

TOPS-10
Software Installation Guide
AA-P512B-TB

April 1986

The TOPS-10 Software Installation Guide provides the system administrator, system manager, or software specialist with the information required to install the TOPS-10 software on KL or KS processors.

This manual supersedes the previous version of the manual with the same name, order number AA-PS12A-TB.

OPERATING SYSTEM:	TOPS-10 V7.03
SOFTWARE:	GALAXY V5.1

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The postpaid READER'S COMMENTS form on the last page of this document requests the user's critical evaluation to assist us in preparing future documentation.

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PREFACE

This manual describes the procedures for installing, customizing, and starting the TOPS-10 monitor. The manual includes the process of loading the default monitor, copying the programs from the distribution tapes to disk, building the monitor, starting the operating system, and creating the bootstrap tape. Procedures for installing, customizing, and starting the GALAXY batch and spooling system are also included, as well as descriptions of the various system files needed for timesharing on the TOPS-1a system. The manual describes these procedures in a step-by-step method, including the purpose of each step.

You can also use the TOPS-10 Software Installation Guide in the following situations:

- o starting the system after a shutdown or failure.
- o Changing the monitor configuration.
- o Installing a new version of the monitor or GALAXY subsystem.

This manual is meant to be used by experienced TOPS-10 software maintainers who are familiar with TOPS-10 conventions for commands and symbols. You should be able to operate the hardware components of the system being installed. For example, instructions for mounting software media (tapes, disks, DECTapes, floppies) are not documented in this manual because those procedures are documented in the TOPS-10 Operator's Guide. The following manuals are also valuable sources of information for additional reference:

TOPS-10 /TOPS-2G Batch Reference Manual for information about writing and submitting batch control files to the GALAXY batch processor.

TOPS-10 Operating System Commands Manual for information about monitor commands and conventions.

TOPS-10 Operators Command Language Reference Manual for information about the QPR program and operator-privileged commands.

TOPS-10\ MACRO Reference Manual if you intend to make changes to program source code.

TOPS-10 LINK Reference Manual for information about TOP-10's linking loader, its switches, commands, and functions.

TOPS-10 Monitor Calls Manual for in-depth information about monitor calls and monitor symbols that you may wish to modify in the monitor sources.

TOPS-10/TOPS-20 RSX-20F System Reference Manual for information about the KL system's front end processor, especially in reference to the KLINIT dialog and the PARSER commands.

TOPS-10/20 USAGE File Specification for information about the formats of the files created by the USAGE accounting system.

TOPS-10 DECnet and PSI Installation Guide for installing the DECnet-10 Version 4 software

TOPS-10 ANF-10 Software Installation Guide for building ANE-10 remote nodes.

To make the Tops-10 Software Installation Guide easier to use, some information has been relegated to appendixes. The appendixes contain alternatives to the Installation procedure and Information for modifying the monitor software.

Chapter 1, the introduction to this manual, lays out a reading path for the first-time user of this manual. Procedures for installing a TOPS-10 system vary greatly between the first-time, new installation of a system, and the installation of a new version of the monitor on a system that has been running TOPS-10. The Introduction will help you find the procedures that apply to the installation you are currently responsible for.

Chapter 2 contains worksheets that are useful when building the TOPS-10 monitor. DIGITAL Field Service personnel can help you fill out the hardware worksheet (Worksheet 1). The system manager must provide the Information for the software worksheet (Worksheet 2) and for the disk parameters worksheet (worksheet 3). Questions about software considerations can be answered by a DIGITAL Software Specialist.

Prepare for the task of installing the monitor carefully. Read the parts of this manual that you are not familiar with, and be sure to set aside plenty of time to complete the installation. If you have any problems with the information in this manual, please fill out the Reader's Comment Card provided at the back of the book, and mail it to Digital Equipment Corporation. This is an important form of feedback for improving the quality of the documentation.

CONVENTIONS

The following conventions are used in this manual, according to the definitions given here. Terms and file names are defined in the Glossary in Appendix E.

?	is used as a wildcard character in file specifications. Any character in the filespec may be replaced by a ?, thereby causing the reference to include any files with the same characters; except that any character will be accepted in place of the ?, or no character may replace the ?. For example, the filespec: DSKB:MAN???.RPT[27,5434] may be satisfied by all of the following: DSKB:MANUAL,RPT[27,5434] DSKB:MAN.RPT[27, 5434] DSKB:MANTM.RPT[27 ,5434]
*	is also used as a wildcard character in file specifications, but It replaces an entire field of the specification; that is, the file name, file extension, project number, programmer number, or SFD name. Wildcard characters are described more thoroughly In Chapter I of TOPS-10 Operating System Commands Manual.
<CTRL/x>	represents a control-character. To enter a control-character, hold down the CTRL key and press the character represented by x.
<ESC>	represents places where you press the ESCape key.
<RET>	represents places where you press the RETURN key.
bold characters	represent Input you type, in examples and procedures.
hh:mm:ss	represents time on a 24-hour clock, where hh = hours, mm = minutes, ss = seconds.
mmm-dd-yy or dd-mmm-yy	represent a date, where mmm = month, dd = day, yy year.
V#(##) VA##-## VE##-##	represent software version numbers.

CHAPTER 1

INTRODUCTION

Before you start to install the system, read the cover letter distributed with the software package, and the BEWARE file (703.BWR) that is included on the distribution tape. They contain information about last minute changes to installation procedures that could not be included in this manual.

This manual uses the following conventions to denote the different procedures for KL and KS systems:

- o Sections appropriate to only one type of processor contain the phrase (KL ONLY) or (KS ONLY) in the title.
- o Within sections, specific references are made in the text to each type of processor.

This explains procedures for installing new systems and installing a new version of the monitor on existing installations. Because of the different circumstances for the two cases, the following reading paths are suggested.

1.1 READING PATH FOR NEW INSTALLATIONS

The new system is assumed to have no data on the formatted disks; therefore, you must initialize the system and the system files. To install the new system, follow all the instructions in the following chapters that are appropriate for the type of processor (KL or KS) that you are installing:

Chapter 1: INTRODUCTION

Chapter 2: PREPARATION

This chapter helps you check the hardware to be sure that it was installed properly and is ready for software installation. It offers worksheets to help you prepare the information that you will need during installation.

Chapter 3: BOOTING THE SYSTEM

This chapter shows how to load the bootstrap monitor from tape and boot the system. For KL systems, this chapter describes booting the front-end processor as well. With this initial system, you can build the TOPS-10 monitor.

INTRODUCTION

Chapter 4: STARTING THE MONITOR

This chapter describes the ONCE-only dialog, and shows how to start the bootstrap monitor on a new installation.

Chapter 5: BUILDING THE MONITOR FILE SYSTEM

Now that the bootstrap monitor is running, you can copy the monitor, CUSPs, GALAXY system, and unbundled software into disk areas that you prepare for this purpose. You may wish to create the system's administrative control files and system program initialization files at this point as well.

Chapter 6: BUILDING THE SUPPLEMENTARY PROCESSOR'S FILE SYSTEM

The front-end processor (for KL systems) or the microprocessor (for KS systems) must be copied from the distribution media to disk. The front end must be booted from disk with the new software.

Chapter 7: BUILDING YOUR MONITOR

You can tailor the TOPS-10 monitor using the procedures in chapter 7. To tailor the monitor, run MONGEN to create new monitor configuration files, assemble and load the new software, and reload the system to start the new version of the monitor.

Chapter 8: STARTING AND TAILORING THE GALAXY SYSTEM

This chapter shows the method for starting up the GALAXY spoolers and servers. It also illustrates procedures for tailoring the GALAXY batch and spooling system to the particular needs of the installation, and contains instructions for assembling and loading the new GALAXY system.

Chapter 9 MAINTAINING THE SYSTEM AUTHORIZATION FILES

This chapter describes the REACT program, which creates the system accounting files that specify PPNs and disk usage authorization for users.

Chapter 10 CREATING SYSTEM INITIALIZATION FILES

This chapter describes the INITIA program. INITIA reads the SYSJOB.INI file to start up TOPS-10 system components automatically when the system is reloaded and the TTY.INI file to set up terminal lines.

Appendix A: ONCE STARTUP OPTIONS

This appendix describes the options to the ONCE program that define disk characteristics and start up the monitor. Most importantly, the LONG startup option is discussed here, which you should use to specify the disk parameters and system lists for the monitor.

INTRODUCTION

Appendix B: MODIFYING THE MONITOR

The procedures in this appendix allow you to modify the monitor, build the monitor library file by hand, and generate a monitor that is not completely supported by Digital Equipment Corporation. The relevant symbols, source modules, and symbol files are described briefly for the experienced TOPS-10 system installer.

Appendix D: MAKING THE DISTRIBUTION MEDIA BOOTABLE

This appendix describes the procedure for making the front-end media bootable for RSX-20F

1.2 READING PATH FOR EXISTING INSTALLATIONS

If you are installing a new version of the monitor on a system that has been running TOPS-1S, you will probably use disks with system information on them. You need not create system accounting or initialization files and you will not need to boot the bootstrap monitor from tape. However, it is necessary to restore files from tape exactly as documented in these procedures.

Before building a new monitor for the existing installation, it would be wise to make sure that the existing monitor, CUSPs, GALAXY components, and front-end file system (for Kb systems) are saved on a backup disk or tape. This allows you to fall back to a previous monitor if the new monitor is difficult to install or run.

Chapter 1: INTRODUCTION

Chapter 2: PREPARATION

Preparation for building the monitor is very important. Even experienced installers might find the checklists and worksheets in this chapter useful.

Chapter 5: BUILDING THE MONITOR FILE SYSTEM

Section 5.4 describes how to restore the monitor, CUSPs, and unbundled software from the distribution tapes. section 5.6 describes how to copy them into the appropriate disk areas.

Chapter 6: BUILDING THE SUPPLEMENTARY PROCESSOR'S FILE SYSTEM

For KL systems, you build the front-end file system and reload the front end. For KS systems, you create the microprocessor file system. Chapter 6 contains instructions for these procedures.

Chapter 7: BUILDING YOUR MONITOR

This chapter will help you customize the monitor, assemble and load the modules, and start your new monitor. It also describes how to create the system bootstrap tape of the new monitor, and the batch control files you can use to build monitors.

INTRODUCTION

Appendix B: MODIFYING THE MONITOR

The procedures in this appendix allow you to modify the monitor, to build the monitor library file by hand, and to generate a monitor that is not completely supported by Digital Equipment Corporation. The relevant symbols, source modules, and symbol files are described briefly for the experienced TOPS-10 system installer.

Appendix C: SETTING SCHEDULER PARAMETERS

This appendix explains how to use the SCDSET program to set system usage quotas, adjust scheduler parameters, update the class of all logged in jobs, and manipulate a SCDMAP.SYS file.

Appendix D: MAKING THE DISTRIBUTION MEDIA BOOTABLE

This appendix describes the procedure for making the front-end media bootable for RSX-20F.

CHAPTER 2

PREPARATION

This chapter explains the steps and precautions to take before powering up your system and beginning the installation procedure. Both KL and KS model processors are covered in this chapter.

A DIGITAL Field Service Representative will install the hardware components of your system and will run diagnostics to ensure that the hardware functions properly.

The materials you need to install the system are:

- o A supported hardware configuration (see section 2.3). The hardware characteristics should be listed for you by the Field Service Representative. To ensure that you have the hardware information that you need to install the system, prepare worksheet 1 in this chapter.
- o A disk unit that is newly formatted (for a new installation) or with plenty of free space (for an existing installation). At least 100,000 disk blocks will be required.
- o Software distribution media (tapes and disks). Each type of processor requires software that is distributed on a different set of media. The distribution package is described in the following sections.
- o A list of software components and options. Use Worksheet 2 in this chapter to record this information.
- o A list of disk parameters and search lists. Use Worksheet 3 to record this information.
- o System accounting files to record user accounts and access privileges. You create these with the REACT program (described in Chapter 9).
- o A SYSJOB.INT file or OPR.ATO file to use for automatic system startup. Chapter 10 explains how to create SYSJOB.INI file. For information on the OPR.ATO file, see the TOPS-10 Operator's Guide.

PREPARATION

2.1 TOPS-10 SYSTEM INSTALLATION MATERIALS

The following magnetic tapes are provided in the software distribution package:

- o The TOPS-10 Distribution Tape

This magnetic tape contains the bundled software for TOPS-10. The tape is written at 1600 bits-per-inch density (BPI) by the BACKUP program. It contains the following:

 - Monitor files
 - TOPS-10 ANF-10 network files
 - 703.BWR file, which describes changes to the monitor from version to version.

- o The TOPS-10 CUSP Tapes

These tapes contain the latest versions of all of the TOPS-10 monitor CUSPS and the files for the GALAXY batch and spooling system. The tapes are written at 1600 BPI by the BACKUP program. The two tapes are 1200 and 2400 feet long. The CUSP tape contains a file named CUSP.BWR, which describes changes to the programs on the CUSP tape.

- o The Customer-Supported Tape

This tape contains files that are supported by the customer base, not by DIGITAL. This tape is also written at 1600 BPI. It contains the following files,

 - customer-supported CUSP files.
 - customer-supported monitor modules.

- o The Tools Tape

This tape contains files that can be used for various purposes, as supplied. The tools are provided as is", and are not necessarily supported.

- o The Bootstrap Tape

This tape contains the TOPS-10 bootstrap monitor and related programs. The bootstrap monitor is provided to allow you to start a standard operating system used to build a customized monitor. The tape is written at 1600 SPY by the BACKUP program.

- o Unbundled Software Tapes

For each unbundled software product, magnetic tape(s) contain the software necessary for running the software. Note that unbundled options may require installation instructions that are not included in this manual because the product contains its own installation manual.

PREPARATION

2.2 FRONT-END INSTALLATION MATERIALS (KL ONLY)

The KL processor is also supplied with software for the RSX-20F front end. The front-end software is distributed on different types of media, depending on the type of system. The front end requires three DECTapes, labeled DT-A, DT-B, and DT-C or three floppy diskettes, labeled FLP-A, FLP-B, and FLP-C.

2.3 REQUIRED HARDWARE CONFIGURATIONS

The bootstrap monitor for TOPS-10 requires a minimal set of peripheral hardware. For the KL and KS systems, the required configurations are different.

For a KL processor, the minimally required configuration for the bootstrap monitor is:

- o One RH20 for disk, dual-ported between the front end and KL processor
- o One RH20 for tape
- o CTY (console terminal)

For a KS processor, the minimally required hardware configuration for the bootstrap monitor is:

- o One RH11 (UBA#1) for disk
- o One RH11 (UBA#3) for tape
- o CTY (console terminal)

After ensuring that all the materials are available to begin installation, power up the system.

2.4 POWERING UP THE SYSTEM

To power up the KL10, press the black switch on the upper control panel to the position labeled POWER ON. When the system is powered up, the light labeled POWER is on. If you have never powered up the system, refer to the TOPS-10 Operator's Guide for detailed instructions.

To power up the KS10, press the button labeled POWER. After a few seconds, when the system is powered up, the light labeled POWER comes on. The system waits 15 seconds and then tries to load the microcode from the disk on drive 0. The message BT AUTO is printed on the CTY to indicate that this operation is in progress. Because the microcode is not on the disk, the CTY continues to receive the BT AUTO message every 15 seconds, until you press CTRL/C on the CTY. CTRL/C stops the process of searching for the microcode on disk, and the prompt KS10> is printed on the CTY. chapter 3 describes procedures for loading microcode from tape.

PREPARATION

To make sure that the system is completely powered up, check the disk and magnetic tape drives for the following:

- o On the disk drive that is dual-ported between the KL and the front end, set the port controller select switch to the A/B position. If you change the port selector switch, you must spin down the pack and power up the drive (KL systems only)
- o Make sure the disk drives are powered up.
- o Make sure the magnetic tape drives are powered up.
- o Make sure the line printers are powered up.
- o Turn on the CTY(s) . Make sure each is loaded with paper and is on-line. Check the terminal setting for line speed. An LA36 terminal must be set to 300 baud. For an LA120, ask the Field Service Representative what the baud rate should be.

If a line printer, disk drive, or magtape drive is not powered up, refer to the TOPS-10 Operator's Guide for powering-up procedures. After powering up the system, you can boot the system as described in Chapter 3. But first, prepare the information you will need by following the instructions in the next section.

2.5 PREPARING INFORMATION

Before installing a new system, it is important to prepare the information that you will need during installation. Because this information is lengthy, and may come from several sources, worksheets are provided here, which you will find useful as reference during installation, and also afterwards, to record the characteristics of the system.

A Field Service Representative can provide you with the information for Worksheet 1, Hardware Configuration.

You can record the software configuration in Worksheet 2, software Configuration. The software configuration is largely the responsibility of the system manager. Information to make the necessary decisions is provided in this manual and in other documents in the TOPS-10 Software Notebook Set. Questions should be directed to a DIGITAL Software Specialist.

In addition to these, the disk system must be defined for the monitor. This is accomplished through the LONG startup option for the ONCE-only dialog (see Appendix A). You can record disk characteristics in Worksheet 3.

PREPARATION

Worksheet I
Hardware Worksheet

System name: _____ (characters maximum

CPU type (KL or KS) _____

Number of CPUs (KL only) _____

CPU Serial Numbers

CTY baud rate

CPU0: _____

CPU1: _____ (KL only) _____

CPU2: _____ (KL only) _____

CPU3: _____ (KL only) _____

Total amount of system memory (768-4096K): _____

Clock ticks (60,50) _____

=====

Tape Drives

Total number of tape drives: _____

Physical name (MTxn:)

Unit type (KL only)

(Repeat for each drive.)

=====

PREPARATION

Worksheet I (Cont.)
Disk Drives

Total number of disk drives: _____

(KL only) <u>Physical name</u>	<u>Drive type</u>	<u>Cpu number</u>	Dual-ported <u>CPU/Front end</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

(Repeat for each drive.)

=====

DTE Interface for Front Ends (KL Only)

CPUn: (Repeat the following for each CPU)

<u>DTE_#</u>	<u>Comm. Type</u>	<u>TTYs</u>	<u>LPTs (Lowercase?)</u>	<u>CDR?</u>
_____	_____	_____	_____	_____
DTE0:	RSX20F	(1-128)	(0-2/Y,N)	(Yes or No)
_____	_____	_____	_____	_____
DTE1:				
_____	_____	_____	_____	_____
DTE2:				
_____	_____	_____	_____	_____
DTE3:				
_____	_____	_____	_____	_____

=====

PREPARATION

Worksheet I (Cont.)
I/O Bus Peripherals

CPUn: (Repeat the following for each CPU)

Line printers (number) _____

LPT0: lowercase? (Yes or No) _____

LPT1: lowercase? (Yes or No) _____

LPT2: lowercase? (Yes or No) _____

=====

PREPARATION

Worksheet II
Software Worksheet

Maximum number of jobs:_____

Maximum amount of memory per job:_____

Allow locking jobs? (Y or N):_____

Minimum amount of memory for unlocked jobs:_____

Number of real-time devices:_____

Number of HPQs:_____

Number of PTYs:_____

=====

Monitor Services
User Runtime Accounting

Exclude monitor overhead?_____ (Y or N)

Use EBOX/MBOX clocks? (KL only) _____ (Y or N)

Include PI time? (XL only) _____ (Y or N)

Account verification?_____ (Y or N)

Include MSGSER_____ PSISER_____ (Y or N)

IPCF_____ ENQ/DEQ_____ (Y or N)

=====

Terminal Lines

TTY number for OPR:_____

=====

PREPARATION

Worksheet II (Cont.)
Network Connections

DECnet? (Yes or No) _____ ANF-10? (Yes or No) _____

DECnet host node number: _____ ANF-10 host node number: _____

Node name: _____ (Six characters maximum.)

ANF-10 terminals: _____ ANF-10 NV-Terminals _____

(Yes or No:)

ANF-10 card readers _____ Line printers _____

DDCMP: _____ Remote data entry: _____

Remote task-to-task: _____

Number of ANF-10 connections: _____

DECnet area number: _____

Ethernet software: _____

LATSER: _____

=====

PREPARATION

Worksheet III
Disk Parameters

File Structures (Answer the following for each file structure.)

Structure Name Units in Structure

Consecutive blocks tried on output: _____

Overdraw blocks allowed per user: _____

Private structure (Yes or No) _____

Owner PPN: _____

Amount of space for crash file: _____K

Blocks per cluster: _____ Bits per cluster count: _____

=====

Units (Answer the following for each unit.)

Unit Name Unit-id SAT Blocks SAF Blocks Swap Space

_____ _____ _____ _____ _____K

_____ _____ _____ _____ _____K

_____ _____ _____ _____ _____K

=====

CHAPTER 3

BOOTING THE SYSTEM

This chapter describes the procedure for loading the bootstrap monitor from tape and booting the system. The procedure for booting a KL system is described in Section 3.1. The procedure for booting a KS system is in Section 3.2.

3.1 BOOTING THE SYSTEM (KL ONLY)

To begin the booting procedure, mount the required media on the drives. KL systems require the front end software that is distributed on either DECTapes or floppy diskettes. The monitor, supporting CUSPS, and unbundled software are distributed on magnetic tape. The TOPS-10 Operator's Guide contains instructions for mounting Software media (DECTapes, floppy diskettes, disks, and magtapes).

For DECTapes, mount the DECTape labeled DT-A on drive 0. Mount DECTape DT-B on drive 1.

To load the front end from floppy diskette media, mount the floppy labeled FLP-A in the left-hand unit (DX0:). Mount the floppy labeled FLP-B in the right-hand drive (DX1:)

Remove the write ring from the bootstrap tape, if there is one in the reel. Mount the bootstrap tape on magtape drive 0.

You must also mount a disk pack that the system can access. Mount a properly formatted disk pack on R_Pm_x, where m is the disk unit's controller letter and x is the unit number. The drive must be dual-ported between the front end and the KL processor. The drive RPA0 is used throughout this manual.

3.1.1 Initializing the Front End (KL Only)

Set the data switches on the front-end control panel to 000007. To do this, raise the switches marked 0, 1, and 2 on the switch register to the upper position. The data switches are off when down, on when up. The control switches to the right of the data switches should all be raised. This data switch setting causes the front end to run the central processor Initialization dialog (KLINIT) , for loading and configuring central-processor memory.

Hold the ENABLE switch on, and press the SW/REG switch. Release both switches. When you press these switches, you load the front end software from floppy or DECTape and start the Initialization dialog.

BOOTING THE SYSTEM

At the CTY, type the responses in the dialog described below. Press RETURN after typing each response. You cannot type ahead; you must wait for the system to respond after you press RETURN. The dialog shown here is reproduced from a KL1091 system startup. Note that the messages printed by the system will differ slightly for KL1090 systems, but you should type the same answers to the questions, regardless of the type of KL system that you are installing.

The KL initialization dialog (KLTNIT) starts automatically, prompting for commands with KLI>. Type the commands shown here in bold characters to boot the front end. Refer to the TOPS-10/TOPS-20 RSX-20F Reference Manual for a description of the KLINIT dialog.

```
RSX-20F VE##-## hh:mm mmm-dd-yy

[SY0: REDIRECTED TO DX0:]
[DX0: MOUNTED]
[DX1: MOUNTED]
KLI -- VERSION VA##-## RUNNING
KLI -- ENTER DIALOGUE [NO,YES,EXIT,BOOT]?
KLI>YES<RET>
KLI -- KL10 S/N: 1042., MODEL B, 60 HERTZ
KLI -- KL10 HARDWARE ENVIRONMENT:
      MCA25 CACHE PAGER
      MOS MASTER OSCILLATOR
      EXTENDED ADDRESSING
      INTERNAL CHANNELS
      CACHE
```

The following question applies only to installations with MCA25 cache pager.

```
KLI -- SELECT PAGE TABLE [FILE,BOTH,0,1)

KLI>BOTH<RET>
KLI -- PAGE TABLE SELECTED: BOTH
KLI -- RELOAD MICROCODE [YES,VERIPY,FIX,NO]?
KLI>YES<RET>
KLI -- MICROCODE VERSION ### LOADED
KLI -- RECONFIGURE CACHE [FILE,ALL,YES,NO]?
KLI>ALL<RET>
KLI -- ALL CACHES ENABLED
KLI -- CONFIGURE KL MEMORY [FILE,ALL,REVERSE,FORCE,YES,NO]?
KLI>ALL<RET>

LOGICAL MEMORY CONPIGURATION
ADDRESS      SIZE      INT   TYPE      CONTROLLER
000000000    768K      4     MF20      11

KLI -- LOAD KL BOOTSTRAP [FILE,YES,NO,FILENAME]?
KLI>BOOTM<RET>
KLI -- WRITE CONFIGURATION FILE [YES,NO]?
KLI>NO<RET>

KLI -- BOOTSTRAP LOADED AND STARTED
BOOTM V#(##)

BTM>
```

BOOTING THE SYSTEM

3.1.2 Booting the Monitor (KL Only)

To the BTM> prompt, type the file specification of the monitor you are loading, followed by a switch to specify the tape drive controller name. The file specification is optional, defaulting to the following:

```
BTM>DSKB:SYSTEM.EXE[1,4)/switch<RET>
```

where /switch identifies the tape controller for the tape drive. One of the following switches may be used:

```
/TM02 or /TM03 for TU45 and TU77 tape drives.  
                For drives other than unit 0, specify /TM02:u or  
                /TM03:u, where u is the unit number.  
  
/TM10           for TU10, TU40, and TU41 tape drives.  
  
/TX01 or /TX02 for TU70, TU71, TU72 tape drives on a DX10  
                channel.  
  
/DX20           for TU70, TU71, or TU72 on a DX20 channel.  
  
/TM78:n:x      for TU78 tape drives, where n is the number of the  
                master drive (controller) and x is the number of  
                the tape drive (unit) on that controller. To  
                specify unit 0 on controller 0, you can type  
                /TM78.
```

When the system begins running, it prints the system name and invokes the ONCE-only dialog. The system name is printed on the CTY, and the ONCE-only dialog starts. The first question that ONCE asks is:

```
KL10    mmm-dd-yy
```

```
Why reload:
```

Continue to chapter 4 for information about the ONCE-only dialog. If ONCE fails to start, retry the procedure from Section 3.1.1.

3.2 BOOTING THE SYSTEM (KS ONLY)

The KS system is booted from magnetic tape. Remove the write ring from the bootstrap monitor tape and mount it on drive 0. You may use a drive other than MTA0. Refer to the TOPS-10 Operators Guide for more information.

NOTE

To boot TOPS-10 Version 7.03 on a KS system, you must use a 7.03 boot tape. Tapes and disks previous to 7.03 do not work.

Mount a formatted disk pack on disk drive 0.

BOOTING THE SYSTEM

Start the bootstrapping procedure by typing MT to the KS10> prompt on the CTY. The system then prints the BTM> prompt on the CTY.

```
KS10>MT<RET>
KS10>USR MOD

BOOTM V#(##)

BTM>
```

To the BTM> prompt, you must type the file specification of the bootstrap monitor, and a switch that specifies the tape drive controller. The file specification is optional, defaulting to the following:

```
BTM>DSKB:SYSTEM.EXE[1,4]/switch<RET>
```

where /switch identifies the controller for the tape drive. The following switches may be used:

```
/TM02 or /TM03 for TU45 and TU77 tape drives.
```

BOOTM starts the loading procedure. The ONCE-only dialog starts automatically when the monitor starts, allowing you to give the monitor the information it requires to run. The beginning of the dialog is shown in the following example:

```
KS10    mmm-dd-yy

Why reload:
```

See chapter 4 for information on running the ONCE-only dialog.

CHAPTER 4

STARTING THE BOOTSTRAP MONITOR

The ONCE program always runs at monitor startup. it provides a question and answer format, and performs a variety of functions, including:

- o Keeping a record of the reason for starting or reloading the system.
- o Checking for memory that is not available.
- o Checking for disk units that are not on line.
- o Allowing you to provide the date and time for the monitor.
- o Allowing you to specify disk and structure parameters.
- o Allowing you to specify the disk units in the system lists (the system search list, the swapping list, and the dump list).
- o Starting the monitor.

4.1 RUNNING THE ONCE-ONLY DIALOG

This chapter describes the process of starting up the bootstrap monitor using standard and default settings. ONCE contains several options to the way It can run. For complete information about ONCE, refer to Appendix A. Chapter 4 contains only the Information and procedures needed to start the bootstrap monitor on a new installation using default disk parameters.

ONCE begins by printing, on the CTY, the system name and the date that the monitor was created. The system name can be changed by running the MONGEN dialog described In Chapter 7.

The ONCE program asks the question:

Why reload:

This question is asked whenever the system is reloaded. For the purpose of installing a new system, you should answer this question with NEW. If you are upgrading to a new version of the monitor, answer with SCHED.

You can include comments to further describe your reasons by preceding the comment with a semicolon or a space. Your answer to this question is stored in the system error log file ERROR.SYS.

STARTING THE BOOTSTRAP MONITOR

If you press RETURN without typing an answer, ONCE prints a list of the possible responses and their meanings. To receive more information, type /HELP. The system prints a list of the possible responses with a brief explanation of each.

After receiving an answer to the WHY RELOAD question, the system asks for the date by printing:

Date:

Type the date in one of the following forms:

MONTH-DAY-YEAR
or
DAY-MONTH-YEAR

In this format, the year and the hyphens are optional. It is very important that you respond with the correct date. If you do not, users' files may be written with the wrong creation dates, resulting in confusion and errors. Therefore, if you type the wrong date, correct the error by reloading the monitor or, after the system starts, by using the SET DATE monitor command to change the date.

The ONCE dialog asks for the time after it receives the date.

Time:

You must type the time based on a 24-hour clock, with optional colons separating the hours, minutes, and seconds.

After receiving the time, ONCE scans memory to be sure that it is accessible. Each monitor is built for a specific amount of memory. MONGEN Question 23 allows you to specify the amount of memory when you are building the monitor. Therefore, new Installations may receive the following message, Indicating that the default monitor was built to expect more memory than that which is currently on-line.

```
%Memory from xxxxxx to yyyyyy is off-line  
Do you want it to be 1)ON-LINE, 2)OFF-LINE, or 3) Down?  
(Type #)
```

For a new installation, you should type 3, because MONGEN has not been run yet.

After the initial dialog, ONCE prompts you for a startup option by printing:

Startup option:

If you press RETURN, ONCE lists the possible startup options. If you type /HELP, ONCE lists the startup options and a brief explanation of each. Then you may choose one of the options, which are described in Appendix A. This chapter describes the procedure for starting the monitor with default disk parameters.

STARTING THE BOOTSTRAP MONITOR

The new installation has no data on the disk packs, no file structures defined, and no structures in the system lists. If you are installing a new system, you must choose either the LONG or DESTROY startup option. The LONG startup option allows you to define the disk parameters that the monitor requires. The DESTROY startup option defines the disk parameters with default values by refreshing all the units that are on line. If you use DESTROY now, as these procedures illustrate, you must run the ONCE-only dialog again at a later time, choosing the LONG startup option so that you can define the disk parameters for the specific installation.

To define disk parameters and system lists now, refer to Appendix A for instructions on the LONG startup option. For the inexperienced user, the description of the LONG dialog may be enlightening because it explains the disk parameters involved (such as file structures, system lists, and many more). In addition, a glossary is provided in

Appendix D to define terms that are exclusive to these installation procedures and programs.

To start the new installation quickly using default disk parameters, follow the procedures in Section 4.2.

4.2 BRINGING UP A NEW SYSTEM

The DESTROY option of the ONCE dialog is a powerful procedure that ensures that the disk parameters are properly defined for the monitor. If used with disks that already contain data or structure definitions, the data and structure information will be DESTROYed and rewritten with default parameters. The disks are refreshed, deleting all files on the disk, and the HOME and SAT blocks are initialized, deleting all information about the disk's place in system lists and file structures. For this reason, the ONCE program ensures that you want to perform the DESTROY option by printing a warning message before processing the DESTROY startup option. This warning is intended to prevent accidental destruction of disk data. If you are booting the monitor on an existing installation, you should use the DESTROY startup option only under informed advice.

However, when you are booting the monitor on a new installation with unused disk units and with no disk parameters set or defined, you may find this option useful for a quick startup. The monitor will set disk parameters to reasonable defaults, create file structures that are useable by the monitor, and construct system lists from the units that are on line.

When you restart the monitor at a later time, you must use the LONG startup option to change these parameters. (Refer to Appendix A for information about changing disk parameters.) However, changing disk parameters may require refreshing the disk, so you should copy any data stored on the disk to backup storage media before changing disk parameters.

STARTING THE BOOTSTRAP MONITOR

The following procedure shows the commands to type that will DESTROY current disk parameters and data, then redefine the parameters to establish default parameters.

Procedure:

```
KL10      mmm-dd-yy
```

```
Why reload:NEW<RET>
```

```
Date:mmm-dd-yy<RET>
```

```
Time:17:41:12<RET>
```

```
Startup option:DESTROY<RET>
```

```
%WARNING: All structures will be refreshed. All disk files will  
be destroyed. All information on currently spinning packs will  
be lost, Do not proceed unless you are positive that you want to  
do this.
```

```
Proceed? (Y or <CR>) Y<RET>
```

This warning helps to prevent accidental use of the DESTROY option. If your disks have data, or if your disk parameters are already defined, do not proceed. Type N or press RETURN in response to this question. ONCE will prompt you for another startup option. However, if your disks are new and the disk parameters have not been set, type Y.

