacity offline diagnostics.

Running the confidence test to verify a single drive

Use this procedure to verify the operation of a disk drive attached to the server.

Running the confidence test to verify several drives

If directed to do so by the Systems Customer Support Center use this procedure to verify the operation of all the drives attached to the server.

Formatting a disk pack

Use this procedure to prepare a removable disk pack for use.

Running the bad page utility

Use this procedure to update the bad page table.

Displaying the bad page table

Use this procedure to check the number of bad pages on a removable disk pack.

Displaying a disk configuration

If directed to do so by the Systems Customer Support Center, use this procedure to display the configuration of your server.

Verifying a disk surface

If directed to do so by the Systems Customer Support Center use this procedure to analyze disk page problems.

Running the disk exerciser test

Use this procedure to check the disk drive hardware.

Accessing large capacity disk diagnostics

Use this procedure to access the 8000 large capacity offline boot diagnostics. Boot diagnostics run automatically as part of the access procedure. When boot diagnostics complete, the TEST SELECTION menu displays on the terminal screen. Boot diagnostic tests are likely to find causes for a system crash.

Some of the diagnostic procedures are password-restricted to Technical Representatives. To access these procedures, contact the Systems Customer Support Center to obtain the required password.

Prerequisite

- Suspect a hardware problem with the large capacity drive.
- Have handy the floppy disk labeled "8000 Series Rigid Disk Diagnostics (80 and 300 Mb)."

- If you need to use a procedure that requires you to log on as a Technical Representative, call the Systems Customer Support Center to obtain the password.
- Have handy the Problem Report Form.

Step-by-step

1. Insert the floppy disk labeled “8000 Series Rigid Disk Diagnostics (80 and 300 Mb).”
2. Boot the server:
 - a. Hold down the B RESET and ALT B buttons at the same time.
 - b. Release the B RESET button.
 - c. When the maintenance panel displays 0002, release the ALT B button.

TIME REQUIRED
PLEASE WAIT! Getting time from server.

The “TIME REQUIRED. PLEASE WAIT! Getting time from server” message appears only if you are entering a password for the first time since booting the server. If the message “No response from Time server” appears, you will be prompted for time information.

LARGE CAPACITY DISK DIAGNOSTICS [Version 7.0+ of 7-Jun-85]

A '?' will further explain the menu options.

A 'BREAK' will return to the prior menu.

PERSON RUNNING THE TEST

1. User
2. System Administrator
3. Tech Rep

Enter Choice Number:

NOTE

Type a question mark (?) at any prompt requiring a response other than "yes" or "no" to display help information.

3. Type the number to begin the log on process depending on the procedures you want to perform:
 - Type **2** and press RETURN to log on as System Administrator.
 - Type **3** and press RETURN to log on as a Technical Representative.
4. Type your password:
 - To log on as a System Administrator, type **STSNEP** .
 - To log on as a Technical Representative, type the password provided to you by the Systems Customer Support Center.



Only asterisks (*) display as you enter the password.

Wrap-up

When you see the TEST SELECTION menu, you can perform the remaining procedures in this section.

TEST SELECTION

- 1 Confidence Test
- 2 Format Disk
- 3 Physical Volume Scavenger
- 4 Bad Page Utility
- 5 Display Bad Page Table
- 6 Exit

Enter choice number:



The instructions for scavenging a physical volume are covered in the Recovery procedures chapter.

Running the confidence test to verify a single drive



The confidence test verifies the condition of a disk drive attached to your server.

Always run the confidence test when you suspect a problem with the server's removable disk. Do not call the Systems Customer Support Center unless the confidence test detects a problem.

The confidence test identifies problems by displaying codes on the maintenance panel. It records error codes in an error log. See *MP Codes and Messages* for more information regarding the codes that display on the maintenance panel.

The confidence test takes about 4 minutes to run on an 80 Mb drive and about 9 minutes to run on an 300 Mb drive. If a failure occurs, the duration is shorter.

Prerequisites

- Perform the procedure "Accessing large capacity disk diagnostics," to log on as a System Administrator and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **1** for the "Confidence Test" option **↵**.



To stop the confidence test at any point press the BREAK key on the server terminal. Then, press the Boot Reset (B RESET) button to return to normal operation.

2. Type **Y** at the "Is the above configuration correct?" prompt **↵**.

LARGE CAPACITY DISK CONFIGURATION

First Unit = < # > Mb

Second Unit = < # > Mb

Third Unit = < # > Mb

Fourth Unit = Not ready. Not found

Is the above configuration correct? (Y/N):

Y Confirms the configuration information.

N Cancels the confidence test.

Passes to run:

3. Type the number of passes (1 to 32000) you want to make **↵**.

CONFIDENCE TEST

Passes to run <number>

Unit(s) being tested <name>

Type of unit being tested (on a single unit test) <data>

Run time for this test <time>

Name of Subtest being run <name>

NOTE

One pass is usually sufficient.

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," you have completed the confidence test. Type any character to return to the TEST SELECTION menu.

Test indicators

If an error occurs, the maintenance panel displays the error code. In addition, the server terminal displays the following message:

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.
Thank you.

Press the BREAK key to display the number of soft errors (errors that are recoverable). Record this information on the Problem Report Form and call Service.



The confidence test records all errors in the error log. It records all commands in the trace table. The trace table lists the type of error, its location, and the command sequence during which the error occurred.

Running the confidence test to verify several drives



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

This test detects and reports hard errors (errors that are not recoverable) and excessive soft errors in the large capacity disk drive and the fixed disk controller. If an error is detected, an error message is displayed on the screen and an MP code displays on the maintenance panel.

The confidence test performs a non-destructive verification on all units. If there are multiple units, and if they are online and in the ready condition, the program can do a multi-unit test.

Run time for the confidence test displays on the screen once the test begins. The screen updates while the test is running.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing large capacity disk diagnostics,” logging on as a Technical Representative to display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **1** to select the “Confidence Test” option **←**.

**NOTE**

To stop the confidence test at any point, press the BREAK key on the server terminal. Then press the Boot Reset (B RESET) button to return to normal operation.

```
LARGE CAPACITY DISK <number> CONFIGURATION
```

```
First Unit = <number> Mb
```

```
Second Unit = <number> Mb
```

```
Third Unit = <number> Mb
```

```
Fourth Unit = Not ready. Not found
```

```
Is the above configuration correct? (Yes/No):
```

2. Type Y at the "Is the above configuration correct?" prompt **↵**.
Y Confirms the configuration information.

Select unit plus pass count to be tested (Yes/No):

N Displays the following:

Please attempt to correct the problem.
Reboot the diagnostic floppy diskette and try again.
Type any character to continue:

3. Type at the "Select unit plus pass count to be tested" prompt **↵**.
Y Displays the UNIT TO BE SELECTED menu.
N Cancels the test.

NOTE

If you do not respond within 10 seconds, the confidence test runs on all the units that are online and in the ready condition.

LARGE CAPACITY DISK CONFIDENCE TEST**UNIT TO BE SELECTED**

1. First Unit
2. Second Unit
3. Third Unit
4. Fourth Unit
5. All Units
6. Exit

4. Type the number of the unit you want to test .

You must select a unit, all units, or exit the test. If a unit selection is made, the test verifies that the selected unit is found, ready, and not write protected. If one of the conditions is not met, one of the following messages is displayed:

Please Attempt to make the Unit ready.
Reboot the diagnostic floppy diskette and try again.
Type any character to continue:

If the selected unit is ready and not write protected, this message is displayed:

Passes to run:

5. Type the number of passes (from 1 to 32000) you want to make on the selected unit



One pass is usually sufficient.

CONFIDENCE TEST

Passes to run: < number >

Running Unit < number > Unit Type: 80Mb Run Time: < # > Mins < # > Secs

SUBTEST

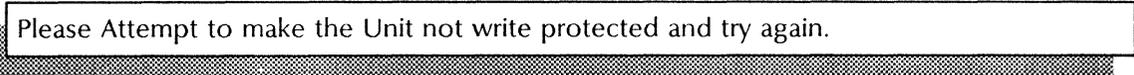
< subtest name >

Wrap-up

When you see the message "SUCCESSFUL COMPLETION. Type any character to continue," the confidence test is complete. Type any character to return to the TEST SELECTION menu.

Test indicators

The following message indicates that the disk unit is write-protected:



Please Attempt to make the Unit not write protected and try again.

The following message indicates an error has been detected. In addition, an MP Code displays on the maintenance panel. See *MP Codes and Messages* for recovery action.

```
ERROR DETECTED. See MP Code.
```

After an error has occurred, press the BREAK key to return to the TEST SELECTION menu. If the error indicated too many soft errors, press the BREAK key to display the soft error count per head. The following screen shows the HEAD ERROR COUNT DISPLAY:

```
HEAD ERROR COUNT DISPLAY
Passes executed: <number>
  HEAD NUMBER   ERROR COUNT
  Head: <number> <number>
  Head: <number> <number>
  Head: <number> <number>
  Head: <number> <number>
  Head: <number> <number>
Type any character to continue:
```

Formatting a disk pack

Formatting a disk pack prepares it for use. It also identifies and flags bad disk pages, and records them in the bad page table. See the “Displaying the bad page table” procedure later in this section for more information.



CAUTION: Formatting a disk pack destroys all data it contains. Copy data you want to save to a backup disk before you format a previously recorded data disk.

You should format a disk whenever you are placing a new disk pack in service or when the Systems Customer Support Center directs you to do so.

Prerequisites

- Copy data to a backup disk before you format a previously recorded data disk.
- Perform the procedure “Accessing large capacity disk diagnostics,” logging on as a System Administrator.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **2** for the "Format Disk" option **↵**.

NOTE

To stop the formatting at any point, press the BREAK key on the server terminal. Then, press the Boot Reset (B RESET) button to return to normal operation.

```
FORMAT DISK
UNIT TO BE SELECTED
  1 First Unit
  2 Second Unit
  3 Third Unit
  4 Fourth Unit
  5 Exit
Enter Choice Number:
```

NOTE

Formatting can be done on both the fixed and removable disks.

2. Type the number for the disk drive containing the pack you want to format **↵**.

```
Passes to run:
```



CAUTION: If you have more than one drive on your server, make sure the drives you don't want formatted are offline.



3. Type the number of formatting passes you want to make on this disk pack .

One pass thoroughly formats the pack and identifies most of the bad disk pages.

WARNING! The following action will be destructive.
Do you still wish to continue (Y/N):

4. Type **Y** at the "Do you still wish to continue?" prompt .
- Y** Confirms the formatting process.
 - N** Cancels the formatting process.

Are you still sure (Y/N):

5. Type **Y** at the "Are you still sure?" prompt .
- Y** Starts the formatting process.
 - N** Cancels the formatting process.

FORMAT DISK

Unit to be run < name >
Passes to run < number >
Run time < number >

Wrap-up

When you see the message "SUCCESSFUL COMPLETION. Type any character to continue," you have completed the formatting procedure. Type any character to return to the TEST SELECTION menu.

Test indicators

The following message indicates a bad page was found and logged in the bad page table:

Logging Bad Pages

The following message indicates a bad page occurred in cylinder zero:

Bad Page in cylinder zero.
Please try another disk pack.
If the problem persists, please get assistance from service.
Type any character to continue:

Follow the instructions in the message to recover from the problem. Record the date and test results on the Problem Report Form.

The following message indicates an excessive number of bad pages exist:

Too many bad pages.
Please try another disk pack.
If the problem persists, please get assistance from service.
Type any character to continue:

The following message indicates a hard (unrecoverable) error occurred:

Formatting failed.
Please call service for assistance and report the Maintenance Panel Code and the data on the screen.
Thank you.

Record the information on the Problem Report Form and call Service.

Running the bad page utility

The bad page utility procedure records a page in the bad page table or rewrites a bad page.

On the 300 Mb fixed drive, you need to record bad pages from the manufacturer's error map. The error map is a listing of disk media errors found by the manufacturer during testing.

The bad page utility provides an option to rewrite the bad page or turn it into a usable page. This provides disk space so that more data can be stored.

Prerequisites

- Perform the procedure "Accessing large capacity disk diagnostics," to log on as a System Administrator and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **4** for the "Bad Page Utility" option **↵**.

BAD PAGE UTILITY

- 1 Manual Bad Page Log
- 2 Rewrite Bad Page (erases Label and Data)
- 3 Exit

Enter Choice Number:

2. Type the number for the option you want \leftarrow .

- 1 Manually records a bad page in the bad page table.
- 2 Rewrites the header of a bad page damaged by a hardware failure.
- 3 Displays the TEST SELECTION menu.

CAUTION: When you rewrite a bad page, the previous contents of the page are lost.



MANUAL BAD PAGE LOG
UNIT TO BE SELECTED

- 1 First Unit
- 2 Second Unit
- 3 Third Unit
- 4 Fourth Unit
- 5 Exit

Enter Choice Number:

3. Type the number for the disk drive with the bad page \leftarrow .

LOG BAD PAGE
Bad page number:

NOTE

To stop the procedure at any point, press the BREAK key on the server terminal. The program returns to the BAD PAGE UTILITY menu.

4. Type the number for the bad page you want to log or rewrite and press RETURN. Use the number appropriate for the type of drive you are testing:

Are you sure? (Yes/No):



CAUTION: Never log a bad page in Cylinder 0. Table 4-1 shows the layout of a 80 Mb and a 300 Mb fixed disk. Never log the first and last numbers for the server you are using:

- 80 Mb drive - never log 0 or 122098
- 300 Mb drive - never log 0 or 463978

Table 4-1. **Fixed disk layout**

	Cylinder 0	Backstop	System	User
80MB Server	00000-00149	<u>00150-04650</u>	<u>04651-15651</u>	<u>15652-122098</u>
300MB Server	00000-00569	<u>00570-05070</u>	<u>05071-30071</u>	<u>30072-463978</u>

- Type **Y** at the "Are you sure?" prompt .
 - Y** Records the page in the bad page table, or rewrites the page.
 - N** Cancels the process.

