

Patch Notice:

DG/UX for AViiON Systems Patch dgux_5.4.2.p77

March 1993

Part Number 017-600036-00

This Patch Notice applies to Models:

P001

Q001

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We recommend that you install this patch immediately.**

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1. Introduction

This Patch Notice describes Patch dgux_5.4.2.p77 for 5.4.2 DG/UX™ Systems running on Data General's family of AViiON™ computers. In addition, this notice also includes information not currently available in the product manuals (e.g., information developed after the current manuals were printed, or corrections to current manuals).

This patch consists of the following parts:

Part Description	Part Number
DG/UX Patch Notice for patch dgux_5.4.2.p77	017-600036-00

This printed notice always accompanies the software. You may print additional copies of this notice after you have installed the product. A copy suitable for line printers can be found in the file /usr/release/dgux_5.4.2.p77.pn. In the event of differences between the printed copy of the notice and the copy on the distribution medium, the printed copy takes precedence.

2. Environment

2.1 Hardware

Patch dgux_5.4.2.p77 of the DG/UX System will run on Data General AViiON series machines with revision E.2 or later of the MC88100 processor and a minimum of 12 MB of main memory, at least 322MB of disk storage, a system console (or graphics monitor for workstations), and a tape drive (for software distribution). On workstations, 16MB of main memory is recommended.

Patch dgux_5.4.2.p77 of the DG/UX System may also be run on a "diskless" AViiON workstation. This requires a console or workstation monitor, but does not require any disk or tape drive units.

2.2 Software

Your system needs to be running DG/UX 5.4.2 or C2 or B1 Trusted DG/UX 5.4.2T System software. If you are running a previous release of Trusted DG/UX, you should upgrade to Release 5.4.2T and then install patch dgux_5.4.2.p77. Apply this patch ONLY to the system software revisions listed above.

3. Patches

3.1 dgux_5.4.2.p77

This patch corrects an incompatibility between patch dgux_5.4.2.p45 and any of the following AV/52xx or AV/62xx system boards:

Part number 005-36290 Revision 56 or greater

Part number 005-36291 Revision 55 or greater

Part number 005-36292 Revision 55 or greater

This incompatibility causes the system to hang while booting a kernel which includes patch dgux_5.4.2.p45 on a machine which is configured with one of these system boards.

In addition to correcting this incompatibility, this patch includes the code fixes introduced in patch dgux_5.4.2.p45. These code changes correct a problem that may, in the unlikely event of a multi-bit hardware memory failure, result in improper program execution or data corruption on AViiON 5200, 5225, 6200, 6225, 6200-20, 6225-20, 5240, 6240, 6240-20, 6280, 7000, and 8000 systems. Without this patch, the systems listed above will compensate for single bit memory errors. With this patch, the systems will continue to compensate for single bit errors, and in

addition, DG/UX will:

1. Use syslogd to report and log memory errors. The default configuration for syslogd enables the reporting of memory errors to the system console.
2. Write ECC corrected data back into main memory. This helps prevent single bit errors from degrading into multi-bit errors.
3. Use improved processor synchronization to avoid deadlock in multiprocessor systems when writing ECC corrected data back into the main memory.
4. Panic when the system encounters a multi-bit hardware memory failure. The panic prevents data corruption and minimizes data loss that may result from this hardware memory failure.

This patch also includes dgux_5.4.2.p33 which corrects a hardware irregularity that can cause corruption of a system control register during data access exception processing. This patch contains a kernel software workaround for this problem. The symptoms of this problem are varied and depend upon the state of the process at the time the problem occurs. Possible symptoms are improper program execution or data corruption.

In addition, this patch includes patch dgux_5.4.2.p68 which fixes two HADA-I disk array deconfiguration problems. The first problem may be seen as a panic code 2000075 or 4000467 during an unbind or while running probedev. The second problem corrected by patch dgux_5.4.2.p68 is exhibited as a panic code 3000032. This problem occurs when the dgsb (HADA-I) driver is deconfigured as the result of unbinding all disk units. The driver code was not properly checking to confirm that no processes still held the dgsb open before returning memory to the free list. A process which still had the dgsb open and tried to access this memory was likely to find that memory already in use by another process, thereby causing the panic to occur. This problem was corrected by modifying the dgsb driver code to properly check for processes holding the driver open before freeing the memory.

Finally, this patch includes patch dgux_5.4.2.p76, which corrects three problems in the dev.a kernel library.

The first fix included from patch dgux_5.4.2.p76 is the elimination of an error message which gets returned from momkfs when trying to create system areas on a magneto-optical disk at the same time that sar -d is running. The error message returned is "Cannot create the System Bootstrap Area". This error message was returned because sar and diskman both tried to open the disk device simultaneously. This was corrected by allowing diskman to open the magneto-optical device even if sar already has it open.

Also included in patch dgux_5.4.2.p76 is a workaround for a hardware problem with the Sony multifunction optical disk drives. The problem occurred when a hardware error was detected while writing several sectors to a WORM platter. Attempted retries to write data that was already written caused the logical disk to seal. The workaround will prevent retry attempts and will now leave error recovery up to the OD (Optical Disk) driver. The OD driver will only attempt to write those sectors that were not written by the SCSI adapter, thus avoiding this problem.

Patch dgux_5.4.2.p76 also corrects a problem which causes DG/UX to panic (most commonly with panic code 2000075) if the /dev/lp device is not configured with any streams modules and the /dev/lp device is accessed. The default configuration for the /dev/lp (set via lp_ARG in /etc/dgux.params) device pushes the three streams modules ptem, ldterm, and ttcompat onto the device. The panic will only occur when this configuration has been modified so that the /dev/lp device is configured without any streams modules.

