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Customer Documentation

Initially Installing and Setting Up the DG/UX™ System on AViiON® Servers with Clients

AViiON®
PRODUCT LINE

Initially Installing and Setting Up the DG/UX™ System on AViiON® Servers with Clients

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Notice

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on AViiON® Servers with Clients
069–000549–00

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Preface

This manual describes how to install and set up a DG/UX™ server system on an AViiON® computer or workstation, using the DG/UX Client/Server User's Package. It also describes how to set up the following clients:

- Diskless, DG/UX operating system (OS) clients on AViiON workstations.
- X terminal clients on AVX–30 X terminals.

In a DG/UX client/server environment, the DG/UX server and its clients are connected to an Ethernet–based local area network and communicate via TCP/IP and NFS® network software.

About Our Readers

In this manual, we assume you have no familiarity with the DG/UX system, or other versions of UNIX® software. For this reason, the manual is written in a cookbook style, with step–by–step instructions and sample display screens that lead you through the process of installing and setting up the DG/UX server and its clients. However, we do assume you have some familiarity with another operating system; for example, the MS–DOS® or the AOS/VS system.

The DG/UX Client/Server User's Package

In addition to the basic DG/UX system, the DG/UX Client/Server User's Package includes the following software:

- GNU C compiler.
- DG/UX X Window System™ software, which is a combination of the X Window System™ software, the OSF/Motif™ window management software, the AView graphics library, and the Looking Glass® desktop manager.
- The Documenter's Tool Kit.
- TCP/IP, NFS, and Yellow Pages[1] network software.
- XPG3 Compliance Package for the DG/UX Operating System on AViiON Computers. This package is not preloaded. See the "Preloaded Software Package" section below.

[1] LEGAL NOTICE TO USERS: Yellow Pages is a registered trademark in the United Kingdom of British Telecommunications plc, and may also be a trademark of various telephone companies around the world. Sun will be revising future versions of software and documentation to remove references to Yellow Pages.

Minimum Equipment Configuration

To properly install the DG/UX client/server software, your AViiON server system must have at least the following minimum equipment configuration:

- On an AViiON computer: an ANSI–standard terminal, which serves as the system console.
- On an AViiON workstation: an ANSI–standard terminal or a graphics monitor/keyboard combination, which serves as the system console.
- A 322–megabyte hard (Winchester) disk.
- A QIC–150 cartridge tape drive.

Preloaded DG/UX Software

The DG/UX Client/Server User's Package for AViiON systems (except the AViiON 6000 series) can be ordered in one of two ways: preloaded or not preloaded. AViiON 6000 series computers do not ship with preloaded software.

If you ordered preloaded software, the DG/UX client/server software is already loaded on your computer's system disk; but the software is not as yet installed. If you didn't order preloaded software, the software is supplied to you on two tapes: 1) a DG/UX 4.30 release tape; 2) a DG/UX 4.32 update tape. This manual supports the installation of both preloaded and non–preloaded systems.

How This Manual Is Organized

This manual consists of five chapters and three appendixes.

- Chapter 1, "Before You Start," contains the information you will need before you install and set up your DG/UX server system and its clients.
- Chapter 2, "Installing the DG/UX Server," describes how to install the DG/UX client/server software on an AViiON computer with a preloaded disk, and how to build a custom kernel.
- Chapter 3, "Setting Up the Basic System," describes how to create user accounts, create and change passwords, and add local alphanumeric terminals and printers to your DG/UX server system. In addition, this chapter explains DG/UX run levels and tells how to shut down the DG/UX server system.

  NOTE: If you are adding terminals and printers that are connected to one or more Systech asynchronous terminal line controllers, you will be directed to *Initially Installing and Setting Up the DG/UX™ System on Stand–Alone, Multiuser AViiON® Computers* for this information.

- Chapter 4, "Setting Up the DG/UX Server to Support Clients," describes how to build a custom kernel that supports AViiON workstations as diskless OS clients. It also tells how to configure the DG/UX server software to support specific diskless OS clients and X terminal clients connected to the network.
- Chapter 5, "Booting and Setting Up a Diskless OS Client Workstation," describes how to bring up a DG/UX diskless OS client on an AViiON workstation.
- Appendix A, "Starting the Installation with DG/UX Release Tapes," describes the initial part of the installation process when installing with a DG/UX 4.30 system release tape and a 4.32 update tape. At the conclusion of Appendix A, you are directed to Chapter 2 of this manual to continue the installation process.
- Appendix B contains duplicate copies of worksheets appearing in Chapter 1 of this manual.
- Appendix C contains instructions for formatting add–on disk drives.

Reader, Please Note

In this manual, we use several typefaces (fonts) to differentiate between the information that the DG/UX system displays on your system console's display screen (or graphics monitor), and the commands and responses that you must type on the system console's keyboard. In addition, we use italic to indicate variable user input. In this manual, variable user input means that you can type one of two or more responses, depending on how you want to configure your system. (We also use italic in text to indicate new terms and titles of manuals.)

Convention	Meaning
boldface	In text and sample screens, indicates commands and responses that you type verbatim from your system console's keyboard.
boldface	In sample screens, indicates a variable response that you type from your system console's keyboard.
monospace	In text and sample screens, indicates system messages and prompts displayed on your system console's monitor.
italic	In sample screens, indicates writer comments about a variable response that you may type on your system console's keyboard.
<Enter>	In sample screens, indicates press the Enter key. (The Enter key is also sometimes referred to as the New Line or Return key in the software.)

Sample Display Screens

Most sample display screens of interactive dialog between the DG/UX system's prompts and messages and your responses are easy to follow. However, some display screens require comments to explain the variables associated with the response(s) you type at your keyboard. An example of a screen with interactive dialog and comments appears below.

```
      (1)                (2)                           (3)
User Login Name?    james <Enter>        (Enter your first name or some other name of
                                         your choosing; for example, james. Then press
                                         <Enter>.)

Full User Name?     James A Jones        (Enter your full name, and then press <Enter>.)

User ID? [101]      <Enter>
Group Name? [general]        <Enter>     (You can enter a new "Group Name" or take
                                         the default "general")
                                                        (4)
Parent directory of login directory? [/accounts]    <Enter>

Initial program? [/bin/sh] <Enter>       (Press <Enter> for the Bourne shell, or type
                                         /bin/csh for the C shell. Then press <Enter>.)

The password is currently clear.
Password Operation? [set]    <Enter>

Password?   july_67   <Enter>            (Type a password name that contains at least
                                         6 characters, 1 of which must be a numeric or
                                         special character; for example, july_67.
                                         Then press <Enter>. You will need your
                                         password to log in to the DG/UX system later
                                         in this chapter.)

Do you want to edit, skip or install this user entry?
[install] <Enter>
```

(1) `Text in this typeface indicates system messages that are displayed on your system console's monitor.`

(2) Text in ***bold italic*** indicates variable user input that you type on your system console's keyboard. Although not shown in this sample screen, user input that is **bold** must be typed verbatim.

(3) Text in *classic italic* is a comment that explains the variable(s) associated with the user input shown in ***bold italic.***

(4) **<Enter>** indicates that you should press the Enter key or the New Line key.

Related Documents

In this manual, we refer to the following manuals that apply to your DG/UX system and your AViiON computer, AViiON workstation(s), and AVX–30 X terminal(s). See *Read This First* for information about other DG/UX software documentation and AViiON hardware documentation.

Seting Up and Managing TCP/IP on the DG/UX™ System (093–701051)

Explains how to plan the installation of TCP/IP on AViiON computers hosting the DG/UX system, and how to customize TCP/IP for the network–application environment. It also explains how to manage TCP/IP software in an installed network.

Managing NFS® and Its Facilities on the DG/UX™ System (093–701049)

Tells how to manage the DG/UX Open Network Computing (ONC™)/Network File System (NFS), and how to install and administer Yellow Pages.

Initially Installing and Setting Up the DG/UX™ System on Stand–Alone, Multiuser AViiON® Computers (069–00562)

Tells how to install and set up the DG/UX system on server–class AViiON computers that operate in traditional multiuser/minicomputer environments. This manual assumes the AViiON computer includes one or more Systech asynchronous terminal line controllers to support a community of local terminal users. It is intended for system administrators who are unfamiliar with the UNIX operating system.

Installing and Managing the DG/UX™ System (093–701052)

Tells how to install and manage the DG/UX operating system on AViiON computers that will run as stand–alone, server, or client systems. It is intended for system administrators who are familiar with the UNIX operating system.

Setting Up, Starting, and Maintaining AViiON® Workstations: 100, 200, and 300 Series (014–001886)

Describes how to unpack and connect system components and optional devices. It also explains how to power up the workstations and prepare for the operating system installation.

*Setting Up and Starting AViiON® 400 Series Stations (*014–001858*)*

Describes how to unpack and connect system components and optional devices. It also explains how to power up the workstation and prepare for the operating system installation.

Setting Up and Starting AViiON® 3000 and 4000 Series Computer Systems (014–001872)

Describes how to unpack and connect system components and optional devices. It also explains how to power up the computer and prepare for the operating system installation.

Setting Up and Starting AViiON® 5000 Series Computer Systems (014–001806)

Describes how to unpack and connect system components and optional devices. It also explains how to power up the computer and prepare for the operating system installation.

Starting AViiON® 6000 Series Systems (014–001819)

Describes the basic AViiON 6000 series computer system, hardware components, and maximum configurations. It also explains how to power up the computer unit and respond to common power–up problems.

Using the AViiON® System Control Monitor (SCM) (014–001802)

Describes how to use the commands and menus of the firmware monitor program to bring up software, control the system environment, and debug programs.

User's Reference for the DG/UX™ System (093–701054)

Describes the commands that constitute the basic user–level software on the DG/UX system.

Using the DG/UX™ Editors (069–701036)

Tells how to use the editors that come with the DG/UX system. This includes the command–line editor (**editread**), the full–screen editor (**vi**), the line editor (**ed**), and the batch editor (**sed**).

Using the DG/UX™ System (069–701035)

Tells how to use the DG/UX system and its Bourne and C shells.

X Window System User's Guide, Volume Three, Motif Edition, from O'Reilly & Associates, Inc. (069–100229–02)

Introduces users to the X Window System in the OSF/Motif environment.

Read This First (069–000519)

Supplies an initial reading path for installers of AViiON hardware and the DG/UX operating system. It also lists and describes the full suite of documentation supporting AViiON hardware and DG/UX software.

Release and Media Notices

In addition to the related manuals described above, you will find useful information in the release and media notices listed below.

Release Notice: DG/UX™ System for AViiON® Computers, Release 4.30.

Update Notice: DG/UX™ System for AViiON® Systems, Release 4.30, Update 2.

Patch Notice: DG/UX 4.32.01.

Update Notice: GNU–C.

Update Notice: DG TCP/IP (DG/UX).

Update Notice: ONC/NFS.

Update Notice 1.0A: Looking Glass.

Update Notice 1.0B: Looking Glass.

Release Notice: DG/UX™ X Windows for AViiON® Systems, Release 4, Revision 4.32.

Release Notice: XPG3 Compliance Package for the DG/UX Operating System on AViiON® Computers.

Release Notice: AView.

Release Notice: Looking Glass® for AViiON® Systems.

Release Notice: AVX–30 Software for AViiON® Systems.

Media Notice: Client/Server User's Package for AViiON® Systems.

Contacting Data General

Data General wants to assist you in any way it can to help you use its products. Please feel free to contact the company as outlined below.

Manuals

If you require additional manuals, please use the enclosed TIPS order form (United States only) or contact your local Data General sales representative.

Telephone Assistance

If you are unable to solve a problem using any manual you received with your system, free telephone assistance is available with your hardware warranty and with most Data General software service options. If you are within the United States or Canada, contact the Data General Service Center by calling 1–800–DG–HELPS. Lines are open from 8:00 a.m. to 5:00 p.m., your time, Monday through Friday. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

Joining Our Users Group

Please consider joining the largest independent organization of Data General users, the North American Data General Users Group (NADGUG). In addition to making valuable contacts, members receive FOCUS monthly magazine, a conference discount, access to the Software Library and Electronic Bulletin Board, an annual Member Directory, Regional and Special Interest Groups, and much more. For more information about membership in the North American Data General Users Group, call 1–800–877–4787 or 1–512–345–5316.

End of Preface

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Chapter 1
Before You Start

This chapter contains the information you will need before you install the DG/UX™ client/server software on the AViiON® system that will be your DG/UX server. It also contains the information you will need before you set up your diskless AViiON workstations as DG/UX operating system (OS) clients.

In this chapter, we discuss the following topics:

- The DG/UX client/server environment.
- I/O device specifications in DG/UX Common Device Specification Format.
- The preloaded DG/UX system disk and factory–installed SCSI ID numbers.
- Preloaded DG/UX software.
- Disk space allocation.
- Addition of software to your DG/UX system.
- What you must know to set up TCP/IP, NFS®, and Yellow Pages™ (YP) network software, and where to find it.
- Hints about using the case–sensitive DG/UX operating system and the DG/UX system administration utility, called **sysadm**.
- The system console and its display language.

The DG/UX Client/Server Environment

In a DG/UX client/server environment, the DG/UX server system uses TCP/IP and NFS network software to supply a bootable operating system image to its DG/UX OS client workstations over an Ethernet–based local area network (LAN). For this reason, you must first install and set up the DG/UX server system software on your AViiON computer or workstation. Then you can boot and set up the individual OS client workstations at your leisure.

Figure 1–1 shows a typical DG/UX client/server environment. You will notice that it includes AVX–30 X terminal clients. Although X terminals are not DG/UX OS clients, they receive their boot code from a DG/UX system via the network.

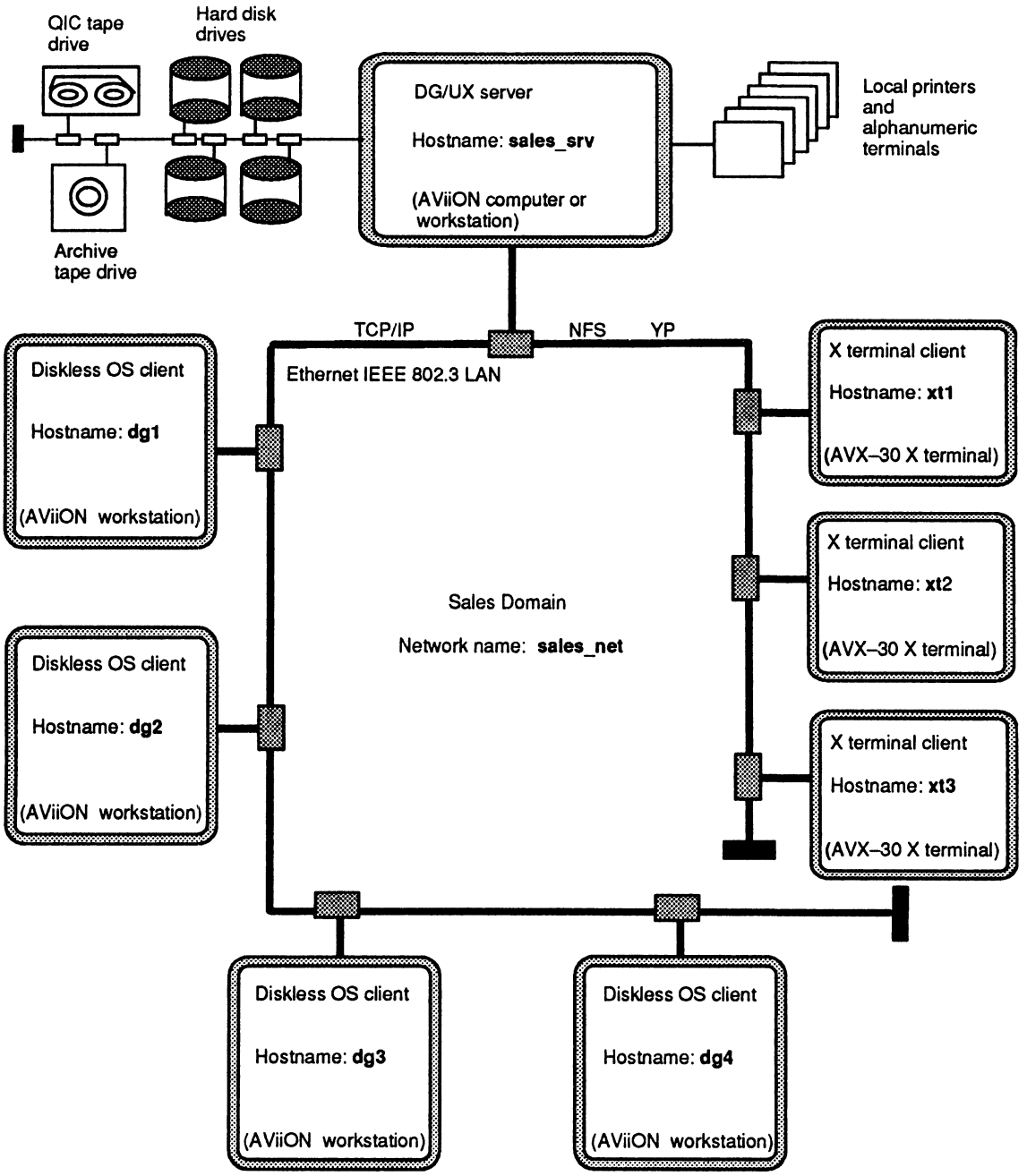


Figure 1–1 A Typical DG/UX Client/Server Environment

Diskless OS Client AViiON Workstations

A diskless OS client, as the name infers, has no local *system* disk; its **/ (root)** and **/usr** file systems and its swap file reside on the DG/UX server system. For this reason, diskless OS clients rely solely on their server to supply their operating system via the network at boot time.

AVX–30 X Terminals

The DG/UX server also supplies boot code to AVX–30 X terminals via the network. In addition, the DG/UX server downloads the AVX–30 X server of the DG/UX X Windows System™ software to the AVX–30 X terminals, thus allowing X terminal users to run X client windows.

I/O Device Specifications in DG/UX Common Device Specification Format

As you install your DG/UX client/server system, the software prompts you to enter or to verify the names of the I/O devices present on your AViiON computer or workstation. You must use the DG/UX Common Device Specification Format (also referred to in this manual as DG/UX device name) for the I/O devices. Otherwise, you will receive error messages.

We have listed the DG/UX device names for the I/O devices common to each AViiON computer system in Tables 1–1 through 1–3. See the section for your AViiON system type. While reviewing the I/O device table for your AViiON system, we recommend that you check or highlight the names of those I/O devices present on your particular system; also mark the page. Later you will find it useful to refer to this table when planning and installing your DG/UX system.

AViiON 5000 Series and AViiON 6000 Series I/O Devices

AViiON 5000 series and AViiON 6000 series systems support the same set of I/O devices, with a few exceptions. However, the number of devices of the same type that are supported by each particular model in the AViiON 5000 and 6000 series computers may differ.

Table 1–1 lists the I/O devices common to AViiON 5000 series and 6000 series computers. It also supplies their DG/UX device names.

Table 1–1 For AViiON 5000 Series and 6000 Series Computers: I/O Devices and Their DG/UX Device Names

I/O Device	DG/UX Device Name in Common Device Specification Format
RS–232–C system console port and RS–232–C terminal/modem port on computer unit	**duart()**
Parallel printer port on computer unit	**lp()**
On Ciprico SCSI controller[1] 0 :	
disk[2] with SCSI ID number 0	**sd(cisc(),0)**
disk with SCSI ID number 1	**sd(cisc(),1)**
disk with SCSI ID number 2	**sd(cisc(),2)**
disk with SCSI ID number 3	**sd(cisc(),3)**
tape[2] with SCSI ID number 4	**st(cisc(),4)**
tape with SCSI ID number 5	**st(cisc(),5)**
tape with SCSI ID number 6	**st(cisc(),6)**
On Ciprico SCSI controller 1[3]:	
disk with SCSI ID number 0	**sd(cisc(1),0)**
disk with SCSI ID number 1	**sd(cisc(1),1)**
disk with SCSI ID number 2	**sd(cisc(1),2)**
disk with SCSI ID number 3	**sd(cisc(1),3)**
tape with SCSI ID number 4	**st(cisc(1),4)**
tape with SCSI ID number 5	**st(cisc(1),5)**
tape with SCSI ID number 6	**st(cisc(1),6)**
On ESDI disk controller[4] 0:	
disk unit 0	**cied(0,0)**
disk unit 1	**cied(0,1)**
disk unit 2	**cied(0,2)**
On SMD disk controller[5] 0:	
disk unit 0	**cimd(0,0)**
disk unit 1	**cimd(0,1)**
disk unit 2	**cimd(0,2)**
disk unit 3	**cimd(0,3)**
Interphase VME Ethernet controller 0	**hken()**
Interphase VME Ethernet controller 1	**hken(1)**
First Systech asynchronous terminal line controller[6]	**syac()**
Second Systech asynchronous terminal line controller[6]	**syac(1)**
Third Systech asynchronous terminal line controller[6]	**syac(2)**
Fourth Systech asynchronous terminal line controller[6]	**syac(3)**
Fifth Systech asynchronous terminal line controller[6]	**syac(4)**
First Systech synchronous controller	**sdcp()**
Second Systech synchronous controller	**sdcp(1)**
Third Systech synchronous controller	**sdcp(2)**
Fourth Systech synchronous controller	**sdcp(3)**

1 SCSI is the acronym for Small Computer Systems Interface. Each SCSI controller supports 7 SCSI devices, maximum. Each of the 7 SCSI devices is identified by its unique SCSI ID (identification) number within the range 0 through 6.

NOTE: If you have an AViiON 5200 computer (model 70331 or 70332) or an AViiON 5220 computer (model 70333) with two internal SCSI controllers, the Ciprico SCSI controller 0 supports only 3 internal SCSI hard disk drives and no external drives. The Ciprico SCSI controller 1 supports only 2 internal, half–height devices (tape and/or disk drives) and 5 external devices (tape and/or disk drives).

2 Notice that the prefix **sd** in the DG/UX device name specifies a SCSI–based disk device. Similarly, the prefix **st** in the DG/UX device name specifies a SCSI–based tape device. Select the prefix of each DG/UX device name according to the type of device (disk or tape) assigned to the particular SCSI ID number in your system. The prefix shown in the table for each SCSI device ID number reflects the typical manufacturing SCSI ID assignments.

3 If your system supports more than two SCSI controllers, substitute **cisc(2)** for **cisc(1)** when specifying the third SCSI controller and its disk and tape units. Similarly, substitute **cisc(3)** for **cisc(1)** when specifying the fourth SCSI controller and its disk and tape units.

4 Available only on AViiON 5000 series computers.

5 Available only on AViiON 6000 series computers. AViiON 6000 series computers support four SMD controllers, maximum, based on configuration. When specifying additional SMD controllers and their disk units, use the same substitutions as shown in note 3 above for SCSI controllers. For example, **cimd(1,0)** specifies disk unit 0 on the second SMD controller.

6 The DG/UX device name **syac** (Systech asynchronous terminal line controller) specifies one of the following: a Systech VME–based, 16–line asynchronous multiplexor/controller (also called the VAC/16); a Systech VME–based, VDA/128 host adapter; a Systech VME–based, VDA/255 host adapter. Notice that each VDA/128 host adapter and each VDA/255 host adapter supports its data terminal devices (128 devices, maximum, and 255 devices, maximum, respectively) via a network of one or more asynchronous cluster controllers.

AViiON 400 Series, AViiON 3000 Series, and AViiON 4000 Series I/O Devices

Table 1–2 lists the I/O devices common to AViiON 400 series workstations, and to AViiON 3000 series and 4000 series computers. It also supplies their DG/UX device names.

Table 1–2 For AViiON 400 Series Workstations, and AViiON 3000 Series and 4000 Series Computers: I/O Devices and Their DG/UX Device Names

I/O Device	DG/UX Device Name in Common Device Specification Format
Keyboard[1]	**kbd()**
Graphics monitor[1]	**grfx()**
RS–232–C/RS–422 port A and mouse[1] port on computer unit	**duart()**
RS–232–C port B on computer unit	**duart(1)**
Parallel printer port	**lp()**
On integrated SCSI controller[2]:	
disk[3] with SCSI ID number 0	**sd(insc(),0)**
disk with SCSI ID number 1	**sd(insc(),1)**
disk with SCSI ID number 2	**sd(insc(),2)**
disk with SCSI ID number 3	**sd(insc(),3)**
tape[3] with SCSI ID number 4	**st(insc(),4)**
tape with SCSI ID number 5	**st(insc(),5)**
tape with SCSI ID number 6	**st(insc(),6)**
Integrated Ethernet controller	**inen()**
Interphase VME–based Ethernet controller	**hken()**
First Systech asynchronous terminal line controller[4]	**syac()**
Second Systech asynchronous terminal line controller[4]	**syac(1)**
First Systech synchronous controller	**sdcp(),**
Second Systech synchronous controller	**sdcp(1)**

1 The keyboard, the graphics monitor, and the mouse are available only on AViiON 400 series workstations.

2 SCSI is the acronym for Small Computer Systems Interface. The SCSI controller supports 7 SCSI devices, maximum. Each of the 7 SCSI devices is identified by its unique SCSI ID (identification) number within the range 0 through 6.

3 Notice that the prefix **sd** in the DG/UX device name specifies a SCSI–based disk device. Similarly, the prefix **st** in the DG/UX device name specifies a SCSI–based tape device. Select the prefix of each DG/UX device name according to the type of device (disk or tape) assigned to the particular SCSI ID number in your system. The prefix shown in the table for each SCSI device ID number reflects the typical manufacturing SCSI ID assignments.

4 The DG/UX device name **syac** (Systech asynchronous terminal line controller) specifies one of the following: a SystechVME–based, 16–line asynchronous multiplexer/controller (also called the

VAC/16); a Systech VME–based, VDA/128 adapter. Notice that a VDA/128 adapter supports 128 data terminal devices, maximum, via a network of one or more asynchronous cluster controllers.

AViiON 100 Series, AViiON 200 Series, and AViiON 300 Series I/O Devices

Table 1–3 lists the I/O devices common to the AViiON 100 series, 200 series, and 300 series workstations. (Exceptions are noted below.) It also lists their DG/UX device names.

Table 1–3 For AViiON 100/200/300 Series Workstations: I/O Devices and Their DG/UX Device Names

I/O Device	DG/UX Device Name in Common Device Specification Format
Keyboard	**kbd()**
Graphics monitor	**grfx()**
RS–232–C/RS–422 port A and mouse port	**duart()**
RS–232–C port B[1]	**duart(1)**
Parallel printer port[2]	**lp()**
On integrated SCSI controller[3] :	
disk[4] with SCSI ID number 0	**sd(insc(),0)**
disk with SCSI ID number 1	**sd(insc(),1)**
disk with SCSI ID number 2	**sd(insc(),2)**
disk with SCSI ID number 3	**sd(insc(),3)**
tape[4] with SCSI ID number 4	**st(insc(),4)**
tape with SCSI ID number 5	**st(insc(),5)**
tape with SCSI ID number 6	**st(insc(),6)**
Integrated Ethernet controller	**inen()**

1 Available on all AViiON workstations, except the AViiON 300 and 310 workstations with monochrome graphics controllers.

2 Available only on AViiON 300 and 310 workstations with monochrome graphics controllers.

3 SCSI is the acronym for Small Computer Systems Interface. Each SCSI controller supports 7 SCSI devices, maximum. Each of the 7 SCSI devices is identified by its unique SCSI ID (identification) number within the range 0 through 6.

4 Notice that the prefix **sd** in the DG/UX device name specifies a SCSI–based disk device; similarly the prefix **st** in the DG/UX device name specifies a SCSI–based tape device. Select the prefix of each DG/UX device name according to the type of device (disk or tape) assigned to the particular SCSI ID number in your system. The prefix shown in the table for each SCSI device ID number reflects the typical manufacturing SCSI ID assignments.

More About SCSI Devices

As noted under Tables 1–1 through 1–3 above, all SCSI–based hard disks use the same format: either **sd(insc(),*n*)** or **sd(cisc(),*n*)**. Similarly, all SCSI–based tape drives use the same format: either **st(insc(),*n*)** or **st(cisc(),*n*)**. In both instances, **insc()** or **cisc()** refers to the computer's SCSI controller, and ***n*** refers to the SCSI ID number that is jumpered on the drive unit; or, in the case of diskette drives, the drive units' SCSI–adapter board.

Specifying SCSI–Based Diskette Devices

If you have diskette drives configured in your system, the DG/UX Common Device Specification Format is extended to include not only the SCSI ID number of the dual–diskette drives' SCSI adapter board but also the unit number of the particular diskette drive. For example, to specify diskette drive unit 0 in a dual–diskette subsystem, use the format **sd(insc(),*n*,0)** or **sd(cisc(),*n*,0)**, as appropriate for your computer or workstation. Similarly, to specify diskette drive unit 1, use the format **sd(insc(),*n*,1)** or **sd(cisc(),*n*,1)**. In all cases, ***n*** refers to the SCSI ID number of the diskette drives' adapter board, and **0** or **1** specifies the unit number of the particular diskette drive.

The Preloaded Disk and Factory–Installed SCSI ID Numbers

When shipped from the factory, the first SCSI–based hard disk connected to the integrated SCSI controller or to the first Ciprico SCSI controller (only on AViiON 5000 and 6000 series computers) is jumpered for SCSI ID 0. If you ordered preloaded DG/UX system software, this is your preloaded DG/UX system disk. Also, when shipped from the factory, the first cartridge tape drive connected to the integrated SCSI controller or to the first Ciprico SCSI controller is jumpered for SCSI ID 4.

Therefore, throughout the installation processes described in this manual, we refer to **sd(insc(),0)** or **sd(cisc(),0)** when specifying your preloaded system disk. And we refer to **st(insc(),4)** or **st(cisc(),4)** when specifying your cartridge tape drive as your software loading device.

The Preloaded DG/UX Software

The preloaded system disk contains the DG/UX software. When preloading the DG/UX client/server user's package, the factory creates the following *logical disks* and their file systems, where applicable, on your SCSI–based system disk: **root**, **usr**, **swap**, **usr_opt_X11**, and **usr_opt_aview**. In concept, logical disks are similar to other operating systems' partitions. Each logical disk contains a configurable number of physical disk blocks. Each disk block contains 512 bytes of physical disk space.

NOTE: If you do not have a preloaded disk, you will create the **root**, **usr**, **swap**, **usr_opt_X11**, and **usr_opt_aview** logical disks as part of the installation of your DG/UX server system.

After these logical disks and file systems are created, the factory *mounts* each logical disk, except **swap**, on a directory, called the mount point. The mount point provides a directory pathname for the logical disk's file system. Then the factory loads the system software on to the logical disks. This makes the **root** (/) and the **usr** file systems (groups of files and their directories) accessible for use by the DG/UX software when you install your system.

The **usr_opt_X11** logical disk supports the file system for the DG/UX X Window System software, and the **usr_opt_aview** logical disk contains graphics libraries and files for use with the DG/UX AView System software. These logical disks and file systems are created during the preload process as a convenience for those who will install the DG/UX system using preloaded software.

The **swap** logical disk does not have an associated directory pathname or file system. The DG/UX system uses this logical disk for swapping pages of processes in and out of virtual memory.

Table 1–4 shows how your preloaded physical disk (SCSI ID 0) is preconfigured at the factory on either a 332–megabyte, a 662–megabyte, or a 1–gigabyte disk.

Table 1–4 Preconfigured System Disk Layout

SCSI–Based Physical Disk	Logical Disk	Piece	Size in Blocks	Mount Point
0	**swap**	1	50,000	–
0	**root**	1	40,000	/
0	**usr**	1	160,000	**/usr**
0	**usr_opt_X11**	1	105,000	**/usr/opt/X11**
0	**usr_opt_aview**	1	8,000	**/usr/opt/aview**
0	*free_space: 332–Mbyte Disk		317,000	–
0	662–Mbyte Disk		973,000	–
0	1–Gbyte Disk		1,767,000	–
0	*total_space: 332–Mbyte Disk		680,000	–
0	662–Mbyte Disk		1,336,000	–
0	1–Gbyte Disk		2,130,000	–

* = approximate

The "Logical Disk" column lists the name of each logical disk on physical disk 0 [**sd(insc(),0)** or **sd(cisc(),0)**]. It also lists the "free_ space" and the "total_space."

The "free_space" refers to the number of physical disk blocks that are not yet allocated to logical disks, based on the capacity of the particular disk drive.

The "total_space" refers to the total capacity in disk blocks of the particular disk drive.

Your system may have disk drives of different capacities than those listed above. See Table 1–7 for the capacities of other supported disk drives.

The "Piece" column shows that each logical disk is created as 1 piece. With the exception of **swap**, **root**, and **usr**, the DG/UX system allows you to create logical disks consisting of a maximum of 32 pieces, which can be distributed across several physical disk drives.

The "Size in Blocks" column shows the following information:

- The number of physical disk blocks allocated to the **swap**, **root**, **usr**, **usr_opt_X11**, and **usr_opt_aview** logical disks.
- The number of unallocated physical disk blocks ("free_space") on the 332–megabyte, the 662–megabyte, and the 1–gigabyte physical disk drives.
- The total number of allocated and unallocated disk blocks ("total_space") on the 332–megabyte, the 662–megabyte, and the 1–gigabyte physical disk drives.

The "Mount Point" column shows the directory pathname of each logical disk's file system.

Allocating Disk Space

As described in "The Preloaded DG/UX Software" section, the DG/UX system allocates and views physical disk space in terms of logical disks. Thus, the physical disk space that is not yet allocated to logical disks is unaccessible to the system software. Further, the DG/UX system does not allow you to dynamically resize logical disks.

For these reasons, it is important to plan the use of your disk space before you begin to install your system.

Before you can plan your DG/UX server system's disk space, you must know the following:

- The names and sizes of the logical disks required by your DG/UX client/server system and by the software you plan to add to this system.
- The size, in total number of disk blocks, of each hard disk on the AViiON computer that will host the DG/UX server system software.

The names and sizes of the logical disks required by your DG/UX client/server system are described in the next few sections of this chapter of the manual. A discussion of logical disks required for add–on software is also included.

To assist you with your planning, see the "System Planning" section at the end of this chapter. This section contains worksheets for planning your logical disks and allocating your physical disk space. Table 1–7 in this chapter lists the model numbers and sizes of most DG/UX–supported disk drives.

While reading through the next few sections in this chapter, refer to the information in the "System Planning" section and begin to fill out the worksheets. Later, as you install your new DG/UX system, you will find the completed worksheets useful.

DG/UX System Logical Disks

Table 1–4 supplies the names of the DG/UX system logical disks. In addition, you will create one or two other logical disks.

- A logical disk for the home directory of user accounts (**accounts**).
- An optional logical disk for temporary storage (**var_tmp**).