When you type Y, the parameters will be set and the disks will be refreshed. When ONCE is finished with that operation, it prints the following message:

```
HOME blocks written on all units
```

If ONCE initializes new disks this way, the disk does not contain BAT blocks, and ONCE displays the following:

```
RPxn first BA? block consistency error  
RPxn second BAT block consistency error  
Do you want a list of bad regions?  
N  
Do you want to initialize the BAT blocks on this unit?  
Y  
Not normally done, are you sure?  
Y  
Initializing BAT blocks
```

STARTING THE BOOTSTRAP MONITOR

Then you have the option of starting the system:

```
Start system? (Y or <CR>) Y<RET>
```

Type Y here to start up the system. Press RETURN to enter another startup option. If you type Y, ONCE lists the file structures that it created, and allows you to log in automatically, as shown in the following example:

```
Disk file structures:
DSKB:RPA0:(ONC541)

To automatically log-in under tl.2) typo LOCiN

KL10 17:43:23

.LOGIN<RET>
```

A job is automatically started under the [1,2] PPN, allowing operator privileges. You can begin creating the TOPS-10 file system using the procedures described in Chapter 5.

The DESTROY option sets the disk parameters to defaults predetermined by the monitor. Those defaults are based on the types of disk units reported by the disk controllers, and values of the parameters are calculated by ONCE. The parameters set by ONCE and the values defaulted by the DESTROY option are listed in Table 4-1. The table shows the types of disk controllers that are recognized by ONCE, and the order in which they are characterized. The construction of file structures and system lists depends on the type of disk controllers that the installation has. For example, if the controller in the first column does not exist, ONCE configures starting at the second column, and so forth.

NOTE

The unit types in Table 4-1 are designated by controller names that are more thoroughly described in Appendix B, Table B-1.

After you start the bootstrap monitor, you can proceed to Chapter 5 to build the monitor file system.

CHAPTER 5

BUILDING THE MONITOR PILE SYSTEM

You must copy the TOPS-10 monitor and CUSPs from the distribution tapes to disk before you can customize the monitor for your installation. (A CUSP is a system program that provides important functions for the user. "CUSP" stands for Commonly Used System Program.) This chapter describes that procedure for both the KL and KS systems.

For a new installation, first restore the BACKUP program from the bootstrap monitor tape. You mounted this tape before running ONCE. The tape drive is identified to the monitor for your job using the following monitor command. On the CTY, type the following:

```
.ASSIGN MTA0: TAPE:<RET>
```

```
MTA000 assigned
```

This command assigns the name TAPE to the tape unit MTA0. If the distribution tape is on a different tape drive, use the correct physical device name. (For existing systems already running GALAXY, ensure that the tape is not available to MDA, using the OPR command SET TAPE-DRIVE.)

For a new KL system, you must allocate space on disk for the front-end file system by following the procedure below.

For a new KL or KS system, you must restore BACKUP from the tape, and then use BACKUP to restore the bootstrap monitor. Therefore, a new installation on a KL must include procedures in Sections 5.1, 5.2, and 5.3. A new installation for a KS must include procedure in Sections 5.2 and 5.3. An existing KS installation requires the procedure in Section 5.4. Continue at Section 5.5 after performing these procedures, if necessary.

BUILDING THE MONITOR FILE SYSTEM

5.1 ALLOCATING DISK SPACE FOR THE FRONT END (KL ONLY)

For a new KL installation, you must restore a file that is used to allocate space on disk that is needed to store the front-end file system.

```
.GET TAPE:FEFILE<RET>  
Job setup
```

NOTE

This command may result in an error message of the form:

```
?Transmission error
```

If a transmission error occurs, reposition the tape to make another attempt to obtain the FEFILE program. Push the rewind button on the tape drive, and type the GET command twice as shown below:

```
.GET TAPE:FEFILE<RET>  
Job setup  
.GET TAPE:FEFILE<RET>  
Job setup
```

When the FEFILE job is set up, use the following procedure to allocate space on a disk unit for the file system:

```
.START<RET>  
  
DISK UNIT NAME:RPA0:<RET>  
  
SIZE OF FILE TN BLOCKS (<CRLF> GIVES DEFAULT OF 2000):<RET>  
  
[2008 DATA BLOCKS ALLOCATED TO FE.SYS]  
[FE.SYS AREA STARTS AT LOGICAL BLOCK 2301.]  
[FRONT END FILE CREATED. HOM BLOCKS WRITTEN]
```

This procedure assumes that the front-end file system will be stored on the disk unit RPA0. You may specify any physical disc unit for RPA0, but the disk must be dual-ported between the front end and the KL, and must be of the RP04 or RP06 drive type. There may be a delay before the front end completes this operation.

Next restore the BACKUP program.

BUILDING THE MONITOR FILE SYSTEM

5.2 RESTORING BACKUP FROM TAPE

For new KL and KS systems, you must restore BACKUP from the bootstrap tape. To accomplish this, type the commands in the following procedure:

```
.GET TAPE: BACKUP<RET>
Job setup
.SAVE BACKUP<RET>
BACKUP saved
.RUN BACKUP(RET>
/
```

The / sign is the BACKUP prompt, indicating that BACKUP is running and is ready to accept BACKUP commands. The following procedure illustrates the commands you need to restore the monitor and its supporting software. The BACKUP program is discussed in the TOPS-10 Operator's Guide. This manual shows only the commands you need to type to restore the monitor and its supporting software from tape.

5.3 RESTORING THE BOOTSTRAP MONITOR

Although the bootstrap monitor is residing in memory, you must copy it to disk as well. Use the following procedure to restore the bootstrap monitor to disk.

Procedure for new KL Systems:

```
/TAPE TAPE:<RET>
/SUPERSEDE ALWAYS<RET>
/RESTORE SYS:*. *<RET>
"DONE
/
```

Procedure for new KS Systems:

```
/TAPE TAPE:(RET>
/SUPERSEDE ALWAYS<RET>
/INTERCHANGE<RET>
/RESTORE SYS:=*. *<RET>
"DONE
/RESTORE DEC:*. *<RET>
"DONE
```

To unload a tape from a KL or KS system, type the following command:

```
/UNLOAD TAPE:<RET>
[MTA000: Read(C/H/S) 7202000/0/0)
```

This command rewinds the tape and unloads it. Remove the tape from the drive. Section 5.5 describes how to restore the files from the other distribution tapes.

BUILDING THE MONITOR FILE SYSTEM

5.4 RESTORING KS MICROPROCESSOR FILES

Existing KS installations require some of the files from the bootstrap tape. These files are not compatible with previous versions and are required for building the microprocessor file system.

The following commands allow you to restore only the necessary files for upgrading a KS microprocessor file system.

Procedure for existing KS systems:

```
/TAPE TAPE:<RET>
/SUPERSEDE ALWAYS<RET>
/INTERCHANGE<RET>
/RESTORE DEC:SMFILE.EXE<RET>
"DONE
/RESTORE DEC:T10KL.ULD<RET>
"DONE
/RESTORE DEC:=KSBOOT.EXE<RET>
"DONE
/UNLOAD TAPE:<RET>
[MTA000: Read(C/H/S) = 7752000/0/0]
```

Remove the tape from the drive and proceed with the instructions in Section 5.5.

5.5 RESTORING THE FILES FROM TAPE TO DISK

For all types of installations, you must restore files free, the tapes.

To restore files from tape to disk, you must mount, restore, unload and dismount each tape. You may restore the tapes in any order, unless otherwise noted in the cover letter included with the specific tape.

The TOPS-10 distribution tape contains the software for the monitor and ANF-10, stored in two save sets.

The procedures in this manual use DSKB as the structure to which the files will be copied, and the area [10,7] for the directory area. To restore files into a different area or to a different file structure, substitute the correct names for the names used here. Note, however, that the area [1,4] is reserved for ersatz device SYS, from which system programs are run. Do not substitute another directory area for [1,4]. The BACKUP program recognizes the ersatz device name DEC as SSL:[10,7], therefore the procedures in this manual use the device name DEC to represent DSKB:[10,7].

BUILDING THE MONITOR FILE SYSTEM

The following procedure shows how to restore files from the distribution tape and from any unbundled software tapes, such as the DECnet or MPE tape.

1. Mount the distribution tape.
2. Type the following commands to restore the files:

```
/TAPE TAPE:<RET>
/REWIND<RET>
/SUPERSEDE ALWAYS<RET>
/PROTECTION 155<RET>
/SSNAME ALL<RET>
/RESTORE DSKB:[10,7,* ,* ,* ,* ,*]=DSKB:* .[* ,* ,* ,* ,* ,*]<RET>
!10,7 DSKB
"DONE
/UNLOAD TAPE:<RET>
[MTA000: Read(C/H/S) = 7752000/0/0]
```

3. Dismount the distribution tape.
4. Do not exit from BACKUP.

5.5.1 Restoring Tapes Manually

You must restore the DECnet tape, the CUSP tape, and the TOOLS tape into the build area. To restore the DECnet tape, use the procedure described in Section 5.5. You can use BACKUP command files supplied on the tapes to restore the DECnet, CUSP, and TOOLS tape. This procedure is described in Section 5.5.2.

To restore the CUSP tape, the customer-supported tape, and the TOOLS tape (if you wish), you must include the /INTERCRANGE command as shown in the following command sequence:

```
/TAPE TAPE:<RET>
/REWIND<RET>
/INTERCHANGE<RET>
/SUPERSEDE ALWAYS<RET>
/PROTECTION 155<RET>
/SSNAME ALL<RET>
/RESTORE DSKB:[10,7]=* .*<RET>
"DONE
/UNLOAD TAPE:<RET>
[MTAS00: Read(C/H/S) = 7752000/0/0]
```

After the files are on disk, create the TOPS-10 disk file system. To do this, create the system directories and copy the appropriate files into each directory. For a new installation, define the system directories, as illustrated in section 5.6. For an existing installation, proceed to Section 5.7.

BUILDING THE MONITOR FILE SYSTEM

5.5.2 Restoring Tapes Using Command Files

You can automate the procedure of installing the remaining tapes, for an existing installation.

The CUSP tape, DECnet tape, and TOOLS tape each include a corresponding BACKUP indirect command file. The command file can be used to restore the files from the tape, copying each file directly into its appropriate UFD or SFD. When you use the supplied indirect command files, BACKUP does not store the files into the build area (DEC) used in the manual procedure (described in Section 5.5.1).

Each file is stored on the tape for which it can be used:

- o The CUSP tape contains CUSPS.RST.
- o The DECnet tape contains DECNET.RST.
- o The TOOLS tape contains TOOLS.RST.

If you use these indirect command files, you can skip the manual procedures documented in Sections 5.5.1, 5.6, and 5.7. When you are upgrading software on an existing system, be sure to check the commands in the indirect command file before you execute it; adjust ersatz device references to apply to the directories used in the existing system.

For example, use the following procedure to restore the DECnet indirect command file and use it to install DECnet on a new system. Mount the DECnet distribution tape and type the following commands to BACKUP:

```
/TAPE TAPE:<RET>
/REWIND<RET>
/INTERCHANGE<RET>
/SUPERSEDE ALWAYS<RET>
/PROTECTION 155<RET>
/SSNAME ALL<RET>
/RESTORR DSK:DSKB:DECNET.RST<RET>
"DONE
/
```

This restores DECNET.RST to your disk area. Use the same command procedure to restore TOOLS.RST or CLISPS.RST from the appropriate tape.

Examine the ersatz device names in the Indirect command file, checking them against existing directories to ensure that you will not supersede necessary files. When the Indirect command file is correct, run BACKUP. To execute the DECNET.RST file, type the following commands:

```
.R BACKUP<RET>
/@DECNET.RST<RET>
```

5.6 CREATING THE TOPS-10 SYSTEM DIRECTORIES

The TOPS-10 monitor requires certain disk directories from which it can access support programs and CUSPs. If you are installing a new system, you must create these directories on disk, then copy the files from the DSKB: [10,7] area to those directories. The monitor recognizes the ersatz device name DEC as t10,7]. Therefore, the device name DEC is used in the following procedures.

BUILDING THE MONITOR FILE SYSTEM

The program that creates directories is CREDIR. The CREDIR program is described in the TOPS-10 User Utilities Manual. Only the commands you need to complete this procedure are demonstrated below.

In the following procedure, the ersatz device, names recognized by the monitor are used to create the appropriate directories for storing monitor files. Each ersatz device name results in a directory area with the standard PPN that the monitor reserves for that purpose. A directory for the specified PPN will be created on each file structure in the system search list, unless you specify otherwise.

The ersatz device names used in this manual are defined as follows:

PPN	Name	Use
---	----	---
[10,7]	DEC:	Field image files
[1,4]	SYS:	System library
[2,5]	HLP:	HELP files
[5,14]	DOC:	DOC files
[5,11]	REL:	REL files
[5,17]	UNV:	MACRO universal files
[1,7]	ACT:	Accounting daemon files

Use the following commands to create the ersatz directories. The directory areas will be created on each file structure in the system search list. CREDIR will report on each directory it creates on each file structure. In this example, DSKB is the only file structure in the system search list.

```
.RUN DEC:CREDIR<RET>

Create directory:HLP:<RET>
  Created DSKB0:[2,5].UFD/PROTECTION,775

Create directory:DOC:<RET>
  Created DSKB0:[5,14].UFD/PROTECTION,775

Create directory:REL:<RET>
  Created DSKB0:[5,11].UFD/PROTECTION,775

Create directory:UNV: (RET)
  Created DSKB0:[5,17].UFD/PROTECTION:775

Create directory:ACT:<RET>
  Created DSKB0:[1,7].UFD/PROTECTION:775

Create directory:<CTRL/C>
```

This procedure creates the directories needed to store the TOPS-10 files.

BUILDING THE MONITOR FILE SYSTEM

5.7 COPYING THE FILES INTO DIRECTORIES

This section explains how to copy the files from DEC into the appropriate directories.

For a new installation, you must use PIP to copy the COMPIL and PIP programs from the DEC area to SYS. Afterwards, you can use the COPY command to copy the rest of the files from DEC into their appropriate areas.

```
.RUN DEC:PIP<RET>
*SYS:/X=DEC:COMPIL.EXE,DEC:PIP.EXE<RET>
*<CTRL/Z>

.COPY SYS:<055>=DEC:*.EXE<RET>

.COPY SYS:<055>=DEC:*.RAM,DEC:*.VPU,DEC:DDT.REL,DEC:JOB DAT.REL<RET>

.COPY SYS:<055>=DEC:OVLAY.REL,DEC:TECO.ERR<RET>

.COPY HLP:<055>=DEC:*.HLP<RET>

.COPY DOC,<055>=DEC:*.DOC<RET>

.COPY REL:<055>=DEC:*.REL<RET>

.COPY UNV:<055>=DEC:*.UNV<RET>
```

For a new Installation, you must also copy the following files:

```
.COPY SYS:<055>=DEC:SYSTEM.CMD<RET>

.COPY SYS:<055>=DEC:*.SYS<RET>

.COPY SYS:<055>=DEC:*.INI<RET>
```

For KL systems, also copy the following files as shown:

```
.COPY SYS:=DEC:DXMCA.ADX,DEC:DXMPA.A8,DEC:DXMCD.ADX<RET>

.COPY SYS:=DEC:KNICOD.BIN,DEC:FEUIC.TXT<RET>
```

For KS systems, copy the following files as shown:

```
.COPY SYS:DEC:T10KL.ULD,KSBOOT.EXE,SMFILE.EXE<RET>
```

If you have not yet read the beware files, read them now. To find out what .BWR files are available, type the following:

```
.DIR *.BWR[10,7,*,*,*,*,*]
```

For an existing installation, use the PRINT command to print all the files listed by the DIR command on the line printer. For new installations, GALAXY is not running, but you can display the files on your terminal using the TYPR command. Be sure to read all the files listed by the DIR command.

BUILDING THE MONITOR FILE SYSTEM

5.8 USING SYSTEM FILES

The SYS: area includes several sample system files. The monitor uses these to create user accounts and to initialize system programs. After you complete the procedures in chapter 6, 7, and 8 you can tailor these files to your installation.

- o ACTDAE.SYS

This is the system's accounting file. It records the PPNs, passwords, access information, and disk quotas for users and operators. Without the ACTDAE.SYS file, no one (users or operators) can log in.

- o SYSJOB.INI

This file automatically starts the following system jobs: ACTDAE, DAEMON, FILDAE, QUASAR, PULSAR, CATLOG, ORION, BATCON, LPTSPL.

- o SYSTEM.CMD

This file can be read by OPR to automatically start batch and spooling processes for GALAXY (refer to Chapter 8).

- o TTY.INI

INITIA reads this file and initializes the CTY and TTY STOMPER functions.

Next you create the file system for the front end (for KL systems) or the microprocessor (for KS systems). Chapter 6 describes these procedures.

CHAPTER 6

BUILDING THE SUPPLEMENTARY PROCESSORS FILE SYSTEM

Each type of processor (KL and KS) is supported by another processor. The KL processor uses a PDP-11 front end for I/O, which requires space on disk for its software. The KS system has a microprocessor that also requires disk space for storage. This chapter explains the procedure for creating those disk file systems. Section 6.1 explains the procedure for building the front-end file system for KL systems. Section 6.2 explains the procedure for building the KS microprocessor file system.

6.1 BUILDING THE FRONT-END FILE SYSTEM (KL ONLY)

For existing installations, where modifications have been made to the front-end software, you should copy the current front-end file system to a backup disk area to resolve those modifications with the new version of the front end.

To build the front-end file system, you must load the front end from the front-end media, which you mounted using the procedures in Chapter 3.

The following procedures assume that the front-end file system will be stored on DSKB, mounted on RPA0. In fact, you can use any structure by replacing DB0 in the commands with DBn, where n is the unit number in RPxn. make sure that the disk unit is write-enabled and is dual-ported between the front end and the KL.

KL systems may have more than one CPU by implementing Symmetric Multi-Processing (SMP) . In a multiple-CPU system, each CPU has a front end, each front end requiring its own file system. Follow the procedures in either Section 6.1.1 or 6.1.2 (depending on the type of front-end distribution media) then follow the procedures in Section 6.1.3 for each front end, using the CTY attached to the appropriate front end.

BUILDING THE SUPPLEMENTARY PROCESSORS FILE SYSTEM

6.1.1 Loading the Front End from DECTape (XL only)

With the DECTapes loaded, be sure that the switches on the DECTape drive are set to the correct positions. DECTape drive 0 (DT0) should have the DECTape labeled DT-A mounted, with the unit selector switch set to 0. The LOCAL/REMOTE switch should be set to REMOTE, and the READ/WRITE switch should be set to WRITE-enable.

DT1 (the second DECTape drive) should have the DECTape labeled DT-B mounted, with the unit selector switch set to 1, the LOCAL/REMOTE switch set to REMOTE, and the READ/WRITE switch set to WRITE-enable.

You invoke the command parser when you type CTRL/\ (control-backslash) on the CTY. This control character is not echoed, but the parser responds with the prompt, PAR).

NOTE

If you make an error at any time during your dialog with the front-end parser, type CTRL/Z followed by CTRL/. The parser prompt will be printed, and you can retype the command.

DECTape files are difficult to access; therefore, the response from some of the following commands may be tedious. Allow at least 45 minutes to complete the procedure of copying files from DECTape.

The PAR> prompt indicates that the front-end command parser is ready to accept commands. Type the SET CONSOLE MAINTENANCE and RESET commands to the parser to ensure that the KL is not running. This procedure is demonstrated below:

```
<CTRL/\>
PAR>SET CONSOLE MAINTENANCE<RET>
CONSOLE MODE: MAINTENANCE
PAR>RESET<RET>
PAR#
```

Next, set the data switches on the front end to 000003, with the first two switches (0 and 1) raised and the rest off. Then hold the ENABLE switch on, and press the SW/REG switch at the same time. The front end prints its software name and date and the location of the front-end software. Type another CTRL/\ to contact the parser again. The following procedure demonstrates the parser dialog:

```
RSX-20F VA##-## hh:mm dd-rmm-yy
[SY0: REDIRECTED TO DT0:]
[DT0: MOUNTED]
[DT1: MOUNTED]
<CTRL/\>
PAR#
```

Note that, although CTRL/\ is shown here, it is not echoed on the CTY.

BUILDING THE SUPPLEMENTARY PROCESSORS FILE SYSTEM

Now start the front-end initialization program and initialize the front end:

```
<CTRL/\>

PAR#MCR INI<RET>
INI>DB0:<RET>
```

The INI program does not prompt when initialization is complete, but it issues an extra carriage return. When you see that the lights on the drive panel are not flashing, type CTRL/\ to contact the parser. Start the mount program (to logically mount the disk unit on which the front end file system will reside) by typing the following commands:

```
<CTRL/\>

PAR#MCR MOU<RET>
MOU>DB0:<RET>

MOU -- MOUNT COMPLETED
MOU><CTRL/Z>
```

Start the UFD program to create the directory for the front-end file system. Type the following commands:

```
<CTRL/\>

PAR#MCR UFD<RET>
UFD>DB0:[5,5]<RET>
```

The UFD program does not prompt the CTY when it is finished, but it issues an extra carriage return. You must press CTRL/\ to invoke the parser. The front end uses the PDP-11 PIP program for copying files. Use the following command to run PIP:

```
<CTRL/\>

PAR#MCR PIP<RET>
PIP>
```

Use the following commands to copy files from the DEctape to disk. The .TSK files are copied to disk first, then the system structure is redefined from DEctape to disk.

```
PIP>DB0:=DT0:F11ACP.TSK,PARSER.TSK,DT1:PIP.TSK<RET>
PIP><CTRL/Z>

<CTRL/\>
PAR#MCR RED<RET>
RED>DB0:=SY0:<RET>
<CTRL/\>
```

BUILDING THE SUPPLEMENTARY PROCESSORS FILE SYSTEM

The PIP program is used to copy all the files from DECTape to disk. This may take 25 minutes to complete. After you copy the files, list the directory of all the files in SY0. When PIP prompts again, exit and start the SAV program to write the front-end monitor to SY0 (defined as DB0:[5,5]) . The DECTapes and disk are logically dismounted automatically. PIP will print warning messages about the files that already exist, but you may ignore these messages.

```
PAR#MCR PIP<RET>

PIP>DB0:=DT0:,DT1:<RET>
PIP>DB0:/LI<RET>
PIP><CTRL/Z>
<CTRL/\>

PAR#SET CONSOLE OPERATOR<RET>
PAR#MCR SAV<RET>
SAV>SY0:/WB<RET>

[DB0: DISMOUNTED]
[DT0: DISMOUNTED]
[DT1: DISMOUNTED]
```

Now copy the files from the third DECTape to the disk area. Remove the mounted DECTapes from drives 0 and 1, and mount the DECTape labeled DT-C on drive DT0. Type the following commands on the CTY:

```
<CTRL/\>
PAR#MCR MOU<RET>
MOU>DT0:<RET>

MOU -- MOUNT COMPLETE
MOU><CTRL/Z>

<CTRL/\>

PAR#MCR PIP<RET>
PIP>DB0:=DT0:<RET>
```

All the files on the third DECTape (mounted on drive DT0) will be copied to the disk (DB0).

To get a directory of all the files now existing on DB0, type the following command:

```
PIP>TT:=DB0:/LI<RET>
```

Then type (CTRL/Z) to exit from PIP and dismount the DECTape, using the following commands:

```
PIP><CTRL/Z)

<CTRL/\>

PAR#MCR DMO<RET>
DMO>DT0:<RET>
DMO -- DISMOUNT COMPLETED
DMO><CTRL/Z)

<CTRL/\>
```

Remove the DECTape from the drive.

You can now boot the RSX-20F front end from the disk. This procedure is described in section 6.1.3.

BUILDING THE SUPPLEMENTARY PROCESSOR'S FILE SYSTEM

6.1.2 Loading the Front End from Floppies (KL only)

If the front end is distributed on floppies, the first two floppies (FLP_A and FLP-B) should be mounted from the procedures described in Chapter 3.

Type a control-backslash (CTRL/\) on the CTY. This character does not echo, but the parser prints the parser-ready prompt, PAR).

NOTE

If you make an error at any time during your dialog with the front-end parser, type CTRL/Z followed by CTRL/\. The parser prompt is printed and you can retype the command.

Type the following commands to the parser to ensure that the CPU is halted:

```
<CTRL/\>
PAR>SET CONSOLE MAINTENANCE<RET>
CONSOLE MODE: MAINTENANCE
PAR>RESET<RET>
PAR#
```

Set the data switches on the front end to 000003 (all the switches off except switches numbered 0 and 1). Holding the ENABLE switch on, press the SW/REG switch at the same time.

The front end prints its system name, which will look similar to the following example. Type another CTRL/\. and start the initialization program (INI). Type the device name DB0 to the INI> prompt. The following procedure shows you what to type:

```
RSX-20F VA##-## hh:mm dd-mmm-yy
[SY0: REDIRECTED TO DX0:]
[DX0: MOUNTED]
[DX1: MOUNTED]
<CTRL/\>
PAR#MCR INI<RET>
INI>DB0:<RET>
```

The INI program does not prompt when the operation is complete, but issues an extra carriage return. When you see the lights on the disk drive panel stop flashing, you can press CTRLA to invoke the parser. The next program to run is MOUNT, to logically mount the disk drive (DB0). Then run the UFD program to create the directory for the front-end file system. Use the following commands:

```
<CTRL/\>
PAR#MCR MOU<RET>
MOU>DB0:<RET>
MOU -- MOUNT COMPLETE
MOU><CTRL/Z)
```

BUILDING THE SUPPLEMENTARY PROCESSOR'S FILE SYSTEM

The UFD program does not prompt when the operation is complete, but issues an extra carriage return. You must press CTRLA to invoke the parser. Run the UFD program next, to create a directory area for the front end files.

```
<CTRL/\>

PAR#MCR UFD<RET>
UFD)DB0:[5,5]<RET>
```

Exit to the parser and run the PIP program to copy the front-end files to disk.

```
<CTRL/\>

PAR#MCR PIP<RET>
PIP>DB0:=DX0:,DX1:<RET>
```

(It may take up to 10 minutes for the files to be copied from the floppies (DX0 and DX1) to disk (DB0).)

You must run the REDIRECT program to change the system search area (SY0) from the floppies to disk. Then save the files with the SAV program. Use the following procedure:

```
PIP><CTRL/Z)
<CTRL/\>

PAR#MCR RED<RET>
RED>DB0:=SY0:<RET>

<CTRL/\>

PAR#SET CONSOLE OPERATOR<RET>

PAR#MCR SAV<RET>
SAV>SY0:/WB<RET>

[DB0: DISMOUNTED]
[DX0: DISMOUNTED]
[DX1: DISMOUNTED]

RSX-20F V##-## hh:mm dd-mn-yy

[SY0: REDIRECTED TO DB0:]
[DB0: MOUNTEDI
```

Now you can copy the files from the third floppy to the disk area.

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First, remove the floppies from drives 0 and 1 and mount the floppy labeled FLP-C in drive 0. Type the commands in the following procedure:

```
<CTRL/\>

PAR#MCR MOU<RET>
MOU>DX0:<RET>

MOU -- MOUNT COMPLETE
MOU><CTRL/Z>

<CTRL/\>

PAR#MCR PIP<RET>
PIP>DB0:=DX0:<RET>
```

All of the files from the third floppy (mounted on drive DX0) will be copied to the disk (080). You can get a directory of all the files by typing the following command:

```
PIP>TT:=DB0:/LI<RET>
```

Type CTRL/Z to exit from PIP. Finally, you must logically dismount the floppy drive using the DMO program. Type the following commands:

```
PIP>(CTRL/Z>
<CTRL/\>

PAR#MCR DMO<RET>
DMO>DX0:<RET>
DMO -- DISMOUNT COMPLETED
DMO><CTRL/Z>

<CTRL/\>
```

Remove the floppy from the drive. Now you are ready to boot the front end from the disk area.

6.1.3 Booting the Front End from Disk (KL Only)

The front end should now be booted from the disk area. To initiate the load, hold the ENABLE switch on and press the DISK switch at the same time, on the drive control panel. The following is the output when the front end is loaded.

```
RSX-20F VA##-## hh:mm dd-mmm-yy

[SY0: REDIRECTED TO DB0:]
[DB0: MOUNTED]

KLI -- VERSION VA##-## RUNNING
KLI -- MICROCODE ### LOADED
KLI -- ALL CACHE ENABLED
LOGICAL MEMORY CONFIGURATION
ADDRESS      SIZE      INT    TYPE      CONTROLLER
00000000    768K         4      MF20      11
KLI -- CONFIGURATION FILE WRITTEN
KLI -- BOOTSTRAP LOADED AND STARTED
BOOT V#(##)

BOOT>
```

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You can load the monitor by typing commands to the BOOT program. To load the default monitor (the bootstrap monitor, appropriate for new installations) , just press RETURN to the BOOT prompt. The default file name is DSKB:SYSTEM.EXE[1,4]. To load a different monitor, type the file name of the monitor to the BOOT prompt, taking care to include the structure name and the complete directory specification.

The ONCE dialog begins automatically. The startup options are described in Appendix A. For a quick startup, use the QUICK startup option. To define the disk parameters required by the monitor, use the LONG startup option.

If you are installing a multiple-processor KL, repeat the procedures in Sections 6.1.1 through 6.1.3 at the console for each CPU.

Section 6.2 describes the procedure for installing the microprocessor file system on KS systems. If you are installing a KL system, go directly to Chapter 7.

6.2 CREATING THE MICROPROCESSOR FILE SYSTEM (KS ONLY)

This section describes the procedure for creating the file system for the KS microprocessor, and for booting the monitor. You must perform this procedure for existing as well as new KS systems.

NOTE

The microprocessor file system for TOPS-10 Version 7.03 is incompatible with previous monitors. You must rebuild the microprocessor file system even if you use a previously built system pack.

6.2.1 Creating a Front-end File System Directory Area

If you are installing a new KS system, you must create a directory area on disk for the microprocessor file system. This area must be [6,2020], and it is recommended that you use the structure that resides on RPA0. Do not use a multiple-unit file structure for the microprocessor file system.

To create the directory area, type the following commands:

```
.R SETSRC<RET>
*CP[10,7]<RET>
*C DSKB:<RET>
*^Z

.R CREDIR<RET>
Create directory:DSKB:[6,2020]/EXIT<RET>
Created DSKB0:[6,2220].UFD/PROTRCTION:775
```

BUILDING THE SUPPLEMENTARY PROCESSOR'S FILE SYSTEM

6.2.2 Writing the Bootstrap Program to Disk

Both new and existing installations must write the bootstrap program to disk after the microprocessor file system directory has been created. To do this, run the SMFILE program as shown below. You must use the version of SMFILE shipped with TOPS-10 Version 7.03 and you must supply the serial number for your system's CPU. Note that the following example uses a CPU serial number of 4097.

```
.RUN DEC:SMFILE<RET>

DECSYSTEM 2020 DIAGNOSTICS FE-FILE PROGRAM
VERSION #.#, TOPS-10, KS10, CPU =4097
[FOR HELP TYPE HELP]

SMFILE>WRITE SETUP DSKB:<RET>
SMFILE>WRITE RESET<RET>
SMFILE>READ T10KL.ULD<RET>
SMFILE>SERIAL 4097<RET>
SMFILE)WRITE CRAM<RET>
SMFILE)WRITE BOOT KSBOOT.EXE<RET>
SMFILE>WRITE DONE<RET>
SMFILE>EXIT<RET>

EXIT
.
```

The KS is now ready to run. Reload the monitor using the following commands:

```
<CTRL/\>

KS10>HA<RET>
```

When the CPU is halted, press the RESET buttons on the CPU panel. The ONCE dialog begins automatically as shown here:

```
KS10 CSL.V#.#

BT AUTO

BOOT V#(##)

[LOADING FROM DSKB:]
```

Appendix A describes the ONCE dialog. Choose either the LONG or QUICK startup options, then go on to chapter 7 for information on building your monitor.

CHAPTER 7

BUILDING YOUR MONITOR

Even though you have a running monitor, the default monitor is only a tool for configuring a monitor for the system. By building the monitor, you configure support for the peripheral devices, memory units, terminal and network lines, as well as supply information that the monitor needs to run CUSPs successfully.

This chapter describes how to specify your hardware and software configuration with the MONitor GENerator (MONGEN) dialog, assemble the monitor with MACRO, and load and save the monitor with LINK. It also explains how to use a set of files included on the distribution tape to automate the monitor build procedure described above.

If you are building the monitor for the first time, do not use the supplied build files. After you build the monitor through direct interaction, edit the distributed build files to tailor them to the characteristics of your installation. You can use the automated build procedure whenever the monitor must be rebuilt (to install patches, upgrade the monitor version, or to make changes to the configuration of the hardware and/or software). When you need to make changes to your monitor that require rebuilding it, follow the instructions in this chapter.

