DNOS

System Generation Reference Manual

Part No. 2270511-9701*B
15 November 1983

TEXAS INSTRUMENTS

MANUAL REVISION HISTORY

DNOS System Generation Reference Manual (2270511-9701)

Original Issue	1 August 1981
Revision	1 October 1982
Revision	15 November 1983

The total number of pages in this publication is 166.

The computers offered in this agreement, as well as the programs that TI has created to use with them, are tools that can help people better manage the information used in their business; but tools – including TI computers – cannot replace sound judgment nor make the manager's business decisions.

Consequently, TI cannot warrant that its systems are suitable for any specific customer application. The manager must rely on personal judgment of what is best for his or her business.

Preface

This manual contains the information necessary to perform a DNOS system generation. The process requires these steps:

- Defining a system
- Building system files
- Assembling and linking
  - — Assembling system source
  - — Linking system components
  - — Building system program file
- Patching the system
- Testing the system
- Installing the system

The following sections describe these steps and give examples to help you complete the system generation process.

Section

1 Introduction — Describes the purpose of the system generation process and lists the file structures necessary for it.

2 System Generation Utility Operations — Details the two modes of operation used to define or modify the system configuration during system generation.

3 System Generation Procedure — Presents the prompts that appear when you execute the System Generation Utility and explains the meaning of user-supplied parameters, such as CRU and TILINE* addresses. Gives examples of how to determine CRU base addresses. Explains the assemble and link, patch, test, and installation steps for system generation.

4 Preanswered Parameters — Describes the preanswered parameters for system generation and the modifications you can make to them.

* TILINE is a registered trademark of Texas Instruments Incorporated.

5 Dynamic Configuration — Describes the utility that allows you to modify the system configuration without performing another system generation.

6 System Generation Examples — Presents several examples to help you perform the system generation process.

Appendix

A Keycap Cross-Reference — Gives the generic key names in a chart that relates the generic name to the key on a specific terminal.

Also, the DNOS software manuals shown on the support manual diagram (frontispiece) contain information related to system generation. The *DNOS Object Installation Manual* (part number 2270514-9701) tells you how to build your system from the shipped media. Refer to the *Two-Channel Asynchronous Interface Module (CI402)* (part number 2263895-9701) or the *Four-Channel Asynchronous Communications Interfaces (CI403 and CI404)* for communications requirements.

Contents

Paragraph	Title	Page
	1 — Introduction	
1.1	DNOS Functional Capabilities	1-1
1.2	Purpose of System Generation	1-1
1.3	System Generation Requirements	1-2
1.3.1	Files Supplied With the System Generation Utility	1-2
1.3.2	Files Created by the System Generation Utility	1-4
1.3.3	User-Supplied Files	1-7
1.4	DNOS Response Notation	1-8
	2 — System Generation Utility Operations	
2.1	Modes of Operation	2-1
2.2	Inquiry Mode	2-1
2.3	Command Mode	2-1
2.3.1	Modification of Preanswered or Required Parameters	2-3
2.3.2	Deleting an Entity	2-4
2.3.3	Listing the Configuration File	2-5
2.3.4	Early Termination of System Generation	2-5
	3 — System Generation Procedure	
3.1	System Generation Prerequisites	3-1
3.1.1	Determining CRU Addresses	3-6
3.1.2	Expansion Chassis	3-9
3.1.3	Interrupt Levels	3-9
3.1.4	TILINE Address	3-10
3.1.5	Devices Sharing Interrupts	3-15
3.1.6	Controllers	3-15
3.2	Beginning the Sysgen Process	3-17
3.3	XSGU Command Prompts	3-17
3.3.1	DATA DISK/VOLUME Prompt	3-18
3.3.2	TARGET DISK/VOLUME Prompt	3-19
3.3.3	INPUT CONFIGURATION Prompt	3-19
3.3.4	OUTPUT CONFIGURATION Prompt	3-19
3.3.5	ASSEMBLE AND LINK Prompt	3-19
3.4	Required Sysgen Parameters for All DNOS Systems	3-20

Paragraph	Title	Page
3.4.1	KIF Prompt	3-21
3.4.2	SITE NAME Prompt	3-21
3.4.3	SECURITY Prompt	3-21
3.4.4	APPLICATION PROGRAM FILE Prompt	3-22
3.4.5	LOG DEVICE Prompt	3-22
3.4.6	ATTENTION DEVICE Prompt	3-22
3.4.7	RESTART ID Prompt	3-22
3.4.8	CARD 1 Prompt	3-22
3.4.9	CARD 2 Prompt	3-22
3.4.10	USER SVC TABLE PATHNAME Prompt	3-23
3.4.11	COUNTRY CODE Prompt	3-23
3.4.12	LINE FREQUENCY Prompt	3-23
3.4.13	POWER FAIL RECOVERY Prompt	3-24
3.4.14	ENTITY Prompt	3-24
3.5	ENTITY Parameters	3-24
3.5.1	Devices — DVC	3-24
3.5.1.1	ACU CRU Prompt	3-41
3.5.1.2	ACU PRESENT Prompt	3-41
3.5.1.3	ASSOCIATED PRINTER Prompt	3-41
3.5.1.4	BAUD RATE Prompt	3-41
3.5.1.5	BOARD TYPE Prompt	3-41
3.5.1.6	CASSETTE OPENS VALIDATED Prompt	3-42
3.5.1.7	CHANNEL NUMBER Prompt	3-42
3.5.1.8	CHANNEL NUMBER xx PROTOCOL Prompt	3-42
3.5.1.9	CHARACTER QUEUE Prompt	3-42
3.5.1.10	CRU ADDRESS Prompt	3-42
3.5.1.11	DEFAULT RECORD SIZE Prompt	3-42
3.5.1.12	DEVICE NAME Prompt	3-43
3.5.1.13	DRIVES Prompt	3-43
3.5.1.14	ECHO Prompt	3-43
3.5.1.15	EXPANSION CHASSIS Prompt	3-43
3.5.1.16	EXPANSION POSITION Prompt	3-43
3.5.1.17	EXTENDED Prompt	3-43
3.5.1.18	FULL DUPLEX MODEM Prompt	3-43
3.5.1.19	INTERFACE TYPE Prompt	3-44
3.5.1.20	INTERRUPT Prompt	3-44
3.5.1.21	INTERRUPT BIT Prompt	3-44
3.5.1.22	IS THE PDT THE INTERRUPT WORKSPACE Prompt	3-45
3.5.1.23	KEYBOARD Prompt	3-45
3.5.1.24	PRINT MODE Prompt	3-45
3.5.1.25	SPEED Prompt	3-45
3.5.1.26	SWITCHED LINE Prompt	3-45
3.5.1.27	TERMINAL TYPE Prompt	3-46
3.5.1.28	TILINE ADDRESS Prompt	3-46
3.5.1.29	TIME OUT Prompt	3-46
3.5.1.30	VALIDATE OPENS Prompt	3-46
3.5.1.31	VDT TYPE Prompt	3-47

Paragraph	Title	Page
3.5.2	Supervisor Calls — SVC	3-47
3.5.2.1	Accounting	3-48
3.5.2.2	Intertask Communication	3-48
3.5.2.3	Encryption	3-48
3.5.3	Stop	3-48
3.5.4	Build	3-48
3.6	Assembling and Linking the Generated System — ALGS	3-49
3.7	Patching the New System — PGS	3-50
3.7.1	PGS Prompts and Responses	3-50
3.7.1.1	DATA DISK/VOLUME Prompt	3-51
3.7.1.2	TARGET DISK/VOLUME Prompt	3-51
3.7.1.3	SYSTEM NAME Prompt	3-51
3.7.1.4	PATCH KERNEL? Prompt	3-51
3.7.1.5	PATCH UTILITY? Prompt	3-51
3.7.1.6	PATCH COMM(NONE,SOME,ALL) Prompt	3-51
3.7.1.7	UTILITY PROGRAM FILE Prompt	3-51
3.7.1.8	IPL FILE NAME Prompt	3-51
3.7.1.9	COMMAND PROCEDURE DIRECTORY Prompt	3-52
3.7.1.10	COMM PROTOCOL NAME(S) Prompt	3-52
3.7.2	PGS Listing Files	3-52
3.8	Testing the New System — TGS	3-52
3.9	Installing the New System — IGS	3-53
3.10	Changing an Existing System Configuration	3-53
3.11	Patching an Existing Configuration	3-55

4 — Preanswered Parameters

4.1	Introduction	4-1
4.2	COMMON Prompt	4-2
4.3	CLOCK Prompt	4-2
4.4	SYSTEM TABLE Prompt	4-2
4.5	SEGMENT MANAGER TABLE AREA Prompt	4-3
4.6	FILE MANAGER TABLE AREA Prompt	4-3
4.7	BUFFER TABLE AREA Prompt	4-3
4.8	FOREGROUND JOB LIMIT Prompt	4-3
4.9	BATCH JOB LIMIT Prompt	4-3
4.10	PHYSICAL MEMORY SIZE Prompt	4-3
4.11	TIME SLICING Prompt	4-4
4.12	SLICE VALUE Prompt	4-4

Paragraph	Title	Page

5 — Dynamic Configuration

5.1	Introduction	5-1
5.2	Activating the System Configuration Utility	5-2
5.3	Terminating the System Configuration Utility	5-3
5.4	Listing the Device Configuration	5-3
5.5	Modifying the Device Configuration	5-4
5.6	Modifying System Table Parameters	5-6
5.6.1	DNOS Performance Measurement Utility	5-6
5.6.1.1	Resource Use	5-10
5.6.1.2	Counters	5-10
5.6.1.3	Memory Use	5-10
5.6.2	Modifying System Table Area Size	5-11
5.7	Country Code	5-12
5.7.1	Show Country Code	5-12
5.7.2	Modify Country Code	5-13
5.8	Modifying Scheduler/Swap Parameters	5-14
5.9	Command Definition Tables	5-15
5.9.1	Show Command Definition Table (SCDT)	5-16
5.9.2	Modify Command Definition Table (MCDT)	5-17
5.10	Creating a New System	5-18

6 — System Generation Examples

6.1	Introduction	6-1
6.2	Example One — Communications	6-1
6.3	Example Two — First Time System Generation	6-9
6.4	Example Three — Modifying an Existing Configuration File	6-12
6.5	Example Four — Defining Special Devices	6-17
6.6	Example Five — Defining an Expansion Chassis	6-18

Appendixes

Appendix	Title	Page
A	Keycap Cross-Reference	A-1

Index

Illustrations

Figure	Title	Page
3-1	Base System Configuration for 990A13 13-Slot Chassis	3-3
3-2	Base System Configuration for 990 13-Slot Chassis	3-4
3-3	Base System Configuration for 990 17-Slot Chassis	3-5
3-4	CRU Base Addresses for 990 and 990A13 13-Slot Chassis	3-7
3-5	CRU Base Addresses, 17-Slot Chassis	3-8
3-6	CRU Base Addresses, 13-Slot Expansion Chassis #1	3-10
3-7	990A13 Interrupt Assignments, 13-Slot Chassis	3-11
3-8	Interrupt Assignments, 13-Slot Chassis	3-13
3-9	Interrupt Assignments, 17-Slot Chassis	3-14
5-1	LDC Output Example	5-4
5-2	Execute Performance Display Output Listing	5-8
5-3	Command Definition Table Listing	5-16
6-1	Example 1 — Configuration Table	6-2
6-2	Example System Configuration File	6-7
6-3	Example 2 — Configuration Table	6-10
6-4	Example 3 — Configuration Table	6-13
6-5	Example 5 — Main Chassis	6-19
6-6	Example 5 — Expansion Chassis	6-20

Tables

Table	Title	Page
1-1	DNOS Object Directories	1-3
1-2	DSR Files	1-4
1-3	Response Type Indicators	1-8
1-4	Field Prompt Notation	1-10
2-1	VDT Commands for System Generation	2-3
3-1	Base Configuration in .S$SHIP	3-2
3-2	Fixed 9902 and 9903 Interface CRU Addresses and Interrupts	3-6
3-3	Offset CRU Base Addresses, Expansion Chassis	3-9
3-4	Recommended TILINE Address Assignments	3-12
3-5	DNOS Supported Device-Controller Combinations	3-16
3-6	XSGU Command Prompts	3-18
3-7	XSGU Required Parameters	3-20
3-8	Country Codes	3-23
3-9	ENTITY Parameter Responses	3-24
3-10	Device Type Responses	3-25
3-11	ASR Device Subparameter Responses	3-26

Table	Title	Page
3-12	Communications Device Subparameter Responses	3-26
3-13	Communications Protocol/Board Type Validation	3-27
3-14	Communications Board Type Subparameter Responses (Except DIPC)	3-28
3-15	Communications Board Type Subparameter Responses (DIPC)	3-29
3-16	Communications Protocol Subparameter Responses (2780/3780)	3-29
3-17	Communications Protocol Subparameter Responses (COMA)	3-32
3-18	Communications Protocol Subparameter Responses (3270)	3-33
3-19	Card Reader Device Subparameter Responses	3-33
3-20	Disk Device Subparameter Responses	3-34
3-21	KSR Device Subparameter Responses	3-34
3-22	Line Printer Device Subparameter Responses	3-35
3-23	Magnetic Tape Subparameter Responses	3-37
3-24	Special Device Subparameter Responses	3-37
3-25	VDT Subparameter Responses	3-39
3-26	VT Subparameter Responses	3-40
3-27	Interrupt Default Values	3-44
3-28	Time-Out Default Values	3-46
3-29	Validate Opens Default Values	3-47
3-30	Optional SVC Groups	3-47
4-1	Preanswered Parameters for Sysgen	4-1
5-1	Field Description for XPD Display	5-8
5-2	Country Codes	5-13

1

Introduction

1.1 DNOS FUNCTIONAL CAPABILITIES

This section describes the functional capabilities, purpose, and requirements of the Distributed Network Operating System (DNOS) System Generation Utility.

DNOS consists of the following set of standard functions:

- A multitasking, preemptive central processing unit (CPU) scheduler
- An internal clock interrupt and timer
- A supervisor call (SVC) preprocessor
- Task management SVC routines
- Basic input/output (I/O) SVC routines

DNOS also supports optional functions to customize your system. Some of these options are specific to certain hardware, and all options require additional memory. You can select optional functions in the following areas:

- Device support
- User-defined SVCs
- Communications

Many parts of DNOS reside on disk and are loaded into memory only when needed. DNOS also requires program swapping, file management, job management, task loading, and numerous SVCs. In addition, DNOS supports output spooling, multiple-user software development, network I/O, file access security, and key indexed files (KIFs).

1.2 PURPOSE OF SYSTEM GENERATION

System generation is the process of tailoring a DNOS system to fit specific application needs. The DNOS System Generation Utility enables you to:

- Include optional DNOS capabilities (for example, certain groups of SVCs)
- Include user-defined SVCs

- Add, change, or delete devices to reflect changes in the hardware configuration
- Change the presupplied responses to certain system prompts (such as time slicing)

The System Generation Utility interactively prompts you for information about the system you want to build. After the interactive session, the utility builds the files necessary to complete the system generation process and uses a batch stream to assemble and link the new or modified system. Alternatively, the assembler can assemble and link the system as a separate operation.

If you include communications devices in the system generation, the system generation process builds the communications software scheduler and the appropriate communications protocol device service routines (DSRs). Finally, the patch stream patches the system.

The System Configuration Utility allows you to modify some parameters of a generated system, as described in the Dynamic Configuration section in this manual.

1.3 SYSTEM GENERATION REQUIREMENTS

The System Generation Utility uses a data disk and a target disk. The data disk and the target disk can be the same physical disk. The *data disk* contains the components necessary to build a system. The *target disk* is where the System Generation Utility builds the new system.

Before you generate a DNOS system, directory .S$OSLINK must reside on the data disk. Several specific files must be under the .S$OSLINK.S$SGU$ directory.

If the system being generated includes communications devices, the communications directory, .S$OSLINK.DNCMO, must also reside on the data disk. Before linking the system, consult the object installation documents on the communications packages you are installing for information on updating this directory.

Files created by the System Generation Utility are on the target disk under the following directory pathname: <target>.SSGU.output. In this pathname, output represents the name that you assign to the new system during system generation.

If you specify an input configuration file, the file <target>.SSGU.input.CONFIG. must also reside on the target disk.

You must supply the System Generation Utility with certain required parameters to complete the configuration of devices. These parameters can include CRU base addresses, interrupt levels, and TILINE addresses. Usually, you can find the information for these parameters included in the configuration chart supplied with your computer.

1.3.1 Files Supplied With the System Generation Utility

The System Generation Utility accesses a number of directories and files. The names and contents of those directories that must exist on the data disk appear in Table 1-1.

Table 1-1. DNOS Object Directories

Name	Contents
.S$OSLINK.DISKMGR	Disk management routines
.S$OSLINK.DNCMO	Communications software (must reside here if communications devices are included during system generation)
.S$OSLINK.FILEMGR	File management routines
.S$OSLINK.IOMGR	I/O management routines
.S$OSLINK.IOU	I/O utility routines
.S$OSLINK.IPC	Interprocess communication (IPC) functions
.S$OSLINK.JOBMGR	Job management routines
.S$OSLINK.KIFMGR	Key indexed file management routines
.S$OSLINK.NUCLEUS	DNOS nucleus functions
.S$OSLINK.PROGMGR	Program management routines
.S$OSLINK.REQPROC	Required supervisor call (SVC) procedures
.S$OSLINK.SEGMGR	Segment management routines
.S$OSLINK.SYSOVLY	System overlay loader
.S$OSLINK.S$SGU$	Sysgen input files

The following files come with the System Generation Utility. They reside in the directory .S$OSLINK.S$SGU$ on the data disk:

- JENDAT — Contains data to be accessed by the System Generation Utility.
- SEED — Used in link control for the system.
- DUMROOT — Used in the link control stream for the system.
- Device service routine files — Contain DSRs for supported devices.

Table 1-2 lists the names of the supplied DSR files.

Table 1-2. DSR Files

File	Device
DSR911	911 VDT
DSR93A	931/940 interfaced with CI401 controller
DSR93B	931/940 interfaced with 9902/9903 port
DSR93C	931/940 interfaced with CI403 or CI404 controller
DSR979	Magnetic tape
DSRASR	ASR
DSRCR	Card reader
DSRDSK	Disk
DSRKSR	KSR
DSRLP	Line printer
DSRSPC	Serial printers interfaced with CI403 or CI404 controller
DSRTPD	Teleprinter devices
DSRVT	Virtual Terminal

1.3.2 Files Created by the System Generation Utility

The System Generation Utility creates a number of files to complete the system generation. If a directory does not already exist with the same name as the output configuration, the System Generation Utility creates one on the target disk. If that directory already exists, you write over it when you build or save the configuration.

You can assemble and link the generated system by using the System Generation Utility or by using the Assemble and Link Generated System (ALGS) command. If you respond YES to the ASSEMBLE AND LINK prompt within the utility, the ALGS command is automatically initiated. If you choose not to assemble and link during the system generation session, the ALGS command can be initiated separately. Both methods create the same files and perform the same function. The directory <target>.SSGU.<output> contains the following files:

- ALGSLIST — Contains the listing of ALGSSTRM.
- ALGSSTRM — Contains the batch stream that assembles, links, and installs all of the disk-resident modules for the new system. The System Generation Utility builds this file when you respond YES to the BUILD prompt.

- CONFIG — Contains a sequential file that is the configuration for the new system. The System Generation Utility updates this file with the current configuration when you respond YES to either the SAVE or BUILD prompt.

- D$LIST — Contains the listing generated when D$SOURCE is assembled. The ALGSSTRM batch stream creates this file when you assemble and link the generated system.

- D$OBJECT — Contains the assembled object code that corresponds to D$SOURCE. The ALGSSTRM batch stream creates this file when you assemble and link the generated system. Later, the link editor links items referenced in this code.

- D$SOURCE — Contains the assembly language source for the system that you build from your configuration. Interrupt and XOP vectors, the read-only memory (ROM) workspace, system loader workspaces, physical device tables (PDTs), SVC tables, system tables, and interrupt decoders reside here. The System Generation Utility builds this file when you respond YES to the BUILD prompt.

- DMLINK — Contains the link control file for the Disk Manager. The System Generation utility builds this file when you respond YES to the BUILD prompt. The link editor uses this file when you assemble and link the generated system.

- DMMAP — Contains the link map that corresponds to DMLINK. The link editor generates this file when you assemble and link the generated system.

- DMOBJ — Contains the linked output specified by DMLINK. The link editor creates this file when you assemble and link the generated system.

