Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124-6497

(503) 696-8080

intel®

April 1994

Dear Paragon™ Supercomputer Customer:

This package contains your Paragon™ System Diagnostics 1.2 software. With this software installed on your Paragon™ Supercomputer, you can use the Paragon™ system diagnostics on the diagnostic station. Please read through the documentation and distribute it to those intending to use the system diagnostics.

Before using your Paragon™ System:

- **Read this letter completely.**
- **Verify the contents of this package.**
- **Read the *Paragon™ System Diagnostic 1.2 Release Notes.***

Package Contents

Your Paragon™ System Diagnostic software is provided as a separate shrinkwrapped package. Please verify that it includes the items listed in Table 1 (Installation Media) and Table 2 (Documentation). If any items are missing, or if you have any questions, please contact Intel Supercomputer Systems Division as described in the "Comments and Assistance" section.

Table 1. Installation Media

Description	Order Number
Cartridge tape labeled Paragon™ Diagnostic Software Release R1.2	313080-001
Cartridge tape labeled Paragon™ Diagnostics Mass Install Release R1.1	312978-001
SCO®OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation N1 Boot Disk	312974-001
SCO®OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation N2 File System Disk	312975-001
SCO®OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation M01 Master Install Disk	312976-001
Paragon™ Diagnostic Workstation Tests Release 1.0 disk	312787-001

Table 2. Documentation

Description	Order Number
Paragon™ System Diagnostic 1.2 Release Notes	313059-001
Paragon™ Diagnostics Reference Manual	312702-003
Paragon™ Diagnostics Troubleshooting Guide	313001-002

What is in This Release?

This release contains Paragon™ System Diagnostics 1.2, Release 3.0.0 of the SCO Open Desktop, the Paragon™ *Diagnostic Reference Manual*, and the Paragon™ *Diagnostic Troubleshooting Guide.*

Restrictions and Limitations of Diagnostics 1.2

Every effort has been taken to ensure the quality of this release, but at the time of shipment we are aware of some limitations. Please refer to the *Paragon™ System Diagnostic 1.2 Release Notes* for known limitations and available workarounds.

Installation

NOTE

Adding or removing any boards or components from your Paragon™ system can damage the system and may invalidate your warranty. Please contact Intel Supercomputer Systems Division Customer Support for assistance in answering your questions.

For directions on how to install the Paragon™ System Diagnostic software, refer to Chapter 3 in the *Paragon™ System Diagnostic 1.2 Release Notes*.

Comments and Assistance

Intel Supercomputer Systems Division is eager to hear of your experiences with our products. Please call us if you need assistance, have questions, or otherwise want to comment on your Paragon system.

U.S.A./Canada Intel Corporation
Phone: 800-421-2823
Internet: support@ssd.intel.com

Intel Corporation Italia s.p.a.
Milanofiori Palazzo
20090 Assago
Milano
Italy
1678 77203 (toll free)

France Intel Corporation
1 Rue Edison-BP303
78054 St. Quentin-en-Yvelines Cedex
France
0590 8602 (toll free)

Intel Japan K.K.
Supercomputer Systems Division
5-6 Tokodai, Tsukuba City
Ibaraki-Ken 300-26
Japan
0298-47-8904

United Kingdom Intel Corporation (UK) Ltd.
Supercomputer System Division
Pipers Way
Swindon SN3 IRJ
England
0800 212665 (toll free)
(44) 793 491056 (*answered in French*)
(44) 793 431062 (*answered in Italian*)
(44) 793 480874 (*answered in German*)
(44) 793 495108 (*answered in English*)

Germany Intel Semiconductor GmbH
Dornacher Strasse 1
85622 Feldkirchen bei Muenchen
Germany
0130 813741 (toll free)

World Headquarters
Intel Corporation
Supercomputer Systems Division
15201 N.W. Greenbrier Parkway
Beaverton, Oregon 97006
U.S.A.
(503) 629-7600 (Monday through Friday, 8 AM to 5 PM Pacific Time)
Fax: (503) 629-9147