Exit? (Yes/No):

- Type **Y** at the "Exit?" prompt .
 - Y** Displays the BAD PAGE UTILITY menu.

BAD PAGE UTILITY

- 1 Manual Bad Page Log
- 2 Rewrite Bad Page (erases Label and Data)
- 3 Exit

Enter Choice Number:

N Return to step 4 to record or rewrite another bad page.

- 7. Type **3** to exit the bad page utility **↵**.

Wrap-up

When you see the message "SUCCESSFUL COMPLETION. Type any character to continue," you have completed the procedure. Type any character to return to the TEST SELECTION menu.

Test indicators

The following message indicates you entered a number that does not identify a valid page. Retry the operation with a correct number.

Invalid Entry!

The following message indicates that the bad page you specified is in cylinder 0:



```
Bad Page in cylinder 0.  
Please try another Disk Pack.  
Type any character to continue:
```

Displaying the bad page table

Use this procedure to read the bad page table and display bad pages that were logged with the **Format Disk** command or **Manual Bad Page Log** command. This procedure lets you check the number of bad pages on the disk pack or verify that the proper pages were recorded.

Prerequisites

- Suspect bad pages.
- Perform the procedure “Accessing large capacity disk diagnostics,” to log on as a System Administrator and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **5** for the "Display Bad Page Table" option ↵.

```
BAD PAGE DISPLAY
UNIT TO BE SELECTED
  1 First Unit
  2 Second Unit
  3 Third Unit
  4 Fourth Unit
  5 Exit
Enter Choice Number:
```

2. Type the number of the drive you want to check ↵.

```
BAD PAGE DISPLAY      <unit >
Bad page: < # >   Cylinder: < # > Head: < # > Sector: < # >
Type any character to continue:
```

Wrap-up

When you see the message "Type any character to continue," you have displayed the bad page table. Type any character to return to the TEST SELECTION menu.

Test indicators

The following message indicates that there are no bad pages logged on the disk:

```
BAD PAGE DISPLAY      UNIT <number>  
The Bad Page Table is empty.  
Type any character to continue:
```

Displaying a disk configuration



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

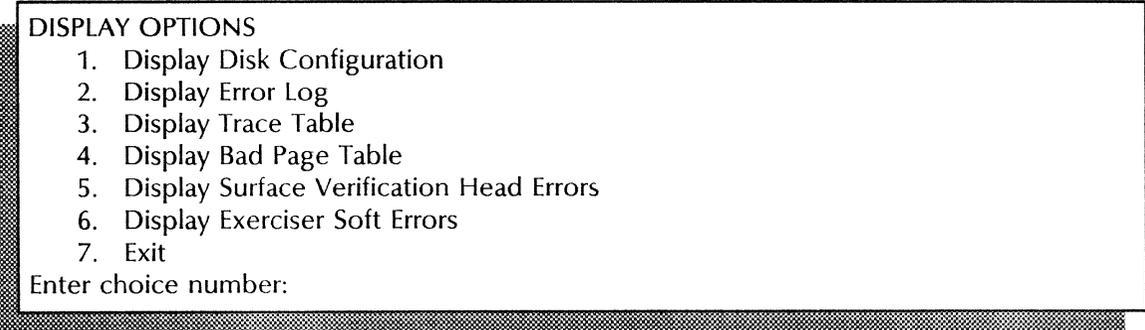
Use this procedure to display the unit type (80/300Mb), the unit placement (first, second, third, or fourth), whether the unit is ready, not ready, or not found. It only displays what is visible to the program. Therefore, if the configuration is not correct, you are responsible for detecting that the configuration is in error.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing large capacity disk diagnostics,” to log on as a Technical Representative and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **2** to select "Display Options" .



DISPLAY OPTIONS

1. Display Disk Configuration
2. Display Error Log
3. Display Trace Table
4. Display Bad Page Table
5. Display Surface Verification Head Errors
6. Display Exerciser Soft Errors
7. Exit

Enter choice number:

**NOTE**

The other options on this menu should only be used by your Xerox Specialist.

2. Type **1** to select "Display Disk Configuration" .

LARGE CAPACITY DISK CONFIGURATION

First Unit = <number> Mb

Second Unit = <number> Mb

Third Unit = <number> Mb

Fourth Unit = Not ready. Not found

Is the above configuration correct? (Yes/No):

Wrap-up

When you see the prompt “Is the above configuration correct?” the display configuration procedure is complete. Type **Y** to accept the configuration and return to the DISPLAY OPTIONS menu.

Test indicators

The message “Not Ready” indicates the drive is present but not online.

The message “Not Found” indicates the drive is not present.

Verifying a disk surface



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

Use this procedure to scan the entire disk surface, reading all pages on the disk. You can specify which unit to run the test on and the number of passes to run. If a bad page is found, the bad page table is checked. If the page is in the bad page table, the page is ignored. If the bad page is not in the bad page table, that page is read an additional nine times, then the success/failure count displays. If the page cannot be read successfully after 10 tries, the program attempts to correct the problem. If the page was corrected, it indicates the method used. The program indicates the pages that cannot be corrected. The following methods are used to correct bad pages:

Times Tried	Corrected by trying again.
Offset Forward	Corrected by moving the heads off-track toward the center of the disk pack.
Offset Reverse	Corrected by moving the heads off-track away from the center of the disk pack.
Strobe Early	Corrected by reading data early.
Strobe Late	Corrected by reading data late.
ECC Correction	Corrected with error correction software.

Not Correctable Could not be corrected.

Run time for Verify Disk Surface is indicated on the screen when the test begins to run.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.
- Perform the procedure “Accessing large capacity disk diagnostics,” to log on as a Technical Representative and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **3** for “Verify Disk Surface” **↵**.

UNIT TO BE SELECTED

1. First Unit
2. Second Unit
3. Third Unit
4. Fourth Unit
5. Exit

2. Type a number to select the drive you want to test **↵**.

FAILING PAGES NOT FOUND IN BAD PAGE TABLE.

PAGE	CYLINDER	HEAD	SECTOR	TIMES TRIED	TIMES FAILED	CORRECTED WITH (Offset/Strobe/ECC)
1560	10	2	0	10	2	Times Tried
2768	18	2	8	10	10	Offset Forward
16577	110	2	17	10	10	Offset Reverse
47172	314	2	12	10	10	Strobe Early
76862	512	2	2	10	10	Strobe Late
93525	623	2	15	10	10	ECC Correction
120221	801	2	11	10	10	NOT Correctable

Wrap-up

When you see the message "SUCCESSFUL COMPLETION. Type any character to continue," you have completed the procedure. Type any character to return to the TEST SELECTION menu.

Test indicators

If errors other than bad pages occur, messages display on the screen. If a hard error is detected, a code number displays on the maintenance panel. If bad pages were detected, the system displays the error count per head when you request it.

Running the disk exerciser test



CAUTION: Do not perform this procedure unless directed to do so by the Systems Customer Support Center. Contact the Systems Customer Support Center to obtain the required password.

This test thoroughly exercises the disk drive hardware, checking for hard and intermittent errors. The test must be run on a disk pack with very few bad pages in order to be considered valid. It first performs a fast format in order to avoid media problems and destroys all data in the process. Then, it performs a random seek of pages on the disk pack verifying the page. Because of the low probability of reading a page that ordinarily is in the bad page table, the test allows one or two bad pages. However, if there are too many bad pages, it will not run.

Run time for the disk exerciser displays on the screen when the program begins.

Prerequisites

- Contact the Systems Customer Support Center to obtain the required password.

- Perform the procedure “Accessing large capacity disk diagnostics,” to log on as a Technical Representative and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type 7 to select “Exercise Disk utility” option ↵.



CAUTION: All of the data on the pack will be lost. You should only run these tests on the Service Pack or a disk pack that does not contain user files.

UNIT TO BE SELECTED

1. First Unit
2. Second Unit
3. Third Unit
4. Fourth Unit
5. All Units
6. Exit

2. Type a number to select the drive you want to test ↵.

Wrap-up

When you see the message "SUCCESSFUL COMPLETION. Type any character to continue," you have completed the procedure. Type any character to return to the TEST SELECTION menu.

Test indicators

If the program detects a hard error, a message displays on the screen and a code displays on the maintenance panel. If the program detects a soft error, the error displays on the screen. All errors are placed in the Error Log, and all commands are placed in the Trace Table.

Record the results on the Problem Report Form and call the Systems Customer Support Center.

5.

Offline diagnostics - 8090 servers

This chapter contains the diagnostic procedures you perform to analyze problems with the low capacity disk, the cartridge tape drive, the high capacity disk, or the high capacity cartridge tape drive on an 8090 server.

Prerequisites

Complete these steps before you perform any 8090 server hardware diagnostic procedures:

- Suspect a hardware problem.
- Record the problem on the Problem Report Form.

Procedures

This section contains these procedures for analyzing 8090 server fixed disk and cartridge tape problems:

Accessing 8090 offline diagnostics

Use this procedure to display the first diagnostics menu, which provides access to: Help, Low Capacity Disk Diagnostics, Cartridge Tape Diagnostics, and High Capacity Diagnostics.

Accessing low capacity disk diagnostics

Use this procedure to run the boot diagnostic tests on the low capacity disk drive and to access the fault analysis test.

Running the fault analysis test

Use this procedure to run individual tests to identify errors in the low capacity disk drive and drive assembly.

Logging on as System Administrator to access cartridge tape diagnostics

Use this procedure to log on and access the Cartridge Tape Diagnostics and Utilities option.

Logging on as System Administrator to access high capacity diagnostics

Use this procedure to log on and access the High Capacity Diagnostics and Utilities option.

Accessing the cartridge tape utilities

Use this procedure to access the various utilities for cartridge tapes to retension, format, and scavenge a tape; and to log a bad page in the bad page table.

Retensioning a cartridge tape

Use this procedure to set the tape to the proper tension.

Formatting a cartridge tape

Use this procedure to format a cartridge tape.

Logging a bad page for a cartridge tape drive

Use this procedure to record the number of a bad page in the bad page table for the cartridge tape.

Logging a bad page for a high capacity disk drive

Use this procedure to record the number of a bad page in the bad page table for the high capacity disk.

Running the confidence test

Use this procedure to run the confidence test for the cartridge tape, the high capacity disk, or the high capacity cartridge tape.

Verifying the disk or tape surface

Use this procedure to verify the cartridge tape surface or the high capacity disk surface.

Displaying cartridge tape statistics

Use this procedure to access the various display options for the cartridge tape.

Displaying high capacity disk statistics

Use this procedure to access the various display options for the high capacity disk.

Displaying high capacity cartridge tape statistics

Use this procedure to access the display options for the high capacity cartridge tape.

Accessing 8090 offline diagnostics

Use this procedure to display the 8090 Offline Diagnostics menu. From this menu, you can select:

- Diagnostics for the low capacity disk drive (25 or 85 Mb)
- Diagnostics and utilities for the cartridge tape
- Diagnostics and utilities for the high capacity disk drive (310 Mb)
- Diagnostics and utilities for the high capacity cartridge tape

The boot diagnostic tests run automatically as part of this procedure. Boot diagnostics verify the operation of the server processor, memory boards, and fixed disk drives. The diagnostics report various failure indicators that alert you to call the Systems Customer Support Center.

Always perform the boot diagnostic tests when you suspect a hardware problem with the fixed disk. Do not call the Systems Customer Support Center unless this procedure fails.

The diagnostics take about 4 minutes to run. It may run several minutes longer, depending on the position of the diagnostics tape when you insert the it into the drive.

Prerequisite

Have handy the tape labeled "8090 Server Diagnostics."

Step-by-step

1. Insert the tape labeled "8090 Server Diagnostics" into the drive.
2. Wait until the tape rewinds and the maintenance panel flashes 0068.
3. Boot the server.
 - a. Hold down the Boot Reset and Alternate Boot buttons at the same time.
 - b. Release the Boot Reset button.
 - c. When the maintenance panel displays 0002, release the Alternate Boot button.

```
Tape Executive Version 2.2
Copyright (c) Xerox Corporation 1984, 1985, 1986, 1987, 1988
All rights reserved.
Processor = <number>
Memory size = <number> K bytes

Scanning cartridge tape directory. (please wait.) ... Done
```



If this is the only server on the net, you see the message "Locating time server..." Enter the correct time parameters before proceeding.

After you see the message "Done," the first diagnostics menu appears:

Choices available:

- 1 Help
- 2 LowCapacityDiskDiagnostics
- 3 CartridgeTapeDiagnosticsAndUtilities
- 4 HighCapacityDiagnosticsAndUtilities

Enter choice number, then press Carriage Return:

Wrap-up

From the first diagnostics menu, you can select the appropriate option and perform the procedures in this chapter as necessary.

Accessing low capacity disk diagnostics

Use this procedure to access the options available to analyze the low capacity disk drive (25 and 85 Mb).

Prerequisite

Perform the procedure "Accessing 8090 offline diagnostics."

