Update Notice

DG/UX for AViiON Systems
Release 4.20 Update 2

May 1990

Part Number 078-600031-00

This Update Notice applies to Models:
P001A Q001A

CONTENTS

1. Introduction

This Update Notice describes the DG/UX™ System release 4.22 update product for Data General's AViiON™ Series products. 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 Update Notice is in addition to information in the DG/UX 4.20 Release Notice.

You may print additional copies of this update notice after you have installed the Release 4.22 update. A copy suitable for lineprinters can be found in the file /usr/release/dgux_4.22.un.

In the event of differences between the printed copy of this update notice and the on-line copy, the printed copy takes precedence.

2. Environment

2.1 Hardware

See the DG/UX Release 4.20 release notice. In addition to Release 4.20 AViiON platforms, Release 4.22 runs on AViiON 300CD and 400 Series workstations and AViiON 4000 Series servers.

Previous releases of DG/UX do not support SCSI synchronous transfers on the AV5000/AV6000 Series of servers due to a controller firmware limitation. Revision 11 firmware for the VME SCSI controller removes this limitation. During system boot of DG/UX 4.22, the controller revision is checked and if it is not Revision 11 or later, the message:

```
Firmware in SCSI controller "cisc()" is out of date --
see release notice.
```

is printed on the system console. This message indicates that the current controller firmware will not support synchronous transfers. There is no risk in using firmware revisions prior to revision 11 since asynchronous SCSI transfers will continue to work. See the Section 4.1.1 "Notes about the kernel" for more information on this message.

3. Enhancements and Changes

3.1 Enhancements

1. Release 4.22 provides support for AViiON 400 Series workstations, AViiON 4000 Series servers, and the AViiON 300CD workstation.

2. Terminal services from the kernel have been extensively enhanced.

3. Support for Choctaw II terminals (D216+, D412+, and D462+) in their DG-UNIX mode has been added.

4. Support for synchronous SCSI was enhanced to include AV5000/AV6000 Series machines.

3.2 Changes

DG/UX 4.22 contains certain fixes in addition to the new software required to support new hardware platforms.

1. A new fsck(1M) has been supplied which fixes a recursive behavior pattern when checking control-point directories.

2. A new uugetty(1M) command has been supplied which will properly respawn upon tty hangup. (NASC-4271)

3. A new restore(1M) command has been supplied which fixes a bug due to which files restored into remote file systems would have zero length. It also fixes a bug which prevented restoring from multiple volumes over the network.

4. A kernel fix is supplied which fixes a virtual timers bug. (RTP0-2050)

5. A bug has been fixed which caused hangs on systems running with a large number of processes (over 200) and a large number of open files.

6. A data compare problem has been fixed which manifested itself under very heavy file system contention.

7. A kernel fix is supplied which rectifies a problem in which the SMD disk controller was returning error code 0x23.

8. The DG/UX kernel has been enhanced to support revision G.3 of the CPU.

9. Numerous terminal-services fixes are supplied.

10. A kernel fix is supplied to correct tracking of resources used by the parent and child when a fork takes place. (NASC-4801)

11. The Ciprico SCSI host adapter driver, cisc(), has been enhanced to return more than 8 bytes of sense data when a SCSI operation completes with a "check condition" status. (NASC-4850)

12. Another kernel fix is supplied to correct the problem where a compile-and-link being performed while the inode memory table is full caused the resulting executable to be corrupted. (NASC-5000)

13. Two fixes to the lp parallel printer driver are included. One prevents the intermittent lose of characters on high-speed parallel printers connected via the parallel port on AViiON 6000/5000 series machines. The second fix corrects parallel printers becoming disabled when shared by multiple machines. (NASC-4622, NASC-4499)

14. The asynchronous raw disk facility has been modified to free memory upon completion of a transfer to a raw device. (NASC-4822)

15. The kernel stack size has been increased to eliminate infrequent hangs that occurred with previous releases.

16. Modifications to terminfo were made to support the Data General D412 and D462 terminals in their wide (132 column) VT220 compatible mode.

17. Support was added for the **NetWare for AViiON Systems Services** and **NetWare for AViiON Systems Transport** software products.