This group of logical disks is described briefly below and, with the exception of **swap**, is shown in Figure 1–2. Other logical disks are discussed in the next three sections of this chapter.

The root Logical Disk

The **root** logical disk is reserved for system–level programs and utilities. As shown in Figure 1–2, the / directory contains many subdirectories, some of which are located on separate logical disks.

If you are installing your DG/UX system from tape, the **root** logical disk must contain 40,000 blocks of physical disk space on your DG/UX system disk.

The swap Logical Disk

The **swap** logical disk supplies temporary storage space for pages of processes that are *swapped out* or *purged* from main memory. The DG/UX system swaps out a page when the following three conditions are present: 1) the page is eligible for swapping (some are not); 2) available main memory has reached a system–imposed *low water* mark (that is, a large percentage of main memory is in use); and 3) the page has not been referenced within a system–imposed time quantum.

For these reasons, the size of your **swap** logical disk depends on the following factors:

- The size of your computer's physical main memory.
- The number and types of applications software, particularly those that are memory–intensive, that you plan to run simultaneously on your system.

As a rule of thumb, the **swap** logical disk should be 1.5 times the size of its host computer's main memory. Based on 2,048 disk blocks per megabyte (1,048,576 bytes per megabyte ÷ 512 bytes per disk block), the formula for calculating **swap** space is as follows:

(1.5 x no. of megabytes of memory) x 2,048 = size of **swap** (in disk blocks)

For example, for an AViiON computer with 32 megabytes of memory, the calculation is as follows:

(1.5 x 32) x 2,048 = 98,304 disk blocks

If you are installing your DG/UX server system from tape, you can specify the size of your **swap** logical disk during installation. If you are installing your DG/UX server system using a preloaded disk, you can add **swap** space after your DG/UX system is installed. For information about adding **swap** space, see the "File System Management" section in *Installing and Managing the DG/UX™ System.*

The usr Logical Disk

The **usr** logical disk also supplies disk space for system–level programs and utilities. And, as shown in Figure 1–2, the **/usr/opt** directory includes the mount point for the **X11** subdirectory, which contains the DG/UX X Window System file systems.

In addition, the **/usr** file system supplies disk space for TCP/IP network software (10,000 blocks), and NFS and YP network software (14,000 blocks).

If you are installing your DG/UX system from tape, the **usr** logical disk must contain 160,000 blocks, minimum, of physical disk space on your DG/UX system disk. However, if you are adding other software that loads disk blocks into the **usr** logical disk, you may want to increase the size of the **usr** logical disk when completing your logical disk planning worksheet. For example, if you are installing the DG/UX system from tape and load the optional XPG3 Compliance Package for the DG/UX Operating System on AViiON Computers, this software will use 4,400 blocks of the **usr** logical disk. See the product release notice for more information about this software development package.

The Home Logical Disk (accounts)

This logical disk contains the individual users' home directories. In these directories, users create and store their local data and program files. In this manual, we call this logical disk **accounts** and give it a directory pathname of **/accounts**. You can assign names of your choosing to this logical disk and its file system.

Each user requires a variable amount of home directory space, based on volume and type of system activity. Typically, allowing 20,000 to 30,000 blocks per user is adequate. Thus, if your DG/UX server system has 10 users, your **accounts** logical disk might contain 300,000 blocks of physical disk space.

The Temporary Logical Disk (var_tmp)

Although the **root** logical disk supplies some temporary space (about 19 megabytes after **root** is loaded), this optional logical disk is useful if your system will run large program compilations, support heavy network traffic, and/or have intensive database I/O activity. If you want to create a logical disk for additional temporary space, give it a name of your choosing (for example, **var_tmp**) and mount it on the **/var/tmp** directory.

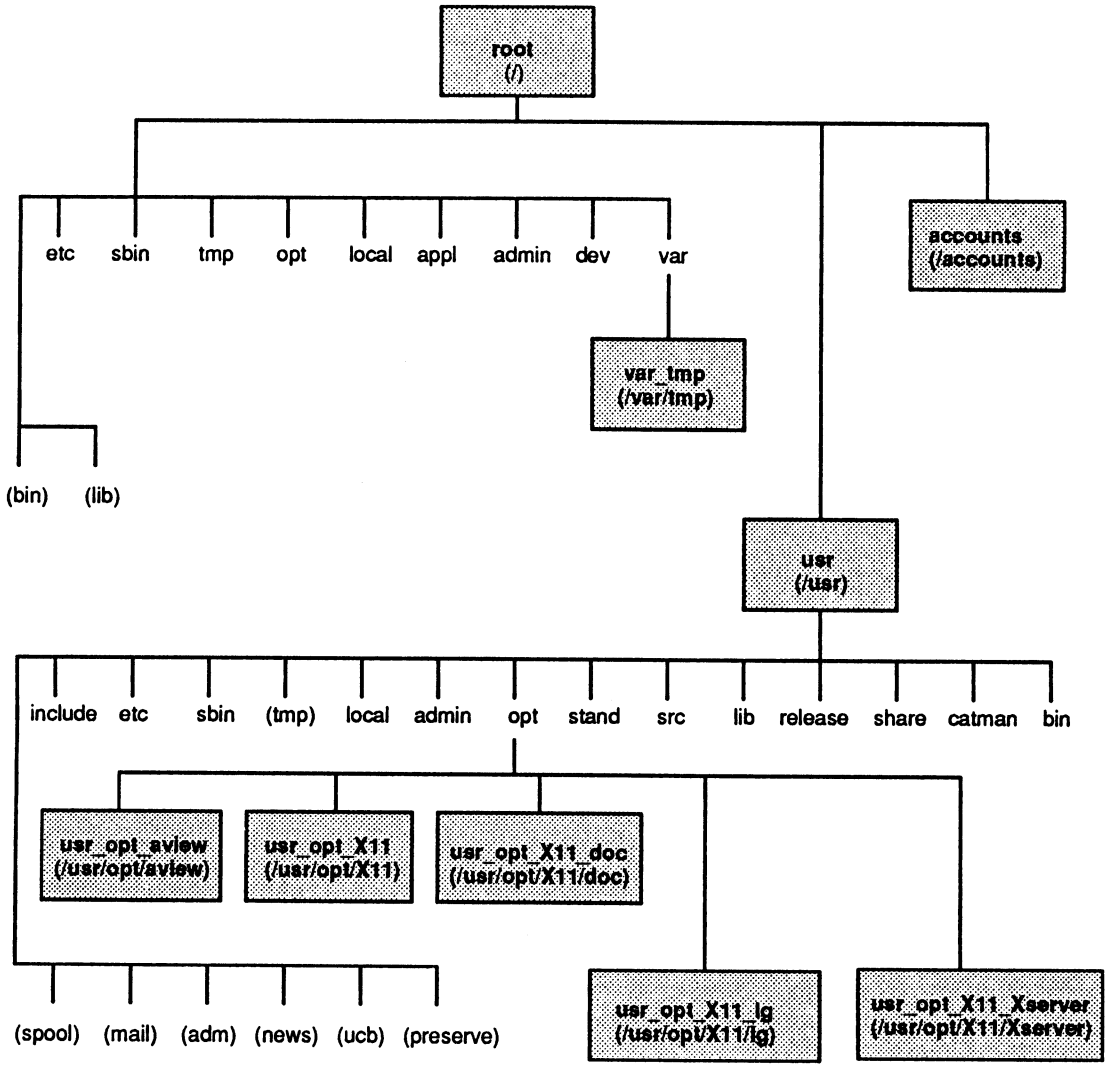
DG/UX X Windows Logical Disks

The DG/UX X Windows System, Revision 4, consists of several software packages. This group of logical disks is described in Table 1–5 and shown in Figure 1–2.

If you are installing the DG/UX system from tape, the **usr_opt_X11** logical disk must contain at least 105,000 disk blocks, and the **usr_opt_aview** logical disk must contain 8,000 disk blocks. As noted below, the other software packages listed in Table 1–5 are optional.

Table 1–5 DGIUX X Windows Logical Disks

Logical Disk and File System Names	Size In Disk Blocks	Required/ Optional/ Recommended	Description
usr_opt_X11 (/usr/opt/X11)	105,000	Required	X Windows System™ and OSF/Motif software.
usr_opt_aview (/usr/opt/aview)	8,000	Required	AView graphics library and subroutines.
usr_opt_X11_doc (/usr/opt/X11/doc)	4,000	Recommended	On–line, X windows documentation from Massachusetts Institute of Technology.
usr_opt_X11_lg /usr/opt/X11/lg)	9,000	Optional	Looking Glass® desktop manager.
usr_opt_X11_Xserver (usr/opt/X11/Xserver)	15,000	Optional	Software development package. Contains libraries and files for customizing an X server.



Rectangles indicate logical disks. Notice that each rectangle contains the name of a specific logical disk and its full mount directory name in parentheses.

Other names in parentheses [for example; (spool)] are symbolic links to directories. For more information about directories, see *Using the DG/UX™ System*.

Figure 1–2 Sample DG/UX System Directory Tree

NOTE: Before proceeding to the next section, go to the Logical Disk Planning Worksheet 1 at the end of this chapter, and fill in the information for the DG/UX system and the DG/UX X Window System logical disks described above.

OS Client Logical Disks

To support diskless OS client AViiON workstations, you must create three logical disks on your server system:

- Server.
- OS client root.
- OS client swap.

Optionally, you may want to create a logical disk for OS client dump space. These logical disks and their directory pathnames (mount points) are described briefly below, and are shown on the sample server directory tree appearing in Figure 1–3.

The Server Logical Disk (srv)

The server logical disk (**srv**) contains OS client directories and files. The mount point directory for this file system is **/srv**.

The **srv** logical disk requires 5,000 blocks of physical disk space.

The OS Client Root Logical Disk (srv_dgux432)

The OS client root logical disk, which we call **srv_dgux432** in this manual, holds the root directories for the AViiON workstation OS clients. The mount point directory for this file system is **/srv/release/PRIMARY/root**.

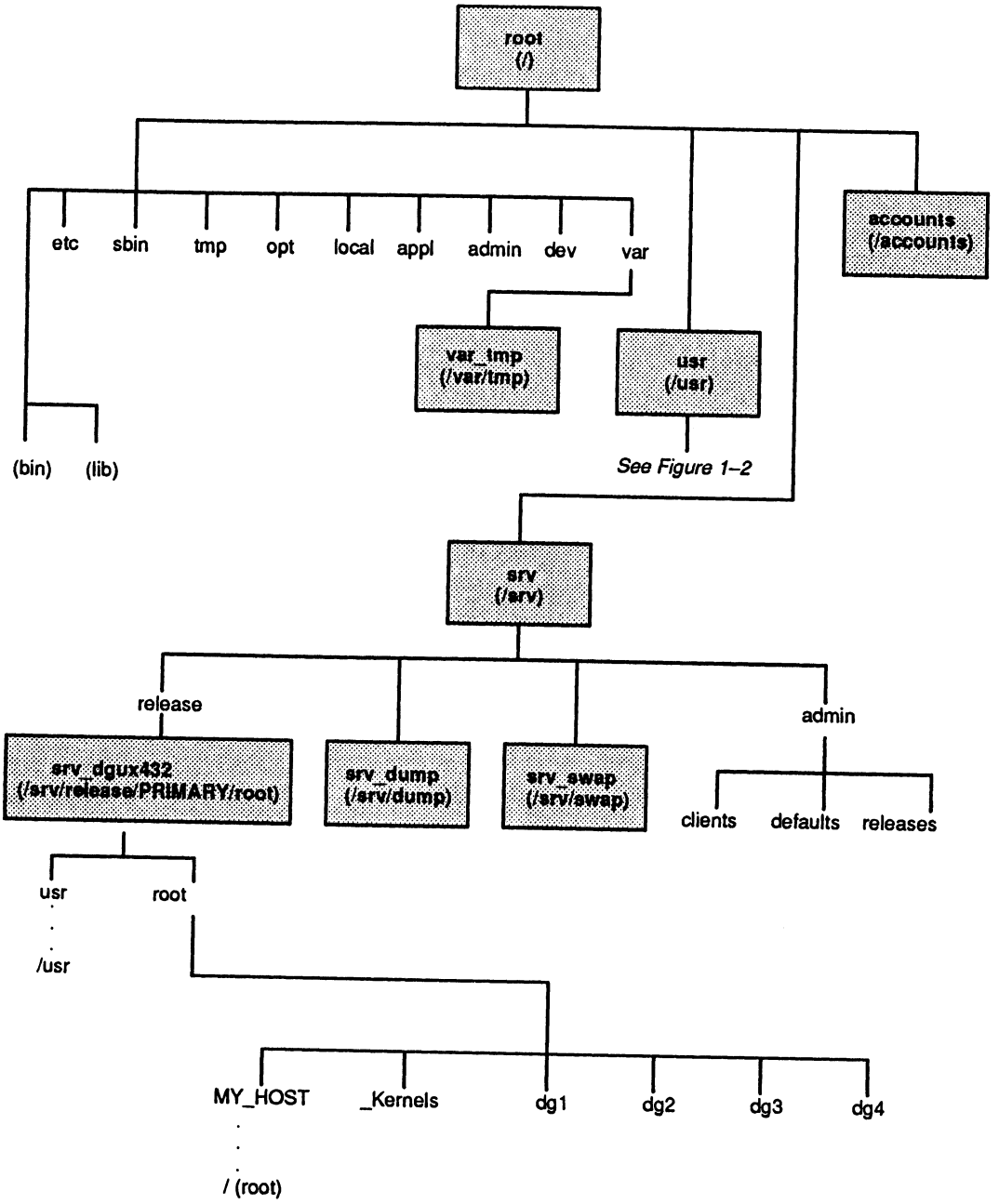
Each OS client 's **root** space is the same as that required by the server system's **root** logical disk; that is 40,000 blocks. Therefore, to calculate the size of the OS client root logical disk, multiply the number of AViiON workstation OS clients your system will support (including those you may want to add at a later time) by 40,000 blocks. For example, if you plan to support a total of four OS client AViiON workstations, you must supply 160,000 blocks (4 x 40,000 blocks) of physical disk space to the **srv_dgux432** logical disk.

The OS Client Swap Logical Disk (srv_swap)

We call this logical disk **srv_swap**. Unlike the server system, this **swap** logical disk has a file system because it must be mounted across the network. The mount point directory for this file system is **/srv/swap**.

Based on an average of 16 megabytes of memory per OS client workstation, 50,000 disk blocks of **swap** space per OS client is adequate. (Notice that the basic formula for calculating the size of **swap** space for an OS client is the same as that for the server's **swap** logical disk.) Thus, if your system will support four OS clients, the OS client **swap** logical disk will contain 200,000 blocks *plus an overhead factor of 17 percent*, or a total of 234,000 blocks. See below.

(4 OS clients x 50,000 blocks per client) x 1.17 overhead = 234,000 blocks.



Rectangles indicate logical disks. Notice that each rectangle contains the name of a specific logical disk and its full mount directory name in parentheses.

Other names in parentheses [(for example; (bin)] are symbolic links to directories. For more information about directories, see *Using the DG/UX™ System*.

Figure 1–3 Sample DG/UX Server Directory Tree

The OS Client Dump Logical Disk (srv_dump)

This logical disk is optional. It is used for memory dumps when an OS client system hangs or an OS client–system panic occurs. On the server system, the system sends a memory dump to a tape device. However, when an OS client performs a memory dump, the resulting file is sent over the network to the **/srv/dump** file system.

If you want to create an OS client dump logical disk (for example, a **srv_dump** logical disk, mounted on **/srv/dump**), we suggest that you provide space for just one client–memory dump for two reasons: 1) dump files are temporary; 2) it is unlikely that more than one OS client will require dump space at a time. Also, base the size of the OS client dump logical disk on the OS client with the largest memory; for example, 16 megabytes.

Like the OS client **srv_swap** logical disk, you must add 17 percent for overhead to the OS client **srv_dump** logical disk. For example, based on 16 megabytes of memory, the calculation for the size of this logical disk is as follows:

(16 megabytes memory x 2048 blocks per megabyte) x 1.17 overhead = 38,339 blocks.

If you do not create this logical disk, we recommend that you increase the size of the **srv** logical disk to accommodate one memory dump from the OS client workstation with the largest memory.

NOTE: Before proceeding to the next section, go to the Logical Disk Planning Worksheet 1 at the end of this chapter, and fill in the information for the OS client logical disks described above.

Logical Disks for Add–On Software

If you plan to install applications software and/or additional communications software packages as part of your initial DG/UX installation, you might have to create logical disks for this software as well.

NOTE: You can create additional logical disks and mount new file systems for add–on software at any time, providing there is a sufficient number of available disk blocks on your DG/UX server's physical disks.

Software packages supplied by Data General Corporation, which are not part of the DG/UX system software, ship on separate tape media, and each package comes with a supporting product release notice. In addition to product information, each release notice contains installation procedures for the particular software package, including where to install the software on the DG/UX system.

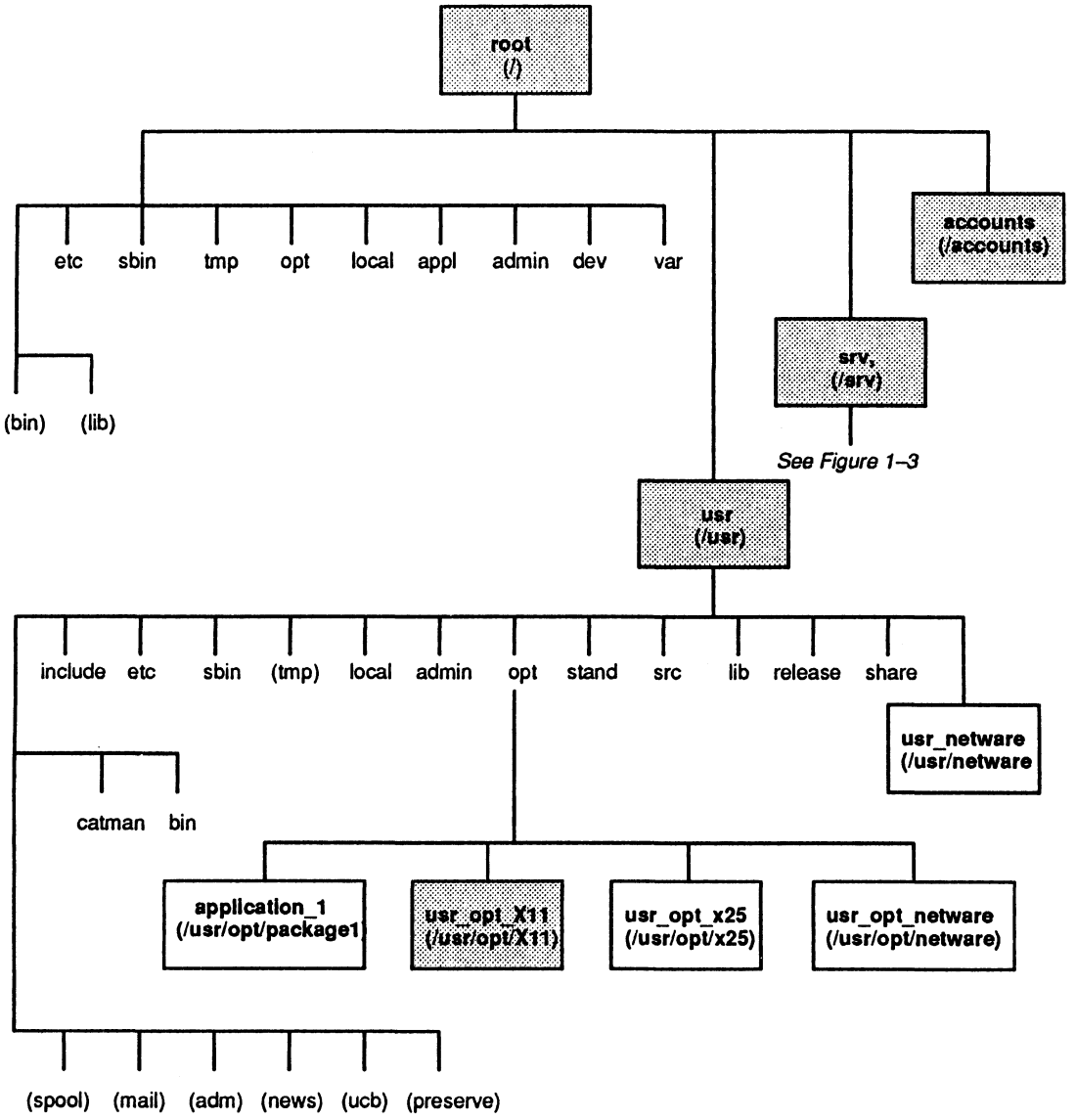
Some software packages require one or more dedicated logical disks of a suitable size for the application. In this case, follow the release notice instructions to create the logical disk(s). If your release notices do not specify dedicated logical disks, it is still good practice, in most cases, to create a logical disk for each software package. This allows you to make optimum use of your available disk space.

If you do not create a separate logical disk, some software packages will be installed automatically in to the **usr** logical disk. If you are installing your DG/UX system from tape and prefer to install these software packages in this manner, be sure to increase the size of the **usr** logical disk to accommodate them. Otherwise, the software packages may fail to load properly, due to the lack of available disk blocks. Once you have initially created the **usr** logical disk with a default size of 160,000 blocks, and you have loaded its file system and the TCP/IP, NFS, and YP network software, it has approximately 6,000 free disk blocks.

Figure 1–4 shows a sample directory tree with one logical disk added for an applications software package, and three logical disks added for two communications packages: one for X.25 for AViiON Systems; two for NetWare® Services for AViiON® Systems, which is Data General's version of NetWare, a local area networking system from Novell, Inc.

NOTE: The logical disks for add–on software described above and shown in Figure 1–4 are for purposes of example only. If you are adding one or both of the communications packages described above to your DG/UX system, be sure to read the installation instructions in the appropriate product release notice(s) for detailed information about specific logical disk requirements or suggestions.

If you are adding software to your DG/UX system, read the appropriate product release notice instructions for installing the software now. Then complete the Logical Disk Planning Worksheet 1 at the end of this chapter.



Rectangles indicate logical disks. Notice that each rectangle contains the name of a specific logical disk and its full mount directory name in parentheses..

Those rectangles without *fill* (dots) identify logical disks for add–on software. For example, the **usr_opt_x25** logical disk is for the X.25 for AViiON Systems communications software package; the **usr_netware** and the **usr_opt_netware** logical disks are for NetWare Services for AViiON Systems software.

Other names in parentheses [(for example; (spool)] are symbolic links to directories. For more information about directories, see *Using the DG/UX™ System*.

Figure 1–4 DG/UX Directory Tree with Sample Logical Disks for Network and Applications Software

TCP/IP, NFS and YP Network Software

The DG/UX server system uses TCP/IP, NFS, and YP network software to communicate with its OS client workstations, as well as AVX–30 X terminal clients, over an Ethernet–based local area network. This software also enables communications between the DG/UX server and its clients, and other systems connected to the same network.

If you are installing your DG/UX system in an established network, see your network administrator for information on installing and setting up this network software. If not, see the following manuals before you begin to install your DG/UX server system.

- *Setting Up and Managing TCP/IP on the DG/UX™ System*
- *Managing NFS and Its Facilities on the DG/UX™ System*

What You Need to Know and Where to Find It

Before installing and setting up TCP/IP, NFS and YP network software on your DG/UX server system, you must have the following information available:

- Ethernet address of your DG/UX server system; for example, 08:00:1B:nn:nn:nn.

  The Ethernet address is unique to each computer (or computer's Ethernet LAN controller board) and each workstation. It is displayed on AViiON computers and AViiON workstations during power–up testing.

- The DG/UX device name of the Ethernet controller used to connect the DG/UX server to the physical Ethernet LAN.

  The device name is one of the following, as appropriate to your server computer or workstation: **inen0**, **hken0**, or **hken1**. In this context, notice that parentheses are omitted in the DG/UX device name.

- The hostname you assign to your DG/UX server system; for example, **sales_srv**.

  See Figure 1–1 for a typical DG/UX client/server environment with a sample hostname assigned to each computer, workstation, and X terminal connected to the network.

- The name of the network to which your DG/UX server and its clients are connected; for example, **sales_net**.

- The internet address of your DG/UX server.

  See *Setting Up and Managing TCP/IP on the DG/UX™ System* for information about internet addresses and how to acquire an internet network number.

- The subnet status of your network.

  See *Setting Up and Managing TCP/IP on the DG/UX™ System* for general information about subnets, as well as the specific information you require to set up this network software in a subnetted environment.

- The network (subnet) mask for your network; for example, **0xffffff00**.

  Notice that a mask is required only when your network will be subnetted. If your network will be subnetted, see *Setting Up and Managing TCP/IP on the DG/UX™ System.*

- Network broadcast address type, BSD 4.2 or BSD 4.3 compatible. For example, BSD 4.2 is all zeroes; BSD 4.3 is all ones.

- The name of your YP domain; for example, **sales_domain**.

- The YP class of the DG/UX server system; that is, **master**, **server**, or **client**.

  See *Managing NFS and Its Facilities on the DG/UX™ System.*

  NOTE: When initially setting up the YP software on your DG/UX server system, typically you set up the DG/UX server as a YP **client**. Then after your DG/UX server system is installed, you can change the DG/UX server status from YP **client** to YP **master** or YP **server**, as appropriate for your network configuration.

After installing and setting up the network software on your DG/UX server system, you will need the following information for each OS client workstation and each AVX–30 X terminal client.

- The Ethernet address of each OS client workstation and each X terminal client.

  The Ethernet address of an AVX–30 X terminal is printed on a label affixed to the terminal unit.

- The hostname you assign to each OS client workstation and each X terminal client; for example, **dg1**; **dg2**; **xt1**; **xt2**, and so on.

- The internet address of each OS client workstation and each X terminal client.

To assist you in compiling your network information, see the TCP/IP, NFS, and YP Worksheet for the DG/UX server and for the DG/UX clients, respectively, in the "System Planning" section at the end of this chapter.

Hints About Using the DG/UX System and the sysadm Utility

The DG/UX system, like all versions of UNIX® software, is case sensitive. You will find that most DG/UX commands are invoked using lowercase letters. For example, the "make directory" command is **mkdir**, followed by an argument. If you enter the same command using uppercase or mixed–case letters (for example, **MKDIR** or **MkDir**), the DG/UX system either does not recognize the command or it interprets it as a different command. You also will find that most DG/UX directory names and filenames use lowercase letters.

For more information about DG/UX commands, directories, and files, see *Using the DG/UX™ System* and *The User's Reference for the DG/UX™ System.*

The **sysadm** utility supplies system administrators with a menu–oriented interface for setting up and managing the DG/UX system. As you install and set up your DG/UX system, you will learn that you can also log in to the DG/UX system as **sysadm** to perform administrative tasks. As **sysadm**, your home directory is **/admin**.

After logging in as **sysadm** (or **root**), you can enter a **sysadm** command with or without an argument. Without an argument, the **sysadm** command displays the SYSADM MAIN MENU. See Figure 1–5 below.

```
                        SYSADM MAIN MENU

1  diskmgmt          Enter the Diskman program
2  sysmgmt           System configuration management menu
3  fsmgmt            File system management menu
4  fileinfo          File information menu
5  ttymgmt           TTY management menu
6  lpmgmt            Line Printer management
7  usermgmt          User management menu
8  uucpmgmt          UUCP management menu
9  networkmgmt       Network management menu
10 releasemgmt       Software release management menu
11 clientmgmt        Diskless and X terminal client management menu

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT.
```

*Figure 1–5 The Main Menu of the **sysadm** Utility*

With an argument, the **sysadm** command displays a **sysadm** submenu or starts a function. For example, the **sysadm usermgmt** command displays the "User management menu" highlighted in Figure 1–5 above and shown in Figure 1–6; the

sysadm adduser command starts the unique "Create a user account" function associated with the User Management menu.

```
                    User Management

1  userdefaults    Set user account defaults
2  adduser         Create a user account
3  deluser         Delete a user account
4  moduser         Modify a user account
5  lsuser          List user account information
6  addgroup        Add group entries
7  delgroup        Delete group entries
8  modgroup        Modify group entries
9  lsgroup         List group entries
10 addalias        Add mail alias entries
11 delalias        Delete mail alias entries
12 modalias        Modify mail alias entries
13 lsalias         List mail alias entries

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT.
```

*Figure 1–6 The User Management Submenu of the **sysadm** Utility*

Hints About Recovering from Errors in the DG/UX Environment

Although few of us understand why or how we get "hung up" in software, it does happen. It's also easy to make errors when installing or setting up new software. For these reasons, we have listed a few keystroke commands in Table 1–6 that will help you recover from most of the situations you might encounter while installing your DG/UX system.

Table 1–6 Key Sequences for Recovering from Operator and System Errors

Key Sequence	When to Use
q	Type **q** (for quit) to abort a "Diskman" or **sysadm** procedure, except **sysadm newdgux**. The latter command lets you edit the prototype system configuration file using an editor, such as the **vi** editor. See the "**vi** editor Tutorial" in Chapter 2 of this manual.
Ctrl–C	Type **Ctl–C**, the DG/UX interrupt key sequence, if **q** doesn't work, except when operating in "Diskman."
Ctrl–]][][][[	Type this key sequence at the system console only when your system is hung. This is called the "hot–key" sequence. The symbols] [are close and open brackets. This key sequence creates a panic and shuts down the DG/UX system. After the system shuts down, you will be prompted to do a system dump. If you respond with a "no" answer, the SCM prompt appears. Then you can reboot your system.

The System Console

You use a system console to install and set up the DG/UX system software. The system console can be a display terminal or an AViiON workstation's graphics monitor and keyboard.

If you are using a display terminal as your system console, it must be set for the following terminal characteristics before you begin to install and set up your DG/UX server system:

- Mode – ANSI.
- Data bits – 8.
- Parity – none.

If you are unsure about how to set these characteristics, see the documentation for your particular display terminal.

Changing the Console Display Language

If your system console's terminal display or graphics monitor requires a language other than U.S. English, make the change before installing your DG/UX system. Instructions for changing the console display language appear in *Using the AViiON™ System Control Monitor*. For information about international character sets, see the DG/UX System Release Notice.

Installing the DG/UX System

After completing the worksheets in the "System Planning" section that follows, you are ready to install the DG/UX System. The installation procedures described in this manual are not difficult, but they do require your full attention. Allow a few *unhurried* hours to plan, install, and set up your DG/UX server system.

If you have a preloaded hard disk, go to Chapter 2 in this manual. If you don't, go to Appendix A in this manual.

System Planning

This section is intended to assist you in planning your DG/UX system. It contains one table and four worksheets.

For logical and physical disk planning, refer to

- Table 1–7, Disk Capacities in Blocks of Available Space.
- Logical Disk Planning Worksheet .
- Physical Disk Planning Worksheet (and sample).

For TCP/IP, NFS, and YP network software planning, refer to

- TCP/IP, NFS, and YP Worksheet for DG/UX Server.
- TCP/IP, NFS, and YP Worksheet for DG/UX Clients.

We encourage you to take the time to fill out the worksheets. You will find them useful when installing your DG/UX client/server system.

NOTE: Appendix B supplies a duplicate copy of each worksheet listed above. You may find it more convenient to pull out and use those copies rather than writing in this section of the manual.

About the Logical and Physical Disk Planning Worksheets

First fill out the Logical Disk Planning Worksheet, Sheets 1 and 2.

Before completing the Physical Disk Planning Worksheet, see the sample worksheet. This worksheet is intended to assist you in allocating logical disks to physical disks when more than one disk is present on the AViiON computer or workstation that will host the DG/UX server system software.

And remember (with the exception of **root**, **usr**, and **swap**), the DG/UX system lets you distribute logical disks in pieces (32 pieces, maximum) across one or more physical disks. For example, a logical disk containing 100,000 blocks might be distributed across 3 physical disks as follows:

- Piece 1: 40,000 blocks assigned to disk unit 0.
- Piece 2: 30,000 blocks assigned to disk unit 1.
- Piece 3: 30,000 blocks assigned to disk unit 3.

This feature enables you to achieve maximum utilization of your physical disk space. In addition, distributing a logical disk whose file system supports multiple users with a high level of I/O activity may enhance system performance.

Physical Disk Capacities

Table 1–7 supplies the model numbers of most DG/UX–supported disk drives, as well as their sizes in megabytes and in disk blocks. Use this table to complete the disk capacities where indicated in the Physical Disk Planning Worksheet.

If you are unsure of the model numbers or the capacities (in megabytes) of the disks present on your AViiON computer or workstation, refer to your AViiON hardware documentation.