Step-by-step

1. At the first diagnostics menu, type **2** and press RETURN to select "Low Capacity Disk Diagnostics." The low capacity disk diagnostics start immediately.

```
Copyright (C) Xerox Corporation 1987, 1988. All right reserved.  
Extended Isolation Disk Diagnostics Program <version> <date>  
Running on a <size> Megabyte Fixed Disk
```

```
> Fault Analysis
```

```
MP code: <number>
```

```
Examining physical volume
```

```
First page of Logical volumn is <number>
```

```
> Media Scan
```

```
Pass: 2
```

```
> List New Bad Pages
```

```
The following pages are marginal
```

```
Please make note and contact your Xerox Support Center.
```

```
-----Page-----Area-----Volume-----  
                <number>         <name>         <name>
```

```
Warnings <...>
```

```
>
```

Wrap-up

When you see the “>” prompt, the fault analysis/media scan tests have completed. The maintenance panel displays:

- 4799 for 25 Mb drives
- 5799 for 85 Mb drives

Now you can select any of the Low Capacity Disk Diagnostics options:

- Boot the server to run an application -- use the **Boot** option
- Boot the server to run a diagnostic -- press the Boot Reset button, releasing at 0000
- Observe disk technical description -- use the **Display Disk Info** option
- Perform fault analysis (see the procedure “Running the fault analysis test” next)
- Log on to a password-protected diagnostic -- use the **Logon** option
- Stop diagnostics without booting the server -- use the **Quit** option

Test indicators

When fault analysis identifies a problem, the maintenance panel alternately displays the test number or report code and an error code. The message “Warnings” may appear if you need to take additional action. See *MP Codes and Messages* for more information about the error code.

If a problem occurs during the memory test (MP code in the 0600s), the test number remains on the maintenance panel while an error log is created.

If a problem occurs during the fault analysis test, the failing MP code displays on the screen as well as on the maintenance panel. The screen also shows the "Loop until error?" prompt. Press RETURN to run diagnostics on that error code. The program continues until either the error no longer exists; or you press the Shift, Break, and Del keys simultaneously.

Running the fault analysis test

The 8090 fault analysis diagnostic includes several tests that detect, isolate, and report errors in the disk assembly area.

Fault analysis runs its tests automatically. These initial tests can normally take from one to four minutes to run, depending on the size of the drive. They may take longer to run if they detect an error.

You can run individual fault analysis tests; for example, to repeat a failed test. By manually starting a fault analysis test, you can repeat the test until it detects an error or you stop it.

Prerequisites

- Perform the procedure "Accessing low capacity disk diagnostics."
- Have handy the Problem Report Form.

Step-by-step

1. Type **Fault Analysis** at the ">" prompt .

Enter Test Code (10-150):

NOTE

Type ? to display a list of the code numbers and the name of each corresponding test.

2. Type a test code (from 10 to 150) .

NOTE

To stop fault analysis at any point, press the Break key.

Test MP Code: <number>
Successful Code: <number>
MP Code: <number>
Loop until error? (Yes/No):

3. Type **Y** or **N** at the "Loop until error?" prompt .
Y Repeats the test until it finds an error or you press the SHIFT Break key.
N Stops the test and displays the ">" prompt.

Wrap-up

When you see the “>” prompt, you have successfully completed the fault analysis test. The maintenance panel displays:

- 4799 for 25 Mb drives
- 5799 for 85 Mb drives

Now you can perform one of three actions:

- Boot the server to run an application -- use the **Boot** option
- Boot the server to run a diagnostic -- press the Boot Reset button, releasing at 0000
- Stop diagnostics without booting the server -- use the **Quit** option

Test indicators

Different codes may display on the maintenance panel depending on the problems detected. See *MP Codes and Messages* for more information.

Record the date and results of the fault analysis test on the Problem Report Form.

Logging on as System Administrator to access cartridge tape diagnostics

Use this procedure to log on and access Cartridge Tape Diagnostics and Utilities.

Prerequisites

- Perform the procedure “Accessing 8090 offline diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. At the first menu, type **3** for the “Cartridge Tape Diagnostic And Utilities” option **↵**.



TIME REQUIRED
PLEASE WAIT! Getting time from server.

This message appears only if you are entering a password for the first time since booting the server.

Copyright (C) Xerox Corporation 1987, 1988 by Xerox Corporation. All rights reserved.
<TYPE OF> DIAGNOSTIC <Version> of <Date> <Time>
A '?' will further explain the menu options.
A 'BREAK' will return to the prior menu.

PERSON RUNNING THE DIAGNOSTIC

1. User
2. System Administrator
3. Tech Rep

Enter choice number:

NOTE

Type a ? at any prompt requiring a response other than "yes" or "no" to display help information.

2. Type **2** for the "System Administrator" option **↵**.

System Administrator
PASSWORD:

3. Type **stsnep** **↵**.

TEST SELECTION

- 1 Utility Options
- 2 Confidence test
- 3 Tape Surface Verify
- 4 Display options
- 5 Exit

Wrap-up

You can perform the remaining procedures in this section from the TEST SELECTION menu.

Logging on as System Administrator to access high capacity diagnostics

Use this procedure to log on and access High Capacity Diagnostics and Utilities.

Prerequisites

- Perform the procedure “Accessing 8090 offline diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. Type **4** for the "High Capacity Diagnostics And Utilities" option .

TIME REQUIRED
PLEASE WAIT! Getting time from server.

This message appears only if you are entering a password for the first time since booting the server.

Copyright (C) Xerox Corporation 1987, 1988 by Xerox Corporation. All rights reserved.
<TYPE OF> DIAGNOSTIC <Version> of <Date> <Time>
A '?' will further explain the menu options.
A 'BREAK' will return to the prior menu.

PERSON RUNNING THE DIAGNOSTIC

1. User
2. System Administrator
3. Tech Rep

Enter choice number:



Type a **?** at any prompt requiring a response other than “yes” or “no” to display help information.

2. Type **2** for the “System Administrator” option **↵**.

```
System Administrator
PASSWORD:
```

3. Type **stsnep** **↵**.

```
HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION
SCSI Configuration Display
< the display will show the present known configuration here >
Is the above configuration correct? (Yes/No):
```

4. Type **Y** or **N** at the “Is the above configuration correct?” prompt.
Y You see the following menu.

- 1 SCSI Configuration Utility
- 2 High Capacity Disk Utilities
- 3 High Capacity Disk Diagnostics
- 4 High Capacity Cartridge Tape Diagnostics
- 5 Exit

N Return to step 2.

Wrap-up

You can perform the remaining procedures in this section from the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu.

Accessing the cartridge tape utilities

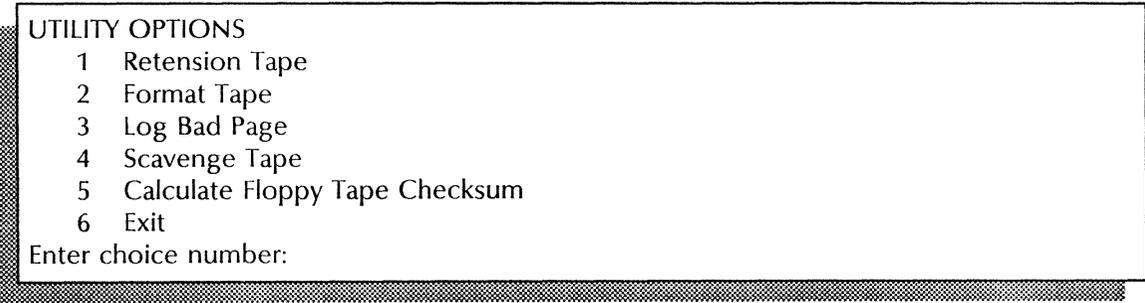
Use this procedure to access the various utilities for 8090 cartridge tapes.

Prerequisites

Perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics” to display the TEST SELECTION menu.

Step-by-step

At the TEST SELECTION menu, type 1 for "Utility Options" .

A screenshot of a terminal window showing the 'UTILITY OPTIONS' menu. The menu is enclosed in a rectangular box with a dotted border. The text inside the box is as follows:

```
UTILITY OPTIONS
 1 Retension Tape
 2 Format Tape
 3 Log Bad Page
 4 Scavenge Tape
 5 Calculate Floppy Tape Checksum
 6 Exit
Enter choice number:
```

Wrap-up

When you see the UTILITIES OPTIONS menu, you can perform the utility procedures, including:

- Retensioning a cartridge tape
- Formatting a cartridge tape
- Logging a bad page



- Scavenging a cartridge tape

The instructions for scavenging a tape are covered in the “Scavenging an 8090 cartridge tape” procedure in the Recovery Procedures chapter.

- Calculate a cartridge (floppy tape) checksum

Retensioning a cartridge tape

Retensioning a cartridge tape may correct read errors by setting the tape to the proper tension. Read errors may occur when a cartridge tape is wound too tightly. This procedure normally takes about 3 minutes.

Prerequisites

- Notice read errors occurring in a new or stored tape.
- Suspect a problem with the cartridge tape.
- Perform the procedure “Accessing the cartridge tape utilities.”
- Have handy the cartridge tape you want to retension.
- Have handy the Problem Report Form.

Step-by-step

1. At the UTILITIES OPTIONS menu, type **1** for the “Retension Tape” option **↵**.

RETENSIONING TAPE

Passes to run:

2. Type the number of passes (1 to 32000) you want to make **↵**.

NOTE

One retensioning pass is usually sufficient.

RETENSIONING TAPE

Total pass count: <number>

Total run time: <number> mins

SUBTEST:

Retension Tape

Each retensioning pass takes about 3 minutes. Each time the system completes a pass, it updates the screen display:

RETENSIONING TAPE

Total pass count: < # > Pass count left: < # >
Total run time: < # > mins Run time left: < # > mins

SUBTEST:
Retension Tape

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," the tape retensioning is complete. Type any character to return to the TEST SELECTION menu.

Test indicators

The following message indicates that tape retensioning failed. Record the MP code and other displayed information on the Problem Report Form and call Service.

ERROR DETECTED

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.
Thank You.

Formatting a cartridge tape

Formatting a cartridge tape prepares it to record data. The procedure, which takes about 45 minutes, retensions the tape, formats it, and verifies the format. Formatting a cartridge tape also reads the tape surface to find defects. The procedure records bad pages in the bad page table.

Preformatted cartridge tapes are available from Xerox. Software or font tapes must be preformatted before you can use them for backup.



CAUTION: Formatting a cartridge tape destroys all data recorded on the tape.

Prerequisites

- Perform the procedure "Accessing the cartridge tape utilities."
- Have handy the Problem Report Form.

Step-by-step

NOTE

1. At the UTILITY OPTIONS menu, type **2** for the “Format Tape” option \leftarrow .

To stop the tape procedure at any point, press the Break key on the server terminal. To exit the tape test entirely to restart and return to normal operation you will need to reboot by pressing the Boot Reset (B RESET) button.

FORMAT TAPE

WARNING! Formatting will destroy the contents of the tape cartridge.

Do you still wish to continue? (Yes/No): No

2. Type **Y** at the “Do you still wish to continue?” prompt and press RETURN. To stop the formatting process, simply press RETURN.
Y Continues the formatting process.
N Cancels the formatting process.

Are you still sure? (Yes/No): No

3. Type **Y** at the “Are you still sure?” prompt and press RETURN. To stop the formatting process, simply press RETURN.
Y Continues the formatting process.

N Cancels the formatting process.

Please, make the tape drive ready.
Type any character when this is done.

4. Insert the cartridge tape into the server. Then, type any key to begin formatting \Leftarrow .

Please enter the name of the tape.
A "RETURN" terminates the entry.
>

NOTE

The action of the tape drive will first rewind the tape to the beginning of tape (BOT) marker and then oscillate ("shoeshine") for several seconds before starting the formatting process.

The tape should now be formatted and you can **skip to Wrap-up**. If the tape you had attempted to format was found to be previously formatted then you will be presented with additional information. **Continue with step 5.**

The tape has already been formatted.
The name of the tape is:
< Tape Name >
Do you still wish to continue? (Yes/No): No

5. Since the tape was found to be already formatted, this message appears, type **Y** \Leftarrow |.
Y Reconfirms the formatting process.
N Cancels the formatting process.

Do you wish to save the old bad page table? (Yes/No): No

6. Type **Y** or **N** at the “Do you wish to save the old bad page table?” prompt \Leftarrow |.
Y Records the old bad page table after the new bad page table.
N Discards the old bad page table.

Wrap-up

When you see the message “SUCCESSFUL COMPLETION,” the tape formatting is complete. Type any character to return to the UTILITY OPTIONS menu.

Test indicators

This message indicates you should perform the “Running the confidence test” procedure:

Hardware error
Please run the Confidence Test.

This message indicates you may need to clean the drive heads or replace the tape:

Bad Tape.
Please clean the read/write head and/or replace the tape.

If you receive the following messages, follow the instructions in the message:

Tape drive not ready.
Please ready the tape drive and try again.

The tape cartridge is write protected.
Please write enable the tape cartridge and try again.
Type any character to continue.

Logging a bad page for a cartridge tape drive

Logging a bad page records the number of a disk page in the bad page table. Use this procedure to log a page in the bad page table for a cartridge tape drive

Occasionally, due to hardware problems, electrical noise, or deterioration of the disk surface, a page on the disk will no longer be readable. When this occurs, the system identifies the number of the page in a message. This page number should be recorded in the bad page table.

Prerequisites

- Perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics.”
- Perform the procedure “Accessing cartridge tape utilities.”
- Have handy the Problem Report Form.

Step-by-step

1. At the UTILITIES OPTIONS menu, type **3** to select the "Log Bad Page" option for the cartridge tape drive **↵**.



To stop logging a bad page at any point, press the Break key on the server terminal. To exit the logging entirely to restart and return to normal operation, reboot by pressing the Boot Reset (B RESET) button.

LOG BAD PAGE

Bad page number:

2. Type the numbers of the page you want to record \leftarrow .

Are you sure? (Yes/No): No

NOTE

Track 0, which includes pages 1 through 32, cannot have bad pages. You may only enter numbers from 33 through 94080.

4. Type **Y** at the "Are you sure?" prompt and press RETURN. To stop the logging process, simply press RETURN.

Y Records the page in the bad page table.

N Cancels the process.