18. A kernel fix was provided that prevents system panics when issuing an **ioctl(2)** call with the I_PEEK command. (RTP0-2053)

4. Notes and Warnings

See also the "Notes and Warnings" section of the DG/UX Release 4.20 release notice.

4.1 Notes

4.1.1 Notes about the kernel

1. In the DG/UX master configuration file /usr/etc/master.d/dgux, the variable PERCENTBUF (a.k.a. cf_bm_percent_memory_for_buffers) is shipped with value 0. This does not mean that buffering is turned off by default. Rather, the zero directs the kernel to select at boot an appropriate percentage for buffers based on how much physical memory your system has.

2. If duplicate copies of the master files in /usr/etc/master.d exist in this directory, then, upon building a kernel, config(1M) will fail with "Bus error" and dump core. In a future release of DG/UX, config will be modified to print an error message and exit cleanly in this situation. (NASC-3701)

3. The maximum supported file system size on DG/UX 4.22 is 2 gigabytes. (NASC-4414)

4. Denormalized number support is not available in DG/UX 4.22. (NASC-4706)

5. For best printer behavior, we recommend that you modify the stty command in the printer interface file for each of your printers. Edit the file /usr/spool/lp/interface/*printer_name* and search for an stty command; in that command, remove any occurrences of ff1, cr1, cr2, or cr3, and add to the command cr0 and ff0. (NASC-4768, NASC-4759)

6. If you receive the message "IAC at device code 0140 panic, code 05" on the system console, it does not signify a DG/UX panic.

7. Previous releases of DG/UX do not support SCSI synchronous transfers on the AV5000/AV6000 Series of servers due to a controller firmware limitation. Synchronous SCSI transfers provide a performance improvement over asynchronous transfers. Revision 11 firmware for the VME SCSI controller removes this limitation. During system boot, the controller revision is checked and if it is not Revision 11 or later, the message:

```
Firmware in SCSI controller "cisc()" is out of date --
see release notice.
```

is printed on the system console. This message indicates that the current controller firmware will not support synchronous transfers. There is no risk in using firmware revisions prior to revision 11 since asynchronous SCSI transfers will continue to work. However, upgrading to Revision 11 or later firmware will provide a performance benefit if any of the following SCSI disks are in your system: 179 MB SCSI disk or 662 MB SCSI disk. Contact your Data General representative for upgrading your SCSI controller firmware.

8. Diskette devices can be treated in two different ways. One way is to set the diskette up as a disk and access as if it were a file system. The other way is to treat it like a tape device and access it via tar, cpio, or dd. See the DG/UX 4.20 Release notice Section 5.1.1 Operating System Kernel Notes for more details on setting up and using diskette devices. The default permissions on diskette devices come set as if the diskette were to be used as a disk. Therefore, to use the diskette as a tape device, you must be superuser to access it via tar, cpio, or dd. If the diskette will be used primarily as a tape device, your system administrator may wish to change the permissions on the /dev/rpdsk and /dev/pdsk device files for others to access.

9. If the message "From System: Out of Paging Area" appears on the master console, one of two things has occurred. You are attempting to run more processes than you have swap space to accomodate or you have a program which is using too much memory. There are several ways of resolving this. If you have a program using too much memory, check that the program is allocating only the space needed and freeing memory when completed with it. If you are overloading the system with processes, you can increase swap space or add more memory.

   To increase swap space, create a logical disk the size of additional swap that you require. Making a file system on this logical disk is not neccessary. Then add this logical disk as a swap device by using "sysadm addswap". This command will modify the /etc/fstab file appropriately. To activate the additional swap, enter the command "swapon -a" and modify the /etc/dgux.params file and set swapon_ARG="-a". By changing the dgux.params file, the new swap area will be activated with each reboot. See the *Installing and Managing the DG/UX System* manual, Chapter 8 "File System Management" for information on adding swap space.

4.1.2 Notes about commands

1. When in init state 1, if sysadm loadpackage exhausts all space in /tmp with its temporary files, it will report "No XDR table of contents was found in file 1 of release medium." If you receive this error message, clean out /tmp and try again.