- ERRFIL — Contains a sequential file used during batch execution of the System Generation Utility to record any error messages that are generated.

- IOULINK — Contains the link control file for the I/O utility. The System Generation Utility builds this file when you respond YES to the BUILD prompt. The link editor requires this file during the ALGS process.

- IOUMAP —Contains the link map that corresponds to IOULINK. The link editor creates this file when you assemble and link the generated system.

- IOUOBJ — Contains the linked output specified by IOULINK. The link editor creates this file when you assemble and link the generated system.

- SYSLINK — Contains the link control file for the remainder of the new System. A file manager and, optionally, the KIF manager link control information reside here. The System Generation Utility builds this file when you respond YES to the BUILD prompt.

- SYSMAP — Contains the link map corresponding to SYSLINK. The link editor creates this file when you assemble and link the generated system.

- SYSOBJ — Contains the linked output specified by SYSLINK. The link editor creates this file when you assemble and link the generated system.

You can generate other files, depending on the system configuration. For example, the System Generation Utility creates the following files if you include communications protocols in your system.

- CFDSR — Contains the communications macro calls that build the tables for the communications software scheduler.
- OBJCFDSR — Contains the assembled object code that corresponds to CFDSR. The ALGSSTRM batch stream creates this file when you assemble and link the generated system. The link of the communications software scheduler includes this file.
- LSTCFDSR — Contains the listing generated when CFDSR is assembled. The ALGSSTRM batch stream builds this file when the generated system is assembled and linked.
- CLNKCSWS — Contains the link control file for the communications software scheduler. The System Generation Utility builds this file when you respond YES to the BUILD prompt.
- COMSWS — Contains the linked output specified by CLNKCSWS. The link editor creates this file when you assemble and link the generated system.
- CMAPCSWS — Contains the link map that corresponds to CLNKCSWS. The link editor generates this file when you assemble and link the generated system.
- COMPATCH — Contains commands to determine the communications protocols to be patched. The System Generation Utility builds this file when you respond YES to the BUILD prompt. The Patch Generated System process uses this file if you respond SOME or ALL to the PATCH COMM prompt.

The System Generation Utility creates the following additional files for each of the communications protocols that have been specified.

- LNK< protocol name> — Contains the link control file for the communications < protocol name> DSR. If you specify < protocol name>, the System Generation Utility builds this file when you respond YES to the BUILD prompt. The link editor uses this file when you assemble and link the generated system.
- DSR< protocol name> — Contains the linked output specified by LNK< protocol name>. The link editor uses this file when you assemble and link the generated system.
- DMAP< protocol name> — Contains the link map that corresponds to LNK< protocol name>. The link editor generates this file when you assemble and link the generated system.

When the generated system is assembled and linked, an additional file is created on the target disk; this program file contains the image of the new DNOS system. The name of this file is the name that you specify in response to the OUTPUT CONFIGURATION prompt of the Execute System Generation Utility (XSGU) command.

In order to execute the DNOS kernel patch stream for a particular system, you must retain the following files:

- SYSMAP
- DMMAP
- IOUMAP

After you assemble and link the generated system, these files are delete protected.

You must retain the CMAPCSWS and DMAP< protocol name> files to execute the communications patch stream(s) for a particular system. After the generated system is linked and assembled, these files are delete protected.

Place all patch listings in the < target> .SSGU.output.PATCHLST directory. This directory can contain these files:

- KERNEL — Contains the kernel patch listing
- COMPATCH — Contains the COMPATCH patch listing
- COM — Contains the communications patch listing
- DNPCSWS — Contains the communications software scheduler patch listing
- CMON< protocol name> — Contains the (protocol) DSR common patch listing
- DNP< protocol name> — Contains the (protocol) DSR patch listing
- PGS — Contains the PGS batch listing
- < utility filename> — Contains a utility patch listing

1.3.3 User-Supplied Files

Files that define special devices must be in the .S$OSLINK.S$SGU$.SD directory; you build this directory with the Create File Directory (CFDIR) command. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual* for information about the CFDIR command.) Include at least twice as many entries in the .S$OSLINK.S$SGU$.SD directory as you have special devices. The .S$OSLINK.S$SGU$.SD directory must have one file defining the DSR and one file defining the device information block (DIB) for each special device in the configuration.

You must assemble and link a DSR before the system can use it. The DSR resides in the following file:

data.S$OSLINK.S$SGU$.SD.DSRxx

In this file pathname, data represents the name of your data disk and xx represents the first two characters of the special device name. The DIB resides in the following file:

data.S$OSLINK.S$SGU$.SD.DIBxxnn

In this file pathname, data represents the name of your data disk and xxnn represents the complete special device name (including the numerical portion that specifies the particular device). The System Generation Procedure section of this manual provides further information about special device names. (Refer to the *DNOS Systems Programmer's Guide* for more information about DSRs, DIBs, and other data structures.)

Finally, if you define your own SVCs, you need to create a directory for storing them. Name the directory as follows: data.S$OSLINK.S$SGU$.USERSVC. Include a file under this directory that shows all defined SVC opcodes and their characteristics. All files and directories that you supply must be on the data disk. Refer to the section in the *DNOS Systems Programmer's Guide* on how to write an SVC.

1.4 DNOS RESPONSE NOTATION

The System Command Interpreter (SCI) commands allow you to generate a system and use various utilities. Each command description specifies the response type that you can enter for each prompt. Table 1-3 lists and defines these response types.

Table 1-3. Response Type Indicators

Response	Definition
Pathname	Name used to access an I/O resource. A pathname can include channel name, device name, file name or station name. You can also specify a pathname by a synonym, a synonym followed by a pathname (synonym.pathname), a logical name, or a logical name followed by a pathname (logical name.pathname). Legal characters in pathnames include uppercase alphabetic characters (A through Z), numerals (0 through 9), period (.), dollar sign ($), left bracket ([ ), right bracket ( ]), and back slash (\ ). The name must start with an alphabetic character.
Devicename	Name of a device (for example, DS01 and ST01).
Filename	Pathname of a file. A concatenation of a disk or volume name, any directory-level names leading to a file, and a final component name of a file. You can also specify a file by a synonym, a synonym followed by a file name (synonym.filename), a logical name, or a logical name followed by a file name (logical name.filename).
Site	Name of a computer installation in a DNOS network. A site name can be from 1 to 8 alphanumeric characters beginning with an alphabetic character.

Table 1-3 Response Type Indicators (Continued)

Response	Definition
Stationname	A station ID in the range of ST01 through ST99. You can obtain the station ID of your station by entering the Show Terminal Information (STI) command.
YES/NO	The response to a prompt can be YES, NO, Y, or N.
Integer	Hexadecimal or decimal digits. Precede hexadecimal numbers by entering a right angle bracket (>) or a leading zero.
Integer exp	Decimal or hexadecimal value or expression composed of decimal or hexadecimal integers and the operators, add (+), subtract (–), multiply (*), and divide (/).
Integer exp list	A list of decimal or hexadecimal values or expressions, separated by commas.
Full exp	Integer expression with the additional operators ( ) to indicate evaluation order and < > to show contents of indicated memory address registers. String operands are also permitted. In the debugger controlled mode, symbolic names and the symbols #PC, #WP, #ST, and #R0, #R1, #R2,...#R15 are permitted. This type is unique to the SCI debugger.
Full exp list	More than one full expression separated by commas.
Alphanumeric	A string of alphabetic and/or numeric characters or a dollar sign ($), starting with an alphabetic character. (Used with user IDs, volume names, and so on.)
Character(s)	Letters, digits, punctuation marks, or other symbols restricted in format or content by the context.
Line number	Numeric expression composed of an integer or integers and the operators, add (+) and subtract (–).

Table 1-4 shows notation symbols used with prompt responses in the command descriptions. These symbols define the valid responses to SCI prompts.

Table 1-4. Field Prompt Notation

Notation	Meaning
Uppercase	Enter the response as listed.
Lowercase	Enter a response of this type.
No marks	The response is required.
[]	The response is optional.
{ }	The response must be exactly one of the enclosed items or must be a type of one of the enclosed items (choices separated by a slash).
Item...item	You can enter more than one item of this type as the response. Items should be separated by commas.
@	Synonyms are allowed as a response.
()	The value in the parentheses represents the initial value. If (*) is shown, the value can be supplied from a synonym set by a previously used command procedure.
/	Alternate response types are indicated.
-	When a hyphen (-) precedes a valid field prompt type, the initial and user responses are not echoed to the screen. In a batch stream, the response is replaced by four dashes.

2

System Generation Utility Operations

2.1 MODES OF OPERATION

The interactive System Generation Utility (invoked by the Execute System Generation Utility (XSGU) command) can operate in either inquiry mode or command mode. In inquiry mode, the utility prompts you for the required parameter values that define the system configuration. In command mode, you can change or delete portions of the configuration created in inquiry mode.

The system you generate and the types of devices you include determine which prompts appear and what sequence they follow. The System Generation Procedure section of this manual describes these prompts. This section describes the differences between the command and the inquiry modes and the prompts directly related to each mode of operation.

2.2 INQUIRY MODE

When you activate the System Generation Utility, it begins in inquiry mode. The utility prompts you for the parameter values required to define the system configuration. The prompts indicate what information you must enter (for example, a device name, a file name, or a table size), and a message appears when you enter the wrong information. Enter a question mark to request further information about the prompt. The prompts appear one after the other and scroll up from the bottom of the screen.

The ENTITY prompt is the last prompt in this sequence. The System Generation Utility provides this prompt so that you can define previously undefined entities, such as a device (DVC) or SVC. When you respond to all of the subsequent prompts that define that entity, the utility displays the ENTITY prompt again.

2.3 COMMAND MODE

You can enter the command mode any time during the system generation process. Use the command mode to change, delete, list, or stop building the configuration, but use the command mode sparingly. Using the command mode excessively can confuse you and cause errors in the system generation process.

Pressing the Command key takes the system generation process from the inquiry mode to the command mode. The System Generation Utility then displays the COMMAND prompt. If you enter the CHANGE command, the System Generation Utility prompts you for the PARAMETER TO BE CHANGED. Enter a parameter name. The utility then prompts you for that parameter. Respond with the new value. When you enter the new value, the System Generation Utility returns to the prompt displayed when you first pressed the Command key. The following example shows prompts and responses that you may encounter when you switch from inquiry mode to command mode:

```
      .
      .
      .
KIF? (YES)
SITE NAME? USER1
SECURITY? (NO)
APPLICATION PROGRAM FILE? <press the Command key>
COMMAND? CHANGE
PARAMETER TO BE CHANGED?  SITE NAME
SITE NAME? AUSTIN
APPLICATION PROGRAM FILE?
      .
      .
      .
```

NOTE

If you enter the command mode, you must return to the inquiry mode to complete the configuration. When you enter the command mode, some commands return to the inquiry mode automatically, but some display the COMMAND prompt. When the COMMAND prompt appears, you must enter INQUIRE to return to the inquiry mode.

Table 2-1 shows the valid commands that can be used while in the command mode. The following paragraphs explain the use of these commands.

Table 2-1. VDT Commands for System Generation

Command	Description
CHANGE	Change a previously answered parameter or a preanswered parameter.
DELETE	Delete an entity from the current configuration.
LIST	List the contents of the current configuration.
STOP	Terminate this session of the System Generation Utility.
INQUIRE	Request that the System Generation Utility return to inquiry mode.

2.3.1 Modification of Preanswered or Required Parameters

The System Generation Utility prompts you for pertinent required parameter values to define the system configuration. Some of these parameters, however, are already defined with a value supplied by the System Generation Utility. The utility does not prompt you for these preanswered parameters.

Generally, preanswered parameters do not have to be changed. If you need to change one, however, enter the command mode while in the System Generation Utility or use the System Configuration Utility. (Refer to the Dynamic Configuration section of this manual for information on the System Configuration Utility.) The Preanswered Parameters section of this manual describes each of the preanswered parameters.

When you execute the System Generation Utility, the required parameters of the utility appear in inquiry mode. If you make a mistake in answering one of these parameters, you can correct it by entering the command mode. The following steps describe how to access and change a preanswered or required parameter during system generation.

1. Enter the command mode. This system displays the COMMAND prompt.
2. Enter the CHANGE command. The prompt PARAMETER TO BE CHANGED appears.
3. Enter the parameter (either preanswered or required) to be changed. The utility prompts for the new value.
4. Enter the new value.

For example, when you change the response to the prompt COUNTRY CODE, the following appears:

```
        .
        .
        .
ENTITY? <press the Command key>
COMMAND? CHANGE
PARAMETER TO BE CHANGED? COUNTRY CODE
COUNTRY CODE? (US) UNITED KINGDOM
ENTITY?
        .
        .
        .
```

The parameter you change determines which prompts the System Generation utility displays.

2.3.2 Deleting an Entity

While using the System Generation Utility, you can delete any system generation entity by entering the DELETE command, then supplying the entity to be deleted. The following example shows the use of the DELETE command:

```
        .
        .
        .
ENTITY?  <press the Command key>
COMMAND? DELETE
ENTITY TO BE DELETED? DVC
DEVICE NAME? ST03
COMMAND? INQUIRE
ENTITY?
        .
        .
        .
```

NOTE

Once a system has been built (that is, answering YES to the BUILD prompt), any files created to include communications devices are not deleted, even when the referenced communications device is deleted. If you want to delete these files, you must use the Delete File (DF) SCI command after deleting the communications devices.

2.3.3 Listing the Configuration File

You can list the parameter values of the configuration by using the List command, as shown in the following example:

```
        .
        .
        .
ENTITY?  <press the Command key>
COMMAND? LIST
        .
```

When you enter the List command at a VDT, the configuration listing appears, and the following prompt appears on the bottom line:

```
<<<<<<<<<<PRESS <RETURN> TO CONTINUE>>>>>>>>>>
```

When you press the Return key, more lines of the configuration listing appear. When the utility displays the last line of the configuration listing, the next prompt in the inquiry mode sequence appears. If you entered the command mode from the ENTITY prompt, the ENTITY prompt re-appears when you reenter the inquiry mode:

```
COMMAND? INQUIRE
ENTITY?
        .
        .
        .
```

2.3.4 Early Termination of System Generation

You can terminate the System Generation Utility at any time by entering the STOP command in response to the ENTITY prompt and pressing the Return key:

```
        .
        .
        .
ENTITY? STOP
        .
        .
        .
```

At this point, one of two things can happen:

- When all the required information has been entered, the System Generation Utility asks if you want to build the system. If you do not wish to build the new system, the System Generation Utility asks if you want to save the new configuration.

- Alternatively, when all the required information has not been supplied, the System Generation Utility asks if you want to save the new configuration. The new system cannot be built until all the required information has been entered.

If you stopped in the middle of building a new system and saved the new system, you can continue building the system by executing the XSGU command. The System Generation Utility picks up at the point that you entered the STOP command.

CAUTION

Use STOP only in response to the COMMAND or ENTITY prompt. You can lose data if you use STOP at any other time.

3

System Generation Procedure

3.1 SYSTEM GENERATION PREREQUISITES

New systems arrive with the minimal DNOS features, allowing you to perform an initial program load (IPL) and begin the system generation process. Generating a DNOS system involves the following stages:

- Issuing the Execute System Generation (XSGU) command provides you information about the system that you are building. If you do not use the minimal DNOS system as your input configuration, you must provide information about all devices on the system. If you use the minimal DNOS system, just delete the devices you do not want and add those you do want. The configuration charts of the 990A13, the 990 13-slot, and the 990 17-slot chassis can help you position the CRU and TILINE addresses and determine the interrupt levels of additional devices and options. These charts appear in this section. Before you begin a system generation, fill out the configuration chart for your system. The chart will make responding to system generation prompts easier.

- If you generate a system that includes communications, you must perform the communications installation procedures before you perform the ALGS command. These procedures install the communications object in the <data>.S$OSLINK directory. During ALGS, these object modules are used to link communications tasks and overlays. For the procedure on installing communications packages, consult the installation documents for the packages you are installing.

- Follow one of these two methods to assemble and link the system:

  — If you respond YES to the ASSEMBLE AND LINK prompt of the XSGU command, the System Generation utility automatically assembles and links the generated system.

  — If you respond NO to the ASSEMBLE AND LINK prompt of the XSGU command, you can perform this step separately by using the Assemble and Link Generated System (ALGS) command.

- Use the Patch Generated System (PGS) command to patch the system.

- Use the Test Generated System (TGS) command and perform an IPL to load and test the newly generated system.

- Use the Install Generated System (IGS) command to make the newly generated system the primary system image.

S$SHIP is the DNOS base system that supports multiple disk drives and at least one video display terminal (VDT). To be able to perform an IPL using the base system, you must configure devices in a specific way. Figure 3-1 shows the base system for the 990A13 13-slot chassis, Figure 3-2 shows the base system for a 990 13-slot chassis, and Figure 3-3 shows the base system for the 990 17-slot chassis. Use the configuration option for a tape controller at TILINE address >F880 if your object kit is shipped on tape. (See Figure 3-1.) (The symbol > indicates a hexadecimal value.) These tables also show the devices supported by the base system and the locations required for the base system to access them.

NOTE

Systems come with the configuration chart attached to the top of the computer chassis. You should update the chart whenever you add or remove devices from the system.

The program file .S$SHIP contains the DNOS base system. The system in S$SHIP supports the configuration indicated in Figure 3-1, Figure 3-2, and Figure 3-3. Table 3-1 shows the S$SHIP configuration.

Table 3-1. Base Configuration in S$SHIP

Device Type	Address		Interrupt
Three Disks	TILINE	>F800	13
One Tape	TILINE	>F880	9
911 VDT	CRU	>0100	10
931 or 940 VDT	CRU	>1700	8
931 or 940 VDT (channel 0)	TILINE	>F980	11

To perform an IPL on the DNOS system as it is shipped on disk, you must use the S$SHIP configuration. To perform an IPL on the DNOS system as it is shipped on tape or diskette, you need another configuration, which is described in the *DNOS Object Installation Manual*.

	LEFT SIDE (P1)					RIGHT SIDE (P2)				
	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
	1	CPU				1	CPU			
	2	Aui	>2E0		6	2		>2C0		15
	3	MEMORY	>2A0	F800	10	3		>280		8
	4	MEMORY EXPANSION	>260		11	4		>240		12
	5	MEMORY EXPANSION	>220		7	5		>200		3
	6	MEMORY EXPANSION	>1E0		11	6		>1C0		11
SEE NOTE 1	7	SPECTRA DISK/TAPE	>1A0	F800 CONTROLLER	9	7		>180		13
SEE NOTE 2 AND 3	8	TRIDENT CONTROLLER	>160	F820	8	8		>140		9
SEE NOTE 4	9	DS-10 CONTROLLER	>120	F840	8	9	931 VDT	>100		10
SEE NOTE 5	10	911	>0E0		12	10	911	>0C0		11
	11	911	>0A0		3	11	911	>080		7
	12	EIA 810	>060		14	12	TTY/EIA COMMUNIC.	>040		4
	13	EIA 810	>020		15	13	EACH	>000		6

NOTES:

(1) SOME STANDARD OPTIONS FOR SLOT 7 ARE AS FOLLOWS:

A FULL BOARD TILINE DISK CONTROLLER AT ADDRESS >F800, INTERRUPT >13 ON P2 SIDE.

A TILINE PERIPHERAL BUS INTERFACE (TPBI) BOARD FOR TAPE IN P1 AT TILINE ADDRESS >F880, INTERRUPT 9 AND DISK IN P2 AT TILINE ADDRESS >F800, INTERRUPT 13 (FOR EXAMPLE, WD800).

A TPBI BOARD FOR DISK IN P1 AT TILINE ADDRESS >F820, INTERRUPT 9 AND DISK IN P2 AT TILINE ADDRESS >F800, INTERRUPT 13 (FOR EXAMPLE, WD500).

(2) SOME STANDARD OPTIONS FOR SLOT 8 ARE AS FOLLOWS:

A FULL BOARD FOR DISK AT TILINE ADDRESS >F820, INTERRUPT 9.

A FULL BOARD FOR TAPE AT TILINE ADDRESS >F880, INTERRUPT 9.

(3) THE P2 SIDE IS USER PROGRAMMABLE TO BE INTERRUPT 9 OR 14.

(4) AN OPTION FOR THE P1 SIDE OF SLOT 9 IS A 931 VDT OR 940 VDT AT CRU BASE ADDRESS >1700, INTERRUPT 8. THIS IS A CI402 CONTROLLER ON A SYSTEM WHERE THE CPU IS NOT A /10A.