More? (Yes/No): No

5. Type **Y** or **N** at the "More?" prompt \leftarrow .

Y **Return to Step 3** to record another bad page.

N Ends the logging process. The UTILITY OPTIONS menu displays.

Wrap-up

When you see the UTILITIES OPTIONS menu, you have successfully completed the log bad page procedure for the cartridge tape drive.

Test indicators

This message indicates you should perform the "Running the confidence test" procedure:

Hardware error
Please run the Confidence Test.

This message indicates you should check that the tape is properly inserted and try again:

Tape drive not ready.
Please ready the tape drive and try again.

This message indicates you should write-enable the tape and try again:

The tape cartridge is write protected.
Please write enable the tape cartridge and try again.
Type any character to continue.

This message indicates the tape is bad or the read/write heads need to be cleaned:

Bad Tape.
Please clean the read/write head and/or replace the tape.

See Appendix A, Hardware maintenance of the *Services Maintenance Guide* for the procedure to clean the read/write heads.

This message indicates you should format the tape:

The tape is not formatted.

This message indicates you should perform the “Scavenging a cartridge tape” procedure:

The tape needs scavenging.
Please run Scavenge Tape.

Logging a bad page for a high capacity disk drive

Logging a bad page records the number of a disk page in the bad page table. Use this procedure to log a page in the bad page table for a high capacity disk drive.

Occasionally, due to hardware problems, electrical noise, or deterioration of the disk surface, a page on the disk will no longer be readable. When this occurs, the system identifies the number of the page in a message. This page number should be recorded in the bad page table.

Prerequisites

- Perform the procedure “Logging on as System Administrator to access high capacity diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. At the HIGH CAPACITY DISK UTILITY SELECTION menu, type **4** to select the “Log Bad Page” option for the high capacity disk drive **↵**.



To stop logging a bad page at any point, press the Break key on the server terminal. To exit the logging entirely to restart and return to normal operation, reboot by pressing the Boot Reset (B RESET) button.

LOG BAD PAGE

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Sixth Drive
- 6 Exit

Enter choice number:

2. Type the number for the disk drive you want to log .
3. Type the numbers of the page you want to record .

Are you sure? (Yes/No): No



Track 0, which includes pages 1 through 32, cannot have bad pages. You may only enter numbers from 33 through 94080.

4. Type **Y** at the "Are you sure?" prompt and press RETURN. To stop the logging process, simply press RETURN.
 - Y** Records the page in the bad page table.
 - N** Cancels the process.

More? (Yes/No): No

5. Type **Y** or **N** at the "More?" prompt **↵**.
 - Y** Return to step 3 to record another bad page.
 - N** Ends the logging process. The HIGH CAPACITY DISK UTILITY SELECTION menu displays.

Wrap-up

When you see the HIGH CAPACITY DISK UTILITY SELECTION menu, you have successfully completed the log bad page procedure for the high capacity disk drive.

Test indicators

This message indicates you should perform the "Running the confidence test" procedure:

Hardware error
Please run the Confidence Test.

This message indicates you should check that the tape is properly inserted and try again:

Tape drive not ready.
Please ready the tape drive and try again.

This message indicates you should write-enable the tape and try again:

The tape cartridge is write protected.
Please write enable the tape cartridge and try again.
Type any character to continue.

This message indicates the tape is bad or the read/write heads need to be cleaned:

Bad Tape.
Please clean the read/write head and/or replace the tape.

See Appendix A, Hardware maintenance of the *Services Maintenance Guide* for the procedure to clean the read/write heads.

This message indicates you should format the tape:

The tape is not formatted.

This message indicates you should perform the “Scavenging a cartridge tape” procedure:

The tape needs scavenging.
Please run Scavenge Tape.

Running the confidence test

Use this procedure to verify the following 8090 components:

- Cartridge tape drive
- High capacity disk drive
- High capacity cartridge tape drive

Always run a confidence test when you suspect a problem with these components. Do not call the Systems Customer Support Center unless the confidence test detects a problem.

The confidence test records hard errors, hard read errors, and excessive soft read errors. The confidence test identifies problems by displaying one or more codes on the maintenance panel and recording error codes in an error log. See *MP Codes and Messages* for more information.

Prerequisites

- If you are verifying a cartridge tape drive, perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics” to display the TEST SELECTION menu.
- If you are verifying a high capacity disk drive or high capacity cartridge tape drive, perform the procedure “Logging on as System Administrator to access high capacity diagnostics.” This will display the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step to test the cartridge tape

1. At the TEST SELECTION menu, type **2** for the "Confidence Test" option **↵**.

NOTE: This test requires a Diagnostic Tape Cartridge.
Any other tape cartridge will create erroneous results.

CONFIDENCE TEST
Passes to run:

2. Type the number of passes (1 to 32000) you want to make **↵**.



One pass is usually sufficient. If you enter a number higher than 1 then later you can stop the confidence test at any point by pressing the Break key.

3. Insert a Diagnostic Tape Cartridge into the drive. **Skip to the Wrap-up.**

Step-by-step to test the high capacity disk drive

1. At the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu, type **3** for the "High Capacity Disk Diagnostics" option ↵.

HIGH CAPACITY DISK DIAGNOSTICS

TEST SELECTION

- 1 Confidence Test
- 2 Disk Surface Verify
- 3 Display Options
- 4 Exit

Enter choice number:

2. At the TEST SELECTION menu, type **1** for the "Confidence Test" option. ↵.

CONFIDENCE TEST

DRIVE SELECTION

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Sixth Drive
- 7 Seventh
- 8 Multi Drive selection
- 9 Exit

Enter Choice Number:

3. Type the numbers of the drive you want to test. and press RETURN. If you choose the Multi Drive selection, **continue with step 4**. If not, **skip to step 5**.

NOTE

To stop the confidence test at any point, press the Break key.

CONFIDENCE TEST
MULTI DRIVE SELECTION

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 All Drives
- 7 Exit

Enter choices separated by a comma:

4. Type the numbers of the drives you want to test and press RETURN. Separate individual numbers with commas or use a hyphen to list a sequence of drives (for example, 1, 2-4, 6-7).

Passes to run:

5. Type the number of passes (1 to 32000) you want to make ↵.



One pass is usually sufficient. To stop the confidence test at any point, press the Break key.

6. Insert a Diagnostic Tape Cartridge into the drive ↵.

Step-by-step to test the high capacity cartridge tape

1. At the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu, type **4** for the "High Capacity Cartridge Tape Diagnostics" option **↵**.

```
CONFIDENCE TEST
DRIVE SELECTION
  1 First Drive
  2 Second Drive
  3 Third Drive
  4 Fourth Drive
  5 Exit
Enter Choice Number:
```

2. Type the number of the drive containing the cartridge tape you want to test **↵**.

```
Passes to run:
```

3. Type the number of passes (1 to 32000) you want to make **↵**.

NOTE

One pass is usually sufficient. To stop the confidence test at any point, press the Break key.

6. Insert a Diagnostic Tape Cartridge into the drive and press RETURN. **Skip to the Wrap-up.**

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," you have successfully completed the confidence test.

Type any character to return to the TEST SELECTION menu.

Test indicators

This screen displays when the confidence test begins:

```
CONFIDENCE TEST   Drive <number>

Total pass count: <number>
Total run time:   <number>
SUBTEST:
<Name of Subtest being run>
```

This screen displays each time the system completes a pass:

```
CONFIDENCE TEST   Drive <number>

Total pass count: <number> Pass count left: <number>
Total run time:   <number> Run Time left: <number> mins
SUBTEST:
<Name of Subtest being run>
```

This message indicates that the confidence test failed. Record the MP code and other displayed information on the Problem Report Form.

ERROR DETECTED

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.
Thank you.

This message indicates the tape is write-protected. Write-enable the tape and retry the test.

The cartridge tape is write protected.
Please write enable the tape cartridge and try again.
Type any character to continue.

Verifying the disk or tape surface

Use this procedure to verify these 8090 components:

- cartridge tape surface
- high capacity disk surface

This procedure evaluates how well data can be read from the tape or disk surface and helps you determine the number of hard and soft read errors. It helps you identify drives that are reading data poorly.

Prerequisites

- Perform the procedure “Accessing 8090 offline diagnostics.”
- If you are verifying a cartridge tape surface, perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics.”
- If you are verifying a high capacity disk surface, perform the procedure “Logging on as System Administrator to access high capacity diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. If you are verifying:
 - A cartridge tape surface, type **3** for the “Tape Surface Verify” option on the TEST SELECTION menu and press RETURN. **Continue with Step 2.**
 - A high capacity disk surface:
 - a. Type **3** for the “High Capacity Disk Diagnostics” option on the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu **↵**.
 - b. Type **2** for the “Disk Surface Verify” option on the TEST SELECTION menu and press RETURN. **Skip to step 3.**

NOTE

To stop the surface verification test at any point, press the Break key.

Passes to run:

2. If you are testing the cartridge tape drive, type the number of passes (1 to 32000) you want to make **↵**.

NOTE

One pass is usually sufficient.

SURFACE VERIFICATION

DRIVE SELECTION

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Multi Drive selection
- 7 Exit

Enter choice number:

3. Type the numbers of the drives you want to test and press RETURN. Separate the numbers with a comma (for example, **1, 3**) If you choose the "Multi Drive selection," **continue with step 4**. If not, **skip to the Wrap-up section**.

DISK SURFACE VERIFY
MULTI DRIVE SELECTION

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 All Drives
- 7 Exit

Enter choices separated by a comma:

4. If you choose "Multi Drive selection" for the high capacity disk, type the numbers of the individual drives you want to test or type **5** to test all drives **↵**.

SURFACE VERIFICATION

Drive <number>

Started: <hh:mm:ss>

Total pass count: <number>

Total run time: <number>

SUBTEST:

Subtest Name

Each pass takes approximately 9 minutes to run. Each time the program executes a pass it updates the displayed information.

```
SURFACE VERIFICATION          Drive <number>          Started: <hh:mm:ss>
Total pass count: <number>    Pass count left: <number>
Total run time: <number>      Run time left: <number>

SUBTEST:
Subtest Name
Done
```

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," you have completed the surface verification procedure. Type any character to return to the TEST SELECTION menu.

Test indicators

If you see this message, check that the tape is fully inserted in the drive and retry the test:

```
SURFACE VERIFICATION
Please make the tape drive ready.
```

If you receive the following messages, record the information on the Problem Report Form and call the Systems Customer Support Center for assistance:

```
Soft read error:
Page: < # >, stream: < # >, track < # >, sector < # >
```

```
Hard read error:
Page: < # >, stream: < # >, track < # >, sector < # >, tries: < # >, times failed < # >
```

```
SURFACE VERIFICATION
Drive <number>: Detected: <number> soft read errors, <number> hard read errors
Display read errors? (Yes/No): No
```

If you receive this message, record the information on the Problem Report Form and call Service for assistance:

ERROR DETECTED

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.
Thank you.

Displaying cartridge tape statistics

Use these procedures to display the various statistics for the cartridge tape. These options allow you to display:

- Error logs – identifies the most recently recorded hardware errors/ Use this information to isolate a hardware or media problem.
- Soft and hard read errors – lists the errors that have occurred.
- The trace table – identifies the most recently executed commands. Use this information to identify any associated hardware problems.
- The read ID buffer – identifies the ID most recently read. Use this information to isolate bit failures.
- The write and read buffers – identifies the data most recently written and read. use this information to compare between the written and read data.
- The bad page table – use this table to identify the number of bad pages recorded and their location.

Prerequisites

- Suspect a hardware or media problem with the cartridge tape.
- Perform the procedure “Accessing 8090 offline diagnostics.”

- Perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics.”
- Have handy the Problem Report Form.

Step-by-step to access the cartridge tape display options

1. At the TEST SELECTION menu, type **4** for “Display Options” .

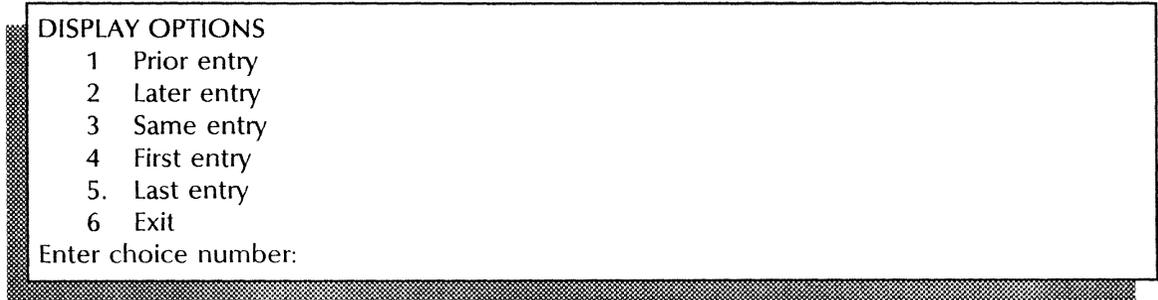
```
DISPLAY OPTIONS
 1  Display Error Log
 2  Display Soft Read Errors
 3  Display Hard Read Errors
 4  Display Trace Table
 5  Display Read ID Buffer
 6  Display Write Buffer
 7  Display Read Buffer
 8  Display Bad Page Table
 9  Exit
```

Enter choice number:

2. When you see the DISPLAY OPTIONS menu, you can perform any of the remaining procedures in this section.

Step-by-step to display the error log

1. At the DISPLAY OPTIONS menu, type **1** for “Display Error Log” .



2. Type the number for the error log entry you want to examine .

```
ENTRY NUMBER:.... <number>           Remaining pass count:.... <number>
Time: <time>                          Subtest number: <number>
COMMAND:
ReadSector[track: <#>, sector: <#>, use single buffer(Y/N):No,
sector count: <#>, clear buffer first(Y/N): Yes, verify read data(Y/N): Yes
data type: diagnostic, try count: <#>];
RETURNED PARAMETERS:
track: <#>, sector: <#>, remaining sector count: <#>,
times retried: <#>
RETURNED STATUS: Data error
TOO MANY SOFT ERRORS IN SUBTEST
Type any character to continue:
```