This chapter describes the following steps to build the monitor:

1. Running MONGEN and answering the questions in the dialog section. MONGEN creates symbol definition source files, containing information obtained from the dialog. You use the source files to build your monitor.

MONGEN creates the following source files

- o HDWCNF.MAC specifies the hardware configuration.
- o NETCNC.MAC specifies the ANF-10 and DECnet-10 network environments.
- o F.MAC specifies options and monitor symbol values.

If you changed any monitor symbols in the FGEN dialog, you must also reassemble the bundled monitor modules to create a new monitor library file, TOPS10.REL.

2. Assembling the source modules. The COMMON, COMDEV, COMMOD, and CONNET modules of the monitor must be assembled with the symbol definitions recorded in the MONGEN configuration files.

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3. Linking and loading the monitor. The modules must be linked with the monitor library files and with any unbundled software that your installation has chosen to run. These are combined to form a runnable, executable monitor in a file named SYSTEM.EXE.

7.1 SPECIFYING YOUR HARDWARE AND SOFTWARE CONFIGURATION

MONGEN is a dialog program that enables you to choose the software modules and features that are most appropriate for your installation and to define your hardware configuration. MONGEN builds MACRO-10 source files. The MONGEN-created source files contain the information needed to create a executable monitor that is specific to your installation. parameters that are assigned in these files determine how the monitor data base is assembled.

Before running MONGEN, do the following:

1. Read this chapter to acquaint yourself with the current version of the MONGEN dialog.
2. Be thoroughly familiar with your system configuration.
3. Predetermine the answers you should provide to the MONGEN dialog. Worksheets I and 2, provided in Chapter 2, will help you determine your responses to the dialog.
4. For unbundled software products, such as DECnet-10, special installation instructions are usually available in a product-specific installation guide. Obtain a copy of any product-specific installation guides for unbundled products, and familiarize yourself with any modifications to the following procedures that might be necessary for installing unbundled software.

The MONGEN dialog is divided into the following sections, each asking questions about a specific aspect of the system configuration:

HDWGEN	Defines the hardware configuration, including type and number of CPUs, processor characteristics, ports for data communications, tape and disk units, line printers, and other peripheral devices. HDWGEN defines the terminal configuration, including the. OPR line number and the dataset line numbers. HDWGEN also offers some services of the monitor that you may refuse or accept. HDWGEN is the longest portion of the MONGEN dialog, and it creates the HDWCNF.MAC file.
NETGEN	Defines the ANF-10 and DECnet-10 network configurations, including number and types of network connections. NETGEN creates the NETCNF.MAC file.
FGEN	Allows you to change the settings of feature test options, thus enabling and disabling the software features and symbol values that the monitor uses to determine how to service users and how to perform maintenance operations. FGEN creates the F.MAC file, which is required for building the monitor. Note that changing these switch settings requires you to rebuild all the monitor library files, thus creating a monitor that is not supported by DIGITAL. For more information, refer to Appendix B.

BUILDING YOUR MONITOR

MONGEN Allows you to activate or remove unsupported options in MONGEN. Note that DIGITAL may not support the changes you make with MONGEN. See Appendix B for more information about modifying the monitor.

The first time you build the monitor for an installation, answer all the questions in HDWGEN, NETIEN, and EGEN. On subsequent occasions, select the MONGEN option that pertains to the values you need to change, and answer all the questions in that section.

7.1.1 Running MONGEN

You can run MONGEN from any disk area, and the source files that are generated are stored in your job's default disk area (DSK), or you can specify another disk area to store the output. Make Sure that the disk area where the monitor is to be built has at least 7000 free disk blocks. Clear the directory area of any extraneous files to eliminate the possibility of confusion when assembling the monitor.

MONGEN questions are in the form:

```
question(default,possible answers) [explanation]:
```

The question is followed by a list of the possible answers enclosed in parentheses. The default value (if any) is printed first in the parentheses, followed by the other answers you may type, separated by commas. Due to the nature of some questions, they may not offer a default answer. An explanation of the question is printed in square brackets, followed by a colon.

Type your answer to the question after the colon, choosing from the possible answers listed within parentheses. To accept the default answer, just press RETURN after the question. If the question has no default, MONGEN prints an error message, and repeats the question. The possible answers are listed in one of these forms:

- (d,m-n) A range of numbers is provided, where d is the default value, m is the smallest number and n is the largest number you may type. Choose a number in that range. Numbers are decimal unless specified otherwise in this manual.
- (rn-n) A range of numbers, with no default value, is provided.
- (Y,N) Answer with Y(es) or N(o)
- (a,b,c,...,z) Choose one of the values in the list.

You can specify multiple, consecutive terminal lines by answering with a range of numbers in the form (m-n)

If you type an invalid or inappropriate response, MONGEN prints an error message and repeats the question. You may respond to the question again.

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To execute the version of MONGEN in DSK:[10,7], type the following command

```
.R SETSRC<RET>
*CP [10,7,703MON]<RET>
*<CTRL/C>

.RUN MONGEN<RET>
```

MONGEN responds with:

```
MONGEN for 703 monitors
/HELP (PROMPT,SHORT,LONG)
```

MONGEN has three forms of the dialog to service users of different levels of experience. You can choose the dialog mode to use.

Node	Effect
SHORT	MONGEN prints only abbreviated questions on your terminal. This mode assumes that you need no explanation of the question and that you are familiar with the choice of answers. SHORT mode is recommended only for users experienced with this version of MONGEN.
PROMPT	MONGEN prints the same abbreviated questions as in SHORT mode, but adds (in parentheses) a choice of answers. This is the default mode.
LONG	MONGEN prints each question, the choice of answers (in parentheses), and an explanation of the question (in square brackets). LONG mode is recommended for all first-time users of this version of MONGEN, and is used in this section to illustrate the dialog.

MONGEN questions take the form of the mode you choose, throughout the dialog. If you have chosen SHORT or PROMPT mode, you can obtain the LONG version of a question by typing /HELP in response to the question. You can change the dialog mode for the remainder of the dialog by typing the following:

```
/HELP: argument
```

where argument is either SHORT, PROMPT, or LONG. These may be abbreviated to S, P. or L.

To exit from MONGEN at any time, type <CTRL/Z>.

7.1.2 The MONGEN Dialog Questions

This section lists the dialog questions for each part of MONGEN. A number precedes each MONGEN question. These numbers help you to follow the dialog more easily. They are not actually displayed when you run MONGEN.

NOTE

MONGEN asks some questions only for specific types of systems; and asks others only if you answer a preceding question in a certain way.

BUILDING YOUR MONITOR

Before running MONGEN, read this chapter carefully. Decide the answers for each question in the dialog. Worksheets 1 and 2 are provided in Chapter 2 to help you record your responses to the MONGEN questions. If you like, you can create a batch control file to run MONGEN, and answer the questions in the control file to save time. The MONGEN control file is described in Section 7.5.

After you type the command RUN MONGEN and answer the /HELP question, MONGEN prints:

```
1      Which GEN (HDW,NET,F,MUNGEN)[
      HDW to define hardware configuration
      NET to define network configuration
      F to define software features

      MUNGEN to include UNSUPPORTED questions in the other dialogs]:
```

Respond with HDW, NET, F, or MUNGEN to indicate the section that you wish to run. For example, If you respond with HDW, MONGEN prints the HDWGEN questions. When the HDWGEN dialog is done, MONGEN asks Question 1 again, so that you can start another part of the MONGEN dialog.

7.1.2.1 Running HDWGRN to Specify Your Hardware Configuration -

HDWGEN is the section containing questions about the hardware of your system, including central processor(s), storage devices, and other peripheral devices.

```
2      output (DSK:HDWCNF.MAC)
```

Press RETURN to accept the file name HDWCNF.MAC and your jobs default disk area for storing the output file. Otherwise, type the file specification that you prefer.

```
3      DECsystem10 (KL,KS)[
      KL is a system with KL10 cpus and internal channels
      KS is a system with a KS10 cpu]:
```

Answer this question with KL if you have a KL10 system, or KS if you have a KS (2020) system.

```
4      Cpu's (1,1-3) [Total number of cpus in the system]:
```

This question is asked only for KL systems. Respond with the total number of CPUs in the system you are configuring.

```
5      System name[24 characters or less]:
```

Respond with the system name of 24 characters or less. The system name is displayed in the banner line that is printed when you issue the INITIA monitor command.

```
6      CPUn serial # (1-10000)
```

Respond with the serial number of the CPU, in the range 1 to 10000. MONGEN asks this question for each processor (CPUn, where n is 0 to 2) in the system.

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- 7 Exclude monitor overhead from user run time (Y,N)[
Overhead is CPU time spent clock queue processing, command
decoding, swapping, and scheduling. User run time always
includes UO execution and unless EBOX/MBOX runtime accounting is
selected (KL10 systems only) includes I/O interrupt service
time.]:

Answer this question with Y(es) or N(o) . If you answer this question
with Y, users receive a more accurate accounting of their processor
usage because user runtime is calculated independently of any monitor
overhead. However, installations that charge their customers for
processor usage should be aware that the exclusion of monitor overhead
decreases the user runtime totals by 10 to 20 percent.

If you answer N, apportioned monitor overhead is included in each
user's runtime. Regardless of how you respond to this question,
monitor overhead is calculated as a separate statistic that can be
used in determining the amount of CPU time spent for overhead.

- 8 EBOX/MBOX runtime accounting (Y,N)[
If EBOX/MBOX runtime accounting is selected in a KL10 based
system, user runtime is computed using the KL10 internal
accounting clocks]:

Questions 8 and 9 are asked only for KL systems. With EBOX/MBOX
accounting (KL10 systems only), meters are turned off at the beginning
of the overhead period and turned on again at the end. For the most
accurate user runtime calculation, answer Y to both Questions 8 and 9.

- 9 Exclude PI time from user runtime (Y,N)[
An answer of `yes" to this question will cause the monitor to set
up the KL10 accounting meters in such a manner that users will
not be charged for cpu time used during interrupts]:

This question is asked only for KL systems. If you answer this
question with Y, the EBOX and MEOX accounting clocks are stopped
whenever a priority interrupt is in progress.

- 10 Account verification (Y,N) [LOGIN and the batch system will verify
that the user has specified a valid account]:

If you answer this question with Y, when accounts are associated with
their PPNS and when ACTDAE is running, users can log in only if they
specify a valid account string. If you respond with N, no
verification test is made. See Chapter 9 for more information.

The MONGEN dialog continues from this point depending on the type of
system you are configuring. For KS systems, MONGEN asks Questions 11A
and 11B, and then skips to Question 22. For KL systems, MONGEN skips
Questions 11A and 11B and goes to Question 12.

- 11A Disk drives (1,1-8):

Type the total number of disk drives on your system. The default is
1. This question is asked only for KS systems.

- 11B Tape drives (1,1-4):

Type the total number of tape drives on your system. The default is
1. This question is asked only for KS systems. MONGEN goes to
Question 22.

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- 12 MOS memory (Y.N) [Include support for the user mode MOS memory diagnostic THGA which collects statistics on single bit memory errors and substitutes the spare bit when a single bit error is determined to be hard]:

If you answer this question with Y, the module MOSSER will be loaded with the monitor. MOSSER contains support for the user-mode MOS memory diagnostic, TGHA. If you answer N, MOSSER is not loaded. Questions 12 through 21C are asked for KL systems only.

- 13 SCA support(Y,N)[Load monitor nodules needed to provide Systems Communications Architecture support]:

If you answer this question with Y, MONGEN loads the monitor modules that provide Systems Communications Architecture support. These modules are required to support CI disks. If you answer N, SCA will not be supported.

- 14 Include RNXKON(Y,N) [Support for RP20 disks]:

If you answer this question with Y, MONGEN will load the RNXKON module to include support for RP20 disk units. If you answer N, RNXKON will not be loaded, and RP20 disk units will not be supported.

- 15 Include RAXKON(Y,N) [Support for disks on the CI bus]:

MONGEN asks this question only if you answered Y to the SCA support question. If you answer this question with Y, MONGEN loads the RAXKON module to include support for disks on the CI (Computer Interconnect) bus. If you answer with N, CI disks will not be supported.

- 16 Include TM2KON(Y,N) [Support for TU16/TU45/TU77 tape drives]:

If you answer Y, MONGEN will load the TM2KON module to include support for TU16, TU45, and TU77 tape drives. If you answer N, those tape drives will not be supported.

- 17 Include TD2KON(Y,N) [Support for DX20/TU7x tape drives]:

If you answer Y, MONGEN will load the TD2KON module to include TU7x tape drives on DX20 controllers. If you answer with N, that configuration will not be supported.

- 18 Include T78KON(Y,N) [Support for TU78 tape drives]:

If you answer Y, MONGEN will load the T78KON module to include support for TU78 tape drives. If you answer N, TU78 tape drives will not be supported.

- 19 # of DTEs on CPU_n (1,1-4) [Interfaces for front-end PDP-11s]:

Respond with the number of DTE devices used for KL10 data communications, including the RSX-20F front end. This question is asked for each processor in the system.

- 20 Type of front end on DTE_n (RSX20F,ANF10,IBM,DECNET):

Answer this question with the type of communications software that the DTE will be used for. This question is repeated n times, where n is your answer to Question 19. DTE0 on each CPU is restricted to the RSX-20F front end. If you answer RSX20F, MONGEN asks questions 21A through 21C.

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21A # terminals on front end #n (0,0-128) [include only timesharing (DH11) lines, not CTY or KLINIK]:

Answer this question with the number of timesharing terminal lines on the front end. This question is asked only when you answer Question 20 with RSX20F.

21B # line printers on front end in (0,0-2):

Answer this question with the number of line printers on the front end. This question is asked only when you answer Question 20 with RSX-20F.

21C Front end printer n lower case (Y,N)[Does printer n have lower case capability]:

Answer this question with Y if front-end printer n has lower case capability, or with N if the printer s uppercase only. MONGEN repeats this question if you answered Question 21B with 2.

If you specified more than one DTE in Question 19, MONGEN repeats Question 20. Questions 19 and 20 are repeated for each CPU.

22 TTY lines (0-32) [Total number of TTY lines]:

Respond with the decimal number of terminal lines supported by your system. MONGEN asks this question for KS systems only.

23 OPR octal line (CTY,0-n) [OPn is privileged operator terminal]:

Respond with the octal number of the terminal you want designated as device OPR (operator-privileged terminal). This is normally the terminal that will be running OPR the operator service program, to control the system utility programs such as the device spoolers and the mount request processor. The default is the console terminal (CTY). The largest possible answer to this question (designated by n) differs for KL and KS systems.

The following question accepts a list of terminal line numbers. The terminal line can be indicated by its number (n); a range of terminal lines can be indicated by the lowest and the highest, separated by a hyphen (m-n); the CTY is always indicated by CTY. Type each designator on a separate line, and end the list with an extra RETURN.

24 Data set lines [Class of terminal for LOGIN, LOGIN resets line to computer echoing and no hardware tabs. Type one octal line #(M), one range (M-N) on separate lines. Type extra carriage return when through.]:

Answer this question with the line numbers of those lines that are dataset lines. For none, press RETURN. (The monitor handles dataset lines differently than other lines.)

25 # Jobs (1-511) [Maximum number attached and detached, not counting null job]:

Specify only the maximum number of jobs needed. Monitor size increases proportionally to the maximum number of jobs.

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26 Maximum P of core for each job (0,0-16384) [0 means all of core]:

Answer this question with the maximum amount of physical memory that any one job may use. This value is specified in number of 512-word pages. A response of 0 indicates the maximum number of pages possible. The value you specify here can be overridden by the SET CORMAX monitor command.

I27 # K total system core(512-4096) [ONCE-only reports if less core at startup]:

Answer this question with the total amount of physical memory that the system has. At monitor startup time, ONCE prints a message if the actual amount of memory on line is less than your response to this question (see Appendix A).

28 Clock ticks per second(60,50) [Power line frequency]:

Respond with the number of clock ticks per second. In North America, the response is 60; in most other countries, the response is 50.

For KL systems, MONGEN asks Question 29A next. For KS systems, MONGEN asks Question 29B next.

29A # Real-time devices (0,0-77)[Max. # which can be put on PI channels simultaneously]:

Answer this question with the number of real-time devices that can be put on a priority-interrupt channel simultaneously. The default is 0; the maximum is 77. If the answer is 0, MONGEN asks Question 29B. If the answer is greater than 0, MONGEN asks Question 29C. Question 29A is asked only for KL systems.

29B Allow jobs to be locked in core (Y,N):

If you answer this question with N, no users will be allowed to lock their jobs in core (memory) . The ANF-10 network programs DTELDR and NETLDR require the ability to lock a job in memory. Therefore, if you intend to use these programs, answer this question with Y. This question is always asked for KS systems, and asked for KL systems if you answered Question 29A with 0.

29C #Pages min guaranteed among jobs not locked in core (0,0-16384): [minimum free core pool for unlocked jobs, 0 assumes all of core]:

Answer this question with a number indicating the number of pages of memory guaranteed to all jobs that are not locked in core. The default is 0, which indicates that all of memory is available to unlocked jobs.

If you respond with 0, no jobs are allowed to be locked, as a safeguard against locked jobs entirely taking over a system's memory (refer to Question 29B. The value you specify in this question can be overridden by the SET CORMIN monitor command. MONGEN asks this question only your answer to Question 29A was 1 or greater, or if your answer to Question 29B was Y.

30 # High priority queues (0,0-15):

Answer this question with the number of high-priority interrupt queues that you want to allow in your system. The default is 0, the maximum is 15.

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- 31 MSGSER (Y,N)[support for device MPX. (more than one device on an I/O channel). This feature is required for MCS-10]:

If you answer Y, the multiplexed-channel (r4PX) software will be loaded. MPX allows more than one device to be associated with a given I/O channel. An answer of N prevents the loading of the MPX software.

- 32 PSISER (Y,N)[Advanced programmed software interrupt service - Support for the PISYS. UUO. This provides an easy and powerful interrupt method for program to trap asynchronous events. Required by GALAXY-10]:

If you answer Y, the PSISER module will be loaded. PSISER provides the software interrupt system, which enables users to specify conditions for which an interrupt is to occur. PSISER is required for the operation of GALAXY-10. An answer of N prevents the loading of PSISER.

- 33 IPCF (Y,N)[Inter process communication facility]:

If you answer Y, the IPCF (Inter-Process Communication Facility) software will be loaded. IPCF allows jobs and/or system processes to communicate with each other. IPCF is required for the operation of MCS-10 and GALAXY-10. An answer of N prevents the loading of the IPCF software.

- 34 ENQ/DEQ (Y,N) [Synchronization primitives to allow simultaneous file update by multiple co-operating processes]:

If you answer Y, the ENQ/DEQ software will be loaded. this software provides synchronization functions used for simultaneous file updates. An answer of N prevents the loading of the ENQ/DEQ software.

For KS systems, MONGEN skips to Question 36. For KL systems, MONGEN continues with the next question.

- 35A LPTS (1,0-3) [Line printers on the I/O Bus]:

Answer this question with the number of line printers to be supported by CPU.

- 35B LPTn Lower case (Y,N) [Does LPTn have lower case capability]:

Answer this question with Y if the line printer has lowercase capability. This question is asked only if your answer to Question 35A was greater than 0, and is asked n times, where n is your answer to 35A.

- 36 #PTYs (20,1-510) [Pseudo-terminals - each operator service program and Batch stream needs one]:

Respond with the number of pseudo-terminals (PTYs) that your monitor must support. OPSER subjobs and batch jobs use PTYs for I/O. You must include at least one PTY.

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MONGEN asks Questions 37A through 38B for KS systems only. For KL systems, MONGEN asks Question 39.

37A LPT (0,0-1) [Line printer]:

Answer this question with 1 if your system has a line printer. Questions 37A through 37B are asked only for KS systems.

37B Lower case (Y,N) [Does LPT have lower case]:

Answer this question with Y if the printer has lowercase capability. This question is asked only if you answered Question 37A with 1.

38A # KMC/DUP LINES (0,0-2) [Number of DIJP-11 synchronous line units attached to a KMC-11 controller.]:

Answer this question with the number of DUP-11 lines connected to the KMC-11 controller.

38B Type of line for KDPn (ANF1B,DECNET,USER):

This question is asked once for each KDP you specify in Question 38A, where n is the KDP number. Type the name of the network product that the KDP will support. Question 38B is asked only if you specify a non-zero value in answer to Question 38A.

39 Decimal "symbol,value" [
For any symbol to be defined.
Type one per line, extra carriage return when through]

40 Octal "symbol,value" [
For any symbol to be defined.
Type one per line, extra carriage return when through]

41 SIXBIT "symbol,value" [
For any symbol to be defined.
Type one per line, extra carriage return when through]

In response to Questions 39, 40, and 41, type the symbols and values at your installation that deviate from the defaults that are defined in the distributed common modules (COMMON, COMDRV, COMNET, and COMMOD), in the form: symbol,value. The radix is set automatically for each symbol. Unless you specify otherwise, HDWGEN defines each symbol according to predefined standard values. (Appendix B contains a list and an explanation of the standard symbols and default values.)

For example, you could specify 1760 as the number of nanoseconds per memory cycle (instead of 1000) by typing the following in response to Question 40.

```
NSPMEM,1760<RET>
```

The values to set for decimal and octal symbols can be specified in expressions by placing the expression in angle brackets. For example, to set certain bits in the DEBUGF word, type the following:

```
DEBUGF,<1B0+1B1>
```

If you want to respond with more than one entry, you must type each symbol,value on a separate line and end each line with RETURN. When you finish typing responses to each question, press RETURN once again to force MONGEN to print the next question. If all the standard values are acceptable, press only RETURN in response to these questions.

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- 42 Type "device-mnemonic, PI-channel" for special devices[
With neither channel AC save routine nor device data block.
The "device-mnemonic" must be 3 characters or less.
Type extra carriage return when through.]

Questions 42 through 44 allow you to build the monitor to support device drivers that are not part of the standard monitor. In response to Question 42, type the device name and priority-interrupt channel for a device driver that does not save the acs on a priority interrupt, and that does not require Device Data Blocks (DDBs) in the monitor. (That is, the driver can support only one device.)

- 43 Type "device-mnemonic, PI-channel, no.-of-devices"[
For special devices with device data blocks.
The "device-mnemonic" must be 3 characters or less.
Type extra carriage return when through.]

Question 43 allows you to specify the device name, PI channel, and number of devices to be supported by a driver that requires DDBs for the devices. (That is, the driver supports multiple devices.)

- 44 Type "device-mnemonic,PI-channel,highest-ac-to-save"[
For special devices with channel save routines to save acs up to the "highest ac to save". "Device" must be 3 char or less.
Type extra carriage return when through.]

Question 44 allows you to specify device drivers that save the acs on an interrupt. Specify the device name, PI channel, and the number of the highest ac to save on an interrupt.

- 45 Type "ersatz-device,P,Pn,search-list-type"[
For customer-defined ersatz devices.
The "ersatz-device" must be exactly 3 characters long.
"P,Pn" is the Project/Programmer number associated.
"search-list-type" is one of ALL,SYS.JOB.
Type extra carriage return when through.]

Question 45 accepts information for installation-specific ersatz device names. Monitor-standard ersatz device names (listed in the TOPS-10 operating System Commands Manual) must not be redefined. However, you can create additional ersatz device names by answering Question 45 with the following information: ersatz device name, the UFD, and the type of search list to use (one of ALL, SYS, or JOB).

- 46 Type "command-name,dispatch,flags,unique-bits,PRVTAB-name"[
For customer defined commands.
The "command-name" is the name of the monitor command to be added.
"dispatch" is one of:
omitted to run the program with the same name as the command
the SIXBIT name of the program to run if different
#address to use the already existing monitor location "address"
as the dispatch routine for this command,e.g. #RUNQUE
"flags" are the flags used in the command table macros, e.g., RUNFLG
"unique-bits" are the command table unique bits, e.g. UNIQ.1
"PRVTAB-name" is the name of the program to be added to PRVTAB,
if any
Type extra carriage return when through.]

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Question 46 allows you to create new monitor commands. The command name that you specify here will run the program that you specify, using the characteristics that you specify. You can also redefine an existing monitor command with your answer. Type each new command followed by the information the monitor needs to process the command. The information is specified in the following components, which must be separated by commas. To omit a component, include only the comma in its place. The components are:

- o Command name -- can be up to six alphanumeric characters.
- o Dispatch address -- identifies the program or routine to run when the command is processed. This may be the name of the program to run from SYS (file name only), or omitted if the program name and command name are equivalent. The dispatch address may also be the location (label) of a routine in the monitor.
- o Flags -- are defined in COMMON to specify the type of command processing for the monitor to use. Separate the flags with
Some of the possible flags are:

Flag	Meaning
APPFLG	-- command saves your current context
CMWRQ	-- requeue the job after command processing
CUSTMR	-- this flag is reserved for customer implementation
INCORE	-- command requires that the job be in memory
NBATCH	-- command is illegal from a batch job
NOACT	-- command is delayed if any devices are active
NOCORE	-- command does not require core
NOINCK	-- command can be processed if issued without a job
NOJOB	-- command does not require a job number
NOLOGIN	-- command does not require that the job be logged in
NOMESS	-- suppress output of SET WATCH statistics
NOPEP	-- monitor must not prompt after command completion
NORUN	-- command requires that the job be halted
NXONLY	-- command is not legal if the job is execute-only
TTYRNC	-- monitor should put job in monitor mode
TTYRNU	-- monitor should put job in user mode
TTYRNW	-- continue I/O wait after command processing

- o Unique-bits -- are bit numbers you can define to specify the number of characters that make this command unique. This is specified in the form UNIQ.n, where n is the number of characters from 1 to 4.
- o PRVTAB-name -- Is the name of the program to place in the monitor table PRIVTAB. This should be equivalent to the dispatch program name, and may be omitted if the command should not be included in PRVTAB. PRVTAB is the monitors list of privileged CUSPs.

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47 Type "terminal-type/Alias,WIDTH,LENGTH,FF,TAB,LC,ALT,DISPLAY,CRLF,XON,8BIT,FILL,erase-to-EOL,backspace-space-backspace" [

For customer defined terminal types.
Terminal-type is the SIXBIT name of the terminal.
/Alias is optional. Alias is the SIXBIT name sent to other systems on set host.
WIDTH is the width of the terminal
LENGTH is the length/pagesize of the terminal
FF/NOFF is whether or not the terminal has hardware form feeds
TAB/NOTAB is whether or not the terminal has hardware form feeds
LC/NOLC is whether or not the terminal is capable of lower case
ALT/NOALT is whether or not the terminal generates old altmodes
DIS/NODIS is whether or not the terminal is a display terminal
CRLF/NOCRLF is whether or not the terminal needs a CRLF at the right margin
XON/NOXON is whether or not ^S/^Q should pause the terminal
8BIT/NO8BIT is whether the terminal handles the 8-bit ASCII character set
FILL is the number of fill characters required for the terminal
Erase-to-EOL is address of sequences to cursor right and erase to EOL
Backspace-space-backspace is address of sequences to backspace, space, backspace
Type extra carriage return when through.]

Question 47 allows you to configure non-standard terminal types into the monitor and define the characteristics of the terminal. Enter each terminal type and its characteristics on a separate line. Separate the characteristics with commas. Press RETURN twice at the end of the list. Note that terminal width and length must be specified as a number corresponding to the number of characters per line (for WIDTH) and number of lines on the terminal page (LENGTH). FILL requires a number corresponding to the filler class to be used, if any. Filler classes are documented in the TOPS-10 operating System Commands Manual for the SET TTY command.

Erase-to-EOL and `backspace-space-backspace" specify the locations of routines in COMDEV that control video terminals (CRTs) . You can use a global address or symbol to specify the routine to control cursor movement.

File DSK:HDWCNF.MAC Closed [HDWGEN finished]

The HDWGEN dialog is finished when the source file is written to disk. Question 1 is repeated, and you may start another section of the dialog, or type CTRL/Z to exit from MONGEN.

7.1.2.2 Running NETGEN to Specify Network Configuration - NETGEN Is the MONGEN section that defines your system network configuration. The dialog is shown below.

```
1      Which GEN (HDW, NET, F, MUNGEN) [
      HDW to define hardware configuration
      NET to define network configuration
      F to define software features
      MUNGEN to include UNSUPPORTED questions in the other dialogs]:
```

To start the NETGEN dialog, answer Question 1 with NET.

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2 Output (DSK:NETCNF.MAC):

Press RETURN if the file name NETCNF.MAC and device DSK are acceptable to store your NETGEN dialog. Otherwise, type the file specification that you prefer.

3 Network software(Y,N)[
Software to support remote computers: DECsystem-10's and
PDP-11's (requires FTNET to be -1)]:

Answer this question with Y if the installation requires software to communicate with remote processors. Any network software requires that you answer this question with Y. If you answer with N, the file NETCNF.MAC will be closed; NETGEN is finished and Question 1 is asked again.

5 ANF node number of central site (1,1-77)[
Unique octal number identifying system to ANF network.]:

Answer this question with the octal number that will identify the installation to the ANF-10 network. Refer to TOPS-10 ANF-10 Software Installation Guide for more information.

6 Name of central site[six characters or less.]:

Answer this question with the name of the host node, in six characters or less. DECnet-10 version 4 requires that the first character of the node name be an alphabetic character. The same node name will be used for both ANF-10 and DECnet-10 communications.

7 # of remote TTYs (1,1-512)[
Maximum number of teletypes on ANF network nodes to be handled at
any given time.]:

Answer this question with the maximum number of terminals from the ANF-10 network nodes to be handled at any given time.

8 ANF Network virtual terminals (Y,N)[
Code to allow local terminal to "SET HOST" to other systems.]:

Answer this question with Y to allow terminals to network from this installation to other systems in the ANF-10 network.

9 Remote card readers (Y,N)[
Code to allow access to card readers on ANF remote stations.]:

Answer this question with Y to allow access to card readers on remote stations in the ANF-10 network.

10 Remote line printers (Y,N)[
Code to allow access to line printers on ANF remote stations.]:

Answer this question with Y to allow access to line printers at remote stations in the ANF-10 network.

11 Remote DNSX DDCMP devices(Y,N)[
Code to allow access to DN8x LBLK-to-DDCMP devices on ANF remote
stations.]:

Answer this question with Y to allow access to DN8x DDCMP devices at remote stations in the ANF-10 network.

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- 12 Remote data entry terminals (Y,N)[
Code to allow access to remote data entry terminals (RDX
devices).]

Answer this question with Y to allow access to remote data entry terminals at remote stations.

- 13 Remote task-to-task through ANF(Y,N)[
Code to allow access to remote jobs (TSKSER).]

Answer this question with Y to allow access to remote jobs. The monitor will include the TSKSER module for ANF-10 intertask communication.

- 14 # of ANF connects (256,1-512)[
Maximum number of simultaneous connections.]:

Answer this question by typing the number of simultaneous ANF-10 connections to remote nodes.

- 15 DECnet software(Y,N)j[
Load monitor modules needed to communicate with other DECnet nodes]:

Answer this question with Y if DECnet-10 version 4 is to be installed on the system. Refer to the TOPS-10 DECnet and PSI Installation Guide for more information.

- 16 DECnet area number of central site(1,1-63)[
Decimal area number for multi-area DECnet network configurations.]:

Answer this question with your central site's area number.

- 17 DECnet node number of central site(1,1-1023)[
Unique decimal number identifying system to DECnet network.]:

Answer this question with a unique decimal number that identifies this system to other nodes in the DECnet network. MONGEN asks this question only if you answered Question 15 with Y.

- 18 DECnet router type(ROUTING,NONROUTING)[ROUTING nodes can have multiple circuits and perform DECnet routing. NONROUTING nodes have only an Ethernet circuit and perform no DECnet routing.]:

Answer this question with ROUTING if the node performs DECnet routing. NONROUTING prevents the node from performing routing, and reduces routing overhead. If you have a KL that you want to have communications with an MCB, or if you are installing a KS, specify ROUTING.

- 19 Ethernet software(Y,N):[Load monitor modules needed to communicate via Ethernet]:

Answer this question with Y if your system uses a KLINI driver with an NI (Ethernet) port.

- 20 Include LATSER(Y,N)[
Load monitor module to communicate with terminal concentrators via Ethernet]:

MONGEN asks this question only if you answered the Ethernet software question with Y. Answer Y to this question if your system uses LAT terminal servers (DECsystem-100 or Ethernet Terminal Servers).

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File DSK:NETCNF.MAC Closed [NETGEN finished]

The NETGEN dialog is finished when MONGEN writes the output file to disk. Question 1 is repeated to allow you to start another part of the dialog.

7.1.2.3 Running FGEN to Specify Software Options - The FGEN dialog simplifies the task of choosing appropriate software from a wide selection. For example, FGEN allows you to select non-standard TOPS-10 features for a given application. In the dialog, the software options are called "feature-test switches."