(5) A STANDARD OPTION FOR SLOT 10 IS A 931 VDT OR 940 VDT ON A CI403 OR CI404 AT TILINE ADDRESS >F980, INTERRUPT 11, CHANNEL 0.

2279331

Figure 3-1. Base System Configuration for 990A13 13-Slot Chassis

	LEFT SIDE (P1)					RIGHT SIDE (P2)				
	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
	1	SMI				1	SMI			
	2	AU				2	AU			
	3	MEMORY		>F800		3	MEMORY		>F800	
	4	MEMORY				4	MEMORY			
	5		>220			5		>200		
	6		>1E0			6		>1C0		
	7	DISK	>1A0	>F800	13	7	DISK	>180	>F800	13
SEE NOTE 1	8		>160		9	8	DISK	>140	>F820	9
SEE NOTE 2	9		>120		8	9	911 VDT	>100		10
SEE NOTE 3	10		>0E0		12	10		>0C0		11
	11		>0A0		3	11		>080		7
	12		>060		14	12		>040		4
	13		>020		15	13		>000		6

NOTES:

(1) AN ALTERNATE CONFIGURATION THAT YOU CAN HAVE IS A FULL SLOT TAPE CONTROLLER AT TILINE ADDRESS >F880.

(2) AN OPTION FOR THE P1 SIDE OF SLOT 9 IS A 931 VDT OR 940 VDT AT CRU BASE ADDRESS >1700, INTERRUPT 8. THIS IS A CI402 CONTROLLER ON A SYSTEM WHERE THE CPU IS NOT A /10A.

(3) THE BASE CONFIGURATION CAN SUPPORT A 931 VDT OR 940 VDT ON CHANNEL 0 OF A CI403 OR CI404 MULTILPLEXER BOARD. THIS BOARD OCCUPIES A FULL SLOT WITH TILINE ADDRESS >F980, INTERRUPT 11.

2279332

Figure 3-2. Base System Configuration for 990 13-Slot Chassis

	TOP OF CHASSIS (P1)					BOTTOM OF CHASSIS (P2)				
	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
	1	SMI				1	SMI			
	2	AU				2	AU			
	3	MEMORY		>FB00		3	MEMORY		>FB00	
	4	MEMORY				4	MEMORY			
	5				11	5				11
	6		>2E0		10	6		>2C0		10
	7		>2A0		15	7		>280		15
SEE NOTE 1	8		>260		12	8		>240		12
SEE NOTE 2	9		>220		8	9		>200		8
	10		>1E0		3	10		>1C0		3
	11	DISK	>1A0	>F800	13	11	DISK	>180	>F800	13
	12		>160		9	12	DISK	>140	>F820	9
	13		>120		10	13	911 VDT	>100		10
SEE NOTE 3	14		>0E0		11	14		>0C0		11
	15		>0A0		7	15		>080		7
	16		>060		14	16		>040		4
	17		>020		6	17		>000		6

NOTES:

(1) AN ALTERNATE CONFIGURATION THAT YOU CAN HAVE IS A FULL SLOT TAPE CONTROLLER AT TILINE ADDRESS >F880.

(2) AN OPTION FOR THE P1 SIDE OF SLOT 9 IS A 931 VDT OR 940 VDT AT CRU BASE ADDRESS >1700, INTERRUPT 8. THIS IS A CI402 CONTROLLER ON A SYSTEM WHERE THE CPU IS NOT A /10A.

(3) THE BASE CONFIGURATION CAN SUPPORT A 931 VDT OR 940 EVT ON CHANNEL 0 OF A CI403 OR OR CI404 MULTIPLEXER BOARD. THIS BOARD OCCUPIES A FULL SLOT WITH TILINE ADDRESS >F980, INTERRUPT 11.

2284998

Figure 3-3. Base System Configuration for 990 17-Slot Chassis

3.1.1 Determining CRU Addresses

The communications register unit (CRU) is a serial data bus used by many of the slower devices, such as keyboard devices and line printers. When defining these devices, you must indicate the CRU base address. This address corresponds to the chassis slot or half-slot occupied by the controller for a particular device. To determine the base address in a 13-slot chassis, start with zero at the right side of slot 13. To determine the base address in a 17-slot chassis, start at the bottom half of slot 17. From the base address, add hexadecimal 20 (> 20) for each successive half-slot.

Figure 3-4 shows the results of performing this procedure with a 13-slot chassis, the chassis used by the Business System 600 and 800 computers. The left half of slot 13 in the 13-slot chassis is CRU base address > 20. The right half of slot 12 is CRU base address > 40, and so on. These addresses are also correct for the 990 13-slot chassis (shipped previously).

Figure 3-5 shows the results of performing this procedure with 17-slot chassis. The left half of slot 17 is CRU base address > 20. The right half of slot 16 is CRU base address > 40, and so on.

The CRU address for a CI402 controller is determined by switch settings on the controller, rather than by the location of the controller in the chassis. The address of the first device on the CI402 is the address of the controller. The address of the second device is > 80 greater than the controller address. See the *Two-Channel Asynchronous Interface Module (CI402)* manual for details on setting the switches of the CI402.

Table 3-2 shows the fixed CRU addresses and the fixed interrupt levels on the 9902 and 9903 interfaces for the 990/10A and Business System 300.

Table 3-2. Fixed 9902 and 9903 Interface CRU Addresses and Interrupts

Interface	Interrupt	CRU Address
990/10A Processor Port	8	>1700
S300 Processor Port	8	>1700
CI421 (S300)		
AUX-2	4	>0B80
COMM (9903)	3	>0B00
CI422 (S300)		
Port 1	6	>0400
Port 2	7	>0480
Port 3	10	>0500
Port 4	12	>0580

LEFT SIDE (P1)					RIGHT SIDE (P2)			
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILI
1					1			
2		>2E0			2		>2C0	
3		>2A0			3		>280	
4		>260			4		>240	
5		>220			5		>200	
6		>1E0			6		>1C0	
7		>1A0			7		>180	
8		>160			8		>140	
9		>120			9		>100	
10		>0E0			10		>0C0	
11		>0A0			11		>080	
12		>060			12		>040	
13		>020			13		>000	

2284999

Figure 3-4. CRU Base Addresses for 990 and 990A13 13-Slot Chassis

TOP OF CHASSIS (P1)					BOTTOM OF CHASSIS (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1					1				
2					2				
3					3				
4					4				
5					5				
6		>2E0			6		>2C0		
7		>2A0			7		>280		
8		>260			8		>240		
9		>220			9		>200		
10		>1E0			10		>1C0		
11		>1A0			11		>180		
12		>160			12		>140		
13		>120			13		>100		
14		>0E0			14		>0C0		
15		>0A0			15		>080		
16		>060			16		>040		
17		>020			17		>000		

2279333

Figure 3-5. CRU Base Addresses, 17-Slot Chassis

Notice in Figure 3-5, the last address assigned is > 2E0. This is the largest CRU base address you can assign in the *main* chassis, unless you are using a CI402 controller. Consequently, you cannot install CRU devices in any slot that requires an address greater than > 2E0. Other boards occupy these positions, such as the system mapping interface (SMI), arithmetic unit (AU), memory controller, and memory array boards. The CI402 controller is an exception to these rules since the CRU address is set in pencil switches on the controller.

3.1.2 Expansion Chassis

You can determine the CRU base addresses in an expansion chassis in the same manner as in the main chassis. However, you must add a multiple of > 400 to each expansion address to arrive at a unique address for each slot in all of the chassis. Table 3-3 lists the values you can add to the CRU base addresses for the expansion chassis.

Table 3-3. Offset CRU Base Addresses, Expansion Chassis

Expansion Chassis	Add to Base Address
1	>0400
2	>0800
3	>0C00
4	>1000
5	>1400
6	>1800
7	>1C00

Figure 3-6 shows the CRU base addresses for a 13-slot chassis used as the first expansion chassis. Notice that slot 1 does not have an address; a buffer board always occupies this position.

3.1.3 Interrupt Levels

During the sysgen process, you must specify the hardware interrupt that each device generates. The location of the controller or interface board in the chassis determines the interrupt level. Figure 3-7 shows the standard interrupt assignments for a 990A13 13-slot chassis. Figure 3-8 shows the standard interrupt assignments for a 990 13-slot chassis.

The interrupt levels for a 13-slot chassis are determined by the positions of jumper wires on the system interface board, which is attached to the rear of the chassis. The jumper wires are inserted into a molded plastic connector plugged into the backboard above slot 1. Do not attempt to change the position of these wires or the connector. The 990A13 chassis uses an etched or programmable card that plugs into the system interface board above slot 1.

Soldered connections determine the interrupt levels of the 17-slot chassis. Figure 3-9 shows standard interrupt level assignments for a 17-slot chassis.

	LEFT SIDE (P1)					RIGHT SIDE (P2)			
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1	CRU BUFFER BOARD (POSITN)					(POSITN)			
2		>6E0			2		>6C0		
3		>6A0			3		>680		
4		>660			4		>640		
5		>620			5		>600		
6		>5E0			6		>5C0		
7	CM01	>5A0	13	~~8~~	7		>580	13	
8	01402 931	>560	9		8		>540	9	
9	911	>520	8	7	9	911	>500	10	7
10	911 (OPEN)	>4E0	12	7	10	911	>4C0	11	7
11		>4A0	3		11		>480	7	
12	EIA 810	>460	14	7	12	EIA TTY	>440	4	
13		>420	15		13		>400	6	

2279334

2265151-0001

Figure 3-6. CRU Base Address, 13-Slot Expansion Chassis # 1

3.1.4 TILINE Address

The TILINE data bus is a high-speed, bidirectional 16-bit data bus. All high-speed elements — such as the CPU, main memory, and high-speed peripheral devices — are connected directly to the TILINE data bus and communicate through it. TILINE peripheral devices include disks, magnetic tape, communications ports, double-sided, double-density (DSDD) diskettes, and asynchronous multiplexors.

LEFT SIDE (P1)					RIGHT SIDE (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1					1				
2				6	2				15
3				10	3				8
4				11	4				12
5				7	5				3
6				11	6				11
7				9	7				13
8				8	8				9*
9				8	9				10
10				12	10				11
11				3	11				7
12				14	12				4
13				15	13				6

NOTE:

* THE P2 SIDE IS USER PROGRAMMABLE TO BE INTERRUPT 9 OR 14.

2285000

Figure 3-7. 990A13 Interrupt Assignments, 13-Slot Chassis

You must supply the TILINE address, which the hardware converts to a memory address, when you define a TILINE device. The switch settings on the controller for the TILINE device determine the TILINE address. Figure 3-2 and Figure 3-3 show typical controllers and the TILINE addresses for each controller. You should not attempt to alter these switches, since the TILINE slave words used by them differ from one type of controller to another and are set by the system generation. Table 3-4 lists the conventional TILINE assignments. Your system should follow a similar assignment pattern.

Table 3-4. Recommended TILINE Address Assignments

TILINE Address	Device Type	Controller Number
	Memory Controller	
>FB00		1
>FB04		2
>FB08		3
	Cache Memory Controller	
>FB10		1
>FB14		2
>FB18		3
	Disk Controller	
>F800		1 (System Disk)
>F810		2
>F820		3
>F830		4
>F840		5
>F850		6
>F860		7
>F870		8
	Tape Controller	
>F880		1
>F890		2
	Communication Controller	
>F900		1
>F910		2
>F920		3
>F930		4
>F940		5
>F950		6
	CI403/404	
>F980		1
>F990		2
>F9A0*		3
	CI402	
>0B00		1
>0F00		2

Note:

* You can add additional controllers after this one. Add >10 to this address to obtain the address of each subsequent controller.

LEFT SIDE (P1)					RIGHT SIDE (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7				13	7				13
8				9	8				9
9				8	9				10
10				12	10				11
11				3	11				7
12				14	12				4
13				15	13				6

2285001

Figure 3-8. Interrupt Assignments, 13-Slot Chassis

BOTTOM OF CHASSIS (P1)					TOP OF CHASSIS (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1					1				
2					2				
3					3				
4					4				
5				11	5				11
6				10	6				10
7				15	7				15
8				12	8				12
9				8	9				8
10				3	10				3
11				13	11				13
12				9	12				9
13				10	13				10
14				11	14				11
15				7	15				7
16				14	16				4
17				6	17				6

2279336A

Figure 3-9. Interrupt Assignments, 17-Slot Chassis

3.1.5 Devices Sharing Interrupts

When configuring your system, observe the following guidelines:

- TILINE devices never share interrupts. However, the CI403 and CI404 communications controllers can share interrupts, and all CI403 and CI404 controllers in an expansion chassis share the interrupt of the TILINE expansion board in the main chassis.
- CRU devices can share interrupts, but some combinations may not work. For example, a card reader and a communications device at interrupt 3 may not work.
- A communications device performs best if it does not share an interrupt. This is strongly recommended. Generally, an interrupt level of 7 or 8 is recommended. A synchronous communications board should not share an interrupt with an asynchronous board (such as the CI403).
- Interrupts cannot be shared between any device and a CRU expander card. It is best not to share the interrupts for CARD1 and CARD2, the two interrupts for total CRU expansion.

Frequently, several CRU devices are assigned the same interrupt during system generation (sysgen) or the same position (interrupt) in an expansion chassis. The device controllers may be absent from the chassis and generated with shared empty slots.

3.1.6 Controllers

DNOS supports several different combinations of asynchronous devices and controllers. If you do not know which controller or port you are using, consult the operator's guide for your Business Systems computer. For the Business Systems 600 and 800 or the 990/10, 990/10A, and 990/12 you can also examine the controller board for its label. Table 3-3 shows the valid device-controller combinations supported by DNOS.

Table 3-5. DNOS Supported Device-Controller Combinations

Controllers	931	940	Business System Terminal	810	840	850/855
CI401	Y	Y	Y			
CI421			Y	Y		Y
CI422			Y	Y		Y
/10A[1]	Y	Y	Y	Y		
CI402	Y	Y	Y	Y		Y
CI403	Y	Y	Y	Y		Y
CI404	Y	Y[2]	Y[2]	Y[2]		Y[2]
AUX1 of 931[3]				Y		Y
AUX1 of Business System Terminal[3]				Y	Y	Y
AUX1 of 940[3]				Y	Y	Y

Notes:

[1] /10A refers to the TMS9902 communications port on the 990/10A processor printed circuit board.

[2] These devices are connected to the CI404 via the fiber optics to EIA RS-232C converter module.

[3] AUX1 refers to the auxiliary port found on the 931, 940, and Business System terminals.

3.2 BEGINNING THE SYSGEN PROCESS

Use the following steps to begin the system generation process:

1. Place the disk pack containing the DNOS base system in a disk drive. If you received the system on something other than a hard disk, you must copy it onto a hard disk. (Refer to the *DNOS Object Installation Manual* for complete instructions.)

2. Load the system. On Business System 300 turn the power off then on. On Business System 600 and 800 and the 990 press HALT and then LOAD. This procedure is the initial program load (IPL). You must perform an IPL when there is no existing system in memory.

3. Bid SCI at a terminal supported by the base system by pressing the Attention key then entering an exclamation point (!).

4. To execute the DNOS System Generation utility, enter the XSGU command and answer each prompt.

3.3 XSGU COMMAND PROMPTS

Use the Execute System Generation Utility (XSGU) command to begin execution of the DNOS System Generation utility. The utility prompts you for the parameters necessary to properly define and build the operating system.

In cases where there is no default value for a prompt, pressing the Return key displays a explanatory message. Many prompts display default values. When this is the case, pressing the Return key enters the default value.

This example illustrates the format you use when executing the XSGU command:

```
[ ] XSGU

    EXECUTE SYSTEM GENERATION UTILITY
        DATA DISK/VOLUME: [site:]devicename/volume name
      TARGET DISK/VOLUME: [site:]devicename/volume name
     INPUT CONFIGURATION: [pathname]
    OUTPUT CONFIGURATION: pathname
      ASSEMBLE AND LINK?: YES/NO                    (NO)
```

After you complete the XSGU series of prompts, the following message appears in TTY mode:

```
*** SYSGEN EXECUTION BEGINS ***
```

If you are modifying an existing system, you must also respond to the INPUT CONFIGURATION prompt. The following message appears at your terminal indicating that the System Generation utility found the existing configuration:

```
*** CONFIGURATION IS NOW BEING READ ***
```

Table 3-6 lists and describes the XSGU prompts.

Table 3-6. XSGU Command Prompts

Prompt	Value Description	Initial Value
DATA DISK/VOLUME:	Disk or volume name containing data for the System Generation utility	< synonym>
TARGET DISK/VOLUME:	Disk or volume name where the System Generation utility writes output files, including the generated system image	< synonym>
INPUT CONFIGURATION:	Name of system you want to modify	< synonym>
OUTPUT CONFIGURATION:	Name of system you want to build	< synonym>
ASSEMBLE AND LINK?	Enter NO if the entire system is not defined; enter YES if it is defined.	NO

The following paragraphs explain in detail the prompts of the XSGU command.

3.3.1 DATA DISK/VOLUME Prompt

You must enter the name of the disk drive or the volume name of the disk containing the standard DNOS modules required to configure the new system. Eventually, the Link Editor links these modules to produce the new DNOS operating system. When you receive your minimal system, these files reside in the directory .S$OSLINK.

You might want to back up this directory on another disk to conserve space. On a system with more than one disk drive, you can accomplish this by using the Create Directory File (CFDIR) and the Copy Directory (CD) commands. When there is only one disk drive with magnetic tape as the backup medium, you can use the Backup Directory (BD) and the Restore Directory (RD) commands. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual* for the proper use of these commands.)

3.3.2 TARGET DISK/VOLUME Prompt

You must enter the name of the disk drive or the volume name of the disk to which you want to write the files created by the System Generation utility. The disk on this drive must be installed and should contain the directory <target>.SSGU. In this pathname, target is the volume name of your target disk. This directory must have at least one entry available to receive the output configuration directory. If this directory is not on the disk, the System Generation utility creates a directory with an allocation of 53 entries called <target>.SSGU on the target disk. The generated system image and other parts of the system will be output as <target>.<systemname>, making this disk the bootable system disk after a successful system generation.

3.3.3 INPUT CONFIGURATION Prompt

This prompt determines the name of an existing directory on the target disk where a configuration file resides. You can use this directory to define the configuration for the new DNOS system. This is an optional parameter, and you do not need to supply a response if you do not want to build your new system from an existing system. If you supply a name, that system configuration file must exist under the directory <target>.SSGU. The name can be one to eight characters long and must begin with an alphabetic character. You can modify the file created by saving the configuration from a previous system generation to reflect a newly defined system.

During the system generation process, you may supply information that causes a warning message to be issued. For instance, if you define two devices at the same address, the System Generation utility issues a warning. If the input configuration has a warning(s), the System Generation utility displays the warning message(s) at your terminal before the ENTITY prompt.

3.3.4 OUTPUT CONFIGURATION Prompt

You must enter the name you want to use to identify the new DNOS system. That name becomes a directory under the target disk directory, <target>.SSGU, and the System Generation utility stores all of its files under this name. The name can be one to eight characters long beginning with an alphabetic character. This output name also identifies the program file (for this DNOS system) that contains the loadable memory image of the DNOS operating system. This is a required parameter. If you are changing an existing system, you can use the same name for both the input and output configurations. The directory <target>.SSGU.output and the DNOS program file are both placed on the target disk. If you answer YES to the ASSEMBLE AND LINK prompt, the response to the OUTPUT CONFIGURATION prompt cannot be the currently executing system.

3.3.5 ASSEMBLE AND LINK Prompt

You can specify that the system be assembled and linked before the System Generation utility terminates. If you answer YES to this prompt, the System Generation utility automatically executes the Assemble and Link Generated System (ALGS) command. If you are building a system configuration in sections or do not completely define your configuration during one session, you should answer NO to this parameter. This enables you to build a system configuration in pieces, for later use. The initial value for this prompt is NO.

If you generate a system that includes communications, you must have performed the communications installation procedure before performing the ALGS command. These procedures install the communications object in the <datadisk>.S$OSLINK directory. During ALGS, these object modules are used to link communications tasks and overlays. For the procedure on installing communications packages, consult the installation documents for the packages you are installing.

3.4 REQUIRED SYSGEN PARAMETERS FOR ALL DNOS SYSTEMS

After you respond to the prompts listed in Table 3-6, the System Generation utility prompts you for the required parameters listed in Table 3-7. When you respond to all of the required parameters and include all devices, enter STOP in response to the ENTITY prompt. The System Generation utility responds by asking whether to build the files required for the remainder of the sysgen process. If you do not wish to build all of the files, or if you attempt to terminate the System Generation utility before responding to all of the necessary parameters, the utility asks if it should build the configuration file. If you answer YES to the BUILD prompt, the System Generation utility builds and saves the configuration files and does not display the SAVE CONFIGURATION prompt. The BUILD prompt does not appear if you do not satisfy all of the required parameters.