3. Record the information on the Problem Report Form.

Step-by-step to display soft read errors

1. At the DISPLAY OPTIONS menu, type **2** for “Display Soft Read Error” .

SOFT READ ERROR DISPLAY

Page: < # >, stream: < # >. track: < # >, sector: < # >, times failed: < # >

Type any character to continue:

2. Record the information on the Problem Report Form.

Step-by-step to display hard read errors

1. At the DISPLAY OPTIONS menu, type **3** for “Display Hard Read Error” .

HARD READ ERROR DISPLAY

Page: < # >, stream: < # >. track: < # >, sector: < # >

Type any character to continue:

2. Record the information on the Problem Report Form.

Step-by-step to display the trace table

1. At the DISPLAY OPTIONS menu, type 4 for "Display Trace Table" .

```
ENTRY NUMBER:.... < number >      Remaining pass count:.... < number >
Time: < time >                      Substest number: < number >
COMMAND:
ReadSector[track: < # >, sector: < # >, use single buffer(Y/N): No,
sector count: < # >, clear buffer first(Y/N): Yes, verify read data(Y/N): Yes,
data type: diagnostic, try count: < # >];
RETURNED PARAMETERS:
track: < # >, sector: < # >, remaining sector count: < # >, times retried: < # >
RETURNED STATUS: Data error
TOO MANY SOFT ERRORS IN SUBTEST
Type any character to continue:
```

2. Record the information on the Problem Report Form.

Step-by-step to display the read ID buffer

1. At the DISPLAY OPTIONS menu, type 5 for "Display Read ID Buffer" .

```
ID BUFFER DISPLAY
HEX COUNT 0    1    2    3    4    5    6    7
*****
0000      0000 0102 CA6F 0000 0000 0000 0000 0000
0008      0000 0000 0000 0000 0000 0000 0000 0000

0078      0000 0000 0000 0000 0000 0000 0000 0000
Type any character to continue:
```



The system displays the data in hexadecimal format.

2. Record the information on the Problem Report Form.

Step-by-step to display the write buffer

1. At the DISPLAY OPTIONS menu, type **6** for "Display Write Buffer"

```

WRITE BUFFER DISPLAY
HEX COUNT 0      1      2      3      4      5      6      7
*****
0000      0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008      1011 1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078      7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes

```

NOTE

The system displays the data in hexadecimal format.

2. Record the information on the Problem Report Form.
3. Type **Y** or **N** at the "More?" prompt .
 - Y** Displays additional data.
 - N** Returns you to the DISPLAY OPTIONS menu.

Step-by-step to display the read buffer

1. At the DISPLAY OPTIONS menu, type 7 for “Display Read Buffer” .

```
READ BUFFER DISPLAY
HEX COUNT 0      1      2      3      4      5      6      7
*****          *****
0000          0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008          1011 1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078          7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes
```

**NOTE**

The system displays the data or the ID in hexadecimal format.

2. Record the information on the Problem Report Form.
 3. Type **Y** or **N** at the “More?” prompt .
- Y** Displays additional data.
- N** Returns you to the DISPLAY OPTIONS menu.

Step-by-step to display the bad page table

1. At the DISPLAY OPTIONS menu, type **8** for "Display Bad Page Table" .

```
BAD PAGE DISPLAY
Page: < # >, stream: < # >, track: < # >, sector: < # >
Type any character to continue:
```

2. Record the information on the Problem Report Form.
3. Type **Y** or **N** at the "More?" prompt .
 - Y** Displays additional data
 - N** Returns you to the DISPLAY OPTIONS menu

Wrap-up

When you see the message "Type any character to continue," the display procedure is complete. Type any character to return to the DISPLAY OPTIONS menu. Type **6** to exit.

Displaying high capacity drive statistics

Use these procedures to access the various display options for the 8090 high capacity (310 Mb) fixed disk. These options allow you to display the:

- Physical volume bad page table – lists the bad pages recorded and identifies the location of these bad physical volume pages.
- Error logs – identifies the most recently recorded hardware errors. Use this information to isolate a hardware or media problem.
- Soft and hard read errors – identifies soft and hard read errors.
- Trace table – displays the most recently entered commands. Use this information to identify any associated hardware problems.
- Read and write buffer – displays the data most recently read and written. Compare between the read and write buffer data.
- Info buffer – displays the last read or written information data.



The Display Manufacturing Bad Page Table is only available to field technicians. This book does not include a procedure for this option.

Prerequisites

- Suspect a hardware or media problem with the high capacity fixed disk.

- Perform the procedure “Accessing 8090 offline diagnostics.”
- Perform the procedure “Logging on as a System Administrator to access high capacity diagnostics.”
- Have handy the Problem Report Form.

Step-by-step to access the high capacity drive display options

1. At the HIGH CAPACITY UTILITY AND DIAGNOSTICS SELECTION menu, type **3** for “High Capacity Disk Diagnostics” .

HIGH CAPACITY DISK DIAGNOSTICS

TEST SELECTION

- 1 Confidence Test
- 2 Disk Surface Verify
- 3 Display Options
- 4 Exit

Enter choice number:

2. At the TEST SELECTION menu, type **3** for "Display Options" .

DISPLAY OPTIONS

- 1 Display Manufacturing Bad Page Table
- 2 Display Physical Volume Bad Page Table
- 3 Display Error Log
- 4 Display Soft Read Errors
- 5 Display Hard Read Errors
- 6 Display Trace Table
- 7 Display Read Buffer
- 8 Display Write Buffer
- 9 Display Info Buffer
- 10 Exit

Enter choice number:

Step-by-step to display the physical volume bad page table

1. At the DISPLAY OPTIONS menu, type **2** for "Display Physical Volume Bad Page Table" .

```
PHYSICAL VOLUME BAD PAGE TABLE DISPLAY
DRIVE TO BE SELECTED
  1 First Drive
  2 Second Drive
  3 Third Drive
  4 Fourth Drive
  5 Fifth Drive
  6 Sixth Drive
  7 Exit
Enter choice number:
```

2. If you have a single-drive server, **skip to step 3**. If you have a multiple-drive server, type the number for the disk drive you want to check .

```
PHYSICAL VOLUME BAD PAGE TABLE DISPLAY      DRIVE <number>
1. Page: < # >   Cylinder < # >   Head < # >   Sector < # > .
More? (Yes/No): Yes
```

3. Record the information on the Problem Report Form.

4. Type **Y** at the “More?” prompt **↵**.
Y Displays additional data.
N Return to the DISPLAY OPTIONS menu.

Step-by-step to display the error log

1. At the DISPLAY OPTIONS menu, type **3** for “Display Error Log” **↵**.

```
ENTRY NUMBER:.... < # >      Remaining Pass Count: < # >
Time: < time >                Pass count: < # >
COMMAND: Read[unit: < # >, page: < # >, use single buffer (Y/N): Y,
clear buffer first? (Y/N): Y, verify read data (Y/N): Y,
data type: diagnostic, try count: < # > ];
RETURNED STATUS:
Type any character to continue:
```

NOTE

A two-page display of device status is presented when an entry is made at this point. An abbreviated error report is also shown.

2. Record the information on the Problem Report Form.
3. To display additional error logs, type any character for the DISPLAY OPTIONS menu **↵**.

Step-by-step to display soft read errors

1. At the DISPLAY OPTIONS menu, type **4** for "Display Soft Read Errors"

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Sixth Drive
- 7 Exit

Enter choice number:

2. If you have a single-drive server, **skip to step 3**. If you have a multiple-drive server, type the number for the disk drive you want to check .

SOFT READ ERROR DISPLAY

1. Page: < # > Cylinder < # > Head < # > Sector < # > Times failed < # >
.
20. Page: < # > Cylinder < # > Head < # > Sector < # > Times failed < # >
More? (Yes/No): Yes

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the “More?” prompt ⇐.
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Step-by-step to display hard read errors

1. At the DISPLAY OPTIONS menu, type **5** for “Display Hard Read Errors” ⇐.

HARD READ ERROR DISPLAY

```
1. Page: < # >   Cylinder < # >   Head < # >   Sector < # >   Times failed < # >
.
20. Page: < # >   Cylinder < # >   Head < # >   Sector < # >   Times failed < # >
More? (Yes/No): Yes
```

2. Record the information on the Problem Report Form.

3. Type **Y** or **N** at the "More?" prompt .
Y Displays additional data.
N Return to the DISPLAY OPTIONS menu.

Step-by-step to display the trace table

1. At the DISPLAY OPTIONS menu, type **6** for "Display trace table" .

```
ENTRY NUMBER:.... < number >      Remaining pass count:.... < number >
Time: < time >                      Subtest number: < number >
COMMAND:
buffer(Y/N):Y
sector count: < # >, clear buffer first(Y/N): Yes, verify read data(Y/N): Yes,
data type: diagnostic, try count: < # >];
RETURNED STATUS:
Data CRC Error
Type any character to continue
```

2. Record the information on the Problem Report Form.
3. To display additional trace tables, type any character for the DISPLAY OPTIONS menu .

Step-by-step to display the read buffer

1. At the DISPLAY OPTIONS menu, type 7 for “Display Read Buffer” .

```
DRIVE TO BE SELECTED
 1 First Drive
 2 Second Drive
 3 Third Drive
 4 Fourth Drive
 5 Fifth Drive
 6 Sixth Drive
 7 Seventh Drive
 8 Exit
Enter choice number:
```

2. If you have a single-drive server, **skip to step 3**. If you have a multiple-drive server, type the number for the disk drive you want to check and press RETURN.

```
READ BUFFER DISPLAY
HEX COUNT 0    1    2    3    4    5    6    7
*****
0000      0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008      101  1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078      7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes
```

NOTE

The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the "More?" prompt .
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Step-by-step to display the write buffer

1. At the DISPLAY OPTIONS menu, type **8** for “Display Write Buffer” ↵.

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Sixth Drive
- 7 Seventh Drive
- 8 Exit

Enter choice number:

2. If you have a single-drive server, **skip to step 3**. If you have multiple-drive server, type the number for the disk drive you want to check ↵.

```
WRITE BUFFER DISPLAY
HEX COUNT 0      1      2      3      4      5      6      7
*****
0000      0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008      1011 1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078      7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes
```

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the "More?" prompt ↵.
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Step-by-step to display the info buffer

1. At the DISPLAY OPTIONS menu, type **9** for “Display Info Buffer” **↵**.

```
DRIVE TO BE SELECTED
```

- 1 First Drive
- 2 Second Drive
- 3 Exit

```
Enter choice number:
```

2. If you have a single-drive server, **skip to step 3**. If you have multiple-drive server, type the number for the disk drive you want to check **↵**.

```
INFORMATION BUFFER DISPLAY
```

```
HEX COUNT 0      1      2      3      4      5      6      7
*****          *****
0000          0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008          1011 1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078          7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes
```



The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the "More?" prompt $\Leftarrow|$.
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Wrap-up

When you see the message "Type any character to continue," the display procedure is complete. Type any character to return to the DISPLAY OPTIONS menu. Type **10** to exit.

Displaying high capacity cartridge tape statistics

Use these procedures to access the various display options for the 8090 high capacity cartridge tape. The various options allow you to display the:

- Error log - shows the most recently recorded hardware errors. Use this information to isolate a hardware or media problem with the high capacity cartridge tape.
- Hard and soft read errors - shows both types of read errors.
- Trace table - displays the most recently encountered hard read errors. Use this information to identify any associated hardware problems.

- Read and write buffers – displays the most recent read and write data. Compare between the two types of data.

Prerequisites

- Suspect a hardware or media problem with the high capacity cartridge tape.
- Perform the procedure “Accessing 8090 offline diagnostics.”
- Perform the procedure “Logging on as System Administrator to access high capacity diagnostics.”
- Have handy the Problem Report Form.

Step-by-step to access the high capacity cartridge tape display options

1. At the HIGH CAPACITY AND DIAGNOSTICS SELECTION menu, type **4** for “High Capacity Cartridge Tape Diagnostics” \leftarrow .

TEST SELECTION

- 1 Confidence Test
- 2 Display Options
- 3 Exit

Enter choice number:

2. At the TEST SELECTION menu, type **2** for "Display Options" .

DISPLAY OPTIONS

- 1 Display Error Log
- 2 Display Soft Read Errors
- 3 Display Hard Read Errors
- 4 Display Trace Table
- 5 Display Read Buffer
- 6 Display Write Buffer
- 7 Exit

Enter choice number:

Step-by-step to display the error log

1. At the DISPLAY OPTIONS menu, type **1** for "Display Error Log" .

LOG ENTRY DISPLAY OPTIONS

1. Prior entry
2. Later entry
3. Same entry
4. First entry
5. Last entry
6. Exit

Enter choice number:

2. Type the number of the error log entry you want to examine ↵.

ENTRY NUMBER: < number >

Subtest: < number >

Time: < time >

Pass count: < number >

COMMAND: < data >

RETURNED STATUS: < data >

Type any character to continue:

3. Record the information on the Problem Report Form.
4. At the LOG ENTRY DISPLAY OPTIONS menu, type **6** for the "Exit" option ↵.