If you have comments about our manuals, please fill out and mail the enclosed Comment Card. You can also send your comments electronically to the following address:

techpubs@ssd.intel.com (Internet)

Intel Supercomputer Users Group

The Intel Supercomputer Users Group promotes the exchange of information among users. Intel strongly supports the Users Group and encourages participation in its activities, which include: Special Interest Groups (SIGs), an annual international users conference, an electronic mail task force, and a "freeware" library of user-contributed software, available electronically to all members of the Intel Supercomputer Users' Group. For membership information contact:

JoAnne Wold (503-629-5322)
joanne@ssd.intel.com (Internet)

Sincerely,

Steve Cannon

Product Marketing Manager
Intel Supercomputer Systems Division

March 1994
Order Number: 313059-001

Paragon™

System Diagnostic 1.2 Release Notes

Intel® Corporation

WARNING

Some of the circuitry inside this system operates at hazardous energy and electric shock voltage levels. To avoid the risk of personal injury due to contact with an energy hazard, or risk of electric shock, do not enter any portion of this system unless it is intended to be accessible without the use of a tool. The areas that are considered accessible are the outer enclosure and the area just inside the front door when all of the front panels are installed, and the front of the diagnostic station. There are no user serviceable areas inside the system. Refer any need for such access only to technical personnel that have been qualified by Intel Corporation.

CAUTION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

LIMITED RIGHTS

Preface

Organization

Chapter 1	This chapter describes the features of the Paragon system diagnostics.
Chapter 2	This chapter describes the compatibility, limitations and workarounds for the Paragon system diagnostics.
Chapter 3	This chapter describes how to install the Paragon system diagnostic software.
Chapter 4	This chapter describes how to update GP node firmware.

Notational Conventions

This manual uses the following notational conventions:

Bold
Identifies command names and switches, system call names, reserved words, and other items that must be used exactly as shown.

Italic
Identifies variables, filenames, directories, processes, user names, and writer annotations in examples. Italic type style is also occasionally used to emphasize a word or phrase.

`Plain-Monospace`
Identifies computer output (prompts and messages), examples, and values of variables. Some examples contain annotations that describe specific parts of the example. These annotations (which are not part of the example code or session) appear in *italic* type style and flush with the right margin.

`Bold-Italic-Monospace`
Identifies user input (what you enter in response to some prompt).

Bold-Monospace
: Identifies the names of keyboard keys (which are also enclosed in angle brackets). A dash indicates that the key preceding the dash is to be held down *while* the key following the dash is pressed. For example:

<Break> **<s>** **<Ctrl-Alt-Del>**

[ ]
: (Brackets) Surround optional items.

. . .
: (Ellipsis dots) Indicate that the preceding item may be repeated.

|
: (Bar) Separates two or more items of which you may select only one.

{ }
: (Braces) Surround two or more items of which you must select one.

Applicable Documents

For more information, refer to the *Paragon™ Diagnostic Reference Manual* and the *Paragon™ Diagnostic Troubleshooting Guide.*

Comments and Assistance

Intel Supercomputer Systems Division is eager to hear of your experiences with our products. Please call us if you need assistance, have questions, or otherwise want to comment on your Paragon system.

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Intel Corporation Italia s.p.a.
Milanofiori Palazzo
20090 Assago
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1678 77203 (toll free)

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Ibaraki-Ken 300-26
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Fax: (503) 629-9147

Table of Contents

Chapter 1
Product Features

Chapter 2
Limitations and Workarounds

Chapter 3
Installation Instructions

Chapter 4
Updating GP Node Firmware

List of Tables

Product Features 1

Features of This Release

This release of the Paragon™ system diagnostics includes the following additional features and enhancements:

The PSD Program

Memory Daughtercard Memory Tests

The memory tests now include memory daughtercards. The added coverage includes configurations up to 128 Mbytes, and is transparent to operators. (These expanded tests require V3.3 of the GP node Flash EPROM.)

Message Coprocessor Tests

New GP node tests have been added to test the message coprocessor.