Table 3-7. XSGU Required Parameters

Required Parameter	Value Description	Default
KIF?	Enter YES if key indexed file (KIF) logic is supported; if not, you enter NO.	YES
SITE NAME?	Enter a valid character string to name the installation site where the system is located.	FTCH84KC
SECURITY?	Enter YES if file security is supported; if not you must enter NO.	NO
APPLICATION PROGRAM FILE?	Enter the program file pathname under <target>.VCATALOG that contains user-written, memory-resident tasks. You can enter a null value.	—
LOG DEVICE?	Enter the name of a device for output of system log messages. You can enter a null value.	—
ATTENTION DEVICE?	Enter the name of a device for listing messages about special system log conditions. You can enter a null value.	ST01
RESTART ID?	Enter the ID of the restart (0-255) task in .S$UTIL.	0
CARD 1?	Enter the interrupt level of expansion chassis 1 – 4. You can enter a null value.	7
CARD 2?	Enter the interrupt level of expansion chassis 5 – 7. You can enter a null value.	

Table 3-7. XSGU Required Parameters (Continued)

Required Parameter	Value Description	Default
USER SVC TABLE PATHNAME?	Enter the pathname of the RPUDAT object module; this is necessary for user-defined SVCs. You can enter a null value.	———
COUNTRY CODE?	Enter the collating sequence is to be used with the ASCII or JISCII values. You must enter a valid country code.	US
LINE FREQUENCY?	Enter the frequency of the power line that the computer is connected to. You must enter the correct line frequency.	60
POWER FAIL RECOVERY?	Enter YES if power is supported; if not, enter NO.	NO
ENTITY?	Enter the special device parameters; the following are valid: DVC — Device SVC — System defined SVCs STOP — Terminate the System Generation utility A response is required.	

The following paragraphs describe in detail the meaning of each of the required sysgen parameters listed in Table 3-2.

3.4.1 KIF Prompt

This parameter specifies whether to include the logic for key indexed file (KIF) support. You must request KIF logic to make the expanded message files available. The default value for this parameter is YES.

3.4.2 SITE NAME Prompt

The site name identifies the installation for which you are performing this system generation and for network software. Choose the name after consulting your network software specialists. The name should begin with an alphabetic character, should be from one to eight characters in length, and can contain both alphabetic and numeric characters. This parameter has no default value, but you must provide a response.

3.4.3 SECURITY Prompt

This parameter specifies whether file security is supported or not. The default value for this parameter is NO.

3.4.4 APPLICATION PROGRAM FILE Prompt

To include memory-resident tasks on the system, you must link and install them on a program file. Whenever you perform an IPL, the system searches the name of the program file that you create. It then loads the memory-resident tasks in this program file in memory. This parameter has no default value and requires no response. If you do not supply a response, tasks are not automatically loaded into memory after each IPL.

3.4.5 LOG DEVICE Prompt

DNOS requires system log files. You can include an optional system log device for listing messages. The system log records all system activities, messages generated by user programs, and messages indicating task, hardware, and I/O errors. The system initializes the system log when you perform an IPL.

DNOS always writes the system log information to the predefined system log file. Because of this, you can specify that DNOS write to a specific log device when it writes a log file. DNOS does not allow you to select a disk drive as the logging device, since this would cause loss of information already stored on these devices. If you enter a null value for this parameter, the system does not maintain a logging device.

3.4.6 ATTENTION DEVICE Prompt

The attention device records messages about logging transactions. When a log file is full, a message appears at the attention device, and the other log file is used. You can either back up or print a full log file to save this and subsequent information. You can include an attention device even if there is no log device. If you do not specify a device, this system maintains no attention device. This parameter has no default value. Ensure that any device used as the attention device does *not* have the TIME OUT prompt set to zero (0). A TIME OUT of 0 on the attention device will cause the system to hang.

3.4.7 RESTART ID Prompt

You can request that a specific task be bid every time you perform an IPL. You must install the specified task on the utility program file .S$UTIL. You can use task IDs 0 through 255, but you must ensure that the selected task ID is not already assigned to another task. If you do not specify a task ID, no restart task is included. The default value for this parameter is 0, which specifies that the System Generation utility assigns no restart task. If you specify a restart ID, the task is initiated after the .S$ISBTCH batch stream completes.

3.4.8 CARD 1 Prompt

DNOS supports up to seven CRU expansion chassis on 990 CPUs. The expansion chassis supports devices that you cannot configure in the 13-slot or 17-slot main chassis. This parameter specifies the interrupt level of the CRU expansion board supporting expansion chassis 1 through 4. If the system has no expansion chassis, enter a null value for this parameter (press the Return key). This parameter has no default value and does not require a response.

3.4.9 CARD 2 Prompt

This parameter specifies the interrupt level assigned to the second CRU expansion card; the second CRU card interfaces with the CRU expansion chassis 5 through 7. This parameter has no default value and does not require a response. Access to expansion chassis 7 requires the task be hardware privileged.

3.4.10 USER SVC TABLE PATHNAME Prompt

You must supply a file called .S$OSLINK.S$SGU$.USERSVC.RPUDAT if your system includes user-defined SVCs. The System Generation utility builds only one of these modules, no matter how many SVC processors you define. In addition, you must put each object module for the SVC processors in the directory .S$OSLINK.S$SGU$.USERSVC. The Assemble and Link Generated System (ALGS) command searches this directory as a library of object modules; therefore, the file names of the modules must be identical to the SVC processor entry point names. If a single module contains several processors, you must assign an alias for each additional processor name. This parameter has no default value. If you respond with a null value, the System Generation utility does not search for this directory and does not generate any user-SVCs.

3.4.11 COUNTRY CODE Prompt

This parameter determines the appropriate collating sequence for each installation. The collating sequence and values may differ from one country to another due to variations between character sets. Table 3-8 lists the valid country codes.

Table 3-8. Country Codes

Abbreviation	Country
AU	Austria
B	Belgium
D	Denmark
FI	Finland
FRA	France
FWP	French Word Processing
G	Germany
J	Japan
N	Norway
SP	Spain
SWE	Sweden
SWI	Switzerland
UK	United Kingdom
USA	United States

The default value for this parameter is United States. If you enter a null value, the utility uses the default value.

3.4.12 LINE FREQUENCY Prompt

This parameter specifies the frequency of the power line used by the computer. In the United States, the line frequency is 60 hertz. Many other countries have a line frequency of 50 hertz. The default value for this parameter is 60. If you enter a null value, the utility uses the default value.

3.4.13 POWER FAIL RECOVERY Prompt

Select the power fail recovery features only if battery backup is available on the system. If you select the power fail recovery option, the computer saves each VDT screen image to keep the information intact in the event of a power failure. The cost in memory is approximately 2K bytes for each VDT included on the system. The default value for this parameter is NO.

3.4.14 ENTITY Prompt

After you define all of the required parameters, you define the specific device(s) for your configuration.

3.5 ENTITY PARAMETERS

The ENTITY is a system component described in inquiry mode of the System Generation utility. Table 3-3 lists responses the utility accepts in response to the ENTITY parameter prompt.

Table 3-9. ENTITY Parameter Responses

Response	Description
DVC	Begin the configuration of a device. Possible device types are CRDR, DS, ASR, MT, COM, LP, VDT, VT, KSR, and SD.
SVC	Include one or more groups of optional SVCs. If your system requires the features provided by one or more of these SVC groups, you must include them.
STOP	Terminate the System Generation utility.

3.5.1 Devices — DVC

If you respond to the ENTITY parameter with DVC, to indicate that you want to include a new device in the system, the following prompt appears:

```
DEVICE TYPE?
```

Enter one of the responses listed in Table 3-10:

Table 3-10. Device Type Responses

Response	Meaning	Reference
ASR	733 automatic send/receive (ASR)	Table 3-11
COM	Communications	Table 3-12
	Protocol/Board Type Validation	Table 3-13
	Boards except DIPC	Table 3-14
	DIPC	Table 3-15
	2780/3780	Table 3-16
	COMA	Table 3-17
	3270	Table 3-18
CRDR	Card reader	Table 3-19
DS	Disk or double-sided, double-density (DSDD) diskette	Table 3-20
KSR	Keyboard send/receive (KSR)	Table 3-21
LP	Line printer	Table 3-22
MT	Magnetic tape	Table 3-23
SD	Special device	Table 3-24
VDT	Video display terminal (VDT)	Table 3-25
VT	Virtual terminal	Table 3-26

Your entry determines the subparameters the utility uses to complete the device configuration.

Table 3-11 through Table 3-26 show the subparameters for each device type. These tables show only those communications protocols having subparameters. The subparameters that you must specify to configure a device vary. Many of the subparameters are the same for different devices, the paragraphs following Table 3-26 discuss those subparameters in alphabetical order (without regard to the order in which you encounter them for a specific device). Table 3-12 through Table 3-18 describe those unique subparameters associated with communications board types and protocols. For more information concerning communications devices see the appropriate communications installation manual(s).

The following series of tables describe the subparameters associated with each device type. These tables are ordered the same as Table 3-10. Prompts are indented where their appearance depends on how you responded to the preceding prompt. For example, Table 3-21 lists the prompts that define a KSR. (The ACU CRU prompt only appears if you answer YES to the ACU PRESENT prompt that immediately precedes it.)

Table 3-11. ASR Device Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? ASR	The following subparameters define a 733 automatic send/receive device.	
CRU ADDRESS?	Enter the CRU address of this device (multiple of > 20, in the range of > 0000 to > 1EE0).	
VALIDATE OPENS?	Enter YES if opens are to be Validated; if not, enter NO.	NO
TIME OUT?	Enter the number of seconds that can elapse for the ASR unit before you receive an I/O error report.	0
CHARACTER QUEUE?	Enter the number of input characters that can be buffered for the device.	10
CASSETTE OPENS VALIDATED?	Enter YES if opens to the device are to be validated; if not, enter NO.	YES
INTERRUPT?	Interrupt level assigned to this device.	6

Table 3-12. Communications Device Subparameter Responses

Prompt	Description
DEVICE TYPE? COM	The following subparameters define a communications device.
BOARD TYPE?	Indicate one of the following communications boards: CI421 or ALPHA The synchronous port on the CI421 (S300 only) CP501 One channel communications processor (BCAIM) CP502 One channel communications processor (X.21 BCAIM) BCAIM One channel communications processor (including X.21 BCAIM) DIPC Communications interprocessor channel (internal channel having no physical board associated with it)

Table 3-12. Communications Device Subparameter Responses (Continued)

Prompt	Description
	CI401 or COMIF One channel interface, synchronous communications only CP503 or FCCC Four-channel communications processor CP504 or HSCC 56Kbps high-speed communications processor

Table 3-13. Communications Protocol/Board Type Validation

Board Type	Communications Protocol						
	3780/2780	3270	COMA	LAP	RTS	SDLC	CMNS
ALPHA or CI421	X	X		X		X	
BCAIM, CP501, or CP502	X	X	X	X	X	X	
COMIF or CI401	X	X			X		
FCCC or CP503	X	X	X	X	X	X	
HSCC or CP504			X			X	
DPIC							X

Note:

An X indicates a valid pairing of board type and communications protocol.

Table 3-14. Communications Board Type Subparameter Responses (Except DIPC)

Prompt	Description	Default
BOARD TYPE?	The following subparameters define a board type ALPHA (CI421), BCAIM (CP501 or CP502), COMIF (CI401), FCCC (CP503), and HSCC (CP504).	
CRU (or TILINE) ADDRESS?	Enter the CRU or TILINE address of the interface. The address you enter depends on the interface type. Enter the CRU address for board types BCAIM (CP501 or CP502), COMIF (CI401), and ALPHA (CI421). The CRU address of this device is a multiple of >20 (in the range of >0000 to >1EE0).	>5A0
	Note: >0B00 is the only correct address for board type ALPHA (CI421).	
	Enter the TILINE address for board types FCCC and HSCC. The TILINE address of this device is a multiple of >10, in the range of >F800 to >FBF0.	>F900
CHANNEL NUMBER xx PROTOCOL?	The valid protocols are 3780, 2780, 3270, COMA, LAP, RTS, and SDLC for the type of communications package you are including in the configuration.	
	If you specify a COMIF board type, you cannot specify protocols LAP, COMA, and SDLC.	
	If you specify an ALPHA board type, you cannot specify either COMA or RTS protocol.	
	If you specify an HSCC board type, you cannot specify protocols 3780, 2780, 3270, LAP, and RTS.	
INTERRUPT?	Enter the interrupt level assigned to this device.	8 7
	Note: Interrupt level is 3 for ALPHA (CI421) board type.	

Table 3-15. Communications Board Type Subparameter Responses (DIPC)

Prompt	Description	Default
BOARD TYPE?	The following subparameters define a DIPC board type.	
CHANNEL NUMBER 00 PROTOCOL	The protocol for channel 00 must be CMNS.	CMNS
CHANNEL NUMBER 01 PROTOCOL	The protocol for channel 01 must be CMNS.	CMNS
NUMBER OF SESSIONS?	Indicate the number of sessions (or resources) allowed. Enter a number in the range 1 to 255.	10

Table 3-16. Communications Protocol Subparameter Responses (2780/3780)

Prompt	Description	Default
CHANNEL NUMBER xx PROTOCOL	The following subparameters define a 3780 or 2780 protocol.	
ACU CRU ADDRESS?	Indicate the auto-call unit CRU address for the device. Valid CRU base addresses for the ACU are in the range of >0000 to >1F00. Determine the address by locating the ACU printed circuit board or the external ACU interface board installed in the chassis. >FFFF indicates an ACU does not have to be generated for this communications channel. Note: the S300 ALPHA (CI421) board does not have an ACU. >FFFE is only valid if the board type is BCAIM (CP502). This indicates that the ACU function is in the card (X.21 BCAIM (CP502) only).	~~>FFFF~~ >0000

Table 3-16. Communications Protocol Subparameter Responses (2780/3780) (Continued)

Prompt	Description	Default
DIAL TYPE?	Indicate the auto-call unit dial type. This question is only asked if a valid ACU CRU address is specified (not >FFFF, and not >FFFE). TOUCH indicates that the data access arrangement (DAA) employs touch tone dialing. PULSE indicates that the data access arrangement (DAA) employs pulse (rotary) dialing.	PULSE
BID RESPONSE TIMEOUT IN SECONDS?	Indicate the number of seconds to wait for a response to a bid before retrying the bid. Enter a value in the range of 0 to 63 (0 implies no time-out). When the local station acts as a host station, 3 seconds is the recommended value.	1 63
RECEIVE ACK TIMEOUT IN SECONDS?	Indicate the number of seconds to wait for a response to a transmitted data block before reporting an error. Enter a value in the range of 0 to 63 (0 implies no time-out).	3 63
RECEIVE DATA TIMEOUT IN SECONDS?	Indicate the number of seconds to wait for a received data block before reporting an error. Enter a value in the range of 0 to 63 (0 implies no time-out). When the local station acts as a host station, this number should be some finite value (30 is recommended).	0
IDLE LINE TIMEOUT IN SECONDS	Indicate the number of seconds to wait in the idle (control) state before reporting an idle line error. Enter a value in the range of 0 to 63 (0 implies an infinite wait). If the disconnect on error task option is on, exceeding this time-out terminates the session.	20 63
TRANSMIT BID THRESHOLD?	Indicate the number of times to retry a bid request before resetting the line with an EOT, reporting an error, and restarting. Enter a value in the range of 0 to 65535.	15 100

Table 3-16. Communications Protocol Subparameter Responses (2780/3780) (Continued)

Prompt	Description	Default
RECEIVE ENQ THRESHOLD	Indicate the number of ENQs (enquires) that can be received before reporting an error. An ENQ is received when an acknowledgement is not understood or not received. Enter a value in the range of 0 to 65535.	15
TRANSMIT ENQ THRESHOLD	Indicate the number of ENQs (enquires) that can be sent before reporting an error. An ENQ is transmitted when an acknowledgement is not understood. Enter a value in the range of 0 to 65535.	15
RECEIVE NAK THRESHOLD	Indicate the number of NAKs (negative acknowledges) that can be received before reporting an error. A NAK indicates that incorrect data has been sent and requests that a block be sent again. Enter a value in the range of 0 to 65535. A 0 indicates an infinite number of NAKs can be received. When the emulator is to operate as a host, the recommended value is 15.	0
TRANSMIT NAK THRESHOLD	Indicate the number of NAKs (negative acknowledges) that can be sent before reporting an error. A NAK indicates that incorrect data has been received and requests that the bad data block be retransmitted. Ente. a value in the range of 0 to 65535. A 0 indicates an infinite number of NAKs may be transmitted.	0
RECEIVE DATA THRESHOLD	Indicate the number of time-out intervals to wait for receptions before reporting an error. Enter a value in the range of 0 to 65535 (0 implies an infinite number of retries).	20

Table 3-17. Communications Protocol Subparameter Responses (COMA)

Prompt	Description	Default
CHANNEL NUMBER xx PROTOCOL?	The following subparameters define a COMA protocol.	
ACU CRU ADDRESS?	Indicate the auto-call unit CRU address for the device. >FFFF indicates an ACU does not have to be generated for this communications channel. >FFFE is only valid if the board type is BCAIM (CP502). This indicates the card contains the ACU function (X.21 BCAIM (CP502) only). Valid CRU base addresses for the ACU are in the range of >0000 to >1F00. Determine the address by locating the ACU printed circuit board or the ACU interface board installed in the chassis.	>FFFF
DIAL TYPE?	Indicate the auto-call unit dial type. This question is only asked if a valid ACU CRU address is specified (not >FFFF, and not >FFFE). TOUCH indicates that the data access arrangement (DAA) employs touch tone dialing. PULSE indicates that the data access arrangement (DAA) employs pulse (rotary) dialing.	PULSE

Table 3-18. Communications Protocol Subparameter Responses (3270)

Prompt	Description	Default
CHANNEL NUMBER xx PROTOCOL?	The following subparameters define a 3270 bisynchronous protocol.	
HIGHEST TERMINAL ADDRESS (0 – 31)?	Enter the highest terminal address that the host computer has reserved for a declared 3270 communications line name.	0
POLL TIMEOUT IN 1/4 SEC INTERVALS?	Enter the number of 1/4 second intervals to wait before reporting a host not polling error. Enter a value in the range of 0 to 255.	240

Table 3-19. Card Reader Device Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? CRDR	The following subparameters define a card reader device.	
CRU ADDRESS?	Enter the CRU address of this device (multiple of > 20, in the range of > 0000 to > 1EE0).	
VALIDATE OPENS?	Enter YES if opens to this are to be validated against other opens; if not, enter NO.	YES
TIME OUT?	Enter the number of seconds that can elapse before you receive an I/O error report.	30
INTERRUPT?	Enter the interrupt level assigned to this device. A card reader device cannot share an interrupt with other devices.	4

Table 3-20. Disk Device Subparameter Responses

Prompt	Description	Default	
DEVICE TYPE? DS	The following subparameters define a disk device.		
TILINE ADDRESS?	Enter the TILINE address of this device (multiple of >10, in the range of >F800 to >FC00).	>F800	>F820
DRIVES?	Enter the number of drives attached to the controller for this device (in the range of 1 to 4).	2	2
DEFAULT RECORD SIZE	Enter the physical record size used when you do not explicitly specify some other value.	3072 ~~768~~	864
INTERRUPT?	Enter the interrupt level assigned to this device.	13	9

Table 3-21. KSR Device Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? KSR	The following subparameters define a keyboard send/receive device.	
TERMINAL TYPE?	Enter the type of KSR (for example, 820). Several hard copy keyboard terminals are supported.	
INTERFACE TYPE?	Enter the interface type (CI401 (COMIF) controller, 9902 port, or a TTY/EIA card).	
SWITCHED LINE?	Enter NO if the terminal is connected to the host computer thru a switched line. A dial-up line is a switched line.	NO
BAUD RATE?	Enter the baud rate required by the KSR in the range of 110 to 9600.	
ACU PRESENT?	Enter YES if automatic call unit (ACU) is required; enter NO if an ACU is not required.	NO
ACU CRU?	Enter the CRU address of the ADU; this is determined by the position of the ACU in chassis.	0

Table 3-21. KSR Device Subparameter Responses (Continued)

Prompt	Description	Default
FULL DUPLEX MODEM?	Enter YES for a full duplex modem; NO for a half duplex modem.	YES
ECHO?	Enter YES if the DSR writes keyboard input to the display component of the device or terminal.	YES
CRU ADDRESS?	Enter the CRU address of this device (multiple of >20, in the range of >0000 to >1EE0).	
VALIDATE OPENS?	Enter YES if opens to this device are to be validated against other opens.	NO
TIME OUT?	Enter the number of seconds that can elapse at the KSR unit before you receive an I/O error report.	0
CHARACTER QUEUE?	Enter the number of input characters that the buffer area for this device can hold.	10
INTERRUPT?	Enter the interrupt level assigned to this device.	6

Table 3-22. Line Printer Device Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? LP	The following subparameters define a line printer device.	LP01 LP02
VALIDATE OPENS?	Enter YES if opens to this device are to be validated against other opens; Enter NO if no validation is done against other opens.	YES YES
PRINT MODE?	Enter printer interface type: SERIAL or PARALLEL.	SERIAL SERIAL
EXTENDED?	Enter YES if the printer uses the full ASCII character set.	~~NO~~ YES YES

Table 3-22. Line Printer Device Subparameter Responses (Continued)

Prompt	Description	Default
SPEED?	Enter the speed of the data transmission line, in the range of 110 to 9600 baud. You should accept the default value (4800) unless you generate the printer on a communications board.	4800
TIME OUT?	Enter the number of seconds that can elapse before you receive an I/O error report when data has been sent but not yet printed.	0
INTERFACE TYPE?	Enter the type of interface used: CI403, CI404, TTY/EIA, or 9902. This question is asked only when the print mode is SERIAL.	TTY
CRU (or TILINE) ADDRESS?	Enter the CRU address of this device (a multiple of >20, in the range of >0000 to >1EE0).	>0060
	Enter the TILINE address of this device (a multiple of >10 in the range of >F800 to >FBF0).	>F980
CHANNEL NUMBER?	Enter the controller channel number for this device. The valid range of responses is from 0 to 3. This question is asked only if the device interface type is CI403 or CI404.	0
INTERRUPT?	Enter the interrupt level assigned to this device.	1

Table 3-23. Magnetic Tape Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? MT	The following subparameters define a magnetic tape device.	
TILINE ADDRESS	Enter the TILINE address of this device (a multiple of >10, within the range of >F800 to >FBF0).	>F880
DRIVES?	Enter the number of drives attached to the controller for this device (within the range of 1 to 4).	1
INTERRUPT?	Enter the interrupt level assigned to this device.	