Table 1–7 Disk Capacities in Blocks of Available Space

Disk Model No.	Type	Size (Megabytes)	Approx Capacity in 512–Byte Blocks
6442	ESDI	322	659,456
6491	SCSI	322	659,456
6539	SCSI	179	366,592
6541	SMD	1,066	2,183,168
6542	SMD	2,132	4,366,336
6554	SCSI	662	1,335,776
6555	ESDI	648	1,327,104
6660	ESDI	330	675,840
6661	ESDI	330	675,840
6662	SCSI	332	679,936
6685	SCSI	1,040	2,129,920
6740	SCSI	1,040	2,129,920

Logical Disk Planning Worksheet, Sheet 1

DG/UX Server Logical Disks

Logical Disk Name	Formula for Calculating Logical Disk Size	Blocks Preloaded	Blocks When Tape–Loaded
swap	If preloaded, fixed size of 50,000 blocks. If tape–loaded, (1.5 x main memory) + (optional blocks for memory–intensive applications software) = total disk blocks.	50,000	
root	Fixed size of 40,000 blocks.	40,000	40,000
usr	If preloaded, fixed size of 160,000 blocks. If tape–loaded, 160,000 (minimum) + optional **usr** blocks as required by add–on software = total disk blocks.	160,000	
usr_opt_X11	Fixed size of 105,000 blocks.	105,000	105,000
usr_opt_aview	Fixed size of 8,000 blocks	8,000	8,000
usr_opt_X11_doc	Optional logical disk. When added, fixed size of 4,000 blocks		
usr_opt_X11_lg	Optional logical disk. When added, fixed size of 9,000 blocks		
usr_opt_X11_Xserver	Optional logical disk. When added, fixed size of 15,000 blocks		
accounts	Variable size, based on number of users and users' system activity.		
var_tmp	Optional logical disk; size is application–dependent.		
srv	Fixed size of 5,000 blocks.	5,000	5,000
srv_dgux432	(Number of OS clients x 40,000 blocks/client) = total disk blocks.		
srv_swap	(Aggregate number of megabytes of memory for all OS clients x 2,048) x 1.17 = total disk blocks.		
srv_dump	(Number of megabytes of memory for 1 OS client) x 2,048) x 1.17 = total disk blocks.		
	Total Disk Blocks		

Total DG/UX System Disk Blocks

Total DG/UX Server Logical Disk Blocks	
Total Add–on Software Logical Disk Blocks (from Sheet 2)	
Total Disk Blocks	

Logical Disk Planning Worksheet, Sheet 2

Add–on Software Logical Disks		
Logical Disk Name	**Description**	**Blocks**
	Total Disk Blocks (Enter here and on Sheet 1)	

Sample Physical Disk Planning Worksheet, Sheet 1

Logical Disk Name	Mount Point	System Disk sd(cisc(),0) 1,040 Mbytes Pc. # Blocks	Add–On Disk sd(cisc(),1) 662 Mbytes Pc. # Blocks	Add–On Disk sd(cisc(),2) 1,040 Mbytes Pc. # Blocks
swap *(on system disk)*	–	1 50,000		
root *(on system disk)*	/	1 40,000		
usr *(on system disk)*	/usr	1 160,000		
usr_opt_X11	/usr/opt/X11			1 105,000
usr_opt_aview	/usr/opt/aview			1 8,000
usr_opt_X11_doc	/usr/opt/X11/doc		1 4,000	
accounts	/accounts		1 100,000	2 100,000
var_tmp	/var/tmp	1 50,000		
srv	/srv			1 5,000
srv_dgux432	/srv/release/PRIMARY/root			1 160,000
srv_swap	/srv/swap			1 234,000
srv_dump	/srv/dump			1 39,000
application_1	/usr/opt/package1	1 75,000	2 37,000	3 100,000
application_2	/usr/opt/package2		1 50,000	
application_3	/usr/opt/package3			1 40,000
Total Disk Blocks Used per Disk		375,000	191,000	791,000
Total Disk Block Capacity per Disk		2,129,920	1,335,776	2,129,920
Available Disk Blocks per Disk		1,754,920	1,144,776	1,338,920

Physical Disk Planning Worksheet, Sheet 1

Logical Disk Name	Mount Point	System Disk ____ Mbytes No. Blocks	Add–On Disk ____ Mbytes No. Blocks	Add–On Disk ____ Mbytes No. Blocks
swap *(on system disk)*	–	1 50,000		
root *(on system disk)*	/	1 40,000		
usr *(on system disk)*	/usr	1 160,000		
usr_opt_X11	/usr/opt/X11			
usr_opt_aview	/usr/opt/aview			
usr_opt_X11_doc	/usr/opt/X11/doc			
accounts	/accounts			
var_tmp	/var/tmp			
srv	/srv			
srv_dgux432	/srv/release/PRIMARY/root			
srv_swap	/srv/swap			
srv_dump	/srv/dump			
Total Disk Blocks Used per Disk				
Total Disk Block Capacity per Disk				
Available Disk Blocks per Disk				

Physical Disk Planning Worksheet, Sheet 2

Logical Disk Name	Mount Point	System Disk ____ Mbytes No. Blocks	Add–On Disk ____Mbytes No. Blocks	Add–On Disk _____Mbytes No. Blocks
Total Disk Blocks Used per Disk				
Total Disk Block Capacity per Disk				
Available Disk Blocks per Disk				

TCP/IP, NFS and YP Worksheet for DG/UX Server

Description of Data	Data
Ethernet address	
DG/UX device name of LAN controller	
Host name	
Network name	
Internet address	
Subnet status	
If subnetted, subnet mask	
Network broadcast address type: compatible with BSD 4.2 or BSD 4.3	
Name of YP domain	
YP class: **master, server, client**	

TCP/IP, NFS and YP Worksheet for DG/UX Clients

Client Host Name	Ethernet Address	Internet Address

End of Chapter

Chapter 2
Installing the DG/UX Server

This chapter describes how to install the DG/UX server system. In this chapter, we provide step–by–step instructions for performing the following tasks:

- Installing the DG/UX starter system, using a preloaded disk.

  NOTE: If you do not have a preloaded disk, go to Appendix A to perform the initial installation tasks.

- Creating logical disks.
- Installing and setting up software packages.
- Creating the kernel.
- Installing the kernel.
- Changing firmware configuration parameters using the SCM.
- Booting your new DG/UX System.

In this chapter, you will see many sample screens showing the relevant text that the DG/UX system displays on your system console's monitor as you install the DG/UX system. As you proceed through the installation process, use your system console's keyboard to type the responses shown in **bold** print in the sample screens.

Installing the DG/UX Starter System

Begin the installation process by powering up your system. Proceed as follows.

1. Power up your system console and any other devices that are connected to your computer unit via cable; for example, a peripheral housing unit containing mass storage devices. If you have data terminal devices, such as terminals or printers, connected directly to your computer unit's rear panel or via controller boards, be sure they are set for on–line mode.

2. Power up your computer unit by moving the computer unit's ac power switch to the ON position.

   As the system hardware initializes and the computer's self–tests run, you will hear beeps and see the system display the following screen. When your computer completes its self–test satisfactorily, you will see the message `Passed` displayed.

```
(c)Data General Corporation 1989, 1990
Model nnnn Series              (nnnn means this information varies with the
                                particular AViiON computer model.)
[Single/Dual] Processor
Color Graphics [8 bit]         (This may not be displayed on your
                                system.)
Firmware Revision nnnnnn
Keyboard Language is U.S.English
Local Ethernet address is 08:00:1B:nn:nn:nn
Initializing [n] Megabytes

Testing.....
     0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
Passed
```

NOTE: If your computer displays error messages or does not complete the self–test satisfactorily, stop here. See the appropriate Setting Up and Starting manual for your computer; it provides troubleshooting instructions for your computer hardware.

Immediately the DG/UX starter system begins to boot, and the first part of the next sample screen appears.

NOTE: If your AViiON computer passed its self–test but fails to boot from its preloaded system disk, call Data General Corporation for assistance before proceeding further. See the Preface of this manual for instructions about contacting Data General Corporation.

3. Respond to the `Device Name?` prompts in the DG/UX starter screen, based on the following:

   - The system console you are using.
   - The DG/UX device name(s) of the physical disk(s) present in your system.
   - The DG/UX device name of the cartridge tape drive you are using to load software.

   See your Physical Disk Planning Worksheet (or the appropriate I/O device table for your computer in Chapter 1) for the DG/UX device names of the physical disk drives on your system.

   When the last `Device Name?` prompt appears, just press the Enter key.

NOTE: Using the Backspace or Delete key will not correct a typing error on this screen. For this reason, use extra care when responding to the DG/UX prompts. If you do make a typing error, press the Enter key. When the next `Device Name?` prompt appears, retype the information correctly.

```
Booting sd(insc(),0)root:/dgux.starter

DG/UX Bootstrap Release 4.31

================================================

DG/UX System Release 4.32, Version (starter)
Using [n] megabytes of physical memory
Found 1 processors(s)
Processor 0 running

                DG/UX Starter System

Enter the names of the devices you will use in Common
Device Specification Format, with one name per line.
Enter just newline when done.

Examples:  sd(insc(),0) st(insc(),4) cird() st(cisc(),4)

Include duart() for servers and kbd() and grfx() for
workstations.
```

	If console is a display terminal, type:	*If console is a keyboard and a graphics monitor, type:*
`Device Name?`	**`duart()`**	**`kbd() <Enter>`**
`Device Name?`	**`sd(cisc(),*)`**	**`grfx() <Enter>`**
`Device Name?`	**`st(cisc(),4)`**	**`sd(insc(),*) <Enter>`**
`Device Name?`	**`<Enter>`**	**`st(insc(),4) <Enter>`**
`Device Name?`		**`<Enter>`**

Note: Substitute the device names shown above for the disks and cartridge tape drive according to your system configuration. Notice that the asterisk in the device names **sd(cisc(),*)** *and* **sd(insc(),*)** *means all disk drives connected to Ciprico SCSI controller 0 or to the integrated SCSI controller, respectively. If you have more than one Ciprico SCSI controller in your computer, add the disk drives connected to these controllers as well; for example,* **sd(cisc(1),*)**.

When you complete this step, the following screen begins to appear.

```
Using /dev/dsk/swap as swap file

** root:
No check necessary for root

Mounting /dev/dsk/root as root file system

INIT:    Boot options are:  init
INIT:    Cannot open /etc/TIMEZONE. Environment not
   initialized.

INIT:    /etc/inittab file created from
   /etc/inittab.prototype

INIT:    Checking and mounting /usr...

INIT:    /usr is now mounted

INIT:    SINGLE USER MODE
  su:    unable to access /etc/passwd

#
```

4. At the # prompt, type

   init 1

   and press the Enter key.

   The # sign is the Superuser prompt, which means you have system–wide privileges. The **init 1** command changes the DG/UX run level from level S (single–user mode) to level 1 (administrative mode).

   NOTE: If you make a typing error when entering a command, such as **init 1**, use the Delete key to erase the error. Then retype the command correctly.

5. The system displays the current date and time, and asks you if the information displayed is correct. As shown below in bold, type **y**, and then press the Enter key. If this information is incorrect, we will correct it later in this manual.

   Notice that the system displays time in a 24–hour format. For example, 08:15 means 8:15 a.m.; 14:30 means 2:30 p.m.; and so on.

```
chk.fsck:

chk.date:
     Current date/time: Wed June 16 08:15 EDT 1990
     Are the current date, time, and TIMEZONE correct?
                  (y n) [n]: y <Enter>

Setting up package: dgux

Initializing system database files from .proto files:
```

As several screens scroll forward, you will see messages about initializing prototype files. Watch for the prompts that appear in the sample screen below.

6. Type the responses exactly as shown in bold.

```
initialize /etc/passwd
.
.
.initialize /etc/sysadm/uucp
.
.
The following file systems are now mounted:

/dev/dsk/root on / type dg/ux (rw)
/dev/dsk/usr on /usr type dg/ux (rw)

Press <RETURN> to display prompt <Enter>

no-node
DG/UX Release 4.32
login:  sysadm <Enter>
DG/UX Release 4.32 AViiON
no-node
============================================================
                          WARNING
ACCESS TO AND USE OF THIS SYSTEM IS RESTRICTED TO
AUTHORIZED INDIVIDUALS!
      Data General AViiON System  DG/UX Release 4.32
============================================================
#
```

You are now logged in as **sysadm**.

Creating and Mounting Logical Disks

In this section, we will use the Diskman utility and your Physical Disk Planning Worksheet to create the logical disks listed below.

- The home logical disk for your users' directories.
- DG/UX OS client logical disks.
- Logical disks for optional add–on software.

After creating these logical disks, we will use a **sysadm** utility, called **addfsys**, to individually mount them.

NOTE: Before you can create a logical disk on a physical disk, the physical disk must be software–formatted. If you are installing a preloaded DG/UX system on an AViiON computer or workstation with more than one physical disk, go to Appendix C and format all "add–on disk(s)." Only the preloaded DG/UX system disk is software–formatted when shipped from the factory. It can take as little as a few minutes to format each add–on disk. Then return to this section and continue on.

Creating the Home Logical Disk (accounts)

Proceed as follows.

1. At the # prompt, type

   sysadm diskmgmt

   and press the Enter key.

   The Diskman Main Menu appears.

2. Type **2** to select the "Logical Disk Management Menu," and press the Enter key.

```
                    Diskman Main Menu

1.   Physical Disk Management Menu

2.   Logical Disk Management Menu

3.   File System Management Menu

4.   Initial Installation Menu

5.   Update Installation Menu

Enter choice: 2  <Enter>
```

The Logical Disk Management Menu appears.

3. Type 1 to select "Create a Logical Disk," and press the Enter key.

```
                Logical Disk Management Menu

1.   Create a Logical Disk

2.   Delete a Logical Disk

3.   Display Information About a Logical Disk

4.   Copy a Logical Disk

5.   Display Information About a Logical Disk Piece

6.   Delete a Piece of a Damaged Logical Disk

Enter choice: 1  <Enter>
```

The system begins to display the "Create a Logical Disk" script.

4. Type the responses shown in bold in the sample screen that follows, with the exceptions as noted.

```
                    Create a Logical Disk

============================================================

Enter the Logical Disk name: accounts <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format:   sd(cisc(),2)  <Enter>      Type the DG/UX
                    device name of the physical disk that will host piece 1 of
                    this logical disk; for example, sd(cisc(),2).
                    Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 100000 <Enter> If this logical disk will consist of 1
                                  piece, enter the full size of the accounts logical
                                  disk; for example, 100000. If it will consist of
                                  more than 1 piece, enter the size of piece 1
                                  according to your Physical Disk Planning
                                  Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk? [N]               If this logical disk will consist of 1 piece,
                                  press <Enter>. If it will consist of more than
                                  one piece, type y and then press <Enter>.
                                  This script will repeat, prompting you
                                  for the DG/UX device name of the physical
                                  disk that will host piece 2 of this logical disk,
                                  and so on.

The Logical Disk 'accounts' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'accounts'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

Creating the DG/UX OS Client Logical Disks

Using your Physical Disk Planning Worksheet, proceed as follows.

1. Type **1** at the "Enter Choice:" line of the Logical Disk Management Menu to again select "Create a Logical Disk." Then press the Enter key.

   The beginning of the following sample screen appears. In this screen, you create the **srv** logical disk and file system.

```
                    Create a Logical Disk

=========================================================

Enter the Logical Disk name: srv <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format:   sd(cisc(),2)  <Enter>      Type the DG/UX
                    device name of the physical disk that will host piece 1 of
                    this logical disk; for example, sd(cisc(),2).
                    Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 5000 <Enter> If this logical disk will consist of 1
                                piece, enter 5000, and then press <Enter>.
                                If it will consist of more than 1 piece,
                                enter the size of piece 1 according to your
                                Physical Disk Planning Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk? [N]             If this logical disk will consist of 1 piece,
                                press <Enter>. If it will consist of more than
                                one piece, type y and then press <Enter>.
                                This script will repeat, prompting you
                                for the DG/UX device name of the physical
                                disk that will host piece 2 of this logical disk,
                                and so on.

The Logical Disk 'srv' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'srv'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

2. Again type **1** at the "Enter Choice:" line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key.

   The beginning of the following sample screen appears. In this screen, you create the OS client root logical disk called **srv_dgux432**.

```
                    Create a Logical Disk

============================================================

Enter the Logical Disk name: srv_dgux432 <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
         Format:    sd(cisc(),2)  <Enter>    Type the DG/UX
                    device name of the physical disk that will host piece 1 of
                    this logical disk; for example, sd(cisc(),2).
                    Then press <Enter>.

Do you want to display the layout of this Physical
         Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
         [nnnnnn] 160000 <Enter> If this logical disk will consist of 1
                                 piece, enter the size of this logical disk
                                 according to your Physical Disk Planning
                                 Worksheet; for example 160000. Then
                                 press <Enter>.
                                 If it will consist of more than 1 piece,
                                 enter the size of piece 1 according to your
                                 Physical Disk Planning Worksheet.

Do you want to specify any more Pieces for this Logical
         Disk? [N]               If this logical disk will consist of 1 piece,
                                 press <Enter>. If it will consist of more than
                                 one piece, type y and then press <Enter>.
                                 This script will repeat, prompting you
                                 for the DG/UX device name of the physical
                                 disk that will host piece 2 of this logical disk,
                                 and so on.

The Logical Disk 'srv_dgux432' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'srv_dgux432'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

3. Again type **1** at the "Enter Choice:" line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key.

   The beginning of the following sample screen appears. In this screen, you create the OS client swap logical disk called **srv_swap**.

```
                    Create a Logical Disk

============================================================

Enter the Logical Disk name: srv_swap <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
         Format:   sd(cisc(),2)  <Enter>     Type the DG/UX
                   device name of the physical disk that will host piece 1 of
                   this logical disk; for example, sd(cisc(),2).
                   Then press <Enter>.

Do you want to display the layout of this Physical
         Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
         [nnnnnn] 234000 <Enter> If this logical disk will consist of 1
                                 piece, enter the size of this logical disk
                                 according to your Physical Disk Planning
                                 Worksheet; for example 234000. Then
                                 press <Enter>.
                                 If it will consist of more than 1 piece,
                                 enter the size of piece 1 according to your
                                 Physical Disk Planning Worksheet.

Do you want to specify any more Pieces for this Logical
         Disk? [N]               If this logical disk will consist of 1 piece,
                                 press <Enter>. If it will consist of more than
                                 one piece, type y and then press <Enter>.
                                 This script will repeat, prompting you
                                 for the DG/UX device name of the physical
                                 disk that will host piece 2 of this logical disk,
                                 and so on.

The Logical Disk 'srv_swap' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'srv_swap'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

Creating Optional Logical Disks for Add–on Software

Refer to your Physical Disk Planning Worksheet. If you plan to create logical disks for add–on software or a DG/UX **var_tmp** logical disk during the initial installation of your DG/UX server system, repeat step 3 in the previous section, substituting the appropriate name and size of each additional logical disk you want to create.

When you have completed this task, continue on as follows.

At the "Enter Choice:" line of the Logical Disk Management Menu, type **q** (for quit) and press the Enter key.

Mounting Your Logical Disks

You must now mount each of the logical disks and file systems you created. Logical disks are mounted individually and, in some cases, are *exported*. Exporting a file system makes it available to other DG/UX systems connected to the same network.

Proceed as follows:

1. At the # prompt, type

   sysadm addfsys

   and press the Enter key.

   The **sysadm addfsys** command mounts a specified logical disk on a specified directory.

   The beginning of the following sample screen appears. In this screen, we mount the **accounts** logical disk on **/accounts**.

2. Type the responses exactly as shown in bold. Notice that the **accounts** logical disk is exported.

```
Mount Directory Name?  /accounts <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name?  accounts <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export the file system? [n] y <Enter>   This exports the /accounts
                                        file system, making it available
                                        to DG/UX users via the
                                        network.
The entry for /accounts has been added.
The directory /accounts does not exist.
Create /accounts? [yes] <Enter>
Mount the file system?  [yes] <Enter>
The file system has been mounted.
#
```

3. At the # prompt, type

   sysadm addfsys

   and press the Enter key.

   The beginning of the following sample screen appears. In this screen, we mount the **srv** logical disk on **/srv**.

4. Type the responses exactly as shown in bold.

```
Mount Directory Name?  /srv <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name?  srv <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export the file system? [n] <Enter>
The entry for /srv has been added.
The directory /srv does not exist.
Create /srv? [yes] <Enter>
Mount the file system?  [yes] <Enter>
The file system has been mounted.
#
```

5. At the # prompt, type

   sysadm addfsys

and press the Enter key.

The beginning of the following sample screen appears. In this screen, we mount **srv_dgux432**, the OS client root logical disk, on **/srv/release/PRIMARY/root**.

6. Type the responses exactly as shown in bold.

```
Mount Directory Name?  /srv/release/PRIMARY/root <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name?  srv_dgux432 <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export the file system? [n] <Enter>
The entry for /srv/release/PRIMARY/root has been added.
The directory /srv/release/PRIMARY/root does not exist.
Create /srv/release/PRIMARY/root? [yes] <Enter>
Mount the file system?  [yes] <Enter>
The file system has been mounted.
#
```

7. At the # prompt, type

   sysadm addfsys

   and press the Enter key.

   The beginning of the following sample screen appears. In this screen, we mount the **srv_swap** logical disk on **/srv/swap**.

8. Type the responses exactly as shown in bold.

```
Mount Directory Name?  /srv/swap <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name?  srv_swap <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export the file system? [n] <Enter>
The entry for /srv/swap has been added.
The directory /srv/swap does not exist.
Create /srv/swap? [yes] <Enter>
Mount the file system?  [yes] <Enter>
The file system has been mounted.
#
```

9. Check your Physical Disk Planning Worksheet. If you have additional logical disks listed on the worksheet, repeat the procedures outlined in steps 7 and 8. Be sure to substitute the appropriate "Logical disk name" and "Mount Directory Name" for each logical disk you mount.

   When you have completed this task, continue on to the next section.

Installing Add–On Software Packages

Installing software consists of two steps: 1) loading the software from a cartridge tape drive; 2) setting up the software under DG/UX. In this section, we describe the tasks required to load add–on software. In the next section, we describe the tasks required to set up software.

If you are not adding software to your system, skip this section and go to the next section in this chapter called "Setting Up Software Packages." Although your DG/UX system software may be preloaded, the DG/UX X Windows system software, the TCP/IP, NFS, and YP network software, and any add–on software packages, must be set up before they can be used.

Loading Software

The first step in preparing to load any add–on software package is to read its associated release notice.

If your software packages require logical disks, go back to the previous section, "Creating and Mounting Logical Disks." Then follow the basic procedures in that section to create and mount logical disks according to the product release notice(s) and your Physical Disk Planning Worksheet.

When the necessary logical disks are created and mounted, proceed as follows.

1. At the # prompt, type

   sysadm makesrv

   and press the Enter key.

   You must create the **/srv** directory tree before loading any software package. This requirement is independent of the server system you are installing.

2. Insert the cartridge tape for your software package in the cartridge tape drive with SCSI ID 4. The DG/UX name for this tape drive is **st(insc(),4)** or **st(cisc(),4)**, depending on the model of your AViiON computer. You will notice in the next sample screen that the DG/UX system now refers to this drive as `Tape Drive 0`.

3. At the # prompt, type

sysadm loadpackage

and press the Enter key.

You will hear the tape drive loading the software, and a screen similar to the one shown below will begin to appear.

4. Type the responses indicated in the appropriate release notice and in the sample screen below.

```
Running subcommand 'loadpackage' from menu 'releasemgmt'
Software Release Management

Release Area? [PRIMARY] <Enter>
Tape Drive? [0]  <Enter>
Is the tape mounted and ready? y <Enter>
.
.                  The messages displayed here will vary with the
.                  particular software being loaded.
.
.
.
.
.
.
Loadpackage is finished.
#
```

5. When the # prompt appears, the software package is loaded. Remove the tape and store it in a secure place.

6. If you have additional software packages to load, repeat steps 2 through 5 now.

When you have loaded all software packages, continue with the "Setting Up Software Packages" section that follows.

Setting Up Software Packages

In this section, you will set up the DG/UX X Windows software, any add–on software packages you may have loaded, and the TCP/IP, NFS and YP network software. When you set up TCP/IP, NFS, and YP, refer to your completed TCP/IP, NFS, and YP Worksheet for the DG/UX Server. Then, to set up these software packages, proceed as follows.

1. At the # prompt, type

sysadm setuppackage

and press the Enter key. The beginning of the first of several setup screens appears.

NOTE: If you make an error when responding to a prompt in a setup screen and want to exit and begin again, type the DG/UX interrupt key sequence, **Ctrl–C**. When the # prompt appears, type the **sysadm setuppackage** command again and press the Enter key.

2. Type the responses shown in bold in the next sample screen, with the exceptions as noted.

```
Running subcommand 'setuppackage' from menu 'releasemgmt',

Software Release Management
Release Area? [PRIMARY]  <Enter>
The following packages have setup scripts that have not been run:

     X11      nfs      tcpip     yp

Package Name? [all] <Enter>
Processing setup scripts for package X11.
Setup package X11 in usr? [yes] <Enter>

     Setting up package: X11

Linking /usr/opt/X11 and /usr
Linking /usr/opt/aview and /usr

Setup package X11 in MY_HOST root? [yes] <Enter>

     Setting up package: X11

Processing setup scripts for package nfs.
Setup package nfs in usr? [yes]  <Enter>

     Setting up package: nfs

Setup package nfs in MY_HOST root? [yes] <Enter>

     Setting up package: nfs

Setting up the rc#.d directory links.
Remove links in /srv/release/PRIMARY/root/MY_HOST/etc/rc#.d
+.................................
Link from /usr/sbin/init.d to /srv/release/PRIMARY/root/MY_HOST/etc
+.................................

    That completes the automated portion of the NFS configuration.
```

Based on the software you loaded and selected, your system may display other packages that require setup.

(Continued)

```
Processing setup scripts for package tcpip.
Setup package tcpip in usr? [yes] <Enter>

     Setting up package: tcpip

In revisions of the DG/UX operating system before 4.00,
the restricted shell command was named restsh
and the remote shell command was named rsh.
To be compatible with the System V Interface Definition (SVID),
the restricted shell command must be named rsh and the
remote shell command must have a different name.
To be SVID-compliant, Data General names the remote shell remsh.

You are prompted to choose whether or not the names of
the remote and restricted shells comply with the SVID.

If You Choose      The Result Is

    y              The restricted shell is named /bin/rsh
                   and the remote shell is named /usr/bin/remsh

    n (default)    The restricted shell is named /bin/restsh
                   and the remote shell is named /usr/bin/rsh.

Do you want names to comply with the System V Interface
 Definition ? [n]  <Enter>

Restricted Shell is named /usr/bin/restsh
Remote Shell is named /usr/bin/rsh

Remote Commands Installation Complete

Press NEWLINE when ready to continue... <Enter>

Setup package tcpip in MY_HOST root? [yes] <Enter>

     Setting up package: tcpip

Creating links for initialization scripts......Please Wait

File: /srv/release/PRIMARY/root/MY_HOST/etc/hosts has been created
from prototype file
File:  /srv/release/PRIMARY/root/MY_HOST/etc/networks  has  been  created
from prototype file
File:  /srv/release/PRIMARY/root/MY_HOST/etc/services  has  been  created
from prototype file
```

(Continued)

```
File:  /srv/release/PRIMARY/root/MY_HOST/etc/protocols  has  been  created
from prototype file
File: /srv/release/PRIMARY/root/MY_HOST/etc/ethers has been created from
prototype file
File: /srv/release/PRIMARY/root/MY_HOST/etc/tcpip.params has been created
from prototype file

Press NEWLINE when ready to continue... <Enter>

 Do you want support for loop interface? [y] <Enter>

Updating  /srv/release/PRIMARY/root/MY_HOST/etc/hosts  and  /srv/release/
PRIMARY/root/MY_HOST/etc/networks files...please wait

NOTE: any entries encountered containing conflicting information
will be deleted from the offending file.

The  following  lines  have  been  removed  from  file  "/srv/release/PRIMARY/
root/MY_HOST/etc/hosts"

-- Begin Remove List --
127.0.0.1       localhost
-- End of Remove List --

The entry "127.0.0.1     localhost" has been added to file "/srv/release/
PRIMARY/root/MY_HOST/etc/hosts"

Updating
":srv/release/PRIMARY/root/MY_HOST/etc/tcpip.params"...please wait.....

IMPORTANT NOTE: You MUST have a "loop" entry specified in
your system configuration file.  Consult the help menu or the
system(4) man page for more information.

Local Loopback Environment Installation Complete

Press NEWLINE when ready to continue... <Enter>
```

(Continued)

```
The following queries refer to the host being installed.  In this case, the host
                                                          refers to diskless OS client being set up.

Enter host Internet address: 192.9.201.9 <Enter>          Substitute the internet
                                                          address of your DG/UX server; then press <Enter>.
[192.9.201.9] Correct ?  [y]    <Enter>
Enter host name: sales  <Enter>                           Substitute the host name of your DG/UX server; then
                                                          press <Enter>.
[sales] Correct ?  [y] <Enter>
Enter network name: sales_net <Enter> Substitute the name of your network; then
                                                          press <Enter>.
[sales_net] Correct ?  [y] <Enter>

Is "sales_net" a subnetted network ? [n] y/n <Enter> If you type y (yes) in response
                                                          to this question, the system will prompt you for your
                                                          "network mask," as shown on the next line. If you
                                                          type n, the "network mask" prompt will not appear.

Enter the network mask: 0xffffff00 <Enter> Subtitute the mask for your network; then
                                                          press <Enter>.
[0xffffff00] Correct ?[y] <Enter>

Calculating network address...please wait.....................

Updating  /srv/release/PRIMARY/root/MY_HOST/etc/hosts  and  /srv/release/
PRIMARY/root/MY_HOST/etc/networks files...please wait

NOTE: any entries encountered containing conflicting information
      will be deleted from the offending file.

The entry "192.9.200.9 sakes" has been added to file
"/srv/release/PRIMARY/root/MY_HOST/etc/hosts"

The entry "sales_net 192.9.200" has been added to file
 "/srv/release/PRIMARY/root/MY_HOST/etc/networks"

Enter controller device name: inen0 <Enter>  Substitute hken() or hken(1), if
                                                          appropriate for your system; then press <Enter>.

[inen0] Correct ?  [y] <Enter>
```

(Continued)

```
There are two variations of Broadcast addresses. A BSD 4.2 compatible
broadcast address has a host portion of all zeros. A BSD 4.3 compatible
broadcast address has a host portion of all ones.

Calculating network portion of broadcast address...please
wait.............

Do you want the host portion of the broadcast address to be all ones ?
[y] y/n <Enter>
```

See your completed TCP/IP, NFS and YP Worksheet for the DG/UX Server.

```
Calculating broadcast address...please wait.....

Updating "/srv/release/PRIMARY/root/MY_HOST/etc/tcpip.params"...please
wait.......

IMPORTANT NOTE: You MUST have an "inen" entry specified in
your system configuration file.  Consult the help menu or the
system(4) man page for more information.

Local Environment Installation Complete

Press NEWLINE when ready to continue...<Enter>

The following queries refer to IXE configuration.

Would you like to configure any IXE interfaces? [n] <Enter>

IXE Configuration Complete

Press NEWLINE when ready to continue...

Would you like to add a remote host entry? [y] n <Enter>

Do you want to edit the /srv/release/PRIMARY/root/MY_HOST/etc/protocols
file? [n] <Enter>

Press NEWLINE when ready to continue...<Enter>

Do you want to edit the /srv/release/PRIMARY/root/MY_HOST/etc/services
file? [n] <Enter>

Network Environment Installation Complete

Press NEWLINE when ready to continue... <Enter>
```

(Continued)

```
Enter FTP login directory [/var/ftp]: <Enter>
 [/var/ftp] Correct ?  [y] <Enter>

Modifying ftp password entry in /srv/release/PRIMARY/root/MY_HOST/etc/
passwd

Directory: /var/ftp exists
Directory: /var/ftp/bin exists
Directory: /var/ftp/etc exists
File "/usr/bin/ls" has been copied to "/var/ftp/bin/ls"
File "/usr/bin/pwd" has been copied to "/var/ftp/bin/pwd"
File "/srv/release/PRIMARY/root/MY_HOST/etc/group" has been copied to
"/var/ftp/etc/group"

FTP Installation Complete

Press NEWLINE when ready to continue...<Enter>

File: /srv/release/PRIMARY/root/MY_HOST/etc/hosts.equiv has been created
from prototype file

Warning: The following query may produce a security breach
in your system.  An entry in the /srv/release/PRIMARY/root/MY_HOST/etc/
hosts.equiv allows a user from the specified remote host having the same
user name to remotely login to your host WITHOUT having to enter a
password.  Caution should be exercised in adding entries to this file.

Do you wish to add a host to the
/srv/release/PRIMARY/root/MY_HOST/etc/hosts.equiv file ? [n] <Enter>
File: /srv/release/PRIMARY/root/MY_HOST/etc/pmterrtab has been created
from prototype file
File: /srv/release/PRIMARY/root/MY_HOST/etc/pmttapetab has been created
from prototype file

Remote Commands Installation Complete

Press NEWLINE when ready to continue...<Enter>

"/srv/release/PRIMARY/root/MY_HOST/etc/sendmail.cf" has been created from
"/srv/release/PRIMARY/root/MY_HOST/etc/arpaproto.cf"

Do you need to customize ruleset 0 ? [n] <Enter>

Modifying mail password entry in /srv/release/PRIMARY/root/MY_HOST/etc/
passwd
```

(Continued)

```
Do you want to use sendmail as the mailx router ? [y] <Enter>

The file "/srv/release/PRIMARY/root/MY_HOST/var/mailx/mailx.rc" has been
created.

The entry "set sendmail=/usr/lib/sendmail" has been added to file "/srv/
release/PRIMARY/root/MY_HOST/var/mailx/mailx.rc"

File: /srv/release/PRIMARY/root/MY_HOST/etc/aliases has been created from
prototype file

Do you want to edit the /srv/release/PRIMARY/root/MY_HOST/etc/aliases
file ? [n]  <Enter>

Executing /usr/bin/newaliases...please wait

3 aliases, longest 11 bytes, 53 bytes total

Sendmail Installation Complete

Press NEWLINE when ready to continue.. <Enter>

The Domain Name System provides a means to distribute management of host
information.  It can be used in place of or in conjunction with Yellow
Pages and/or the /etc/hosts file.

To install and run the domain name server on your machine you must have
data bases set up for the name server.  Chapter 5 of Setting Up and
Managing DG/UX TCP/IP explains in detail the domain name system and the
requirements to run this service.  Please read this chapter before at-
tempting to set up the domain name service on your system.

The answers to the following questions will be used to partially config-
ure your system for domain name service access.  The only files that will
be edited are /etc/resolv.conf, /etc/named.boot, and /etc/svcorder.  If
you do not want to edit these files at this time, answer no to the first
question.

Do you want to partially configure for domain name service ? [n] <Enter>

Partial Domain Name Server Installation Complete

Press NEWLINE when ready to continue...<Enter>

Deleting obsolete files......Please Wait
```

(Continued)

```
Setup package yp in usr? [yes]  <Enter>

     Setting up package: yp

Setup package yp in MY_HOST root? [yes] <Enter>

     Setting up package: yp

     Setting up the rc#.d directory links.
     Remove links in /srv/release/PRIMARY/root/MY_HOST/etc/rc#.d
     +.................................
     Link from /usr/sbin/init.d to /srv/release/PRIMARY/root/MY_HOST/etc
     +.................................

    Enter the name of the YP Domainname []: sales_domain <Enter>
                                        Substitute the name of your YP domain and press
                                        <Enter>.

    ----    This host will first run as a YP client
    ----    Setting YP domainname to :  sales_domain

    Is the domainname correct? (y n) [n]: y <Enter>

    That completes the YP setup for a YP client.
--  To initiate YP services you will have to change to init level 3
--  To complete the YP setup as a YP server or master please refer
    to the ONC/NFS release notice for the release

          Based on the software you loaded, your system may display other setup messages.
             .

setuppackage is finished.

#
```

(Concluded)

When the # prompt appears on your screen, you have finished setting up software packages.

Now continue on to the "Creating the Kernel" section in this chapter of the manual.

Creating the Kernel

Creating the kernel requires the use of the **vi** editor. If you are not familiar with this editor, a brief tutorial that will help you to create a kernel appears below. For more information about the **vi** editor and its command set, see *Using the DG/UX™ Editors*. The command set described below is a small subset of the available **vi** commands.

vi editor Tutorial

The **vi** editor, like UNIX, is case sensitive. It has three operating modes: input, command, and last line. This tutorial is concerned primarily with the command and the input modes.

To enter command mode, press the Esc (Escape) key.