The *RPM Counter Test* has been moved from the *Register Tests* category in the PSD menu to *Multiple Processor Tests*. The *LTU Line Count Test* has been moved from the *Multiple Processor Tests* category to *NIC Tests*. There have been several minor changes to the names of test categories in the menu.

HIPPI Tests

4K FIFOs on HIPPI daughtercards are now included in the HIPPI tests.

Faster DAT Tests

The SCSI tests have been expanded to cover compression, streaming and compatibility issues for the 1533A Tape Drive.

1 Gbyte Disk Drives

The disk drive tests have been expanded to support 1-Gbyte drives.

The SUMMARY Command

A new **summary** command has been added to provide a report about the tests run in the current PSD session. Refer to the description of the **summary** command in the *Diagnostic Reference Manual.*

Enhanced PSD Command Line Syntax

New command line switches have been added to the **psd** program. The **-d** switch allows you to override the default and specify a debug-session log file. The **-e** switch allows you to specify a **psd** environment file. Refer to the description of the **psd** command in the *Diagnostic Reference Manual.*

Improved Mesh Tests

The new mesh tests stress the mesh communications more and provide a higher confidence level in the functionality of the mesh.

A **length** command has been added for specifying the packet size used in the mesh tests. The default packet size is 1K.

Enhanced Location for IP Addresses

psd now checks first in the */etc/hosts* file for the IP addresses for the diagnostic station and the Paragon. If the addresses are not in that file, then it checks in the file *psdenv* as before.

Selectable Sub-Set of Nodes

The *first* and *last* commands, along with the *empty* and *fill* commands, may be used to specify a sub-set of nodes to use with tests or utility operations (such as **initutil**) during a PSD session.

Improved On-Line Help

The on-line help system has been expanded to be more thorough and easier to use.

Diagnostic Utilities

The following paragraphs describe changes that have been made to the standalone diagnostic utilities. Refer to the manual page for each command, either on-line or in the *Diagnostic Reference Manual* for more information.

hwcfg

The new **hwcfg** utility handles the new *NOPAGER* and *PAGE_TO* entries in *DEVCONF.TXT*, which are used for OS debugging and for customizing configurations.

initutil

initutil works correctly with dynamically scaled configurations where the boot node is outside of the range of *first* and *last* nodes.

initutil reports results in CBS (cabinet:backplane:slot) notation.

mrcutil

The processor bit-buckets are enabled based on the optional *first* and *last* nodes.

statusutl

A new **-s** switch has been added to suppress selected *Processor-Port-Misroute* error messages for nodes marked *empty* or that fall outside of the *first* and *last* node range.

A new **-p** switch has been added to receive status from the power controller boards.

rstutil

rstutil now shuts off the global clock (RPMs) and restarts it automatically.

flashutil

flashutil is now able to reprogram the Flash EPROM on MIO, HIPPI and Memory daughtercards.

A **-n** switch specifies that a response won't be expected from the NIC boot loader.

A **-p** switch command allows you to select a specified target to program.

A **-x** switch command reports the checksum of the current contents of the specified device(s) and the checksum of the new contents.

flashutil provides a menu to select which target to program (when the **-p** switch command is not used).

romver

romver works with GP node firmware V3.3.

Limitations and Workarounds 2

This chapter contains known limitations and workarounds in this release of the Paragon system diagnostics (PSD). Please read this chapter before you use the diagnostic software.

Note

The Paragon system diagnostics should not be running when the Paragon OSF/1 operating system is to be booted.

Hard Reset Error Recovery

If you use the reset button on an XP/E system diagnostic station to do a hard reset, or cycle the power on the diagnostic station of any system, you will make an "ungraceful" exit from Paragon System Diagnostics.

When **psd** begins its initialization, it saves a copy of the *SYSCONFIG.BIN* file into *SYSBIN.ORIG*. If the diagnostic station reports:

```
Cannot save the binary configuration file: /u/paragon/diag/SYSBIN.ORIG already
exists
```

Remove this file to run **psd** without error.

Hardware Revision Levels

The minimum hardware revision level supported by this release of PSD is listed in Table 2-1. Refer to the Comments and Assistance section in the Preface for instructions on contacting Intel SSD Customer Service for this information.