Table 3-24. Special Device Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? SD	The following subparameters define a special device (SD). Up to 15 different types of special devices can be defined.	
VALIDATE OPENS?	Enter YES if opens to this device are to be validated against other opens.	NO
TIME OUT?	Enter the number of seconds that can elapse for this device before you receive an I/O error report.	0
INTERFACE TYPE?	Enter the type of interface used: CI403, CI404, 9902, or NONE. NONE indicates the SD is not interfaced via an asynchronous controller or a 9902 port.	
TILINE DEVICE?	Enter YES if this is a TILINE device. This question is asked only if the interface type is NONE.	NO
CRU (OR TILINE) ADDRESS?	Enter the CRU address of this device (a multiple of >20, in the range of >0000 to >1EE0.	
	Enter the TILINE address of this device (a multiple of >10, in the range of >F800 to >FBF0). The default value is >F980 if the interface is CI403 or CI404. The default value is >F800 if the interface type is NONE.	>F800 or >F980

Table 3-24. Special Device Subparameter Responses (Continued)

Prompt	Description	Default
CHANNEL NUMBER?	Enter the controller channel number for the device. The valid range of responses is from 0 to 3. This question is asked only if the device interface type is CI403 or CI404.	0
DEVICE NAME?	Enter the name of this special device; the first two characters that you enter are used by sysgen in assigning a device name.	
INTERRUPT BIT?	Enter offset/index of the interrupt bit. This offset/index is relative to the CRU base address for the device. This prompt does not appear for TILINE devices.	15
BUFFER SIZE?	Enter the number of input characters that the buffer area for this device can hold. This prompt does not appear for TILINE devices.	80
IS THE PDT THE INTERRUPT WORKSPACE?	Enter YES if the physical device table (PDT) is the workspace that the interrupt handler is to use.	YES
KEYBOARD?	Enter YES if the special device has a keyboard (used to determine the device number); the entry must be YES to use SCI on a terminal. YES does the following: • It gives the special device the name STxx. • It expects a KSB workspace after the PDT from the DIB. • It builds a KSB input queue of the size >A. • It puts the proper station number in register 6 of the KSB workspace	YES
INTERRUPT?	Enter the interrupt level assigned to this device.	15

Table 3-25. VDT Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? VDT	The following subparameters define a VDT device.	VDT
VALIDATE OPENS?	Enter YES if opens to this device are to be validated against other opens.	NO
TIME OUT?	Enter the number of seconds that can elapse for this device before you receive an I/O error report. 0 specifies no time-out.	0
CHARACTER QUEUE?	Enter the number of input characters that the buffer area for this device can hold.	48
VDT TYPE?	Enter 911, 931, or 940. This specifies type of VDT.	911
ASSOCIATED PRINTER?*	Enter YES if the 931 or 940 has an associated printer attached to the terminal.	NO
SWITCHED LINE?*	Enter YES if the VDT is connected to the host computer through a switched line. A dial-up line is a switched line. If the 990 originates the call to a 940 VDT, this parameter must be set to NO.	NO
SPEED?*	Enter the speed of the data transmission line in the range of 110 to 19200 baud.	19200
INTERFACE TYPE?*	Enter the interface type used: a COMIF or a 9902-9903 (CI402, CI403, CI404, CI421, CI422, or 990/10A port) card.	
CRU (OR TILINE) ADDRESS?	Enter the CRU or TILINE address of the device.	
	Enter the CRU address (a multiple of >20, in the range of >0000 to >1EE0) if the interface is a CI401 or 9902-9903 (CI402, CI421, CI422, or 990/10A port) card.	
	Enter the TILINE address of this device (a multiple of >10 in the range of >F800 to >FBF0) if the interface is a CI403 or CI404 card.	>F980

Table 3-25. VDT Subparameter Responses (Continued)

Prompt	Description	Default
CHANNEL NUMBER*	Enter the controller channel for the device. The valid range of responses is from 0 to 3. This question is asked only if the device interface type is CI403 or CI404.	0
INTERRUPT?	Enter the interrupt level assigned to this device.	10

Note:

* These parameters are only asked for the 931 and 940 terminals.

Table 3-26. VT Subparameter Responses

Prompt	Description	Default
DEVICE TYPE? VT	The following subparameters define a virtual terminal device.	
NUMBER OF VIRTUAL TERMINALS	Enter a number in the range of 1 to 50. Virtual terminals are for local area networks only and can be used only when the network software is installed.	10

When you supply the last parameter for a device, the System Generation utility prompts you for another device type. After you configure the last device, press the Return key in response to the DVC prompt, and respond to the ENTITY prompt. If you want to enter optional SVCs you can enter SVC; or terminate the sysgen session by entering STOP.

The following is an example of a typical sequence of events. If a parameter has a default value, that value appears in parentheses after the prompt.

```
      .
      .
      .
ENTITY? DVC
DEVICE TYPE? DS
TILINE ADDRESS? (>F800)
DRIVES? (1)
DEFAULT RECORD SIZE? (768)
INTERRUPT? (13)
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11
      .
      .
      .
```

Each of the following paragraphs explain an ENTITY prompt shown in Table 3-11 through Table 3-26. Since some prompts appear in more than one table, the prompts in these tables are listed in alphabetical order.

3.5.1.1 ACU CRU Prompt. The automatic call unit (ACU) is a CRU device and has an address determined by its position in the chassis.

3.5.1.2 ACU PRESENT Prompt. An ACU establishes a telephone connection. If you use an ACU with the device you are defining, select this option.

3.5.1.3 ASSOCIATED PRINTER Prompt. When you define a 931 or 940 VDT, this subparameter specifies whether an optional printer is attached to the 931 or 940 VDT. The default value is NO.

3.5.1.4 BAUD RATE Prompt. Baud rate is a measure of the speed of data transmission. To determine the valid responses to this prompt, enter a question mark (?). The System Generation utility then lists all valid values.

3.5.1.5 BOARD TYPE Prompt. This subparameter defines the communications interface or processor board for the communications device. The system supports several communications board types. Each of these boards has recently been renamed, but the System Generation utility accepts both the old and the new names. Enter a question mark (?) to receive a list of all valid responses.

3.5.1.6 CASSETTE OPENS VALIDATED Prompt. You encounter this subparameter only when defining a device type ASR. This subparameter refers to the two cassette drives found on the 733 ASR. When the cassette is open, access privilege requested by a task determines access rights to the device and avoids conflicting operations. Cassettes that do not have opens validated can be accessed by many different tasks at the same time. The default value is YES.

3.5.1.7 CHANNEL NUMBER Prompt. This parameter is displayed only when defining a device interfaced with a CI403 or CI404 controller. These controllers have four channels (0 through 3). The default is 0.

3.5.1.8 CHANNEL NUMBER xx PROTOCOL Prompt. This subparameter defines the communications protocol for the current channel. Communications protocols define the set of conventions governing the format and relative timing of message exchanges between two communicating processes. To determine the correct response to this prompt, consult the object installation documents for the communications packages you are installing. You can use several protocols on the DNOS operating system. Enter a question mark (?) to obtain a list of all valid responses.

3.5.1.9 CHARACTER QUEUE Prompt. This subparameter specifies the number of characters entered from a keyboard that can be buffered by the DSR. When a read input request is not pending, a keyboard DSR stores the user's keyboard input in the character queue. The DSR does not echo (transmit) keyboard input to the display device associated with the keyboard when there is no read request pending. The DNOS DSR buffers only the number of characters specified. Any additional characters from the device are lost. The default value is 10. The maximum value is 30. You must enter an even number.

3.5.1.10 CRU ADDRESS Prompt. Devices that use the CRU require this subparameter. The CRU is a serial data bus used by many of the slower speed controllers, such as CI401, CI402, and TTY-EIA. The position of the device controller in the computer chassis determines the address of most CRU devices, with the exception of the CI402.

In the main chassis, CRU addresses (except the CI402) are assigned to slots 2 through 13 (13-slot chassis) or slots 6 through 17 (17-slot chassis). If a board occupies the entire slot, the CRU address is assigned to position P2. This subparameter has no default value. In the main chassis, CRU communications devices must be at interrupts 3 through 15. If a board occupies an entire slot, the CRU address used is the one assigned to position P2. The CRU addresses available for a communications device are >0000 through >1EE0, in multiples of >20.

The CI402 board occupies two consecutive slots in the chassis. Pencil switches on the board determine the CRU address, regardless of which slots the CI402 occupies in the chassis. These switches designate the CRU address of the first slot (channel 0). The CRU address of the second slot (channel 1) is the address of channel 0 plus >80.

3.5.1.11 DEFAULT RECORD SIZE Prompt. You must supply this subparameter when you define a disk or device type DS. The system uses this value when you have not explicitly stated a physical record size for a file created on this device. You can override this value by specifying a default physical record size for the disk when it is initialized. The default value for this subparameter is 768.

3.5.1.12 DEVICE NAME Prompt. The System Generation utility names all devices recognized by DNOS with four-character names. The usual format for a device name is xxnn, where xx indicates alphabetic characters that identify the device type; and nn is the number of an individual device of the identified type. For example, LP02 represents the second line printer.

The System Generation utility assigns the first two letters of the device name to this device. The first two letters of the device name (xx) must correspond to the xx in the DSR file name (.S$OSLINK.S$SGU$.SD.DSRxx). Each specific device name (xxnn) must correspond to the xxnn in the device information block file name (.S$OSLINK.S$SGU$.SD.DIBxxnn).

You must supply this subparameter only when defining a special device or device type SD. You provide the name for special or nonstandard devices. The system accepts up to 15 combinations for the first two characters of a special device name. This subparameter has no default value.

3.5.1.13 DRIVES Prompt. This subparameter applies to device types DS and MT. Each controller of these device types can support from one to four drives of the same type. The type of controller determines the type of drive.

Enter the number of disk, tape, or diskette drives attached to the controller. The default value is 1. Since the System Generation utility only needs to know the number of drives attached, you can upgrade the hardware on the system from one type of disk drive to another without performing the sysgen process again.

3.5.1.14 ECHO Prompt. Answer YES to this subparameter if the terminal is running full duplex. You must select echo in order for character editing to work properly at the terminal. If you select echo, you must configure the terminal without local copy.

3.5.1.15 EXPANSION CHASSIS Prompt. This subparameter appears only if the interrupt level you define for a device is assigned to an expansion chassis. Responses to the prompts CARD 1 and CARD 2 give the interrupt level assigned to a CRU expansion board. Enter the number of the expansion chassis containing the device controller. The default value for this subparameter is 1 when the interrupt level for the device is the same as the level designated for CARD 1. The default value is 5 when the interrupt level for the device is the same level designated for CARD 2.

3.5.1.16 EXPANSION POSITION Prompt. This subparameter appears only if the interrupt level you define for a device is the same as that assigned to an expansion board. The CARD 1 and CARD 2 prompt responses are the interrupt level assigned to an expansion chassis. You should enter the interrupt position assigned to the device controller in the expansion chassis in which the device is installed. Use values from 0 through 23. The default value is 0.

3.5.1.17 EXTENDED Prompt. The line printer you use may have an extended character set that includes lowercase letters and additional special characters. To get upper and lowercase characters on an 810 printer, for example, you must respond YES. The default value is YES.

3.5.1.18 FULL DUPLEX MODEM Prompt. This question is asked only for a KSR device using a switched line. CI401 and 9902 are the only interfaces that can be used. If you are not using a modem, accept the default of YES. You should answer NO only if you use the Bell 202S modem (or its equivalent).

3.5.1.19 INTERFACE TYPE Prompt. The interface types are CI401 (COMIF), TTY/EIA, 9902 (990/10A 9902 port, CI402, 9902 port of the CI421, and CI422), 9903 (9903 port of the CI421), CI403, and CI404. The device controller determines which interface type you should select. Table 3-27 shows the device-controller combinations that can be used. If you do not know which controller or port you are using, consult the operator's guide for your Business System computer. For the Business Systems 600 and 800, you can also examine the board for its label.

3.5.1.20 INTERRUPT Prompt. The value you enter specifies the interrupt level (in the range from 3 through 15) assigned to the device or device controller you are configuring. When a device requests service, it generates an interrupt. The computer services interrupts on a priority basis, with level 0 being the highest priority and level 15 the lowest. Levels 0 through 2 are unavailable for use by devices. Level 5 is usually assigned to the system clock. If a single device, full-slot controller occupies the entire slot, the interrupt level used is the one assigned to position P2. (Refer to the beginning of this section for an explanation of interrupt levels.) If a device is installed in a CRU expansion chassis, you must enter the interrupt level corresponding to that chassis, as previously described.

To determine the interrupt assignment for devices supported and installed by Texas Instruments, refer to the configuration chart attached to the chassis. You can use the List Device Configuration (LDC) command to determine the interrupts assigned to an already generated system. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual.*) The default value for this subparameter is device dependent. Table 3-27 indicates the default values assigned to the various device types.

Table 3-27. Interrupt Default Values

Device	Default Value
Card reader	4
Disk	13
733 ASR	6
Magnetic tape	9
Communications	8
Line printer	14
VDT	10
KSR	6
Special device	15

3.5.1.21 INTERRUPT BIT Prompt. This subparameter appears when you define a special device that is not a TILINE device. If this device shares an interrupt level with other devices, the system must be able to determine which device generated the interrupt. The system checks each device to determine which one has a flag set. The flag, which is one of the CRU bits allocated to the device controller, indicates which controller generated an interrupt. The default value for this subparameter is 15.

3.5.1.22 IS THE PDT THE INTERRUPT WORKSPACE Prompt. This subparameter appears when you define a special device. The Physical Device Table (PDT) contains information about the device and the workspace used by the interrupt handler. For a special device, you must specify whether the interrupt handler can use a workspace in the PDT. The alternative is to use the Device Information Block (DIB) or the KSB as a workspace. Most interactive devices use the DIB as an interrupt workspace. (Refer to the *DNOS Systems Programmer's Guide* and the *DNOS System Design Document*.) The default value for this subparameter is YES.

3.5.1.23 KEYBOARD Prompt. This subparameter appears when you define a special device. If the device has a keyboard, it receives the next available keyboard device name. For example, if you have already configured three VDTs, the VDTs are ST01 through ST03. Now you define a special device called SALES and answer YES to the KEYBOARD prompt. The System Generation utility names the device ST04. If you respond NO to the KEYBOARD prompt, this special device is called SA01 and you cannot bid SCI at this device. If the PDT is not the interrupt workspace, this subparameter determines whether the KSB or the DIB is used for the workspace. The default value (YES) specifies that the KSB contains the workspace used by the interrupt handler.

3.5.1.24 PRINT MODE Prompt. You can define line printers as requiring either serial or parallel data transfer. In serial mode, data is transferred one bit at a time; in parallel mode, data is transferred one character at a time. The 810, 850, 855, and LQ45 printers use serial mode; 2230, 2260, LP300, and LP600 printers use parallel mode.

If the print mode is parallel, the device is defined to receive 8-bit codes. This is the case with the 2230 and the 2260. For these printers, use the Modify Device State (MDS) command to set the CODE8 prompt to NO. For the LP600 and LP300, set CODE8 to YES. Do this after your system generation is finished. You will need to issue the MDS in expert mode. The *DNOS System Command Interpreter (SCI) Reference Manual* for details. The default value for this subparameter is SERIAL.

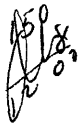
If you define a line printer as a serial line printer, the system assumes that the printer does not receive eight-bit codes. If you require a printer that recognizes eight bit codes, you can change the print mode by using the Modify Device State (MDS) command.

3.5.1.25 SPEED Prompt. This subparameter specifies the baud rate for a device. If you respond to the prompt with a question mark (?), the system lists all valid baud rates. Only the CI402 communications interface supports speeds above 19,200 baud. The COMIF and other communications boards support speeds up to 9600 baud.

3.5.1.26 SWITCHED LINE Prompt. Switched lines are dial-up lines. Terminals that are either directly connected or connected by leased lines are not on switched lines. The default is NO, which specifies a directly connected or leased line.

Some modems require Data Terminal Ready (DTR) and Request to Send (RTS) signals from the system before they recognize a ring indicator; others don't. SWITCHED LINE = YES has the system wait for the ring indicator before raising DTR/RTS. If your modem wants DTR/RTS before the ring indicator, nothing will happen.

If the 990 originates the call to a 940 VDT, this parameter must be set to NO.



3.5.1.27 TERMINAL TYPE Prompt. DNOS supports several hard copy keyboard terminals. If you specify a KSR, the System Generation utility prompts you for the terminal type. To determine the valid responses to this prompt, enter a question mark (?). The utility then lists all valid terminal types.

3.5.1.28 TILINE ADDRESS Prompt. TILINE is a high-speed data bus used by the various disk controllers, magnetic tape controllers, and asynchronous communications controllers. TILINE device controllers can access CPU memory directly. The setting of the switches located on the controller defines the address of a TILINE device. To determine this address, consult the configuration chart attached the chassis. The default value for this subparameter is >F800 for disk, >F880 for magnetic tape, and >F980 for devices interfaced via a CI403 or CI404 asynchronous controller.

The TILINE devices must be at interrupts 3 through 15, with addresses available in the range of >F800 to, but not including >FC00, in multiples of >10. This subparameter has no default value.

3.5.1.29 TIME OUT Prompt. When you initiate an I/O operation to a device, DNOS waits a specified number of seconds for completion of the operation. If the operation does not complete before the specified period of time, DNOS assumes that an error has occurred. The amount of time that elapses before the system generates an error report is the time out. The default values are device dependent. The number of seconds used as default values for the devices appear in Table 3-28. A zero indicates that DNOS does not do time-out processing.

Table 3-28. Time-Out Default Values

Device	Default Value
Card reader	30
733 ASR	0
Line printer	60
VDT	0
KSR	0
Special device	30

For a device used as the system log or as an attention device for the system log, you must specify a time-out value greater than zero. Thirty seconds is the recommended value.

3.5.1.30 VALIDATE OPENS Prompt. Either one task or many concurrent tasks can access a device. Devices that have opens validated are available to one or many tasks, according to the access privilege requested by the task. Devices that do not have opens validated can be accessed by many tasks at the same time. The device determines the default values for this subparameter. For example, if an application program accesses a line printer, that printer should be unavailable to other tasks. Table 3-29 shows the default values assigned the various devices.