In command mode, you can edit previously created text. **vi** interprets your keystrokes as commands. For example, you can move your cursor through the text using the following keystroke commands:

h moves the cursor one character position to the left.
l moves the cursor one character position to the right.
j moves the cursor down one line.
k moves the cursor up one line.

When the cursor is at the appropriate character position and **vi** is in command mode, you can insert, delete, or replace text using one of the following commands. Each of these commands puts you in input mode.

i enables you to insert text beginning at the cursor position.
a enables you to insert text beginning one character position to the right of the cursor.
x enables you to delete the character at the cursor position.
dd enables you to delete the current line.
R enables you to overwrite existing text, beginning at the cursor position, until you press the Esc key to return to command mode.

After you insert, delete, or replace one or more characters, you re–enter command mode by pressing the Esc key. Once in command mode, you can invoke sequences of commands without pressing the Esc key again.

To exit the **vi** editor in command mode, type **ZZ**. This command saves the file, including your changes, and returns you to the previous prompt or script.

To exit the **vi** editor without saving your changes, type **:q!**. The **q!** is a last–line mode command; the **:** invokes last–line mode.

In the steps that follow, you will create a DG/UX kernel for your particular AViiON computer by editing a prototype system configuration file. As you will see, this file supports multiple DG/UX configurations, including AViiON workstations, AViiON server systems, communications protocols, and *tuneable* system parameters. Tuneable parameters are those which you can define and/or change to suit your system requirements.

The prototype system configuration file is large; you will find that it spans several screens. Within these screens, you will *comment out* configuration information that does not apply to your particular AViiON computer or workstation. You do this by using the **vi** editor to insert a # sign at the left margin of the particular lines shown in the sample screens that follow. Or, if you prefer, you may delete each description line that does not apply to your AViiON system. Then when you build and install your new kernel, the information in the prototype configuration file that is *commented out* or deleted will be ignored.

Now proceed as follows.

At the # prompt, type

sysadm newdgux

And press the Enter key.

As the first screen of the prototype configuration file begins to appear, select the **vi** editor as shown in the sample screen that follows. When the # signs appear (the # is the **vi** comment character) at the left margin of this screen, the **vi** editor is in command mode. As you read the contents of this file, use the j key to move down the screen one line at a time.

NOTE: If you make an error and have difficulty correcting it with the **vi** editor, you can exit the system configuration file by simply typing the following **vi** command: **:q!** This leaves the file unaltered by your editing, and allows you to begin again.

```
Running subcommand 'newdgux' from menu 'sysmgmt',
System Configuration Management

System Name? [aviion] <Enter>
System file "/usr/src/uts/aviion/Build/system.aviion"
   does not exist.
Create the system file [yes] <Enter>
Editor? [vi] <Enter>
Copyright (C) Data General Corporation 1990.
#All Rights Reserved.
#Licensed Material -- Property of Data General
#Corporation.
#This software is made available solely pursuant to the
#terms of a DGC license which governs its use.

#sccid = "@(#) 88K 1990 system.dgux.proto   94.6"
#-------------------------------------------------------
#Prototype fragment of system configuration for:
#
#(Product Name):          DG/UX
#(Release):               4.31
#
#This prototype is provided to assist you in creating
#your customized system configuration file.
#This file consists of system file entries pertaining to
#this product.  Include this fragment in your customized
#system file and edit it to reflect your system's
#configuration.
#See this product's master file (in /usr/etc/master.d)
#for more details.
#-------------------------------------------------------

#-------------------------------------------------------
#Devices:
#
#List all devices and pseudo-devices in this section, one
#entry per line.  Typical configurations for several
#typical configurations have been provided below;
#delete entries that do not apply to your system and add
#to the list any devices your system has that are not
#already listed.
```

Continue to move down through the file using the j key until the following screen appears:

```
#### Typical AViiON 200 or 300 series workstation configuration:

        NOTE: This configuration description also applies to AViiON 100 series
        workstations.

# Note that your system can have a second duart() or an lp()
# controller, but not both.

    kbd()           # -- keyboard
    grfx()          # -- graphics display
    sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
    st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
    inen()          # -- integrated Ethernet controller
    duart()         # -- integrated Duart terminal line controller
    duart(1)        # -- second Duart (if present in system)
    lp()            # -- integrated line printer controller
                            (if present)

    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

This is the first of four AViiON system hardware configuration descriptions in this section of the file; the others are as follows:

- Typical AViiON 400 series workstation configuration.
- Typical AViiON 4000 series server configuration.

  Notice that the AViiON 4000 series configuration description applies to the AViiON 3000 series system as well.
- Typical AViiON 5000 or 6000 series server configuration.

To build a DG/UX kernel for your particular AViiON system, you must retain (and edit, if required) the "Typical AViiON ..... configuration" screen that describes your particular AViiON system; for example, a "Typical AViiON 4000 series server configuration." And you must comment out or delete the "Typical" configuration descriptions for all other systems.

NOTE: As you read through the sections of this configuration file displayed on your system console's monitor, you will notice that some sections of the file are omitted from the sample screens in this manual. This is done intentionally for the sake of brevity. The omitted sections do not require editing.

Editing the AViiON Configuration Descriptions

See the appropriate set of instructions below to edit this portion of the system configuration file for your particular AViiON computer or workstation.

For AViiON 100/200/300 Series Workstations

As shown in the screen below, this group of workstations has the same basic configuration with the following exceptions: the AViiON 300 and 310 workstations with monochrome graphics have an integrated line printer controller [`lp()`] and only one duart [`duart()`]; all other AViiON 100, 200, and 300 series workstations have two duarts [`duart()` and `duart(1)`], but do not have an `lp()`. For these reasons, you must edit this file as follows.

If you have an AViiON 300 or 310 workstation with monochrome graphics, proceed with step 1 below. If you have a 100, 200, or other 300 series workstation, skip step 1 and go to step 2 below.

1. Use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of the line that reads `duart(1)`; or, if you prefer, delete this line, using the **vi** delete–line command, **dd**. See the sample screen below.

```
#### Typical AViiON 200 or 300 series workstation configuration:

          NOTE: This configuration description applies only to AViiON 300 and 310 series
          workstations with monochrome graphics.

# Note that your system can have a second duart() or an lp()
# controller, but not both.

    kbd()           # -- keyboard
    grfx()          # -- graphics display
    sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
    st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
    inen()          # -- integrated Ethernet controller
    duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart (if present in system)
    lp()            # -- integrated line printer controller
                            (if present)

    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

Skip step 2 below, and go to step 3.

2. Use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of the line that reads `lp()`; or, if you prefer, delete this line, using the **vi** delete–line command, **dd**. See the sample screen below.

```
#### Typical AViiON 200 or 300 series workstation configuration:

        NOTE: This configuration description applies to all AViiON 100 series, 200 series, and
        300 series workstations, except the AViiON 300 and 310 series workstations with
        monochrome graphics.

# Note that your system can have a second duart() or an lp()
# controller, but not both.

    kbd()           # -- keyboard
    grfx()          # -- graphics display
    sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
    st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
    inen()          # -- integrated Ethernet controller
    duart()         # -- integrated Duart terminal line controller
    duart(1)        # -- second Duart (if present in system)
#   lp()            # -- integrated line printer controller
                            (if present)

    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

3. After editing the appropriate screen above for your workstation, continue moving down through the file using the j key until you see the following screen for the AViiON 400 series workstation.

4. Comment out or delete all configuration descriptions in this file, as shown in the sample screen.

```
#### Typical AViiON 400 series workstation configuration:

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart
#   lp()            # -- integrated line printer controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

5. When the subsequent AViiON 4000 series, and AViiON 5000 and 6000 series configuration screens appear, comment out or delete all configuration descriptions in these files, as shown below.

```
#### Typical AViiON 4000 Series server configuration:

      NOTE: This configuration description also applies to AViiON 3000 series servers.


#   sd(insc(),*)   # -- all SCSI disk drives on integrated SCSI adapter
#   st(insc(),*)   # -- all SCSI tape drives on integrated SCSI adapter
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   cird()         # -- Ciprico Rimfire or SMD disk controller

#   inen()         # -- integrated Ethernet controller
#   hken()         # -- Interphase VME Ethernet controller
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   duart(1)       # -- second Duart
#   lp()           # -- integrated line printer controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magtape device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device


#### Typical AViiON 5000 or 6000 series server configuration:

#   cird()         # -- Ciprico Rimfire or SMD disk controller
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   lp()           # -- integrated line printer controller
#   hken(0)        # -- 1st Interphase VME Ethernet controller
#   hken(1)        # -- 2nd Interphase VME Ethernet controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magnetic device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device
```

6. After commenting out or deleting the information in the above screens, continue to move the cursor down through this file until you see the heading `Tuneable Configuration Parameters`. Now go to the "Tuneable Configuration Parameters" section, which appears later in this chapter.

For AViiON 400 Series Workstations

Editing this portion of the configuration file for an AViiON 400 series workstation consists of the following steps:

- Commenting out or deleting the device information in all "`Typical AViiON .... configuration`" screens, except the one that describes the AViiON 400 series workstation.
- Editing device information, if required, in the AViiON 400 series configuration screen.

Proceed as follows.

1. In the `Typical AViiON 200 or 300 series workstation configuration` screen, use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of each line in this screen. Or, if you prefer, delete each line, using the **vi** delete–line command, **dd**. See the sample screen below.

```
#### Typical AViiON 200 or 300 series workstation configuration:

# Note that your system can have a second duart() or an lp()
# controller, but not both.

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart (if present in system)
#   lp()            # -- integrated line printer controller
                          (if present)

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

2. After completing this task, continue using the j key to move the cursor down the screen until the heading `Typical AViiON 400 series workstation configuration` appears. See the sample screen below.

3. If your AViiON 400 series workstation contains one or more VME–based asynchronous terminal controllers or Ethernet LAN controllers, use the **vi** insert command (**i**) to insert the DG/UX device names for these controllers in the configuration file, as shown in the next sample screen.

NOTE: If your AViiON 400 series workstation contains a VME–based synchronous terminal controller (**sdcp**), do not insert the device name for this controller in the configuration file shown below. Synchronous controllers are configured with the communications software packages they support.

```
#### Typical AViiON 400 series workstation configuration:

    kbd()           # -- keyboard
    grfx()          # -- graphics display
    sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
    st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
    inen()          # -- integrated Ethernet controller
    duart()         # -- integrated Duart terminal line controller
    duart(1)        # -- second Duart
    lp()            # -- integrated line printer controller
```

If your AViiON 400 series workstation contains Systech asynchronous terminal controllers and/or Interphase Hawk Ethernet LAN controllers, insert their DG/UX device names in this file, as shown in bold below.

```
    hken()          # -- Interphase VME Ethernet controller
    syac()          # -- Systech terminal line controller

    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

4. After viewing (and editing, if required) the above file, continue moving down through this file using the j key. When the subsequent AViiON 4000 series, and AViiON 5000 and 6000 series configuration screens appear, comment out or delete all configuration descriptions in these files, as shown below.

```
#### Typical AViiON 4000 Series server configuration:

      NOTE: This configuration description also applies to AViiON 3000 series servers.

#   sd(insc(),*)   # -- all SCSI disk drives on integrated SCSI adapter
#   st(insc(),*)   # -- all SCSI tape drives on integrated SCSI adapter
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   cird()         # -- Ciprico Rimfire or SMD disk controller

#   inen()         # -- integrated Ethernet controller
#   hken()         # -- Interphase VME Ethernet controller
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   duart(1)       # -- second Duart
#   lp()           # -- integrated line printer controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magtape device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device


#### Typical AViiON 5000 or 6000 series server configuration:

#   cird()         # -- Ciprico Rimfire or SMD disk controller
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   lp()           # -- integrated line printer controller
#   hken(0)        # -- 1st Interphase VME Ethernet controller
#   hken(1)        # -- 2nd Interphase VME Ethernet controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magnetic device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device
```

5. After commenting out or deleting the information in the above screens, continue to move the cursor down through this file until you see the heading `Tuneable Configuration Parameters`. Now go to the "Tuneable Configuration Parameters" section, which appears later in this chapter.

For AViiON 3000/4000 Series Servers

Editing this portion of the configuration file for an AViiON 3000 series or 4000 series server consists of the following steps:

- Commenting out or deleting the device information in all "`Typical AViiON .... configuration`" screens, except the one that describes the AViiON 3000 series or 4000 series server.
- Editing the device information appearing in the "`Typical AViiON 4000 series server configuration`" screen, as required, to match the configuration of your particular system.

Proceed as follows.

1. In the "Typical AViiON 200 or 300 series workstation configuration" screen, use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of each line in this screen. Or, if you prefer, delete each line, using the **vi** delete–line command, **dd**. See the sample screen below.

```
#### Typical AViiON 200 or 300 series workstation configuration:

# Note that your system can have a second duart() or an lp()
# controller, but not both.

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart (if present in system)
#   lp()            # -- integrated line printer controller
                          (if present)

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

2. After completing this task, continue using the j key to move the cursor down the screen until the heading `Typical AViiON 400 series workstation configuration` appears. Then repeat step 1 above. See the next sample screen.

```
#### Typical AViiON 400 series workstation configuration:

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart
#   lp()            # -- integrated line printer controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

3. After completing this task, continue using the j key to move the cursor down the screen until the heading `Typical AViiON 4000 series server configuration` appears. See the sample screen below.

4. Edit this screen, as required, to include only those I/O devices present on your AViiON 3000 series or 4000 series system. To delete a device, insert a **#** sign at the beginning of the line containing the device description, as shown in the sample screen. Or, if you prefer, use the **vi** delete–line command, **dd**, to delete the description line from the file.

   NOTE: If your AViiON 3000 or 4000 series server contains a VME–based synchronous terminal controller (**sdcp**), do not insert the device name for this controller in the configuration file shown below. Synchronous controllers are configured with the communications software packages they support.

```
#### Typical AViiON 4000 Series server configuration:
```

NOTE: This configuration description also applies to AViiON 3000 series servers.

```
    sd(insc(),*)    # -- all SCSI disk drives on integrated SCSI adapter
    st(insc(),*)    # -- all SCSI tape drives on integrated SCSI adapter
#   sd(cisc(),*)    # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)    # -- all SCSI tape drives on Ciprico SCSI adapter
#   cird()          # -- Ciprico Rimfire or SMD disk controller
```

Notice that we "commented out" the Ciprico controllers and their devices. If you prefer you can delete these lines from your file. Ciprico devices appear in this file in error. They are not available on AViiON 3000 or 4000 series server systems.

```
    inen()          # -- integrated Ethernet controller
    hken()          # -- Interphase VME Ethernet controller
#   syac()          # -- Systech terminal line controller

    duart()         # -- integrated Duart terminal line controller
    duart(1)        # -- second Duart
    lp()            # -- integrated line printer controller

    syac()          # -- Systech terminal line controller
```

Notice that we "commented out" the first **syac()** *description line in this screen and inserted a new* **syac()** *description line. By placing the* **syac()** *description line after the* **duart()** *and* **duart(1)** *description lines, we simplify the assignment of* **tty** *lines when setting up the DG/UX system.*

```
    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

4. After editing the above file, continue moving down through this file using the j key. When the subsequent AViiON 5000 and 6000 series configuration screen appears, comment out or delete all configuration descriptions in this file, as shown next.

```
#### Typical AViiON 5000 or 6000 series server configuration:

#   cird()          # -- Ciprico Rimfire or SMD disk controller
#   sd(cisc(),*)    # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)    # -- all SCSI tape drives on Ciprico SCSI adapter
#   syac()          # -- Systech terminal line controller
#   duart()         # -- integrated Duart terminal line controller
#   lp()            # -- integrated line printer controller
#   hken(0)         # -- 1st Interphase VME Ethernet controller
#   hken(1)         # -- 2nd Interphase VME Ethernet controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magnetic device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device

#-----------------------------------------------------------------------

#-----------------------------------------------------------------------
```

5. After commenting out or deleting the information in the above screen, continue to move the cursor down through this file until you see the heading `Tuneable Configuration Parameters`. Now go to the "Tuneable Configuration Parameters" section, which appears later in this chapter.

For AViiON 5000/6000 Series Servers

Editing this portion of the configuration file for an AViiON 5000 series or 6000 series server consists of the following steps:

- Commenting out or deleting the device information in all `Typical AViiON .... configuration` screens, except the one that describes the AViiON 5000 series or 6000 series server.
- Editing the device information appearing in the "`Typical AViiON 5000 or 6000 series server configuration` screen, as required, to match the configuration of your particular system.

Proceed as follows.

1. In the `Typical AViiON 200 or 300 series workstation configuration` screen, use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of each line in this screen. Or, if you prefer, delete each line, using the **vi** delete–line command, **dd**. See the sample screen below.

```
#### Typical AViiON 200 or 300 series workstation configuration:

# Note that your system can have a second duart() or an lp()
# controller, but not both.

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart (if present in system)
#   lp()            # -- integrated line printer controller
                          (if present)

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

2. After completing this task, use the j key to move the cursor down the screen until the heading `Typical AViiON 400 series workstation configuration` appears. Then repeat step 1 above. See the next sample screen.

```
#### Typical AViiON 400 series workstation configuration:

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart
#   lp()            # -- integrated line printer controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

3. After completing this task, continue using the j key to move the cursor down the screen until the heading `Typical AViiON 4000 series server configuration` appears. Then repeat step 1 above. See the sample screen below.

```
#### Typical AViiON 4000 Series server configuration:

      NOTE: This configuration description also applies to AViiON 3000 series servers.

#   sd(insc(),*)    # -- all SCSI disk drives on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tape drives on integrated SCSI adapter
#   sd(cisc(),*)    # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)    # -- all SCSI tape drives on Ciprico SCSI adapter
#   cird()          # -- Ciprico Rimfire or SMD disk controller

#   inen()          # -- integrated Ethernet controller
#   hken()          # -- Interphase VME Ethernet controller
#   syac()          # -- Systech terminal line controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart
#   lp()            # -- integrated line printer controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

4. After completing this task, continue using the j key to move the cursor down the screen until the heading `Typical AViiON 5000 or 6000 series server configuration` appears. See the sample screen below.

5. Edit this screen, as required, to include only those I/O devices present on your AViiON 5000 series or 6000 series system. To add a device use the **vi** insert command (**i**) and type the name of the device. To delete a device, insert a **#** sign at the beginning of the line containing the device description. Or, if you prefer, use the **vi** delete–line command (**dd**) to delete the description line from the file.

   NOTE: If your AViiON 5000 or 6000 series server contains a VME–based synchronous terminal controller (**sdcp**), do not insert the device name for this controller in the configuration file shown below. Synchronous controllers are configured with the communications software packages they support.

```
#### Typical AViiON 5000 or 6000 series server configuration:

    cird()          # -- Ciprico Rimfire or SMD disk controller
    sd(cisc(),*)    # -- all SCSI disk drives on Ciprico SCSI adapter
    st(cisc(),*)    # -- all SCSI tape drives on Ciprico SCSI adapter
#   syac()          # -- Systech terminal line controller
    duart()         # -- integrated Duart terminal line controller
    lp()            # -- integrated line printer controller
    hken(0)         # -- 1st Interphase VME Ethernet controller
    hken(1)         # -- 2nd Interphase VME Ethernet controller
    syac()          # --  Systech terminal line controller
```

Notice that we "commented out" the first **syac()** *description line and inserted a new* **syac()** *description line. By placing the* **syac()** *description line after the* **duart()** *line, we simplify the assignment of tty lines when setting up the DG/UX system.*

```
    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magnetic device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

6. After editing the above configuration screen, continue to move the cursor down through this file until you see the heading `Tuneable Configuration Parameters`. Now go to the "Tuneable Configuration Parameters" section, which appears later in this chapter.

Tuneable Configuration Parameters

Under the heading `Tuneable Configuration Parameters` on your screen, you will find a list of items under the subheadings `Parameter Name` and `Value`. Before using the **vi** editor to change any value in this group of parameters, read the parameter descriptions below. Notice that two of the parameters described below do not appear in the DG/UX configuration file: `SHMMAX` and `NPROC`. They must be inserted, if appropriate for your system, as part of the editing task associated with creating a DG/UX kernel.

`TZ` (TIMEZONE) is represented as the number of minutes by which your time zone follows Greenwich Mean Time (GMT). In the configuration file, `TZ` is set for the Eastern Time Zone, which is `300` minutes behind GMT. Unless you know the number of minutes that your time zone follows GMT, leave this line untouched. We will make any necessary changes to the date and time later in this chapter.

`MAXUP` refers to the maximum number of processes that any user will be able to have at one time. Accept the default for this value, 64; that is, leave this number untouched.

`NODE` is the hostname of your particular system. It is used by an asynchronous file transfer package called UUCP. Additionally, this hostname appears as part of the login banner when you log in to your DG/UX system. You can take the default, `my_node`, but we recommend that you use the **vi** editor to replace `my_node` with a short name of your choosing; for example **sales_srv**.

`DUMP "st(insc(),4)"` selects the cartridge tape drive with SCSI ID number 4 as the dump device for your workstation in the event of an emergency. In this context, dump refers to a dump of physical memory to a mass–storage medium in the event of a DG/UX panic. These dumps are used to diagnose problems; and, therefore, should not be confused with doing system backups. If you have another tape drive that you will be using for emergency dumps, replace `st(insc(),4)` with the device name (in Common Device Specification Format) of your emergency dump device. *Be sure to delete the # signs at the left margin of this line.*

`DUMP "inen()"` selects the AViiON computer's Ethernet port as the emergency dump device for your system. Since this book is written for a DG/UX server system, *be sure that a # sign is inserted at the beginning of this line.*

`SHMMAX` defines a shared–memory segment that is larger than the current 4.32 kernel system default. If your system includes the DG/UX X Window System software, this configuration parameter and its value (4194304) must appear as a Tuneable Configuration parameter in this prototype configuration file. See the next sample screen.

NPROC specifies the maximum number of processes that can exist at one time. The default value for this parameter is 256. As a rule of thumb, you can expect the average terminal user to have three active processes running simultaneously. Further, users running CPU–intensive software may have as many as ten active processes running simultaneously. For this reason, if your system is supporting large terminal counts via VDA/128 and/or VDA/255 host adapters, you should add NPROC to your list of tuneable configuration parameters, and increase its value according to your estimate of concurrent active processes. Although increasing the value of NPROC may result in a slight degradation of system performance, an NPROC value that is too small will result in a process–table overflow, which will effectively suspend system services.

PERCENTNFS, NETBOOTDEV, ROOTFSTYPE, and SWAPDEVTYPE apply only to diskless DG/UX OS client systems; therefore, they are commented out in this configuration file. See the next sample screen.

Now proceed to edit the Tuneable Configuration Parameters appearing in the next sample screen according to your system's requirements.

```
# Tuneable Configuration Parameters:
#
#List all configuration parameters you wish to override in this
#section, one entry per line.
#.
#You should set the MAXUP variable to the maximum number of
#processes that each user will be allowed to run simultaneously.
#This number should be at least 64 for workstations.
#
#You should set the NODE variable to control your nodename for
#uname(1) and uucp(1), but not more than 255 characters.
#
#You should set the DUMP variable to the name of the tape
#device (in DG/UX Common Device Specification Format) that
#will be the default device to take dumps in case of system
#emergencies.  For diskless workstations, the DUMP variable
#should be set to the network device used to boot the machine.
#.
#.

#   Parameter Name          Value
#   ---------------         -----

    TZ                      300
    MAXUP                   64
    NODE                    "my_node"  This is the hostname of your system. Use
                                       the vi replace command (R) to overwrite the
                                       hostname within the quotation marks with
                                       a name of your choosing; for example
                                       "sales_srv."

    DUMP                    "st(insc(),4)"  Be sure to delete the #
                                            signs appearing at the left margin
                                            of this line in the file you are editing.

####DUMP                   "inen()"  Leave the # signs on this line untouched.

    SHMMAX                  4194304   This shared-memory parameter and its value is
                                      required when supporting the DG/UX X
                                      Window System software.

    NPROC                   nnn       The default value for this parameter is
                                      256.  If your system includes a VDA/128
                                      or a VDA/255 host adapter, you may want to
                                      add the NPROC parameter to this file and
                                      increase its value.  See the description of
                                      NPROC under the heading "Tuneable
                                      Configuration Parameters."
```

(Continued)

```
### PERCENTNFS      100
### NETBOOTDEV      "inen()"
### ROOTFSTYPE      NETWORK_ROOT
### SWAPDEVTYPE     NETWORK_SWAP
.
.
.
```

(Concluded)

The remaining sections of this configuration file do not require editing; however, they do provide information about the communications software packages added to your DG/UX system.

If you want to view the remaining sections of this file, use the j key to scroll through the file until you reach the end.

Exiting the System Configuration File

To exit the system configuration file and the **vi** editor, press the Esc (Escape) key; then type **ZZ**.

Immediately after exiting the **vi** editor, the system displays the following message:

```
Ready to Configure a Kernel? [yes]
```

You are now ready to install the new kernel. Continue on to the "Configuring, Building and Installing the Kernel" section.

Configuring, Building and Installing the Kernel

In this section, you will configure and build a kernel by responding to the system prompts shown in the sample screen that follows. Then you will shut down the system so that you can install the new kernel.

1. Type the responses shown in bold.

   CAUTION: Read step 2 before you follow the instructions shown in this screen to shut down and to reboot; otherwise, you may attempt to halt the system too quickly.

```
Ready to Configure a Kernel? [yes] <Enter>

sysadm will now run config on /usr/src/uts/aviion/Build/system.aviion.

Config succeeded.


sysadm will now attempt to build a kernel.
Building...
The build succeeded.


Install the New Kernel? [no] y <Enter>
For a diskless client of this Host? [no] <Enter>
Kernel Pathname? [/dgux.aviion] <Enter>

The new kernel has been copied to /dgux.aviion.
Link /dgux to the New Kernel? [yes] <Enter>

The new kernel will not take effect until you shutdown and reboot.
To do this, quit from sysadm, and say:
    cd /
    /etc/shutdown
    /etc/halt -q

Until you do this, a few commands which depend on the symbol table
in /dgux (such as the kernel profiler and netstat) may not work
correctly
This should not cause any serious difficulties.
#
```

If the configuration or build fails, the system will display several messages followed by the prompt `Print the Build Error File? [yes]`. If this occurs, press the Enter key.

Since your printer is not yet enabled, the system will use your system console's display screen to display the Build Error File. Next you should call Data General Corporation for help. See the Preface for instructions.

If the system has successfully configured and built the kernel, you must now shut down the system to complete the installation of the new kernel.

2. At the # prompt, type

   cd /

   and press the Enter key.

   You are now in the **root** (/) directory.

3. At the # prompt, type

   /etc/shutdown

   and press the Enter key.

   The system displays the message that `Shutdown started`.

   In about 1 minute, you will hear warning beeps and see warning messages displayed.

   Next you will be prompted with the message: `Do you want to continue? [ y or n].` Type **y** to continue and press the Enter key.

   In about 30 seconds the system displays the following message:

```
#
INIT:  New run level: S
INIT:  SINGLE USER MODE
#
```

4. At the last # prompt, type

   /etc/halt -q

   and press the Enter key.

   When the `SCM>` prompt appears, the system is shut down.

Changing Firmware Configuration Parameters Using the SCM

When the DG/UX system halts, the System Control Monitor (SCM) takes control, and the SCM> prompt appears. The SCM is the hardware interface to AViiON computers. It is a firmware monitor program that tests and manages the system at powerup, and it maintains control until the DG/UX kernel or other system software takes over. For more information about the SCM, see *Using the AViiON™ System Control Monitor (SCM).*

You will use the SCM to change your system's boot path so that your DG/UX system will boot automatically when the computer powers up. Then, optionally, you can change the baud rate for your mouse, if present in your system. The default baud rate for the mouse is 1200.

Changing Boot Parameters

Change the boot parameters as follows.

1. At the SCM> prompt, type **F** and press the Enter key. The SCM View or Change System Configuration menu appears.

2. Type **1** to select "Change boot parameters," and press the Enter key.

```
            View or Change System Configuration

1        Change boot parameters

2        Change console parameters

3        Change mouse parameters

4        Change printer parameters

5        View memory configuration

6        Change testing parameters

7        Return to the previous screen

Enter choice(s) -> 1 <Enter>
```

The Change boot parameters menu appears.

3. Type **1** to select "Change system boot path," and press the Enter key.

```
Change boot parameters

1        Change system boot path

2        Change diagnostic boot path

3        Change data transfer mode [block]

4        Return to previous screen

Enter choice(s) -> 1 <Enter>
```

The next screen begins to appear.

4. Type the responses shown in bold, with the options as noted.

If you choose to boot now, your DG/UX system will start booting, and the system will come up in DG/UX run level 3. And, if you have a graphics monitor and keyboard serving as your system console, you will also come up in the DG/UX X Window System login window. In this case, go to the "Booting Your New DG/UX System" section next.

If you choose not to boot now, the SCM will return you to the Change boot parameters menu.

```
System boot path = xxxxxxx

Do you want to modify the system boot path? [N] y <Enter>

Enter new system boot path -> sd(insc(),0)root:/dgux -3 <Enter>  Modify
                              the DG/UX device name of the system disk, if required for
                              your system.

System boot path = [sd(insc(),0)root:/dgux]

Do you want to modify the system boot path? n <Enter>

Do you want to boot now?[N]          If you want to continue with the SCM,
                                      press <Enter>.
                                     If you want to boot your DG/UX system now,
                                     type y and press <Enter>.
```

5. In the Change boot parameters menu, type **4** to select "Return to previous screen," and press the Enter key.

The SCM View or Change System Configuration menu reappears.

If you want to change the mouse baud rate, continue on.

If you want to boot now, select the appropriate number on each SCM screen to "Return to the previous screen." When the SCM> prompt appears on your monitor's screen, go to the "Booting Your New DG/UX System" section.

Changing the Mouse Baud Rate

When the View or Change System Configuration menu appears, proceed as follows.

1. Type **3** to select "Change mouse parameters," and press the Enter key.

   The Change mouse parameters screen appears.

2. Type **1** and press the Enter key.

```
Change mouse parameters

1        Change baud rate [1200]

2        Return to previous screen

Enter choice(s) -> 1 <Enter>
```

   The Change baud rate screen appears.

3. Type the appropriate selection number (not the baud rate) for the baud rate your mouse requires, and press the Enter key.

```
Change baud rate

1         300
2         600
3         1200
4         2400
5         4800
6         9600
7         19200
8         Return to previous screen

Current baud rate [9600]

Enter choices(s) -> <selection number>  <Enter>
```

The Change mouse parameters screen reappears.

4. Type **2** to select "Return to previous screen," and press the Enter key.

5. When the View or Change System Configuration menu appears, type **7** to select "Return to the previous screen," and press the Enter key.

   When the SCM> prompt appears on your monitor's screen, go to the "Booting Your New DG/UX System" section, which follows.

Booting Your New DG/UX System

If you returned to the SCM> prompt at the end of the last section, type **b** and press the Enter key. Your DG/UX system will begin to boot and display initializing messages. After about 5 minutes, you will see one of two login messages, depending on the type of system console you are using: a display terminal or a graphics monitor and keyboard combination.

Logging in to DG/UX from a System Console Terminal

If your system console is a display terminal, the DG/UX system displays the login message shown in the first three lines of the sample screen below.

To log in to the system, type **sysadm** at the `login:` prompt and press the Enter key. See the sample screen below. Since you have not yet defined a password, the Superuser prompt (#) appears immediately.

NOTE: Instructions for setting passwords appear in Chapter 3.

Congratulations! Your new DG/UX system is installed.