Table 2-1. Compatible Hardware Revision Levels for Diagnostics 1.2

Field Replaceable Unit (FRU)	Component	Revision	Comments
GP Node	Node Board	Fab7-011	
	FLASH EPROM	V3.3	Fixes powerup reset problems
	NIC ASIC	A step	
MDC	Memory Daughtercard	V1.3	Needs GP 3.3 firmware
MIO Board	Node Board(s)	as per GP	See above entry
	Daughtercard	Fab2	
		Fab3	
	FLASH EPROM	tftp - 1.13 MIO - 1.0	
		tftp - 1.13 MIO - 1.1	Adds Ethernet tests and fixes SCSI and asynchronous bugs
		tftp - 1.13 MIO - 1.2	Adds Ethernet tests and fixes SCSI and asynchronous bugs
		tftp - 1.13 MIO - 1.3	Fixes Ethernet tests
HIPPI Board	Node Board(s)	Fab8-007	
	Daughtercard	Fab2	
	FLASH EPROM	V1.1	
	Daughtercard	Fab3	
	FLASH EPROM	V1.2	
RAID Controller	Controller Board	92/01	PSD 1.2 provides RAID OS 3.06
Disk Drives	Maxtor	MXT-1240	Intel P/N 317961-001
	Seagate	ST31200N	Intel P/N 340573-001
Tape Drive	HP	35470	Intel P/N 316897-001
	HP	1533	Intel P/N 340744-001

If you make any system changes, first consult *Paragon™ Diagnostic Reference Manual* and the *Paragon™ OSF/1 User's Guide.*

Compatible Software

The results of booting the Paragon O/S with different combinations of scan driver, Paragon O/S, and diagnostics software are shown in Table 2-2. A successful boot or test is indicated with a 'Y' (minimal testing was done) and an unsuccessful boot or test is indicated with a 'N'.

Table 2-2. Paragon Software Compatibility (1 of 2)

O/S	Diagnostics	Scan Driver	O/S Boot Method	O/S Boot Results	PSD Test Results
R1.1	R1.1	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	N	Y
			fscan	N	
			scanio	N	
R1.1	1.2	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	N	Y
			fscan	N	
			scanio	N	
R1.1.3	R1.1	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	
R1.1.3	1.2	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	

Table 2-2. Paragon Software Compatibility (2 of 2)

O/S	Diagnostics	Scan Driver	O/S Boot Method	O/S Boot Results	PSD Test Results
R1.1.4	R1.1	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	
R1.1.4	1.2	0.6	async	Y	Y
			fscan	Y	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	
R1.2	R1.1	0.6	async	Y	Y
			fscan	N	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	
R1.2	1.2	0.6	async	Y	Y
			fscan	N	
			scanio	Y	
		0.8	async	Y	Y
			fscan	Y	
			scanio	Y	

- The 0.6 scan driver was released with the R1.1 Diagnostics.
- The 0.8 scan driver was released with Diagnostics 1.2.

- The combination of R1.1 Paragon O/S and the 0.8 version of the scan driver should not be used. This is the reason why patch R1.1.3 had a modified reset script.
- All test results are for V3.x of GP node firmware.
- **fscan** and the scan driver should be compatible. For example, R1.1 **fscan** is built with the 0.6 scan driver, and R1.2 **fscan** is built with the 0.8 scan driver, which has large-system improvements in it.

GP Node Identification

The codes in Table 2-3 identify the FRU (Field Replaceable Unit) numbers for the different GP.

Table 2-3. GP Node FRU Identification

FRU Number	Description
AI	All Pre-1.2-compatible GP Nodes (except 32 MB Fab 8 boards)
AJ	Pre-1.2-compatible 32 MB Fab 8 GP Nodes
AK	1.2-compatible Fab 7 GP Nodes
AL	Not used
AM	1.2-compatible Fab 8 (16 MB) GP Nodes
AN	1.2-compatible Fab 8 (32 MB) GP Nodes

Node boards that might be in a system. They are shown in the *SYSCONFIG.TXT* file, as in the following example line. The "AK" entry identifies a 1.2-compatible Fab 7 unit.

```
S 0 GPNODE AK10 16 MIO B02
```

Refer to Appendix D of the *Diagnostics Reference Manual* for more information.