Only the standard settings of the feature-test options have been tested and are fully supported. Although installations may alter the settings of feature-test options, nonstandard option settings have not been tested and are not supported. Changing the settings of the feature-test switches requires rebuilding the monitor library file, TOPS10.REL. This procedure is documented in Appendix B.

To set the appropriate feature-test switches, MONGEN needs the file FGEN.HLP. FGEN.HLP contains the list of feature-test switches that you can change with FGEN. MONGEN first looks for FGEN.HLP on the directory from which MONGEN is run, then looks for it on SYS. If FGEN.HLP cannot be found, the following message is printed on your terminal:

```
%Cant find FGEN.HLP
```

If this message occurs, use the monitor COPY command to copy the file from the DEC area into the area from which you are running MONGEN.

FGEN allows you to:

- o List the standard settings for a given application.
- o Determine what the feature-test switch symbols mean.
- o Alter the feature-test switch settings.
- o Add new feature-test switches.

```
1      Which GEN(HDW,NET,F,MUNGEN)[
      HDW to define hardware configuration
      NET to define network configuration
      F to define software features
      MUNGEN to include UNSUPPORTED questions in the other dialogs]:
```

To start the FOEN dialog, answer Question 1 with F.

```
2      Output (DSK:F.MAC):
```

If you accept the file name F.MAC and the device DSK, just press RETURN. Otherwise, type the file specification that you prefer.

```
3      Feature set (KLFULL, KSFULL)[
      KLFULL Includes all Tops-10 features supported for RL10 based
      systems
      KSFULL Same as KLFULL but for KS10 based systems]
```

The list of feature test switches differs according to the type of system you are installing. For a KL system, answer this question with KLFULL. For a KS system, answer this question with KSFULL.

BUILDING YOUR MONITOR

After starting the FGEN dialog. MONGEN prints the following:

```
4      Standard setting (YES,NO,LIST,EXPLAIN) [  
      Standard values for all feature test switches for your  
      configuration]:
```

Answer this question with YES to end the FGEN dialog, NO to change the settings of feature-test switches, LIST to observe the names and current settings of the options, or EXPLAIN to observe the options, settings, and a brief explanation of the, options. The answers are illustrated here:

YES To accept the standard feature test switch settings. This ends the FGEN dialog and closes the output file. Question 1 is asked again, to allow you to run another part of the MONGEN dialog. This answer is shown in the following demonstration:

```
      Standard setting (YES,NO,LIST,EXPLAIN) [  
      Standard values for all feature test switches for your  
      configuration] :YES<RET>
```

```
      File DSK:F.MAC Closed [FGEN finished]
```

The dialog is finished immediately, with standard options and settings written into F.MAC. Question 1 is asked again, to allow you to run another portion of MONGEN.

NO To change the setting of individual switches or add new feature test switches. You can define the feature test switch by typing the option symbol name and its setting in the form:

```
      symbol,n
```

where n is either 0 (to turn the feature off) or -1 (to turn the feature on). The following demonstration shows how a standard option (FTNET) can be turned on:

```
      Standard setting (YES, NO, LIST, EXPLAIN) [  
      Standard values for all feature test switches for your  
      configuration] : NO<RET>
```

```
      Type switch.value(or LIST or EXPLAIN) \  
      For any feature test switch to define, type  
      "switch, value", value=0 for off or -1 for on, or type  
      LIST or EXPLAIN to list or explain switches. Type one  
      per line, extra carriage return when through.]
```

```
      FTNET,-1<RET>  
      <RET>
```

```
      Set each switch(Y,N)[  
      List each switch with its current value and ask for new  
      value] :Y<RET>
```

```
      SYMBOL,VALUE(ON.OFF,LIST,EXPLAIN,END) :END<RET>
```

```
      File DSK:F.MAC Closed [FGEN finished]
```

Here you may type any of the answers that are listed in parentheses. ON turns the option on, OFF turns the option off. LIST and EXPLAIN are described below. END, as used here, ends the FGEN dialog. Question 1 is repeated so that you can run another portion of the MONGEN dialog.

BUILDING YOUR MONITOR

LIST To examine the current settings for any or all of the feature test options. You can accept or change the current settings, as demonstrated here.

```
Standard setting (YES,NO,LIST,EXPLAIN)[
Standard values for all feature test switches for your
configuration] :LIST<PET>

Switch(switch to list or explain) [ type name of switch
to be listed or explained or ALL or /HELP. Type extra
carriage return when through.]ALL<RET>
SYMBOL,SETTING
SYMBOL,SETTING
.
.
.
Standard setting (YES,NO,LIST,EXPLAIN) [
Standard values for all feature test switches for your
configuration] :YES<RET>

File DSK:F.MAC Closed [FGEN finished]
```

Question 1 is asked again, to allow you to run another part of the MONGEN dialog.

EXPLAIN To examine the meaning of any or all of the feature test switches, in addition to the current settings. The dialog for the EXPLAIN answer follows:

```
Standard setting (YES, NO, LIST, EXPLAIN) [
Standard values for all feature test switches for your
configuration] :EXPLAIN<RET>

switch(switch to list or explain)[
type name of switch to be listed or explained or ALL or
/HELP.
Type extra carriage return when through.] ALL<RET>

SYMBOL,VAL;
;EXPLANATION
SYMBOL,VAL;
.
.
.
Standard setting (YES, NO, LIST, EXPLAIN) [
Standard values for all feature test switches for your
configuration] :YES<RET>

File DSK:F.MAC Closed [FGEN finished]
```

Question 1 is asked again, to allow you to run another part of the MONGEN dialog. Type <CTRL/Z> to exit from MONGEN.

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7.2 ASSEMBLING THE MONITOR

You must always assemble the following monitor source files:

```
COMMON.MAC
COMDEV.MAC
COMMOD.MAC
COMNET.MAC
```

It is necessary to assemble the following universal files with them:

```
F.MAC
S.MAC
HDWCNF.MAC
NETCNF.MAC
NETPRM.MAC
DTEPRM.MAC (KL only)
ICHPRM.MAC
D36PAR.MAC
```

It is important that F.MAC precede S.MAC in the compiler commands, because S.MAC has conditional assemblies that depend on the contents of F.MAC. Use the following monitor commands to compile the monitor.

```
.COMP/COMP F,S,NETPRM<RET>
MACRO: F
MACRO: S
MACRO: NETPRM

.COMP/COMP DTEPRM,ICHPRM,D36PAR<RET>
MACRO: DTEPRM
MACRO: ICHPRM
MACRO: D36PAR

EXIT

.COMP/COMP HDWCNF+NETCNF+<COMMON,COMDEV,COMNET><RET>
MACRO: COMMON
MACRO: COMDEV
MACRO: COMNET

EXIT

.COMP/COMP HDWCNF+COMMOD<RET>
MACRO: COMMOD

EXIT
```

If you are using a standard combination of feature-test switch settings and DIGITAL-supplied sources, you do not need to assemble the remainder of the bundled monitor modules. These modules have already been assembled and combined in a monitor library file named TOPS10.REL, which must be copied to DSKB before you can link and save the monitor. The TOPS10.REL library file for the KL is in [10,7,703MON,KL]. The TOPS10.REL library file for the KS is in [10.7,703MON,KS].

If you are not using a standard combination of feature-test switch settings or if you have made changes to the monitor sources, you must assemble all the monitor sources, creating a new monitor library file. These procedures are explained in Appendix B.

BUILDING YOUR MONITOR

7.3 LINKING AND SAVING THE MONITOR

The next step in building the monitor is to link the monitor modules. The LINK program used in these procedures provides both a runnable monitor (SYSTEM.EXE) , and several options for information you can receive about the linking process. This section lists only the commands that the LINK program requires to build the monitor. For full documentation on the LINK program, refer to the TOPS-10 Link Reference manual.

The following sequence of instructions loads and saves a monitor for a standard KL configuration with no unbundled software:

```
.R LINK<RET>
*/NOINITIAL/HASH:9000 SYSTEM/SAV,SYSTEM/MAP=/LOCALS -<RET>
#COMMON,COMDEV,COMNET,COMMODO,TOPS10/SEARCH/GO<RET>

EXIT
```

The file name SYSTEM is an arbitrary name chosen for the monitor; you can use any file name. However, the bootstrap defaults to SYSTEM.EXE[1,4], so SYSTEM is a good choice for the file name.

NOTE

You must load COMNET even if you answer NO to the NETWORK SOFTWARE question in MONGEN.

To load unbundled software (except DECnet) with the monitor, include the name of the relocatable file(s) in the command line after COMMODO. For SMP support use CPNSER.REL.

The following procedure shows how to load DECNET with a KL monitor:

```
.COPY=DSKB:TOPS10.REL[10,7,703MON,KL]<RET>
.COPY=DSKB:MAKDCN.CCL[10,7,703MON,KL]<RET>
.COPY=DSKB:DECNET.REL[10,7,703MON,KL]<RET>
.R MAKLIB<RET>
*@MAKDCN.CCL<RET>
*^C
.R LINK<RET>
*/NOINITIAL/HASH:9000 SYSTEM/SAV,SYSTEM/MAP=/LOCALS -<RET>
#COMMON,COMDEV,COMNET,COMMODO,TOPS10/SEARCH/GO<RET>

EXIT
```

To load DECnet on a KS, follow the same command procedure, using the TOPS10.REL, MAKDCN.REL, and DECNET.REL from the following area:

```
DSKB:file.REL[10,7,703MON,KS]
```

7.3.1 copying the New Monitor to SYS:

Now copy your customized monitor to SYS so that it can be easily loaded by the bootstrap program. Type the following monitor command:

```
.COPY SYS:=SYSTEM.EXE<RET>
```

After SYSTEM.EXE is in SYS, you can start your new monitor.

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7.4 BRINGING UP THE NEW MONITOR

To load the new monitor, you must reload the system. First you must shut down the current monitor, then reload the monitor. Use the QUICK startup option to start the monitor quickly without changing disk parameters. The following procedures show a QUICK startup on the KL and then on the KS. On both systems, SYS:TTY.INI and SYS:SYSJOB.INI were created previously.

Procedure (KL System)

```
<CTRL/\>
PAR>SHUTDOWN<RET>
DECSYSTEM-10 NOT RUNNING
[Dumping on DSKB:CRASH.EXE[1,4]]
[Loading from DSKB:SYSTEM.EXE[1,4]]

MONITOR mmm-dd-yy
Why reload:NEW<RET>
Date:mmm-dd-yy<RET>
Time:18:36:12<RET>
Startup option: QUICK<RET>

MONITOR 18:36:41 CTY system 2476
Connected to Node CENTRA(0) Line #45

.LOGIN 1,2

.R OPR
OPR>EXIT

.
```

Procedure (KS System)

```
<CTRL/\>
KS10>HA<RET>
```

(Press the RES!? and BOOT switches on the console at the same time.)

```
KS1S CSL.V#.*
BTAUTO
BOOT V#(##)

BOOT>

MONITOR mmm-dd-yy
Why reload:NEW<RET>
Date:mmm-dd-yy<RET>
Time:18:36:06<RET>

Startup option: QUICK<RET>

MONITOR 18:36:20 CTY system 4101
.LOGIN 1,2
.R OPR
OPR>EXIT<RET>

.
```

BUILDING YOUR MONITOR

Now start up the GALAXY spoolers, as illustrated in Section 8.1, and check the system to be sure all the necessary components are running, using the OPR command SHOW.

If your system includes ANF-10 nodes, see the TOPS-10 ANF-10 Software Installation Guide for instructions on building front-end components.

DECnet-10 nodes may also be configured, as documented in the DECnet-10 Software Installation and Generation Guide.

7.5 CREATING THE SYSTEM BOOTSTRAP TAPE

This section describes the procedure for creating a bootstrap magnetic tape for your system. The bootstrap tape could be used to get your monitor running in the event of a disk failure that prevents booting from disk. BOOTM is the bootstrap program used for loading the monitor from a magnetic tape saved in BACKUP format. You should rebuild the bootstrap tape every time you load a new monitor.

For KL systems, you can build the bootstrap tape using the instructions in Section 7.4.1. For KS systems, refer to Section 7.4.2.

These procedures save the monitor as DSKB:SYSTEM.EXE[1,4], the default name and area for loading with BOOTM.

7.5.1 creating the Bootstrap Tape (KL Only)

Use the following steps to create a bootstrap monitor tape for a KL system. Mount a magnetic tape that you will use for the bootstrap tape, ensuring that the write ring is on the tape. Tape drive MTA0 is used here.

```
.ASSIGN MTA0: BACKUP:<RET>
.SET BLOCKSIZE BACKUP:512<RET>
.REWIND BACKUP: <RET>
.COPY BACKUP:=FEFILE.EXE<RET>
.COPY BACKUP:=FEFILE.EXE<RET>
.COPY BACKUP:=SYS:BACKUP.EXE<RET>
```

Then, copy your new monitor and all the system files to tape by typing:

```
.R BACKUP<RET>
/SAVE DSKB:[1,4]=SYS:SYSTEM.EXE<RET>
/SAVE DSKB:[1,4]=SYS:*. *<RET>
```

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7.5.2 Creating the Bootstrap Tape (KS Only)

Use the following steps to create a bootstrap monitor tape for a KS system. Mount a tape that you will use for the bootstrap tape, ensuring that a write ring is included. Tape drive MTAG is used here.

```
.ASSIGN MTA0: BACKUP:<RET>
.SET BLOCKSIZR BACKUP:512<RET>
.REWIND BACKUP:<RET>
.COPY BACKUP:=T10KL.RAM<RET>
.COPY BACRUP:BOOTM.RDI<RET>
.COPY BACKUP:SYS:BACKUP.EXE<RET>
```

Then copy your new monitor to tape by typing:

```
.R BACKUP<RET>
/SAVE DSKB:[1,4]=SYS:SYSTEM.EXE<RET>
/SAVE DSKB:[1,4]=SYS:*. *<RET>
```

7.6 AUTOMATING THE BUILD PROCEDURE

This section describes how to automate the build procedure. It discusses the files necessary to build a monitor, where they are located, how to customize them, and how to use them. Before you submit the control files described in this section, start the GALAXY batch and spooling system as described in Chapter 8.

The following table lists each file and its function. An asterisk (*) appears next to files that require customization. Section 7.6.1 explains how to modify these files.

Some of the files pertain only to particular installations. except where noted, all of the files below are on the distribution tape.

BUILDING YOUR MONITOR

Table 7-1: Monitor Build Files

File	Function
BUILD.CTL	compiles the files in the build areas. These areas include the COMMON modules (COMCON, COMDEV, COMMON, and COMNET). In addition, BUILD.CTL builds TOPS10.GLB and MON.EXE.
BUILDS.DCL(*)	contains command definitions.
BUILDS.MIC(*)	submits all the build control files.
BUILDS.PTH(*)	defines the build areas.
COMCTL.MIC	provides a template for the control file that COMPIL.MIC uses.
COMCTL.TEC	reads COMCTL.MIC to generate the control file that COMPIL.MIC uses.
COMPIL.CTL	builds TOPS10.REL.
COMPIL.MIC	creates and submits a control file that compiles and lists a single monitor module.
DECNET.FIL	contains a list of DECnet files to compile and the names of the directory areas for the .REL files. This file applies only to DECnet sites. It is on the DECnet tape.
DONE.MIC(*)	submits a batch job that creates .CFCs (Combined FILCOMs, a record of weekly changes) and moves sources to a permanent disk area.
DONE.TEC(*)	uses data from DONE.MIC to produce DONE.CTL.
DONE.CTL	provides clean-up operations, such as taking a directory of all .MAC files in the BASE: area, performing FILCOMs, moving files from BASE: to MON:, and creating CFCs. See section 7.5.1 for more information about the DONE.* files.
GEN.CTL(*)	runs the MONGEN dialogs.
GEN.MIC(*)	puts the current load number into GEN.CTL.
MPE.FIL	contains a list of MPE files to compile and the names of the directory areas for the .REL files. This file applies only to SMP sites. It is on the MPE or CPNSER tape.
NEWMOD.MIC	creates an empty, permanent .MAC file and an empty, permanent .CFC file for DONE to use when running FILCOM.

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Table 7-1: Monitor Build Files (Cont.)

File	Function
START.CTL	<p>performs the following operations in preparation for full recompilation of the monitor:</p> <ul style="list-style-type: none"> o Deletes all files from BASE: except *.MAC, *.MIC, and FGEN.HLP. o Creates the LINK.CCL. and GLOB.MIC files. o creates MPE.FIL, UNSUP.FIL, and DECNET.FIL if they do not already exist in the build area. o Uses the .FIL files to create UNIV.CMD, TOPS10.CMD and TOPS10.CCL in each FGEN area. o Invokes TREE.TEC, and TOPS10.TEC.
<p>NOTE</p> <p>Submit START.CTL whenever you install a new version of the monitor, an autopatch, or when you change the value of any previously defined symbol.</p>	
SWITCH.INI(*)	includes switches, runs the version of PATH shipped with TOPS-10 version 7.03 and sets defaults for the SUBMIT commands.
TOPS10.FIL(*)	contains a list of files to compile and the names of the directory areas for the .REL files.
TOPS10.TEC	creates the .CCL and .CMD files that COMPIL.CTL, BUILD.CTL, and UNIV.CTL use.
TREE.TEC	uses BUILDS.PTH and START.MIC to insure that FGEN and BUILD areas exist and that they are empty. TREE.TEC deletes START.MIC when it completes this action.
UNIV.CTL(*)	recompiles all the universal files in selected areas, as defined by hard-wired paths.
UNSUP.FIL	contains a list of customer-supported modules to compile. This file applies only to sites with unsupported configurations. It is on the customer-supported tape.

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7.6.1 Customizing the Build Files

Some of the files for building the monitor can be used without alteration. However, the following files are only templates. You must modify them to build a monitor that reflects your installation. This section explains how to customize these files.

BUILDS .DCL

This file defines the PATH command to run SYS:PATH (as used in the supplied .MIC and .CTL files). This command must invoke the PATH program supplied on the 7.03 customer-supported CUSPs tape. If this version of the PATH program is installed in SYS: you do not need to include this command definition.

BUILDS.MIC

This file submits COMPIL.CTL in each FGEN area, and BUILD.CTL in each build area. Edit it to use only your monitor areas.

BUILDS.PTH

This file consists of three sections, separated by the following string: !<*>!. Each section defines logical names for one of the following areas: library areas, FGEN areas, and monitor build areas.

LIBRARY AREAS

BASE:

This name is required. Define it to point to the area used to edit any locally modified sources for building. The area should be the superior SFD (or UFD) of each of the FGEN areas defined in the second section of the file.

CTLS:

This name is required. Define it to point to the files used in the build procedures (*.MIC, *.CTL, *.TEC, and *.FIL)

LOGS:

This name is required. Define it to point to the area that stores all the batch log files.

MON:

you must define this name, and specify the /SEARCH attribute. The /SEARCH attribute insures accessibility of the files required during the build procedure. It points to the distribution sources, and files used in the build procedures.

SCUMS:

This name is optional. You must include it if you use the supplied DONE procedure.

SYS:, UNV:, REL:

These may not be required, but you must use the current version of MACRO and LINK to build the monitor.

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FGEN AREAS

the FGEN areas are used to build a TOPS10.REL file for linking monitors. There is one FGEN area for each FGEN dialog you complete in MONGEN. Most installations need only one or two such areas: a KL area and a KS area.

MONITOR BUILD AREAS

The monitor build areas are used to build a MON.EXE for each system at an installation. Define these areas to be in SFDs subordinate to the appropriate FGEN areas. However, if there is only one build area corresponding to a given FGEN area, the two areas can point to the same SFD. For example, in the supplied prototype, S: could be the same as KS:.

The last line of BUILDS.PTH runs the DECLAR program to define some commands, and to insure that directory scanning is on. Directory scanning is essential to the correct operation of the build procedures. Whether you need to define commands depends on what is in SYS:. For example, if you redefine SYS:, you must run MIC from the new area, or you must redefine the DO command. See the section on BUILDS.DCL.

DONE.MIC
DONE.TEC

These files perform clean-up operations, record the changes made, and move the successfully compiled sources to a permanent disk area.

GEN.CTL

This file runs MONGEN for each FGEN and build area. Edit it to generate only the configurations in your monitor areas.

GEN.MIC

This file puts the current load number into GEN.CTL and submits GEN.CTL.

SWITCH.INI

This file should be in the UFD corresponding to the BASE: area. Define it to run the version of PATH supplied on the 7.03 customer-supported CUSPs tape and to process BUILDS.PTH. It should also set up appropriate defaults for SUBMIT commands.

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TOPS10.FIL

TOPS10.FIL contains a list of files to compile. For each file, it lists four optional fields of information in the following format:

<UNIV SPEC>|<COMPIL STRNG>|<LIBRARY SPEC>|<AREA LIST>

UNIV SPEC

This field determines whether the file is a universal file, and, consequently whether its COMPIL STRNG should be duplicated in UNIV.CMD.

COMPIL STRNC

This field contains the command to give to COMPIL to get the file compiled. If the file already is a .REL file (such as EDDT), leave this field blank.

LIBRARY SPEC

This field contains the specification for the module to be included in TOPS10.REL. If this file should not be part of this library, leave this field blank.

AREA LIST

This field contains the list of FGEN or build areas for which the file should be compiled.

UNIV.CTL

This file forces compilation of all monitor sources. It defines a path to each FGEN area to do this. Edit it to use your FGEN areas.

7.6.2 The Build Procedure

The following example shows the complete build procedure. Bold print shows the commands that you type. The column to the right of the commands contains explanatory remarks.

.SUBMIT START<RET>

.DO NEWMOD modulename<RET>

This command applies only if you are including a new module.

.DO COMPILE FGEN<RET>

.DO COMPILE MONGEN<RET>

Include the above COMPILE commands only if you have made changes to FGEN or MONCEN.

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.DO GEN ###<RET>

Include the DO GEN command only if you have changed your configuration or if you want to recompile all the COMMON modules.

.SUBMIT UNIV<RET>

Include the SUBMIT UNIV command only if you have submitted START.

.DO COMPILE modulename<RET>

Include DO COMPILE module name to obtain a listing.

.DO BUILDS<RET>

Compiles the monitor modules in the FGEN areas, and builds MON.EXE and TOPS10.GLB. Unless you have changed the universal files, this is the only step you need to perform.

7.7 CUSTOMIZING BOOT

Before you bring up the monitor, you can modify the BOOT program to eliminate the loading procedures for hardware that does not exist at your installation. This procedure allows you to save space in memory, because the monitor contains all the microcode available, except for the NI (Ethernet) microcode.

You can use a batch control file to modify BOOT. or you can perform the following steps manually. For a KS system, you can modify the control file to include a step that creates binary files or a step to start EDDT. For a KL system, you can modify the control file to include or exclude microcode for various hardware components; as well.

However, it is possible to run the batch control file after you have started GALAXY, exactly as distributed. The following example explains the procedure:

```
.SUBMIT BOOT.CTL
```

This command submits the control file for batch processing. You can perform the following steps manually, instead:

```
.COMPILE/COMPILE TTY:+DSK:BOOT.NAC
```

```
*FTKL10==0
```

```
*FTKS10==-1
```

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These commands to COMPILE set the KS feature test switch to build BOOT for KS systems.

```
    ^Z      ;exits from COMPIL
    ^Z

.R LINK
*KSONCE/SAVE = BOOT/LOCALS/SYMSEG:LOW, REL:EDDT/GO
```

This command runs LINK to create KSONCE.EXE.

```
.RUN KSONCE
*N      ;do not write binary files
*N      ;do not run EDDT
```

These commands turn off the default action of KSONCE, which writes binary files and runs EDDT. You can modify these actions by changing N to Y.

```
.RENAME KSBOOT.EXE=BOOT. EXE
```

This command creates KSBOOT from BOOT.EXE. This is the end of the KS section. The following commands are used to build a KL BOOT:

```
.COMPILE/COMPILE BOOT.MAC
```

This command compiles the BOOT source file.

```
.R LINK
*BTONCE/SAVE = BOOT/LOCALS/SYMSEG:LOG, REL:EDDT /GO
```

These commands run LINK and create BTONCE.EXE, which is used to create BOOT.EXB. Next, run BTONCE:

```
.R BTONCE
*N      ;do not write binary file
*N      ;do not run EDDT
*N      ;do not load DX10/TX01
*Y      ;load DX20/TX02
*Y      ;load DX20/RP20
*Y      ;load KLIPA/CI
*N      ;do not load KLNI/NI
```

This dialog can be modified in the manual procedure or in the control file, to change the settings of the Y and N values. For example, run BTONCE and type the following:

```
.R BTONCE
*Y      ;write binary files
*N      ;do not load DX10/TX01
*N      ;do not load DX20/TX02
*N      ;do not load DX20/RP20
*N      ;do not load KLIPA/CI
*Y      ;load KLNI/NI
```

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After you make these changes, run FILDDT to create a BOOT DDT that you may use to examine problems that you might have with your BOOT procedure. Note that the \$ represents the <ESC> character.

```
.R FILDDT
*BTONCE/S
*/M
=1$11U
=1$U
--BTSVEC$8U
.SAVE BTDDT
```

These commands create a new version of BOOT and a BTDDT that you can now load. For a KS, use the appropriate dialog to copy the file to the microprocessor file system (described in Chapter 6).

For a KL, you must load the front-end file system. The file must be loaded into each front end on a multiple-processor KL system. You must repeat the copying procedure every time you rebuild the front end file system.

The following procedure shows how to load BOOT into the front end for a single-processor KL system:

```
.LOG 1,2

.RUN FE
```

On the CTY, type the following commands:

```
<CTRL/\>
PAR>MCR MOU
MOU>FE0:
MOU><CTRL/\>
PAR>MCR PIP
PIP>DB0:BOOT.EXB = FE0:[10,7]BOOT.EXB
PIP><CTRL/\>
PAR>MCR DMO
DMO>FE0:
DMO><CTRL/\>
<CTRL/\>
```

Now you can bring up your new monitor with the new BOOT.EXB file to control microcode loading by the front end.

CHAPTER 8

STARTING UP AND TAILORING THE GALAXY SYSTEM

After the Tops-10 monitor is running, you can start the GALAXY batch and spooling system. GALAXY is a set of programs that controls the batch system, the operator interface, the output devices, and requests for the disk and tape units of the operating system. The components of the GALAXY system are:

Module	Function
ACTDAE	Accounting daemon
BATCON	Batch controller
CATALOG	Mountable device catalog daemon
CDRIVE	Card reader spooler
GLXLIB	Sharable GALAXY object-time system
LPTSPL	Line printer spooler
MOUNT	User tape and disk mount program
OPR	Operator interface
ORION	Operator interface controller
PLEASE	User-to-operator communications program
PULSAR	Tape label and disk processor
QUASAR	Queue manager and resource allocator
QUEUE	User spooling request program
SPRINT	Card reader interpreter

The GALAXY components listed below should be started automatically whenever the system is reloaded. You can accomplish this by including them in the SySJOB.INI file. (SYSJOB.INI is described in chapter 10.) The GALAXY components that must be initialized are:

```
ACTDAE
QUASAR
PULSAR
CATLOG
ORION
BATCON
LPTSPL
```

STARTING UP AND TAILORING THE GALAXY SYSTEM

8.1 STARTING THE GALAXY SPOOLERS

The GALAXY spoolers must also be started with commands to the OPR program that is the operator interface for the GALAXY batch and spooling system. After reloading the system, type the following commands:

```
.R OPR<RET>

OPR>START ? ONE OF THE FOLLOWING:

BATCH-STREAM      CARD-PUNCH      NODE      PAPER-TAPE-PUNCH

PLOTTER           PRINTER           READER
```

In this example, the ? was typed to show the possible arguments to START. To start the new GALAXY system, use each of the arguments with the START command:

```
OPR>START BATCH-STREAM<RET>
OPR>START NODE<RET>
OPR>START PRINTER<RET>
OPR>START READER<RET>
```

If you receive error messages indicating that certain objects do not exist, you may ignore them. The message shows that a certain configuration does not exist at your installation. Continue with the next command.

The spoolers can be started automatically by OPR if you include the above commands in the file SYS:SYSTEM.COMD.

You can ensure that the appropriate GALAXY files have been started by using the OPR>SHOW STATUS command.

The OPR program is described in the TOPS-10 Operator's Command Language Reference Manual.

8.2 TAILORING THE GALAXY SYSTEM

This section describes the procedure for tailoring the GALAXY system to the requirements of your installation. It describes the procedures necessary for running the GALGEN program, submitting the GALGEN batch job, and starting the GALAXY system with the new parameters.

It is only necessary to run GALGEN if you have made changes to the GALAXY modules, or if you wish to change the default parameters described in the GALGEN program. Note that DECnet Version 4 support is built into the distributed GALAXY programs; therefore, it is not necessary to run GALGEN to include DECnet support.

STARTING UP AND TAILORING THE GALAXY SYSTEM

8.2.1 Running GALGEN

You can run GALGEN during the installation of GALAXY or after GALAXY is started.

The GALCEN program consists of a set of questions that allows you to change the standard configuration to match the hardware configuration of your installation. If your answers to all of the GALGEN questions match the default answers (shown in square brackets) , it is not necessary for you to run the GALGEN program. The GALGEN dialog is shown below in the long format. Additional explanation is provided for some questions.

You can save time and effort by building the GALAXY system in your own disk area. Copy GALGEN into your area before running it, and follow the procedure shown here:

```
.RUN GALGEN<RET>
```

GALGEN begins by printing the following:

```
GALGEN Version (####)
```

```
[Starting GALAXY Generation Procedure for TOPS-10 System]
```

```
[Writing GALAXY Configuration File DSKB:GALCNF.MAC[15,7]]
```

```
In the following dialog, all questions are of the form:
```

```
text of question (list or range of answers) [default answer]
```

The line starts with the actual text of the question. Following the question is a description of the possible answers enclosed in parentheses. This description might be a range of numbers, a list of keywords, or a textual description. Following this description is the default answer, enclosed in square brackets. The default will be assumed if you only press the RETURN key.

You have the choice of carrying on a LONG dialog in which an explanation of each question is provided automatically, or a SHORT dialog in which it is assumed that you are familiar with the GALAXY generation procedure. In either case, you can always obtain the help text by typing a question mark (?) in response to any question.

Answer the following question with either LONG (for a long dialog) or SHORT (for a short one). Simply pressing the RETURN key will imply SHORT.

```
Dialog Length(SHORT, LONG) [SHORT] LONG(RET)
```

Administrative Controls and Parameters

The questions in this section determine absolute GALAXY parameters, which cannot be overridden by user or operator commands.

The OPR program logs all terminal transaction in a log file. The following question allows you to change the default file name, which is OPERAT.LOG.

```
Operator log filename(3-6 Characters) [OPERAT]
```

STARTING UP AND TAILORING THE GALAXY SYSTEM

You have the option of maintaining a backup master queue file which may be used in the unlikely event that the primary master queue file is destroyed.

Do you want redundant master queue file(YES,NO) [No]

The backup file for the master queue file is useful if GALAXY or the master queue file is accidentally deleted or damaged. It records all the current queue jobs so that they will not be lost.

Any permanently mounted structure may be used for the master queues. The structure that is first in the system search list is preferred.

File structure to use for master queue(3-6 Characters) [SSL]

The structure on which the master queue file is stored should be easily accessible by GALAXY. SSL is the acronym for System Search List. Unless you are running a private version of GALAXY, you should press RETURN for this question.

Users can specify a priority for their batch and spooling requests with the /PRIORITY switch. The allowable values for this parameter range between 1 (representing lowest priority) and 63 (representing the highest). The following two questions relate to this switch. The first question requests the maximum priority which may be specified by a non-privileged user.

Maximum priority non-privileged users may specify(1-63) [20]

You may specify the value to be used if the user does not specify a /PRIORITY switch. This value must be between 1 and the maximum priority that you specified in the previous question.

Default for /PRIORITY on batch and spooling requests(1-63) [10]

A queue request that is queued without the /PRIORITY switch must take a default priority. The value you specify here will be used as the default for such requests. The value must be between 1 and the maximum that you specified in the previous question. If you use 1 here, users will not be able to set some requests to a priority that is lower than the default. Therefore, it is recommended that the default that you specify here be greater than 1.

Fallback code inclusion

This section establishes whether 7.02 fallback code is to be included. GALAXY will be larger and less efficient if this code is enabled, but it is necessary if 7.02 is to be run with the 7.03 GALAXY. This feature will probably be removed sometime after 7.03 is released.

You can enable fallback code by answering this question with YES:

Is 7.02 fallback code to be included? (YES,NO) [NO]

STARTING UP AND TAILORING THE GALAXY SYSTEM

[SYSTEM] INFO Parameters

This section allows you to set any currently defined [SYSTEM] INFO control parameters.

The [SYSTEM] INFO facility, which allows users to manipulate PIDs for IPCF communication by symbolic names, is now part of QUASAR. While [SYSTEM] INFO normally limits the maximum length of a symbolic PID name using the GETTAB item %IPMPL (maximum packet length), you have the option of specifying the maximum length of a PID name.

Maximum length of a PID name (29-79 characters) [39]

Applications

The following section establishes parameters for applications supported by GALAXY (for example, NCP) . These applications will be accessible through OPR, the operator interface.