```
sales_srv
DG/UX Operating System Release 4.32
login:  sysadm <Enter>
#
```

Now go to the "What to Do and Where to Go Next" section.

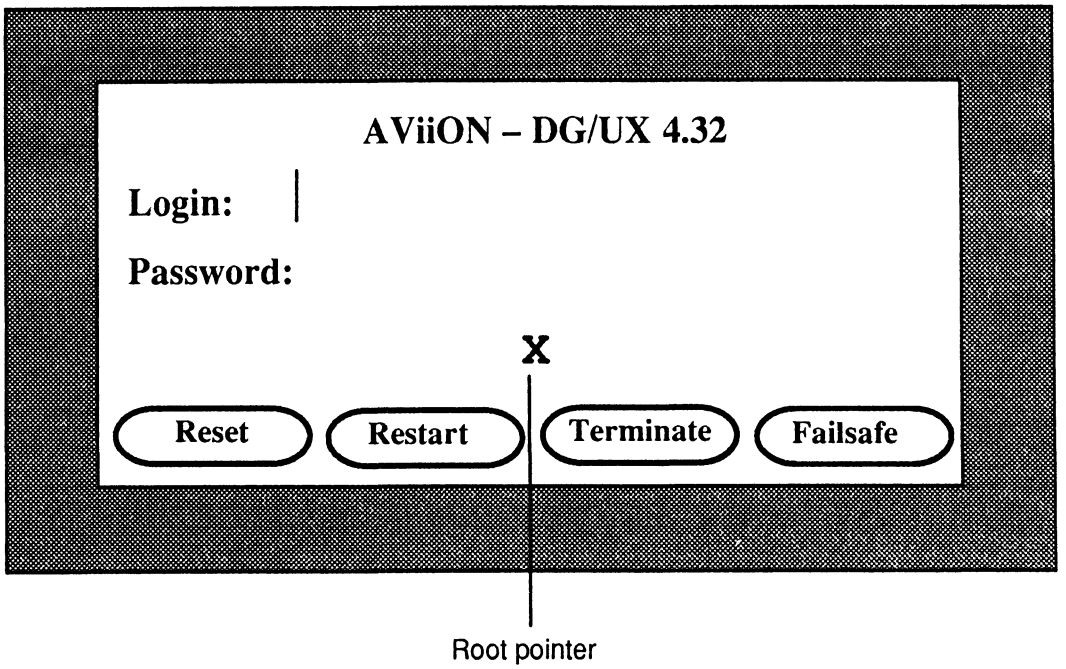
Logging in to DG/UX from a System Console Graphics Monitor and Keyboard

If your system console is a graphics monitor and keyboard, the DG/UX X Window System software displays the login window shown in the sample screen below.

Congratulations! Your new DG/UX system is installed and the DG/UX X Windows System software is up and running.

This login window supplies two login options:

- Logging in to the DG/UX X Window environment.
- Terminating the DG/UX X Window System software, and logging in to the DG/UX environment.



Logging in and Closing the DG/UX X Window Environment

Because you may be unfamiliar with X Window software, in this section we tell you not only how to log in to the DG/UX X Window environment but also how to close your X Window session and return to the DG/UX environment.

To log in, proceed as follows.

1. Ensure that the root pointer (**X**) is positioned in the login window. If it is not, simply move the mouse across its pad until the **X** is inside the login window. See the sample screen above.

2. Type **sysadm** — the system will echo your login name as you type it, and the login cursor (|) will move one character position to the right with each character you type.

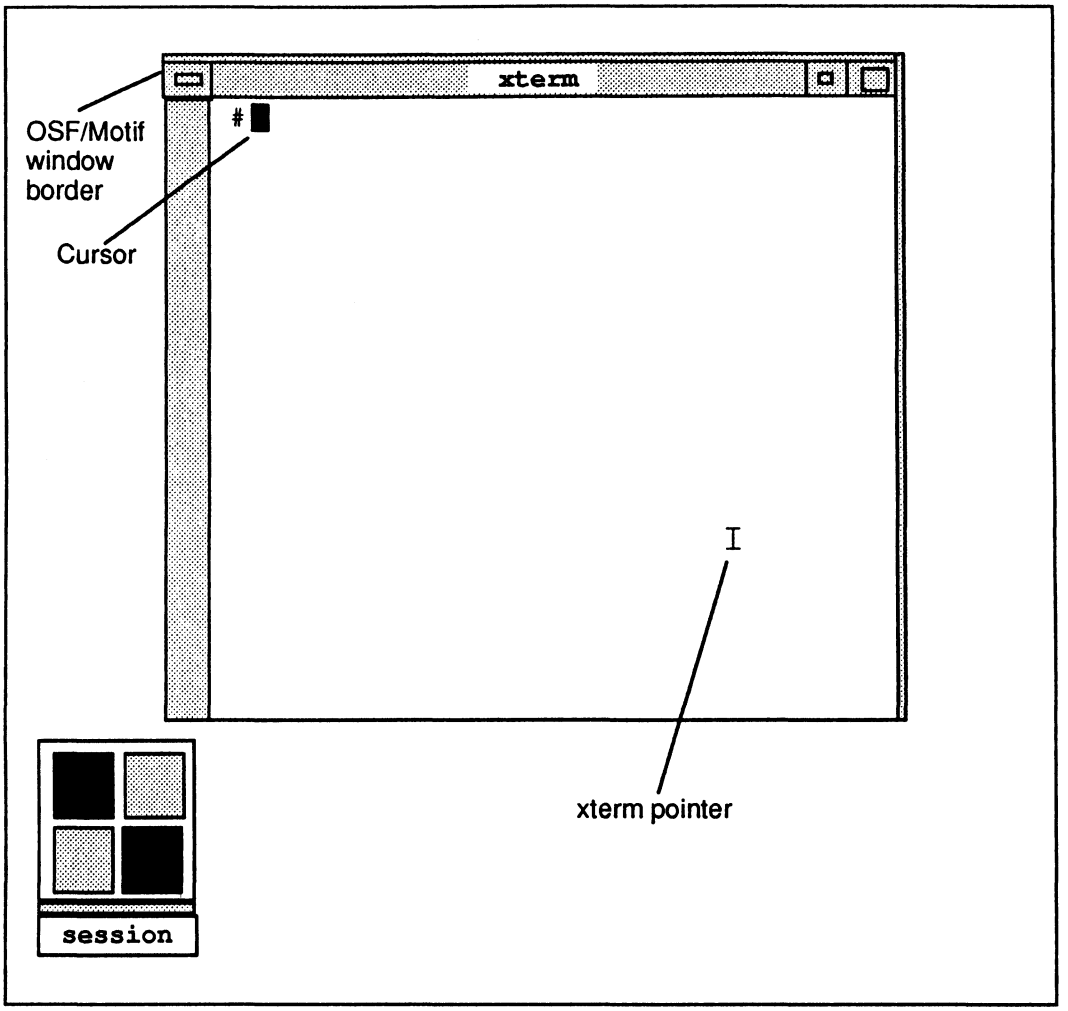
Then press the Enter key. Immediately, the cursor moves to the right of the word "Password." See the sample screen below.

NOTE: Instructions for setting passwords appear in Chapter 3.

3. Press the Enter key again.

```
Login: sysadm <Enter>
Password: | <Enter>
```

Immediately the login window disappears, and the screen displays the root bitmap, a mesh pattern. Next it displays two windows: one empty and one displaying an hourglass icon. Then, after a few seconds, these windows disappear, and the screen displays two X clients in the root window: 1) a VT102 terminal emulator, displaying "xterm" in its title bar; and 2) an xsession icon, displaying "session" in its title bar. See the sample screen below.



With the xterm pointer (I) in the xterm window, this X client window is activated and the color of its OSF/Motif window border is intensified.

Notice that the Superuser prompt (#) is displayed in the xterm window. Therefore, you can use the terminal emulator running in this xterm window to perform the DG/UX set–up tasks that follow. If this is your choice, go to the "What to Do and Where to Go Next" section after reading the section below that tells how to close your X Window session.

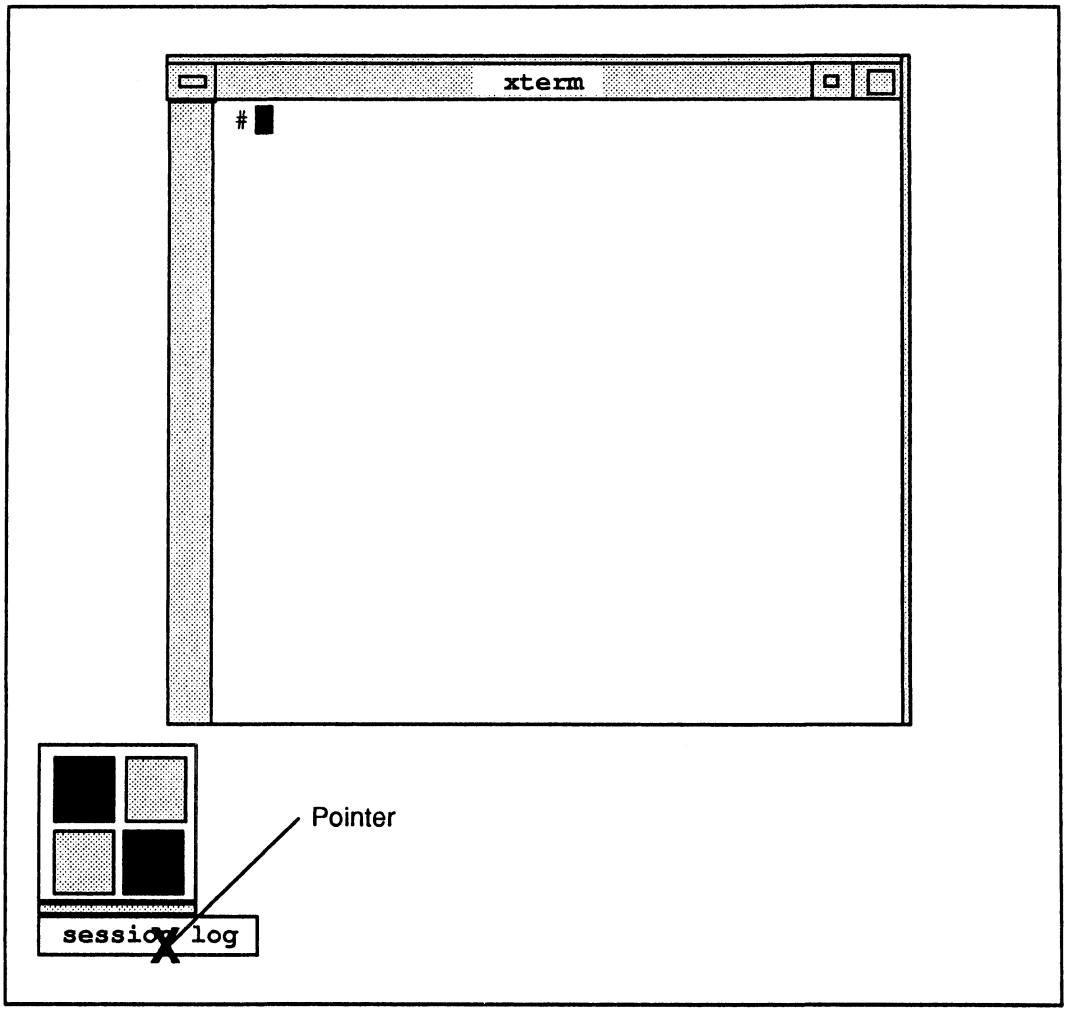
If you prefer the larger font supplied by the terminal emulator running in the DG/UX environment, you may choose to close your X Window session now and return to the DG/UX environment to perform the DG/UX set–up tasks that follow. Later you can customize your X Window environment to suit your applications and your eyes. For information about using the DG/UX X Window System software, see *X Window System™ User's Guide, Volume Three, OSF/Motif™ Edition.*

To close your X Window session, proceed as follows.

1. Move the mouse across its pad. Notice that the pointer follows the position of the mouse. Also notice that the pointer changes from an I to an **X** when it moves outside the xterm window.

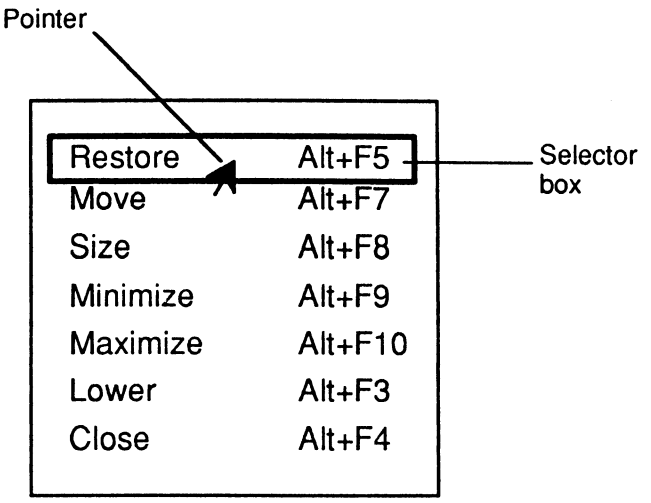
2. Position the **X** pointer on the session icon, as shown in the sample screen below.

   With the **X** pointer positioned on the session icon, the title bar extends and now displays "session log."



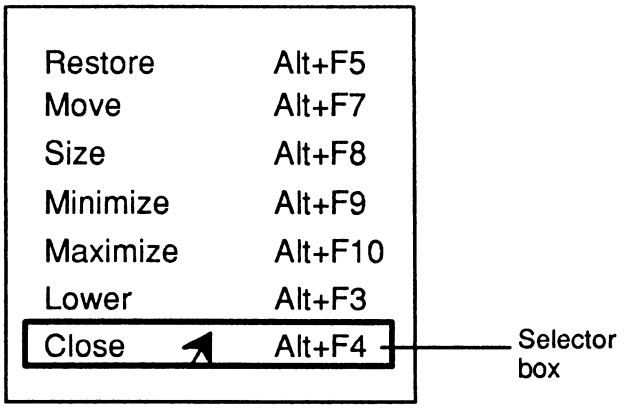
3. While the X pointer is positioned on the session icon, *click* (press and release) the left–hand button on your mouse.

   Immediately the pointer becomes an arrow and the following menu appears above the session icon. See the next sample screen.



4. Using the mouse, move the arrow pointer into the selector box surrounding the "Restore" menu option.

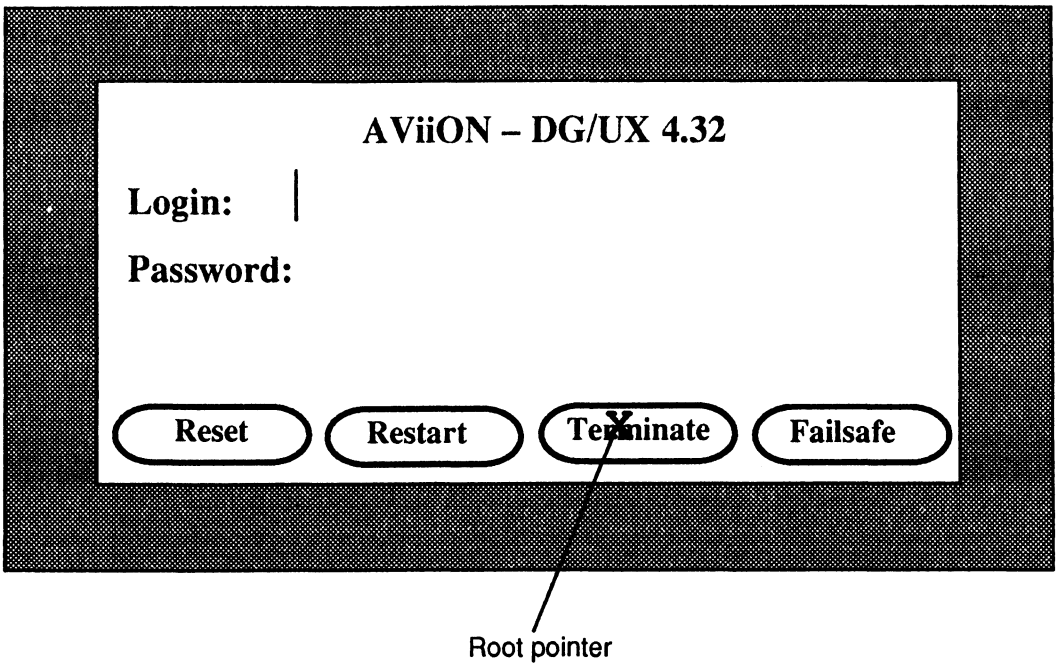
5. Now press and hold the left–hand mouse button while dragging the mouse downward across its pad, so that the selector box slides down the menu. When the selector box surrounds the "Close" menu option, release the mouse button. See the sample screen below.



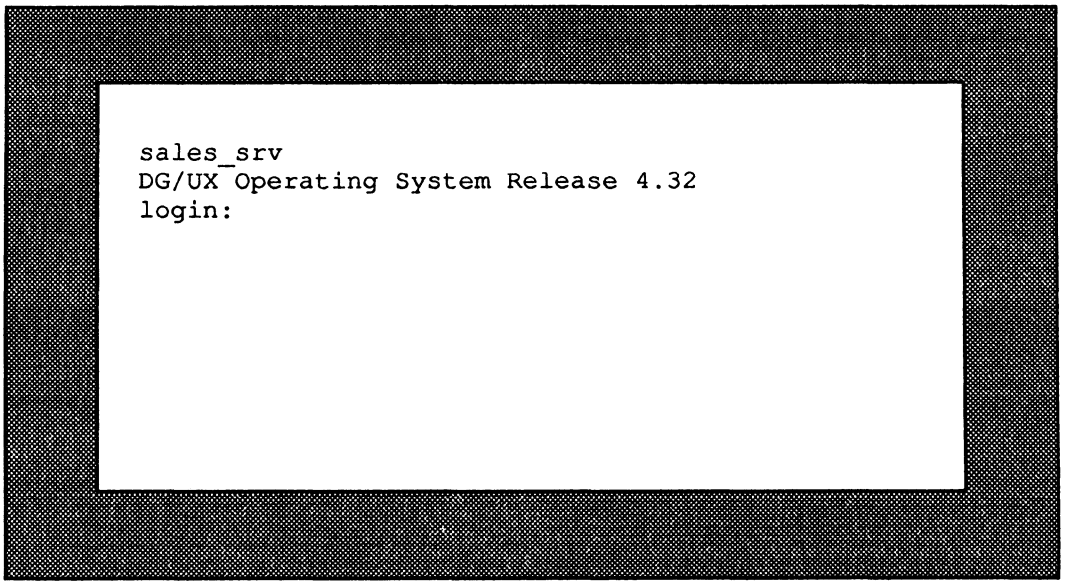
Immediately the X client windows disappear. A few seconds later, the DG/UX X Window login window appears.

Terminating the DG/UX X Window Environment

To terminate the DG/UX X Window environment, simply move the mouse across its pad until the **X** pointer is positioned over the "Terminate" button. See the sample screen below. Then *click* (press and release) the left–hand mouse button.



Immediately the DG/UX X Window login banner disappears and your screen goes blank. Now press the Enter key and the DG/UX login banner appears.



Now log in to the DG/UX system as follows.

1. At the `login:` banner, type

   sysadm

   and press the Enter key.

2. At the `Password:` prompt, press the Enter key.

   NOTE: Instructions for setting passwords appear in Chapter 3.

When the Superuser (#) prompt appears, go to the next section.

What to Do and Where to Go Next

What you do and where you go next in the documentation set depends on the following issues:

- Will your DG/UX server function as a Yellow Pages Master or Server?

  If not, go to Chapter 3 in this manual.

  If so, go to *Managing NFS® and Its Facilities on the DG/UX™ System,* and change your DG/UX server from a Yellow Pages client to a Yellow Pages Master or Server. Then return to Chapter 3 in this manual.

- Does your AViiON computer contain Systech asynchronous terminal line controllers?

  If not, go to Chapter 3 in this manual.

  If so, skip Chapter 3 in this manual and go to Chapters 3 and 4 in *Initially Installing and Setting Up the DG/UX System™ on Stand-Alone, Multiuser AViiON Computers.* Then return to Chapter 4 in this manual.

In addition, if you need to change your system's date or time, go to the next section in this chapter before proceeding further.

Changing the Date and Time

To changer the date and time on your system, type

sysadm datetime

and press the Enter key.

The following screen begins to appear. Enter the responses shown in bold in the sample screen.

the following:

```
The current timezone is EST.  Daylight savings time is used.

The current date and time are: May/10/91  13:30
Time Zone [3] ?  <Enter>
         The time zone is specified by entering the number beside
         the desired time zone:
         1        Greenwich          (GMT)
         2        Atlantic           (AST & ADT)
         3        Eastern            (EST & EDT)
         4        Central            (CST & CDT)
         5        Mountain           (MST & MDT)
         6        Pacific            (PST & PDT)
         7        Yukon              (YST & YDT)
         8        Alaska             (AST & ADT)
         9        Bering             (BST & BDT)
         10       Hawaii             (HST)
         11       Japan              (JST)
The default is the current time zone.
```

`Time zone? [3] 2 <Enter>`	*Type the time zone number for your geographical region; e.g.,* **2**, *and then press* **<Enter>**.
`Does your area use Daylight Savings Time ? [y] y/n`	*If you are on Daylight Savings Time now, press* **<Enter>**. *If you are not, type* **n**, *and then press* **<Enter>**.
`Month? [05] 6 <Enter>`	*Type the appropriate month; e.g.,* **6**, *and then press* **<Enter>**.
`Day of the month? [10] 12 <Enter>`	*Type the appropriate day; e.g.,* **12**, *and press* **<Enter>**.
`Year? [90] <Enter>`	*Just press* **<Enter>** *if the year is 1990; otherwise, type the last two digits of the current year, and then press* **<Enter>**.
`Hour? [15] 14 <Enter>`	*Type the current hour; e.g.,* **14**, *which means 2 p.m., and then press* **<Enter>**.
`Minute? [32] 15 <Enter>`	*Type the current minute; e.g.,* **15**, *and then press* **<Enter>**.
`#`	

Your DG/UX system's date and time are now updated.

End of Chapter

Chapter 3
Setting Up the Basic System

This chapter describes how to set up and begin to manage the basic DG/UX system. It provides step–by–step instructions for performing the following tasks.

- Creating user accounts.
- Creating and changing passwords.
- Adding a printer to the DG/UX system.
- Adding a terminal to the DG/UX system.
- Changing the run levels of your DG/UX system.
- Shutting down the DG/UX system.
- Powering down the computer.

Creating User Accounts

In this section, you will create your DG/UX system's user accounts. First you will set the default characteristics for all user accounts; then you will create individual user accounts to suit their applications.

1. At the # prompt, type

   sysadm

   and press the Enter key. The SYSADM MAIN MENU appears.

2. Type **7** to select "User management menu," and press the Enter key.

```
                        SYSADM MAIN MENU

1  diskmgmt          Enter the Diskman program
2  sysmgmt           System configuration management menu
3  fsmgmt            File system management menu
4  fileinfo          File information menu
5  ttymgmt           TTY management menu
6  lpmgmt            Line Printer managememt
7  usermgmt          User management menu
8  uucpmgmt          UUCP management menu
9  networkmgmt       Network management menu
10 releasemgmt       Software release management menu
11 clientmgmt        Diskless and X terminal client management menu

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT.  7 <Enter>
```

The User management menu appears.

3. Type **1** to select "Set user account defaults," and then press the Enter key.

```
                        User Management

1  userdefaults      Set user account defaults
2  adduser           Create a user account
3  deluser           Delete a user account
4  moduser           Modify a user account
5  lsuser            List user account information
6  addgroup          Add group entries
7  delgroup          Delete group entries
8  modgroup          Modify group entries
9  lsgroup           List group entries
10 addalias          Add mail alias entries
11 delalias          Delete mail alias entries
12 modalias          Modify mail alias entries
13 lsalias           List mail alias entries

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 1 <Enter>
```

The system begins to display the next screen.

4. Enter the responses shown in bold, with the options as noted below.

   NOTE: Unless you are familiar with UNIX–based systems, we recommend that you take the defaults in the following example. When you are better acquainted with your DG/UX system, you can come back and modify the defaults. For information about user account management, including system security, see *Installing and Managing the DG/UX™ System.* For information about the Bourne and/or C shells, see *Using the DG/UX™ System.*

```
Enable Password Aging? [no]     <Enter>
Group Name? [general]     <Enter>
Parent directory of login directory? /accounts  <Enter>  If you gave your
                                                         user home directory pathname a different name,
                                                         substitute this name for /accounts .

Initial Program? [/bin/sh]  <Enter>  If you are familiar with shells and want to select
                                     the C shell, type /bin/csh, and then press <Enter>.
                                     If you just press <Enter>, you select the
                                     Bourne shell.

Press the NEWLINE key to see the usermgmt menu [?, q]  <Enter>
```

   Next the User Management menu reappears.

5. Type **2** to select "Create a user account," and press the Enter key.

   The system begins to display the next sample screen.

6. Enter your responses as shown in bold.

   NOTE: In the next sample screen, you can elect to use the reiterative capability built into this script to create numbers of user accounts in a single session.

```
User Login Name?  cindy <Enter>
```
Enter your first name or some other name of your choosing; for example, **cindy**. *Then press* **<Enter>**.

```
Full User Name?   Cindy James
```
Enter your full name, and then press **<Enter>**.

```
User ID? [100]    <Enter>
```
Notice that the system increments the User ID number as additional users are created.

```
Group Name? [general]      <Enter>

Parent directory of login directory? [/accounts]   <Enter>

Initial program? [/bin/sh] <Enter>
```
Press **<Enter>** *for the Bourne shell, or type* **/bin/csh** *for the C shell and press* **<Enter>**.

```
The password is currently clear.
Password Operation? [set]   <Enter>

Password?  july_67  <Enter>
```
If you are creating a password for yourself, type a password name that contains at least 6 characters, 1 of which must be a numeric or special character; for example, ***july_67***. *Then press* **<Enter>**. *You will need your password to log in to the DG/UX system later in this chapter.*
If this account is for a user other than yourself, simply press **<Enter>**. *In this manner, users can create their individual passwords as each logs in to the DG/UX system for the first time.*

```
Do you want to edit, skip or install this user entry?
[install] <Enter>

User cindy has been added.
Do you want to add another user? [yes]
```
Press **<Enter>** *if you want to add another user, and the above prompts will be repeated. Otherwise type* **no** *and press* **<Enter>**.

```
Press the NEWLINE key to see the usermgmt menu [?, q]:
```
Type ***q*** *to exit the User Management menu, and return to the # prompt.*

```
#
```

You have now created your user accounts(s).

Creating and Changing a Password

In this section, you will create a password for **root** and for **sysadm**. You can create or change a user password in the same manner.

*CAUTION: Because it is easy for a novice user (or anyone) to corrupt the DG/UX kernel files when logged in as **root**, be sure to protect these files now by creating a password for **root**.*

To create a password for **root**, proceed as follows.

1. At the # prompt, type

   passwd root

   and press the Enter key.

   The system displays `Changing password for root.` Then it displays `New password:`

2. Type the **root** password name of your choosing, and press the Enter key. Notice that the system does not echo the password name as you type it.

   Next the system displays `Re-enter new password.`

3. Type the same **root** password again, and press the Enter key.

   When the # prompt appears, the **root** password is set until you change it.

To create the password for **sysadm**, proceed as follows.

1. At the # prompt, type

   passwd sysadm

   and press the Enter key.

   Repeat steps 2 and 3 above.

Adding a Printer to the DG/UX System

In this section, we show you how to add one or both of the printers listed below to your DG/UX system. If you are not adding a printer to your system at this time, skip this section, and go to the next section, "Adding a Terminal to the DG/UX System."

- A parallel printer connected to the parallel printer port (if present) on your AViiON computer unit's rear panel.
- A serial printer connected to an RS–232–C port on your AViiON computer unit's rear panel.

If you are adding a printer, you will also define a default printer.

NOTE: If you have a parallel or serial printer connected to a Systech asynchronous terminal line controller in your AViiON computer, skip the remainder of this chapter and go to Chapters 3 and 4 of *Initially Installing and Setting Up the DG/UX System on Stand–Alone, Multiuser AViiON Computers.* These chapters supply detailed information for adding multiple terminals and printers to a DG/UX system.

1. At the # prompt, type

   sysadm

   and press the Enter key. The SYSADM MAIN MENU appears.

2. Type **6** to select "Line Printer management menu," and press the Enter key.

```
                        SYSADM MAIN MENU

1  diskmgmt          Enter the Diskman program
2  sysmgmt           System configuration management menu
3  fsmgmt            File system management menu
4  fileinfo          File information menu
5  ttymgmt           TTY management menu
6  lpmgmt            Line Printer management
7  usermgmt          User management menu
8  uucpmgmt          UUCP management menu
9  networkmgmt       Network management menu
10 releasemgmt       Software release management menu
11 clientmgmt        Diskless and X terminal client management menu

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 6  <Enter>
```

The Line Printer Management screen appears.

3. Type **1** to select "Define a new printer," and press the Enter key.

```
                    Line Printer Management

1   addlp          Define a new printer
2   dellp          Delete a printer
3   modlp          Modify an existing printer
4   lslp           List printers
5   defaultlp      Define the default printer
6   acceptlp       Set a printer to accept print requets
7   rejectlp       Set a printer to reject print requests
8   enablelp       Enable a printer
9   disablelp      Disable a printer
10  queuelp        Display the printer queue of a printer
11  cancellp       Cancel print requests
12  movelp         Move print requests from one printer to another
13  startlp        Start the lp scheduler
14  stoplp         Stop the lp scheduler

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP,q to QUIT:   1  <ENTER>
```

The beginning of the next sample screen appears.

4. Type the responses shown in bold, with the exceptions as noted in the *comments*.

```
Stop the Scheduler Now? [yes] <Enter>

The scheduler has been shut down.
Printer name? lp1 <Enter>   You can substitute a name of your choosing; for example,
                            for a serial printer, you might choose sp1.
Is this a local printer? [yes] <Enter>
Printer Model? [dumb] list  <Enter>

The current models (from /usr/spool/lp/model) are:

async_1200          Asynchronous Line Printer (1200 baud)
async_2400          Asynchronous Line Printer (2400 baud)
async_300           Asynchronous Line Printer (300 baud)
async_4800          Asynchronous Line Printer (4800 baud)
async_600           Asynchronous Line Printer (600 baud)
async_9600          Asynchronous Line Printer (9600 baud)
dg455x    DG Laser Printer (4557, 4558)
dumb      Dumb Asynchronous Line Printer (no baud rate)
lpj       DG LPJ Line Printer
parallel            Generic Parallel Line Printer
parallel-2          Generic Parallel Line Printer - maps nl to cr-nl
                              nl = New Line key; cr = Carriage Return key
remshlp   Remote Line Printer (via TCP/IP)
termprinter         TermServer Line Printer

                    Select the model name of your printer from the list above. For example, if
                    you have a parallel printer, type parallel to the question below. If you have
                    an asynchronous serial printer connected to an RS-232-C port, type the
                    model name of the asynchronous serial printer with the correct baud rate;
                    for example, async_1200.
                    If you have a printer that is not listed above, type q to exit this configuration
                    menu. Then call Data General Corporation for assistance.

Printer Model? [dumb] parallel  (See comments above.) <Enter>
Printer Device File? list <Enter>

Line printer devices are:
lp
TTY devices are in the range:  tty00 to tty01

Printer Device File: /dev/lp  (See comments below.) <Enter>

                    /dev/lp is the printer device file for a parallel printer. If you selected an
                    asynchronous serial printer model, for example, async_1200, then type
                    /dev/tty01, or /dev/tty02 if you have two duarts. Do NOT type /dev/tty00
                    if your system console is a graphics monitor and keyboard. If it is, tty00
                    is reserved for the mouse.

lp1 has been added.
Accept and Enable lp1? [yes] <Enter>
lp1 has been set to accept requests.
Restart the Scheduler Now? [yes] <Enter>
The scheduler has been restarted.
Press the NEWLINE key to see the lpmgmt menu <Enter>
```

Next the Line Printer Management screen reappears.

The line printer called **lp1** is now ready for use and the printer scheduler is started. If you are adding a second printer to the DG/UX system via a port on the computer unit's rear panel, repeat steps 3 and 4 above. Then continue on with step 5 below.

5. In the Line Printer Management menu, type **5** to select "Define the default printer," and press the Enter key.

```
                    Line Printer Management

1   addlp          Define a new printer
2   dellp          Delete a printer
3   modlp          Modify an existing printer
4   lslp           List printers
5   defaultlp      Define the default printer
6   acceptlp       Set a printer to accept print requets
7   rejectlp       Set a printer to reject print requests
8   enablelp       Enable a printer
9   disablelp      Disable a printer
10  queuelp        Display the printer queue of a printer
11  cancellp       Cancel print requests
12  movelp         Move print requests from one printer to another
13  startlp        Start the lp scheduler
14  stoplp         Stop the lp scheduler

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP,q to QUIT:   5  <ENTER>
```

The system displays the beginning of the next sample screen.

6. Enter the responses shown in bold in the sample screen. Notice that we define **lp1** as the default printer.

```
There is no current default.
New Default Printer? lp1 <Enter>      Substitute a different printer name, as
                                      appropriate for your system configuration.

The new default printer is: lp1.

Press the NEWLINE key to see the lpmgmt menu [?,   , q]  Type q and press
                                                         <Enter> to return to the Superuser prompt.
#
```

Adding a Terminal to the DG/UX System

In this section, we show you how to add a terminal to your DG/UX system. We assume the terminal (or the modem supporting the terminal) is connected directly to an RS–232–C or an RS422 port on your computer unit's rear panel. We also assume this terminal is not serving as the system console.

NOTE: If you have terminals connected to a Systech asynchronous terminal line controller in your AViiON computer, skip the remainder of this chapter and go to Chapters 3 and 4 of *Initially Installing and Setting Up the DG/UX System on Stand-Alone, Multiuser AViiON Computers.* These chapters supply detailed information for adding multiple terminals and printers to a DG/UX system.

Operating Variables for Terminals

When adding a terminal, the DG/UX system prompts you to specifiy two operating variables: *lineset* and *TERM*.

About Linesets

The *lineset* establishes the speed and other line characteristics of the RS–232–C or RS422 port to which a terminal or a modem is connected. Further, the port line characteristics and the corresponding terminal (or modem) line characteristics must match. Table 3–1 lists the names of the linesets that the DG/UX system supports, together with their line characteristics. For information about setting the line characteristics of your terminal and/or modem, see the documentation for the specific device(s).

Table 3–1 Lineset Names and Characteristics for Terminals and Modems

Lineset Name	Baud Rate	Parity	Bits	Mode
For Terminals				
9600	9600	None	8	ANSI
9600EP	9600	Even	7	ANSI
19200	19200	None	8	ANSI
19200EP	19200	Even	7	ANSI
For Modems				
M300	300	None	8	—
M1200	1200	None	8	—
M2400	2400	None	8	—
M4800	4800	None	8	—
M9600	9600	None	8	—

About the TERM Variable

The *TERM variable* is an environmental variable that identifies the type of terminal that is connected directly (or indirectly via a modem) to an RS–232–C/RS422 port on the computer unit's rear panel or on a controller connected to the computer unit. The DG/UX system uses **vt100** as the default TERM variable. If you are adding a terminal that can operate in VT100 mode, you will find it easiest to set it up to operate in this mode.

If you want to see a listing of the TERM variables supported by the DG/UX system, type the following command at the # prompt:

man term | more

Then press the Enter key.

NOTE: The **man** command invokes a man page; **term** (an acronym for **terminfo**) is the name of the man page you want to view; | is the UNIX *pipe* sign; **more** allows you to scroll the man–page file upward each time you press your keyboard's space bar. You can use this command format later to view any electronic man page. For more information about man pages, begin with the *User's Reference for the DG/UX™ System.*

After you scroll through the **term** man page, the # prompt reappears on your screen.

You should now have the lineset and TERM information required to add a terminal to your DG/UX system. Proceed as follows.

Using sysadm to Add a Terminal

Proceed as follows.

1. At the # prompt, type

   sysadm

   and press the Enter key. The SYSADM MAIN MENU appears.

2. Type **5** to select the "TTY management menu," and press the Enter key.

```
                        SYSADM MAIN MENU

1  diskmgmt          Enter the Diskman program
2  sysmgmt           System configuration management menu
3  fsmgmt            File system management menu
4  fileinfo          File information menu
5  ttymgmt           TTY management menu
6  lpmgmt            Line Printer managememt
7  usermgmt          User management menu
8  uucpmgmt          UUCP management menu
9  networkmgmt       Network management menu
10 releasemgmt       Software release management menu
11 clientmgmt        Diskless and X terminal client management menu

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 5  <Enter>
```

The TTY Management menu appears.

3. Type **2** to select "Add a single tty entry," and press the Enter key.

```
                        TTY Management

1   ttydefaults    Define tty default settings
2   addtty         Add a single tty entry
3   deltty         Delete a tty entry
4   modtty         Modify a tty entry
5   lstty          List tty entries
6   installtty     Add multiple tty entries

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT  2 <Enter>
```

The following sample screen begins to appear.

Type the responses shown in bold, with the exceptions as noted in the *comments.*

```
TTY Number? ? <Enter>

          The answer must be a number.
          Permissible answers are:
                    Between 00 and 02
```

AViiON 300 and 310 series workstations with monochrome graphics support only tty numbers 00 and 01. All other AViiON computers and workstations support tty numbers 00 through 02.

```
TTY Number? nn <Enter>
```

n is the number of the tty line that supports the terminal you are adding. Do NOT type **00** *if your system console is a graphics monitor and keyboard. If it is,* ***tty00*** *is reserved for the mouse. Also, do NOT type a tty number that you have already assigned to a serial printer.*

```
Login State? [on]  <Enter>

Lineset Name?       [9600]  <Enter>
```

Type the appropriate lineset name for your terminal or modem. See Table 3–1 earlier in this chapter.