Installation Instructions 3

This chapter describes the steps necessary to install SCO® Open Desktop® Release 3.0.0 and the Paragon™ Diagnostic Software.

The procedures in this chapter use the conventions described in the Preface. You should also be aware of the following conventions:

- The instruction "Enter ***character(s)***" means type the indicated character(s), and then press the **<Enter>** key. For example, "Enter *y*" means type the letter "y", and then press the **<Enter>** key.
- In prompts, square brackets surround a default value. Pressing **<Enter>** selects the indicated default value.
- Some steps in these procedures cause a great deal of information to be displayed. However, the step as described here may show only the last message displayed. Also, do not be concerned if the indicated message does not appear immediately. Some steps take several minutes to complete.

Installing SCO® OPEN DESKTOP® Release 3.0.0

Installation Time:	Approximately 45 minutes.
Installation Media:	One cartridge tape labelled "SCO® OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation SCO Mass Install Tape Vol 1 of 1" (312978-001). One disk labelled "SCO® OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation N1 Boot Disk" (312974-001). One disk labelled "SCO® OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation N2 File System Disk" (312975-001). One disk labelled "SCO® OPEN DESKTOP® R3.0.0 for the Paragon™ Diagnostic Workstation M01 Master Install Disk" (312976-001).

Requirements for Installation

You will need certain data on hand for use during the installation. Use this form to gather and record the required data.

Data Needed	Enter data in this column
The SCO Serial Number (located in the SCO OPEN DESKTOP box)	
The SCO Activation Key (located in the SCO OPEN DESKTOP box)	
The system name of the diagnostic station	
The root password of the diagnostic station	
The IP address of the diagnostic station	
The domain name of the diagnostic station (use the **hostname** command to find it)	
The Netmask of the diagnostic station	
The Broadcast IP address of the diagnostic station	
The IP address of the Paragon Boot Node	
The total number of cabinets	

It is essential to make backup copies of:

- Diagnostic station-specific files */etc/hosts* and */etc/resolv.conf* (if they exist)
- Paragon diagnostic configuration files */usr/paragon/boot/DEVCONF.TXT*, */usr/paragon/boot/MAGIC.MASTER*, and */usr/paragon/MAGIC.md* files (if they exist)
- Paragon OSF/1 files which reside on the diagnostic station in the directory trees */usr/local/bin* and */usr/paragon/boot*

Reinstalling SCO® OPEN DESKTOP®

If you are reinstalling SCO OPEN DESKTOP over an existing system, use a utility, such as **fdisk**, to delete the active UNIX partition on the diagnostic station.

1. To find the active partition (see the manpage for fdisk to interpret the returned information), enter:

   fdisk -p

2. Delete the active partition. For example, if partition 1 is active, enter:

   fdisk -d 1

Install SCO® OPEN DESKTOP® Procedure

WARNING

These procedures overwrite the Paragon diagnostic station disk drive. Make a backup of any user file(s) you want to retain.

1. Insert the SCO N1 Boot disk into the disk drive.
2. Boot the diagnostic station by turning the power on.
3. At the boot prompt, press **<Enter>.**
4. When prompted, insert the SCO N2 File System disk and press **<Enter>**.

Note

Ignore the normal message `warning: /dev/ropipe was not in mount table.`

5. When prompted to select the type of tape drive, enter the following:

   scsi

Note

The prompt in the next step refers to the MIT System Image Vol. I tape. Our corresponding product is called the *"SCO Mass Installation Toolkit Tape Vol. I"* and is used in place of the MIT tape.

6. When prompted:

   A. Verify that the SCO M01 Master Install diskette is in the floppy drive.

   B. Verify that the SCO Mass Installation Toolkit Tape Vol. 1 is in the tape drive.

   C. Press **<Enter>**.

   (This step takes about 30 minutes.)