2. When sysadm newdgux asks whether it should install a kernel "For a diskless client?", what is meant is "For a diskless client of this host?" Therefore, if you are using a diskless client to build a new kernel for that machine itself, the correct answer to this question is "no." Further, when you build a new kernel for a diskless client on the server machine (not on the client itself), the message "This kernel won't take effect until you reboot" should be taken as referring to the client, not the server.

3. If you wish to use accounting, give the following commands as the superuser while at run-level 1:

```
chown adm /etc/wtmp
chgrp adm /etc/wtmp
chmod 664 /etc/wtmp
```

If these changes have not been made, you will see the error message

```
/usr/lib/acct/startup: /etc/wtmp: cannot create
```

when you take your system to run-level 2 or higher. For more information on accounting, see Chapter 15 of *Installing and Managing the DG/UX System*. (RTP0-1992)

4. Using **lint**(1) with the -p option causes the error

```
cpp: Invalid option -T
```

(RTP0-2031)

5. The remshlp model for **lp**(1) does not allow multiple lp options to be used. (RTP0-2057)

6. **nawk**(1) does not allow variables on the command line that have underscores in their names. (RTP0-2124)

7. Standamong **diskman**(1M) changes the value of the stty erase setting. (JAPN-334)

8. Programs (such as **vi**(1)) which use the **curses**(3X) library can work with eight-bit characters provided that the system is set up correctly. (**Curses** uses the character classification macros in **ctype**(3c) to test and convert characters before displaying them.) In order to display eight-bit characters via **curses**, you must address all the following issues:

   1. Make sure that the **stty**(1) settings are correct in every interactive session. In the AT&T/POSIX line discipline (normally used by **sh**(1) login shells and their child shells), give this command:

      ```
      stty cs8 -istrip
      ```

      In the Berkeley line discipline (normally used by **csh**(1) login shells and their child shells), give this command:

      ```
      stty pass8
      ```

      You would want to put the appropriate command into a **.profile** or **.login** file.

      You may also accomplish this change *for physical terminals only* by editing **/etc/gettydefs**. (Placing the above commands in **.profile** or **.login** files is required for pseudo-terminals, and thus for X Windows **xterm**(1) sessions.) Suppose you wish to set up **tty01** to handle eight-bit characters correctly. Examine the line in **/etc/inittab** which pertains to **tty01**; it will look something like this:

      ```
      01:234:respawn:/etc/getty tty01 9600 vt220
      ```

      The second **getty** argument (in this case, "9600") is a label which corresponds to an entry in **/etc/gettydefs**. (It is a common misconception that this argument designates a baud rate. Entries in **gettydefs** specify a baud rate, and they have traditionally been named after that rate; nevertheless, there is no requirement that the label and the baud rate be the same string.) Find the entry in **/etc/gettydefs** to which the label corresponds and remove ISTRIP from it.

      If you change this file, be aware that your changes will only take effect at the next login to the terminal. Also, if you change a **gettydefs** entry, all terminals with that label in their **inittab** entry will be affecfed; if necessary, create a new **gettydefs** entry to handle your eight-bit terminals. For more information, see the man pages for **gettydefs**(4) and **inittab**(4).

   2. If you are running X Windows on an AViiON workstation, make sure that your **xterm** is brought up with an eight-bit font, such as **iso**:

      ```
      xterm -fn iso &
      ```

   3. Define an eight-bit character class; this is done using **chrtbl**(1M). For instance, we might call it "iso" and create it as follows (with the **usr** file system mounted read/write):

      ```
      mkdir /usr/src/lib/chrclass
      cd /usr/src/lib/chrclass
      vi iso.src
      ```

      # Describe the character class as explained in **chrtbl**(1M)*; save the file.*

      ```
      chrtbl iso.src
      cp iso /usr/lib/chrclass
      ```

      Then set your environment to use the eight-bit character class. Users of **sh**(1) should give these commands (or place them in a **.profile**):

      ```
      CHRCLASS=iso
      export CHRCLASS
      ```

      Users of **csh**(1) should give this command (or place it in a **.login**):