```
Hangup Delay (in seconds)? [0] <Enter>
```

The hangup delay specifies the time that the system will wait for a user to enter a login name on the terminal. For a terminal connected directly to the computer, just press **<Enter>**. *For a terminal connected to the computer via a modem, type a number between 60 and 120, and press* **<Enter>**. *This will avoid wasting telephone connect time.*

```
TERM Variable? [vt100]  <Enter>
```

You can select the vt100 terminal type by pressing **<Enter>**; *you can choose not to select a TERM variable at this time by typing* **none**; *or, you can type a new TERM variable, as appropriate.*

```
Available in Init Administrative State? [no] <Enter>
Description? <Enter>
TTY n has been added.

Press the NEWLINE key to see the ttymgmt menu [?, ^, q]:
```

Type **q** *to quit and return to the Superuser prompt.*

```
#
```

4. At the # prompt, type

   init q

   and press the Enter key.

You have added a terminal to your DG/UX sytem. Now continue with the next section, "Changing the DG/UX Run Levels."

Changing the DG/UX Run Levels

The DG/UX system can operate in one of several run levels. See Table 3–2.

Table 3–2 DG/UX Run Levels

Run Level	Description
S	Single user mode. The system default file systems / and **/usr** are mounted.
1	Administrative mode. This mode is used to install and remove software, and to perform administrative tasks, such as checking file systems, doing backups, and so on. System processes are running, and the file systems / and **/usr** are mounted.
2	Multiuser mode. This is the mode with the most services for those who are not operating in a network environment and who are not running the DG/UX X Window System software, Release 4. All local file systems are mounted.
3	Multiuser mode. This is the mode required to run DG/UX X Window System software, Release 4. It is also the mode with remote file system sharing (NFS) and network services.
4	User–defined level. Used mainly for applications.
5 and 6	Undefined levels.

Normally your system operates at run level 3, since your DG/UX server requires network services to support its clients. For this reason, you used the SCM in Chapter 2 earlier to set your system's boot path to include booting to run level 3.

Alternately, you can set your system's boot path to boot automatically to a specific run level by using the **vi** editor to change the **/etc/inittab** file.

Editing the /etc/inittab File

Proceed as follows.

1. Type

   vi /etc/inittab

   and press the Enter key. The **/etc/inittab** file appears.

```
#
def:s:initdefault:
fsc::bootwait:/sbin/chck.fsck        <dev/console >dev/console 2>&1
.
.
.
.
.
```

2. Change the **s** entry on the first line of this file (`def:s:initdefault`) to **3**, so that the line now reads `def:3:initdefault:`.

3. Exit the **vi** Editor by pressing the Esc key and typing **ZZ**. Next the # prompt appears.

Hereafter your DG/UX system will automatically boot to run–level 3.

Moving Up and Down Run Levels

When DG/UX is operating at run–level 3, we recommend that you *shut down* the system to change to a lower run level. See the "Shutting Down your System" section, which appears next in this chapter.

When the system shuts down to run–level S (Single User Mode) and you want to move to a higher run level, use the **init** command to change to a higher run level. For example, to change to run–level 1, type **init 1** and press the Enter key. Similarly, to change to run–level 3, type **init 3** and press the Enter key.

Shutting Down Your DG/UX System

To shut down your system, you must be in the **root** (/) directory. If you are not logged in as **sysadm** or **root**, you must first log out of the system. Then you can log in as **sysadm** or **root**.

To log out of the DG/UX system while in the DG/UX X Window environment, first close your X windows session. Then at the DG/UX X Window login prompt, press the "Terminate" button. See the "Terminating the DG/UX X Window Environment" section in Chapter 2 of this manual. When you get the DG/UX prompt, log in as **root** or **sysadm**.

To log out of the DG/UX system while in the DG/UX environment, proceed as follows.

1. In the Bourne shell: type **Ctrl D**.

   In the C shell: type **logout** or **exit**.

   NOTE: If you are logged in as **sysadm** or **root**, and want to log out so that you can log in again, perhaps as a user, type **exit**. Then when the login banner appears, you can log in to the DG/UX system again.

   Next the login banner reappears.

2. Log in as **root** or **sysadm,** and the system will display the Superuser (#) prompt.

Now to shut down the system, proceed as follows.

1. At the # prompt, type

   cd /

   and press the Enter key.

2. At the # prompt, type the following to notify users (when present on the system) of the impending shutdown.

   wall "System is going down in 5 minutes. Please log off."

   and press the Enter key.

3. At the # prompt, type

   shutdown -g300 -y

   and press the Enter key.

   The **-g** switch in the above command string specifies the grace period in seconds (300 seconds in the example above) between broadcasting a warning message to those logged in to the DG/UX system and the beginning of the

system shutdown activities. Therefore, if the system is currently without users, the grace period could be set for 0 seconds as follows: **-g0**.

The **-y** option switch in the above command string tells the system that you are sure you want to shutdown now. Without this switch, the DG/UX system displays a shutdown confirmation prompt and waits for your positive response before proceeding to shutdown the system.

4. Now wait a few seconds for the following message to be displayed:

```
#
INIT:  New run level: S
INIT:  SINGLE USER MODE
#
```

5. At the last # prompt, type

   halt -q

   and press the Enter key.

   When the SCM> prompt appears, the DG/UX system is shut down.

Rebooting the DG/UX System

When your system is shut down, you can reboot the DG/UX from the SCM> prompt by typing

b

and pressing the Enter key.

Powering Down Your Computer

If you want to power down your AViiON computer, proceed as follows.

When the SCM> prompt is displayed (indicating that the DG/UX system is shutdown), move the ac power switch on your computer unit to the OFF position. Then power down your system console and all I/O devices connected to the computer unit, such as a peripheral housing unit and any data terminal devices.

After your AViiON computer is shut down and powered down, the DG/UX system will automatically boot the next time you power up your computer in the following sequence: first power up any peripheral devices; then power up the computer unit.

Where to Go Next

In this chapter, you created user accounts, added a printer and a terminal to your system, and learned a little about running your DG/UX system. Now you are ready to set up the DG/UX server to support OS and X terminal clients. Chapter 4 tells how to do this.

If you shut down your system as described in this chapter, type **b** at the `SCM>` prompt to boot your system again before starting the tasks described in Chapter 4.

End of Chapter

Chapter 4
Setting Up the DG/UX Server to Support Clients

This chapter describes how to set up the DG/UX server to support diskless operating system (OS) clients and AVX–30 X terminal clients. In addition, it supplies step–by–step instructions for performing the following tasks:

- Creating and installing a kernel that will support a community of diskless OS clients.
- Adding individual diskless OS client workstations to the DG/UX server.
- Adding individual AVX–30 X terminal clients to the DG/UX server.
- Adding client network addresses to the DG/UX server's internet and Ethernet address files.

Before You Start

To perform the tasks described in this chapter, you must be logged in to the DG/UX system as **sysadm** or **root**, and DG/UX must be operating at run level 3.

Verifying Your Login Status

To verify your login status, type **who am i** and press the Enter key. When you are logged in as **sysadm** or as **root**, the DG/UX system will respond by displaying one of the following messages:

```
sysadm      console      <the current date and time>
root        console      <the current date and time>
```

If you are logged in as a user, log out. Then log in as **sysadm** or **root**.

Verifying the DG/UX Run Level

To verify the run level of your DG/UX system, type **who –r** and press the Enter key. The DG/UX system will display the run level in a message similar to the following:

```
run-level 3     <the current date and time>   3    2    1
```

If you are operating in the DG/UX X Window environment, you must be at run level 3; therefore, you do not need to check your run level.

Creating a Diskless Kernel

In this section, we will show you how to create a diskless kernel that supports one or more diskless OS clients hosted by AViiON 100 series, 200 series, and/or 300 series workstations. You do this in the same manner as you created the kernel for your DG/UX server system; that is, you will use the **vi** editor to edit the prototype system configuration file. But this time you will edit only the "`Typical AViiON 200 or 300 series workstation configuration`" description. You will comment out or delete the typical configuration descriptions of all other AViiON systems.

About the Diskless OS Client Hardware Configuration

Because diskless OS clients are supported by a common diskless kernel, they share a common set of I/O device configuration parameters. The next sample screen is an excerpt from the prototype system configuration file, which we edited with comment signs (`#`s) to support a typical community of diskless OS client workstations.

```
#### Typical AViiON 200 or 300 series workstation configuration:

        NOTE: This configuration description also applies to AViiON 100 series
        workstations.

# Note that your system can have a second duart() or an lp()
# controller, but not both.

    kbd()           # -- keyboard
    grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
    inen()          # -- integrated Ethernet controller
    duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart (if present in system)
#   lp()            # -- integrated line printer controller
                            (if present)

    ptc()           # -- pseudo-terminal controller device
    pts()           # -- pseudo-terminal slave device
    pmt()           # -- pseudo-magtape device
    log()           # -- Streams logger pseudo-device
    prf()           # -- profiler pseudo-device
```

Notice this typical diskless configuration includes only those hardware I/O devices required to support the workstation's graphics monitor, keyboard, and mouse [the mouse is supported by the `duart()`], and its integrated Ethernet controller [`inen()`]. All other hardware I/O devices are commented out, since we assume the diskless OS clients will use their DG/UX OS server as their file and print server as well.

However, if you will configure any of your diskless OS client workstations with additional I/O devices, edit the diskless kernel file for the diskless OS client workstation with the greatest requirement for I/O device support. This will not affect diskless OS client workstations that do not have these additional I/O devices. The DG/UX system simply displays a message that it cannot find certain I/O devices when booting these diskless OS clients via the network.

Editing the Prototype System Configuration File

As you may recall, the prototype system configuration file is large; it spans several screens. Within these screens, you use the **vi** editor to *comment out* or delete configuration information that does not apply to the AViiON 100 series, 200 series, and 300 series workstations supported by the diskless kernel.

NOTE: If you need to refresh your **vi** editor skills, refer to the "**vi** editor Tutorial" in Chapter 2 of this manual.

Now proceed as follows.

1. At the # prompt, type

   sysadm newdgux

   and press the Enter key.

   Immediately you are prompted for the "`System name?`"

2. As shown in the next sample screen, type

   diskless

   and press the Enter key.

   As the first screen of the prototype configuration file begins to appear, select the **vi** editor by pressing the Enter key in response to `Editor? [vi]`. See the sample screen that follows. When the # signs appear at the left margin of this screen, the **vi** editor is in command mode. As you read the contents of this file, use the j key to move down the screen one line at a time.

   NOTE: If you make an error and have difficulty correcting it with the **vi** editor, you can exit the system configuration file by simply typing the following **vi** command: **:q!** This leaves the file unaltered by your editing, and allows you to begin again.

```
Running subcommand 'newdgux' from menu 'sysmgmt',
System Configuration Management

System Name? [aviion] diskless <Enter>
System file "/usr/src/uts/aviion/Build/system.diskless"
   does not exist.
Create the system file [yes] <Enter>
Editor? [vi] <Enter>
Copyright (C) Data General Corporation 1990.
#All Rights Reserved.
#Licensed   Material   --   Property   of   Data   General
#Corporation.
#This software is made available solely pursuant to the
#terms of a DGC license which governs its use.

#sccid = "@(#) 88K 1990 system.dgux.proto   94.6"
#-------------------------------------------------------
#Prototype fragment of system configuration for:
#
#(Product Name):           DG/UX
#(Release):                4.31
#
#This prototype is provided to assist you in creating
#your customized system configuration file.
#This file consists of system file entries pertaining to
#this product.  Include this fragment in your customized
#system file and edit it to reflect your system's
#configuration.
#See this product's master file (in /usr/etc/master.d)
#for more details.
#-------------------------------------------------------

#-------------------------------------------------------
#Devices:
#
#List all devices and pseudo-devices in this section, one
#entry per line.  Typical configurations for several
#typical configurations have been provided below;
#delete entries that do not apply to your system and add
#to the list any devices your system has that are not
#already listed.
```

3. Continue to move down through the file using the j key until the following screen appears. This is the configuration description for the group of AViiON 100 series, 200 series, and 300 series workstations that this diskless kernel will support.

4. Use the **vi** insert command (**i**) to insert a comment sign (**#**) at the beginning of each hardware I/O device description line that you want to comment out of your diskless kernel's hardware I/O configuration. Or, if you prefer, use the **vi** delete–line command (**dd**) to delete these description lines from the file.

   NOTE: Leave the group of description lines beginning with `ptc()` and ending with `prf()` untouched.

```
#### Typical AViiON 200 or 300 series workstation configuration:

        NOTE: This configuration description also applies to AViiON 100 series
        workstations.

# Note that your system can have a second duart() or an lp()
# controller, but not both.

   kbd()          # -- keyboard
   grfx()         # -- graphics display
   sd(insc(),*)   # -- all SCSI disks on integrated SCSI adapter
   st(insc(),*)   # -- all SCSI tapes on integrated SCSI adapter
   inen()         # -- integrated Ethernet controller
   duart()        # -- integrated Duart terminal line controller
   duart(1)       # -- second Duart (if present in system)
   lp()           # -- integrated line printer controller
                           (if present)

   ptc()          # -- pseudo-terminal controller device
   pts()          # -- pseudo-terminal slave device
   pmt()          # -- pseudo-magtape device
   log()          # -- Streams logger pseudo-device
   prf()          # -- profiler pseudo-device
```

5. After editing this screen, continue to move down through the file using the j key until you see the following screen for the AViiON 400 series workstation.

6. Comment out or delete all configuration descriptions in this file, as shown in the next sample screen.

```
#### Typical AViiON 400 series workstation configuration:

#   kbd()           # -- keyboard
#   grfx()          # -- graphics display
#   sd(insc(),*)    # -- all SCSI disks on integrated SCSI adapter
#   st(insc(),*)    # -- all SCSI tapes on integrated SCSI adapter
#   inen()          # -- integrated Ethernet controller
#   duart()         # -- integrated Duart terminal line controller
#   duart(1)        # -- second Duart
#   lp()            # -- integrated line printer controller

#   ptc()           # -- pseudo-terminal controller device
#   pts()           # -- pseudo-terminal slave device
#   pmt()           # -- pseudo-magtape device
#   log()           # -- Streams logger pseudo-device
#   prf()           # -- profiler pseudo-device
```

7. When the subsequent AViiON 4000 series, and AViiON 5000 and 6000 series configuration screens appear, comment out or delete all configuration descriptions in these files as well. See the sample screens below.

```
#### Typical AViiON 4000 Series server configuration:

      NOTE: This configuration description also applies to AViiON 3000 series servers.

#   sd(insc(),*)   # -- all SCSI disk drives on integrated SCSI adapter
#   st(insc(),*)   # -- all SCSI tape drives on integrated SCSI adapter
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   cird()         # -- Ciprico Rimfire or SMD disk controller

#   inen()         # -- integrated Ethernet controller
#   hken()         # -- Interphase VME Ethernet controller
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   duart(1)       # -- second Duart
#   lp()           # -- integrated line printer controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magtape device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device


#### Typical AViiON 5000 or 6000 series server configuration:

#   cird()         # -- Ciprico Rimfire or SMD disk controller
#   sd(cisc(),*)   # -- all SCSI disk drives on Ciprico SCSI adapter
#   st(cisc(),*)   # -- all SCSI tape drives on Ciprico SCSI adapter
#   syac()         # -- Systech terminal line controller
#   duart()        # -- integrated Duart terminal line controller
#   lp()           # -- integrated line printer controller
#   hken(0)        # -- 1st Interphase VME Ethernet controller
#   hken(1)        # -- 2nd Interphase VME Ethernet controller

#   ptc()          # -- pseudo-terminal controller device
#   pts()          # -- pseudo-terminal slave device
#   pmt()          # -- pseudo-magnetic device
#   log()          # -- Streams logger pseudo-device
#   prf()          # -- profiler pseudo-device
```

8. After commenting out or deleting the information in the above screens, continue to move the cursor down through this file until you see the heading `Tuneable Configuration Parameters`. Now go to the "Tuneable Configuration Parameters" section, which appears next.

Tuneable Configuration Parameters

Under the heading `Tuneable Configuration Parameters`, you will find a list of items under the subheadings `Parameter Name` and `Value`. Before using the **vi** editor to change any value in this group of parameters, read the parameter descriptions below. Notice that the `SHMMAX` parameter described below, and shown in bold in the next sample screen, does not appear in the DG/UX configuration file. You must add this parameter to the system configuration file for your diskless OS clients; otherwise, they will be unable to use the DG/UX X Window System software.

`TZ` (TIMEZONE) is represented as the number of minutes by which your time zone follows Greenwich Mean Time (GMT). In the configuration file, `TZ` is set for the Eastern Time Zone, which is `300` minutes behind GMT. Leave this line untouched.

`MAXUP` refers to the maximum number of processes that any user will be able to have at one time. Take the default for this value (64); that is, leave this number untouched.

`NODE` is the hostname of the particular system being installed. However, since the diskless kernel is intended to support more than one host system, change the hostname in this particular file from "`my_node`" to "`diskless.`"

`DUMP "st(insc(),4)"` selects the cartridge tape drive with SCSI ID number 4 as the dump device for the system in the event of an emergency. Since this configuration file supports diskless OS clients that send their dump files across the network to their DG/UX server's **/srv/dump** directory, *be sure that a # sign is inserted at the beginning of this line.*

`DUMP "inen()"` selects the Ethernet port as the emergency dump device for the system. Since this is the dump device that diskless OS clients will use, *be sure to delete the # signs at the beginning of this line.*

`SHMMAX` defines a shared–memory segment that is larger than the current 4.32 kernel system default. If your system includes the DG/UX X Window System software, this configuration parameter and its value (4194304) must appear as a Tuneable Configuration parameter in this prototype configuration file. See the next sample screen.

`PERCENTNFS`, `NETBOOTDEV`, `ROOTFSTYPE`, and `SWAPDEVTYPE` — these configuration parameters are required for diskless OS clients. Therefore, *be sure to delete the # sign(s) at the beginning of each line that displays one of these parameter names.*

Now edit the Tuneable Configuration Parameters appearing in the next sample screen, with the exceptions as noted in the *comments*.

NOTE: As you read through the configuration file displayed on your system console's monitor, you will notice that some sections of the file are omitted from the sample screens in this manual. This is done intentionally for the sake of brevity. The omitted sections do not require editing.

```
# Tuneable Configuration Parameters:
#
#List all configuration parameters you wish to override in this
#section, one entry per line.
#.
#You should set the MAXUP variable to the maximum number of
#processes that each user will be allowed to run simultaneously.
#This number should be at least 64 for workstations.
#
#You should set the NODE variable to control your nodename for
#uname(1) and uucp(1), but not more than 255 characters.
#
#You should set the DUMP variable to the name of the tape
#device (in DG/UX Common Device Specification Format) that
#will be the default device to take dumps in case of system
#emergencies.  For diskless workstations, the DUMP variable
#should be set to the network device used to boot the machine.
#.
#.

#   Parameter Name          Value
#   --------------          -----

    TZ                      300
    MAXUP                   64
    NODE                    "diskless"  Use the vi replace command (R) to
                                        overwrite the default host name (my_node)
                                        with the name diskless.

### DUMP                    "st(insc(),4)"  Leave this line untouched.

    DUMP                    "inen()"  Be sure to delete the # signs appearing at
                                      the lefthand margin of this line in the file
                                      you are editing.

    SHMMAX                  4194304   Use the vi insert command (i) to add this
                                      parameter and its value to the file. They are
                                      required when supporting the DG/UX X
                                      Window System software, Release 4, Revision
                                      4.32.

    PERCENTNFS      100               Be sure to delete the # signs
    NETBOOTDEV      "inen()"          appearing at the lefthand margin
    ROOTFSTYPE      NETWORK_ROOT      of this group of description lines in the file
    SWAPDEVTYPE     NETWORK_SWAP      you are editing.
```

The remaining sections of this configuration file do not require editing; however, they do provide information about the communications software packages present in your DG/UX system.

If you want to view the rest of this file, use the j key to scroll through the file until you reach the end.

Exiting the System Configuration File

To exit the system configuration file and the **vi** editor, proceed as follows:

Press the Esc (Escape) key; then type **ZZ**.

Immediately after exiting the **vi** editor, the system displays the following message:

```
Ready to Configure a Kernel? [yes]
```

You are now ready to install the new kernel. Continue on to the "Installing the Kernel" section.

Installing the Kernel

In this section, you configure and install the diskless kernel by responding to the system prompts shown in the next sample screen.

Type the responses shown in bold.

```
Ready to Configure a Kernel? [yes] <Enter>

sysadm will now run config on /usr/src/uts/aviion/Build/system.diskless.

Config succeeded.

sysadm will now attempt to build a kernel.
Building...

The build succeeded.

Install the New Kernel? [no] y <Enter>

For a diskless client of this Host? [no] y <Enter>

Kernel Pathname? [/srv/release/PRIMARY/root/_Kernels/dgux.diskless] <Enter>

Link all primary clients to the new kernel? [y]  <Enter>

#
```

If the configuration or build fails, the system will display several messages followed by the prompt: `Print the Build Error File? [yes]`. If this occurs, press the Enter key to get the printout. You may have to invoke **sysadm newdgux** again to correct any error that caused a configuration or build error. If a failure occurs a second time, call Data General Corporation for assistance.

Adding Diskless OS Clients

In this section, we will show you how to

- Create a default DG/UX set for diskless OS clients.
- Add a diskless OS client to the set.

Creating a Default Set for Diskless OS Clients

In this section, you will create a default set for your diskless OS clients called "dgset." This set specifies the release area (PRIMARY), default kernel (diskless), and the home directory (**/accounts**) used to support each client in the set.

Proceed as follows.

1. At the # prompt, type

   sysadm

   and press the Enter key.

   The SYSADM MAIN MENU appears.

2. Type **11** to select the "Diskless and X terminal client management menu," and then press the Enter key.

```
                        SYSADM MAIN MENU

1  diskmgmt          Enter the Diskman program
2  sysmgmt           System configuration management menu
3  fsmgmt            File system management menu
4  fileinfo          File information menu
5  ttymgmt           TTY management menu
6  lpmgmt            Line Printer managememt
7  usermgmt          User management menu
8  uucpmgmt          UUCP management menu
9  networkmgmt       Network management menu
10 releasemgmt       Software release management menu
11 clientmgmt        Diskless and X terminal client management menu

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 11  <Enter>
```

The "Diskless Client Management" menu appears.

3. Type **2** to select "Create or modify a set of diskless client defaults, " and press the Enter key.

```
                    Diskless Client Management

1  addclient        Add a diskless client entry
2  clientdefaults   Create or modify a set of diskless client defaults
3  delclient        Delete a diskless client entry
4  lsclient         List information about diskless clients
5  bootdefault      Change the default release for a diskless client
6  addxterminal     Add an X terminal display bootstrap client
7  delxterminal     Delete an X terminal display bootstrap client
8  lsxterminal      List X terminals that are served by this machine

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 2  <Enter>
```

The beginning of the following sample screen appears.

4. Type the responses shown in bold below.

```
There are no sets currently defined.
Defaults Set Name? dgset <Enter>      You may substitute a "Set Name" of your choosing.
dgset is a new defaults set.
Release Area? [PRIMARY] <Enter>
Default Swap Size? [16m] <Enter>
Default Home Directory? [/home] /accounts  <Enter>
Default Kernel?
      [/srv/release/PRIMARY/root/_Kernels/dgux.diskless] <Enter>
Default Bootstrap File? [/usr/stand/boot.aviion] <Enter>

Defaults for set dgset have been assigned.

Press the NEWLINE key to see the clientmgmt menu [?, ^, q]: <Enter>
```

The "Diskless Client Management " menu reappears.

You have now created a diskless OS client set called "dgset." In the next section, you will add a diskless OS client workstation to that set.

Adding a Diskless OS Client Entry to a Client Set

Refer to your completed copy of the TCP/IP, NFS, and YP Worksheet for DG/UX Clients. You will need the hostname of each diskless OS client you wish to add to your DG/UX server at this time.

To add a diskless OS client entry to a client set, follow these steps:

1. In the Diskless Client Management menu, type **1** to select "Add a diskless client entry, " and then press the Enter key.

   The beginning of the next sample screen appears. Notice that the reiterative capability built into the following script lets you add multiple diskless OS clients to a set in one session.

2. Type the responses shown in bold below.

```
Server's Host Name on Client's Network? [sales] sales_srv <Enter>
                                        Substitute the hostname of your DG/UX
                                        server system, and press <Enter>.

Client Host Name? dg1 <Enter>           Substitute the hostname of your diskless client
                                        workstation, and press <Enter>
Defaults Set Name? [none] dgset <Enter>
Use ALL defaults from dgset? [yes] <Enter>
Creating the client root.
Creating the swap file.
Creating /etc/fstab.
Creating /etc/hosts.
Creating /etc/tcpip.params.
Creating /etc/nfs.params.
Creating the kernel link.
Creating the bootstrap link.
Client dg1 has been added.

Do you wish to add another client? [yes]  Press <Enter> if you want
                                        to add more clients now, and this script will
                                        repeat. Otherwise, type n and press <Enter>.

Press the NEWLINE key to see the clientmgmt menu [?, ^, q]: <Enter>

#
```

The Diskless Client Management menu reappears.

You have added your diskless OS client(s) to the DG/UX client set called "dgset".

Adding X Terminal Clients

In this section, you will define an AVX–30 X terminal as an X display bootstrap client of this DG/UX server system.

Refer to your completed copy of the TCP/IP, NFS, and YP Worksheet for DG/UX Clients. You will need the hostname of each X terminal client requiring support from this DG/UX server system.

Now proceed as follows.

1. In the Diskless Client Management menu, type **6** to select "Add an X terminal display bootstrap client," and press the Enter key.

```
                    Diskless Client Management

1  addclient       Add a diskless client entry
2  clientdefaults  Create or modify a set of diskless client defaults
3  delclient       Delete a diskless client entry
4  lsclient        List information about diskless clients
5  bootdefault     Change the default release for a diskless client
6  addxterminal    Add an X terminal display bootstrap client
7  delxterminal    Delete an X terminal display bootstrap client
8  lsxterminal     List X terminals that are served by this machine

Enter a number, a name, the initial part of a name, ? or <number>?
for HELP, q to QUIT. 6  <Enter>
```

The beginning of the following sample screen appears. Notice that the reiterative capability built into the following script lets you add multiple X terminal clients in one session.

2. Type the responses shown in bold below.

```
Client host name?  xt1  <Enter>      You may substitute a hostname of your
                                     choosing; then press <Enter>.
Booststrap File? [usr/opt/X11/xtd/avx30boot] <Enter>
Creating the bootstrap link.

Client xt1 has been added.
Do you wish to add another X terminal client? [yes] (Press <Enter> if you want
                                     to add more X terminal clients now. Otherwise,
                                     type n and press <Enter>.
Press the NEWLINE key to see the clientmgmt menu [?, ^, q]: (Type q to
                                     exit and return to the Superuser prompt.)
#
```

Adding DG/UX Client Network Addresses

In this section, you will learn how to add the hostname and internet address of each diskless OS client and each X terminal client to the DG/UX server's **/etc/host** file. Then you will add the hostname and the Ethernet address of each diskless OS client and each X terminal client to the DG/UX server's **/etc/ethers** file.

To perform the tasks outlined in this section, you will need your completed copy of the TCP/IP, NFS, and YP Worksheet for DG/UX Clients.

Adding DG/UX Clients to the /etc/hosts File

Proceed as follows.

1. At the # prompt, type

   sysadm addhost

   and press the Enter key.

   Immediately the beginning of the following sample screen appears. Notice that the reiterative capability built into this script lets you add the internet address of multiple diskless OS and X terminal clients in one session.

2. Type the responses shown in bold.

```
Running subcommand 'addhost' from menu 'networkmgmt'
Network Management
```

Note: If the DG/UX server is now the YP master, the system will display the following message:

```
This host is the YP master.  You must choose between accessing
the global or local user list.
Access the Global Host/Network List? [yes] <Enter>
```

Note: If the DG/UX server is not the YP master, the system will display the following message:

```
This host is not the YP master.  You can only access
the local host/network list.
Host Name? dg1 <Enter>
```

Substitute the hostname of the client whose address is being added to the **/etc/host** *file of the DG/UX server.*

```
Host Address? 128.223.1.46 <Enter>
```

Substitute the internet address of the above–named client.

```
The entry for dg1 has been added.
Do you want to add another host?  [yes]
```

Press **<Enter>** *if you want to add another host. Otherwise, type* **n** *and then press* **<Enter>**.

Adding DG/UX Clients to the /etc/ethers File

Proceed as follows.

1. At the # prompt, type

   sysadm addether

   and press the Enter key.

   Immediately the beginning of the following sample screen appears. Notice that the reiterative capability built into the following script lets you add the Ethernet address of multiple diskless and X terminal clients in one session.

2. Type the responses shown in bold.

```
Running subcommand 'addether' from menu 'networkmgmt'
Network Management

    Note: If the DG/UX server is now the YP master, the system will display the
          following message:

This host is the YP master.  You must choose between accessing
the global or local user list.

Access the Global Host/Network List? [yes] <Enter>

    Note: If the DG/UX server is not the YP master, the system will display the
          following message:

This host is not the YP master,  You can only access
the local host/network list.

Host Name? dg1 <Enter>                    Substitute the hostname of the
                                          client whose address is being added to
                                          the /etc/ethers file ofthe DG/UX server.

Ethernet Address? 08:00:1B:nn:nn:nn: <Enter> Substitute the Ethernet
                                          address of the above-named client.

The entry for dg1 has been added.
Do you want to add another host?  [yes] Press <Enter> if you want to
                                          add another host. Otherwise, type n
                                          and then press <Enter>.
```

What to Do and Where to Go Next

Once you have completed the tasks described in this chapter, your DG/UX server is set up to support your diskless OS clients and your X terminal clients.

To boot and set up a diskless OS client, continue on to Chapter 5.

To boot and set up an AVX–30 X terminal, go to the following documentation:

AVX–30 Software for AViiON® Systems Release Notice.

DG/UX™ X Windows for AViiON® Systems, Release 4, Revision 4.32.

NCD16 Network Display Station, Installation and Operation Manual, which comes with your AVX–30 X terminal.

End of Chapter

Chapter 5
Booting and Setting Up a Diskless OS Client Workstation

This chapter describes how to boot a DG/UX diskless OS client AViiON workstation and set up the required software. In this chapter, we will show you how to

- Boot the diskless OS client workstation.
- Set up the DG/UX X Windows System and the TCP/IP, NFS, and YP software on the diskless OS client workstation.
- Start and log in to the DG/UX X Windows System software.

In addition, this chapter lists common tasks associated with managing and using a diskless OS client workstation and tells where to find the supporting documentation.

Booting a Diskless OS Client Workstation

Begin by powering up your AViiON workstation as follows.

1. Apply power to the graphics monitor and any other I/O device(s) present on your AViiON workstation.

2. Power up the workstation's computer unit by moving the computer unit's ac power switch to the ON position.

   As the system hardware initializes and the computer's self–tests run, you will hear beeps and see the system display the following screen. When your computer completes its self–test satisfactorily, you will see the message `Passed` displayed.

```
(c)Data General Corporation 1989, 1990
Model nnnn Series              nnnn means this information varies with the
                               particular AViiON workstation model.
[Single/Dual] Processor
Color Graphics [8 bit]         This may not be displayed on your
                               system.
Firmware Revision nnnnnn
Keyboard Language is U.S.English
Local Ethernet address is 08:00:1B:nn:nn:nn
Initializing [n] Megabytes

Testing.....
     0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
Passed

SCM>
```

NOTE: If your AViiON workstation displays error messages or does not complete the self–test satisfactorily, stop here. See the appropriate Setting Up and Starting manual for your workstation; it provides troubleshooting instructions.

3. At the SCM> prompt, type

   b inen()

   Then press the Enter key.

   The AViiON workstation will display messages similar to those in the following screen.

```
Booting sd()b inen()

Local Ethernet address is 08:00:1B:nn:nn:nn  The Ethernet Address is unique
                                             to each workstation.
Local Internet address is nnn.nnn.nnn.nnn  The network addresses (Ethernet and
                                           internet) should match the pair defined for this
                                           diskless OS client workstation.
Trying server at nnn.nnn.nnn.nn or Cnnnnnnnnn hex  This is the internet
                                                   address of this client's DG/UX server system; it
                                                   is first presented in "dot notation," and then
                                                   in hexidecimal.

Using sales_srv:srv/release/PRIMARY/root/dg1 as root
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
DG/UX System Release 4.32, Version 00
Using nn megabytes of physical memory
Found 1 procesor(s)
Processor 0 running
Unable to configure st(insc(),4). Skipping this device  This is a
                                                        typical message displayed by the DG/UX
                                                        system when a device that is included in
                                                        the diskless kernel configuration file is
                                                        not present on the diskless OS client
                                                        workstation being booted.
Broadcasting boot params information request for IP address Cnnnn
Mounting sales_srv: /srv/swap/dg1 as swap file system.
Mounting sales_srv: /srv/release/PRIMARY/root/dg1 as root file system

INIT:  Boot options are:  init inen()
INIT:  Cannot open /etc/TIMEZONE.  Environment not initialized.

INIT:  /etc/inittab file created from /etc/inittab.prototype.
INIT:  Checking and mounting /usr . . .

INIT: /usr is now mounted.
.
.
INIT:  SINGLE USER MODE
#
```

The DG/UX system is now booted and running in Single User Mode.

Before you can set up the necessary software for this diskless OS client, the DG/UX system must be operating at run level 1. To do this, proceed as follows.

1. Type

   init 1

   and press the Enter key.

   The system displays the current date and time, and asks if the information displayed is correct.

2. As shown below in bold, type **y**, and then press the Enter key.

   If this information is incorrect, you can easily correct it later by using the **sysadm datetime** command. See "Changing the Date and Time" section in Chapter 2 of this manual.

```
chk.fsck:

chk.date:
     Current date/time: Wed March 6 08:15 EDT 1991
     Are the current date, time, and TIMEZONE correct?
                  (y n) [n]: y <Enter>

Setting up package: dgux
```

   As several screens scroll forward, watch for the prompts that appear in the sample screen below.

6. Type the responses exactly as shown in bold.

```
Press <RETURN> to display prompt <Enter>

dg1                    The hostname of your system may be different.
DG/UX Release 4.32
login:  sysadm <Enter>
DG/UX Release 4.32 AViiON
dg1
============================================================
                          WARNING
ACCESS TO AND USE OF THIS SYSTEM IS RESTRICTED TO
AUTHORIZED INDIVIDUALS!
      Data General AViiON System  DG/UX Release 4.32
============================================================
#
```

   You are now logged in as **sysadm**, and the DG/UX system is operating at run level 1.

Setting Up Software

In this section, we will set up the DG/UX X Window System software and the TCP/IP, NFS, and YP network software. Proceed as follows.

1. At the # prompt, type

   sysadm makesrv

   and press the Enter key.

   The **/srv** directory must be created before the DG/UX system will load and/or set up a software package.

2. At the # prompt, type

   sysadm setuppackage

   and press the Enter key. The beginning of the first of several setup screens appears.

   NOTE: If you make an error in the **setuppackage** script and want to exit the script and begin again, type the DG/UX interrupt key sequence, **Ctrl C**. When the # prompt appears, type the **sysadm setuppackage** command again and press the Enter key.

3. Type the responses shown in bold in the sample screen below, with the exceptions as noted.