Step-by-step to display the soft read errors

1. At the DISPLAY OPTIONS menu, type **2** for "Display Soft Read Errors" .

SOFT READ ERROR LOG

Drive: <number>, track <number>, block <number>

Type any character to continue:

2. Record the information on the Problem Report Form.

Step-by-step to display the hard read errors

1. At the DISPLAY OPTIONS menu, type **3** for "Display Hard Read Errors" .

HARD READ ERROR LOG

Drive: <number>, track <number>, block <number>

Type any character to continue:

2. Record the information on the Problem Report Form.

Step-by-step to display the trace table

1. At the DISPLAY OPTIONS menu, type **4** for "Display Trace Table"

DISPLAY OPTIONS

1. Prior entry
2. Later entry
3. Same entry
4. First entry
5. Last entry
6. Exit

Enter choice number:

2. Type the number of the trace table entry you want to examine ↵.

```
ENTRY NUMBER: <number>      Subtest: <number>
Time: <number>              Pass count: <number>

COMMAND: <data>
RETURNED STATUS: <data>

Type any character to continue:
```

3. Record the information on the Problem Report Form.
4. At the LOG ENTRY DISPLAY OPTIONS menu, type **6** for the "Exit" option ↵.

Step-by-step to display the read buffer

1. At the DISPLAY OPTIONS menu, type **5** for "Display Read Buffer" ↵.

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Exit

Enter choice number:

2. If you have a single-drive server, **skip to step 3**. If you have a multiple-drive server, type the number for the tape drive you want to check ↵.

READ BUFFER DISPLAY

HEX	COUNT	0	1	2	3	4	5	6	7
*****	*****								
0000	0001	0203	0405	0607	0809	0A0B	0C0D	0E0F	
0008	101	1213	1415	1617	1819	1A1B	1C1D	1E1F	
.									
0078	7071	7273	7475	7677	7879	0000	0000	0000	

More? (Yes/No): Yes



The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.

4. Type **Y** or **N** at the "More?" prompt ←|.
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Step-by-step to display the write buffer

1. At the DISPLAY OPTIONS menu, type **6** for "Display Write Buffer" ←|.

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Exit

Enter choice number:

2. If you have a single-drive server, **skip to step 3**. If you have multiple-drive server, type the number for the disk drive you want to check ↵.

```
WRITE BUFFER DISPLAY
HEX COUNT 0    1    2    3    4    5    6    7
*****
0000      0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008      101  1213 1415 1617 1819 1A1B 1C1D 1E1F.
.
0078      7071 7273 7475 7677 7879 0000 0000 0000
More? (Yes/No): Yes
```



The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the “More?” prompt ↵.
 - Y** Displays additional data.
 - N** Return to the DISPLAY OPTIONS menu.

Wrap-up

When you see the message "Type any character to continue," the display procedure is complete. Type any character to return to the DISPLAY OPTIONS menu. Type 7 to exit.

6.

Multiport diagnostics

This chapter contains the diagnostic procedures you perform to analyze problems with the RS232C and RS366 hardware. This hardware provides additional ports for the 8000 and 8090 servers.

Procedures

This section contains these procedures for analyzing 8000 and 8090 hardware problems with the RS232C or RS366 ports:

Accessing the RS232C and RS366 diagnostics

Use this procedure to access the RS232C and RS366 diagnostics.

Running the RS232C internal loopback test

Use this procedure to check basic RS232C port functions.

Running the RS232C turnaround tool loopback test

Use this procedure to check asynchronous transmit and receive functions.

Running the RS232C modem loopback test

Use this procedure to check synchronous transmit and receive functions.

Displaying communication statistics

Use this procedure to display various communications statistics.

Accessing the RS232C and RS366 diagnostics

The RS232C and RS366 diagnostics verify the operation of the respective ports. Always perform these tests when you suspect a hardware problem with the ports. Do not call the Systems Customer Support Center unless one of these procedures fail.

Prerequisites

- Suspect a problem with the RS232C or RS366 port.
- Have handy the Problem Report Form.

Step-by-step

1. Insert the appropriate diagnostic medium into the server drive:
 - For 8090 servers – the cartridge tape labeled “8090 Multiport Service Diagnostics” into the cartridge tape drive.
 - For 8000 servers – the “8010 Multiport RS232C Diagnostics” into the floppy drive.
2. Boot the server.
 - a. Hold down the Boot Reset (B RESET) and Alternate B (ALT B) buttons at the same time.
 - b. Release the Boot Reset (B RESET) button.

- c. When the maintenance panel displays 0002, release the Alternate B (ALT B) button.

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RS232C AND RS366 DIAGNOSTICS (Version 1.0)

A '?' will further explain the menu options.

A 'BREAK' will return to the prior menu.

PERSON RUNNING THE TEST

1. User
2. System Administrator
3. Tech Rep

Enter choice number:

3. Type **2** for the "System Administrator" option \Leftarrow .

System Administrator:

PASSWORD:

4. Type **stsne** .



Only asterisks (*) display as you enter the password.

TEST SELECTION

- 1 RS232C internal loopback
- 2 RS232C turnaround tool loopback
- 3 RS232C modem loopback
- 4 RS366 turnaround tool loopback
- 5 Display options
- 6 Exit

Enter choice number:

Wrap-up

When you see the TEST SELECTION menu, you can perform any of the remaining procedures in this section.

Running the RS232C internal loopback test

Use this procedure to check the RS232C port. Run this test before calling Service when you suspect a problem with the RS232C port.

The RS232C internal loopback diagnostics take about 6 minutes to run depending on the number of ports.

Prerequisites

- Perform the procedure “Accessing the RS232C and RS366 diagnostics.”
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **1** for the “RS232C internal loopback” option **↵**.

```
RS232C INTERNAL LOOPBACK TEST
Passes to run:
```

2. Type the number of passes you want to run **↵**.

```
Running: < data >           Run time: < time >
SUBTEST
< port type > < port number > < subtest name >
```

**NOTE**

One pass is usually sufficient.

Wrap-up

When you see the message “SUCCESSFUL COMPLETION,” you have completed the loopback test. Type any character to return to the TEST SELECTION menu.

Test indicators

If an error occurs, the maintenance panel displays the error code. In addition, the server terminal displays the following message:

ERROR DETECTED

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.

Thank you.

Record this information on the Problem Report Form and call Service.

Running the RS232C turnaround tool loopback test

Use this procedure to check the operation of the RS232C asynchronous functions. Run this test before calling Service when you suspect a problem with the RS232C port.

Prerequisites

- Perform the procedure “Accessing the RS232C and RS366 diagnostics.”
- Have handy the Problem Report Form.
- Install the ‘Turnaround’ tool in the port to be tested.

Step-by-step

1. At the TEST SELECTION menu, type **2** for the “RS232C turnaround tool loopback” option ↵.

```
RS232C TURNAROUND TOOL LOOPBACK TEST
Port to be selected
0  <port name >
1  <port name >
2  <port name >
3  <port name >
4  Exit
Enter choice number:
```

2. Type the number of the port you want to test ↵.

```
Passes to run:
```

3. Type the number of passes you want to run ↵.

One pass is usually sufficient.

NOTE

```
Running port: < data >      Run time: < time >
SUBTEST
< Port number >      < subtest name >
```

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," you have completed the turnaround tool loopback test. Type any character to return to the TEST SELECTION menu.

Test indicators

If an error occurs, the maintenance panel displays the error code. Record this information on the Problem Report Form and call the Systems Customer Support Center.

If you receive the following message, call Service:

```
ERROR DETECTED
Please call service for assistance and report the Maintenance Panel Code and the data on
the screen.
Thank you.
```

If you receive the following message, call the Systems Customer Support Center:

Is the turnaround tool properly installed? (Y/N): No

Running the modem loopback test

Use this procedure to check the operation of the RS232C synchronous functions. This test should be run before calling Service when you suspect a problem with the synchronous operation of the RS232C port.

Prerequisites

- Perform the procedure "Accessing the RS232C and RS366 diagnostics."
- Have handy the Problem Report Form.
- Set up the modem for testing.

Step-by-step

1. At the TEST SELECTION menu, type **3** for the “RS232C modem loopback” option **↵**.
The modem or modem eliminator must be in the loopback mode.

NOTE

RS232C MODEM LOOPBACK TEST

Port to be selected

0 <port name >

1 <port name >

2 <port name >

3 <port name >

Enter choice number:

2. Type the number of the port you want to test **↵**.

Passes to run:

3. Type the number of passes you want to run .



One pass is usually sufficient.

```
Running port: <data>           Run time: <time>
Modem clock frequency: <number>
SUBTEST
<subtest name>
```

Wrap-up

When you see the message "SUCCESSFUL COMPLETION," you have completed the modem loopback test. Type any character to return to the TEST SELECTION menu.

Test indicators

If an error occurs, the maintenance panel displays the error code. In addition, the server terminal displays the following message:

ERROR DETECTED

Please call service for assistance and report the Maintenance Panel Code and the data on the screen.

Thank you.

Record this information on the Problem Report Form and call Service.

Displaying communications statistics

Use these procedures to access the various communications display options for the RS232C and RS366 ports:

- Summary log – displays a summary of RS232C hardware errors.
- Error log – displays the most recently encountered hardware errors.
- Trace table – displays the most recently executed input/output commands.
- Transmit buffer – displays the most recently transmitted data. This information may help isolate bit failures.
- Receive buffer – displays the most recently received data. This information may help isolate bit failures.

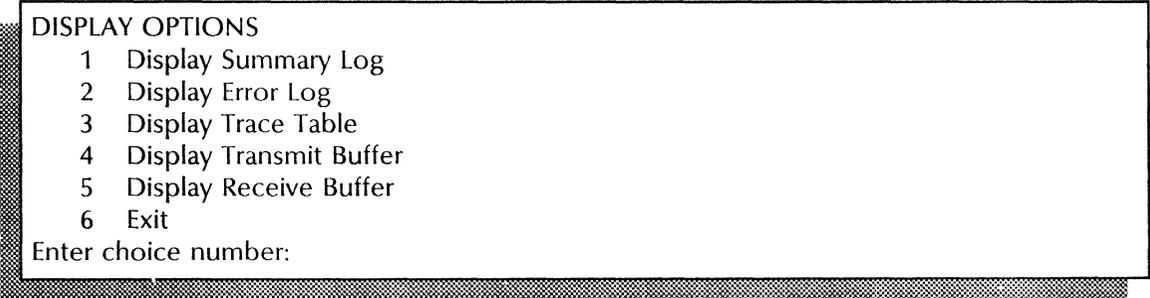
You need this information before you call Service.

Prerequisites

- Perform the procedure “Accessing the RS232C and RS366 diagnostics.”
- Have handy the Problem Report Form.

Step-by-step to access the communications display options

1. At the TEST SELECTION menu, type 5 for "Display options" .



A screenshot of a terminal window showing a menu titled "DISPLAY OPTIONS". The menu lists six numbered options: 1 Display Summary Log, 2 Display Error Log, 3 Display Trace Table, 4 Display Transmit Buffer, 5 Display Receive Buffer, and 6 Exit. Below the list is the prompt "Enter choice number:". The terminal window has a black border and a grey, textured background.

```
DISPLAY OPTIONS
```

- 1 Display Summary Log
- 2 Display Error Log
- 3 Display Trace Table
- 4 Display Transmit Buffer
- 5 Display Receive Buffer
- 6 Exit

Enter choice number:

2. Continue to the display option step-by-step you want.

Step-by-step to display the summary log

1. At the DISPLAY OPTIONS menu, type **1** for the “Display Summary Log” option **↵**.

```
DISPLAY SUMMARY LOG
*****
Transmitter port: <number>          STATUS RETURNED
Command: <name>                     Successful completions: <number>
Times executed: <number>            Bytes transmitted: <number>

*****
Receiver port: <number>              STATUS RETURNED
Command: <name>                     Successful completions: <number>
Times executed: <number>            Bytecount errors: <number> (if errors found)
More? (Yes/No): Yes                 Bytes received: <number>
```

2. Record the information on the Problem Report Form.

Step-by-step to display the error log

1. At the DISPLAY OPTIONS menu, type **2** for the “Display Error Log” option \Leftarrow .

NOTE

If there were no errors the display will be:

```
THE ERROR LOG IS EMPTY
```

```
Type any character to continue:
```

Otherwise:

```
ENTRY NUMBER:..... <number >
```

```
COMMAND: <data >
```

```
Bytes received: <number >
```

```
Returned status: <data >
```

```
                  <error name >
```

```
Remaining iterations: <number >
```

```
Error Code: <number >
```

```
Type any character to continue:
```

2. Record the information on the Problem Report Form.
3. To display additional error logs, type any character for the LOG ENTRY DISPLAY OPTIONS menu ↵.

Step-by-step to display the trace table

1. At the DISPLAY OPTIONS menu, type **3** for the "Display Trace Table" option ↵.

```
ENTRY NUMBER:..... < number >  
  
COMMAND: < data >  
  
Bytes received: < number >  
Returned status: < data >  
Remaining iterations: < number >  
  
Type any character to continue:
```

2. Record the information on the Problem Report Form.
3. To display additional trace tables, type any character for the LOG ENTRY DISPLAY OPTIONS menu ↵.

Step-by-step to display the transmit buffer

1. At the DISPLAY OPTIONS menu, type **4** for the "Display Transmit Buffer" option **↵**.

TRANSMIT BUFFER DISPLAY

Port to be selected

0 Port 0

1 Port 1

2 Port 2

3 Port 3

4 Exit

Enter choice number:

2. Type the number of the port you want to examine **↵**.

```
TRANSMIT BUFFER DISPLAY
HEX COUNT 0    1    2    3    4    5    6    7
*****
0000      0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008      101  1213 1415 1617 1819 1A1B 1C1D 1E1F

0078      7071 7273 7475 7677 7879 0000 0000 0000
Type any character to continue:
```

NOTE

The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the "More?" prompt **↵**.
 - Y** Displays additional data.
 - N** Returns to the DISPLAY OPTIONS menu.