The following applications are supplied with GALAXY. When you run GALGEN, you must supply all the applications required for your configuration.

Application Name	Internal?	Module
CATALOG	NO	CATTAB
CONFIG	YES	CNFTAB
LCP	YES	LCPTAB
NCP	YES	NCPTAB
QUOTA	NO	QUOTAS

You can enable applications through your answers to the following questions.

Will you be running applications?(YES,NO) [NO]

Each application must be associated with an application table name (for example, NCPTAB)

Application name or carriage return to exit(1-20 characters)
Table-name for NCP(1-6 Characters)

Here, you may type the name of an application supported by OPR, such as NCP, and the file(s) required to run the application, such as NCPTAB.

Internal ORION application? (YES,NO) [NO]

Answer this question Y if you will be using applications that are internal to ORION. CONFIG and LCP (the LAT Control Program) are internal applications.

Application module name (1-6 Characters)

Answer this question with the name of the ORION module that controls the application.

STARTING UP AND TAILORING THE GALAXY SYSTEM

Batch Job Defaults

The questions in this section are used to define default values for the various options that a user can specify when submitting a batch job.

The batch user can specify a maximum runtime for his batch job using the /TIME switch. If he does not specify this switch the following default will be used:

Default batch job runtime limit(5-9999 seconds) [360]

Every batch job has maximum limits for each type of spooled output. These limits can be set by the batch user with appropriate switches to the SUBMIT command. If the user doesn't specify these switches, the following defaults will be used:

Line printer output limit(0-9999 pages) [200]
Card punch output limit(0-9999 cards) [1000]
Paper tape punch output limit(0-5000 feet) [200]
Plotter output limit(0-5000 minutes) [30]

The user can specify whether or not the batch log file should be printed after the job terminates by using the /OUTPUT switch to the SUBMIT command. The action is specified by: LOG to always print the log file, NOLOG to never print the log file, and ERROR to print the log file only if the job ended with an unhandled error. If the user doesn't specify this switch, the following value will be used.

Default for SUBMIT/OUTPUT(LOG,NOLOG,ERROR) [LOG]

The system provides for the enforcement of a maximum physical memory limit on batch jobs. The user can specify a maximum memory parameter and if any program attempts to exceed this limit, the batch job goes virtual.

Should memory limits be enforced(YES,NO) [YES]

The user can specify a maximum memory limit by using the /CORE switch. If this switch is not specified by the user, the following default will be used.

Memory limit(24-16384 pages) [512]

Line Printer Defaults and Parameters

The questions in this section are used to set default values for the line printer spooler.

Job banner pages are printed at the beginning of each print request. The user's name and any /NOTE value is printed on them.

Number of job banner pages(0-5) [2]

Job trailer pages are printed at the end of each print request. The user's name and any spooler checkpoint information is printed on them.

Number of job trailer pages(0-5) [2]

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File header pages are printed before each file or copy in each print request. The file name is printed in BOLD letters on each header page.

Number of file header pages(0-5) [2]

The user can specify a special form for a print request with the /FORMS switch. If this switch is not specified the following default will be used.

Name for standard output forms(4-6 Characters) [NORMAL]

The number of characters that uniquely identifies a form is compared with the current form name to determine if a forms change is required for a specific user request.

Number of characters which uniquely identifies form(2-6) [4]

The forms type that a user specifies when submitting a request is compared with the forms types currently mounted in the printer and the forms types recorded in SYS:LPFORM.IN: and SYS:SPPORN.INI. Your answer to this question specifies the number of characters in the name of the forms type that qualify as a match.

There may be site-specific devices which require special device drivers loaded with LPTSPL as needed. For example, the LN01 laser printer requires the module LPTL01 in order for LPTSPL to load fonts as requested.

Do you want to load any special printer drivers? (YES,NO) [NO]

Parameters for MDA

The questions in this section are used to set the default parameters for the Mountable Device Allocator (MDA)

You have the option of specifying whether to enable the deadlock avoidance code in MDA. When enabled, the deadlock avoidance code prevents jobs from blocking, or waiting, for a tape or disk resource that another job may already own or does not exist. You are given this option because slightly more CPU time is used to insure that deadlocks won't occur.

Enable deadlock avoidance? (YES,NO) [YES]

You have the option of specifying which label type is the default.

NOTE

Label type USER-EOT will allow a user program to see the end of tape condition on an UNLABELED tape only. All other label types will cause the user to block at end of tape while MDA automatically expands the volume set. In this case the user program will NOT see end of tape.

Default tape label type(ANSI,BYPASS,IBN,USER-EOT,UNLABELED)
[USER-EOT]

You have the option of specifying the default density at which tapes are read and written.

STARTING UP AND TAILORING THE GALAXY SYSTEM

Default 9-track tape density(200,556,800,16000,6250) [1600]
Default 7-track tape density(200,556,800) [800]

You have the option of specifying the default track type on which to mount tapes.

Default track type(7,9) [9]

The system administrator can allow non-privileged users to bypass label processing.

Allow bypassing for non-privileged users?(YES,NO) [NO]

When the user mounts a labeled tape, (s)he can use the /LABEL-TYPE:BYPASS switch to specify that the tape label be ignored. If you want this function to be restricted to privileged users, answer NO to this question. If you want all users to be able to mount any tape regardless of the label type, answer YES to this question.

Miscellaneous Defaults and parameters

The questions in this section refer to general GALAXY parameters.

The following section establishes default bias and disk page to spooler unit conversion factors.

Do you want the standard limit computation(YES,NO) [YES]

This question refers to disk page conversion to spooler units. (Note that one disk page equals four disk blocks.) If you do not want this conversion, answer NO to the question. If you answer NO, GALGEN prints the following and prompts you for a value for each output device.

The default output limit of a spooled file is calculated as:

limit = disk blocks * units per disk block * copies

The output limit is expressed in pages for the printer, cards for the card punch, minutes for the plotter, and feet for the paper tape punch. The following questions establish the number of units of output per disk page.

Number of printed pages per disk block [.7]
Number of punched cards per disk block [A]
minutes of plotter output per disk block [0.07]
Feet of paper tape per disk block [7]

The default action to be taken when output exceeds the specified limit for an output spooler may be to ABORT the job and ignore all remaining output, ASK the operator what to do, or PROCEED to finish processing the job.

Default output-limit-exceeded action(ABORT,ASK,PROCEE0) [ASK]

If file access between network nodes is to be done, each FAL (File Access Listener) stream needs a network type associated with it. The network types supported are ANF-10 and DECnet.

Default network-type for FAL streams (ANF-10,DECnet) [ANF-10]

[End of GALGEN Dialog]

STARTING UP AND TAILORING THE GALAXY SYSTEM

When the dialog is finished, GALGEN writes the output file GALCNF.NAC into the disk area. Use this output file to configure your new GALAXY system.

8.2.2 Assembling the New GALAXY System

You may use the batch control file (GALAXY.CrL) provided to assemble the new GALAXY system. To submit a batch job, the GALAXY system and spoolers must be running. For an existing installation, the GALAXY system is probably already running because it is usually started automatically at system startup from the SYSJOB.INI or OPR.ATO file. If you are installing a new system, you should create one of these files, reload the system, and start the GALAXY components (as described in Section 8.1).

The batch control file GALAXY.CTL that is included on the CUSP tape uses the GALCNF.MAC file to generate a GALAXY system. The batch job will take about one hour to run, and will generate the appropriate .EXE files for the GALAXY system. Copy the batch control file into your area and submit it from there.

To start the batch job, type the monitor command:

```
.SUBMIT GALAXY/TIME/RESTART
```

If the batch job ends in an error, try to correct the control file, then delete the .LOG file and submit the control file again. If the error occurs again, consult a software specialist or system programmer.

NOTE

It is Important that the batch job run successfully. Check the log file carefully to be sure that no warning (%) errors occurred. These errors do not end the job but may cause problems later.

When the batch job finishes successfully, a series of messages will be printed on the operator's terminal. One message will be printed for each component of the GALAXY system as it is created.

When the components are successfully created, they are ready to be copied into SYS. Note that the system should be stand-alone during this process because no users can submit requests during this procedure.

8.3 SHUTTING DOWN THE GALAXY SYSTEM

If a GALAXY system is already running, you must shut it down before you copy the existing GALAXY files into a backup area and copy the new files into SYS. Before shutting down the GALAXY system, you should obtain exclusive use of the operating system by scheduling stand-alone time for this purpose or by ending timesharing.

Using the OPR program, stop the old GALAXY system. To start OPR, type the following command:

```
.R OPR<RET>
```

```
OPR>
```

STARTING UP AND TAILORING THE GALAXY SYSTEM

To obtain a list of the components of the current GALAXY system by typing the following command:

```
OPR>SHUTDOWN ? ONE OF THE FOLLOWING:

BATCH-STREAM   CARD-PUNCH   NODE   PAPER-TAPE-PUNCH
PLOTTER        PRINTER      READER

OPR>SHUTDOWN
```

To stop all the components of the GALAXY system, type the SHUTDOWN command followed by the name of each component. For example:

```
OPR>SHUTDOWN BATCH-STREAM<RET>
OPR>SHUTDOWN CARD-PUNCH<RET>
OPR>SHUTDOWN NODE<RET>
OPR>SHUTDOWN PAPER-TAPE-PUNCH
OPR>SHUTDOWN PLOTTER<RET>
OPR>SHUTDOWN PRINTER<RET>
OPR)SHUTDOW READER<RET>
```

During this procedure, OPR may print the following message on your terminal:

```
--THERE ARE NO DEVICES STARTED--
```

In this case, there were no devices on line for that component. You can ignore the message and go on to the next command.

After you shut down all the components, exit from OPR:

```
OPR>EXIT<RET>
```

After returning to monitor level, use the SYSTAT monitor command to determine the jobs that are running for GALAXY. The GALAXY jobs may be named any or all of the following:

```
QUASAR
BATCON
SPRINT
LPTSPL
ORION
PULSAR
```

Using the ATTACH command, attach to each job and log it out.

The GALAXY programs that are currently running must now be copied to a backup area from SYS. In the following example, they are copied to OLD ([1,3]). Note that the command line is continued using the hyphen at the end of the first input line.

```
.COPY [1.3]=[1.4]QUASAR.EXE,BATCON.EXE,SPRINT.EXE,GLXLIB.EXE,-<RET>
#SPROUT.EXE,LPSPL.EXE,ORION.EXE,PULSAR.EXE,OPR.EXE<RET>
```

STARTING UP AND TAILORING THE GALAXY SYSTEM

You must also delete the master queue files. The master queue files can be deleted with the following command:

```
.DELETE SYS:QSRMS1.*<RET>
```

```
FILES DELETED:  
SYS:QSRMS1.QSR  
221 BLOCKS FREED
```

You are ready to copy the new files to SYS and bring up the new GALAXY system.

8.4 STARTING THE GALAXY SYSTEM

After you stop the old GALAXY system, you can start the new GALAXY system. The first step is to copy all the new GALAXY files into SYS. The new files will automatically supersede the old files in SYS. Use the COPY command to copy all the .EXE files from your area to SYS.

```
.COPY SYS:*.EXE<RET>
```

You can start the GALAXY programs by reloading the system if the system has a file SYS:SYSJOB.INI that logs in the system programs. The SYSJOB.INI file is described in Chapter 10. To start the GALAXY programs manually, reload the system by typing CTRL/\ on the CTY and typing the SHUTDOWN command to the parser. Then reload the system, as demonstrated here:

```
<CTRL/\>  
  
PAR>SHUTDOWN<RET>  
  
DECSYSTEM-10 NOT RUNNING  
  
[Dumping on DSKB:CRASH.EXE[1,4]]  
[Loading from DSK:SYSTEM.EXE[1,4]]  
  
TOPS-10 703 Development mm-dd-yy  
  
Why reload: SCHED<RET>  
Date:mmm-dd-yy  
Time:17:55<RET>  
  
Startup opticon:QUICK<RET>  
  
TOPS-10 703 Development mm-dd-yy
```

Now log in with the PPN [1,2] and start up the GALAXY spoolers by running the app program, as described in Section 8.1.

CHAPTER 9

MAINTAINING THE SYSTEM AUTHORIZATION FILE

The REACT program enables you to maintain the system authorization file, ACTDAE.SYS. This chapter explains how to use REACT commands to create, change, and delete user accounts. It also explains how to update the master accounting file, and enable account validation. To run REACT, you must have administrative privileges (JP.ADM in JBTPRV).

The REACT command tables at the end of this chapter provide quick reference to the commands discussed in Sections 9.2 through 9.8.

9.1 CONVERTING OLD ACCOUNTING FILES

The REACT shipped with TOPs-10 Version 7.03 requires that you use the ACTDAE.SYS accounting file. If your system currently uses ACCT.SYS and AUXACC.SYS files, use the procedure in the next section to convert them, to the ACTDAE.SYS format.

To convert ACCT.SYS and AUXACC.SYS files to the ACTDAE.SYS format, use the NEWACT program as shown below:

1. Run NEWACT.

NEWACT looks up the ACCT.SYS, AUXACC.SYS, and USERS.TXT files and uses the information in them to create the new ACTDAE.SYS file. If you do not want the information in USERS.TXT included in your new accounting file, delete the USERS.TXT file.

2. Copy the new ACTDAE.SYS to SYS:.

9.2 ENTERING AND EXITING REACT

The following examples show how to enter and exit the REACT program. Bold characters indicate what you type.

To enter REACT type the following:

```
.R REACT<RET>
```

```
REACT>
```

To exit the REACT program and return to monitor command level, type the following:

```
REACT>EXIT<RET>
```

MAINTAINING THE SYSTEM AUTHORIZATION FILE

9.3 GETTING HELP WHILE USING REACT

To get information about REACT commands and keywords you can do the following:

- o Press the question mark at any time to display command keywords and values.
- o Press the ESCape key after you have entered enough characters to uniquely identify a command. After you press the ESCape key, REACT completes the rest of the command name for you, and provides guidewords in parentheses to help you complete the command line.
- o Type HELP while using REACT to get information about REACT commands and values.
 - When you type HELP and press RETURN, REACT displays a brief list of top-level REACT commands and their functions.
 - When you type HELP followed by a command name, REACT displays information about that command.
 - When you type HELP while you are in user-mode, REACT displays help for the commands available in that mode.

Table 9-2 provides a complete list of user-mode commands and their functions.

9.4 CREATING USER ACCOUNTS

The INSERT command enables you to create a new account, and to define the attributes of the account. The attributes you define for a user's account make up the user's profile.

You must specify a user-id when you use the INSERT command. REACT then prompts you for the user's PPN. If you typed a user-id that does not exist. If the user-id belongs to an existing account, REACT prints an error message. REACT uses the default profile to establish initial values for all the profile attributes. After you create a new user account, you can modify values that may not meet the requirements of the user. Section 9.5 explains the account characteristics that you can change.

To create a new user account, type INSERT, followed by the user-id. The user-id may be a user name or PPN.

The following example shows how to use the default profile to create an account for user TESTNAME. The DONE command completes the insertion. The SHOW command displays the profile attributes for user TESTNAME's account (refer to section 9.4.3).

```
REACT> INSERT TESTNAME<RET>
New user PPN: [255,2054]
[READPL Default profile loaded: [%,%]
USER>
```

The USER) prompt allows you to change the attributes of the new profile. You can modify the attributes using the commands described in Section 9.5.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

You can use an existing account as the default profile for the new user account, by specifying the new user-id = old user-id.

To create a group of accounts with the same project number, type INSERT and supply a wildcard (*) for the programmer number. REACT then prompts you for the following information:

1. Base programmer number:
(Supply the first programmer number in the series you want to create.)
2. Programmer number increment:
(Supply the number to increment each programmer number.)
3. Count of PPN's to insert:
(Supply the number of PPNTS you wish to create.)
4. Prompt for user name?
(Respond YES if you want REACT to prompt you for the user name for each account you create. If you respond NO, REACT generates a user name for each account it generates in this series.)
5. Prompt for password?
(Respond YES if you want REACT to prompt you for the password for each account you create. If you respond NO, REACT generates a random password for each account it creates in this series.)

The following example shows how to create multiple accounts under the same project number. It uses an existing user-id (user name or PPN) as a model to define the attributes of the new accounts.

```
REACT>show [20,*] /FAST<RET>
[20,2222] OLDUSER
REACT> insert [20,*]=OLDUSER<RET>
Base programmer number:3000<RET>
Programmer number increment:2<RET>
Count of PPN's to insert:5<RET>
Prompt for user name?y<RET>
Prompt for password?n<RET>

[REANEW          Inserting new user: [20,3000]]
New user name:LYSER1<RET>
[REAINS          [20,3000] inserted with name USER1]
[REAPSW          Password assigned: T07H2NTU]

[REANEW          Inserting new user: [20,3002]]
New user name:USER2<RET>
[REAINS          [20,3002] inserted with name USER2]
[REAPSW          Password assigned: AIHT073H]

[REANEW          Inserting new user: [20,3004]]
New user name:USER3<RET>
[REAINS          [20,3004] inserted with name USER3]
[REAPSW          Password assigned: O8OZYYPW]
```

MAINTAINING THE SYSTEM AUTHORIZATION FILE

```
[REANEW          Inserting new user: [20,3006]]
New user name:USER4<RET>
[REAINS         [20,3006] inserted with name USER4]
[REAPSW         Password assigned: 0ZQWWJNC]

[REANEW          Inserting new user: [20,3010]]
New user name:USER5<RET>
[REAINS         [20,3008] inserted with name USER5]
[EAPSW          Password assigned: JP3SOQJ4]
```

```
REACT>SHOW [20,*]/FAST<RET>
[20.2222] OLDUSER
[20,3000] USER1
[20,3002] USER2
[20,3004] USER3
[20,3006] USER4
[20.3010] USER5
```

9.5 MODIFYING USER PROFILES

The CHANGE command allows you to modify the attributes of an existing user profile. When you type the CHANGE command, REACT prompts you for the user-id of the account you want to modify, then enters user-mode.

Before you change a user's profile, you may want to display the profile to check the current values and settings. Use the SHOW command and supply a userid to display a profile. See Section 9.6 for an example of the SHOW command.

To modify user NEWUSER's profile, use the CHANGE command. The following example changes the expiration date of NEWUSER's account.

```
REACT>CHANGE [20,3333]<RET>
USER>? one of the following:
ACCESS-TYPES          CONTEXT-QUOTAS          CORE-LIMITS
DISTRIBUTION-LOCATION  ENQ-DEQ-QUOTA          EXPIRATION DATE
IPCF-QUOTAS          LOGIN-TIMES            MAILING-ADDRESS
NAME                 PASSWORD                PERSONAL-NAME
PRIVILEGES           PROFILE-DEPAULT        PROGRAM-TO-RUN
REQUIREMENTS        SCHEDULAR-TYPE         SPOOLED-DEVICES
STRUCTURE-QUOTAS     WATCH-BITS

  or one of the following:
DEFAULT  DONE  HELP  QUIT  RESTORE  SHOW
USER>EXPIRATION-DATE 31-DEC-89<RET>

USER>SHOW<RET>
.
.
.
```

MAINTAINING TEE SYSTEM AUTHORIZATION FILE

9.6 DISPLAYING USER INFORMATION

The SHOW command displays information about users listed in the accounting file. To display a users profile, type the following:

```
REACT>SHOW user-id/switch<RET>
```

where user-id can be the user name or PPN of an existing account profile. You may optionally include one of the following switches:

```
/DETAIL lists all user profile information  
/FAST lists only the user-name and PPN
```

You can use wildcards to specify a set of PPNs. The following example shows the profile for the user with PPN [20,6666]:

```
REACT>SHOW NEWUSER<RET>  
PPN: [20,6666]  
User name: NEWUSER  
Profile default: [55,%] or [%,%]  
* Personal name: -none-  
* Distribution location: -none-  
* Mailing address: -none-  
* Expiration date: never  
* LOGIN times: weekdays 0:23 Weekends 0:23  
* Access types: Card reader, Network file access, Local, ANF CTY,  
Dataset, Remote, Subjob of batch, Batch  
* Requirements for LOGIN:  
Account and remark strings are not required  
Name is not required  
Password under timesharing and batch  
Password change at next LOGIN  
Minimum password length: -none-  
Password change interval: -none-  
Password changes are allowed  
* Scheduler type: 52  
* Program to run: -none-  
* Context-quotas: Contexts 4, Total pages 512  
* Core Limits: Physical 512. Virtual 512  
* ENQ/DEQ quota: 511  
* IPCF quotas: Send 2, Receive 5, PIDs 2  
* Privileges: -none-  
* Spooled device bits: CDP, CDR, LPT, PLT, PTP  
* Watch bits: MTA  
* Structure quotas:  
Structure      Quota in      Quota out      Reserved      Status  
-----  
DSKB           1000           5000           0  
DSKC           10000          5000           0  
Administrative data:  
Profile last changed by [1,2] at 3-Feb-86 10:36:49  
Last access -never-  
Last password change -none-  
REACT>
```

Characteristics of the profile that have not been changed from the default are designated by an asterisk at the beginning of the line.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

9.7 DELETING USER ACCOUNTS

The DELETE command removes a user account from ACTDAE.SYS. You can use wildcards in a PPN to delete multiple accounts. The following example deletes user NEWUSER's account.

```
REACT>SHOW NEWUSER/FAST<RET>
[20,6666]      NEWUSER

REACT>DELETE [20,6666] <RET>
User [20,6666] NEWUSER, expiration date: 31-Dec-89 0:00:00
```

REACT responds with:

```
Are you sure?
```

This question prevents you from accidentally deleting accounts. You can respond to this question with NO, QUIT, SHOW, or YES. Use NO or QUIT if you do not want to delete the account. Use SHOW to display the profile (the question "Are you sure?" will be repeated). Type YES only if you want to delete the account. If you say YES, REACT prints the following messages:

```
User [20,6666] NEWUSER deleted

A total of one user deleted.
```

Use the SHOW command to check that you have deleted user NEWUSER's account.

```
REACT>SHOW NEWUSER<RET>
?REANSU      No such user NEWUSER
```

9.8 UPDATING THE MASTER ACCOUNTING FILE

You can use the VERIFY command to maintain a master accounting file, to which you may want to make changes and check the system accounting file before, making system-wide changes. VERIFY allows you to compare the master accounting file in your area with the ACTDAE.SYS in SYS.

To use the VERIFY command, you must first have a copy of ACTDAE.SYS in your disk area. The default file name for this copy is MASTER.SYS. You can make your changes to accounting profiles in the MASTER.SYS file, then use VERIFY to list the differences between the MASTER.SYS file and SYS:ACTDAE.SYS. REACT allows you to keep the changes you made in MASTER.SYS or to discard the changes.

To use the VERIFY command, type the following command to REACT:

```
REACT>VERIFY master-file user-id/switch
```

The master file is your copy of SYS:ACTDAE.SYS. The default file (if you do not specify a file name) is DSK:MASTER.SYS.

You can optionally include a user-id (user name or PPN) after the file name, to check only that user profile against the system file. If you include a PPN, you can specify wildcards to verify a group of accounts.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

You may optionally Include one or more of the following switches:

```
/NOREPORT  Does not list the profile attributes of the
            profiles that are difference from the system file.

/NOUPDATE  Does not allow you to update the master file with
            changes from the system file.

/REPORT    Lists the profile attributes of user accounts that
            are different from the system file. This action
            is taken by default.

/UPDATE    Allows you to update the master file with changes
            from the system file. This question is asked at
            the end of the verification as part of the default
            action.
```

For example, use the VERIFY command to list differences throughout the entire master file, for all users:

```
REACT>VERIFY MASTER.SYS

Master file:      DSKC:MASTER.SYS[1,2]
Accounting file:  DSKA:ACTDAE.SYS[1,4]
Temporary file:  DSKC:039REA.TMP[1,2]
Verifying:       [*,*] /REPORT /UPDATE
```

REACT lists the profile information for any user profiles that are different from the system accounting file. This listing is identical to the display from the SHOW command (see Section 9.4.2). Then REACT prints the following message:

```
Preserve changes?
```

You can respond with NO, QUIT, SHOW, or YES. If you want to delete the changes from your master file, type NO or QUIT. To display the changes, type SHOW. If you want to keep the changes, type YES.

9.9 USING ACCOUNT VALIDATION

The USAGE file accounting system provides ASCII files containing data useful in billing users for system usage. The accounting daemon (the ACTDAE program) can provide validation of account strings when users log in, and write usage data in the USAGE files.

For details on the format of the USAGE file entries, refer to the TOPS-10/20 USAGE File Specification. The following sections describe the procedure for enabling account validation

To enable account validation, do the following:

1. Answer Y to question 10 in the HDWGEN portion of MONGEN
2. Require account validation for each PPN in ACTDAE.SYS.
3. Create the account validation file PROJCT.ACT.
4. Run the program PROJCT.EXE to convert PROJCT.ACT into PROJCT.SYS.
5. Copy PPOJCT.SYS into ersatz device SYS: (PPN is [1,4]).

MAINTAINING THE SYSTEM AUTHORIZATION FILE

9.9.1 PROJCT.ACT

PROJCT.ACT is an ASCII file you can create to associate account strings with PPNs. The format of each line in PROJCT.ACT is:

```
[p,pn]=account1,account2,account3,...
```

You can use the * and ? wildcard characters in the PPNs. You can substitute the * for either project number, programmer number, or both. You can substitute the ? for a single digit in the PPN. For example, the PPN definition [27?,3007] would define account strings for both [27,007] and [275,3007]. You cannot include both the * and a digit in a single number (either project number or programmer number).

A single PPN can be defined to accept any number of account strings, each of which is an ASCII sequence of up to 39 alphanumeric characters. The account strings must match user input (at LOGIN), exactly, including the casing of letters. If the account string definition in PROJCT.ACT is all uppercase, for example, the user must type the account string in all uppercase form.

You can allow the user to log in without specifying an account string by defining a default account string for the PPN. Use the /DEFAULT switch after one of the account strings that is valid for the user's PPN. Then when the user logs in, (s)he can simply press RETURN in response to the ACCOUNT: prompt. The session will be charged to the default account string. For example, the following account definition allows the user to default accounting data to the first account string in the definition (PUBLICATIONS):

```
[27,5434)=PUBLICATIONS/DEFAULT,MARKETINC,MAINTENANCE
```

The PPN entries in the PROJCT.ACT file must occur in numerically ascending order. In the case of wildcard characters, the * is equivalent to 777777, and the ? is equivalent to a 7. In cases of conflicts between a wildcarded number and an explicit number, the wildcarded PPN must follow the explicit PPN. For example, the following order is valid:

```
[10,10]=ABC  
[10.2370] =DEF,GHI  
[10,23??]=FOO  
[10,*]=GHI  
[*,*]=JKL
```

Note that, under this scheme, the user with PPN [10,10] may not log in with account string JKL, because an explicit definition overrides any subsequent definitions. However, the user with PPN [10,2370] can log in with account string GHI, because any number of account strings can be valid for a single PPN.

Account strings can also contain wildcard characters. The * in the account string definition denotes account strings with any number of characters (or no characters) to replace it. However, when the ? is used to replace a character, it must be matched by a character. Therefore, the account string ABC??FG* can be matched only by account strings containing ABC for the first three characters, followed by any two characters, containing FG for the sixth and seventh characters, followed by no more or any number of characters.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

9.9.2 PROJCT.EXE

After you create PROJCT.ACT, and ensure that it exists in your directory path, run the PROJCT.EXE program as shown below:

```
.R PROJCT<RET>

END OF JOB
EXIT
.
```

If an error occurs during processing the PROJCT.ACT file, PROJCT displays a message indicating the field or problem in the input file. Edit the PROJCT.ACT file to correct the problem, and run PROJCT again. When successful, PROJCT creates the PROJCT.SYS file. Copy this file into SYS:

When account validation has been enabled, the user will see an additional prompt in the LOGIN dialog (ACCOUNT:), after the PASSWORDS prompt. See the TOPS-10 Operating System Commands Manual for more information.

9.10 MAINTAINING LOGIN FAILURE RECORDS

REACT uses the FAILUR.LOG file to maintain records on login failures. All records in the FAILUR.LOG file are written in 7-bit ASCII, and vary in length. All validation failure entries have the same format for the first eleven fields. The following table explains the first eleven fields of the FAILUR.LOG file:

Table 9-1: FAILUR.LOG File Format

#	Field	Pos	Data Type	Comments
001	Error code	001	Octal	Error code defined in ACTDAE
002	Usage style Date/Time	003	Decimal	Same format as usage entries
003	Job number	017	Decimal	Job number of QUEUE./tP&P sender
004	PPN (LH)	020	Octal	PPN (left half) of above job
005	PPN (RH)	026	Octal	PPN (right half) of above job
006	Username	032	ASCII	12 character name of above job
007	Program name	044	ASCII	6 character program name
008	TTY name	050	ASCII	Example: TTY45
009	Node name	056	ASCII	Node name of job (ANF-1g, DECnet, or LAT)
010	Line name	072	ASCII	Line name on above node
011	APC code	075	Octal	Asynchronous port characteristic

MAINTAINING THE SYSTEM AUTHORIZATION FILE

The following table shows the format for fields that end the Invalid account string (1) and Invalid password (6) error entries.

#	Field	Pos	Data Type	Comments
012	PPN (LH)	077	Octal	PPN (left half) whose account string was invalid.
013	PPN (RH)	083	Octal	PPN (right half) as above

The Job not privileged entry (3) only contains the first 11 fields because the job number is already specified.

9.11 TOP-LEVEL REACT COMMANDS

The following table describes the basic commands for creating, changing, and deleting accounts. It also describes commands for updating the master accounting file, and displaying user information.

Table 9-2: Top-level REACT Commands

Command	Function
CHANGE userid	Enables you to enter user-mode and modify user profiles.
DELETE userid/ASM /NOASK	Removes the specified account from ACTDAE.SYS. You can specify a wildcard in the userid. /ASK is the default. /ASK causes REACT to prompt you to confirm each deletion you make. If you specify /NOASK, REACT does not prompt you to confirm each deletion.
EXIT	Exits the REACT program and returns you to monitor command level.
HELP	Displays information about REACT commands. To display a brief list of REACT top-level commands, type HELP and press RETURN. To get more information about a particular REACT command, type HELP and the command name.
INSERT userid [=userid]	Enables you to enter user-mode and create user accounts. You can supply an optional existing userid to use as a guide for the new profile.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

Table 9-2: Top-level REACT Commands (Cont.)

Command	Function
LIST userid filespec/switch	Writes information from the specified user's profile to a file. You can specify a wildcard in the userid. The default file specification is DSK:ACCT.LST[-]. Switches are: /DETAIL, which lists all the information in a user's profile, and /FAST, which lists only the PPN and its associated username. /DETAIL is the default.
LOCK	Opens ACTDAE.SYS in READ-ONLY mode, to prevent other users from making changes to the file while you update the master accounting file.
SELECT	Allows you to mark accounts that have certain profile attributes in common. You use the SELECT command to specify the attributes that you want as identifiers for the group. After you mark the accounts as a group, you can change various attributes of the profiles as a group, rather than doing so individually. For example, to extend the expiration date of all accounts that expire on December 31, you do the following: SELECT the accounts that have the expiration date you want to change, and CHANGE the expiration date to the desired date.
SHOW userid	Displays information from the specified user's profile. You can specify a wildcard in the userid. Switches are: /DETAIL, which displays all the information in a user's profile, and /FAST, which displays only the PPN and its associated username. /DETAIL is the default.
UNLOCK	Reopens ACTDAE.SYS so that other users may access it.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

Table 9-2: Top-level REACT Commands (Cont.)

Command	Function
VERIFY [filespec] user-id/switch	Allows you to maintain a master accounting file to maintain changes to the system's accounting file. You can specify a particular user account or verify all PPNs. This command allows you to list the differences between your master and the system accounting file, and, optionally, update the master accounting file.

NOTE

[userid] can be either a PPN or a user name. If the username includes characters other than A-Z, a-z, hyphen (-) or digits, you must enclose it in double quotes.

9.12 USER-MODE COMMANDS

User-mode commands are subcommands to the CHANGE, INSERT, and SELECT commands, and consist of the following types of commands:

- o FIELD CHANGE COMMANDS that specify the user account field that you want to change.
- o CUSTOMER-DEFINED FIELD CHANGE COMMANDS you define in REACTU.MAC to tailor the REACT program to the special needs of your installation.
- o ACTION COMMANDS that perform the changes specified with Field Change Commands (listed in Table 9-2).