Note

Ignore the message `errno 26, Text file busy....`

7. When prompted to set system time, enter ***y*** (for yes).

   If you are not in North America, enter ***n*** (for no) in response to step 8 and go to step 11.

8. When asked if you are in North America, enter ***y*** (for yes) or enter ***n*** (for no).

9. When asked for your time zone, enter your time zone number and press **<Enter>**.

10. When asked if daylight savings applies to your time zone, enter either ***y*** (for yes) or ***n*** (for no).

11. Enter the correct date and time using the format of year, month, day, hour and minute. This example is for a date and time of March 9, 1994 at 6:22 p.m.:

    9403091822

12. When asked if you want to set the system name, enter ***y***.

13. Enter your diagnostic station name and press **<Enter>**.

14. When asked if the mail system should be a different name, enter ***n***.

15. When prompted, press **<Enter>** to continue.

16. When prompted to serialize the system, respond with **y**.

Note

If you respond "Yes" to the question in step 17, you will be forced to start this procedure over at step 1.

17. When asked if you want to execute floppy-based serialization, respond with **n**.
18. Enter Serial Number and Activation Key codes at the prompts.

    (This step takes about 20 seconds.)
19. When asked if you want to change your answer to any of these questions, respond with **q**.

    The system now builds */unix*. (This step takes a few minutes.)
20. When prompted to reboot the system, remove any remaining floppy disk(s) and/or tape(s) and press **<Enter>** to reboot.

Note

In the next step you have only 5 seconds to press **<Enter>** after the boot prompt appears.

21. When the boot prompt appears, enter single-user mode by pressing **<Enter>** within 5 seconds.
22. Wait for the single-user mode login prompt, then enter the password:

    paragon3
23. Run the password utility:

    passwd
24. When prompted to choose your own password, respond with **1.**
25. When prompted, enter your new password.
26. When reprompted, reenter your new password.
27. Edit the file */etc/default/tcp* by changing the lines in the *tcp* file as shown in Table 3-1.

Table 3-1. Edit Values in the *letc/default/tcp* File

Current	Change To:
DOMAIN = default.com	DOMAIN = *DS system's Domain name*
IPADDR = nnn.nnn.nnn.nnn	IPADDR = *DS system's IP address*
NETMASK = nnn.nnn.nnn.nnn	NETMASK = *netmask*
BROADCAST = nnn.nnn.nnn.nnn	BROADCAST = *broadcast IP address*

28. Restore your */etc/hosts* file from your backup copy, if one was created, or modify the existing */etc/hosts* file.

Note

When you restore the */etc/hosts* file, you must also alias the DS domain name to the DS IP number. Use the **hostname** command to find the domain name.

29. Reboot the diagnostic station:

```
reboot
```

This completes the installation of the basic SCO OPEN DESKTOP Release 3.0.0 software on the diagnostic station.

Installing the Paragon™ Diagnostic Software

Installation Time:	Approximately 10 minutes.
Installation Media:	One cartridge tape labelled "Paragon™ Diagnostic Software Release 1.2" (312977-002).
Information you need:	*root* password. IP address of the Paragon Boot Node. IP address of the Diagnostic Workstation. The total number of cabinets in the Paragon system.

Note

To install the Paragon Diagnostic Software Release 1.2, you must have completed the installation of the SCO OPEN DESKTOP Release 3.0.0. (This is the same release used with the previous version of Diagnostic Software.)

To install the Paragon Diagnostic Software, perform the following steps:

1. Login as *root* on the diagnostics station.

   Change to the root directory:

   ```
   cd /
   ```

2. Change the **umask** for directory creation:

   ```
   umask 022
   ```

3. If a diagnostic daemon is running, stop it with the following command:

   ```
   dsdc stop
   ```

NOTE

Ignore either the error message `dsdc: Command not found` or `DSD shutdown: DSD is not running` and continue with the installation.

The daemon will either be restarted automatically when the diagnostic station is rebooted, or restarted manually at the end of this procedure.

4. Insert the Paragon Diagnostic Software Release 1.2 tape in the tape drive.

5. Extract the files from the tape:

   (This step takes a few minutes.)