Step-by-step to display the receive buffer

1. At the DISPLAY OPTIONS menu, type **5** for the “Display Receive Buffer” option **↵**.

```
RECEIVE BUFFER DISPLAY
Port to be selected
0   Port 0
1   Port 1
2   Port 2
3   Port 3
4   Exit
Enter choice number:
```

2. Type the number of the port you want to examine **↵**.

```
RECEIVE BUFFER DISPLAY
HEX COUNT 0   1   2   3   4   5   6   7
*****
0000          0001 0203 0405 0607 0809 0A0B 0C0D 0E0F
0008          101  1213 1415 1617 1819 1A1B 1C1D 1E1F
.
0078          7071 7273 7475 7677 7879 0000 0000 0000
Type any character to continue:
```

NOTE

The system displays the data in hexadecimal format.

3. Record the information on the Problem Report Form.
4. Type **Y** or **N** at the "More?" prompt **←**.
 - Y** Displays additional data.
 - N** Returns to the DISPLAY OPTIONS menu.

Wrap-up

When you see the message "Type any character to continue," the display procedure is complete. Type any character to return to the DISPLAY OPTIONS menu. Type **6** to exit.

7.

Recovery procedures

This chapter contains the procedures you can use to recover from hardware or software errors with the 8000 and 8090 series servers. These procedures are divided into:

- Power failure recovery
- Software recovery

Power failure recovery

This section contains the following procedure to recover from errors:

Recovering from a power failure

Use this procedure to make the network operational after a crash caused by a power failure.

Recovering from a power failure

This procedure should be used to make a network operational after a power failure.

Prerequisites

- Determine if other servers on the same network were affected by the power failure.
- Determine system time.
- Have handy the Services Installation Worksheet filed in the *Activities Guide*.

Step-by-step

1. Boot the server using the “Booting the server” procedure in the *Services Maintenance Guide*.

2. Set the correct time on the server using the “Setting time” procedure in the *Services Maintenance Guide*.



Step 2 may not be necessary for the 8090 server because it has a battery-operated backup clock.

3. Set the correct time on the other servers in the same network using the “Booting the server” procedure in the *Services Maintenance Guide*.
4. Boot any connected workstations in the same network using the “Booting the workstation” procedure in the *Viewpoint Reference Manual*.

Wrap-up

When you see the “>” prompt, you have successfully booted your server.

Software recovery

A disk's file system can become damaged due to software failure, hardware failure, or power loss. System software, applications software, or the actual database structure can be damaged. This section contains a number of procedures to recover from software errors:

Repairing damaged service software

Use this procedure to repair damaged service software.

Repairing the Mail Service database

Use this procedure to repair damage to the Mail Service database.

Scavenging an 8000 physical volume

Use this procedure to correct disk errors and repair a broken physical volume on the 8000 drives.

Scavenging an 8090 physical volume

Use this procedure to correct disk errors and repair a broken physical volume on the 8090 high capacity drive.

Scavenging an 8000 user volume

Use this procedure to recover from various errors, including inconsistent file system, disk label check, and unrecoverable disk error on the 8000 and 8090 series servers.

Scavenging an 8090 cartridge tape

Use this procedure to repair a broken file on the cartridge tape.

Repairing damaged service software

Use this procedure to repair damaged individual service software.



If there is a bad page on the backstop or system volume, repair the bad page and re-install system software.

Prerequisites

- Perform the “Running boot diagnostics” procedure to verify that no hardware problem exists.
- Perform the “Running a media scan” procedure (for 8000 medium capacity drives and 8090 low capacity drives), the “Verifying disk surface” procedure (for 8000 large capacity drives), or the “Running the confidence test” procedure (for 8090 high capacity drives) to identify the bad pages in the backstop or system volumes.

Step-by-step

1. Perform a non-normal startup using the “Running the service manually” procedure in the *Services Maintenance Manual*.
2. Type **3** at the “Enter Choice Number” prompt **↵**.
3. Use the “Step 8. Installing services” procedure in the *Services Installation and Setup Guide* to replace the software that was damaged.



If there is another Clearinghouse on the network, you may have to log on and enable at the problem server in order to install another Clearinghouse on that server.

Wrap-up

When you see the “Installing <service name>” message, you have successfully repaired the damaged software.

Repairing the Mail Service database

Use this procedure to repair Mail Service database damage during the server restart sequence. There are three possible starting points for this procedure:

- The server crashed and restarted itself without indicating any need for repair. You suspect that the database is damaged. **Start with Step 1.**
- The Mail Service crashed during operation and rebooted itself. The Mail Service has not started itself yet. Based on recent messages of possible database damage, you determined the need for database repair. **Start with Step 4.**
- You received a message indicating the Mail Service needs to be repaired and the server is prompting you to specify a startup option. **Start with Step 10.**



The Mail Service needs a minimum of 300 pages and a maximum of 7% of the database size to store data during the repair. If it is successful in allocating the space it needs, the procedure continues on its own. If the Mail Service is unsuccessful in allocating all of the space it needs, it aborts the operation and prompts you to reboot and retry the repair. If the repair does not complete normally, call the Systems Customer Support Center.

Step-by-step

1. Log on and enable.
2. Type **Stop Service** .

Enter one or more choices:

3. Type the number for all services (for example, if two services are listed, type **1-2**) .

Stop immediately? (Y/N):

4. Type **Y** at each “Stop Immediately?” prompt
 - Y** The service is stopped immediately and does not respond to users’ requests.
 - N** The system waits until each user is logged off before allowing you to continue.The prompts you receive depend on the services running on your server.

5. Reboot the server:
 - a. Hold down the Boot Reset (B RESET) and Alternate Boot (ALT B) buttons at the same time.
 - b. Release the Boot Reset (B RESET) button.
 - c. When the maintenance panel displays 0001, release the Alternate Boot (ALT B) button.

Normal startup? (Y/N):

6. Type **N** at the "Normal startup?" prompt **⇐**.
 - Y** Completes the initialization process.
 - N** Interrupts the initialization process to perform special functions and displays the interrupt points available.

Enter interrupt point

- 1 Interrupt before opening primary volume
- 2 Interrupt before processing profile
- 3 Interrupt before running services

Enter one or more choices:

7. Type **3** for the "Interrupt before running services" option **⇐**.

8. If you have a single Clearinghouse Service network, and the Clearinghouse resides on this server, type **Run Service** and press RETURN. If not, **skip to Step 11**.

Enter one or more choices:

9. Type the number for the Clearinghouse option ⇐.

Normal startup? (Y/N):

10. Type **Y** at the “Normal startup?” prompt ⇐.
11. Log on and enable.
12. If no other services coreside on your server, or if you do not want the other coresident services to run while the repair operation is running, **skip to step 16**.
13. If you want other coresident services to run while the repair operation is running (especially if a Clearinghouse is coresident), type **Deactivate Service** ⇐.

Enter one or more choices:

14. Type the number for the “Mail Service” option ⇐.
15. Type **Proceed** ⇐.

16. Type **Run Service** |.

Enter one or more choices:

17. Type the number for the “Mail Service” option |.

Normal startup? (Y/N):

18. Type **N** at the “Normal startup?” prompt |.

Enter choice:

19. Type the number for the “Repair existing database” option |.

NOTE

Normally, one or more of the characters “H, B, E, or M” will appear on the screen during the repair. This means that the repair operation discovered an abnormality in a message. The character that is printed shows the nature of the abnormality. If the screen is full of these characters, call the Systems Customer Support Center.

20. When the repair is complete, if you have coresident services that were not running during the repair procedure, type **Proceed** .



After the repair is completed, messages that the Mail Service delivered just prior to the repair might appear as duplicates in recipient's mailboxes. One or more messages may also be deleted during the repair. The amount lost should not be significant.

21. Log off.

Wrap-up

When you see the ">" prompt on the screen, you have successfully completed the procedure.

Scavenging an 8000 physical volume

Use this procedure to scavenge the physical volume for the 8000 drives. You can verify that the disk hardware is functional, correct disk errors, and repair damaged data structures on a physical volume. The system tries to recreate any bad page or logical volume marker page that is not readable.

Prerequisites

- Perform the procedure “Running the confidence test to verify several drives” in the Offline diagnostics - 8000 servers chapter.
- Perform the procedure “Accessing large capacity disk diagnostics” in the Offline diagnostics - 8000 servers chapter, to log on as a System Administrator and display the TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TEST SELECTION menu, type **3** for "Physical Volume Scavenger"

```
SCAVENGE DISK
UNIT TO BE SELECTED
1 First Unit
2 Second Unit
3 Third Unit
4 Fourth Unit
5 Exit
Enter Choice Number:
```

2. Type the number for the drive containing the volume you want to scavenge .

```
If the Physical Volume on the disk is an older version do you wish to convert to the new
version (Yes/No):
```

3. Type **Y** or **N** at the prompt .
- Y** Converts the physical volume file directory to the most recent software version.
- N** Maintains the existing software version.

Wrap-up

When you see the message “SUCCESSFUL COMPLETION. Type any character to continue,” you have completed the scavenging procedure. Type any character to return to the menu.

Test indicators

The following message indicates a boot file is damaged:

```
Please re-install software.  
Type any character to continue:
```

See the “Step 4. Installing system software” procedure in the Server Software Installation chapter of the *Services Installation and Setup Guide*.

The following message indicates that the scavenging operation has found a problem it can correct and is attempting to repair it:

```
A problem was found.  
Attempting repair.  
<item> repaired.
```

The following message indicates that the scavenging operation has not recovered any bad pages in the bad page table and has reset the bad page table:

```
WARNING: The Bad Page Table has been set to zero bad pages.  
Type any character to continue:
```

See the “Running a media scan” procedure in this chapter.

The following message indicates that the scavenge repair has failed:

```
A problem was found.  
Attempting repair.  
Repair Unsuccessful...Bad Disk  
Please call service for assistance.  
Type any character to continue:
```

Scavenging an 8090 physical volume

Use this offline procedure to scavenge the physical volume for the 8090 high capacity disk drive. You can verify that the disk hardware is functional, correct disk errors, and repair a broken physical volume. The system tries to recreate any bad page or logical volume marker page that is not readable.



Online diagnostics for scavenging a cartridge tape are covered in the “Scavenging a cartridge tape” procedure in the Online diagnostics - 8000 and 8090 servers chapter. Also, online diagnostics for scavenging a high capacity cartridge tape are covered in the “Scavenging a high capacity cartridge tape” procedure in the Online diagnostics - 8000 and 8090 servers chapter.

Prerequisites

- Perform the procedure “Running the confidence test” in the Offline diagnostics - 8090 servers chapter.
- Perform the procedure “Accessing 8090 offline diagnostics” in the Offline diagnostics - 8090 servers chapter to access the High Capacity Diagnostics and Utilities.
- Perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics” in the Offline diagnostics - 8090 servers chapter to access the TOOL AND TEST SELECTION menu.
- Have handy the Problem Report Form.

Step-by-step

1. At the TOOL AND TEST SELECTION menu, type **2** for the "Physical Volume Scavenger" option **↵**.

PHYSICAL VOLUME SCAVENGER

DRIVE TO BE SELECTED

- 1 First Drive
- 2 Second Drive
- 3 Third Drive
- 4 Fourth Drive
- 5 Fifth Drive
- 6 Sixth Drive
- 7 Seventh Drive
- 6 Exit

Enter Choice Number:

2. Type the number for the disk drive containing the volume you want to scavenge **↵**.

```
PHYSICAL VOLUME SCAVENGER  DRIVE <number>
```

```
Total pass count: <number>
```

```
Total run time: <number> mins
```

```
SUBTEST:
```

```
<name>
```

Wrap-up

When you see the message "SUCCESSFUL REPAIR. Type any character to continue," you have repaired the physical volume. Type any character to return to the TOOL AND TEST SELECTION menu.

When you see the message "NO PROBLEM FOUND. Type any character to continue," scavenge has completed successfully without finding a problem. Type any character to return to the TOOL AND TEST SELECTION menu.

Test indicators

This message indicates the repair was successful and that the bad page table was either lost or damaged:

```
SUCCESSFUL REPAIR
WARNING! Damaged Physical Volume bad page table.
Do you wish to reconstruct the Physical Volume bad page table using the Manufacturing
bad page table? (Yes/No): Yes
```

Call the Systems Customer Support Center for instructions on how to rebuild the bad page table using the manufacturing bad page table.

This message indicates that scavenging encountered a hard (or unrecoverable) error:

```
REPAIR UNSUCCESSFUL
ERROR DETECTED.
Please call service for assistance and report the Maintenance Panel Code and the data on
the screen.
Thank you.
```

Record the message and MP code on the Problem Report Form and call Service for assistance.

Any of these messages indicate that software needs to be reinstalled:

- Boot file not OK.
- Germ not OK.
- Software microcode not OK.
- Hardware microcode not OK.

Record the message on the Problem Report Form and call the Systems Customer Support Center for assistance.

Scavenging an 8000 user volume

These online scavenge procedures are used to rebuild the structure of the file system on a damaged 8000 disk volume. Scavenging repairs the file system by determining the cause of the problem and the area where it occurred. Once the cause has been determined, you can take appropriate steps to resolve the problem.

Perform these procedures when you need to recover from errors with a disk's file system, including:

- Inconsistent file system
- Disk label check
- Unrecoverable disk error

There are many variables that determine what recovery procedures you should use when the disk's file system becomes damaged. Since the recovery procedures are different for an inconsistent file system and a disk label check or unrecoverable disk error, separate step-by-step procedures are available for each of these situations.