The following prompt indicates that you have entered user-mode:

```
USER>
```

Table 9-3 lists REACT Field Change Commands.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

Table 9-3: REACT Field Change Commands

Command	Function
ALL	Allows you to specify all of the options for a given field change command.
AND	Allows you to specify selection criteria with the SELECT command.
ACCESS-TYPES	Specifies the types of access allowed to the specified user. An access is any attempt by a user, or in behalf of a user, to gain access to the system using a correct combination of user-id and password. ACCESS-TYPES include following: ANF-CTY, BATCH, DATA-SET, FILES-ONLY, LOCAL, NETWORK-FILE-ACCESS, PHYSICAL-CARD-READER, REMOTE, SUBJOB-OF-BATCH.
CONTEXT-QUOTAS	Specifies the limits governing the use of job contexts. The context quota is the number of contexts a user may have at any one time. Each logged in job has at least one (current) context. The maximum is 511. A quota of zero indicates no limit. The saved page quota is the number of pages of swapping space a user may occupy with idle contexts. A quota of zero indicates no limit. Refer to the description of job contexts in the TOPS-10 Operating System Commands Manual for more information.
CORE-LIMITS	Specifies a decimal value for the physical and virtual limit of the number of pages. The maximum number of physical pages is 8,192. The maximum number of virtual pages is 16,384.
DISTRIBUTION-LOCATION	Specifies text to be displayed on the banner page(s) of spooled output. The text indicates where the operator should distribute the user's output.
DONE	Writes the changes to the ACTDAE.SYS File.
ENQ-DEQ-QUOTA	Specifies a decimal value for the number of outstanding ENQ locks. The maximum number is 511.
EXPIRATION-DATE	Specifies the date and time when LOGINS to this account are no longer allowed.
IPCF-QUOTAS	Specifies a decimal value for the SEND, RECEIVE, and PID quotas. The maximum value for each quota is 511.
HELP	Displays help text for the Specified user-mode command.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

Table 9-3: REACT Field Change Commands (Cont.)

Command	Function
LOGIN-TIMES	Specifies the time of the day the user is allowed to LOGIN. Weekdays are divided into 24 one-hour segments, Weekends are divided into 12 two-hour segments. Therefore, if a user is permitted to LOGIN on Saturday at 7:00 AM, the user can actually LOGIN between 6:00 AM and 7:59 AM.
NAME	Specifies the username for this profile. The username can consist of any printable character except the following: %, *, or / It can be up to 39 characters long, and it cannot begin with a numeric character.
NO	Allows you to specify options to field change commands
NONE	Allows you to disallow all of the options to a given field change command.
NOT	Allows you to specify selection criteria with the SELECT command.
OR	Allows you to specify selection criteria with the SELECT command.
PASSWORD	Specifies a password the user must type to gain access to the system. The password can consist of any printable characters, and can be up to 39 characters long.
PERSONAL-NAME	Specifies a name other than the users official accounting name (see NAME). The personal name, if available, is printed on the banner page(s) of a user's spooled output. This is an unprivileged entry in a profile, and as such may be modified by the user.
PPN	Specifies the user's project, programmer number. The PPN is the primary means of identifying a user.
PRIVILEGES	Specifies the privileged functions allowed to the user. The privileged functions are: CPU, DISK-PRIORITY, ENQ-DEQ, HPQ, IPCF, LOCK, METER, MON-SPY, OPERATOR, POKE, RTTRP, SPY, TRPSET, UNSPOOL
PROGRAM-TO-RUN	Specifies the file specification of the program to run after LOGIN is complete. The file specification may include a device name, program name, extension, and directory, including up to five levels of sub-file directories (SFD).
PROHIBIT	Enables the system administrator to prevent users from changing their passwords. This is useful in situations where several people share a single PPN.

MAINTAINING THE SYSTEM AUTHORIZATION FILE

Table 9-3: REACT Field Change Commands (Cont.)

Command	Function
QUIT	Terminates the current user-mode command.
REQUIREMENTS	Specifies additional information the user must supply when logging in. Options are: <ul style="list-style-type: none"> o ACCOUNT information associated with the user o NAME under timesharing or batch o PASSWORD under timesharing or batch o REMARK to be stored in the usage files
RESTORE	Deletes any changes you have made to a profile in the current user-mode session, and returns all attributes to their original values.
SCHEDULER-TYPE	Associates the specified user profile with a group that has been assigned a scheduler class. (See Appendix C for information about assigning scheduler classes.)
SHOW	Displays the current fields for the specified user profile.
SPOOLED-DEVICES	Specifies the physical devices not normally available to the user. The options are CDP, CDR, LPT, PTP, PLT and ALL.
STRUCTURE-QUOTAS	Specifies the structure on which the user has disk space allocated, and the amount of disk space allocated on the structure. LOGIN puts these structures in the user's search list, and sets either of the following two I/O status bits: READ-ONLY or NO-CREATE.
WATCH-BITS	Specifies any of the following watch bits that LOGIN sets: CONTEXTS, DAY, FILES, MTA, READ, RUN, VERSION, WAIT, WRITE. For more information, see the SET WATCH command in the TOPS-10 Operating System Commands Manual.

CHAPTER 10

CREATING SYSTEM INITIALIZATION FILES

There are several files that the monitor uses to help start up the system, initiate terminal communication, and provide information to the user. The INITIA program reads these files and passes the information that you store in them to the monitor. This chapter discusses the INITIA program and the initialization files that INITIA can read.

10.1 INITIA

INITIA is a system program that passes information to the monitor and automatically starts up other system programs. Users can also run INITIA from their terminals to set up terminal characteristics and display information about the terminal.

10.1.1 INITIA at System Startup

When INITIA runs automatically at system startup, it reads SYS:SYSJOB.INI, an optional system startup file created by the system administrator. You can prevent INITIA from running automatically at startup, by using the NO INITIA startup option, as described in Appendix A. SYSJOB.INI contains the commands necessary to start up system programs that normally run in a detached state (that is, programs that do not normally require terminal I/O) . Some system programs that may be started from SYSJOB.INI are ACTDAE, FILDAE, QUASAR, ORION, and others.

NOTE

INITIA cannot access files that are protected from it. Therefore, the system files SYSJOB.INI and TTY.INI must have a protection code of <15>). Protection codes are described in detail in the TOPS-10 Operating System Commands Manual.

SYSJOB.INI allows you to start system components quickly and automatically. Most programs that can be started by OP SER, with OPR.ATO, may be placed in SYSJOB.INI instead. SYSJOB.INI can contain monitor commands and commands to programs, but its intended purpose is as a system initialization file, and great care should be taken to ensure that the file can, be read successfully.

CREATING SYSTEM INITIALIZATION FILES

10.1.1 Initializing Terminals

INITIA runs automatically when a terminal connects to the system. To initialize the terminal, INITIA reads the file SYS:TTY.INI to establish information about the terminal. This information is stored in TTY.INI when the file is created by the system administrator.

10.1.3 The INITIA Monitor Command

The INITIA monitor command enables users to initialize their terminals at any time. To run INITIA from a terminal, use the INITIA monitor command and include the INITIA command in your SWITCH.INI file.

You can also use INITIA to do the following:

- o Display the system banner and time of system shutdown (KSYS) if any.
- o Display the current setting of terminal characteristics.
- o Change terminal characteristics.

See the TOPS-10 Operating System Commands Manual for more information about the INITIA command and the SWIRCH.INI file

10.2 THE SYSJOB.INI FILE

SYS:SYSJOB.INI (if it exists) is read by INITIA at system startup. TOPS-10 provides several system programs that are suitable for startup by INITIA from SYSJOB.INI.

SYSJOB.INI is only one of several ways to start up system programs automatically. Most of the programs that can be started automatically by OPSER, from the OPR.ATO file, can be started more easily and efficiently by INITIA through SYSJOB.INI. Commonly started from SYSJOB.INI are the system daemon programs (DAEMON, FILDAE, ACTDAE) GALAXY components (ORION, QUASAR, PULSAR, BATCON, LPTSPL, and others), user utilities (like MIC), and site-specific system programs. Any system program that normally runs in a detached state is a candidate for startup from SYSJOB.INI.

INITIA reads SYSJOB.INI, sending the commands to the monitor for special processing through the FRCLIN (force-line) mechanism. FRCLIN is an internal mechanism of the monitor that allows a privileged program to pass commands to the monitor as though the commands had been issued from a terminal. Because terminal input is handled quickly by the monitor, INITIA uses FRCLIN to start up system programs with a minimum of delay.

CREATING SYSTEM INITIALIZATION FILES

10.2.1 Format of SYSJOB.INI

SYSJOB.INI is formatted as a list of the commands that can be sent through the FRCLIN to the monitor. Any monitor commands can be placed in SYSJOB.INI, but the following are the most commonly used:

SET DEFAULT ACCOUNT string	Sets a default account string by which the jobs on FRCLIN can be logged in.
LOGIN	Logs in a job through FRCLIN to accommodate the program that is started on the next line of the file. This command does not actually run the LOGIN program or use the LOGIN UUU. The monitor performs special logging-in actions to prepare a job for the program. The jobs are logged in under the PPN [1,2] by default.
program	Specifies the name of a system program to run.

Each program name is placed on a line following a LOGIN command. The program is assumed to be run from SYS. Therefore, the command BATCON is actually interpreted as the command:

```
R BATCON
```

Note that the actual monitor command R or RUN may be included in the command line.

NOTE

It is possible to log in programs with a PPN other than [1,2]. This may be accomplished by omitting the LOGIN command, and by specifically omitting the R and RUN commands. The program will then be run from a job that is not logged in, using PPN [2,5]. The program is responsible for logging itself in, if desired, by using the LOGIN UUU and any PPN that is valid.

To insure that input from other FRCLIN users does not interrupt logically related groups of commands in SYSJOB.INI, INITIA groups the SYSJOB.INI commands into strings delimited by LOGIN commands. For example, the following list shows commands contained in SYSJOB.INI file:

```
LOGIN
ACTDAE
LOGIN
SET HPQ 1
DAEMON
```

INITIA groups the above commands into two strings. The first string contains the following commands:

```
LOGIN<CR>ACTDAE<CR>
```

INITIA copies the first string into FRCLIN's input buffer. Then it copies the the second string into FRCLIN's input buffer. The second string consists of the following commands:

```
LOGIN<CR>SET HPQ 1<CR>DAEMON<CR>
```


CREATING SYSTEM INITIALIZATION FILES

NOTE

INITIA considers any program name given in SYSJOB.INI that starts with "LOG" to be a LOGIN command. This does not affect the content of the input, but it may cause conflicts, which the above technique attempts to prevent. To differentiate between LOGIN commands and other program names that begin with the letters LOG, use the following format:

```
R LOG...
```

If errors occur during processing, the rest of the input file may not be executed. Therefore, the order of the commands in SYSJOB.INI is vital to successful system startup. It is important to place monitor components first in the file, followed by CUSPS and other programs. You should place ACTDAE first in the file, to ensure that accounting is enabled when the rest of the programs are started. You may include commands to the programs you are starting. If you include commands, you must explicitly detach the program after the commands if the program does not detach itself as a result of the commands.

System programs that may be started from SYSJOB.INI detect the FRCLIN mechanism and detach themselves automatically. To detect FRCLIN, a program must compare the number of the terminal line that sent the startup command with word 162 (%CNFLN) of GETTAB Table 11 (.GTCNF) where the FRCLIN line number is stored. The FRCLIN mechanism ignores output from the programs that are started with FRCLIN, and for that reason it may be difficult to determine why SYSJOB.INI fails to be completed. To detect the reason for an error in SYSJOB.INI, set the DF.WFL bit in the monitor debugging word (DEBUGF), and restart INITIA. Output from the programs that are started will then be printed on the CTY.

After INITIA is finished, FRCLIN is free for use by other system components that must send commands to programs. The following is an example of SYS:SYSJOB.INI.

```
.TYPE SYS:SYSJOB.INI<RET>

SET DEFAULT ACCOUNT PRISM      ;set the account string as "PRISM"
LOG                             ;log in a SYSJOB
ACTDAE                          ;run the accounting daemon
LOG
DAEMON                          ;run SYS:DAEMON
LOG
FILDAE                          ;run SYS:FILDAE
LOG
ORION                           ;run SYS:ORION
LOG
QUASAR                          ;run SYS:QUASAR
LOG
PULSAR                          ;run SYS:PULSAR
.
.
.
NIK/DETACH                      ;run a local program in detached
LOG                             ;mode
SET HPQ 1                       ;set a high priority run queue for
LOG                             ;MIC
R MIC                           ;Start MIC
.
```

CREATING SYSTEM INITIALIZATION FILES

10.3 THE TTY.INI FILE

Before a user can log in, the terminal must be logically connected to the system. During the connection process, the INITIA program runs automatically for the terminal to set up terminal and job characteristics.

INITIA performs terminal initialization when it reads the file, SYS:TTY.INI. The commands in TTY.INI set terminal characteristics and pass information about programs that will run automatically when the terminal is initiated.

If you have specified NO INITIA in the ONCE dialog, users must issue the the INITIA SETTTY command to activate the options in TTY.INI.

10.3.1 Format of TTY.INI

Each line of TTY.INI (except continued lines) must begin with one of the terminal identifiers listed in the table below. Using these commands, you can specify any number of terminals in a command line, or you may use any number of command lines for each terminal. If conflicting options are specified for a single terminal, the last option in the file takes effect.

To continue a command line, put a hyphen (-) as the last character of the line that is to be continued. To use a comment, precede the comment by a semicolon (;) or an exclamation point (!). File line numbers are ignored. Multiple tabs and spaces are treated as one space.

10.3.2 Terminal Identifiers

The following commands identify a terminal or set of terminals. This identifier is placed first in the command line, followed by the options that are listed in the next section.

Identifier	Terminal Lines Indicated
ALL:	All terminal lines.
CTY:	The CTY (controlling terminal) only.
DETECT n	Dataset lines that are set to n baud.
LINSPD n	Lines that are set to n baud.
node identifier	Terminal at the node called "node." The identifier following node_ can be any of the identifiers in this list.
OTHER	Any terminals not specified with a TTY: identifier.
OTHSPD n	All lines not set to n baud.
TTYnnn:	Terminal line nnn. This identifier can be abbreviated to TTnnn:.

CREATING SYSTEM INITIALIZATION FILES

Identifier	Terminal Lines Indicated
TTYnnn-zzz:	All terminal lines from nnn to zzz. This identifier can be abbreviated to TThnn-zzz:.
(TTYaaa:, TTYbbb:,...,TTYzzz:)	All terminal lines listed.

Terminal line numbers range from 0-777 (octal). Hard-wired terminals are assigned permanent terminal line numbers in the form TTYnnn:, where nnn is the physical line number. Terminals connected through nodes have permanent line numbers in the form nnn_lll, where nnn is the node name or number and lll is the number of the line that connects the terminal to the node. When one of these remotely-connected terminals is recognized by the system, the monitor assigns a "terminal name" to it, in the form TTYnnn:, where nnn is a temporary number assigned during the connection. These terminal names are reassigned on a dynamic basis, as terminals logically connect and disconnect from the system.

For example, TTY10: is a terminal number that will not change. It is assigned to a terminal that is hard-wired to the host system. If the host system is named MING, this terminal may also be referred to as MING_10. Terminal line 15 on node XENON (a terminal concentrator with node number 44) would be named 44_15 (or XENON_15), and this designation will not change. However, when terminal 44_15 is connected to the host system, it may be assigned terminal name TTY130: by the monitor. The terminal will be known to the monitor as TTY130: as long as it remains connected to the host system. If the terminal becomes disconnected and then reconnected, it might be assigned a different terminal name, such as TTY52:.

16.3.3 Options

The identifier is followed by options that specify information to be associated with the terminal(s) identified at the beginning of the command line. There are three types of options:

- o commands that specify special processing by INITIA.
- o Terminal characteristics to be set for the terminal when it is connected.
- o Programs to run automatically when the terminal is connected.

The options are separated by commas or spaces. For those options that require an argument, the argument can immediately follow the option name, or it can be separated from the option name by a colon or a space. Option names can be abbreviated, as long as the abbreviation is unique.

In conflicting situations, the option specified last in the command line takes precedence over those specified earlier. You can turn many options off by typing NO before the option word, with or without an intervening space. A minus sign has the same effect as NO. Thus, NO GAG, NOGAC, and -GAG have the same effect. In the table below, the complement of the command is shown, if a complement is valid. The default setting of the options is designated by (*)

CREATING SYSTEM INITIALIZATION FILES

TTY.INI Options

The following table lists options that specify special processing to be done for the terminal at initialization:

Table 10-1: Special Processing Commands

Option	Complement	Meaning
CONNECT	--	Connect networked terminal to the host.
HELP	--	Print Information about the INITIA command.
KSYS	NOKSYS(*)	Display KSYS time if it has been set.
LOCATE node		Make a logical connection with the specified node, similar to the monitor LOCATE command.
NAME	NONAME	Print the system name.
NORUN	--	Suppress the running of programs that are set to run automatically for the terminal.
NOTICE	NONOTICE (*)	Print SYS:NOTICE.TXT, if there is such a file.
SETTTY	NOSETTTY	Set terminal setting from TTY.INI (on CTY) or SWITCH.INI. If the job is logged in, NOSETTTY is the default.
STOMP	--	Initiate the "terminal stomper" function that disconnects terminal lines that have been detached and idle for two or more minutes.
STRUCTURES	NOSTRUCTURES(*)	Print individual structure notes from ALL:STR.TXT[1,4].
TEXT	NOTEXT(*)	Print SYS:INITIA.TXT, if such a file exists. (This is the default action).
TTY	NOTTY(*)	Display all terminal settings for this terminal.

Terminal Setting Options:

The following options specify terminal characteristics to set for the terminal during initialization. Most of these characteristics can be changed by the user with the monitor command SET TTY.

CREATING SYSTEM INITIALIZATION FILES

Table 10-2: Terminal Characteristics

Option	Complement	Meaning
ALTMODE	NOALTMODE	Use ALTNODE for ESCAPE key. (This changes ASCII codes 175 and 176 to 033.)
BLANKS	NOBLANKS	Suppress automatic RETURNS in terminal output
CRLF	NOCRLF	Issue an automatic RETURN at the right margin (which is set by WIDTH:n) on terminal input.
DEBREAK	NODEBREAK	Include the debreak feature on 2741 terminals.
DEFER	NODEFER	Suppress echoing until input is requested by the system. This allows the user to type characters ahead that will be displayed when the system is ready for input.
DIALOUT:n*...		Dial this phone number automatically. Spaces, hyphens, and parentheses are ignored; each asterisk (*) typed causes a five-second pause for a dial-tone.
DISPLAY	NODISPLAY	Specify that this is a display terminal.
ECHO	NOECHO	Echo all input back to the terminal.
EIGHTBIT	NOEIGHTBIT	Allow eight-bit character codes for the terminal.
ELEMENT:n		Use typeball element n for a 2741 terminal. Valid element numbers are: 029 Standard correspondence 087 CALL 360 BASIC 938 BCD 963 Extended binary (EBCDIC) 987 APL correspondence 988 APL (EBCDIC)
ESCAPE:n	NOESCAPE	Set an alternate escape character for the terminal, where n is an octal number specifying the ASCII character to be interpreted as an escape character. NOESCAPE resets the escape character to the default, octal 33.
FILL: n		Use n as the filler class (where n = 0,1,2, or 3).

CREATING SYSTEM INITIALIZATION FILES

Table 10-2: Terminal Characteristics (Cont.)

Option	Complement	Meaning
FORM	NOFORM	Utilize form feed control for terminal.
GAG	NOGAG	Receive messages only from operator or at monitor level.
HDX	HOHDX	Allow half-duplex communication.
IDLEDISC:n	--	Set the dialup idle disconnect timer to n seconds. If a dialup line is idle for more than n seconds, it will be automatically disconnected. If you set the value to zero, no automatic disconnect will occur. The maximum value for n is 255 seconds.
LC	UC	Allow both uppercase and lowercase characters.
LENGTH: n		Set the page length for the terminal. the integer n should specify the number of lines to fill the terminal screen or page. This number is used when terminal output is automatically stopped by the monitor (see STOP/SSTOP options)
QUOTE	NOQUOTE	Enable character quoting on this terminal using <CTRL/V>.
RCVSPEED:x	--	Set receive speed. The valid speeds are listed for the SPEED option.
REMOTE	NOREMOTE	Specify that the terminal has remote software status.
RTCOMPAT	NORTCONP	Take no special action when CTRL/R and CTRL/T are typed.
SBELL	NOSBELL	Specify whether the terminal bell should ring when output is automatically stopped by the monitor.
SLAVE	NOSLAVE	Specify that the terminal is a special purpose data terminal. When you set SLAVE, INITIA does not display its normal system banner on the terminal.

CREATING SYSTEM INITIALIZATION FILES

Table 10-2: Terminal Characteristics (Cont.)

Option	Complement	Meaning
SPEED:x	--	Set receive and send speeds to one of the following (for x): 0 50 75 110 134 150 200 300 600 1200 1800 2400 4800 9600 EXTA EXTB
SSTOP	NOSSTOP	Specify that automatic stopping of terminal output should not react to implicit CTRL/Q by resetting the line counter for page length. Instead terminal output should be stopped automatically based strictly on the number of lines output since the last time the user typed CTRL/Q explicitly while output was stopped at the end of a page.
STOP	NOSTOP	Specify that terminal output should be automatically stopped after n lines, where n is the argument to LENGTH, or defaults according to the type of terminal. Note that the line counter is reset to 0 when a CTRL/S is received, even though that character may not have been typed by the user, but sent by the terminal itself.
TABS	NOTABS	Specify that terminal has horizontal tab control.
TAPE	NOTAPE	Accept CTRL/S and CTRL/Q to control the paper tape reader.
TERMINET	--	Initialize tabs for TERMINET-300.
TIDY	NOTIDY	Specify (for 2741 terminals) that every character occupy one print space. The terminal normally prints characters so that they appear as the user types them in. For example, the character [usually prints out as two characters: ^<. In TIDY mode, [prints out as a single character: <.

CREATING SYSTEM INITIALIZATION FILES

Table 19-2: Terminal Characteristics (Cont.)

Option	Complement	Meaning																										
TYPE:type	--	Specify the type of terminal. Valid terminal types are: <table border="0"> <tr><td>2741</td><td>VT50</td></tr> <tr><td>DAS21</td><td>VT52</td></tr> <tr><td>LA30</td><td>VT61</td></tr> <tr><td>LA34</td><td>VT100</td></tr> <tr><td>LA36</td><td>VT101</td></tr> <tr><td>LA38</td><td>VT102</td></tr> <tr><td>LA120</td><td>VT103</td></tr> <tr><td>TTY (default)</td><td>VT125</td></tr> <tr><td>TTY33</td><td>VT180</td></tr> <tr><td>VK100</td><td>VT185</td></tr> <tr><td>VT05</td><td>VT200</td></tr> <tr><td>VT06</td><td>VT220</td></tr> <tr><td></td><td>VT240</td></tr> </table>	2741	VT50	DAS21	VT52	LA30	VT61	LA34	VT100	LA36	VT101	LA38	VT102	LA120	VT103	TTY (default)	VT125	TTY33	VT180	VK100	VT185	VT05	VT200	VT06	VT220		VT240
2741	VT50																											
DAS21	VT52																											
LA30	VT61																											
LA34	VT100																											
LA36	VT101																											
LA38	VT102																											
LA120	VT103																											
TTY (default)	VT125																											
TTY33	VT180																											
VK100	VT185																											
VT05	VT200																											
VT06	VT220																											
	VT240																											
UNPAUSE:n	NOUNPAUSE	Set the unpause character for this terminal. The UNPAUSE character is the character you type to resume output that you stopped with the STOP option. (See the LENGTH, STOP, and SSTOP options.) The argument n is an octal number that represents an ASCII character code. NOUNPAUSE resets the character to the default value, octal 21, which represents <CTRL/Q>.																										
UC	NOUC	Specify that the terminal is uppercase only. All lowercase characters sent from the system to the terminal will be translated to uppercase.																										
WIDTH:n		Set the number of characters per line to n characters (where n = 17 to 200 decimal).																										
XMTSPEEDtx		Set send speed. The valid speeds are listed for the SPEED option.																										
XONXOFF	NOXONXOFF	Specify whether user should have capability of stopping terminal output by typing CTRL/S.																										

CREATING SYSTEM INIPIALIZATION FILES

Options to Run Programs Automatically

The following programs start automatically when INITIA runs for the terminal. A job is logged in for the program and INITIA creates a PPN for the job, Unless specified otherwise, INITIA constructs PPNs as follows.

If the terminal is a local terminal, use [1,2]. If the terminal is remote, INITIA constructs a PPN using the algorithm [100+node-number,2]. For example, a terminal at the node that has node number 12 receives the PPN [112,2]. INITIA creates a job search list for the job, which it copies from the current setting of the system search list.

Option	Program
AUTOMATIC	Start OPSER, which begins processing an auto file. The OPSER auto file name that is read depends on the terminal from which OPSER was started. When the terminal is connected directly to the local system, then: If device OPR:, OPR.ATO is used. If not device OPR:, TTYnnn.ATO is used, where nnn is the terminal line number. When the terminal is connected to a remote node, then: If device OPR:, OPRnnn.ATO is used, where nnn is the node number. If not device OPR:, nnnlll.ATO is used, where nnn is the node number and lll is the terminal line number.
CHKPNT	Start CHKPNT under [1,2]. This program cannot be run from a remote terminal.
CRASH	Start FILEX under [10,1]
DAEMON	Start DAEMON under [1,2]. This program cannot be run from a remote terminal.
GALOPR	Start the OPR program, which begins processing the file SYS:SYSTEM.CMD, if the terminal is local. If the terminal is remote, SYS:nnnlll.CMD is used, where nnn is the node number and lll is the line number of the terminal where OPR is started.
OMOUNT	Start OMOUNT under [1,2]. This program cannot be run from a remote terminal.
OPSER	Start OPSER.
STOMP	Initiate the "terminal stomper" function, which disconnects terminal lines that have been detached and idle for a time period longer than two minutes.
SYSDPY	Start SYSTAT display program for appropriate terminal type.

CREATING SYSTEM INITIALIZATION FILES

The following is an example of a TTY.INI file:

```
.TYPE SYS:TTY.INI<RET>

ALL:                                NORUN KSYS TEXT
CTY:                                AUTOMATIC
TTY0-10:          TYPE:LA36          SPEED 300 NO REMOTE
TTY11:           TYPE:VT52          SPEED 9600 NO REMOTE
TTYL2-47:        SPEED 9600 NO REMOTE
SPIRIT_TTY0:     TYPE:LA36          SPEED 300 NO REMOTE
SPIRIT_TTY7:     TYPE:LA120        PAGE 0 NO REMOTE GALOPR
SPIRIT_TTY40:    FILL:2 WIDTH:72 NO TAB NO FORM
NOVA_TTY2-25:    TYPE:VT52          DEFER NO GAG
.
.
.
```

10.3.4 Associated (Terminal) Messages

If there are errors in the TTY.INI file, INITIA prints:

```
?INTCER INITIA COMMAND ERROR
```

The TTY.INI file can be corrected by the operator. Any other ?INT... error message indicates a serious system problem that must be investigated by your software specialist.

APPENDIX A
ONCE STARTUP OPTIONS

ONCE begins by printing on the CTY, the system name and the date that the monitor was created. The system name is set by Question 5 of the HDWGEN portion of MONGEN (see Chapter 7) . If you are starting an SMP system, you can start the other CPUs anytime after the system banner is printed.

The ONCE program then asks the question:

Why reload:

This question allows any of several responses, depending on the type of reload being performed. It is asked whenever the system is reloaded. For purposes of installing the monitor, use one of the following answers:

NEW if you are installing a new system

SCHED if you are loading a new or different version of
the monitor

If the system is being reloaded after a system problem or crash,
use one of the following answers:

HALT if the system ended with a stopcode or HALT

HARDWARE if the system ended with a hardware malfunction

HUNG if the system would not respond

LOOP if the monitor was looping in executive mode

NXM if a non-existent memory stop occurred

OPR if an operator error occurred

PARITY if a memory parity error occurred

POWER if a power failure occurred

STATIC if static electricity caused the crash

If the system came down for a scheduled maintenance session, or
scheduled standalone time, use one of the following answers:

PM for preventative maintenance

CM for corrective maintenance

SA for scheduled stand-alone time

ONCE STARTUP OPTIONS

If none of the responses you see here apply, use the following:

OTHER followed by the reason for the reload

You can include comments to further describe your reasons by preceding the comment with a semicolon or a space. Your answer to this question is stored in the system error log file ERROR. SYS

After receiving an answer to the WHY RELOAD question, the system asks for the date by printing:

Date:

Type the date in the form:

MONTH DAY YEAR
or
DAY MONTH YEAR

Where MONTH is replaced by the name of the month (JANUARY through DECEMBER) and can be abbreviated to a unique set of characters. DAY is the numerical day of the month (1 through 31). YEAR is replaced by the four or two digit year designation, and it is optional.

If you respond with an incorrectly formatted date, ONCE asks the question again in more detail:

PLEASE TYPE TODAY'S DATE AS MON-DD(-YY)

If you specify a date before the last system crash, the ONCE dialog verifies your response by asking the question:

IS THIS CORRECT? (Y OR N)

To which you can respond Y if the date you typed was correct, or N, if you typed an incorrect date. If you type N, the DATE: prompt is reprinted so that you can type the correct date.

The ONCE dialog asks for the time after it receives the date.

Time:

Type the time based on a 24-hour clock, with an optional colon separating the hours, minutes and seconds. If the format of the time is incorrect, ONCE prints the following message:

PLEASE TYPE TIME AS HHMMSS OR HH:MM:SS

As with the date, it is very important that you type the correct time to the TIME: prompt. The system time can be changed by the SET DAYTIME monitor command. However, changing the system time during system operation may adversely affect system operation. Therefore, it is recommended that you reload the system if you find it necessary to change the system date or time.

If the time was before the last system crash, ONCE will ask you to be sure that you typed the correct time by asking:

%Specified time is prior to last crash.

Specified time: HH:MM:SS

Last crash time: HH:MM:SS

Is this correct? (Y or N)

ONCE STARTUP OPTIONS

If you respond with N, the TIME: prompt is repeated.

After receiving the time, ONCE scans memory to be sure that it is accessible. Each monitor is built for a specific amount of memory. MONGEN Question 23 allows you to specify the amount of memory when you are building the monitor. Therefore, new installations will probably receive the following message, indicating that the default monitor was built to expect more memory than that which is currently on-line.

```
%Memory from xxxxxx to yyyyyy is off-line
Do you want it to be 1)ON-LINE, 2)OFF-LINE, or 3) Down?
(Type #)
```

If the memory must all be on line, type 1. If it is not needed at this time, type 2. It will be possible to bring the memory area on line during system operation, with the SET MEMORY command. If the memory is not going to be required at all, type 3. The memory that is down cannot be accessed by the operator with the SET MEMORY command. For a new installation, type 3.

The ONCE program now prompts for a startup option. The startup option allows you to specify whether you wish to make changes to the disk parameters of the system, and whether you want to start up the monitor. ONCE allows you to change many disk and search list parameters, and performs disk refreshing and restructuring for maintenance purposes.

If you are starting an SMP system and have not started the other CPUs yet, ONCE prints the following message before proceeding with the startup option question:

```
CPU n is not running.
```

After the initial dialog, ONCE prompts you for a startup option by printing:

```
Startup option:
```

There are two types of startup options, those that are used to change disk parameters, and those that are used to startup the monitor.

1. Options Affecting Disk Parameters:

- o CHANGE -- To change or define a disk parameter by running a portion of the LONG dialog. This option also checks for memory and disk units that are offline. CHANGE allows you to list the unit and structure parameters, as well as the system lists, and allows you to change them. (Section A.1.2 describes the CHANGE startup option.)
- o DESTROY -- To refresh all structures, rewrite all HOME blocks, and redefine the file structures and system lists using default parameters. (Chapter 4 describes the DESTROY startup option.)

ONCE STARTUP OPTIONS

- o LONG -- To define all the disk parameters that ONCE is responsible for. This startup option also checks all units to be sure they are all on line. The other options that affect disk parameters implement parts of the LONG dialog. (Section A.1.1 describes the LONG startup option.)
- o REFRESH -- To refresh all or specified file structures. (Section A.1.4 describes the REFRESH startup option.)
- o UNITID -- To change the unit-id of all or only specified disk units. Before starting the system, this option also allows you to change other disk parameters and to write HOME blocks. (Section A.1.3 describes the UNITID startup option.)

2. Options For System Startup

- o GO and QUICK -- The GO and QUICK options are identical. They start the monitor without any checking or dialog. (They are described in Section A.2.2.)
- o NOINITIA -- To start the monitor with no further dialog. Unlike the GO and QUICK options, NOINITIA does not run the INITIA program (described in Chapter 10). Therefore, NOINITIA should be used only in a stand-alone situation. (The NOINITIA startup option is described in Section A.2.1.)

After you type a startup option, if the system has CI disks, ONCE prints the following message:

```
[Initializing CI networks]
```

When disks are refreshed, ONCE prints the following message on the CTY:

To automatically log-in under [1,2] type "LOGIN"

You can log in a job under the PPN [1,2] by simply typing LOGIN to the monitor prompt. However, in most cases, disks are not refreshed, and the LOGIN command requires a PPN and password before you can log in a job.

For a new installation, when disk parameters and system search lists have not been defined, use the LONG startup option to define parameters.