```
Running subcommand 'setuppackage' from menu 'releasemgmt',

Software Release Management
Release Area? [PRIMARY]  <Enter>
The following packages have setup scripts that have not been run:

     X11     nfs     tcpip    yp

Package Name? [all] <Enter>
Processing setup scripts for package X11.

Setup package X11 in MY_HOST root? [yes] <Enter>

     Setting up package: X11

Processing setup scripts for package nfs

Setup package nfs in MY_HOST root? [yes] <Enter>

     Setting up package: nfs

Setting up the rc#.d directory links.
Remove links in /srv/release/PRIMARY/root/MY_HOST/etc/rc#.d
+.................................
Link from /usr/sbin/init.d to /srv/release/PRIMARY/root/MY_HOST/etc
The nfs.params file in /srv/release/PRIMARY/root/MY_HOST already
 exists.

You may choose to have a new /etc/nfs.params generated.........

Do you want a new /etc/nfs.params? (y n) [y]: y <Enter>

    That completes the automated portion of the NFS configuration.

Processing setup scripts for package tcpip.
Setup package tcpip in MY_HOST root? [yes] <Enter>

     Setting up package: tcpip

Creating links for initialization scripts ....... Please Wait
.
.
.
.
Press NEWLNE when ready to continue <Enter>
```

(Continued)

```
Do you want support for loop interface? [y] <Enter>

Updating /srv/release/PRIMARY/root/MY_HOST/etc/hosts and
 /srv/release/PRIMARY/root/MY_HOST/etc/networks files...please wait

NOTE: any entries encountered containing conflicting information
will be deleted from the offending file.

The following lines have been removed from file
 "/srv/release/PRIMARY/root/MY_HOST/etc/hosts"

-- Begin Remove List --
127.0.0.1       localhost
-- End of Remove List --

The entry "127.0.0.1     localhost" has been added to file "/srv/release/
PRIMARY/root/MY_HOST/etc/hosts"

Updating
":srv/release/PRIMARY/root/MY_HOST/etc/tcpip.params"...please wait.....

IMPORTANT NOTE: You MUST have a "loop" entry specified in
your system configuration file.  Consult the help menu or the
system(4) man page for more information.

Local Loopback Environment Installation Complete

Press NEWLINE when ready to continue... <Enter>

The following queries refer to the host being installed.

Enter host Internet address: 192.9.200.80 <Enter>      Substitute the internet
                                                       address of the diskless OS client being set up;
                                                       then press <Enter>.
[192.9.200.80] Correct ?  [y]    <Enter>
Enter host name: dgl  <Enter>          Substitute the hostname of the diskless OS client
                                       being set up now; then press <Enter>.)
[dgl] Correct ?  [y] <Enter>
Enter network name: sales_net <Enter> Substitute the name of your network; then
                                       press <Enter>.
[sales_net] Correct ?  [y] <Enter>

Is "sales_net" a subnetted network ? [n] y/n <Enter> If you type y (yes) in response
                                       to this question, the system will prompt you for your
                                       "network mask," as shown on the next line. If you
                                       type n, the "network mask" prompt will not appear.
```

(Continued)

```
Enter the network mask: 0xffffff00 <Enter>  Subtitute the mask for your network; then
                                            press <Enter>.
[0xffffff00] Correct ?[y] <Enter>

Calculating network address...please wait.....................

Updating /srv/release/PRIMARY/root/MY_HOST/etc/hosts and
 /srv/release/PRIMARY/root/MY_HOST/etc/networks files...please wait

NOTE: any entries encountered containing conflicting information
      will be deleted from the offending file.

The entry "192.9.200.80 dg1" has been added to file
"/srv/release/PRIMARY/root/MY_HOST/etc/hosts"

The entry "sales_net 192.9.200" has been added to file
 "/srv/release/PRIMARY/root/MY_HOST/etc/networks"

Enter controller device name: inen0 <Enter>

[inen0] Correct ?  [y] <Enter>

There are two variations of Broadcast addresses. A BSD 4.2 compatible
broadcast address has a host portion of all zeros. A BSD 4.3 compatible
broadcast address has a host portion of all ones.

Calculating network portion of broadcast address...please
wait.................

Do you want the host portion of the broadcast address to be all ones ?
[y] y/n <Enter>          See your completed TCP/IP, NFS and YP Worksheet for the
                         DG/UX Server.

Calculating broadcast address...please wait.....

Updating "/srv/release/PRIMARY/root/MY_HOST/etc/tcpip.params"...please
wait.......

IMPORTANT NOTE: You MUST have an "inen" entry specified in
your system configuration file.  Consult the help menu or the
system(4) man page for more information.

Local Environment Installation Complete

Press NEWLINE when ready to continue...<Enter>
```

(Continued)

```
The following queries refer to IXE configuration.

Would you like to configure any IXE interfaces? [n] <Enter>

IXE Configuration Complete

Press NEWLINE when ready to continue...

Would you like to add a remote host entry? [y] n <Enter>

Do you want to edit the /srv/release/PRIMARY/root/MY_HOST/etc/protocols
file? [n] <Enter>

Do you want to edit the /srv/release/PRIMARY/root/MY_HOST/etc/services
file? [n] <Enter>

Network Environment Installation Complete

Press NEWLINE when ready to continue...<Enter>

Enter FTP login directory [/var/ftp]: <Enter>
 [/var/ftp] Correct ?  [y] <Enter>

Modifying ftp password entry in
 /srv/release/PRIMARY/root/MY_HOST/etc/passwd

Directory: /var/ftp exists
Directory: /var/ftp/bin exists
Directory: /var/ftp/etc exists
File "/usr/bin/ls" has been copied to "/var/ftp/bin/ls"
File "/usr/bin/pwd" has been copied to "/var/ftp/bin/pwd"
File  "/srv/release/PRIMARY/root/MY_HOST/etc/group"  has  been  copied  to
"/var/ftp/etc/group"

FTP Installation Complete

Press NEWLINE when ready to continue...<Enter>

File: /srv/release/PRIMARY/root/MY_HOST/etc/hosts.equiv has been created
from prototype file

Press NEWLINE when ready to continue... <Enter>
```

(Continued)

```
Warning: The following query may produce a security breach
in your system.  An entry in the /srv/release/PRIMARY/root/MY_HOST/etc/
hosts.equiv allows a user from the specified remote host having the same
user name to remotely login to your host WITHOUT having to enter a
password.  Caution should be exercised in adding entries to this file.

Do you wish to add a host to the
/srv/release/PRIMARY/root/MY_HOST/etc/hosts.equiv file ? [n] <Enter>
File:  /srv/release/PRIMARY/root/MY_HOST/etc/pmterrtab  has  been  created
from prototype file
File: /srv/release/PRIMARY/root/MY_HOST/etc/pmttapetab has been created
from prototype file

Remote Commands Installation Complete

Press NEWLINE when ready to continue...<Enter>

"/srv/release/PRIMARY/root/MY_HOST/etc/sendmail.cf" has been created from
"/srv/release/PRIMARY/root/MY_HOST/etc/arpaproto.cf"

Do you need to customize ruleset 0 ? [n] <Enter>

Modifying mail password entry in
 /srv/release/PRIMARY/root/MY_HOST/etc/passwd

Do you want to use sendmail as the mailx router ? [y] <Enter>

The file "/srv/release/PRIMARY/root/MY_HOST/var/mailx/mailx.rc" has been
created.

The entry "set sendmail=/usr/lib/sendmail" has been added to file "/srv/
release/PRIMARY/root/MY_HOST/var/mailx/mailx.rc"

File: /srv/release/PRIMARY/root/MY_HOST/etc/aliases has been created from
prototype file

Do  you  want  to  edit  the  /srv/release/PRIMARY/root/MY_HOST/etc/aliases
file ? [n]  <Enter>

Executing /usr/bin/newaliases...please wait

3 aliases, longest 11 bytes, 53 bytes total

Sendmail Installation Complete

Press NEWLINE when ready to continue.. <Enter>
```

(Continued)

```
The Domain Name System provides a means to distribute management of host
information.  It can be used in place of or in conjunction with Yellow
Pages and/or the /etc/hosts file.

To install and run the domain name server on your machine you must have
data bases set up for the name server.  Chapter 5 of Setting Up and
Managing DG/UX TCP/IP explains in detail the domain name system and the
requirements to run this service.  Please read this chapter before at-
tempting to set up the domain name service on your system.

The answers to the following questions will be used to partially config-
ure your system for domain name service access.  The only files that will
be edited are /etc/resolv.conf, /etc/named.boot, and /etc/svcorder.  If
you do not want to edit these files at this time, answer no to the first
question.

Do you want to partially configure for domain name service ? [n] <Enter>

Partial Domain Name Server Installation Complete

Press NEWLINE when ready to continue...<Enter>

Deleting obsolete files......Please Wait

Processing setup scripts for package yp
Setup package yp in MY_HOST root? [yes] <Enter>

     Setting up package: yp

    Setting up the rc#.d directory links.
    Remove links in /srv/release/PRIMARY/root/MY_HOST/etc/rc#.d
    +.................................
    Link from /usr/sbin/init.d to /srv/release/PRIMARY/root/MY_HOST/etc
    +.................................

   Enter the name of the YP Domainname []: sales_domain <Enter>
                                    Substitute the name of your YP domain; then press
                                    <Enter>.

   ----    This host will first run as a YP client
   ----    Setting YP domainname to :  sales_domain

   Is the domainname correct? (y n) [n]: y <Enter>
```

(Continued)

```
    That completes the YP setup for a YP client.
--  To initiate YP services you will have to change to init level 3
--  To complete the YP setup as a YP server or master please refer
    to the ONC/NFS release notice for the release


setuppackage is finished.

#
```

(Concluded)

Your diskless OS client workstation is now ready for use.

Starting and Logging in to the DG/UX X Window System Software

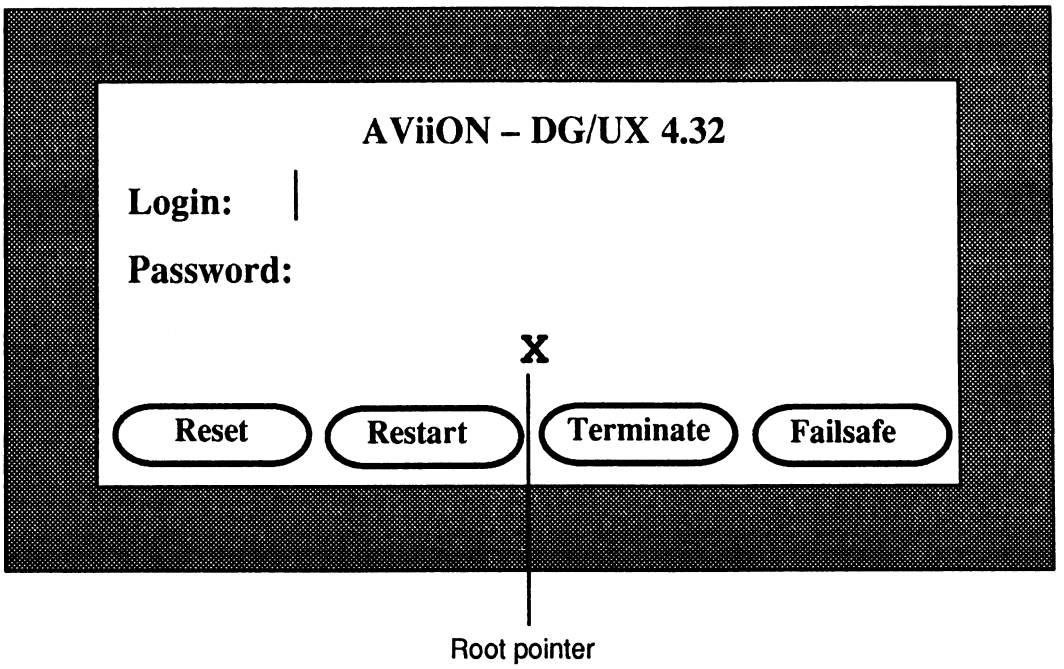
In this section, you will change the DG/UX operating level to run level 3 and then log in to the DG/UX X Window System software.

First type

init 3

and press the Enter key.

After DG/UX displays a number of screens containing initializing messages, the DG/UX X Window System login window appears when DG/UX is at run level 3. See the next sample screen.



To log in, proceed as follows.

1. Ensure that the root pointer (**X**) is positioned in the login window. If it is not, simply move the mouse across its pad until the **X** is inside the login window. See the sample screen above.

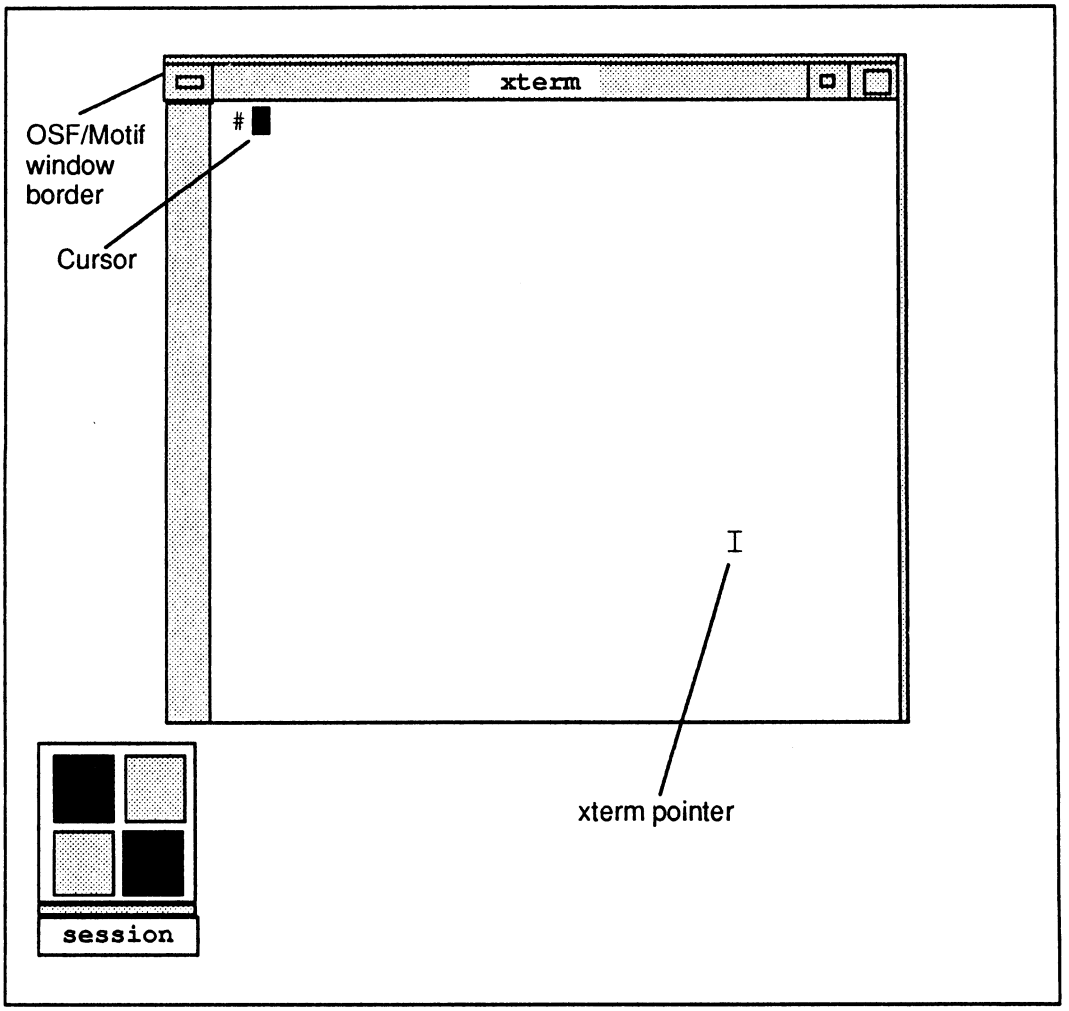
2. Type **sysadm** — the system will echo your login name as you type it, and the login cursor (|) will move one character position to the right with each character you type.

   Then press the Enter key. Immediately, the cursor moves to the right of the word "Password." See the sample screen below.

3. Because you have not as yet set a password on **sysadm**, simply press the Enter key again.

```
Login: sysadm <Enter>
Password: | <Enter>
```

Immediately the login window disappears, and the screen displays the root bitmap, a mesh pattern. Next it displays two windows: one empty and one displaying an hourglass icon. Then, after a few seconds, these windows disappear, and the screen displays two X clients in the root window: 1) a VT102 terminal emulator, displaying "xterm" in its title bar; and 2) an xsession icon, displaying "session" in its title bar. See the sample screen below.



With the xterm pointer (I) in the xterm window, this X client window is activated and the color of its OSF/Motif window border is intensified.

Notice that the Superuser prompt (#) is displayed in the xterm window. Therefore, you can use the terminal emulator running in this xterm window to perform other setup activities, such as setting passwords for **sysadm** and **root**. See the "Creating and Changing Passwords" section in Chapter 3 of this manual. Then you can continue on to the next section.

About the OS Client's File Systems

To view the file systems currently mounted on your diskless OS client, type **mount** and then press the Enter key. The DG/UX system will display a list of the mounted file systems. Notice that in addition to **/**, **/usr**, and **/srv/swap**, your system has three additional file systems mounted: **/usr/opt/aview** and **/usr/opt/X11**, which support the DG/UX X Window System software running on your diskless OS client; and **/accounts**, which provides the home (parent) directory for users of the DG/UX server and its clients.

What Else to Do and Where to Find the Information

This diskless OS client workstation is essentially ready for a user to log in. To perform other common tasks associated with managing and using your diskless OS client workstation, see Table 5–1.

Table 5–1 Common Tasks and Where to Find the Information

Task Description	Where to Find the Information
Using the DG/UX X Window System software.	*X Window System User's Guide, OSF/Motif Edition.*
Shutting down the DG/UX system on a diskless OS client workstation.	"Shutting Down the DG/UX System" section in Chapter 3 of this manual.
Adding a remote file system to a diskless OS client workstation.	"File System Management Procedures" section of *Installing and Managing the DG/UX™ System.*
Adding a remote printer to a diskless OS client workstation.	"LP System Management" section of *Installing and Managing the DG/UX™ System.*

End of Chapter

Appendix A
Starting the Installation with DG/UX Release Tapes

This appendix describes the initial part of the DG/UX server installation on AViiON computers that do not have a preloaded DG/UX system disk. In this appendix, we provide step–by–step instructions for performing the following tasks:

- Booting the stand–alone Diskman utility.
- Using Diskman to initialize and register physical disks, and to create **root**, **usr**, and **swap**.
- Loading DG/UX 4.30 software into the **root** and **usr** file systems.
- Updating the **root** and **usr** file systems with DG/UX 4.32 software.
- Booting the DG/UX 4.32 Starter System.
- Creating logical disks for the DG/UX X Window System software.
- Loading DG/UX 4.30 and DG/UX 4.32 system software packages.

To perform the above tasks, you must have the DG/UX 4.30 release tape and the DG/UX 4.32 update tape.

When you complete the procedures outlined in this appendix, your system will closely parallel a preloaded DG/UX system shipped from the factory. Then you will be ready to proceed with the remainder of the DG/UX server installation described in Chapter 2 of this manual.

Booting Stand–Alone Diskman from Tape

Begin the booting process by powering up your system. Proceed as follows.

1. Power up your system console and any other devices that are connected to your computer unit via cable; for example, a peripheral housing unit containing mass storage devices. If you have data terminal devices, such as terminals or printers, connected directly to your computer unit's rear panel or via controller boards, be sure they are set for on–line mode.

2. Power up your computer unit by moving the computer unit's ac power switch to the ON position.

   As the system hardware initializes and the computer's self–tests run, you will hear beeps and see the system display the following screen.

```
(c)Data General Corporation 1989, 1990
Model nnnn Series              nnnn means this information varies with the
                               particular AViiON computer model.
[Single/Dual] Processor
Color Graphics [8 bit]         This may not be displayed on your
                               system.
Firmware Revision nnnnnn
Keyboard Language is U.S.English
Local Ethernet address is 08:00:1B:nn:nn:nn
Initializing [n] Megabytes

Testing.....
     0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ
Passed

SCM>
```

   When your computer completes its self–test satisfactorily, you will see the message `Passed` displayed on your system console. Then the `SCM>` prompt appears.

NOTE: If your computer displays error messages or does not complete the self–test satisfactorily, stop here. See the appropriate Setting Up and Starting manual for your computer; it provides troubleshooting instructions.

3. Insert the DG/UX 4.32 update tape in your cartridge tape drive with SCSI ID number 4.

4. At the `SCM>` prompt, type the following boot command:

   NOTE: The DG/UX device name used in the command below refers to the SCSI–based cartridge tape unit, jumpered for SCSI ID 4 and connected to an integrated SCSI controller. If your AViiON system is a 5000 series or 6000 series, substitute the DG/UX device name for your SCSI–based cartridge tape drive; for example, **st(cisc(),4)**.

   b st(insc(),4)

   and press the Enter key.

   The DG/UX bootstrap program starts loading Diskman, and the beginning of the next sample screen appears.

5. Based on the system console you are using, type the device name(s) shown in bold exactly as they appear in the sample DG/UX Starter System screen. When the last `Device Name?` prompt appears, just press the Enter key.

   NOTE: If you make a typing error while entering a device name, simply press the Enter key, and retype the device name correctly when the next `Device Name?` prompt appears. Using the Backspace or Delete key will not correct a typing error in this screen.

```
Booting st(insc(),4)

DG/UX Bootstrap Release 4.31
Skipping tape file 1.

================================================

DG/UX System Release 4.32, Version Diskman
Using [n] megabytes of physical memory
Found 1 processors(s)
Processor 0 running

                DG/UX Starter System

Enter the names of the devices you will use in Common
Device Specification Format, with one name per line.
Enter just newline when done.
Examples:  sd(insc(),0) st(insc(),4) cird() st(cisc(),4)

Include duart() for servers and kbd() and grfx() for
workstations.

          If your console is a display      If your console is a keyboard
          terminal, type:                   and a graphics monitor, type:

Device Name?   duart()                      kbd() <Enter>
Device Name?   <Enter>                      grfx() <Enter>
Device Name?                                <Enter>
```

Using Diskman to Perform the Initial Installation

After the bootstrap program displays a few messages, the Diskman Main Menu appears, and item 4 "Initial Installation Menu" is displayed in reverse–video format, as shown in the next sample screen.

To perform the initial installation, proceed as follows.

1. Type 4 to select the "Initial Installation Menu," and press the Enter key.

```
                    Diskman Main Menu

1.   Physical Disk Management Menu

2.   Logical Disk Management Menu

3.   File System Management Menu

4.   Initial Installation Menu

5.   Update Installation Menu

Enter choice:  4 <Enter>
```

The Initial Installation Menu appears, and item 7 "All Installation Steps" appears in reverse–video format.

2. Type 7 to select "All Installation Steps," and press the Enter key.

```
                Initial Installation Menu

1.   Initialize Physical Disks

2.   Create the Root Logical Disk and File System

3.   Create the Swap Logical Disk

4.   Create the /usr Logical Disk and File System

5.   Load the Root File System

6.   Load the /usr File System

7.   All Installation Steps

Enter choice:  7  <Enter>
```

The beginning of several sample Initial Installation screens appears. Each sample screen leads you through one or more of the six installation steps listed in the Initial Installation Menu shown above. Be sure to type the responses shown in bold, with the exceptions as noted. Also watch for the comments that tell you to remove the DG/UX 4.32 update tape and insert the DG/UX 4.30 release tape.

```
All Installation Steps
=======================================================================

        1.  Initialize Physical Disks

Do you want to run this step?[y]  <Enter>

Enter the Physical Disk Specification in DG/UX common
format: sd(insc(),0) <Enter>
```

Substitute the DG/UX device name of the disk you are using as the system disk if different than **sd(insc(),0).**

```
Install a Disk Label on a Physical Disk
Do you want to run this step? [y]  <Enter>
Disk label already exists on disk sd(insc(),0).
Do you want to reinstall disk label? [n] y  <Enter>
```

What the system displays next depends on the type of disk you are formatting (initializing). If you are formatting a SCSI–based disk, the system will display the following:

```
Installing generic SCSI label on SCSI device.
Disk Label has been reinstalled.
```

If you are formatting an ESDI or SMD disk, the system will display the following:

```
=======================================================================

                                Disk Types

1.  6442                    ESDI                322MB
2.  6555                    ESDI                648MB
3.  6661                    ESDI                322MB
4.  6541                    SMD                 1066MB
5.  None of the Above

=======================================================================
Enter the type of disk that you have: 4  <Enter>
```

Type the selection number of your disk type; for example, **4.** *If you are formatting an unlisted disk, type* **5** *and respond to the DG/UX prompts relating to your disk drive.*

```
Disk label has been installed.

Perform Hardware Formatting on a Physical Disk
Do you want to run this step? [y]  <Enter>
WARNING: this operation will DESTROY any data on the Physical
Disk sd(insc(),0).
Do you want to continue? [y]  <Enter>
```

(Continued)

All Installation Steps (Continued)

(1. Initialize Physical Disks continued)

```
Create DG/UX System Areas on a Physical Disk
Do you want to run this step? [y]  <Enter>
WARNING: this operation will DESTROY any data on the Physical
Disk sd(insc(),0).
Do you want to continue? [y]  <Enter>

The Physical Disk sd(insc(),0) is 631053 blocks in size
```

Based on the size of your disk, the number of blocks specified above may be different.

```
Enter the number of blocks to allocate for the Remap Area:
    [189]  <Enter>
Enter the pathname of the boot.aviion file:[/usr/stand/boot.aviion]
        <Enter>
Perform Surface Analysis on a Physical Disk

Do you want to run this step? [y] n <Enter>
```

If you are formatting a Data General disk, type **n** *to this question. If you type* **y** *to this question, allow approximately 20 minutes per 100 megabytes of disk space for the system to perform this analysis.*

```
Do you want to format another Physical Disk? [n] y/n <Enter>
```

If you have a computer with a single hard disk, just press **<Enter>**. *If you have additional hard disks, type* **y** *and then press* **<Enter>**. *Diskman will repeat the steps described above.*

After all hard disks are initialized, just press **<Enter>** *to exit this procedure.*

(Continued)

All Installation Steps (Continued)

```
        2. Create the Root Logical Disk and File System

Do you want to run this step?[y]  <Enter>
Enter the Logical Disk Name: [root]  <Enter>
Enter the Physical Disk specification in DG/UX common
 format: [sd(insc(),0)] <Enter>

The Physical Disk must be registered for this operation.
Do you want to register it? [y] <Enter>
Physical Disk sd(insc(),0) has been registered.
Do you want to display the layout of this Physical Disk? [n]  <Enter>
Enter the Physical Disk Address of the starting block of the Logical
Disk Piece: [729]  <Enter>
Enter the size in blocks of the Logical Disk Piece: [40000]  <Enter>
The Logical Disk 'root' has been created.

Making a file system on logical disk 'root' . . .

Made a File System on the Logical Disk 'root'.

        3. Create the Swap Logical Disk

Do you want to run this step?[y]  <Enter>
Enter the Logical Disk Name: [swap]  <Enter>
Enter the Physical Disk specification in DG/UX common
 format: [sd(insc(),0)] <Enter>
Do you want to display the layout of this Physical Disk? [n]  <Enter>
Enter the Physical Disk Address of the starting bock of the Logical
Disk Piece: [40729]  <Enter>

Enter the size in blocks of the Logical Disk Piece:
        [50000]

The Logical Disk 'swap' has been created.
```

This is the DG/UX device name of the disk you specified as your system disk. Thus, the name displayed here may be different on your system.

Take the default by pressing the **<Enter>** *key.*

Pressing **<Enter>** *here selects the default size of the* **swap** *logical disk. If you want to increase its size, type the new number of disk blocks; for example,* ***75000****. Then press* **<Enter>**.

(Continued)

All Installation Steps (Continued)

```
        4. Create the /usr Logical Disk and File System

Do you want to run this step?[y]  <Enter>
Enter the Logical Disk Name: [usr]  <Enter>
Logical Disk Piece 1:
Enter the Physical Disk specification in DG/UX common
  format: [sd(insc(),0)] <Enter>
Do you want to display the layout of this Physical Disk? [n] <Enter>
Enter the Physical Disk Address of the starting block of Logical
  Disk Piece 1: [90729]    <Enter>
Enter the size in blocks of Logical Disk Piece 1:
         [160000]
Do you want to specify any more Pieces for this Logical
  Disk? [n]  <Enter>
The Logical Disk 'usr' has been created.

Making a file system on logical disk 'usr' ...

Made a File System on the Logical Disk 'usr'.
```

Pressing **<Enter>** *here selects the default size of the* **usr** *logical disk. If you want to increase the size of* **usr**, *type the new number of disk blocks; for example,* ***200000****. Then press* **<Enter>**.

(Continued)

All Installation Steps (Continued)

```
         5. Load the Root File System

Do you want to run this step? [y]  <Enter>

Do you want to see the names of the files being loaded? [y] n <Enter>
                                        We recommend that you answer no (n) to this
                                        prompt. "Yes" extends the load time and makes
                                        it difficult to read error messages, if present.

Enter the Logical Disk Unit Name: [root]  <Enter>
Enter the tape drive specification in DG/UX common
   format:  st(insc(),4)  <Enter>       Substitute the DG/UX device name of your
                                        cartridge tape drive, as required; for example,
                                        st(cisc(),0)
Ready to load the Root File System.

Mount the first release tape on the tape drive st(insc(),4).

         REMOVE THE DG/UX 4.32 UPDATE TAPE NOW.  Then insert the DG/UX 4.30
         release tape.  When this is done, continue on.  (In this manner, you first load the DG/UX
         4.30 software into root and usr.  Later in this appendix, you will update root and  usr by
         loading the DG/UX 4.32 software.)

Press New Line when ready to continue . . .  <Enter>

Loading . . .                           Allow several minutes for
Loading . . .                           the loading process to complete.
Loading . . .
.
.
The Root File System has been loaded.
         6. Load the /usr File System

Do you want to run this step? [y]  <Enter>

Do you want to see the names of the files being loaded? [y] n <Enter>
                                        We recommend that you answer no (n) to this
                                        prompt. "Yes" extends the load time and makes
                                        it difficult to read error messages, if present.

Enter the Logical Disk Unit Name: [usr] <Enter>
Enter the tape drive specification in DG/UX common
  format: [st(insc(),4)]  <Enter>
Ready to load the /usr File System.

Mount the first release tape on the tape drive st(insc(),4).
Press New Line when ready to continue . . . <Enter>
Loading . . .                           Allow about 20 minutes for the software
Loading . . .                           loading process to complete.
Loading . . .
.
.
The /usr File System has been loaded.
Your starter system has been installed.
Press New Line when ready to continue <Enter>
```

(Concluded)

The system again displays the Initial Installation Menu.

The DG/UX release 4.30 **root** and **usr** software is now installed.

3. At the `Enter choice:` prompt, type **^** (Shift 6), and then press the Enter key.

   The Diskman Main Menu appears.

4. Remove the DG/UX release 4.30 tape from your cartridge tape drive, and again insert the DG/UX 4.32 update tape.

   In the next few steps, you will update the 4.30 **root** and **usr** software with the 4.32 software.

5. Type **5** to select the "Update Installation Menu," and press the Enter key.

```
                    Diskman Main Menu
1.   Physical Disk Management Menu
2.   Logical Disk Management Menu
3.   File System Management Menu
4.   Initial Installation Menu
5.   Update Installation Menu
Enter choice:  5 <Enter>
```

6. Type **3** to select "All Update Steps," and press the Enter key.

```
                Update Installation Menu
1.   Update the Root File System
2.   Update the /usr File System
3.   All Update Steps
Enter choice:  3 <Enter>
```

In the next sample screen, you update the DG/UX 4.30 **root** and **usr** software with the DG/UX 4.32 software. Type the responses shown in bold.

```
All Update Steps
=================================================================

         1.  Update the Root File System

Do you want to run this step? [y]  <Enter>

Do you want to see the names of the files being loaded? [y] n <Enter>
Enter the Logical Disk Unit Name: [root]  <Enter>
Enter the tape drive specification in DG/UX common
 format: st(insc(),4) <Enter>          Substitute the DG/UX device name of your
                                       cartridge tape drive, as required.

Ready to load the Root File System.

Mount the first release tape on the tape drive st(insc(),4).
Press New Line when ready to continue . . .  <Enter>
Loading . . .
.
.
.
The Root File System has been loaded.
Press New Line when ready to continue . . . <Enter>


         2.  Update the /usr File System

Do you want to run this step [y]  <Enter>

Do you want to see the names of the files being loaded? [y] n <Enter>
Enter the Logical Disk Unit Name: [usr]  <Enter>
Enter the tape drive specification in DG/UX common
 format: [st(insc(),4)] <Enter>
Ready to load the /usr File System.

Mount the first release tape on the tape drive st(insc(),4).
Press New Line when ready to continue . . . <Enter>

Loading . . .
.
.
.
.
The /usr File System has been loaded.

Your system has been updated.
You can now boot a kernel from disk.

Do you want to return to the SCP-CLI? [y] <Enter>   The SCP-CLI in this
                                                    context refers to the SCM (System Control Monitor).
```

When the SCM> prompt appears, the DG/UX Release 4.32 update is installed. You are now ready to boot the DG/UX Release 4.32 Starter System.

7. Remove your DG/UX 4.32 tape from the cartridge tape drive, and put it and the DG/UX 4.30 tape aside. You will need them again to load DG/UX software packages.

Booting the DG/UX Starter System

Proceed to boot the DG/UX Starter System as follows.

1. At the SCM> prompt, type the following (substituting the DG/UX device name of your system disk, as required):

   b sd(insc(),0)root:/dgux.starter

   and press the Enter key.

   Immediately the DG/UX starter system begins to boot, and the beginning of the next sample screen appears.

2. Respond to the `Device Name?` prompts in the next sample screen, based on the following:

   - The system console you are using.
   - The DG/UX device names of the physical disks present in your system.
   - The DG/UX device name of the cartridge tape drive you are using to load software.

   See your Physical Disk Planning Worksheet (or the appropriate I/O device table for your computer or workstation in Chapter 1) for the DG/UX device names of the physical disk drives on your system.