   ```
   tar xvf /dev/rct0
   ```

6. Remove the Paragon Diagnostic Release 1.2 tape.

7. If Release 1.1.4 or later of the Paragon OSF/1 operating system has been installed or you have previously installed Diagnostic Software 1.2, go to Step 15.

8. The scan utilities directory has now been created. Change to that directory:

   ```
   cd /etc/conf/pack.d/scan
   ```

9. Install the Driver:

   ```
   ./buildscan
   ```

   If the OS has previously been installed, you may be prompted about whether you want to rebuild the kernel. Answer *yes* (*y*).

   The system now builds */unix*.

   (This step takes a few minutes.)

Note

The following messages are normal; ignore them:

```
device driver for scan does not exist configuring
scan driver into kernel

/dev/scan does not exist, building into kernel
```

10. When asked if you want this kernel to boot by default, enter ***y*** (for yes).
11. When asked if you want the kernel environment to be rebuilt, enter ***y*** (for yes).
12. Shutdown the diagnostics station:

    shutdown -y -g0

13. When prompted to reboot, press **<Enter>**.
14. Login as *root* on the diagnostics station.
15. Do one of the following:

    - Check that *DIAG_ALIAS* and *PARA_ALIAS* are defined in the */etc/hosts/* file. The alias variables should be included on the lines that Paragon and Diagnostic Station IP numbers. (This is the recommended way to define system IP addresses.)

      ```
      xxx.xx.xx.xx DS_name DIAG_ALIAS DS_name.def.com
      xxx.xx.xx.xx Paragon_name PARA_ALIAS
      ```

    - Modify the */u/paragon/diag/psdenv* file to include the IP definition lines as follows. (This is the old way of defining system IP addresses for PSD.)

      ```
      OUR_IP_ADDR=Paragon Boot Node IP Address
      DS_IP_ADDR=Diagnostic Station IP Address
      ```

16. Change directory to */usr/paragon/boot*:

    cd /usr/paragon/boot

    Find out if *DEVCONF.TXT* and files exist. If they are not found in */usr/paragon/boot*, then do the next step. If the files are present, skip the next step.

17. Do one of the following:

    - Restore the *DEVCONF.TXT* and *MAGIC.MASTER* files now if you saved them prior to installation of SCO ODT 3.0.0.

    - Create *DEVCONF.TXT* and *MAGIC.MASTER* files. You can alter the samples found in */usr/paragon/diag/sample*. Refer to the *Paragon Diagnostics Reference Manual* for a detailed description of these files.

18. Change directory to */u/paragon/diag*:

    ```
    cd /u/paragon/diag
    ```

19. Run the **hwcfg** utility to generate an intermediate hardware configuration file (see manual page for **hwcfg**). It will generate intermediate file */usr/paragon/boot/HWCONFIG.TXT*.

    ```
    hwcfg
    ```

    If PSD was installed before, it will prompt you to ask whether you want to overwrite *HWCONFIG.TXT*. Answer *yes* (*y*).

Note

The message `Check cable: Warning Cable E (power control) not present` is normal; ignore it.

If the message `hwcfg: The number of cabinets must be specified` is reported, use the **-c** switch with **hwcfg** to specify the number of cabinets in your system.

20. Run the configuration merge utility, **mergecfg**, to generate *SYSCONFIG.TXT* (see manual page for **mergecfg**). It will generate */usr/paragon/boot/SYSCONFIG.TXT* file.

    ```
    mergecfg
    ```

    If *SYSCONFIG.TXT* already exists, it will prompt you to ask if you want to overwrite the file. Answer *yes* (*y*).

21. Run the configuration parser, **cfgpar**, to generate *SYSCONFIG.BIN* (see manual page for **cfgpar**). It will generate the binary file */u/paragon/diag/SYSCONFIG.BIN*.

    ```
    cfgpar
    ```

You need to update the FLASH EPROM in your system. After that, you are ready to use the Paragon Diagnostic Software. See Chapter 4 of these release notes for how to update the FLASH EPROM.