The startup option can be followed by one of the following switches to control the type of output to the CTY:

ONCE STARTUP OPTIONS

Table A-1:
ONCE Startup Option Switches

Switch	Explanation
/ASK	to ask if each disk unit should be on- or off-line.
/HELP	to receive an explanation of each startup option.
/NOASL	to force the monitor to rebuild the Active Swapping List from disk after a reload. If you do not specify this switch, the monitor first tries to use the preserved copy in the Active Swapping List. If the monitor cannot use the preserved data, then it rebuilds the data from disk.
/NOCOPY	to prevent CRSCPY from starting. Otherwise, CRSCPY runs when the monitor is started up, and when it experiences a continuable stopcode, it copies the current crash file (SYS:CRASH.EXE) into a backup file in the XPN area.
/NODXLD	to prevent automatic reloading of DX20s.
/NOERROR	to suppress printing of warning error message (preceded by % sign).
/NOPRIMARY	to suppress starting primary protocol (KL-10 only)
/NOSDL	to force the monitor to rebuild the System Dump List from disk after a reload. If you do not specify this switch, the monitor first tries to use the preserved copy in the System Dump List. If the monitor cannot use the preserved data, then it rebuilds the data from disk.
/NOSSL	to force the monitor to rebuild the System Search List from disk after a reload. If you do not specify this switch, the monitor first tries to use the preserved copy in the System Search List. If the monitor cannot use the preserved data, then it rebuilds the data from disk.
/NOVALIDATE	to turn off account validation.
/OFFLINE	to type a message for each off-line unit found.
/STANDALONE	to bring up the monitor as a stand-alone system.

A.1 CHANGING DISK PARAMETERS

This section describes the startup options that allow you to change disk parameters before starting the monitor. To define the characteristics of the disk system, you must run the LONG dialog. After this initial setup is completed, you can change certain aspects of the system using the CHANGE dialog, or the UNITID dialog to change only the unit-id. The REFRESH option forces a refresh procedure to initialize characteristics that require refreshing. Note that the DESTROY startup option, which initializes the disk system using default parameters, is described in Chapter 4.

ONCE STARTUP OPTIONS

A.1.1.1 LONG Startup Option

The LONG option is described first, because it contains the complete ONCE dialog and all of its facilities. The startup options that change or affect disk parameters (DESTROY, REFRESH, UNITID, and CHANGE) implement a portion of the LONG dialog.

During the long form of startup, ONCE performs the following functions:

- o Checks memory for units that are off-line, confirming the state of the memory units by a response from you.
- o Checks the HOME blocks on all the units for inconsistencies and optionally rewrites the HOME blocks at the end of the dialog. If any units are write-protected, ONCE reports the unit name, asking whether it should be write-enabled or write-protected.
- o Reports on disk units that are off line.
- o Checks the BAT blocks, listing any inconsistencies for each unit. You can have BAT blocks rewritten at this point.
- o Lists the number of bad regions on any unit you specify.
- o Lists each file structure and the units in the file structure in their logical order.
- o Lists all the disk units that are not in a file structure.
- o Lists the units in the active swapping list. For new installations, there is no swapping list, and ONCE prints a message to indicate that.
- o Lists the structures in the system search list (SSL)
- o Lists the structures in the system dump list (SDL)
- o Allows you to change parameters of any structure.
- o Allows you to change parameters of any unit.
- o Allows you to change any system disk parameters.
- o Allows you to dissolve file structures, if any file structures exist.
- o Allows you to define file structures.
- o Allows you to specify the units on which you want HOME blocks rewritten.
- o Lists the structures that need to be refreshed, and allows you to specify the structures that you want refreshed. If you do not specify any structures to refresh, you are asked to specify another startup option.
- o Allows you to log in as [1,2], after ONCE has refreshed structures.
- o Starts running the null job and begins timesharing.

ONCE STARTUP OPTIONS

Because you can define so many disk parameters with the ONCE program, a worksheet is provided in Chapter 2. Worksheet 3 corresponds to the ONCE dialog questions. You may find it useful to fill out the worksheet as you review the dialog, recording your answers to the questions in the dialog. The worksheet might then be retained for your records, as an aid when you refresh structures, create new file structures, or redefine disk parameters.

The following example shows the LONG dialog of the ONCE program. When you run the ONCE program, the questions are not numbered. However, this manual numbers the questions, and prints the question numbers in bold to help you follow through the various possible answers. The paragraphs following each question explain the questions and offer suggestions about answering them. User input is printed in bold, and is provided only for demonstration.

ONCE repeats certain sections of the LONG dialog for each unit or structure to which the questions apply. When you finish answering the questions in a particular section and want to move on to the next section, press RETURN.

If at any point you wish to stop the dialog, press ESCAPE to enter another startup option.

TOPS-10 7.03 system mm-dd-yy

If you are starting an SMP system, start the other CPUs now.

1 Why reload:

Type the reason for the reload.

2 Date:

Type the date here, as MON-DAY-YEAR.

3 Time:

Type the time here, as HH:MM:SS or HHMMSS, where HH is hours (by the 24-hour clock), MM is minutes, and SS is seconds (optional).

4 Startup option: LONG<RET>

Type the startup option you prefer. The LONG option is used in this example.

In the following dialog, all numbers are decimal. Type <CR> to accept the default, or a new number to change value.

The ONCE program checks the units on the system for disk units that are not on-line. If any units are off-line, ONCE prints the following message:

%UNIT-NAME is off-line

ONCE STARTUP OPTIONS

5 Do you want it to be 1)ON-LINE, 2)OFF-LINE, or 3) Down?
(Type it)

Question 5 allows you to specify whether you want the unit on line. If you specify 1, you must power up the drive before answering the question. When you specify 2, the pack is mounted but the drive is not powered up. When GALAXY starts, the disk will be mounted automatically. Specify 3 when you want the drive to be detached from the system; you will have to use the ATTACH command to access the drive.

ONCE then checks the HOME blocks on the disk units for inconsistencies. Each disk pack contains two HOME blocks that contain pertinent information about the disk unit, such as the file structure it is in (if any), swapping space that has been allocated on the unit, and the other unit-specific information that ONCE allows you to change.

If the HOME blocks are inconsistent, ONCE prints one or both of the following messages:

UNIT-NAME first HOM block consistency error

UNIT-NAME second HOM block consistency error

6 Do you want to initialize the HOME blocks on this unit?

If you answer Question 6 with Y, the HOME blocks will be initialized (rewritten) when the dialog is finished.

ONCE checks the system search list for inconsistencies and reports them. If there are no units in the system search list, the following messages are printed:

[Rebuilding the system search list from the HOME blocks]

?No structures in system search list
[Rebuilding the active swapping list from the HOME blocks]

?No units in active swapping list
[Rebuilding the system dump list from the HOME blocks]

%No structures in system dump list

These messages are printed for new installations when the system search lists have not been defined. You can define these lists (system search list, active swapping list, and system dump list) later in the ONCE dialog.

ONCE checks the BAT blocks for each unit. BAT blocks point to hardware errors on the disk pack. Two BAT blocks are written on the pack when it is formatted, and the system updates them when it finds blocks on the disk that cannot be read from or written to. The BAT blocks are first checked for consistency errors. They must be formatted properly, so that the system can read them. If inconsistencies are found in both blocks on the unit, they will be reported. If the first BAT block is all right, the second BAT block is not checked, because the second can be updated with a copy of the first.

ONCE STARTUP OPTIONS

You have the option of listing the bad regions pointed to by the BAT blocks. This information would be useful if only the first BAT block had a consistency error. If both BAT blocks are inconsistent, then this information would be useless. Therefore, if the first BAT block is inconsistent, but the second is consistent, and if the list of bad regions on the disk is lengthy, you should consider having the disk reformatted.

You have the option of initializing the BAT blocks. Initialization rewrites the BAT blocks completely. All previous data about errors on the disk will be deleted and the BAT blocks will be filled in by the system as it attempts to read/write the disk. The BAT blocks should only be initialized if both have been reported to have inconsistencies, or if a disk channel has been erroneously reporting hard errors on the disk.

The following messages are printed when a set of BAT blocks is found to be inconsistent:

```
UNIT-NAME first BAT block consistency error
UNIT-NAME second BAT block consistency error
```

Question 7A is asked only if there are inconsistencies in the BAT blocks.

```
7A      Do you want a list of bad regions?
        Y<RET>
```

If you answer with Y, ONCE lists the bad regions, and asks whether you want the BAT blocks for this unit to be initialized. The list of bad regions looks like the following:

```
First block    #Blocks
8371           1
```

```
7B      Do you want to initialize the BAT blocks on this unit?
```

Question 7B allows you to specify whether the BAT blocks should be rewritten. Note that the old BAT blocks will be lost, and the information about bad areas on the disk will have to be rewritten into the new BAT blocks. If you indicate that the BAT blocks should be initialized, the following question confirms that action.

```
7C      Not normally done, are you sure?
```

Answer with Y to rewrite the BAT blocks. ONCE prints the following message when initializing BAT blocks:

```
Initializing BAT blocks
```

After checking BAT blocks for inconsistencies, the following question allows you to list the bad regions on the disk, which are pointed to by the BAT blocks.

ONCE STARTUP OPTIONS

8 Type physical unit name to list number of bad regions
 [<CR> if none, ALL if all]
 RPA2<RET>
 RPA2()
 \$ Bad regions = 0

To Question 8, a possible response might be RPA2 (as shown here) on which ONCE might find 0 bad regions.

Next, the ONCE program lists the file structures, and the units that are not in a file structure. The units in the active swapping list, system search list, and system dump list are displayed.

DSK file structures:
STR:PHYS(UNIT-ID)

Units not in a file structure:
PHYS(UNIT-ID),PHYS(UNIT-ID),...

Units in active swapping list:
PHYS(UNIT-ID),PHYS (UNIT-ID),...

Structures in system search list:
STR,STR,...

Structures in system dump list:
STR,STR,...

Note that these lists can be changed in a following section of the dialog. They are listed here for your information. Units that are not on-line are included in these lists.

9 Type structure name for a list of its parameters (<CR> if none, ALL if all)

Question 9 allows you to list the parameters of a specific file structure or all file structures. This listing can be useful if you wish to change the parameters of a file structure. If you type ALL, ONCE lists the parameters for all the structures that are on line and repeats the question so that you can list parameters for another structure. If you only press RETURN, ONCE continues to Question 10.

10 Type physical unit name to list its parameters (<CR> if none, ALL if all)

Question 10 allows you to list the parameters of any disk unit or all disk units. This listing is useful when changing the parameters of a disk unit. If you type ALL, parameters of all of the disk units will be listed. If you specify a unit, ONCE lists the unit parameters and then repeats the question so you can list another unit. If you only press RETURN, ONCE continues to Question 11.

11 Before HOME blocks are rewritten,
 Do you want to change any disk parameters?

If you answer Question 11 with RETURN, the dialog will proceed to the section for rewriting HOME blocks (see Question 32). If you type Y, ONCE continues to Question 12.

ONCE STARTUP OPTIONS

12 Type structure name to be dissolved (<CR> if none, ALL if all)

The first disk parameters to be specified are the file structure parameters. Question 12 allows you to dissolve any existing file structures and it is asked only if file structures exist. A file structure is dissolved by deleting all reference to that file structure on the unit. The units in that structure will not be listed as part of any file structure until you define a file structure as containing those units.

13 Type structure name to be defined (<CR> if none)

Question 13 allows you to specify the name of a file structure to be defined. If you just press RETURN, the dialog continues at the section for changing unit parameters (Question 23).

14 Type names of physical units in structure.
(ALL if all, extra <CR> when done)

Question 14 allows you to specify the names of the physical units in the structure you just defined.

15 Type structure name to change its parameters (<CR> if none, ALL if all)

Question 15 allows you to define the parameters for a new file structure, or change the parameters of an existing file structure.

You can specify one structure to change only its parameters, or ALL to change all the structures. If ALL, Questions 15 through 22 will be repeated for each structure.

After each printing of current value, type new value or <CR>

STR-NAME

Parameters which may be changed without refreshing

The following five values (answers to Questions 16 through 19B) can be changed regardless of whether you will have the structure refreshed.

16 # of consecutive blocks tried for on output = 30
Min = 1 Max = 262143

When the system attempts to write to disk, it tries to allocate a consecutive number of blocks that are free. Question 16 allows you to specify this number. If the consecutive blocks are found, the file is written and the SAT block pointers are changed to reflect the change in free space. If the system cannot find a consecutive number of blocks of the size specified here, the file will be stored in the first free space, fragmented if necessary. Therefore, the value you give to Question 16 can affect the efficiency of file storage on the disk. It is recommended that you use a multiple of the cluster size (specified in Question 21). A number too small can result in fragmented disk files and excessive time spent in accessing files.

Answer Question 16 with the number of consecutive blocks that the system should check, when searching for free space on disk to write files.

ONCE STARTUP OPTIONS

- 17 # blocks allowed for overdraw per user 500
Min = 1 Max = n

When the system attempts to write a file for a user whose disk-space quota on the structure is not large enough to accommodate the whole file, a number of blocks over the quota can be allowed: this number is the "overdraw." When the user reaches the disk quota, the monitor does not allow new files to be created. It attempts to write the files that are open at the time quota was exceeded.

Answer Question 17 with the number of blocks each user is allowed on the structure for overdraw purposes.

The maximum allowable answer for Question 17 and others is a variable that depends on the type of disk unit. Therefore, this discussion uses n for the maximums that vary.

- 18 Is this a private structure? (Type Y if private, N if no access restrictions)

Question 18 sets the privacy status of a structure. A system structure is not private, and may be accessed by any user without explicitly mounting the structure for the job. A private structure requires that users who wish to access it must use the MOUNT command to mount the structure.

Answer Question 18 with Y if the structure is private, and not available to be mounted by every user when logging in.

ONCE then checks the owner PPM of the structure. A file structure need not have an owner PPM. If the owner PPN is set, however, the user with that PPM has full file access of the entire structure. The following message is printed if the structure has no owner PPM:

Owner PPM is not set

- 19A Do you want to change the owner PPN? Y<RET>

Answer Question 19A with Y if you want to set or change the owner PPN of the structure. ONCE proceeds to question 19B, which allows you to enter the owner PPN. If you answer with N, ONCE continues with Question 20.

- 19B Enter PPM as [proj#,prog#] or <CR> to clear it

Answer Question 19B with the new PPM, or press RETURN to clear the current PPN without replacing it. The PPM may be wildcarded. Note that a PPN of [*,*] allows all users full access to all files on the structure.

The parameters specified in Questions 20 through 22 require ONCE to refresh the structure, to make changes to them. The structures that need refreshing will be listed near the end of the dialog before ONCE refreshes them. You will be allowed to specify the structures to be refreshed.

ONCE STARTUP OPTIONS

- 20 Parameters that require refreshing
K for CRASH.EXE = n
Min = 0 Max = 4096

Question 20 specifies the amount of space to allow on the structure for a crash file (the copy of memory that is written to disk automatically when the system crashes). This value should be at least the size of the maximum amount of memory used by your system. For RP20 and CI disks, however, this value should be 0.

- 21 Blocks per cluster = n
Min = 1 Max = 511

Question 21 specifies the cluster size for the structure. The cluster size is critical to efficient use of the disk. A one-block data file requires 3 blocks on disk, including RIB, data block, and spare RIB. If a cluster size of 10 were assigned, 7 blocks would be wasted for this one-block file. The cluster size should not be set to less than 3, but the actual size depends on the type of applications using the disk. The monitor requires a retrieval pointer for each cluster in the file it is accessing. Therefore, the cluster size should not be too small for the size of the average file. A large file with a small cluster size wastes monitor overhead.

Answer Question 21 with the cluster size. The default listed by ONCE depends on the type of disk unit. The best value depends on the type of application using the disk, but the default is often appropriate.

ONCE computes and displays the cluster address size (in bits) , and the size of a super-cluster:

Therefore bits per cluster $adr. = n$
Therefore blocks per super-cluster = n
Therefore super-clusters per unit = n

- 22 Bits per cluster count = n
Min = 1 Max = 18

Answer Question 22 with the number of bits per cluster count, or press only RETURN to accept the default.

ONCE then calculates and prints the number of bits per checksum:

Therefore bits per checksum = n

NOTE

This ends the dialog for changing structure parameters. If you answered Question 15 with ALL, ONCE will repeat Questions 15 through 22 for each structure.

Questions 23 through 28 allow you to change disk unit parameters.

ONCE STARTUP OPTIONS

- 23 Type physical unit name to change its parameters (<CR> for none, ALL if all)

Answer Question 23 with the physical name of the unit for which you want to change parameters. If you only press RETURN, ONCE proceeds to Question 29A for changing the active swapping list. If you type ALL, Questions 24 through 28 will be repeated for each unit that is on line. Those that are off line will only be printed in the order that they are accessed.

Questions 24 through 26 require that the unit be refreshed if the values are changed.

UNIT-NAME

- 24 After each printing of current value, type new value or <CR>
Parameters that require refreshing
of SAT blocks on unit = 8
Min=8 Max=n

Question 24 allows you to specify the number of SAT blocks on the unit. The default is calculated according to the type of disk unit. Unit names may be printed for units that are off line. As a general rule, you should select the minimum number of SAT blocks, to reduce monitor overhead.

ONCE calculates and lists the number of clusters per SAT block, and words per SAT:

Therefore clusters per SAT = n
Therefore words per SAT = n

- 25 K for swapping on unit = 0
Min = 0 Max = n (variable based on cluster size)

Question 25 allows you to specify the amount of swapping space allowed on the unit. This value should be at least 2 times the size of memory. If you don't allow enough space. You may run out of swapping space during timesharing. The only way to expand the swapping space is to refresh the disk, which destroys all user files. If the unit is/will be in the system's active swapping list, you must allocate some space for swapping on the unit.

ONCE calculates the first logical block where the system will attempt to write swapped data. You can change this value with Question 26.

- 26 Computed 1st logical block for swapping = n
1st logical block for swapping = n
Min = n Max = m

Answer Question 26 with the first logical block on the disk that the system will use for swapping. The default is usually appropriate, because the swapping space is put in the middle of the disk, to minimize the average seek time when accessing the swapping space.

Questions 27 and 28 allow you to change unit parameters that, if changed, do not require that the unit be refreshed.

ONCE STARTUP OPTIONS

Parameters that do not require refreshing:

27 Unit ID is nnnnnn

Question 27 allows you to specify a unit identification. This identification resides in the HOME blocks on the disk unit, for unique identification of the disk pack. Therefore, it should be a unique number that will never conflict with another code. Every pack should have a unit-id of six alphanumeric characters that may be a portion of the pack's serial number.

ONCE lists the current unit-id, if any, and then waits for you to type a new unit-id. Press RETURN if you do not want to change the unit-id.

If the unit you are currently defining does not have a unit-id, the following message is displayed:

Zero unit ID - New ID needed

28 #SAT blocks in core = 1
Min = 1 Max = n

Question 28 allows you to change the number of SAT blocks to be stored in memory for the unit. While the unit is mounted, the SAT blocks on the unit are stored in memory for fast access by the system. All of the SAT blocks should be stored in memory.

Answer Question 27 with the number of SAT blocks to be stored in memory. Use the same answer that you gave to Question 24.

NOTE

The unit-specific questions are over. You can proceed to change the active swapping list or you can change parameters for another unit. ONCE repeats Question 23. Press RETURN to continue at Question 29A.

ONCE prints the active swapping list.

Units in active swapping list:
STR-NAME,STR-NAME,...

29A Do you want to change the active swapping list?

The active swapping list is the list of units that the system will use to store data that is swapped to disk. The units in the active swapping list should have swapping space allocated on them, and this allocation can be changed in the section of the dialog for changing unit parameters. The units in the active swapping list are accessed in the order they are shown here, so for the most efficient swapping, the units should be listed in the order of fastest to slowest accessibility.

The swapping list is divided into classes, where Class 0 is used first, then Class 1, Class 2, and so on.

If you answer Question 29A with Y, Question 29B is asked. If you only press RETURN, ONCE continues with Question 30A.

ONCE STARTUP OPTIONS

29B For each class type physical unit names (Extra <CR> when done)
Class 0
RPA0: <RET>
<RET>

Class 1
<RET>

Type each structure within the class, followed by RETURN. Type an extra RETURN when the list for each class is done. If you do not enter any structures within a class, the number of classes is ended. All swapping units should be placed in Class 0, except units that have slow I/O. Be sure to include all or several controllers in the swap list.

ONCE then prints the system search list. The system search list is a list of file structures, in the order that they will be searched whenever the ersatz device SYS: is specified or implied. The system CUSPs must be accessible through the system search list.

Structures in system search list:
STR-NAME, STR-NAME,...

30A Do you want to change the system search list?

If you answer Question 30A with Y, Question 308 is printed, allowing you to specify a list of file structures for the system search list. If you only press RETURN, ONCE continues with Question 31A.

30B Type structure names for system search list (Extra <CR> when done)

Answer Question 30B with the name of each structure in the SSL, in the order in which the search list should be accessed. Type an extra RETURN when the list is complete.

ONCE prints the system dump list:

Structures in system dump list:
STR-NAME , STR-NAME, ...

31A Do you want to change the system dump list?

Question 31A allows you to change the system dump list. The system dump list is the list of structures where the system will attempt to write the crash file whenever the system is halted. Space should be allocated on every structure in the system dump list for the crash file. This allocation can be made in Question 20.

If you answer Question 31A with Y, ONCE asks Question 31B. If you only press RETURN, ONCE prepares to write the HOME blocks.

31B Type structure names for system dump list (Extra <CR> when done)

Answer Question 31B with the name of each structure in the list, followed by RETURN, and type an extra RETURN when the list is complete.

ONCE STARTUP OPTIONS

NOTE

All of the unit-specific parameters have been listed. ONCE prepares to rewrite the HOME blocks, a process that will completely delete existing data in the HOME blocks. Therefore, ONCE allows you to list all of the disk parameters again, by asking Questions 9 and 10 again.

Before HOME blocks are written

- 9 Type structure name for a list of its parameters (<CR> if none, ALL if all)
- 10 Type physical unit name to list its parameters (<CR> if none, ALL if all)

If you answer Questions 9 or 10 with an answer other than RETURN, ONCE lists the appropriate parameters. Then ONCE allows you to change these parameters by returning to Question 11:

- 11 Do you want to change any disk parameters?

If you answer Question 11 with Y, ONCE returns to the dialog. When your response to this question is RETURN, ONCE prepares to write HOME blocks by printing Question 32:

- 32 Type physical units on which to write HOME blocks (Extra <CR> when through)
(<CR> if none, ALL if all; ALL is normal case)

Answer Question 32 with the name of the unit(s) on which HOME blocks should be rewritten. In most cases, all HOME blocks should be rewritten. ONCE prints the following message when it rewrites HOME blocks:

HOME blocks written

Before refreshing any structures, ONCE lists the file structures that need to be refreshed, units that are not in a file structure, the active swapping list, the system search list and the system dump list.

DSK file structures:
Needs refreshing STR-NAME:UNIT-NAME(UNIT-ID)

.
. .
.

Units not in a file structure:
UNIT-NAME(UNIT-ID),UNIT-NAME(UNIT-ID),....

Units in active swapping list:
UNIT-NAME(UNIT-ID),UNIT-NAME(UNIT-ID),...

Structures in system search list:
UNIT-NAME(UNIT-ID),UNIT-NAME(UNIT-ID),...

Structures in system dump list:
UNIT-NAME(UNIT-ID),UNIT-NAME(UNIT-ID),...

ONCE STARTUP OPTIONS

You are also given the opportunity to return to the beginning of the dialog to change any disk parameters:

- 9 Type structure name for a list of its parameters (<CR> if none, ALL if all)
- 10 Type physical unit name to list its parameters (<CR> if none, ALL if all)
- 11 Do you want to change any disk parameters? (<CR> if no)

When you press RETURN in response to these questions, ONCE begins the procedure for refreshing structures. First, it lists the structures that need to be refreshed:

%Need refreshing:
STR-NAME

- 33 Type structure name to be refreshed (<CR> if none)

Answer Question 33 with the name of a file structure that you want refreshed. Remember, refreshing a structure destroys all the data on the structure. Question 33 is repeated after each structure is refreshed, allowing you to type the name of another structure. When you have typed the names of all the structures that you want refreshed, press RETURN in response to Question 33 to end the ONCE dialog.

If structure(s) are refreshed, ONCE starts the monitor and allows you to start a job as shown here. However, if you specify no structure(s) to refresh, ONCE allows you to specify another startup option, such as QUICK, NOINITIA, or GO.

To automatically log-in under [1,2] type "LOGIN"

```
TOPS-10 7.03 system mm-dd-yy  
  
.LOGIN<RET>
```

A.1.2 CHANGE Startup Option

The CHANGE option allows you to change only the disk parameters that you specify. By accepting the name of the type of parameter that you want to change, the CHANGE option allows you to bypass a large portion of the LONG dialog. The following is a reproduction of the CHANGE startup option, with questions numbered to refer to the questions in the LONG dialog.

```
TOPS-10 7.03 system mm-dd-yy
```

- 1 Why reload:
- 2 Date:
- 3 Time:

ONCE STARTUP OPTIONS

4 Startup option: CHANGE<RET>

Answer Question 4 with CHANGE to start the CHANGE dialog to change specific disk parameters.

As in the LONG dialog, ONCE checks the disk units for units that are not on-line:

%UNIT-NAME is off-line

5 Do you want it to be 1)ON-LINE, 2)OFF-LINE, 3)Down? (Type I)

Question 5 allows you to place the units on line.

The CHANGE dialog then asks the following questions from the LONG dialog. If you answer any with an answer other than RETURN, the LONG dialog continues from that point.

15 Type structure name to change its parameters (<CR> if none, ALL if all)

Question 15 allows you to change the structure parameters. It is repeated when the structure-specific parameters have been listed. If you answer Question 15 with RETURN, ONCE allows you to change unit parameters:

23 Type physical unit name to change its parameters (<CR> for none, ALL if all)

If you answer Question 23 with an answer other than RETURN, the LONG dialog is invoked starting at Question 24, allowing you change the disk unit parameters. Then Question 23 is repeated. If you answer Question 23 with RETURN, ONCE allows you to change the active swapping list:

29A Do you want to change the active swapping list?

If you answer Question 29A with Y, ONCE asks Question 29B (refer to the LONG dialog, Section A.1.1). If you answer it with RETURN, ONCE asks Question 30A:

30A Do you want to change the system search list?

If you answer Question 30A with Y, ONCE asks Question 30B. If you answer 30A with RETURN, ONCE prints Question 31A.

31A Do you want to change the system dump list?

If you answer Question 31A with Y, ONCE asks Question 31B. If you answer 31A with RETURN, ONCE prepares to write HOME blocks, by asking Question 32:

32 HOME blocks to be written on which physical units (Extra <CR> when through)
(<CR> if none, ALL if all;"ALL" is normal case)

HOME blocks written

Question 32 allows you to specify whether to write HOME blocks. This question is asked only if you elected to change parameters that require rewriting HOME blocks.

ONCE STARTUP OPTIONS

%Need refreshing:
STR-NAME

33 Type structure name to be refreshed (<CR> if none)

Question 33 allows you to specify file structures to be refreshed. It is asked if you changed parameters that require that the file structure be refreshed.

If a structure is refreshed, ONCE will start the monitor and allow you to start a job as shown here. If no structures are refreshed, ONCE allows you to specify another startup option, such as QUICK, NOINITIA, or GO.

To automatically log-in under [1,2] type "LOGIN"

TOPS-10 7.03 system mm-dd-yy

.

A.1.3 UNITID Startup Option

The UNITID option prepares the ONCE program to accept the physical unit names and new unit identifications. Like the other startup options, UNITID first checks for off-line memory, and, after accepting the date and time, checks for off-line disk units.

TOPS-10 7.03 system mm-dd-yy

1 Why reload:

2 Date:

3 Time:

4 Startup option: UNITID<RET>

%UNIT-NAME is off-line

5 Do you want it to be 1)ON-LINE, 2)OFF-LINE, 3)Down? (Type #)

After checking the disk units, ONCE asks the following question:

Change all unit ID's? (Y or CR)

To change the unit identifications of only specific units, answer this question by pressing RETURN. To list the unit-ids of all units, answer with Y.

If you only press RETURN, ONCE prints the list of units and unit-ids, and asks the following question:

UNIT-NAME(UNIT-ID)

UNIT-NAME(UNIT-ID)

Type unit name, a comma, and new unit id for each desired unit. (Extra CR when through.)

Type the physical unit name of each unit to be changed, followed by a comma, and the new unit-Id for the unit. Type an extra RETURN when you have typed all the unit-ids you want to define.

ONCE STARTUP OPTIONS

If you answered the previous question with Y, ONCE lists each physical unit name and the current unit-id. After each unit, you may type a new unit-id, or press RETURN to keep the old unit-id, as shown here:

After each unit name, type the I.D.

```
RPA0 (RPO6A):<RET>
RPA1 (RPO6B):<RET>
RPB0 (RPO4A):RPO7A<RET>
RPB1 (RPO7A):<RET>
```

```
.
```

After you type an extra RETURN (if you are changing specific unit-ids) or after ONCE lists all the disk units, ONCE allows you to enter the LONG dialog by asking Question 11 from the LONG dialog:

11 Do you want to change any disk parameters?

If you only press RETURN, ONCE prepares to write HOME blocks. All HOME blocks should be rewritten after changing disk parameters.

32 HOME blocks to be written on which physical units (Extra <CR> when through)
(<CR> if none, ALL if all;"ALL" is normal case)

HOME blocks written

ONCE then repeats its request for a startup option, to which you might answer with the QUICK startup option:

STARTUP OPTION: QUICK<RET>

TOPS-10 7.03 system mm-dd-yy

```
.
```

A.1.4 REFRESH Startup Option

The REFRESH startup option is provided to allow you to refresh file structures. It checks the HOME blocks of all units to find which file structures need to be refreshed, and prints the names of structures that need refreshing. Then it asks you to type the name of a file structure to be refreshed. After refreshing, it requests another file structure to be refreshed. When you answer this question with RETURN, ONCE allows you to start a job.

TOPS-10 7.03 system mm-dd-yy

1 Why reload:

2 Date:

3 Time:

ONCE STARTUP OPTIONS

4 Startup option: REFRESH<RET>

%Need refreshing:
STR-NAME

33 Type structure name to be refreshed (<CR> if none)

The structures that need to be refreshed are printed, and then you may type the name of a structure to refresh. If you type the name of a structure that does not need to be refreshed, ONCE prints:

Not normally done, are you sure?

If the structure you specify is in the system search list, ONCE prints:

This is a system STR, are you positive?

If you press RETURN to either of these questions, NO is assumed. Type Y to refresh the structure you specify.

WARNING

When you refresh a file structure you destroy all data on the structure. Therefore, ONCE attempts to make absolutely certain that you intend to refresh the structure before doing so.

After refreshing, ONCE allows you to log in automatically, by typing LOGIN. If no structures were refreshed, ONCE prompts for another startup option.

STARTUP OPTION: QUICK<RET>

TOPS-10 7.03 system mm-dd-yy

.

A.2 STARTING THE MONITOR

This section describes the startup options that allow you to start up the monitor without changing any disk parameters. You can start up the monitor without running INITIA to initialize the terminal lines by using the NOINITIA option. Note that this also prevents INITIA from reading the SYSJOB.INI file as well. (Refer to Chapter 10). To start the system and allow INITIA to run, use either QUICK or GO.

ONCE STARTUP OPTIONS

A.2.1 NOINITIA Startup Option

The NOINITIA startup option is identical to the GO and QUICK options, except that it prevents the INITIA program from running. Therefore, it is a quick way to start the monitor without changing any disk parameters. However, the NOINITIA option should not be used to start timesharing because INITIA is required to initialize terminal lines. INITIA can be run later from the CTY using the INITIA SYS monitor command. (See Chapter 10 for more information about INITIA.)

TOPS-10 7.03 system mm-dd-yy

- 1 Why reload:
- 2 Date:
- 3 Time:
- 4 Startup option: NOINITIA<RET>

After you type the NOINITIA option, ONCE checks for off-line disk units, and lists them. However, you are not allowed to change them.

%UNIT-NAME is off-line

TOPS-10 7.03 system mm-dd-yy

.

A.2.2 GO and QUICK Startup Options

The GO startup option provides an even quicker method of starting the monitor by not checking or reporting off-line disk units. It is identical to the QUICK startup option. These startup options start INITIA, however, which requires that one of the following files exist:

SYS:TTY.INI to set up terminal line characteristics.

SYS:OPR.ATO to be read by OPSER automatically.

INITIA first attempts to read TTY.INI. If the file does not exist in SYS, it runs OPSER, which attempts to read OPR.ATO. If OPR.ATO does not exist, OPSER prints an error message. You can exit from OPSER using CTRL/C and continue your work.