      ```
      setenv CHRCLASS iso
      ```

4. When you write **curses** programs, include a call to **setchrclass(3c)** before any use of **curses** functions.

```
#include <stdio.h>
#include <ctype.h>
/* ... */

if (setchrclass((char *) 0) == -1) {
    fprintf(stderr,"setchrclass failed\n");
}
/* Curses calls... */
```

4.2 Warnings

4.2.1 Warnings concerning the DG/UX Release 4.22 kernel

1. In DG/UX Release 4.22, the ordering of devices in the system configuration file is significant. In the past, the order in which devices are configured was chosen by **sysadm newdgux** (more specifically, by **config(1m)**, which **sysadm newdgux** calls).

   For example, a DG/UX Release 4.20 kernel built from a system configuration file which contained `duart()` and `syac()` in either order would associate /dev/tty00 with the first line on the VAC/16 and /dev/tty16 with the Duart serial communication port. In DG/UX Release 4.22, this will be true only if `syac()` precedes `duart()` in the system configuration file.

   Similarly, if `duart()` precedes `syac()` then /dev/tty00 will be associated with the serial communication port and /dev/tty01 will be associated with the first line on the syac controller.

2. To configure the second serial port on an AViiON 400 or 4000 Series system, uncomment the entry
   `duart(1)`
   in the system configuration file. Ensure that `duart(0)` precedes `duart(1)` and that `duart@5(1,fff82c00,2)` is absent or commented out.

3. To configure the second serial port on an AViiON 300CD workstation, uncomment the entry
   `duart@5(1,fff82c00,2)`
   in the system configuration file. Ensure that `duart(0)` precedes `duart@5(1,fff82c00,2)` and that `duart(1)` is absent or commented out.

4. If you wish to configure a local parallel printer, `lp()`, into your kernel, ensure that it follows all `duart` entries.

5. When entering SCSI devices in a server configuration file, enter all SCSI disk devices, i.e., `sd(cisc(),*0)` before entering any SCSI tape devices. Further, when entering tape devices, each device should be enumerated separately, e.g., `st(cisc(),5)` or `st(cisc(),6)` rather than using `st(insc(),*)` to configure all tapes. This information supersedes that provided in the 4.20 release notice under Section 5.2.1, item 2.

6. While using the 2 GB mass storage device on an AViiON Series 300, 400, or 4000 system, the DG/UX system may very infrequently panic with code 053000023.

7. If the available space in a logical disk is below the percentage specified with **tunefs(1M)**, then vi(1) will lose the contents of a file if executed by a non-superuser in this logical disk. (UKSC-36332, NASC-4307, SWE-224)

8. The *freemem* value reported by **sar(1M)**'s -r option is incorrect. (NASC-4409)

9. Occasionally, on a cold power up, DG/UX will panic with panic code 4000110 if a parallel printer is attached and online. The problem is due to stray interrupts to the parallel port not being properly cleared. (NASC-4658)

10. The **vtimes(3C)** call incorrectly reports time in seconds rather than clock ticks. (RTPO-2149)

11. The ringing of the bell on the AV300 Series Workstations may cause DG/UX to return write errors on the back duart port (tty01). If the duart port is used, users should eliminate generation of an audible bell.

4.2.2 Warnings concerning DG/UX Releases 4.20 and 4.22 commands

1. The product literature for DG/UX Release 4.20 incorrectly states that large file system support is available. This support is also not available in Release 4.22.

2. The tar(1) utility with the -o option does not extract permissions correctly on directories. (RTP0-2034)

3. A WYSE terminal emulating a Televideo 925, TVI925, does not function properly in vi(1). (NASC-4204)

4. The function **tgetch** of the **curses(3X)** library does not always accept the escape character. (JAPN-297)

5. sysadm does not support global user management completely. Specifically, **adduser** does not update the Yellow Pages **passwd** map and **addhost** and **addether** do not modify the Yellow Pages **hosts** and **ethers** files. (NASC-4377, JAPN-341)

6. sysadm **datetime** does not change the timezone for users of the csh(1). (JAPN-328)