Table 3-29. Validate Opens Default Values

Device	Default Value
Cassette	YES
Card reader	YES
733 ASR	NO
Line printer	YES
VDT	NO
KSR	
820 as SCI station	NO
820 as line printer	YES
Special device	NO

3.5.1.31 VDT TYPE Prompt. This subparameter specifies whether the video terminal is a model 911, 931, or 940 VDT. Enter either 911, 931, or 940.

3.5.2 Supervisor Calls — SVC

The operating system SVC routines perform specific functions. Required SVCs do not appear in the configuration file. You cannot and need not request them since sysgen always generates them. However, some SVCs are optional. To include an optional SVC, respond to the ENTITY prompt as follows:

```
ENTITY? SVC
```

Once you have requested optional SVCs, use the SVC group name parameter to determine which of the SVC groups is to be included. Table 3-30 lists the optional SVC groups, and the paragraphs that follow describe these groups. Table 3-30 also shows the approximate code size for each of the optional SVC groups. They occupy space in the system overlay named SVCTWO, the same overlay used for user-written SVCs. If you are writing an SVC processor, you may want to omit any optional SVCs you do not need.

Refer to the *DNOS Supervisor Call (SVC) Reference Manual* for detailed information on these SVCs.

Table 3-30. Optional SVC Groups

Group Name	SVC Processors	Approximate Code Size (in Bytes)
Accounting	>47, >49	>A0
Intertask Communication	>1C, >1D	>B0
Encryption	>45, >46	>2A0

When you have included the last optional SVC group, press the Return key after the SVC GROUP NAME prompt, as follows:

```
        .
        .
        .
ENTITY? SVC
SVC GROUP NAME? ACCOUNTING
SVC GROUP NAME? <Press the Return key>
ENTITY?
        .
        .
        .
```

3.5.2.1 **Accounting.** You can collect information about jobs other than the current job. For example, when a task terminates, an entry in an accounting file can identify the task and the job under which it was running, as well as provide information on CPU utilization, the amount of memory allocated to the task, the number of SVCs issued, and the number of I/O bytes transferred. To include this SVC group, enter ACCOUNTING in response to the SVC GROUP NAME prompt. Using this response allows the accounting SVCs to log accounting data and makes user-SVCs available for logging accounting data and for examining task accounting information.

3.5.2.2 **Intertask Communication.** This group includes SVCs in the calling task that put and get data from a buffer in the DNOS dynamic memory area. To include this SVC group, enter INTERTASK COMMUNICATION in response to the SVC GROUP NAME prompt.

3.5.2.3 **Encryption.** This group supports the Get Encrypted Value and the Get Decrypted Value SVCs. The task calls upon DNOS to encrypt and decrypt data for any purpose. It provides a degree of privacy for the data, but not at a high security level. For accurate decryption of data, the Get Decrypted Value SVC must use the same encryption key used in the encrypting process.

To include this SVC group, enter ENCRYPTION in response to the SVC GROUP NAME prompt. If you answer NO to the SECURITY prompt, the Encryption SVC must be included to use the SCI commands that handle access groups.

3.5.3 Stop

When you answer all the required parameters and include all devices, enter STOP in response to the ENTITY prompt. (Refer to the System Generation Utility Operations section for a discussion of the Stop command.)

3.5.4 Build

When you respond to the ENTITY prompt with STOP, the System Generation utility displays the BUILD prompt. A YES response automatically saves the configuration; consequently, the SAVE CONFIGURATION prompt does not appear. The BUILD prompt does not appear if you have not satisfied all of the required parameters.

3.6 ASSEMBLING AND LINKING THE GENERATED SYSTEM — ALGS

After you define all of the required system parameters, you must assemble and link the system by using the ALGS command. The System Generation utility executes automatically if you respond YES to the ASSEMBLE AND LINK prompt of the XSGU command. The format of the ALGS command is as follows:

```
[ ] ALGS

ASSEMBLE AND LINK GENERATED SYSTEM
       DATA DISK/VOLUME: [site:]devicename/volumename
     TARGET DISK/VOLUME: [site:]devicename/volumename
            SYSTEM NAME: alphanumeric  (*)
```

The initial values for the TARGET DISK/VOLUME and the SYSTEM NAME prompts are the same values you entered when executing the XSGU command.

If you generate a system that includes communications, you must perform the communications installation procedures before performing the ALGS command. These procedures install the communications object in the <datadisk>.S$OSLINK directory. During ALGS, these object modules are used to link communications tasks and overlays. For the procedure on installing communications packages, consult the installation documents for the packages you are installing.

The ALGS command takes approximately 30 minutes to execute and executes in the background. You can enter the Wait (WAIT) command or the Show Background Status (SBS) command to monitor the execution of ALGS.

If too much System Table Area is requested, ALGS issues the following message:

```
OVERLAY TOO BIG OVERWRITES NEXT HIGHER PHASE
```

Upon successful completion of the assembling and linking process, the system generation utility displays the following message:

```
0 ERRORS ENCOUNTERED IN ASSEMBLING AND LINKING
```

If ALGS encounters an error, one of the following messages appears:

```
ERROR code OCCURRED LINKING COMSWS
ERROR code OCCURRED WHILE LINKING DSR<protocol name>
ERROR code OCCURRED IN LINKING THE SYSTEM
ERROR code OCCURRED IN LINKING I-OU
ERROR code OCCURRED IN LINKING DISK MANAGER
count ERRORS OCCURRED ASSEMBLING CFDSR
count ERRORS OCCURRED ASSEMBLING CFLAP
count ERRORS ENCOUNTERED IN ASSEMBLING AND LINKING
```

Reexecute the XSGU command and enter the command mode and generate a new system specifying less table area. The Preanswered Parameters section describes how to modify preanswered parameters such as the system table area size.

The codes (>4000 through >C000) indicate the severity of the error. The higher the code, the more severe the error. The count indicates the number of errors generated during the installation of various system modules. To determine the cause of the error, refer to the batch stream listing file and/or the appropriate link map in the .SSGU.<system name> directory. The listing file contains messages in the following format:

```
U-LINKEDIT nnnn<message>
```

The first character indicates the source of the error. Source errors are as follows:

U — User error
S — Software error
H — Hardware error
LINKEDIT — Message from the link editor.
nnnn — The message number.
<message> — The short form of the message.

(Refer to the *DNOS Messages and Codes Reference Manual* for more information about this message.)

3.7 PATCHING THE NEW SYSTEM — PGS

After the successful completion of either the Assemble and Link Generated System (ALGS) command or the Execute System Generation Utility (XSGU) command with the assemble and link option, the new operating system resides in the kernel program file. The name of this file was given in response to the SYSTEM NAME prompt. The system image must be patched before an initial program load (IPL) can be performed. The PGS command is used to patch the new system.

The PGS process builds a batch stream containing commands to execute the appropriate batch streams. The batch stream is placed in the .SSGU.<systemname>.PGS file on the target disk and is executed by PGS. The batch SCI listing is written to the file .SSGU.<systemname>.PATCHLST.PGS on the target disk.

3.7.1 PGS Prompts and Responses

When you enter the PGS command, the following prompts appear:

```
[ ] PGS

PATCH GENERATED SYSTEM
            DATA DISK/VOLUME: [site:]{devicename/alphanumeric} (*)
          TARGET DISK/VOLUME: [site:]{devicename/alphanumeric} (*)
                SYSTEM NAME: alphanumeric                      (*)
             PATCH KERNEL?: YES/NO                          (YES)
            PATCH UTILITY?: YES/NO                          ~~(NO)~~ YES
  PATCH COMM(NONE,SOME,ALL): {N/NONE/S/SOME/A/ALL}          ~~(NONE)~~ S
```

If you enter YES to the PATCH UTILITY? prompt, the following prompts are displayed:

```
PATCH GENERATED SYSTEM
            UTILITY PROGRAM FILE: alphanumeric                    (S$UTIL)
                  IPL FILE NAME: alphanumeric                     (S$IPL)
      COMMAND PROCEDURE DIRECTORY: alphanumeric                   (S$CMDS)
```

If you enter SOME in response to the PATCH COMM(NONE,SOME,ALL) prompt, the following prompt is displayed:

```
PATCH GENERATED SYSTEM
     COMM PROTOCOL NAME(S): character(s)...character(s)
```

Thg following paragraphs describe individual PGS prompts and responses.

3.7.1.1 DATA DISK/VOLUME Prompt. For this prompt, use the device or volume name that contains the system linkable object directories and patch files. The initial value is the same as the response to the last DATA DISK/VOLUME prompt of either the ALGS, XSGU, or PGS command.

3.7.1.2 TARGET DISK/VOLUME Prompt. For this prompt, use the device or volume name that contains the newly generated system. The initial value is the same as the response to the last TARGET DISK/VOLUME prompt of either the ALGS, XSGU, or PGS command.

3.7.1.3 SYSTEM NAME Prompt. The name of the generated system must be a one- to eight-character alphanumeric string. The initial value is the same as the response to the last SYSTEM NAME prompt of either the ALGS, XSGU, or PGS command.

3.7.1.4 PATCH KERNEL? Prompt. If YES is the response, the kernel patches are applied to the specified system name. Respond NO if you do not want to apply kernel patches.

3.7.1.5 PATCH UTILITY? Prompt. A YES response causes additional prompts to be displayed. Respond NO if you do not want to apply utility patches.

3.7.1.6 PATCH COMM(NONE,SOME,ALL) Prompt. A response of ALL causes all communications patches for the protocols you have generated to be applied to the generated system. Respond NONE if you do not want to apply communications patches. A response of SOME causes additional prompts to be displayed, and only the selected communications patches are applied.

3.7.1.7 UTILITY PROGRAM FILE Prompt. The name of the utility program file to be patched must be a one- to eight-character alphanumeric string. This is usually S$UTIL. Enter the exact characters of the last component of the file name. You cannot use logical names or synonyms. The file must reside in the VCATALOG directory on the target disk.

3.7.1.8 IPL FILE NAME Prompt. The name of the system loader file to be patched must be a one- to eight-character alphanumeric string. This is usually S$IPL. Enter the exact characters of the last component of the file name. You cannot use logical names or synonyms. The file must reside in the VCATALOG directory on the target disk.

3.7.1.9 COMMAND PROCEDURE DIRECTORY Prompt. The name of the command procedure directory to be patched must be a one- to eight-character alphanumeric string. This is usually S$CMDS. Enter the exact characters of the last component of the directory name. You cannot use logical names or synonyms. The directory must reside in the VCATALOG directory on the target disk.

3.7.1.10 COMM PROTOCOL NAME(S) Prompt. For this prompt, use the communications protocol name(s) that identifies the communications protocol(s) patches to be applied. The valid responses are 3780, 2780, 3270, RTS, SDLC, LAP, COMA, and CMNS. More than one protocol name can be entered. Separate each protocol name with a comma.

3.7.2 PGS Listing Files

The PGS listing files are placed in the .S$SGUS$.<systemname>.PATCHLST directory on the target disk. The file names of the various listings are as follows:

File Name	Description
KERNEL	Kernel patch listing
< utility program file>	Utility patch listing
COMPATCH	COMPATCH batch stream listing
COMM	COMM batch stream listing
DNPCSWS	COMSWS patch listing
CMON< protocol name>	Common communications protocol DSR patch listing
DNP< protocol name>	Communications protocol DSR patch listing
PGS	PGS batch listing

After termination of PGS, the new system image is ready to be tested and/or installed as the executing operating system.

3.8 TESTING THE NEW SYSTEM — TGS

You should test the new system before you actually install it as the primary system image. Use the following procedure:

1. Execute the Test Generated System (TGS) command, and respond to the following prompts:

```
[] TGS

   TEST GENERATED SYSTEM
        TARGET DISK/VOLUME: devicename/volumename@
               SYSTEM NAME: alphanumeric
```

2. Perform an IPL to load the new system image into memory.

3. Test each device that has been configured for the system.

The initial values for the TARGET DISK/VOLUME and the SYSTEM NAME prompts are the same values you entered when executing the XSGU command.

The TGS command causes the new DNOS system to be selected on a temporary basis only. If the new system is inadequate, you can load the original system into memory. To accomplish this, you need only perform another IPL. You can modify an inadequate system by repeating the sysgen process, starting with the XSGU command or by using the system configuration utility described in the Dynamic Configuration section.

3.9 INSTALLING THE NEW SYSTEM — IGS

The final step in creating a new DNOS operating system is to install the new system. Execute the Install Generated System (IGS) command as follows:

```
[ ] IGS

    INSTALL GENERATED SYSTEM
         TARGET DISK/VOLUME: {devicename/alphanumeric}   (*)
                SYSTEM NAME: alphanumeric                (*)
```

As with the ALGS, PGS, and TGS commands, initial values appear for the TARGET DISK/VOLUME and SYSTEM NAME prompts. After you execute the IGS command, the new DNOS system is the primary system. You load this system image into memory each time you perform an IPL.

3.10 CHANGING AN EXISTING SYSTEM CONFIGURATION

You can change your system to add new devices and delete old ones; or entirely rebuild it by adding new features. For example, you must build a new system when you add a KIF to a system that does not have KIF logic. You can configure a new system from an existing system by executing either the System Generation utility or the System Configuration utility. (Refer to the Dynamic Configuration section.) To change a system by using the XSGU command, supply the existing system name in response to the INPUT CONFIGURATION prompt.

To replace the existing system with the newly configured system, supply the existing system name in response to the OUTPUT CONFIGURATION prompt for the new system. You can build a new system but leave the current system unchanged by supplying a new system name in response to the OUTPUT CONFIGURATION prompt. After you complete the series of XSGU prompts, the System Generation utility displays the following message to indicate that it has found the existing configuration:

```
*** CONFIGURATION IS NOW BEING READ ***
```

NOTE

Once a system has been built (that is, answering YES to the BUILD prompt), any files created to include a communications device are not automatically deleted, even when that communications device is deleted. If you want to delete these files, you must use the Delete File (DF) SCI command after deleting the communications device.

If any errors exist in the input configuration, they appear now. Having several devices specified for the same address is an example of such an error.

After the existing configuration is displayed, the remaining sysgen prompts appear one at a time in TTY mode. You can change the configuration by entering the command mode and changing the desired parameters:

```
      .
      .
      .
ENTITY?
COMMAND? CHANGE
PARAMETER TO BE CHANGED? KIF
KIF? (YES) <cr>
ENTITY?
      .
      .
      .
```

After you complete the new system configuration, enter STOP in response to the ENTITY prompt. You can build the new configuration files or save the configuration if you use the STOP command.

To generate a system that includes communications, you must perform the communications installation procedures before performing the ALGS command. These procedures install the communications object in the < datadisk> .S$OSLINK directory. During ALGS, these object modules are used to link communications tasks and overlays. For the procedure on installing communications packages, consult the installation documents for the packages you are installing.

You must assemble, link, patch, test, and install the new system as discussed in the preceding paragraphs.

NOTE

Since LUNOs are assigned to the program file, ALGS can only generate a system of the same name if the system to be replaced is not currently executing.

3.11 PATCHING AN EXISTING CONFIGURATION

If problems are found with DNOS products that are already released, patches are created then shipped to customers. You can apply these patches by using the PGS command or by executing the patch batch streams directly. Patches in the periodic product patch releases have an associated patch release document describing the appropriate patch procedures.

4

Preanswered Parameters

4.1 INTRODUCTION

Several parameters have assigned default values. These preanswered parameters do not appear on the screen or in the configuration file, unless you enter the command mode to modify one or more of them. You should not modify these parameters unless required by your applications or geographic location. Table 4-1 lists the preanswered parameters, their meanings, and the default values assigned to each. You can obtain information about table usage and other system parameters by using SCI commands such as Execute Performance Display (XPD) and Modify System Tables (MST). (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual.*)

You can modify the preanswered parameters by entering the command mode during the sysgen process. Enter CHANGE in response to the COMMAND prompt. (Refer to the Systems Generation Utility Operations section.) Use a question mark after you enter the parameter to be changed if you want to know the minimum and maximum values that you can specify. You can also change preanswered parameters while executing the System Configuration utility. (Refer to the Dynamic Configuration section.)

Table 4-1. Preanswered Parameters for Sysgen

Prompt	Description	Default
COMMON	Optional user-supplied system common area.	
CLOCK	Interrupt level of the clock.	5
SYSTEM TABLE	Size of system table area in K bytes (1K = 1024 bytes).	
SEGMENT MANAGER TABLE AREA	Table area used by Segment manager in K bytes.	12
FILE MANAGER TABLE AREA	Table area used by File manager in K bytes.	12
BUFFER TABLE AREA	Size of table area used for file buffers in K bytes.	
FOREGROUND JOB LIMIT	Maximum number of foreground jobs that can be active in the system.	50
BATCH JOB LIMIT	Maximum number of background jobs that can be active in the system.	10

Table 4-1. Preanswered Parameters for Sysgen (Continued)

Prompt	Description	Default
PHYSICAL MEMORY SIZE	Size of the physical memory. If you enter zero, the sysgen utility calculates the size of the physical memory.	0
TIME SLICING	Indication of whether time slicing is enabled.	YES
SLICE VALUE	Number of system time units in one time slice (one system time unit = 50 milliseconds).	1

4.2 COMMON PROMPT

This parameter is the pathname of the file that contains the assembled object code for the system common area of memory. System common is memory reserved within the system that is available to all tasks. You can use it to exchange data between tasks. You must supply the object code to be placed in the system common area. If you specify no pathname, no system common area is created. The default value is NONE.

4.3 CLOCK PROMPT

This parameter specifies the interrupt level assigned to the internal clock. The possible values are interrupt levels 5 and 15. A jumper wire on the system interface board determines the clock interrupt level assignment for the 990/10 CPU. The 990/12 CPU is prewired at interrupt level 5. Assigning interrupt level 15 gives all other devices on the system a higher interrupt priority than the clock and can increase I/O efficiency. A level 15 interrupt for the clock can also affect time slicing. The default value is 5.

CAUTION

Only qualified service personnel should change the jumper wires that determine the interrupts normally assigned to devices.

4.4 SYSTEM TABLE PROMPT

The System Generation utility allocates all the available table space for the system.

4.5 SEGMENT MANAGER TABLE AREA PROMPT

This parameter determines the amount of memory allocated to the segment management table. The default value is 12K bytes.

4.6 FILE MANAGER TABLE AREA PROMPT

This parameter determines the amount of memory that should be allocated to the file management table. The file management table area is required for the I/O utilities. The default value is 12K bytes.

4.7 BUFFER TABLE AREA PROMPT

This parameter determines the amount of memory allocated to the buffer table area. I/O and communications systems require a buffer table area. The default value is 4K bytes. The System Generation Utility allocates 4K bytes for each active 940 or 931 in your system. You need about 4K bytes for transitory system requirements. See the communications systems documentation for additional buffer memory requirements.

4.8 FOREGROUND JOB LIMIT PROMPT

This parameter determines the maximum number of foreground jobs that can be active in the system at any one time. A job executes under SCI in either the foreground or background mode. A job can be made up of one or more cooperating tasks. The default value is 50.

4.9 BATCH JOB LIMIT PROMPT

This parameter determines the maximum number of batch jobs that can be active in the system at any one time. The default value is 10.

4.10 PHYSICAL MEMORY SIZE PROMPT

DNOS determines the actual amount of memory installed on the computer before allocating memory for the operating system and user tasks. Since DNOS allocates memory dynamically, a user task normally has no control over the absolute load address.

Should you want to reserve a block of memory for special purposes, enter a value for the amount of memory (in K bytes) that you do not want DNOS to access. This reserved block resides in the high end of memory. You should not modify this parameter unless you need to reserve a block of memory. The default value is 0, which indicates that DNOS reserves no memory and dynamically allocates all of the installed memory for its own use.

4.11 TIME SLICING PROMPT

This parameter determines whether the system will recognize time slicing. With time slicing, the task scheduler allots a specified number of system time units to each task that requests to become active. When a task uses up its allocated time, the task scheduler determines whether it should activate another task that has the same or higher priority level. If time slicing is not enabled, the task with the highest priority executes until it terminates or suspends itself. The default value is YES.

4.12 SLICE VALUE PROMPT

This parameter determines the length, in system time units, of the time slice allotted to a task. One system time unit is equal to 50 milliseconds. If a task does not terminate by the end of the time slice, the task scheduler suspends the task to allow other tasks to execute. Activate this parameter only if you enable time slicing. The default value is 1.