The following procedures are available:

- Accessing scavenge
- Scavenging to recover from an inconsistent file system
- Scavenging to recover from an unrecoverable disk error/disk label check

The time needed to conduct a scavenge operation depends on the size of the disk involved:

- 10 Mb fixed disk 5 – 10 minutes
- 29 Mb fixed disk 10 – 20 minutes
- 42 Mb fixed disk 15 – 45 minutes
- 80 Mb removable disk 15 minutes – 1 hour
- 300 Mb removable disk 30 minutes – 4 hours

NOTE

On systems with multiple disks, scavenging can be run in the background. You can scavenge the primary volume by booting from a secondary volume, typing the **Scavenge** command, and specifying the primary volume as the drive to scavenge. You can scavenge the secondary volume by typing the **Scavenge** command and specifying the desired secondary volume as the drive to scavenge.

There are two types of scavenge operations that you can use: normal and non-normal.

Normal scavenge repairs inconsistent portions of the file system. When a normal scavenge is used, the user volume is returned to a useful condition through a minimum of automatic recovery procedures. Occasionally, the normal scavenge operation determines the need for a page-level scavenge and applies one automatically. When this occurs, a message displays on the terminal screen and records in the scavenger log. Other times, a normal scavenge fails to repair the volume because it does not detect a need for an extended scavenge. This may become apparent when you retry the procedure that manifested the problem.

Non-normal scavenge has two options: page-level scavenge and extended scavenge. You may select either or both of these options when running a non-normal scavenge. The page-level scavenge repairs page-level inconsistencies of the file system. The extended

scavenge completely rebuilds the file system so that all inconsistent parts are repaired, including those that were missed by a previous normal scavenge.



If you do not select a page level scavenge and the system determines that a page-level scavenge is needed, the page level scavenge is performed.

Prerequisites

- Suspect disk errors.
- Have handy the Problem Report Form.

Step-by-step to access scavenge

1. Reboot the server.
 - a. Hold down the Boot Reset (B RESET) and Alternate Boot (ALT B) buttons at the same time.
 - b. Release the Boot Reset (B RESET) button.
 - c. When the maintenance panel displays 0001, release the Alternate Boot (ALT B) button.

Normal startup? (Y/N):

2. Type **N** at the “Normal Startup?” prompt .
 - Y** Completes the initialization process.
 - N** Interrupts the initialization process to perform special functions and displays the interrupt points available.

Enter interrupt point

- 1 Interrupt before opening primary volume
- 2 Interrupt before processing profile
- 3 Interrupt before running services

Enter one or more choices:

3. Type **1,3** for the “Interrupt before opening the primary volume” and “Interrupt before running services” options .
4. Type **Scavenge** .

NOTE

If you have a multi-drive server, you are asked which drive you want to scavenge. Type the number of the volume you were attempting to open when you received the error message.

Normal scavenge? (Y/N):

Step-by-step to recover from an inconsistent file system

1. Type **Y** at the "Normal scavenge?" prompt **↵**.
Y Selects the Normal Scavenge operation.
N Selects the Non-normal Scavenge operation.

```
Confirm? (Y/N):
```

2. Type **Y** at the "Confirm?" prompt **↵**.

```
Scavenge started on <date> <time>  
Scavenging directories...done  
Building data structures...done  
Rebuilding directories...done  
Writing log...done  
<number> files found.  
Total elapsed time for scavenge: <time>
```

3. Type **Proceed** **↵**.
4. Verify that the server is able to open the primary volume and continue with its normal initialization process. If so, your scavenge has fixed the problem. If not, perform an extended scavenge. **Continue with Step 5.**

5. **Repeat Step 1.**

Normal scavenge? (Y/N):

6. Type **N** at the “Normal scavenge?” prompt **↵**.

Additional scavenge option(s) to be applied

1 Page-level scavenge

2 Extended scavenge

Enter one or more choices:

7. Type **2** for the “Extended scavenge” option **↵**.

The File System will be scavenged

The extended scavenge option will be applied during this scavenge

Confirm? (Y/N):

8. Type **Y** at the “Confirm?” prompt **↵**.

Y Confirms the extended scavenge operation.

N Cancels the extended scavenge operation.

```
Scavenge started on < date > < time >
Scavenging directories...done
Building data structures...done
Rebuilding directories...done
Writing log...done
< number > files found.
Total elapsed time for scavenge: < time >
```

9. Type **Proceed** .
10. Verify that the server is able to open the primary volume and continue with its normal initialization process. If so, your extended scavenge has fixed the problem. If not, call the Systems Customer Support Center.

Test indicators

If the scavenge procedure uncovered additional problems, the message “Please see scavenge log for problems found” directs you to the scavenger log. Use the **Show Scavenger Log** command to view the scavenger log. Refer to Appendix A in this book for a list of scavenger log messages.

Use the **Show Scavenger Log** command to view the report of problems found. Look for entries ending in “.bcd”. Use the “Step 8. Installing services” procedure in the Server

Software Installation chapter of the *Services Installation and Setup Guide* to reinstall the service named before the “.bcd” suffix.



CAUTION: Do not reinstall the Mail Service software if it is damaged. Use the “Repairing the Mail Service database” procedure.

Wrap-up

When you see the message “Total elapsed time for scavenge <time>,” the scavenge procedure has completed.

Step-by-step to recover from an unrecoverable disk error/disk label check

1. Type **N** at the “Normal scavenger?” prompt |.
 - Y** Selects the normal scavenge operation.
 - N** Selects the non-normal scavenge operation.

Additional scavenge option(s) to be applied

- 1 Page-level scavenge
- 2 Extended scavenge

Enter one or more choices:

2. Type **1** for the “Page-level scavenge” option **↵**.

The File System will be scavenged
The page-level scavenge option will be applied during this scavenge
Confirm? (Y/N):

3. Type **Y** at the “Confirm?” prompt **↵**.

Test indicators

If the scavenge procedure uncovered additional problems, the message “Please see scavenge log for problems found” will direct you to the scavenger log. Use the **Show Scavenger Log** command to view the scavenger log. Refer to Appendix A in this book for a list of scavenger log messages.

Use the **Show Scavenger Log** command to view the report of problems found. Look for entries ending in “.bcd”. Use the “Step 8. Installing services” procedure in the Server Software Installation chapter of the *Services Installation and Setup Guide* to reinstall the service named before the “.bcd” suffix.



CAUTION: Do not reinstall the Mail Service software if it is damaged. Use the “Repairing the Mail Service database” procedure.

Wrap-up

When you see the message “Total elapsed time for scavenge <time>”, the scavenge procedure has completed.

Scavenging an 8090 cartridge tape

Use this offline procedure to repair a broken file on the 8090 cartridge tape. The procedure may take from a few seconds up to 45 minutes, depending on the number of files on the tape.



Online diagnostics for scavenging a cartridge tape are covered in the “Scavenging a cartridge tape” procedure in the Online diagnostics - 8000 and 8090 servers chapter. Also, online diagnostics for scavenging a high capacity cartridge tape are covered in the “Scavenging a high capacity cartridge tape” procedure in the Online diagnostics - 8000 and 8090 servers chapter.

Prerequisites

- Perform the procedure “Logging on as System Administrator to access cartridge tape diagnostics” in the Offline diagnostics - 8090 servers chapter to access the TEST SELECTION menu.
- Perform the procedure “Accessing cartridge tape utilities” in the Offline diagnostics - 8090 servers chapter to access the UTILILITY OPTIONS menu.

- Have handy the Problem Report Form.

Step-by-step

1. At the UTILITY OPTIONS menu, type **4** for the “Scavenge Tape” option **↵**.



To stop this procedure at any point, press the BREAK key.

```
SCAVENGE TAPE
```

```
Running Scavenger
```

Wrap-up

When you see the message “SUCCESSFUL REPAIR,” the tape scavenging is complete. Type any character to return to the UTILITY OPTIONS menu.

Test indicators

This message indicates you should perform the “Running the confidence test” procedure:his message indicates you should reinsert the tape and try again:

UNSUCCESSFUL REPAIR

Hardware error

Please run the Confidence Test.

UNSUCCESSFUL REPAIR

Tape drive not ready.

Please ready the tape drive and try again.

This message indicates you should write-enable the tape and try again:

UNSUCCESSFUL REPAIR

The tape cartridge is write protected.

Please write enable the tape cartridge and try again.

Type any character to continue.

This message indicates you should clean the read/write heads or use another tape:

UNSUCCESSFUL REPAIR

Bad Tape.

Please clean the read/write head and/or replace the tape.

See Appendix A, *Hardware maintenance*, of the *Services Maintenance Guide*, for the procedure to clean the read/write heads.

This message indicates you should format the tape:

UNSUCCESSFUL REPAIR

The tape is not formatted.

A.

Scavenger log messages

Introduction

When the system encounters an error during a scavenge operation, it displays a message on the server terminal and records the message in the scavenger log. Then, it attempts to correct the problem. If the system did not resolve the problem, you must restore the file(s).

Be familiar with the following terms and abbreviations:

NSFile	Any file (document, folder, file drawer) that is stored on a server. If the file can contain another file, it is referred to as a <i>container</i> or a <i>directory</i> .
Leader page	Part of the internal structure of the file containing the file attributes.
Segment	A piece of a file.

Segment directory	A list of the segments in a file.
Children	Any file(s) contained in a file drawer, folder, or divider. For example, a document contained in a file drawer is the child of the file drawer.
Orphan	The remaining contents of a file drawer, folder, or divider after the container was deleted. The system places the remaining contents in an orphan directory called Scavenge of < date >.

Listing

MESSAGE

Error 1 - changed to directory

DESCRIPTION

The system changed an NSFile (file A) that was not a directory into one because another NSFile (file B) claimed to be contained within it. After scavenging, file A is a directory and contains file B.

Error 2 - duplicate page

During scavenging, several disk pages were discovered that claimed to be the same page of an NSFile. The scavenger arbitrarily chose one of these pages as valid. The other was deleted.

Error 3 - duplicate segment ID

The contents of the segment directory within an NSFile indicated two segments with the same identifier. Identifiers must be unique for all segments of an NSFile. One of the two was modified to the value indicated to make it unique.

Error 4 - file deleted	Because other problems were encountered, the file was deleted. In all cases, at least one other message accompanies this one.
Error 5 - illegal attribute value	The scavenging program encountered an illegal value. The value of the attribute was reset to a default (legal) value.
Error 6 - illegal attribute value for non-directory	The value is not allowed for an NSFile which is not a directory. The value of such an attribute was reset to a default (legal) value.
Error 7 - illegal segment ID	An entry of the segment directory within an NSFile contained an invalid segment identifier. The scavenger changed the bad value to a valid and unique one.
Error 8 - invalid attribute value	The scavenging program encountered an invalid value (for example, strings with illegal characters). The value of the attribute was reset to a default (valid) value.
Error 9 - deleted leader extension	Because of other problems, the leader extension of an NSFile had to be deleted.
Error 10 - missing leader extension	An NSFile indicated that it had an extended leader but none was found. The indication of an extended leader was reset for this file.
Error 11 - reinserted leader extension	The scavenging program reattached a leader extension file that was detached from its primary NSFile.

- Error 12 - leader extension has wrong type** The leader extension file indicated by the content of an NSFile leader was not of the proper type. The bad leader extension file was deleted and the NSFile leader was changed to indicate that the leader is no longer extended.
- Error 15 - loop in hierarchy** The scavenging program encountered an NSFile, which claimed to be a child of one of its descendants. The loop was broken.
- Error 16 - missing pages** After reconstructing the mapping of files to the pages representing their contents, the indicated pages were not found. Each such page was reinitialized with null values.
- Error 17 - orphan file** The scavenging program encountered an NSFile which had no valid parent. The file was placed in an orphan folder.
- Error 19 - orphan page** The scavenging program encountered a disk page which did not appear to belong to any file, but appeared to contain data. The contents of the page were lost.
- Error 20 - orphan segment** The scavenging program could not locate an NSFile containing a valid segment entry for the indicated segment. The NSFile designated within the segment did not indicate a valid NSFile. The orphaned segment was deleted.
- Error 21 - deleted segment** Because of other reported problems, it was necessary to delete the indicated segment.
- Error 22 - missing segment** The segment directory of an NSFile indicated a segment file which could not be located. The entry for the segment was deleted from the segment directory.

Error 23 - reinserted segment	The indicated segment was reinserted into the segment directory of an NSFile.
Error 24 - segment has wrong type	The file designated by the content of a segment directory entry was not of the proper type. The entry was removed and the file deleted.
Error 27 - string is too long	The value of a string attribute exceeded the maximum allowable length for string values. The value was truncated to a length not exceeding the allowable maximum.
Error 28 - too many segments	The segment directory of an NSFile contained too many entries. The count of entries was reduced to the maximum allowed and extraneous entries were ignored.
Error 29 - unreadable pages	Certain pages representing the content of a file could not be read from the disk. An attempt was made to rewrite the contents of each such page to allow them to be read. However, if this failed, the file containing the pages was lost.
Error 30 - bad variable attributes	The storage area for variable-length attributes (string attributes such as name and owner) was ill-formed and could not be recovered. Previous values for these attributes were lost and their new values were nulled (appear uninitialized).
Error 31 - wrong number of children	The number of children indicated for a directory disagreed with the actual number found by scavenging. The value of this attribute was corrected.
Error 32 - wrong segment ID	The segment identifier within a segment directory entry did not agree with that contained within the segment file itself. The identifier within the segment file was changed to agree with the segment directory entry.

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- Error 33 - wrong data size in bytes** The stored value of the size of the file in bytes did not agree with the actual number of bytes found. The value of this attribute was set to the actual number of bytes found. This is reported when the contents of the file have incorrect information.
- Error 34 - wrong stored size in bytes** The stored value for the size of the file in pages did not agree with the actual number of pages found. The value of this attribute was set to the actual number of pages found. This is reported when the stored size (content plus attributes) has incorrect length.
- Error 37 - new root created** The root of the file system was lost and recreated.
- Error 38 - orphan directory created** This directory was created to hold orphan files.

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