7. Modem lines which are used for calling into a system need to be set up with modem control and fully functional carrier-detect so that associated processes are killed when the line is disconnected. To get cu(1) to work on a line with modem control, it must be instructed to open the line without waiting for carrier-detect to go high; this is done using the M option on the second field of the /usr/lib/uucp/Devices file. Here are example lines for that file:

```
ACU tty00,M - M1200 bi_hayes
Direct tty00,M - M2400 direct
```
(NASC-4574, NASC-4722)

8. The pad operator of **printf(3s)**, **fprintf(3s)**, or **sprintf(3s)** does not work. (NASC-4439)

9. tar(1) does not create subdirectories correctly when extracting from a tar image dumped relative to the root directory. (RTP0-2135, UKSC-37550, UKSC-38000)

10. **df(1M)** and **tunefs(1M)** may return bogus information when run on large file systems. See Notes on file system size supported by DG/UX 4.22. (NASC-4411, NASC-4557, NASC-4414)

11. If a login session into a modem on a tty port terminates abnormally (user hangs up or call disconnects), the modem port may hang. (NASC-4572)

12. The **dbx(1)** debugger may dump core when using its print feature without giving the variable to be printed. (RTP0-2158)

13. Multiple-volume dumps to floppy disks using **dump(1M)** or **dump2(1M)** are not recommended. Use **cpio(1)** where multiple-volume floppy archiving is desired.

4.2.3 Warning concerning diskless clients

1. Diskless systems may have trouble mounting their / ("root"), **usr**, and **swap** file systems if the Yellow Pages are active and the current domain contains no **netgroup** map. Release 4.20 of Data General's ONC/NFS product shipped without a **netgroup** map. You may work around the problem by ensuring that a **netgroup** map exists, even if it is empty. Further, you may decrease the time required to boot a diskless client by ensuring that a **bootparams** map exists, even if it is empty.

   To ensure that these maps are present, log onto the machine which is the master server for your domain. First, check for the presence of a **netgroup** map with this command:

   ```
   ypcat netgroup
   ```
   If there is no **netgroup** map, you will see this error message:
   ```
   no such map in server's domain
   ```
   If the **ypcat** command does not result in this error, there is a **netgroup** map. (A lone newline indicates the presence of an empty map.)

Now check for the existence of a **bootparams** map with this command:

```
ypcat bootparams
```

Again, if the **ypcat** command instead elicits

```
no such map in server's domain
```

then there is no **bootparams** map; and if output results, there is a **bootparams** map.

If you need to create a map, first locate your Yellow Pages source directory by giving the following command:

```
grep '^SRC_DIR' /etc/yp/Makefile
```

You will receive a response like

```
SRC_DIR=/etc
```

The directory to the right of the equal-sign is the Yellow Pages source directory. For instance, if you received the above response, your source directory would be /etc.

Change your current working directory to the Yellow Pages source directory and check for the existence there of a file called **netgroup**. If there is no such file, create an empty one with

```
echo > netgroup
```

If there is such a file (and it is non-empty), examine the contents. You must make a decision: do you wish the Yellow Pages to manage the information contained in the file? If so, skip the remainder of this paragraph. If not, move the **netgroup** file to a backup location temporarily and create an empty **netgroup** file; *when you finish the instructions in the next paragraph, move the backup copy back to* **netgroup**. (Do not attempt to boot diskless clients while the information in the **netgroup** file is in a backup location.)

Now change your current working directory to /etc/yp and give the command

```
make netgroup
```

You have just created a **netgroup** Yellow Pages map. If you wish to create a **bootparams** Yellow Pages map, follow the above instructions (starting with "Change your current working directory to the Yellow Pages source..."), substituting **bootparams** wherever **netgroup** appears. More information on bootparams and net groups is available in the man pages **bootparams**(5) and **netgroup**(5).

5. Documentation

5.1 Manuals

There are no additional manuals other than what is delivered with 4.20.

5.2 Changes

There are no document change packages associated with this release.

6. Software Distribution

6.1 Media

DG/UX is bundled within the **Operating System User's Package**.