```
Booting sd(insc(),0)root:/dgux.starter

DG/UX Bootstrap Release 4.31

==============================================

DG/UX System Release 4.32, Version (starter)
Using [n] megabytes of physical memory
Found 1 processors(s)
Processor 0 running

                DG/UX Starter System

Enter the names of the devices you will use in Common
Device Specification Format, with one name per line.
Enter just newline when done.

Examples:  sd(insc(),0) st(insc(),4) cird() st(cisc(),4)

Include duart() for servers and kbd() and grfx() for
workstations.
```

	If console is a display terminal, type:	*If console is a keyboard and a graphics monitor, type:*
Device Name?	**duart()**	**kbd() <Enter>**
Device Name?	**sd(cisc(),*)**	**grfx() <Enter>**
Device Name?	**st(cisc(),4)**	**sd(insc(),*) <Enter>**
Device Name?	**<Enter>**	**st(insc(),4) <Enter>**
Device Name?		**<Enter>**

Note: *Substitute the device names shown above for the disks and cartridge tape drive according to your system configuration. Notice that the asterisk in the device names* **sd(cisc(),*)** *and* **sd(insc(),*)** *means all disk drives connected to Ciprico SCSI controller 0 or the integrated SCSI controller, respectively. If you have more than one Ciprico SCSI controller in your computer, add the disk drives connected to these controllers as well; for example,* **sd(cisc(1),*)**.

When you complete this step, the system displays the following messages.

```
Using /dev/dsk/swap as swap file

** root:
No check necessary for root

Mounting /dev/dsk/root as root file system

INIT:    Boot options are:  init
INIT:    Cannot open /etc/TIMEZONE. Environment not
   initialized.

INIT:    /etc/inittab file created from
   /etc/inittab.prototype

INIT:    Checking and mounting /usr...

INIT:    /usr is now mounted

INIT:    SINGLE USER MODE
  su:    unable to access /etc/passwd

#
```

Ignore the comments about `TIMEZONE` and `passwd`.

3. At the # prompt, type

   init 1

   and press the Enter key.

   The # sign is the superuser prompt, which means you have system–wide privileges. The **init 1** command changes the DG/UX run level from level S (single–user mode) to level 1 (administrative mode).

   NOTE: If you make a typing error when entering a command, such as **init 1**, use the Delete key to erase the error. Then retype the command correctly.

4. The system displays the current date and time, and asks if the information displayed is correct. Type **y** and press the Enter key. If this information is incorrect, we will correct it in the "Changing the Date and Time" section in Chapter 2 of this manual.

   Notice that the system displays time in a 24–hour format; for example, 08:15 means 8:15 a.m. while 14:30 means 2:30 p.m.

```
chk.fsck:

chk.date:
     Current date/time: Wed June 16 08:15 EDT 1991
     Are the current date, time, and TIMEZONE correct?
                  (y n) [n]: y <Enter>

Setting up package: dgux

Initializing system database files from .proto files:
```

As several screens scroll forward, you will see messages about intializing prototype files. Watch for the prompt that appears in the sample screen below.

5. Type the responses exactly as shown in bold.

```
initialize /etc/passwd
.
.
.initialize /etc/sysadm/uucp
.
.
The following file systems are now mounted:

/dev/dsk/root on / type dg/ux (rw)
/dev/dsk/usr on /usr type dg/ux (rw
.
.
Press <RETURN> to display prompt

no_node
DG/UX Release 4.32
login:  sysadm <Enter>
DG/UX Release 4.32 AViiON
no-node
.
.
============================================================
                          WARNING
ACCESS TO AND USE OF THIS SYSTEM IS RESTRICTED TO
AUTHORIZED INDIVIDUALS!
      Data General AViiON System  DG/UX Release 4.32
============================================================
#
```

You are now logged in as **sysadm**.

Creating and Mounting Logical Disks

In this section, we use stand–among Diskman to create logical disks and file systems for the DG/UX X Window System software.

NOTE: This appendix is intended primarily to bring your system up to a state similar to a new preloaded DG/UX system. For this reason, although you may want to create other logical disks at this time, such as those for your OS clients and add–on software, this manual describes how to create and mount these logical disks in Chapter 2.

After creating the logical disks described in this section, we will mount them. Mounting a logical disk makes its file system accessible to the DG/UX system.

Creating Logical Disks for the DG/UX X Window System

In the steps that follow, we show you how to create five logical disks for your DG/UX X Window System software. Two of these logical disks (**usr_opt_X11** and **usr_opt_aview**) are required; two (**usr_opt_X11_doc** and **usr_opt_X11.lg**) are optional; and the fifth (**usr_opt_X11_Xserver**) is intended only for software developers of customized X servers.

Before proceeding further, refer to your Physical Disk Planning Worksheet. Create and mount only the logical disks for the DG/UX X Window System software that you have selected for your configuration. Skip the instructions for the logical disks that are not included in your planning worksheet.

Proceed as follows.

1. At the # prompt, type

   sysadm diskmgmt

   and press the Enter key.

   The Diskman Main Menu appears.

2. Type **2** to select the "Logical Disk Management Menu," and press the Enter key.

```
                    Diskman Main Menu

1.   Physical Disk Management Menu

2.   Logical Disk Management Menu

3.   File System Management Menu

4.   Initial Installation Menu

5.   Update Installation Menu

Enter choice: 2  <Enter>
```

The Logical Disk Management Menu appears.

3. Type 1 to select "Create a Logical Disk," and then press the Enter key.

```
                Logical Disk Management Menu

1.   Create a Logical Disk

2.   Delete a Logical Disk

3.   Display Information About a Logical Disk

4.   Copy a Logical Disk

5.   Display Information About a Logical Disk Piece

6.   Delete a Piece of a Damaged Logical Disk

Enter choice: 1  <Enter>
```

The beginning of the following sample screen appears.

4. Type the responses exactly as shown in bold, with the exceptions as noted in the next sample screen and in your Physical Disk Planning Worksheet.

   In this screen, you create the logical disk and file system for the X Window System software, called **usr_opt_X11**. Note that the "X" in **X11** is uppercase. Be sure to check your Physical Disk Planning Worksheet to determine the physical disk(s) this logical disk will reside on.

```
                    Create a Logical Disk

============================================================

Enter the Logical Disk name: usr_opt_X11 <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format: <DG/UX device name> <Enter>      Type the DG/UX
                  device name of the physical disk that will host piece 1 of
                  this logical disk; for example, sd(cisc(),2).
                  Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 105000 <Enter> If this logical disk will consist of 1
                                  piece, enter 105000, as shown. If it will
                                  consist of more than 1 piece, enter the
                                  size of piece 1 according to your Physical Disk
                                  Planning Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk? [N]               If this logical disk will consist of 1 piece,
                                  press <Enter>. If it will consist of more than
                                  one piece, type y and then press <Enter>.
                                  This script will repeat, prompting you
                                  for the DG/UX device name of the physical
                                  disk that will host piece 2 of this logical disk,
                                  and so on.

The Logical Disk 'usr_opt_X11' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'usr_opt_X11'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

5. Again type **1** at the `Enter Choice:` line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key.

   The beginning of the following sample screen appears.

   In this screen, you create the logical disk and file system for the AView graphics library, called **usr_opt_aview**.

6. Type the responses exactly as shown in bold, with the exceptions as noted in the sample screen and in your Physical Disk Planning Worksheet.

```
                    Create a Logical Disk

=========================================================

Enter the Logical Disk name: usr_opt_aview <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format: <DG/UX device name> <Enter>     Type the DG/UX
                  device name of the physical disk that will host piece 1 of
                  this logical disk; for example, sd(cisc(),2).
                  Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 8000 <Enter> If this logical disk will consist of 1
                                piece, enter 8000, as shown. If it will
                                consist of more than 1 piece, enter the
                                size of piece 1 according to your
                                Physical Disk Planning Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk? [N]             (If this logical disk will consist of 1 piece,
                                press <Enter>. If it will consist of more than
                                one piece, type y and then press <Enter>.
                                This script will repeat, prompting you
                                for the DG/UX device name of the physical
                                disk that will host piece 2 of this logical disk,
                                and so on.

The Logical Disk 'usr_opt_aview' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'usr_opt_aview'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

In steps 7 and 8, you will create the logical disk and file system for the X windows documentation supplied by Massachusetts Institute of Technology, called **usr_opt_X11_doc**. This package and the ones that follow are optional. Read ahead and install only those packages that you have configured in your

Physical Disk Planning Worksheet. If you do not plan to create logical disks for additional DG/UX X Windows software, go to step 13 now and continue on.

7. Again type 1 at the `Enter Choice:` line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key.

   The beginning of the following sample screen appears.

8. Type the responses exactly as shown in bold, with the exceptions as noted in the sample screen and in your Physical Disk Planning Worksheet.

```
                    Create a Logical Disk

==========================================================

Enter the Logical Disk name: usr_opt_X11_doc <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
         Format: <DG/UX device name> <Enter>     Type the DG/UX
                  device name of the physical disk that will host piece 1 of
                  this logical disk; for example, sd(cisc(),1).
                  Then press <Enter>.

Do you want to display the layout of this Physical
        Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
         [nnnnnn] 4000 <Enter> If this logical disk will consist of 1
                               piece, enter 4000, as shown. If it will
                               consist of more than 1 piece, enter the
                               size of piece 1 according to your Physical Disk
                               Planning Worksheet.

Do you want to specify any more Pieces for this Logical
        Disk? [N]              If this logical disk will consist of 1 piece,
                               press <Enter>. If it will consist of more than
                               1 piece, type y and then press <Enter>.
                               This script will repeat, prompting you
                               for the DG/UX device name of the physical
                               disk that will host piece 2 of this logical disk,
                               and so on.

The Logical Disk 'usr_opt_X11_doc' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'usr_opt_X11_doc'. .
.
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

In steps 9 and 10, you will create the logical disk and file system for the Looking Glass desktop manager. Notice that this package is optional. If you do not plan to install it, skip the next two steps and continue on.

9. Again, type **1** at the `Enter Choice:` line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key. The beginning of the following sample screen appears.

10. Type the responses exactly as shown in bold, with the exceptions as noted in the sample screen and in your Physical Disk Planning Worksheet.

```
                    Create a Logical Disk

=========================================================

Enter the Logical Disk name: usr_opt_X11_lg <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format: <DG/UX device name> <Enter>     Type the DG/UX
                   device name of the physical disk that will host piece 1 of
                   this logical disk; for example, sd(insc(),2).
                   Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 9000 <Enter> (If this logical disk will consist of 1
                                 piece, enter 9000, as shown. If it will
                                 consist of more than 1 piece, enter the
                                 size of piece 1 according to your Physical Disk
                                 Planning Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk?                  If this logical disk will consist of 1 piece,
                                 press <Enter>. If it will consist of more than
                                 1 piece, type y and then press <Enter>.
                                 This script will then repeat, prompting you
                                 for the DG/UX device name of the physical
                                 disk that will host piece 2 of this logical disk,
                                 and so an.

The Logical Disk 'usr_opt_X11_lg' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk 'usr_opt_X11_lg'. .
.
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

In steps 11 and 12, you create the logical disk and file system for the X server software development package, called **usr_opt_X11_Xserver** If you do not plan to install it, go to step 13 and continue on.

11. Again type **1** at the "Enter Choice:" line of the Logical Disk Management Menu to select "Create a Logical Disk." Then press the Enter key.

The beginning of the following sample screen appears.

12. Type the responses exactly as shown in bold, with the exceptions as noted in the sample screen and in your Physical Disk Planning Worksheet.

```
                    Create a Logical Disk

=========================================================

Enter the Logical Disk name: usr_opt_X11_Xserver <Enter>
Logical Disk Piece 1:
Enter the Physical Disk Specification in DG/UX Common
          Format: <DG/UX device name> <Enter>    Type the DG/UX
                  device name of the physical disk that will host piece 1 of
                  this logical disk; for example, sd(cisc(),1).
                  Then press <Enter>.

Do you want to display the layout of this Physical
          Disk? [N] <Enter>
Enter the Physical Address of the starting block of
Logical Disk Piece 1:[nnnnnn]  <Enter>

Enter the size in blocks of Logical Disk Piece 1:
          [nnnnnn] 15000 <Enter> (If this logical disk will consist of 1
                                  piece, enter 15000, as shown. If it will
                                  consist of more than 1 piece, enter the
                                  appropriate size of piece 1 according to your
                                  Physical Disk Planning Worksheet.

Do you want to specify any more Pieces for this Logical
          Disk? [N]               If this logical disk will consist of 1 piece,
                                  press <Enter>. If it will consist of more than
                                  1 piece, type y and then press <Enter>.
                                  This script will repeat, prompting you
                                  for the DG/UX device name of the physical
                                  disk that will host piece 2 of this logical disk,
                                  and so on.

The Logical Disk 'usr_opt_X11_Xserver' has been created.
Do you want to make a file system on this Logical
Disk? [Y] <Enter>

No additional information is required, but you may supply
mkfs flags and options if you wish.

Enter the flags and options you want to specify: <Enter>
Making a file system on logical disk
   'usr_opt_X11_Xserver'. . .
Press New Line when ready to continue <Enter>
```

When you complete this task, the Logical Disk Management Menu reappears.

13. At the `Enter Choice:` line of the Logical Disk Management Menu, type **q** (for quit) and press the Enter key.

```
                Logical Disk Management Menu

   1.   Create a Logical Disk

   2.   Delete a Logical Disk

   3.   Display Information About a Logical Disk

   4.   Copy a Logical Disk

   5.   Display Information About a Logical Disk Piece

   6.   Delete a Piece of a Damaged Logical Disk

   Enter choice: q  <Enter>
```

Next Diskman asks `Do you want to quit Diskman? [n].`

14. Type **y**, and press the Enter key.

Mounting Your Logical Disks

The logical disks and file systems you just created must now be individually mounted and *exported*. Exporting a file system makes it available to other DG/UX systems connected to the same network. In this manner, the DG/UX server supplies the DG/UX X Window System software to its OS and X terminal clients.

Proceed as follows:

1. At the # prompt, type

   sysadm addfsys

   and press the Enter key.

   The **sysadm addfsys** command mounts a specified logical disk on a specified directory.

   The beginning of the following sample screen appears. In this screen, we mount the **usr_opt_X11** logical disk on **/usr/opt/X11**.

2. Type the responses exactly as shown in bold. Note that the "**X**" in **/usr/opt/X11** is uppercase.

```
Mount Directory Name?  /usr/opt/X11 <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name? usr_opt_X11 <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export? [no] y <Enter>

The entry for /usr/opt/X11 has been added.

The directory /usr/opt/X11 does not exist.
Create /usr/opt/X11? [yes] <Enter>
Mount the file system?  [yes] <Enter>
#
```

The **usr_opt_X11** logical disk is now mounted on **/usr/opt/X11**.

3. At the # prompt, again type

   sysadm addfsys

   and press the Enter key.

   The beginning of the following sample screen appears.

4. Type the responses shown in bold.

```
Mount Directory Name?  /usr/opt/aview <Enter>
Is this a local file system? [yes] <Enter>
Logical disk name? usr_opt_aview <Enter>
Writeable?  [yes] <Enter>
Dump Cycle? [d] <Enter>
fsck Pass?  [1] <Enter>
Export? [n] y <Enter>

The entry for /usr/opt/aview has been added.

The directory /usr/opt/aview does not exist.
Create /usr/opt/aview? [yes] <Enter>
Mount the file system?  [yes] <Enter>

#
```

The **usr_opt_aview** logical disk is now mounted on **/usr/opt/aview**.

If you created one or more of the optional DG/UX X Windows logical disks, continue on with step 5. If not, go to the "Loading System Software Packages" section.

5. Repeat steps 3 and 4 above for the remaining logical disks. For example:

   - Mount **usr_opt_X11_doc** on **/usr/opt/X11/doc**
   - Mount **usr_opt_X11_lg** on **/usr/opt/X11/lg**.

Loading System Software Packages

In this section, you load the DG/UX system software packages in two steps: first, you load the packages on your DG/UX release 4.30 tape; second, you load the update software packages on your DG/UX 4.32 update tape.

You will notice in the following two sample screens that many software packages are loaded twice, and others are loaded once. Those loaded a second time are receiving update software.

IMPORTANT: Because DG/UX 4.32 contains a new release of the X Windows System software, do NOT load the old DG/UX X Windows packages ("X11.lg," "X11.man," and "X11") on the 4.30 tape. Load only the new DG/UX X Windows System packages on the DG/UX 4.32 update tape.

Proceed as follows.

1. Insert your DG/UX release 4.30 tape in your cartridge tape drive with SCSI ID 4; for example, **st(insc(),4)**.

2. At the # prompt, type

   sysadm makesrv

   and press the Enter key.

   You must create the **/srv** directory tree before the system will load a software package.

3. At the # prompt, type

   sysadm loadpackage

   and press the Enter key.

   The beginning of the following sample screen appears.

4. Type the responses shown in bold, with the exceptions noted by the *comments*.

   NOTE: In the following sample screen, the DG/UX system now refers to the cartridge tape drive [**st(insc(),4)** or **st(cisc(),4)**, depending on your system] as `Tape Drive 0`.

```
Running subcommand 'loadpackage' from menu 'releasemgmt',
Software Release Management

Release Area? [PRIMARY]  <Enter>
Tape Drive? [0]  <Enter>
Is the tape mounted and ready? y <Enter>

Load Package X11.lg?[yes] n <Enter>  Do NOT load this package.
Load Package X11.man?[yes] n <Enter> Do NOT load this package.
Load Package X11?[yes] n <Enter>     Do NOT load this package.

Load Package dgux.man?[yes] <Enter>  This contains the DG/UX on-line, manual pages.

Load Package dtk.man?[yes] <Enter>   This contains the Documenter's Tool Kit on-line,
                                     manual pages.
Load Package dtk?[yes] <Enter>       This contains the Documenter's Tool Kit software.

Load Package gcc.man?[yes] <Enter>   This contains the GNU C on-line, manual pages.
Load Package gcc?[yes]  <Enter>      This contains the GNU C compiler.

Load Package nfs.man?[yes] Enter>    This contains the NFS on-line, manual pages.
Load Package nfs[yes] <Enter>        This contains the NFS network software.
Load Package tcpip.man?[yes]<Enter>  This contains the TCP/IP on-line, manual pages.
Load Package tcpip? [yes] <Enter>    This contains the TCP/IP software.

List file names while loading?[yes] <Enter>
Mount Volume 1
Is the tape mounted and ready? y <Enter>

Skipping tape files 0 to 49          Allow 35 minutes for this software to load.
.
.
.
.
.
.
.
.
loadpackage is finished
#
```

When the # prompt appears on your screen, your DG/UX 4.30 software packages are loaded.

5. Remove your DG/UX release 4.30 tape. Then insert your DG/UX 4.32 update tape in your cartridge tape drive with SCSI ID 4; for example, **st(insc(),4)**.

6. At the # prompt, type

   sysadm loadpackage

   and press the Enter key.

   The beginning of the following sample screen appears.

7. Type the responses shown in bold, with the exceptions as noted by the *comments*.

```
Running subcommand 'loadpackage' from menu 'releasemgmt',
Software Release Management

Release Area? [PRIMARY]  <Enter>
Tape Drive? [0]  <Enter>
Is the tape mounted and ready? y <Enter>

Load Package X11.doc?[yes] y/n <Enter>  This contains the X Windows on-line
                                        documentation supplied by Massachusetts
                                        Institute of Technology.

Load Package X11.lg?[yes] y/n <Enter>   This contains the Looking Glass software,
                                        which is a desktop manager for the DG/UX
                                        X Window System.

Load Package X11.man?[yes] <Enter>      This contains the X Windows on-line manual
                                        pages.
Load Package X11?[yes] <Enter>          This contains the X Windows software.

Load Package Xserv.sde?[yes] y/n <Enter> This contains the X Server development
                                         software.

Load Package dgux.man? [yes] <Enter>    This contains the DG/UX on-line manual pages.
Load Package dgux.patch? [yes] <Enter>  This containss a patch for DG/UX 4.32.
Load Package gcc? <Enter>               This contains the GNU C compiler.)

Load Package nfs.man? [yes] <Enter>     This contains the NFS on-line manual pages.
Load Package nfs [yes] <Enter>          This contains the NFS network software.
Load Package tcpip.man? [yes] <Enter>   This contains the TCP/IP on-line manual pages.
Load Package tcpip? [yes] <Enter>       This contains the TCP/IP network software.

Load Package XPG3.dgux?[yes] y/n <Enter> This contains the XPG3 development
                                         software.
Load Package XPG.man3? [yes] y/n <Enter> This contains the XPG3 on-line manual
                                         pages.

List file names while loading? [yes]  <Enter>
Mount Volume 1
Is the tape mounted and ready? y  <Enter>

Skipping tape files 0 to 12          (Allow 35 minutes for this software to load.).
.
.
.
.
loadpackage is finished
#
```

When the # prompt appears on your screen, your DG/UX 4.32 update software packages are loaded.

You can remove your DG/UX 4.32 update tape from the cartridge tape drive. Be sure to store the DG/UX Release 4.30 tape and the DG/UX 4.32 update tape in a secure place so they will be available if you need them in the future.

Where to Go Next

Your system is partially installed and closely parallels the state of a new preloaded DG/UX system.

Now go to the "Creating and Mounting Logical Disks" section in Chapter 2 and continue the installation of your DG/UX system.

End of Appendix

Appendix B
Worksheets

This appendix contains the following worksheets:

- Logical Disk Planning Worksheet, Sheet 1
- Logical Disk Planning Worksheet, Sheet 2
- Physical Disk Planning Worksheet, Sheet 1
- Physical Disk Planning Worksheet, Sheet 2
- TCP/IP, NFS, and YP Worksheet for DG/UX Server
- TCP/IP, NFS, and YP Worksheet for DG/UX Clients

Logical Disk Planning Worksheet, Sheet 1

DG/UX Server Logical Disks

Logical Disk Name	Formula for Calculating Logical Disk Size	Blocks Preloaded	Blocks When Tape–Loaded
swap	If preloaded, fixed size of 50,000 blocks. If tape–loaded, (1.5 x main memory) + (optional blocks for memory–intensive applications software) = total disk blocks.	50,000	
root	Fixed size of 40,000 blocks.	40,000	40,000
usr	If preloaded, fixed size of 160,000 blocks. If tape–loaded, 160,000 (minimum) + optional **usr** blocks as required by add–on software = total disk blocks.	160,000	
usr_opt_X11	Fixed size of 105,000 blocks.	105,000	105,000
usr_opt_aview	Fixed size of 8,000 blocks	8,000	8,000
usr_opt_X11_doc	Optional logical disk. When added, fixed size of 4,000 blocks		
usr_opt_X11_lg	Optional logical disk. When added, fixed size of 9,000 blocks		
usr_opt_X11_Xserver	Optional logical disk. When added, fixed size of 15,000 blocks		
accounts	Variable size, based on number of users and users' system activity.		
var_tmp	Optional logical disk; size is application–dependent.		
srv	Fixed size of 5,000 blocks.	5,000	5,000
srv_dgux432	(Number of OS clients x 40,000 blocks/client) = total disk blocks.		
srv_swap	(Aggregate number of megabytes of memory for all OS clients x 2,048) x 1.17 = total disk blocks.		
srv_dump	(Number of megabytes of memory for 1 OS client) x 2,048) x 1.17 = total disk blocks.		
	Total Disk Blocks		

Total DG/UX System Disk Blocks

Total DG/UX Server Logical Disk Blocks	
Total Add–on Software Logical Disk Blocks (from Sheet 2)	
Total Disk Blocks	

Logical Disk Planning Worksheet, Sheet 2

Add–on Software Logical Disks		
Logical Disk Name	**Description**	**Blocks**
	Total Disk Blocks (Enter here and on Sheet 1)	

Physical Disk Planning Worksheet, Sheet 1

Logical Disk Name	Mount Point	System Disk ____ Mbytes No. Blocks	Add–On Disk ____ Mbytes No. Blocks	Add–On Disk ____ Mbytes No. Blocks
swap (on system disk)	–	1 50,000		
root (on system disk)	/	1 40,000		
usr (on system disk)	/usr	1 160,000		
usr_opt_X11	/usr/opt/X11			
usr_opt_aview	/usr/opt/aview			
accounts	/accounts			
var_tmp	/var/tmp			
srv	/srv			
srv_dgux432	/srv/release/PRIMARY/root			
srv_swap	/srv/swap			
srv_dump	/srv/dump			
Total Disk Blocks Used per Disk				
Total Disk Block Capacity per Disk				
Available Disk Blocks per Disk				

Physical Disk Planning Worksheet, Sheet 2

Logical Disk Name	Mount Point	System Disk ____ Mbytes No. Blocks	Add–On Disk ____Mbytes No. Blocks	Add–On Disk _____Mbytes No. Blocks
Total Disk Blocks Used per Disk				
Total Disk Block Capacity per Disk				
Available Disk Blocks per Disk				

TCP/IP, NFS and YP Worksheet for DG/UX Server

Description of Data	Data
Ethernet address	
DG/UX device name of LAN controller	
Hostname	
Network name	
Internet address	
Subnet status	
If subnetted, subnet mask	
Network broadcast address type: compatible with BSD 4.2 or BSD 4.3	
Name of YP domain	
YP class: **master, server, client**	

TCP/IP, NFS and YP Worksheet for DG/UX Clients

Client Hostname	Ethernet Address	Internet Address

End of Appendix

Appendix C
Formatting Add–On Disks

This appendix supplements the "Creating and Mounting Logical Disks" section of Chapter 2 of this manual. It describes how to format one or more add–on disk drives when installing the DG/UX system using a preloaded disk.

Proceed as follows.

1. At the # prompt, type

   sysadm diskmgmt

   and press the Enter key.

   The Diskman Main Menu appears.

2. Type **1** to select the "Physical Disk Management Menu," and press the Enter key.

```
                    Diskman Main Menu

 1.   Physical Disk Management Menu

 2.   Logical Disk Management Menu

 3.   File System Management Menu

 4.   Initial Installation Menu

 5.   Update Installation Menu

Enter ? or <number>? for HELP, ^ to GO BACK, or q to QUIT
Enter choice: 1 <Enter>
```

   The Physical Disk Management Menu appears.

3. Type **5** to select the "Format a Physical Disk Menu," and press the Enter key.

```
                Physical Disk Management Menu

  1.    Register, Deregister or List Registered Physical Disks

  2.    Add, Recover or Display Bad Blocks on a Physical Disk

  3.    Display a Physical Disk's Layout

  4.    Display a Physical Disk's Label

  5.    Format a Physical Disk

  6.    Copy a Physical Disk

Enter ? or <number>? for HELP, ^ to GO BACK, or q to QUIT
Enter choice: 5 <Enter>
```

The Physical Disk Formatting Menu appears.

4. Type **6** to select "All of the Above," and press the Enter key.

```
                Physical Disk Formatting Menu

  1.    Install a Disk Label on a Physical Disk

  2.    Perform Hardware Formatting on a Physical Disk

  3.    Create DG/UX System Areas on Physical Disk

  4.    Reinstall Bootstraps on a Physical Disk

  5.    Perform Surface Analysis on a Physical Disk

  6.    All of the Above

Enter ? or <number>? for HELP, ^ to GO BACK, or q to QUIT
Enter choice: 6 <Enter>
```

The system begins to display the screen for formatting a physical disk.

5. Type the responses shown in bold in the sample screen below, with the exceptions as noted in the *comments*.

```
Enter the Physical Disk Specification in DG/UX common
     format: sd(cisc(),1) <Enter>
```

Substitute the DG/UX device name of the disk you are formatting if different than **sd(cisc(),1)**.

```
Install a Disk Label on a Physical Disk
Do you want to run this step? [y] <Enter>
Disk label already exists on disk sd(cisc(),1).
Do you want to reinstall disk label? [n] y <Enter>
```

What the system displays next depends on the type of disk you are formatting (initializing). If you are formatting a SCSI–based disk, the system will display the following:

```
Installing generic SCSI label on SCSI device.
Disk Label has been reinstalled.
```

(Continued)

If you are formatting an ESDI or SMD disk, the system will display the following:

```
                          Disk Types

1.       6442             ESDI             322MB
2.       6555             ESDI             648MB
3.       6661             ESDI             322MB
4.       6541             SMD              1066MB
5.       None of the Above
```

Enter the type of disk that you have: ***4*** **<Enter>** *Type the number for your disk type; for example, type* **4**. *If you are formatting an unlisted disk, type* **5** *and respond to the DG/UX prompts relating to your disk drive.*

```
Disk label has been installed.

Perform Hardware Formatting on a Physical Disk
Do you want to run this step? [y] <Enter>
WARNING: this operation will DESTROY any data on the Physical Disk sd(cisc(),1).
Do you want to continue? [y] <Enter>

Create DG/UX System Areas on a Physical Disk
Do you want to run this step? [y] <Enter>
WARNING: this operation will DESTROY any data on the Physical Disk sd(cisc(),1).
Do you want to continue? [y] <Enter>

The Physical Disk sd(cisc(),1) is 631053 blocks in size
```

Based on the size of your disk, the number of blocks specified above may be different.

```
Enter the number of blocks to allocate for the Remap Area: [189] <Enter>
Enter the pathname of the boot.aviion file:[/usr/stand/boot.aviion] <Enter>

Perform Surface Analysis on a Physical Disk

Do you want to run this step? [y] n <Enter>
```

If you are formatting a Data General disk, type **n** *in response to this question. If you type* **y** *in response to this question, allow approximately 20 minutes per 100 megabytes of disk space for the system to perform this analysis.*

Press New Line when ready to continue . . . **<Enter>**

(Concluded)

The Physical Disk Formatting Menu reappears.

6. At the `Enter Choice:` line, either type **6** to format another disk and press the Enter key, or type **q** to quit and press the Enter key.

   If you are formatting another disk, repeat steps 5 and 6.

When you have finished formatting disks, continue to step 7.

7. At the `Do you want to quit Diskman? [n]`, type

   y

   and press the Enter key.

End of Appendix

TIPS ORDERING PROCEDURES

TO ORDER

1. An order can be placed with the TIPS group in two ways:
   a) MAIL ORDER – Use the order form on the opposite page and fill in all requested information. Be sure to include shipping charges and local sales tax. If applicable, write in your tax exempt number in the space provided on the order form.

      Send your order form with payment to:
      Data General Corporation
      ATTN: Educational Services/TIPS G155
      4400 Computer Drive
      Westboro, MA 01581–9973

   b) TELEPHONE – Call TIPS at (508) 870–1600 for all orders that will be charged by credit card or paid for by purchase orders over $50.00. Operators are available from 8:30 AM to 5:00 PM EST.

METHOD OF PAYMENT

2. As a customer, you have several payment options:
   a) Purchase Order – Minimum of $50. If ordering by mail, a hard copy of the purchase order must accompany order.
   b) Check or Money Order – Make payable to Data General Corporation.
   c) Credit Card – A minimum order of $20 is required for MasterCard or Visa orders.

SHIPPING

3. To determine the charge for UPS shipping and handling, check the total quantity of units in your order and refer to the following chart:

Total Quantity	Shipping & Handling Charge
1–4 Items	$5.00
5–10 Items	$8.00
11–40 Items	$10.00
41–200 Items	$30.00
Over 200 Items	$100.00

   If overnight or second day shipment is desired, this information should be indicated on the order form. A separate charge will be determined at time of shipment and added to your bill.

VOLUME DISCOUNTS

4. The TIPS discount schedule is based upon the total value of the order.

Order Amount	Discount
$0–$149.99	0%
$150–$499.99	10%
Over $500	20%

TERMS AND CONDITIONS

5. Read the TIPS terms and conditions on the reverse side of the order form carefully. These must be adhered to at all times.

DELIVERY

6. Allow at least two weeks for delivery.

RETURNS

7. Items ordered through the TIPS catalog may not be returned for credit.
8. Order discrepancies must be reported within 15 days of shipment date. Contact your TIPS Administrator at (508) 870–1600 to notify the TIPS department of any problems.

INTERNATIONAL ORDERS

9. Customers outside of the United States must obtain documentation from their local Data General Subsidiary or Representative. Any TIPS orders received by Data General U.S. Headquarters will be forwarded to the appropriate DG Subsidiary or Representative for processing.

TIPS ORDER FORM

Mail To: Data General Corporation
Attn: Educational Services/TIPS G155
4400 Computer Drive
Westboro, MA 01581 - 9973

BILL TO:	SHIP TO: (No P.O. Boxes - Complete Only If Different Address)
COMPANY NAME _____	COMPANY NAME _____
ATTN: _____	ATTN: _____
ADDRESS _____	ADDRESS (NO PO BOXES) _____
CITY _____	CITY _____
STATE _____ ZIP _____	STATE _____ ZIP _____

Priority Code _____ (See label on back of catalog)

Authorized Signature of Buyer (Agrees to terms & conditions on reverse side)	Title	Date	Phone (Area Code)	Ext.

ORDER #	QTY	DESCRIPTION	UNIT PRICE	TOTAL PRICE

A SHIPPING & HANDLING

☐ UPS	ADD
1–4 Items	$5.00
5–10 Items	$8.0
11–40 Items	$10.00
41–200 Items	$30.00
200+ Items	$100.00

Check for faster delivery

Additional charge to be determined at time of shipment and added to your bill.

☐ UPS Blue Label (2 day shipping)
☐ Red Label (overnight shipping)

B VOLUME DISCOUNTS

Order Amount	Save
$0–$149.99	0%
$150–$499.99	10%
Over $500.00	20%

Tax Exempt # or Sales Tax (if applicable) _____

ORDER TOTAL	
Less Discount See B	–
SUB TOTAL	
Your local* sales tax	+
Shipping and handling – See A	+
TOTAL – See C	

C PAYMENT METHOD

☐ Purchase Order Attached ($50 minimum)
P.O. number is _____. (Include hardcopy P.O.)
☐ Check or Money Order Enclosed
☐ Visa ☐ MasterCard ($20 minimum on credit cards)

Account Number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ Expiration Date ☐☐☐☐

_____
Authorized Signature
(Credit card orders without signature and expiration date cannot be processed.)

THANK YOU FOR YOUR ORDER

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
PLEASE ALLOW 2 WEEKS FOR DELIVERY.
NO REFUNDS NO RETURNS.

* Data General is required by law to collect applicable sales or use tax on all purchases shipped to states where DG maintains a place of business, which covers all 50 states. Please include your local taxes when determining the total value of your order. If you are uncertain about the correct tax amount, please call 508–870–1600.

Form 702
Rev. 8/87

DATA GENERAL CORPORATION
TECHNICAL INFORMATION AND PUBLICATIONS SERVICE
TERMS AND CONDITIONS

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