3.2 Soft Error Reporting

A single bit soft memory error indicates that a single bit in a memory word is not correct, but that the system has been able to compensate by reconstructing the correct memory data. There are many environmental factors that contribute to an occasional soft, single bit error. Single bit soft memory errors are expected on most modern computer systems.

Although soft memory error logging has previously been enabled on some AViiON models, patches dgux_5.4.2.p45 (now obsoleted by dgux_5.4.2.p77) and dgux_5.4.1.p76 (now obsoleted by dgux_5.4.1.p87) will enable the logging for AViiON models 5200, 5225, 6200, 6225, 6200-20, 6225-20, 5240, 6240, 6240-20, 6280, 7000, and 8000. These log reports will be stored in the system's error log file (/var/adm/messages) and, by default, will be displayed on the system console. Although some other vendors may not display soft memory errors, Data General feels that reporting these errors may provide customers with some useful information.

The AViiON servers in the list above all have an error correcting (ECC) feature that automatically compensates for single bit memory errors. Therefore, most soft memory error reports should cause no concern and should only serve as a reminder that your AViiON hardware is operating properly. However, if soft memory error reports become very frequent, then the reports may indicate that field service should be contacted. Accordingly, we ask that you contact field service only if the frequency of soft memory errors exceeds the following limits:

Board Size	Soft Errors per Month
192 MB	40
128 MB	27
64 MB	13
48 MB	40
32 MB	27
16 MB	13

4. Files

The following files make up patch dgux_5.4.2.p77 and will overload the current version of these files when loaded. To be able to back out of this patch, these files should be saved prior to loading this patch.

```
/usr/options/dgux_5.4.2.p77.name
/usr/release/dgux_5.4.2.p77.pn
/usr/release/dgux_5.4.2.p77.fl
/usr/src/uts/aviion/lb/uc.a
/usr/src/uts/aviion/lb/io.a
/usr/src/uts/aviion/lb/sc.a
/usr/src/uts/aviion/lb/pdep.a
/usr/src/uts/aviion/lb/dev.a
/usr/stand/boot.aviion
/usr/stand/diskman
/dgux.installer
/dgux.starter
```

5. Installation Instructions

5.1 Loading the Patch

If you have received a tape which contains only this patch, the patch is in diskman loadable format and consists of those files listed in the "Files" section of this document. If you have received this patch as part of an SSS shipment, please refer to the "WARNING NOTICE" which is included in your shipment for instructions on loading and installing this patch instead of using the instructions below. In either case, **TO BACK OUT OF THIS PATCH, FILES LISTED IN THE "Files" SECTION OF THIS DOCUMENT SHOULD BE SAVED TO ANOTHER NAME OR BACKED UP BEFORE PROCEEDING.** You must bring your system down to the SCM to boot this patch tape.

To bring your system down to the SCM, perform the following steps:

```
# cd /
# shutdown -g0 -y
# halt -q
```

To boot the tape on a workstation (AV3xx/4xx/41xx/43xx):

```
SCM> b st(insc(),4)
```

To boot the tape on a server system (AV5xxx/6xxx):

```
SCM> b st(cisc(),4)
```

To boot the tape on an AV/53x or AV/46xx:

```
SCM> b st(ncsc(),4)
```

Loading of this patch occurs in two phases. During the first, the bootstrap is installed on the system disk (and any other bootable disk in the system). During the second phase, the rest of the files included in the patch are installed in the appropriate directories.

Follow the instructions below to load this patch:

1. From the Diskman Main Menu select the "Physical Disk Management Menu".
2. From the Physical Disk Management Menu select the "Format a Physical Disk" option.
3. From the Format a Physical Disk Menu select the "Install a Bootstrap on a Physical Disk" option.
4. The system will prompt you for the disk specification of the disk where the bootstrap is to be installed:

Enter the physical disk specification in DG/UX common format:

Type in the physical disk specification, for example sd(insc(0),0,0).

5. The system will then ask if you want to install the bootstrap:

Physical disk sd(insc(),0) does not have an up-to-date bootstrap.
Do you want to install one? [yes]

Answer "yes" to this question.

6. The system will then ask for the pathname of the bootstrap image:

Enter the pathname of the bootstrap image file: [/usr/stand/boot.aviion]

Accepting this default will install the bootstrap on the selected physical disk. This procedure can be repeated for other bootable disks in the system by returning to step 4.

7. After the bootstrap has been re-installed, return to the Diskman Main Menu.
8. From the Diskman Main Menu select the "System Installation Menu".
9. From the System Installation Menu select the "Load System Software" option.

10. The system will ask if you want to register all disks:

Do you want to register all recognized formatted physical disks? [yes]

Answer "yes" to this question.

11. The system will then register the disks and prompt you for the logical disk name of the /usr file system.

Enter the /usr file system's logical disk name: [usr]

Type in the name of the logical disk that contains the /usr file system.

12. The system will then probe for tape drives and prompt you for the tape drive that contains the patch tape.

Enter the tape drive specification in DG/UX common format: [st(isc(0),4,0)]

Type in the device specification for the tape drive that contains the patch tape, for example st(isc(),4).

13. Once the package has finished loading, exit Diskman and reboot your kernel.

5.2 Installing the Patch

See Chapter 4 of the *Managing the DG/UX System* manual for instructions on reconfiguring the system. Use **sysadm newdgux** to build and install a new kernel. If you are loading this patch from tape, you will want to reboot your system at this point. If your system is a diskless server, your client kernels must be rebuilt or the new **dgux.diskless** in **/usr/stand** must be hard linked to the appropriate client's root area.

--- End of Patch Notice ---