1. QIC 150 MB cartridge tape Part Number: 079-600064-00

6.2 Organization

The 4.22 update tape has the following layout:

File	Name	Size	Type	Disposition
0	boot.aviion	290	image	
1	sysadm_toc	48	toc	
2	diskman	4130	image	
3	dtoc	000000	image	
4	dgux__r.421_03	4130	tar	/
5	dgux__r.422_krn+	1262592	tar	/
6	dgux__r.422_etc	16384	tar	/
7	dgux__u.421_04	81920	tar	/usr
8	dgux__u.421_05	279552	tar	/usr
9	dgux__u.421_09-13	2885632	tar	/usr
10	dgux__u.421_krn	3164160	tar	/usr
11	dgux__u.421_krn+	2639872	tar	/usr
12	dgux__u.421_cmds	81920	tar	/usr
13	dgux__u.422_krn	2918400	tar	/usr
14	dgux__u.422_krn+	49152	tar	/usr
15	dgux__u.422_cmds	132096	tar	/usr
16	dgux__u.422_etc	65536	tar	/usr
17	dgux__u.421_28	16384	tar	/usr
18	dgux__fl.name	128	tar	/usr
19	nfs__u.422_nfs	1508352	tar	/usr
20	nfs__fl.name	128	tar	/usr

6.3 Files

A list of files that are loaded when DG/UX 4.22 is loaded on your disk is available in files called /usr/release/dgux_4.22.fl and /usr/release/nfs_4.22.fl.

7. Installation Instructions

Below, we provide information which supplements *Installing and Managing the DG/UX System*, particularly Chapter 2, "Installing the DG/UX System." The "Phases" and "Steps" mentioned below refer to this chapter.

Make sure that you have the DG/UX Release 4.20 version of *Installing and Managing the DG/UX System* at hand before starting.

7.1 Installing Servers and Diskful Workstations

These installation instructions apply to three categories of AViiON customers:

1. Customers receiving Release 4.22 factory-preloaded systems;

2. Customers currently running DG/UX Release 4.20 with or without Update 1; and

3. Customers who have no release loaded and running (i.e., whose system disk is blank).

Instructions for loading 4.22 for each case are given below; please follow the instructions for the category into which you fall. We also suggest that you read through your instructions before beginning work on them.

7.1.1 Customers receiving Release 4.22 factory-preloaded systems

Read Phase One: *Planning the Installation*, for background information concerning how your system is preloaded. You will find all the required logical disks and file systems already created on your system disk, and Release 4.22 software preloaded; see the preload notice for information on the names and sizes of file systems on your disk and the products which are preloaded. Skip to Phase Three: *Customizing the Primary Release*, and follow the instructions until completion.

7.1.2 Customers currently running DG/UX Release 4.20 or 4.21

If your system serves diskless clients: The procedure described below assumes that you wish to update your diskless clients to Release 4.22. Data General recommends that you do so. If for some reason you wish to have a diskless client run a previous release (i.e. Release 4.20 or 4.21), we recommend that you delete this client before upgrading the server to Release 4.22; then, after upgrading the server, create a secondary release area containing the previous release and set the client up to use that area. See *Installing and Managing the DG/UX System* for more information on secondary releases.

First, make complete archives of your disks!

Boot diskman from the DG/UX Release 4.22 tape as described in Step 6, "Booting diskman from Tape," of Phase Two: *Loading the Primary Release.*

From **diskman's** Main Menu, select the Physical Disk Management Menu by pressing 1; from it, select "Format a Physical Disk" by pressing 5; from the resulting menu, select "Reinstall Bootstraps on a Physical Disk" by pressing 4. Then follow **diskman's** directions to install a new bootstrap on your system disk. (When **diskman** asks you for the pathname of the bootstrap file, accept the default.)

Return to diskman's Main Menu and select Update Installation Menu to update the / (root) and /usr file systems as described in Step 10, "Updating System Software". When the update is complete, continue to Step 11, "Booting the Starter Kernel" of Phase Three: *Customizing the Primary Release.* Note that on an update installation, fewer initialization steps are performed when going to init 1.

Go now to Step 13, "Loading Software Packages with sysadm" and update the NFS package. No setup will be necessary after updating NFS.