22. If you did not do Steps 8 through 14 to build a new scan driver and did not reboot the diagnostic station, restart the diagnostic daemon manually:

    ```
    dsdc start
    ```

23. To enter the diagnostic menu, enter:

    ```
    psd
    ```

Updating GP Node Firmware 4

Installation Time:	Approximately 1 minute.
Installation Media:	The update is part of the diagnostic software.
Information you need:	*root* password.

Note

You must install the Paragon system diagnostic software before you update the Paragon GP node firmware.

If your current system firmware is an earlier version than R1.1, you need to update to R1.1 prior to updating to R1.2. Refer to the *Release Notes* for R1.1 for instructions.

If you receive `Response timeout: node...` errors, when using **flashutil**, check that the small power connecters (1" x 1", with three wires) in the lower-right corner of the backplanes are seated properly.

Caution

This procedure updates all nodes at the same time. There is a very small risk in this method: if a power glitch occurs during the approximately 25 seconds required for updating, it is possible that the coding in every EPROM could be damaged.

The alternative is to update one node at a time, or a small range of nodes. A power glitch would then disturb the EPROM coding in only a single node or a small set of nodes. However, a 512-node machine, for example, would require several hours to update that way.

1. There are three methods for updating the Paragon System firmware. Choose one of the following methods:

   - Update one node at a time:

     flashutil -s node

     This is the safest method for protecting against power glitches. If a power glitch occurs while updating the specified node, you may not be able to recover this node. The GP node and MIO firmware are at the greatest risk. Recovering from a power glitch may require an external EPROM programmer.

   - Update a range of nodes:

     flashutil -s first_node..last_node

     You may use the node-range option to do a section of your system at a time. This method localizes the risk to a group of nodes. Updating a cabinet of nodes is possible with this method.

   - Update your entire system:

     flashutil

     This choice carries the greatest risk, but provides the quickest update. All nodes are updated in parallel.

2. Choose the update target from the menu that **flashutil** displays:

```
Please select the Flash memory for the update

  1 ---> Program the GP          Flash memory
  2 ---> Program the MIO         Flash memory
  3 ---> Program the HIPPI       Flash memory
  4 ---> Program the MDC         Flash memory
 20 ---> Exit flashutil no Flash programming
```

To update the GP (for example), enter *1*

NOTE

The HIPPI selection works on 256 Kbyte firmware. It will not program older 128 Kbyte HIPPI devices.

3. The **flashutil** program returns a message asking if you want to reset the Paragon system.

```
This program will reset the Paragon system. Do you wish to
continue? (y/n)
```

To cancel at this point, enter either a carriage return or ***n*** (for no).

To update, enter *y* (for yes).

4. The program initializes and loads the nodes, then displays a warning message. You now have one last chance to abandon the update:

```
Warning! current Flash EPROM contents will be erased and
replaced.
Proceed? (yes/no)
```

Enter "no" to abandon the update, or enter "yes" to update.

Any response other than *yes* (fully spelled out) cancels the update.

flashutil then sends a command to each node in sequence, causing the node to program the Flash EPROM image that now resides in RAM into the node's Flash EPROM. **flashutil** displays a "+" for each node that is programmed, and a "-" for each node that isn't programmed. For example, if there are five nodes in a system, with the third one including an MIO daughtercard, **flashutil** displays the following series as it goes through the nodes to reprogram MIO Flash EPROMs:

```
--+--
```

If no error message follows the "+" sign, the node programmed correctly. A "-" sign indicates that the selected target was not found on that node—it does not indicate an error or an empty slot.

NOTE

A system that contains a mix of old and new firmware (for example when a board is placed in a system that has previously been updated) will need to be operated the same as if all nodes in the system contain the old firmware.

5. If you do enter ***yes***, the update proceeds. After about 30 seconds the update is complete and the UNIX prompt returns. You may confirm that the GP firmware now contains the correct updated version number. Use the **romver** program to display the version number that it finds on the GP node boards:

```
romver
```

6. The **romver** program sends a message in this format:

```
All nodes contain [version #] [part #] [check sum]
```

The UNIX prompt returns.