5

Dynamic Configuration

5.1 INTRODUCTION

With DNOS, you can modify your system configuration to suit many of your needs. The System Configuration utility performs the following operations on the disk image of an existing system:

- List the device configuration
- Show the country code
- Add, change, and delete devices
- Modify various system table area parameters
- Modify the state of a device
- Change the country code for a specific installation
- Fine tune the system scheduling parameters

On a running system, the System Configuration utility also performs these operations:

- Fine tune scheduling parameters
- List the device configuration
- Show the country code
- Modify the state of a device

The System Configuration utility cannot add, delete, or modify special devices or communications devices.

This section discusses activating and terminating the System Configuration utility; listing and modifying the device configuration; modifying the system table parameters, the country code, the scheduler, and swap parameters; showing and modifying the command definition tables; and creating a new system with the System Configuration utility.

Some of the SCI commands discussed in this section display or modify the system image currently running in memory. If the System Configuration utility is active, most of these SCI commands use the disk image of the system that you specify. The discussion of each command explains which system the command uses.

The System Configuration utility writes the specified modifications to a system image; it does not modify the configuration files. Therefore, if you execute the System Generation utility after you have modified your system, the System Generation utility listing of the configuration does not contain your modifications; the System Generation utility uses different files than the System Configuration utility.

The Creating a New System paragraph in this section demonstrates how to create a new system image using the System Configuration utility.

(The *DNOS System Command Interpreter (SCI) Reference Manual* contains additional information about SCI commands discussed in this section.)

5.2 ACTIVATING THE SYSTEM CONFIGURATION UTILITY

The Execute System Configuration Utility (XSCU) command activates a system configuration session. The XSCU command must be executed before the System Configuration utility can modify a system image on a disk. When you execute the XSCU command, the following prompts appear:

```
[] XSCU

        EXECUTE SYSTEM CONFIGURATION UTILITY
              SYSTEM VOLUME: devicename@                (*)
                SYSTEM NAME: alphanumeric
```

You can modify any system by supplying the appropriate system name and the disk volume containing the executable system image. The System Configuration utility displays the current device configuration for the system.

When the System Configuration utility is active, the following SCI commands operate on the system image specified with the XSCU command:

- List Device Configuration (LDC)
- Modify Country Code (MCC)
- Modify Device Configuration (MDC)
- Modify Device Status (MDS)
- Modify Scheduler/Swap Parameters (MSP)
- Modify System Table Sizes (MST)
- Show Country Code (SCC)

If you perform one of these commands without activating the System Configuration utility, the command either operates on the system image currently running in memory or returns an error message indicating that the command operates only on a disk image of a system.

NOTE

If you modify the system that is running in memory, your modifications take effect immediately. If you modify the disk image of a system, your modifications are not written to the disk until you terminate the System Configuration utility with the Quit System Configuration Utility (QSCU) command.

5.3 TERMINATING THE SYSTEM CONFIGURATION UTILITY

The Quit System Configuration Utility (QSCU) Command terminates the System Configuration utility. When you execute the QSCU command, the following prompt appears:

```
[] QSCU

        QUIT CONFIGURATION UTILITY SESSION
                  ABORT?: YES/NO              (NO)
```

To save the configuration, accept the initial value (NO) by pressing the Return key. To abort your modifications for this session, enter YES. If you are modifying the disk image of a system and do not abort the configuration session, the system writes your modifications to the system name specified with the XSCU command. To verify that the changes you made are correct, perform an IPL after executing the QSCU command. (See the Creating a New System paragraph in this section.)

5.4 LISTING THE DEVICE CONFIGURATION

The List Device Configuration (LDC) command displays the system device configuration. During a system configuration session the LDC command lists the device configuration of the system specified with the XSCU command; otherwise the LDC command lists the device configuration of the current system in memory.

When you execute the LDC command, the following prompt appears:

```
[] LDC

  LIST DEVICE CONFIGURATION
      LISTING ACCESS NAME: [pathname@]
```

If you do not enter a response to the LISTING ACCESS NAME prompt, the LDC command displays the output listing at your terminal; any sequential output device or file can be used for output. Figure 5-1 shows a sample output listing produced by the LDC command.

NAME	DEVICE TYPE	CRU/ TILINE	MUX CHANNEL	INTERRUPT	CHASSIS	POSITION	MODE	8-BIT CHARS
CR01	CARD READER	0040		4			DIAG	YES
DS01	TILINE DISK	F800		13			ON	NO
DS02	TILINE DISK	F800		13			ON	NO
DS03	TILINE DISK	F810		12			OFF	NO
LP01	LP: SERIAL	0460		7	1	14	SPLR	YES
LP04	LP: SERIAL	FA00	2	15			ON	NO
MT01	MAG TAPE	F880		9			ON	NO
ST01	ASR - 733	0000		6			ON	NO
CS01	CASSETTE	0000		6			ON	NO
CS02	CASSETTE	0000		6			ON	NO
ST02	VDT - 911	0400		7	1	16	ON	NO
ST03	VDT - 911	0420		7	1	17	ON	NO
ST05	VDT - 931	FA00	1	15			ON	NO
LP03	LP: SERIAL	FA00	1	15			ON	NO
ST06	VDT - 931	FA00	3	15			ON	NO
ST98	VIRTUAL VDT	NONE		NONE			ON	NO
ST99	VIRTUAL VDT	NONE		NONE			ON	NO
VT01	VIRTUAL BASE	EFFF		NONE			DIAG	NO

Figure 5-1. LDC Output Example

The last column in Figure 5-1 (labeled 8-BIT CHARS) indicates whether this device accepts 8-bit ASCII characters. For example, LP01 uses 8-bit ASCII codes; LP04 does not.

NOTE

The virtual terminal numbers start at ST99 and are numbered backward for the number of virtual terminals specified. For example, if 10 virtual terminals were included in the system, the virtual terminal numbers would be ST90 through ST99 and VT01.

5.5 MODIFYING THE DEVICE CONFIGURATION

The Modify Device Configuration (MDC) command deletes, changes, or adds devices on the system. You can use this command only after executing the XSCU command. Modifications are not made to the system image on disk until you quit the configuration session with the QCSU command. If you add a device that is not in your current configuration, execute the Patch Generated System (PGS) SCI command with the PATCH KERNAL prompt equal to YES. This insures that you have all the latest updates to the device service routines.

When you execute the MDC command, the following prompt appears:

```
[] MDC

   MODIFY DEVICE CONFIGURATION
         DATA DISK/VOLUME: [pathname@]          (*)
```

NOTE

The MDC command cannot be used to modify communications devices.

Enter a response to the DATA DISK/VOLUME prompt if you are adding or modifying new devices. After you respond to the DATA DISK/VOLUME prompt, or if you press the Return key (accept the default value), the following prompt appears:

```
MODIFY DEVICE CONFIGURATION
 COMMAND(CHANGE,ADD,DELETE): {C/A/D}        (C)
```

The prompts that appear next depend on your response to the COMMAND (CHANGE,ADD,DELETE) prompt:

- A Delete (D) response causes the DELETE DEVICE prompt to appear:

```
DELETE DEVICE
        DEVICE NAME: devicename
```

- A Change (C) response causes the CHANGE DEVICE prompt to appear:

```
CHANGE DEVICE
        DEVICE NAME: devicename
```

- An Add (A) response causes the ADD DEVICE prompt to appear:

```
ADD DEVICE
     DEVICE TYPE: character(s)
```

When changing or adding a device, the System Configuration utility displays the following prompts for the associated parameter values:

```
     CASSETTE OPENS VALIDATED?: YES/NO        (YES)
               CHARACTER QUEUE: integer       (*)
                   CRU ADDRESS: integer       (*)
          DEFAULT RECORD SIZE: integer        (*)
                        DRIVES: integer       (*)
             EXPANSION CHASSIS: [integer]     (*)
            EXPANSION POSITION: [integer]     (*)
       EXTENDED CHARACTER SET?: YES/NO        (*)
                     INTERRUPT: integer       (*)
              OPENS VALIDATED?: YES/NO        (*)
  PRINT MODE (SERIAL/PARALLEL): {S/P}         (*)
                TILINE ADDRESS: integer       (*)
                      TIME OUT: integer       (*)
                 TERMINAL TYPE: integer       (*)
                INTERFACE TYPE: character(s)  (*)
                SWITCHED LINE?: YES/NO        (*)
                     BAUD RATE: integer       (*)
                  ACU PRESENT?: YES/NO        (*)
                       ACU CRU: integer       (*)
            FULL DUPLEX MODEM?: YES/NO        (*)
                         ECHO?: YES/NO        (*)
                    VDT TYPE: integer         (*)
           ASSOCIATED PRINTER?: YES/NO        (*)
                         SPEED: integer       (*)
                   CDT NUMBER: integer        (*)
                     CDE MASK: integer        (*)
                CHANNEL NUMBER: integer       (*)
           NUMBER OF TERMINALS: integer       (*)
```

NOTE

Only those prompts that apply to a particular device appear. For instance, CASSETTE OPENS VALIDATED would not apply to a VDT and therefore would not appear.

5.6 MODIFYING SYSTEM TABLE PARAMETERS

Some of the preanswered parameters of the System Generation utility have default values for the various system table area parameters. The following paragraphs describe how to monitor these table areas and modify them when necessary.

5.6.1 DNOS Performance Measurement Utility

The Execute Performance Data (XPD) command, which operates independently of the XSCU command, displays the system performance data. There are no prompts, and the XPD command always displays the performance of the system image currently running in memory. Figure 5-2 shows an example of the XPD display.

When you execute XPD, the F1 key resets the display and the Command key terminates the display. Because the XPD command samples the counters at specified intervals (not constantly), the percentages in the display do not show the current value; rather, they show the values as of the last display update. Some values accumulate over the entire period between display initializations; other values only apply to the interval between the previous and current display updates.

To write the XPD display to a file or printer, assign the logical name SCREEN to the file with the Assign Logical Name (ALN) command:

```
[] ALN

    ASSIGN LOGICAL NAME
             LOGICAL NAME: SCREEN
            RESOURCE TYPE: NONE

    ASSIGN LOGICAL NAME
          ACCESS NAMES(S): SYS1.MYDIR.XPDLIST
             GLOBAL NAME?: NO
```

Or, assign the logical name SCREEN to a spooler device:

```
[] ALN

    ASSIGN LOGICAL NAME
             LOGICAL NAME: SCREEN
            RESOURCE TYPE: SPOOL

 ASSIGN SPOOLER PARAMETERS
             ANS1 FORMAT?: NO
  LISTING DEVICE OR CLASS: LP01
     NUMBER OF LINES/PAGE: 50
                    FORM: <cr>
         NUMBER OF COPIES: 1
            BANNER SHEET?: NO
             GLOBAL NAME?: NO
```

Once this is done, press the Print key each time you want the display written to the file or printer.

The field descriptions for Figure 5-2 are listed in Table 5-1.

```
                    D N O S   P E R F O R M A N C E

Number of Clock Ticks:        6685                          Count Active  Wom
      Number Ticks    %  Spot %  Counters:                Tasks:    36      1     0
DS01 U:          43     0     7   Jobs  Cmp:       0      Jobs :    10      1     0
CPU  U:         229     3    24   Tasks Cmp:       0    Memory:   Use     Max   Avail
Schd U:        6460    96    76   Seg   Mgr:       0  Sys Table:  5688    6772  18834
FM T U:          15     0     1   File  Mgr:     177  JCA Table:  2082    2524  12288
Ldr  U:           1     0     0   IPC Calls:       0   SM Table:  4832    5038  12288
Mp 1 U:          75     1     9   Roll Outs:       0   FM Table:  5660    6032  12288
FM X U:          41     0     5   FM Queues:      15   Buf Area:   2848          4096
DS02 U:           0     0     0   Ovly  Lds:       7   User Mem: 355680        956384
DS03 U:           0     0     0   Name  Mgr:       1      Rolled Out: Segments -    0
DS04 U:           0     0     0   IOU Calls:       1              Disk Records -    0
DS05 U:           0     0     0   WOT Calls:       0      Disk Res Tasks in Mem:   31
DS06 U:           0     0     0   JCA Expds:       0  Cache List: Buf -  61 Prg -  16
```

Figure 5-2. Execute Performance Display Output Listing

Table 5-1. Field Description for XPD Display

Field	Description
Number of Clock Ticks	Number of clock ticks that have elapsed since the display was last initialized (for 60 Hz power, 1 tick = 8.33 ms; for 50 Hz power, 1 tick = 10 ms)
Number Ticks	Number of clock ticks during which this item was busy
%	Percent of clock ticks during which this item was busy since the display was last initialized
Spot %	Percent of clock ticks during which this item was busy since the display was last updated
Counters	Counts of factors since the last initialization of display
DS01 U	Use figures for the disk unit DS01
CPU U	Use of the central processing unit
Schd U	Task scheduler use (includes idle time)
FM T U	File management task use
Ldr U	Task loader use
Mp1 U	Map file 1 use. (Virtually all task code executes in map file 1.)
FM X U	File management XOP level processor (fast transfer) use
DS02 U	Use figures for disk unit DS02

Table 5-1. Field Description for XPD Display (Continued)

Field	Description
DS03 U	Use figures for disk unit DS03
DS04 U	Use figures for disk unit DS04
DS05 U	Use figures for disk unit DS05
DS06 U	Use figures for disk unit DS06
Jobs Cmp	Number of jobs completed
Tasks Cmp	Number of tasks completed
Seg Mgr	Number of segment manager SVCs issued
File Mgr	Number of file management SVCs issued
IPC Calls	Number of IPC SVCs issued
Roll Outs	Number of tasks rolled out. (Indicates whether more memory would improve system performance.)
FM Queues	Number of file management requests queued (that is, not handled by fast transfer)
Ovly Lds	Number of system overlays loaded
Name Mgr	Number of Name Management SVCs
IOU Calls	Number of I/O SVCs for Utility operations
WOT Calls	Number of times the system table area has become full
JCA EXPDS	Number of times the user JCAs have been rolled from memory in order to expand. (If this figure is large, the system programmer can increase the medium JCA size using the Modify Scheduler/Swap Parameter (MSP) command.)
Tasks	Current count of all tasks, active tasks, tasks on WOM queue, and tasks on the WOT queue. (The WOM queue is a queue of tasks that are waiting for memory. The WOT queue is a queue of tasks waiting for system table area.)
Jobs	Current count of all jobs, active jobs, jobs with tasks on WOM queue, and jobs with tasks on WOT queue
Memory	Byte count of memory currently in use, maximum memory used since the display began and the existing amount of memory
Sys Table	System table area
JCA Table	System job communications area
SM Table	Segment management table area

Table 5-1. Field Description for XPD Display (Continued)

Field	Description
FM Table	File management table area
Buf Area	I/O buffer table area
User Mem	User memory
Rolled Out:	
Segments	Number of segments on roll file
Disk Records	Number of disk records in use on roll file
Disk Res	
Tasks in Mem	Number of tasks in memory, including those that are memory-resident
Cache List:	
Buf-	Number of buffers on the cache list
Prg-	Number of program segments on the cache list

5.6.1.1 Resource Use. The DS0n U, CPU U, Schd U, FM T U, Ldr U, Mp1, and FM X U parameters in Figure 5-2 and Table 5-1 reflect a general indication of the I/O or CPU-bound characteristics of your system. You can use these values to optimize the file arrangement of your system, thus improving the efficiency.

High values in the Schd U (Scheduler) field indicate little user activity.

The FM T U and FM X U values show file management activity. The ratio of FM T U (task level) to FM X U (XOP—fast transfer—level) processing reveals the operation efficiency. The more time spent in XOP-level processing, the faster the file management operates. Adding memory to the system or changing the cache limit with the Modify Scheduler/Swap Parameters (MSP) command can increase this ratio.

The Ldr U (task loader) value shows the system activity involved with loading tasks and with swapping procedure segments, program segments, and overlays. Generally, systems with large memories have smaller values than systems with small memories.

The Mp1 (map file 1) reflects general user activity and system tasks not executing as part of the kernel.

5.6.1.2 Counters. The center column in Figure 5-2 (Counters) indicates the system's general activity. The Roll Outs value shows whether more memory would improve system performance.

5.6.1.3 Memory Use. The right-hand column in Figure 5-2 shows memory use.

Sys Table, JCA table, SM Table, FM table, Buf Area, and User Mem show the amount of memory required for system tables. If the table areas are not appropriate, modify these values with the Modify System Table Sizes (MST) command.

The Rolled Out Segments, Disk Records, and Disk Res Tasks in Mem, as well as Cache List Buf and Prg, indicate disk use. A consistently high value for Rolled Out Segments indicates that more memory would improve system performance. High values for Disk Res Tasks in Mem, Cache List Buf, and Cache List Prg indicate segments are held in memory that would otherwise have to be retrieved from disk. If frequently used disk-resident tasks are retained in memory, performance is better than if each bid requires disk access. The Special Features section of the *DNOS Systems Programmer's Guide* has information on performance optimization.)

5.6.2 Modifying System Table Area Size

Some of the preanswered parameters of the System Generation utility have default values for the various system table area (STA) parameters. Usually, these values do not have to be changed after you generate a system image. The Modify System Table Sizes (MST) command modifies these table area parameters when necessary, but the MST command cannot modify the system image currently running in memory.

To use the MST command, you must first execute the XSCU command and specify a system image on a disk. The table area changes made to a disk resident system image are not written to the disk image until you execute the QSCU command. You must then perform an IPL using the modified system image to determine the results of the MST operation. Once the modified system image is running in memory, you can use the XPD command to check the results of the modification.

To modify the size of one or more STA parameters, execute the MST command. The following prompts appear:

```
   [] MST

MODIFY SYSTEM TABLE SIZES
          SYSTEM TABLE AREA: {integer/ALL/MAX}  (*)
 SEGMENT MANAGER TABLE AREA: integer            (*)
    FILE MANAGER TABLE AREA: integer            (*)
          BUFFER TABLE AREA: integer            (*)
            SYSTEM JCA SIZE: integer            (*)
```

The initial value for each of these prompts is the current area parameter. The Preanswered Parameters section of this manual and the *DNOS System Command Interpreter (SCI) Reference Manual* discuss these parameters.

In the following example, the MST command modifies the sizes of the segment manager table (to 6144 bytes) and the file manager table (to 2048 bytes).

Execute the MST command.

```
   [] MST

MODIFY SYSTEM TABLE SIZES
          SYSTEM TABLE AREA: 12288
 SEGMENT MANAGER TABLE AREA: 2264
    FILE MANAGER TABLE AREA: 1024
          BUFFER TABLE AREA: 2048
            SYSTEM JCA SIZE: 12288
```

Enter 6144 after the SEGMENT MANAGER TABLE AREA prompt and 2048 after the FILE MANAGER TABLE AREA prompt. Accept the initial values for the SYSTEM TABLE AREA, BUFFER TABLE AREA, and SYSTEM JCA SIZE prompts by pressing the Return key.

```
MODIFY SYSTEM TABLE SIZES
          SYSTEM TABLE AREA: 12288 <cr>
 SEGMENT MANAGER TABLE AREA: 6144
    FILE MANAGER TABLE AREA: 2048
          BUFFER TABLE AREA: 2048  <cr>
            SYSTEM JCA SIZE: 12288 <cr>
```

Modifying the system table areas affects the system memory requirements; this may reduce or increase memory available for other uses.

5.7 COUNTRY CODE

You can change the collating sequence by changing the country code. The System Configuration utility uses Show Country Code and Modify Country Code to display or change the collating sequence of the system.

5.7.1 Show Country Code

The Show Country Code (SCC) command displays the collating sequence (country code) used by the system. If you are not in a system configuration session, the SCC command displays the collating sequence of the system image currently running in memory. If you are in a system configuration session, the SCC command displays the collating sequence of the system image specified when you executed the XSCU command. When you execute the SCC command, the following prompt appears:

```
[] SCC

 SHOW COUNTRY CODE
     LISTING ACCESS NAME: [pathname@]
```

Any sequential output device can be the listing access name. If you accept the default, the SCC command displays the output listing at your terminal. The following example shows the installed country code is the United States:

```
[] SCC

 SHOW COUNTRY CODE
     LISTING ACCESS NAME: <cr>

COUNTRY = USA
```

5.7.2 Modify Country Code

The Modify Country Code (MCC) command allows you to change the country code and the collating sequence. You can modify the country code of a system image on a disk only after first executing the XSCU command. You cannot directly modify the country code of the system image currently running in memory. MCC does not write modifications to the system image on disk; these modifications are written to the system image on a disk when you execute the QSCU command. When you execute the MCC command, this prompt appears:

```
[] MCC

     MODIFY COUNTRY CODE
            COUNTRY NAME: alphanumeric  (*)
```

The MCC command displays the current country code as the initial value. Table 5-2 shows the valid responses to the COUNTRY NAME prompt.