Next, rebuild your kernel using **sysadm newdgux** as described in Step 15, "Building a Custom Kernel". You may re-use a pre-existing system file if you wish, or you may generate a new one by specifying a system name different from the old one: for instance, instead of specifying `aviion` in response to **sysadm newdgux's** question `System Name?` you might specify `aviion.4.22`.

In any case, be sure to read the first entries in the "Warnings" section of this update notice. They have to do with a new behavior of **sysadm newdgux:** the order in which you list devices is now significant.

Link the new kernel to /dgux (but be sure to retain the old kernel).

Your system is now upgraded to DG/UX Release 4.22. Reboot your system, making sure that you boot the /dgux kernel image, which is the new one you created above, rather than one of its Release 4.20 or 4.21 predecessors.

If your system supports diskless clients and you wish to upgrade them (as we recommend), now see the setup under Section 7.2, "Installing Diskless Clients," below.

7.1.3 Customers who have no release loaded and running

Make sure that you have both a Release 4.20 tape and a Release 4.22 tape at hand before beginning! You will need both during the installation.

Start at page one of *Installing and Managing the DG/UX System.* Step 2, "Planning Disk Usage for the Release," of Phase One: *Planning the Installation,* discusses the sizes of certain logical disks; use the sizes presented in the Release 4.20 release notice in lieu of the Step 2 sizes where they differ.

When you reach Step 6, "Booting diskman from Tape," of Phase Two: *Loading the Primary Release,* in Chapter Two, insert the Release 4.22 tape in your tape drive before entering the boot command line.

Before beginning Step 9, "Loading DG/UX Software onto System Logical Disks," remove the Release 4.22 tape and insert the Release 4.20 tape. Then proceed with the step.

When Step 9 has finished, replace the Release 4.20 tape with the Release 4.22 tape and follow the instructions in Step 10, "Updating System Software." This will replace certain items of Release 4.20 with their newer Release 4.22 versions.

Be certain to use the Release 4.20 tape in Step 9 and the Release 4.22 tape in Step 10. The order is significant!

In Step 13, "Loading Software Packages with sysadm", load the packages from the DG/UX Release 4.20 tape first and then update the NFS package by performing the same step on the DG/UX Release 4.22 tape. *Again, order is significant in this step*

Proceed through the remainder of the installation instructions.

7.2 Installing Diskless Clients

If the server for your diskless machine has not been upgraded to DG/UX Release 4.22, we recommend that you do so, using the instructions in the section "Installing Servers and Diskful Workstations" above.

To update your clients to DG/UX Release 4.22, copy the following files from the 4.22 OS server's root (/) to each client's root (**/srv/release/PRIMARY/root/***client_name*):

```
etc/fsck
etc/motd
etc/issue
```

Make sure you have updated the NFS package to obtain the new diskless kernel for your clients (**/usr/stand/dgux.diskless**). If your diskless machines are running customized kernels, these kernels should be rebuilt as described in Step 19, "Building Kernels for Diskless Clients". Be sure to read the first entries in the "Warnings" section of this update notice. They have to do with a new behavior of **sysadm newdgux**: the order in which you list devices is now significant.

Your diskless systems will be running DG/UX Release 4.22 when they are rebooted.

7.3 Setting up Release 4.22 in a Secondary Release Area

If you do not wish your server to run DG/UX Release 4.22, you may create a secondary release area for Release 4.22 and attach a client to it. See *Installing and Managing the DG/UX System* for more information about secondary release areas.

The recommended sizes for the / (root) and /usr file systems for DG/UX Release 4.22 are identical to those for Release 4.20. Use the sizes which are recommended in the Release 4.20 release notice.

In brief, you will first use **sysadm addrelease** to create a secondary release area, then **sysadm loadpackage** to load the Release 4.20 distribution tape *then* the Release 4.22 tape. *The order is significant!* Then add clients to the release area using **sysadm clientdefaults** and **sysadm addclient**.

8. Preparing a Software Trouble Report (STR)

Refer to the Release Notice for DG/UX Release 4.20 for instructions. Be sure to specify Release 4.22 as the product revision when filling out an STR.

--- End of Update Notice ---