If TTY.INI exists, then INITIA follows the instructions in TTY.INI. The following example assumes that TTY.INI exists, and contains the line:

CTY GALOPR

ONCE STARTUP OPTIONS

INITIA reads the line, and starts OPR on the CTY (where the commands are entered). INITIA reads SYS:SYSJOB.INI, starting the system programs, and then waits for input. Type the EXIT command to exit from OPR:

MONITOR mm-dd-yy

- 1 Why reload:OTHER;TEST<RET>
- 2 Date: mmm-dd-yy<RET>
- 3 Time: 11:44<RET>
- 4 Startup option: QUICK<RET>

MONITOR 11:44:06 CTY system 1026
Connected to Node CENTR(0) Line # 45

.LOGIN 1,2
.R OPR
OPR>EXIT<RET>

.

A.3 CHANGING PARAMETERS WITH TWICE

The TWICE program is provided to operators for changing disk parameters without reloading the system. It requires the operator to be logged in as (1,2] and runs a portion of the ONCE program after some preliminary questions. Like ONCE, it checks the disk units that are on line, reporting off-line units, inconsistent HOME and BAT blocks, and bad regions on disk.

.R TWICE<RET>

Scratch file? (Y or CR)

This question allows you to store the disk data base in a .BIN file. Normally, you respond to this question by pressing RETURN.

READ UNITS:

This question allows you to specify the names of disk units you wish to change. READ UNITS refers to the disk units from which you wish ONCE to read the HOME blocks.

WRITE UNITS:

The second request is for disk units on which to write new HOME blocks for changed information. The ONCE program ensures that you will not inadvertently disrupt system operation by not allowing you to change the disk parameters for disks that you did not specify as WRITE UNITS.

Startup option:

The TWICE program passes control to the ONCE program at this point, allowing you to specify a startup option to change disk parameters. If you specify a startup option that starts the monitor (GO, QUICK, or NOINITIA), TWICE simply exits to monitor level.

APPENDIX B

MODIFYING THE MONITOR

B.1 REBUILDING THE MONITOR LIBRARY FILE

The monitor library file, TOPS10.REL is distributed with the TOPS-10 monitor in a standard form. It is linked with the monitor common modules (COMMON, COMNET, COMDEV, and COMMOD), as explained in the instructions in Section 7.3 of this manual. For new installations, the procedure in Chapter 7 is sufficient for building the monitor.

The monitor library file contains assembled code for all the bundled monitor modules. If an installation has made modifications to the monitor, or if you changed any settings of feature test options in the FGEN portion of MONGEN, you must reassemble the monitor library file.

NOTE

The symbol values and configuration options possible with this procedure are so numerous that it is impossible to predict results in every combination. Therefore, you should be aware that the resulting operating system may not be supported by Digital Equipment Corporation.

Several modules must appear in a specific order. They are:

- F.MAC
- S.MAC
- NETPRM.MAC
- DTEPRM.MAC
- COMMON.MAC
- COMDEV.MAC
- COMNET.MAC
- COMMOD.MAC
- EJBDAT.REL
- FILFND.MAC
- FILIO.MAC
- FILLUO.MAC
- DPXKON.MAC
- FHXFON.MAC
- FSXKON.MAC
- RHXKON.MAC
- RPXKON.MAC

MODIFYING THE MONITOR

These files must precede all other modules, and must be listed in this order. The following files must be placed, in this order, at the end of the list:

```
PATCH.MAC
SYSINI.MAC
SYSCHK.MAC
ONCMOD.MAC
REFSTR.MAC
ONCE.MAC
```

For more information about building the monitor library file, read the batch control file COMPIL.CTL.

B.2 CHANGING COMMON SYMBOLS

The COMMON, COMDEV, COMNET, and COMMOD modules contain symbols that may be redefined with MONGEN. This section lists those symbols. When entering the symbols to MONGEN, type them in the form:

```
symbol,value
```

The symbols and their default values are listed here as they might be typed in the MONGEN dialog.

The following symbols may be changed in Questions 42 through 44 of the HDWGEN portion of MONGEN. They are divided according to the radix required on the values.

B.2.1 Decimal Symbol Values

The following symbols are defined with values in decimal radix. The default values (shown here) may be changed with Question 42 of the HDWGEN portion of MONGEN.

B.2.1.1 Symbols Defined in COMMON -

ERPTMX,80	Specifies the length of block for errors.
EVBN,128	Blocks available for mapping buffers and IOWDs.
HIGHXC,80	Highest extended channel.
IFCS,5	Swapper fairness count maximum.
LIM1HS,30	Limit of stopcodes in any 1 hour period.
LOGSIZ,34	17K (current size of LOGIN CUSP).
M.BMAX,13	Maximum number of simultaneous batch job streams.
M.CBAT,10	Number of bad addresses in per CPU bad.
M.CLSN,16	Number of CPU classes for scheduler.
M.CMCT, 32	Number of calls to CHKTAL routine.

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M.DNSZ,30000 DECnet free core size.
M.DTLS,90 CPU time limit (seconds) to set.
M.EBPS,12500000 Default number of EBOX ticks per second.
M.ENQD,100 Default ENQ quota.
M.ENQM,500 Maximum number of active queues.
M.ETSZ,3000 Ethernet free core size.
M.KNSZ,3000 KLNI free core size.
M.LASZ,15000 LAT free core size.
M.LCST,0 Length of the Line Data Block reserved for customer definition.
M.MBPS,9750000 Default MBOX references per second.
M.OMSM,60 Number of minutes between calls to BIGBEN.
M.PCST,0 Length of the Process Data Block reserved for customer definition.
M.SCSZ,4000 SCA free core size.
MAXNBP,64 Maximum number of SNOOP UVO breakpoints.
MEMITL,4 Number of ways memory can be interleaved.
MINCOR,JOBN*150 Assume 3 DDBS per job.
MINMAX,1024*12 Smallest legal CORMAX.
MLACTS,39 Maximum length of the account string.
NSPMEM,1000 1000 nano-seconds per memory cycle.
PAVJSP,20 Predicted average job size.
RLDTIM,112 Time to auto-reload.
SFC0,20 CPU0 scheduler fairness count.
SFC1,20 CPU1 scheduler fairness count.
TTDMOS,16 Maximum output string for RSX-20F.
UFC0,10 UVO fairness counter maximum.
UFC1,10 UVO fairness counter for slave.

B.2.1.2 Symbols Defined in COMNET -

MSGMAX,512 Maximum message size in the network.
NTTPLN,32 Size of a terminal PCB.

MODIFYING THE MONITOR

B.2.1.3 Symbols Defined in COMDEV -

DSETIM, 320	Maximum time to do a data security erase (seconds).
IDLSEC,90	Any terminal idle this number of seconds gets disconnected.
LPTSIZ,27+2	LPT buffer size in words (132 column printer).
M.AIDL,n	The number of seconds before idle ANF-10 lines are disconnected, where n defaults to the current value for IDLESEC (see above)
M.DIDL,n	The number of seconds before idle dataset lines are disconnected, where n defaults to the current value for IDLESEC (see above)
M.LIDL,n	The number of seconds before idle LAT lines are disconnected, where n defaults to the current value for IDLESEC (see above).
M.NIDL,n	The number of seconds before idle NRT/CTERM lines are disconnected, where n defaults to the current value for IDLESEC (see above).
MTSIZ,128	Magtape buffer size in words.
NOISE,12	Noise record length in bytes.
TAPTIM,60	Maximum time to skip 10 records (seconds)
TTCHKS,4	Size of TTY chunk, in powers of 2, with a minimum of 4. Increasing the size of TTY chunk can increase TTY throughput.
TTYLCT,1	Lower case terminal. If 1, terminal has uppercase capability. If 0, terminal has lowercase capability.
TTYRMT,-1	Remote terminal. If 1, terminal is remote. If 2, terminal is local.
TTYWID,72	Terminal width default.

B.2.1.4 Symbols Defined in COMMOD -

BLKMAX,100000	Maximum number of blocks to transfer (KL10).
BLKMAX,252	Maximum number of blocks to transfer (KS10).
CHVIFP,10	Standard initial fairness count for positioning.
CEVIFT,10	Standard initial fairness count for transferring.
DSKTRY,10	Number of error tries on disk data errors.
FIL4WD,9	Number of 8 word core blocks per job (for NMB,PPB,UFB,ACC).

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MAXUSI,8	Maximum negative USETI (maximum number of extended RIBs).
MFDSIZ,30	Number of blocks for initial MFD set by refresher.
PTRLEN,7	Number of in-core retrieval pointers per file.
RCLTRY,10	Number of times to try `DSKTRY' data errors.
SERTRY,3	Number of times to try on search errors.
SWCLSN,7	Highest class for swapping.
SWPMAX,8	Maximum number of units for swapping.
UNVRSF,500	Reciprocal safety factor for each unit.

B.2.2 Octal Symbol Values

The following symbols are defined by values in octal radix. The default settings for these symbols can be changed with Question 43 of the HDWGEN portion of MONGEN.

B.2.2.1 Symbols Defined in COMMON -

BPTBIT,0	Initial user "SET DDT BREAKPOINT" setting.
CP0NRN,0	Reserve 7 channels on CPU0 for RP20 channels.
CP0NRP,0	Reserve 7 channels on CPU0 for RP004 channels.
CP0NTP,0	Reserve 7 channels on CPU0 for tapes.
CP1NRN,7	Reserve 7 channels on CPU1 for RP20 channels.
CP1NRP,7	Reserve 7 channels on CPU1 for RP04 channels.
CP1NTP,7	Reserve 7 channels on CPU1 for tapes.
CP2NRN,14	Reserve 7 channels on CPU2 for RP20 channels.
CP2NRP,14	Reserve 7 channels on CPU2 for RP04 channels.
CP2NTP,14	Reserve 7 channels on CPU2 for tapes.
CTYDCR,0	Delay for RETURN on CTY during ONCE,
CTYDLF,0	Delay for LINE FEED on CTY during ONCE.
DEFBPT,	Initial CPU breakpoint mask (one bit per CPU).
DEFDEB,0	Debugging word.
DTTRY,4	Number of times to re-try on DECTape errors.
INDPPN,0	0 means project programmer numbers are dependant across projects. That is, owner of PPN is determined by programmer number only.

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LIM1MS,4	Limit of stopcodes in any 1 minute period.
LIM8MS,7	Limit of stopcodes in any 8 minute period.
M.BMIN,0	Minimum number of guaranteed batch jobs.
M.CLSS,1	Scheduler is class system scheduler.
M.DCLS,0	Scheduler class for new jobs.
M.EMRT,0	Default is regular runtime.
M.ITA,0	Default is to use interval timer.
M.JMAX,M.JOB-M.BMIN	Maximum number of simultaneous interactive jobs.
M.PIDN,JOBN*2	Size of PIDTAB.
M.RCMP,0	Prohibits execution of restricted command features from remote terminals.
M.STOF,0	Frequency to call start TTY output (must be 2^{n-1}).
M.WCH,JW.WMT	Watch bits used to set initial.
M.XFFA,0	Do file access protection checking on [1,2] and JACCT.
SCHEDN,0	Schedule value.
STDENS,5	Standard density (6250 BPI).
SYSSEG,-1	Minus one for fast GETSEG from SYS.
TTYTRA,0	Number of extra TTY DDBs for slave lines.

B.2.2.2 Symbols Defined in COMNET -

MAXODR,6	Maximum number of data requests for input devices.
MSGMXM, MSGMAX	Maximum message size the -10 will transmit.

B.2.2.3 Symbols Defined in COMDEV -

FLCDEF,1	Terminal filler class code to use if not specified.
MTDAEM,10	Number of times per reel to call DAEMON for magtape error reports.
MTDLTP,LT.BLP	Default label type.
MTELOG,-1	Zero to log all recovered magtape errors.
TTYALT,0	Default setting of TTY ALTMODE.

MODIFYING THE MONITOR

B.2.2.4 Symbols Defined in COMMOD -

CCWMAX,1	Maximum number of data channel command words.
LBFSIZ ,1000	Default large-buffer size (OP.LBF on an OPEN). Specify the octal value in words in multiples of 200.
LIMLVL,5	Maximum number of nested SFDs for this monitor.
M.CBMX,JOBN-1	Default blocks in disk cache.
M.DFLB,3	Default number of large disk buffers.
M.DFNB,6	Default number of disk buffers.
M.QSTR,0	Default structure for device queues.
MF DPRV,555000	MFD privileges (all can READ, LOOKUP).
PRVFIL,557	Standard file privilege.
PRVSPL,077	Protection for spooled output.
PRVSY,155	Protection for most system programs.
PRVUFD,775	Standard UFD privilege.
PRYSYS,157	Protection for SYS:*.SYS.
RIBERN,0	RIB error threshold for RIB errors on structures in system search list.
SYNRPR,357000	Privileged files in SYS.
SYRDPR,355000	Non-privileged files in SYS.
SYS PRV,775000	SYS UFD privileges (project 1 can read/create on SYS).

B.2.3 SIXBIT Symbol Values

The following symbols are defined by SIXBIT values. The default settings shown here can be changed by Question 44 of the HDWGEN portion of MONGEN. These symbols are defined in COMMON.

M.CRSH,CRSCP	Default crash copy program name.
OPRLIN,CTY	OPR terminal at the central (PDP10) site.

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B.3 CONFIGURING UNSUPPORTED DEVICES INTO THE MONITOR

Ordinarily, the MONGEN dialog asks questions about supported devices only. By selecting the MUNGEN option in MONGEN, you can create a MONGEN dialog that includes questions about unsupported devices you may want to configure into your monitor.

When you run a modified MONGEN, it displays the following message at startup:

CAUTION

This MONGEN includes dialog for UNSUPPORTED monitor options. Digital may not support a monitor generated with such code enabled.

The MUNGEN dialog modifies internal MONGEN control variables to suppress or enable questions in the HDWGEN, NETGEN, and FGEN dialogs. It does not produce source files. It does, however, allow you save a copy of the modified MONGEN for later use.

B.4 USING THE MUNGEN DIALOG IN MONGEN

Run MONGEN, and select the MUNGEN option.

```
Which GEN(HDW,NET,F,MUNGEN):MUNGEN
```

CAUTION

The MUNGEN dialog alters MONGEN so that it includes dialog for devices not currently supported.

MONGEN asks which MUNGEN command mode you want to use.

```
Mode(EXIT,ALL,INCLUDE,EXCLUDE,LIST)
```

The following sections describe each of the MUNGEN modes and how to use them. In all modes, you can use the MONGEN /HELP and /HELP:arg switches to get more information.

B.4.1 EXIT Mode

EXIT terminates the MUNGEN dialog, and asks the following question:

```
Save (Y,N) [Do you want to save this configured MONGEN on  
DSK:MUNGEN.EXE for later use]:
```

After you respond Y or N, MONGEN exits the MUNGEN dialog, and returns to the question,

```
Which GEN(HDW,NET,F,MUNGEN):
```

MODIFYING THE MONITOR

B.4.2 ALL Mode

ALL displays each unsupported device name and asks if you want to include questions about it in the MONGEN dialog. The order of the questions in ALL mode is subject to change. Therefore, errors may result if you use ALL mode in a batch control file that runs MONGEN. To avoid errors when you use a control file to modify MONGEN, use the INCLUDE and EXCLUDE modes instead.

B.4.3 LIST Mode

LIST displays the name of each unsupported device, and whether MONGEN currently includes or excludes questions about it. By default, the MONGEN dialog excludes questions about all unsupported devices.

B.4.4 INCLUDE and EXCLUDE Modes

INCLUDE adds questions about the unsupported devices you specify. EXCLUDE removes questions about unsupported devices. When you use INCLUDE or EXCLUDE mode, MONGEN displays the following prompt:

Options(Name,Name,...Or "*"):

You enter the names of devices, separated by commas. You may not abbreviate device names. You can supply a wildcard (*) to INCLUDE or EXCLUDE questions about all unsupported devices.

MONGEN limits the length of your response to 80 characters. To specify a very long list of devices, you may need to use the INCLUDE or EXCLUDE command several times.

The following table lists devices that you may want to configure into your system. Note that some of these devices may not be supported. The controller numbers, shown as the variable x, are incremented for each controller on the system. The controller names include the variable n, which is an alphabetic character incremented for each controller on the system.

MODIFYING THE MONITOR

Table B-1: Device Channels and Controllers

Channels	Controller	Kont-Name	Unit Types
RH2S -->DX20	RP20 (master)	RNx	RP20 (slaves)
RH10, RH20	Massbus	FSx RPx	RS04 RP04,RP05, RP06,RP07
RH11 (KS only)	Massbus	RPx	RM03,RP06
DF10,DF10C	RP10 RC10	DPx FHx	RP02,RP03 drums
RH11 (KS only)	TM0n	MTx	TU45, TU77
DX10	TX01	MTx	TU70,TU71,TU72
RH20 -->DX20	TM02	MTx	TU45,TU70, TU71,TU72,TU77
RH20	TM0n	MTXn	TU45,TU77
RH20	TM78	MTx	TU78
RH20 -->C125	HSC50	RAX	RA60,RA80,RA81

APPENDIX C

SETTING SCHEDULER PARAMETERS

The SCDSET program enables a privileged user to accomplish the functions of the SCHED. monitor call, and to manipulate a SCDMAP.SYS file. For example, you can use SCDSET to do the following:

- o Set system usage quotas
- o Adjust scheduler parameters
- o Create and modify a SCDMAP.SYS file
- o Move a SCDMAP.SYS file into the SYS area
- o Update the class of all logged-in jobs automatically

C.1 REQUIRED PRIVILEGES

The privileges required to use SCDSET depend on the functions you want to accomplish. The following list describes the privileges required for different functions.

- o To manipulate a SCDMAP.SYS file, you need only to have the privileges necessary to move the file into the SYS area.
- o To set system usage quotas, and adjust scheduler parameters, you must be logged in as [1,2], or the SCDSET program must have JACCT privileges.
- o To use the READ/SET functions, you must be logged in as [1,2].

C.2 CAUTIONS

If you misunderstand how the scheduler works, or make typing mistakes while using SCDSET, you may unintentionally halt all work being done on the system. Therefore, practice working with SCDSET and the scheduler during non-production timesharing until you are familiar with both of them.

To prevent system quotas and system load from affecting your work, run SCDSET in a High Priority Queue (HPQ) except when you create or modify a SCDMAP.SYS file. If you use an HPQ when you create or modify a SCDMAP.SYS file, you adversely affect system performance.

SETTING SCHEDULER PARAMETERS

C.3 SCDSET COMMANDS

This section describes the top-level SCDSET commands. It also describes EDIT subcommands, and the parameters you can read and set with the READ/SET commands.

C.3.1 EDIT

Calls the MAKMAP routine. The MAKMAP routine enables you to create or modify a SCDMAP.SYS file. EDIT uses the following subcommands:

SUBCOMMAND	FUNCTION
COPY/SET	Copies a file from a area or device to the SYS area.
EXIT	Returns to top-level.
HELP	Displays EDIT help text.
ONE CLASS	Changes one scheduler type to a scheduler class in the SCDMAP.SYS file.
RANGE	Changes a range of scheduler types to scheduler classes in the SCDMAP.SYS file.
READ	Reads in a SCDMAP.SYS file for modification.
TYPE	Displays a specified range of scheduler types.
WRITE	Writes a SCDMAP.SYS file to a device or area.

C.3.2 EXIT

Returns your job to monitor level.

C.3.3 HELP

Displays help text.

C.3.4 READ/SET

Execute functions of the SCHED. monitor call. You can read or set the following parameters:

PARAMETER	MEANING
AVG SWAP TIME	The estimated average swap time for a typical job on the system. The AVG SWAP TIME controls the rate at which the swapper changes from one class to the next when it chooses jobs to swap in.
SB CLASS	The class to run as background batch. Background batch class jobs run whenever the system is otherwise idle.

SETTING SCHEDULER PARAMETERS

PARAMETER	MEANING
BB SWAP TIME	The estimated time required to swap a background batch job. The scheduler uses the RB SWAP TIME to decide when the system should permit a background batch job to be swapped in.
CORE SCHEDULING INTERVAL	The rate at which the system stops accounting for in-core protect time and stops using in-core protect time to requeue jobs. The CORE SCHEDULING INTERVAL is important for systems with a large amount of memory, or very few users.
CPU SCAN ORDER	The scan table used by a CPU or CPUs.
DEFAULT CLASS	The class new jobs assume when they first log in. The DEFAULT CLASS applies to a new job until LOGIN reads the job's class from SCDMAP.SYS and changes the class appropriately.
FREE CORE GOALS/LIMITS	The percentage of free and potentially free memory that must be available to the swapper. If this percentage is not available, the swapper swaps out jobs in long term wait.
HIGH SEGMENT RETENTION TIME	The dormant high segment retention time is high segment in-core protect time. It prevents the deletion from memory of high segments which have become dormant until a specified time has elapsed.
IN-CORE FAIRNESS FACTOR	The factor that controls the rate at which out of core jobs and in-core jobs are scheduled for swapping.
JOB CLASS	The scheduler class of all logged in jobs.
MS INTERVAL	The Micro Scheduling interval (in jiffies). The MS interval specifies how often the scheduler selects a class to be scheduled.
PRIMARY PERCENTAGES	The system usage percentages for a particular job class. The sum of all primary percentages may be fixed. In this case, the scheduler only chooses a job to run when its class has the highest priority. When the sum is fixed, a class cannot exceed its class quota. If the only runnable jobs are in this class, the scheduler runs the null job.
PROT	A constant used to calculate the minimum core usage quota. The measurement is in microseconds.

SETTING SCHEDULER PARAMETERS

PARAMETER	MEANING
PROT1	The in-core timeslice used after a job has expired its initial in-core protect time. PROT1 controls the rate at which I/O bound jobs circulate around the run queues.
PROTM	The maximum in-core protect time assigned to a job. It specifies an upper limit for very large jobs.
PROTOT	A constant used to calculate the minimum core usage quota. The measurement is in microseconds.
RESPONSE FAIRNESS	The rate at which the scheduler chooses jobs to run. The rate depends on the order of the jobs in the "just swapped in list", and the allocations specified by the job classes.
RUNTIME BY CLASS	The amount of runtime each class has used since the last time that a class quota was changed. The measurement is in jiffies. This parameter also displays the percentage of runtime each class has used.
SCHEDULER FAIRNESS	The rate at which PQ2 jobs are scheduled ahead of PQ1 jobs. SCHEDULER FAIRNESS allows compute bound jobs to run even when there are many interactive jobs running.
SECONDARY ALLOCATION	The maximum amount that a class will be given after using up the primary percentage.
SWAPPER FAIRNESS	The rate at which PQ2 jobs are swapped in ahead of PQ1 jobs.
TIME BASE	The base run quanta (In milliseconds) for either run queue. Note that internally, the scheduler stores this value in local jiffies. Therefore, it may not be possible to adjust the time slice by a few milliseconds.
TIME MAXIMUM	The maximum quantum runtime that a job uses.
TIME MULTIPLIER	The parameter that assigns a larger quantum runtime for large jobs. The quantum runtime is the result of the following: $(\text{TIME BASE}) + (\text{TIME MULTIPLIER}) * (\text{job size})$ The scheduler compares the quantum runtime to a run quantum maximum, and assigns the smaller of the two values to large jobs.

SETTING SCHEDULER PARAMETERS

C.3.5 UPDATE JOBS

The UPDATE JOBS command updates all the job parameters defined above for logged in jobs, and writes the changes to files if requested. UPDATE JOBS accomplishes this through the FIXJOB routine, which does the following:

- o Asks if you want to move a new SCDMAP.SYS file to the SYS area. If you answer yes, you move the SCDMAP.SYS file. If you answer NO, FIXJOB calls the MOVMAP routine to move the SCDMAP.SYS file.
- o Gets each logged in job's PPN.
- o Determines whether to use the batch half or timesharing half of the SCDMAP.SYS file currently on SYS.
- o Looks in ACTDAE.SYS for the user's scheduler type.
- o Executes the SCHED. monitor call to put that job in the correct scheduler class.
- o Prints an error message for each logged in job it does not find in ACTDAE.SYS, or for which the SCHED. monitor call failed.

The FIXJOB routine does not execute the SCHED. monitor call for [2,5] jobs, or for its own job.

C.4 THE SCDMAP.SYS FILE

You must have the SCDMAP.SYS file on SYS. The file contains 1024 (decimal) nine bit entries (256 decimal words) . The first 512 entries constitute the map for timesharing users, the second 512 entries constitute the map for batch users. Each entry contains a number between zero and thirty-one inclusive (0-31) that specifies a scheduler class. Each of the 512 scheduler types for both timesharing and batch has an entry. Thus, at login time, LOGIN looks in ACTDAE.SYS for the PPN's scheduler type and then looks in SCDMAP.SYS for the current scheduler class for that scheduler type and job type (timeshare or batch). If you do not want to differentiate between timeshare and batch, the second half of the map should be identical to the first half.

SETTING SCHEDULER PARAMETERS

The format of the SCDMAP.SYS file is as follows:

Table C-1: SCDMAP.SYS Format

		0-8	9-17	BITS 18-26	27-35
Word	0	n0	n1	n2	n3
Word	1	n4	n5	n6	n7
Word	2	n8	n9	n10	n11
Word	127	n508	n509	n510	n511
Word	128	m0	m1	m2	m3
Word	129	m4	m5	m6	m7
Word	130	mB	m9	m10	m11
Word	255	m508	m509	m510	m511

nXXX is the location of the Scheduler Class for timesharing users of Scheduler Type XXX (as stored in ACTDAE.SYS), and mXXX is the location of the Scheduler Class for batch users of Type XXX.

APPENDIX D

MAKING THE DISTRIBUTION MEDIA BOOTABLE

This appendix contains the procedure for making the front-end media bootable for RSX-20F. It illustrates the procedure for DECTapes, but you can also use it to make floppies bootable. To use this procedure for floppy disks instead of DECTapes, substitute the device names DT0: and DT1: for DX0: and DX1: (the floppy disk device names). This procedure assumes that your system has a bootable front end file system mounted on the front end's hard disk drive.

1. Mount the disk pack containing a bootable RSX-20F system in the front end RP06.
2. Set the PDP-11 console switches to 000203.
3. Press the SW/REG and ENABLE switches at the same time.
4. Mount the distribution DECTape "C" on drive 0.
5. Type everything printed in bold characters below:

```
<CTRL/\>  
MCR MOU<RET>  
MOU>DT0:<RET>           Mounts DECTape C on DECTape  
                           drive 0.
```

```
MOU -- MOUNT COMPLETE  
MOU><CTRL/Z>  
<CTRL/\>
```

```
PAR>MCR PIP<RET>  
PIP>DB0:RSX20F.SYS;*/DE<RET>  Deletes RSX-20F.SYS from  
                               disk.
```

```
PIP>DBO:=DT0:RSX20F.SYS<RET>  Copies RSX-20F.SYS from  
                               DECTape C to disk.
```

```
PIP><CTRL/Z>  
<CTRL/\>
```

```
PAR>MCR DM0<RET>  
DM0>DT0:<RET>           Dismounts DECTape C from  
                           DECTape drive 0.
```

```
DM0 -- DISMOUNT COMPLETE  
DM0><CTRL/Z>  
<CTRL/\>
```

6. Remove DECTape C from drive 0.
7. Mount distribution DECTape A on DECTape drive 0 and DECTape B on DECTape drive 1.

MAKING THE DISTRIBUTION MEDIA BOOTABLE

8. Type everything printed in bold characters below:

```
PAR>MCR BOO<RET>           Runs the RSX-20F bootstrap
                           loader.
BOO>DB0:RSX20F.SYS<RET>    Runs RSX-20F.SYS.
<CTRL/\>                   If you are using floppies,
                           this step mounts both of
                           them automatically.

INS -- SY MOUNTED TSK=PARSER
```

NOTE

The following step applies only to DECTapes. If you are using floppies, go to the initialization step below.

```
PAR>MCR MOU<RET>           Mounts DECTape B on DECTape
MOU>DT1:<RET>              drive 1.
MOU -- MOUNT COMPLETE
MOU> <CTRL/Z>
<CTRL/\>
```

NOTE

The remaining steps apply to both DECTapes and floppies.

```
PAR>SET CONSOLE MAINTENANCE<RET> Changes to maintenance mode
                                  to allow you to set the
                                  date and time.
CONSOLE MODE:  MAINTENANCE

PAR>SET FAULT<RET>              Turns on fault
                                  continuation.
FAULT-CONTINUATION:  ON
                                  You can set KLINIK
                                  parameters at this point.

PAR>SET DATE<RET>              Sets the date and time.
DATE:dd-mmm-yy<RET>
TIME:hh:mm<RET>

PAR>SET CONSOLE OPERATOR<RET>    Sets the console mode to
                                  OPERATOR. (OPERATOR is the
                                  default console mode.)
CONSOLE MODE:  OPERATOR
PAR>MCR SAV<RET>
SAV>SYS:/WB<RET>                Saves the currently running
                                  RSX-20F to DECTape drive 0
                                  (In bootable form).

[DT0: dismounted]
[DT1: dismounted]

RSX-20F VE##-## hh:mm dd-mmm-yy

[SY0: redirected to DTB:]
[DT0: mounted]
[DT1: mounted]
```

9. Press the HALT switch on the PDP-11 console.

To copy this RSX-20F to the front end file system on hard disk, see the front end file system installation procedure in Chapter 6.

APPENDIX E

SOFTWARE INSTALLATION GUIDE GLOSSARY

This appendix lists and explains the terms and conventions used in this manual.

AC

An accumulator.

Accounting Files

The files that are used to control access and use of computer resources. ACTDAE.SYS and QUOTA.SYS are the accounting files. See Chapter 9 for more information about these files.

AUTCON

The monitor module to automatically configure tape and disk drives. AUTCON is part of the monitor, that detects changes in status of I/O channels. It is also invoked at system startup to build the appropriate data bases for mass-bus and CI bus devices.

BAF block

The BAT block that is stored in memory.

BAT block

The data table, stored on disk, containing information about bad areas on disk.

CRASH.EXE

The file automatically written by BOOT when the system fails. CRASH.EXE can be used to reload a suspended monitor.

CTY:

The console terminal for the front end and CPU. The CTY is usually a hard-copy terminal, so that important information about the system that is printed can be easily perused when the system is not running.

SOFTWARE INSTALLATION GUIDE GLOSSARY

CUSP

A Commonly Used System Program that works closely with the monitor to perform system functions. For example, LOGIN, PIP, and BACKUP are CUSPs.

DAY-MON-YEAR

The format of the system date you supply to the ONCE-only dialog.

Ersatz Device Names

The monitor associates certain device names with PPNs. Such a device name is called an "ersatz device." The list of ersatz device names can be expanded with Question 49 of the HDWGEN portion of MONGEN.

File Structure

A file structure is one or more disk packs, mounted and spinning, that have been defined to the monitor as a single entity to be referenced and accessed by the file structure name. File structure information is entered into the disk HOME blocks by the ONCE program.

HH:MM:SS

The time you input for the system time in the ONCE-only dialog.

HIGH-ADDR

The high-bound physical address in memory that is referenced in the ONCE dialog.

HOME block

The data block that is stored on disk which contains information about the unit's file structure, access information, and amount of swapping space.

Initial Job Search List

The job's initial search list (established by LOGIN from the information in the accounting files.)

Job Search List

Those file structures that constitute DSK for the job.

LOW-ADDR

The lower-bound address of a physical address reference specified in the ONCE dialog.

SOFTWARE INSTALLATION GUIDE GLOSSARY

MFD

The Master File Directory of all the User File Directories. An MFD is kept for each file structure.

ONCE

The monitor module that contains the ONCE-only mandatory system startup dialog and I/O device initialization. In debugging mode, ONCE preserves the monitor's symbol table. If the data is not available, ONCE asks why the system is being reloaded, and allows any of several startup options to change disk parameters and/or start up the system.

ONCMOD

The monitor module containing the optional ONCE-only system startup dialog for disk initialization. Structure and unit parameters are changed using ONCMOD. TWICE runs ONCMOD during timesharing.

OPR device

A designation made for the benefit of the monitor, which indicates the terminal from which the operator's controlling job is running. Monitor messages for the operator are directed to the OPR device.

OPR program

The operator-interface program to the various components of the GALAXY batch and spooling system.

PPN

A project-programmer number. [PPN] in square brackets represents the User File Directory of the user with that PPN.

REFSTR

The monitor module that is called by ONCE and TWICE to refresh structures.

SAB block

The SAT block that is stored in memory.

SAT block

The Storage Allocation Table, stored on each disk unit, containing information about the status of the clusters on the disk and their use bits, which tell whether clusters on the disk are "in use," storing data, or "free" for storage of data.

SOFTWARE INSTALLATION GUIDE GLOSSARY

STR-NAME

The name of a defined file structure, which you provide to the ONCE dialog.

SYSINI

The monitor module responsible for system initialization. SYSINI runs only in the policy, or boot, CPU. It invokes the ONCE dialog, initializes device data blocks, maps memory, and sets up monitor service routines, such as the RSX-20F interface. In time, it causes CPU startup.

System Dump List

The list of file structures that will be searched for space to store CRASH.EXE when the system falls.

System Search List

Those files structures that are searched when some ersatz device names, such as SYS: or DEC:, are used.

UFD

The User File Directory that lists the files of each user in a file structure.

UNIT-NAME

The physical unit name of a disk specified in the ONCE dialog.

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