Table 5-2. Country Codes

Abbreviation	Country
AU	Austria
B	Belgium
D	Denmark
FI	Finland
FRA	France
FWP	French Word Processing
G	Germany
J	Japan
N	Norway
SP	Spain
SWE	Sweden
SWI	Switzerland
UK	United Kingdom
USA	United States

WARNING

Incorrect use of this command can cause key indexed files to become unusable. Modify the country code only if you want the collating sequence of the new country code.

The following steps demonstrate how to modify the country code of a system image on disk:

1. Execute the XSCU command and specify the system image on a disk that you wish to modify.

```
[] XSCU

      EXECUTE SYSTEM CONFIGURATION UTILITY
            SYSTEM VOLUME: SYS1
              SYSTEM NAME: SYSNAME
```

2. Execute the MCC command:

```
[] MCC
```

3. When the prompt appears, specify the new country code:

```
MODIFY COUNTRY CODE
          COUNTRY NAME: UK
```

4. Execute the QSCU command and accept the initial value (NO) of the ABORT prompt by pressing the Return key.

```
[] QSCU

  QUIT SYSTEM CONFIGURATION UTILITY
                    ABORT?: NO
```

5. Perform an IPL using the modified system image.

6. Verify the results of your modification by using the SCC command.

5.8 MODIFYING SCHEDULER/SWAP PARAMETERS

The Modify Scheduler/Swap Parameters (MSP) command can fine tune scheduling and swapping algorithms to improve throughput. This command should be used only by system programmers who are very familiar with the operating system. If you are in a system configuration session, MSP modifies the system image on a disk specified with the XSCU command; otherwise the MSP command modifies the running system. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual* for specific prompt details.)

When you execute the MSP command, the following prompts appear:

```
 [] MSP

MODIFY SCHEDULER/SWAP PARAMETERS

MODIFY MISCELLANEOUS VALUES
  FRONT PANEL DISPLAY-LEFT: alphanumeric     (*)
 FRONT PANEL DISPLAY-RIGHT: alphanumeric     (*)
        CLOCK TICKS/SLICE: integer           (*)
   END ACTION LIMIT(STU'S): integer          (*)
  MEMORY ERROR SAMPLE RATE: integer          (*)
          MEDIUM JCA SIZE: integer           (*)
```

After you answer the preceding prompts, these prompts appear:

```
MODIFY SCHEDULER PARAMETERS
   INITIAL PRIORITY VALUES: integer exp list (*)
    WEIGHT OF JOB PRIORITY: integer exp list (*)
    DYNAMIC PRIORITY RANGE: integer exp list (*)
        AGING ON PRIORITY?: YES/NO...YES/NO  (*)
     TICS BETWEEN SUSPENDS: integer          (*)
```

After you answer the preceding prompts, these prompts appear:

```
MODIFY SWAPPING PARAMETERS
          CACHABLE BUFFERS: integer          (*)
 CACHABLE PROGRAM SEGMENTS: integer          (*)
   MINIMUM SUSPENSION TIME: integer          (*)
    MINIMUM EXECUTION TIME: integer          (*)
 STATE >24 IMMEDIATE ROLL?: YES/NO           (*)
  LOADER TIME DELAY(STU'S): integer          (*)
    JCA EXPANSION BOUNDARY: integer          (*)
```

If the system being modified is not the running system, these prompts appear:

```
MODIFY MORE MISCELLANEOUS VALUES
      FOREGROUND JOB LIMIT: integer          (*)
           BATCH JOB LIMIT: integer          (*)
      PHYSICAL MEMORY SIZE: integer          (*)
                 SITE NAME: alphanumeric     (*)
```

5.9 COMMAND DEFINITION TABLES

Each keyboard device on the system has an associated command definition table (CDT), and each CDT has a Command Definition Entry (CDE) for each character used for a keyboard bid of a task. For instance, the standard CDTs for terminals include CDEs for the exclamation point (!) as the character to bid the SCI task. When you press and release the Attention key and then press the exclamation point (!) at a terminal, you bid SCI. The Show Command Definition Table (SCDT) command lists the CDT contents, and the Modify Command Definition Table (MCDT) command modifies the CDT contents.

Each time you generate a new system image, the load process creates a new set of CDTs for that system using the CDTs supplied for the S$SHIP system.

5.9.1 Show Command Definition Table (SCDT)

To list the CDT for a particular type of device, execute the SCDT command. The following prompts appear:

```
[] SCDT

SHOW COMMAND DEFINITION TABLE
              VOLUME NAME: [alphanumeric@]
              SYSTEM NAME: alphanumeric
   DEVICE TYPE/CDT NUMBER: {911/940/931/733/TPD/SD/VT/integer}
      LISTING ACCESS NAME: [pathname@]
```

Respond with the appropriate volume name and system name. The VOLUME NAME prompt default is your system volume. The response to the LISTING ACCESS NAME can be any file or device; the default is your terminal. To list a particular CDT, use either the device type (for instance, 911) or the CDT number. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual* for a complete list of CDT numbers.) Figure 5-3 shows the listing of the default CDT (used by S$SHIP) for a 911 device.

```
                         CDES FOR COMMAND DEFINITION TABLE NUMBER:  >A

2100 FF0A FF01 0000 0000 2020 2020 2020 2020      !. .. .. .. ..
1880 FF0A FF16 0000 0000 2020 2020 2020 2020      .. .. .. .. ..
4E30 FF0A FF91 0600 0100 4E45 5457 4F52 4B20      NO .. .. .. .. NE TW OR K
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
0000 0000 0000 0000 0000 0000 0000 0000 0000      .. .. .. .. .. .. .. .. ..
```

Figure 5-3. Command Definition Table Listing

This default CDT contains three entries: the first entry defines the exclamation point (!) as the SCI bid character, the second entry defines the hard break character, and the third entry is for network software. (Refer to the *DNOS System Command Interpreter (SCI) Reference Manual* for a complete explanation of the SCDT listing.)

5.9.2 Modify Command Definition Table (MCDT)

The MCDT command defines as many as 16 different characters, the task associated with each character, and the bid parameters for each character. Use the MCDT command to modify the CDT for a particular type of device. When you execute the MCDT command the following prompts appear:

```
[] MCDT

MODIFY COMMAND DEFINITION TABLE
             VOLUME NAME: [alphanumeric@]
             SYSTEM NAME: alphanumeric
          ADD OR DELETE: {A/ADD/D/DELETE}              (ADD)
  DEVICE TYPE/CDT NUMBER: {911/940/931/733/TPD/SD/VT/integer}
```

If you respond ADD to the ADD OR DELETE prompt, the following prompts appear:

```
MODIFY COMMAND DEFINITION TABLE
         FIVE WORD ENTRY: integer,integer,integer,integer,integer
         DEFAULT USER ID: [character(s)]
```

If you respond DELETE to the ADD OR DELETE prompt, the following prompt appears:

```
MODIFY COMMAND DEFINITION TABLE
 CHARACTER TO DELETE (HEX): integer
```

In the following example, the MCDT command adds a CDE to CDT number > A. After you press the Attention key, followed by a capital letter U (hexadecimal character code > 55), the new CDE bids task > 99 on .S$UTIL:

```
[] MCDT

MODIFY COMMAND DEFINITION TABLE
             VOLUME NAME: MYDISK
             SYSTEM NAME: SYSTEM1
          ADD OR DELETE: ADD
  DEVICE TYPE/CDT NUMBER: >A

MODIFY COMMAND DEFINITION TABLE
         FIVE WORD ENTRY: >5500,>FF0A,>FF99,0,0
         DEFAULT USER ID: MARTY
```

NOTE

If you add a new CDE for a keyboard device, all the CDE masks associated with keyboard devices using the new CDE may need to be changed. Use the Modify Device Configuration (MDC) command to change the masks. If you delete the CDE entry for the hard break character (> 18), the > 18 code should not be used for anything else.

The next example shows how you can delete the CDE associated with the character P (hexadecimal character code > 50) from CDT number > A (the default CDT for 911 devices):

```
[] MCDT

MODIFY COMMAND DEFINITION TABLE
             VOLUME NAME: MYDISK
             SYSTEM NAME: SYS2
          ADD OR DELETE: DELETE
  DEVICE TYPE/CDT NUMBER: 911

MODIFY COMMAND DEFINITION TABLE
 CHARACTER TO DELETE (HEX): >50
```

A separate set of CDTs exists for each system. If you modify any entries in a CDT for a system that you subsequently use as the input configuration for a new system generation, the newly generated system does not contain the same CDTs as the old one. It contains the same CDTs as the original S$SHIP system. You can install the CDTs of the old system in the new system by using the Copy/Concatenate (CC) command. The set of CDTs for each system resides under the directory .S$CDT. For example, the CDTs for a system named SYS1 reside in the file .S$CDT.SYS1. To install the CDTs for SYS1 into another system named SYS2, copy the file .S$CDT.SYS1 to the file .S$CDT.SYS2, as shown in the following example:

```
[] CC

 COPY/CONCATENATE
     INPUT ACCESS NAME(S): SYS1.S$CDT.SYS1
       OUTPUT ACCESS NAME: SYS2.S$CDT.SYS2
                 REPLACE?: YES
    MAXIMUM RECORD LENGTH: <cr>
```

5.10 CREATING A NEW SYSTEM

The System Configuration utility can increase system table sizes and delete, add, or modify standard devices in the disk image of a DNOS system. You cannot use it to add, change, or delete devices from the running system.

If you use the System Configuration utility to modify a system, you should first copy the disk image to another program file, make the modifications to that program file, then use the Test Generated System (TGS) command to set that system as a trial system before performing an IPL. If the trial system is operational, use the Install Generated System (IGS) command to make it permanent. The following step-by-step procedure describes the series of commands you use to create a new system. SYS1 is the name of the system disk in this example.

1. Copy the current system image using the Copy Directory (CD) command:

```
[] CD

  COPY DIRECTORY
            INPUT PATHNAME: SYS1.<system name>
           OUTPUT PATHNAME: SYS1.TEMPDIR
       CONTROL ACCESS NAME: <cr>
       LISTING ACCESS NAME: <cr>
                   OPTIONS: ADD
       EXECUTION MODE(F,B): FOREGROUND
```

2. Use the Modify File Name (MFN) command to change the name of the copy. Then move the copy from the SYS1.TEMPDIR directory to the SYS1 directory:

```
[] MFN

     MODIFY FILE NAME
              OLD PATHNAME: SYS1.TEMPDIR.<system name>
              NEW PATHNAME: SYS1.TEMPDIR.S$NEWSYS
                  REPLACE?: YES

[] CD

  COPY DIRECTORY
            INPUT PATHNAME: SYS1.TEMPDIR
           OUTPUT PATHNAME: SYS1
       CONTROL ACCESS NAME: <cr>
       LISTING ACCESS NAME: <cr>
                   OPTIONS: ADD
       EXECUTION MODE(F,B): FOREGROUND
```

3. Execute the XSCU command as shown:

```
[] XSCU

      EXECUTE SYSTEM CONFIGURATION UTILITY
             SYSTEM VOLUME: SYS1
               SYSTEM NAME: S$NEWSYS
```

   The System Configuration utility displays a listing of the current device configuration. To clear the display on a VDT, press the Command key.

4. Execute the MDC command. This command adds new devices and changes or deletes existing devices.

5. After adding all the desired devices to the system, you should add more system table area by executing the MST command. Respond to the SYSTEM TABLE AREA prompt with MAX, and accept the defaults for the remaining prompts. MAX allocates the maximum number of bytes available.

```
[] MST

MODIFY SYSTEM TABLE SIZES
          SYSTEM TABLE AREA: MAX
 SEGMENT MANAGER TABLE AREA: <cr>
    FILE MANAGER TABLE AREA: <cr>
          BUFFER TABLE AREA: <cr>
            SYSTEM JCA SIZE: <cr>
```

   The System Configuration utility displays the current value for each of these prompts as the initial value.

6. Execute the QSCU command, answering NO to the ABORT prompt:

```
[] QSCU

          QUIT CONFIGURATION UTILITY SESSION
                     ABORT?: NO
```

7. When you execute the QSCU command, the System Configuration utility writes your modifications to the disk image of the copied system. To test the new system, execute the TGS command:

```
[] TGS

  TEST GENERATED SYSTEM
        TARGET DISK/VOLUME: SYS1
                SYSTEM NAME: S$NEWSYS
```

8. Perform an IPL to initialize the test system. Log on to the system and try the new devices to insure you added them correctly. If some devices are incorrectly defined, begin again at step 3 to correct the device definitions.

9. When you are satisfied with the system, make it the permanent system by executing the IGS command:

```
[] IGS

   INSTALL GENERATED SYSTEM
        TARGET DISK/VOLUME: SYS1
                SYSTEM NAME: S$NEWSYS
```

10. After successfully testing and installing the new system, delete the temporary directory:

```
[] DD

  DELETE DIRECTORY
                  PATHNAME: SYS1.TEMPDIR
       LISTING ACCESS NAME: <cr>
             ARE YOU SURE?: YES
```

6

System Generation Examples

6.1 INTRODUCTION

This section is to help you complete the sysgen process for any installation. The examples given here follow the format required to perform all system generations; however, the details for a specific installation can vary according to the needs of that installation. In these examples, the values in parentheses are the default values the System Generation utility displays.

6.2 EXAMPLE ONE — COMMUNICATIONS

In this example, the System Generation utility generates the communications facilities using the following:

- A 990A13 chassis
- A CI403 interface for three 931 VDTs on channels 0, 1, and 2
- A CI403 interface for one 850 printer on channel 3
- Two DS80 disk drives at TILINE address >F800, interrupt 13
- One MT1600 tape drive at TILINE address >F880, interrupt 9
- One CP502 interface (BCAIM) at CRU address >080, interrupt 7

Figure 6-1 shows the desired configuration for this example.

	LEFT SIDE (P1)					RIGHT SIDE (P2)			
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1	/12 LR SMI				1	/12 LR SMI			
2	/12 LR AU			6	2	/12 LR AU			15
3	CACHE MEMORY			10	3	CACHE MEMORY			8
4	MEMORY			11	4	MEMORY			12
5	MEMORY			7	5	MEMORY			3
6		>1E0		11	6		>1C0		11
7	DS80	>1A0	>F800	9	7	DS80	>180	>F800	13
8	MT1600	>160	>F880	8	8	MT1600	>140	>F880	9*
9		>120		8	9				
10	CI403	>0E0	>F980	12	10	CI403	>0C0	>F980	11
11		>0A0		3	11	CP502	>080		7
12		>060		14	12		040		4
13		020		15	13		>000		6

NOTE:

* THE P2 SIDE IS USER PROGRAMMABLE TO BE INTERRUPT 9 OR 14.

2279337

Figure 6-1. Example 1 — Configuration Table

The following example generates the system shown in Figure 6-1.

```
[] XSGU

EXECUTE SYSTEM GENERATION UTILITY
       DATA DISK/VOLUME: DS01
     TARGET DISK/VOLUME: DS01
    INPUT CONFIGURATION:
   OUTPUT CONFIGURATION: EXAMPLE1
     ASSEMBLE AND LINK?: NO

***  SYSGEN EXECUTION BEGINS  ***
KIF?(YES)
SITE NAME? AUSTIN
SECURITY? (NO)
APPLICATION PROGRAM FILE?
LOG DEVICE?
ATTENTION DEVICE?
RESTART ID? (0)
CARD 1?
CARD 2?
USER SVC TABLE PATHNAME?
COUNTRY CODE? (US)
LINE FREQUENCY? (60)
POWER FAIL RECOVERY? (NO)
ENTITY? DVC
```

If you are unsure of the proper response to a parameter, you can enter a question mark (?) and press the Return key for a message (similar to the one below). Messages also appear if you enter an invalid response.

For example, to receive information on the DEVICE TYPE prompt, respond with a question mark and press the Return key.

```
DEVICE TYPE? ?
```

The following information appears on the screen:

```
EACH TYPE OF DEVICE OR PERIPHERAL IN YOUR SYSTEM MUST BE DEFINED.
THE FOLLOWING MNEMONICS ARE USED:
         CRDR -- CARD READER    LP   -- LINE PRINTER
         DS   -- DISK           VDT  -- VIDEO DISPLAY TERMINAL
         ASR  -- ASR/733        KSR  -- KSR
         MT   -- MAG TAPE       COM  -- COMMUNICATIONS
         SD   -- SPECIAL DEVICE VT   -- VIRTUAL TERMINAL
IF MORE THAN ONE DEVICE OF THE SAME TYPE EXISTS, EACH MUST BE DEFINED
SEPARATELY. TO STOP ADDING DEVICES  ENTER "RETURN" WHEN PROMPTED.
```

The first two devices defined are disk drives at TILINE address > F800. The disk drive controller determines the type of disk installed and has no bearing on the system generation process.

```
DEVICE TYPE? DS
TILINE ADDRESS? (>F800)
DRIVES? (1) 2
DEFAULT RECORD SIZE? (768)
INTERRUPT? (13)
```

Next, you define a magnetic tape drive at TILINE address > F880.

```
DEVICE TYPE? MT
TILINE ADDRESS? (>F880)
DRIVES? (1)
INTERRUPT? (9)
```

At CRU address > 080 you generate a COM device. This device is a 3780 emulator using a CP502 board.

```
DEVICE TYPE? COM
BOARD TYPE? CP502
CRU ADDRESS? >0080
CHANNEL NUMBER 00 PROTOCOL? (NONE) 3780
ACU CRU ADDRESS? (>FFFF)
BID RESPONSE TIMEOUT IN SECONDS? (01)
RECEIVE ACK TIMEOUT IN SECONDS? (03)
RECEIVE DATA TIMEOUT IN SECONDS? (20)
IDLE LINE TIMEOUT IN SECONDS? (20)
TRANSMIT BID THRESHOLD? (15)
RECEIVE ENQ THRESHOLD? (15)
TRANSMIT ENQ THRESHOLD? (15)
RECEIVE NAK THRESHOLD? (0)
TRANSMIT NAK THRESHOLD? (0)
RECEIVE DATA THRESHOLD? (20)
INTERRUPT? (8) 7
```

Now generate three 931 VDTs at TILINE address > F980. Each 931 is connected to a different channel on a single CI403 board.

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11
```

Finally, generate a serial printer at TILINE address > F980. The printer uses channel 3 of the same CI403 board used by the three 931s.

```
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 3
INTERRUPT? (14) 11
DEVICE TYPE?
ENTITY?
```

Once all entities have been defined, you can terminate this sysgen session.

```
ENTITY?  STOP
BUILD? (NO) YES
***  CONFIG   IS NOW BEING BUILT  ***
***  D$SOURCE IS NOW BEING BUILT  ***
***  LINKSTREAMS ARE NOW BEING BUILT  ***
***  ALGSSTRM IS NOW BEING BUILT  ***
XSGU COMPLETE: <Press RETURN>
```

After you build the required files, you can complete the sysgen process in one of two ways. If you respond YES to the prompt ASSEMBLE AND LINK, sysgen assembles the file D$SOURCE and then links the appropriate system modules; if you accept the initial value for this prompt (NO), you must execute the ALGS command when the sysgen utility terminates.

If the system assembles and links without errors, you should execute the PGS, TGS, and IGS commands. (Refer to Section 3 for a description of all sysgen-related commands.) Figure 6-2 shows a listing of the configuration file produced by this system generation session:

```
KIF? YES
SITE NAME? AUSTIN
SECURITY? NO
APPLICATION PROGRAM FILE?
LOG DEVICE?
ATTENTION DEVICE?
RESTART ID? 0
CARD 1? 0
CARD 2? 0
USER SVC TABLE PATHNAME?
COUNTRY CODE? UNITED STATES
LINE FREQUENCY? 60
POWER FAIL RECOVERY? NO
ENTITY? DVC
DEVICE TYPE? DS                DS01    DS02
TILINE ADDRESS? >F800
DRIVES? 2
DEFAULT RECORD SIZE? 768
INTERRUPT? 13
DEVICE TYPE? MT                MT01
TILINE ADDRESS? >F880
DRIVES? 1
INTERRUPT? 9
DEVICE TYPE? COM               CM01
BOARD TYPE? CP502
CRU ADDRESS? >0080
CHANNEL NUMBER 00 PROTOCOL? 3780  * CM01
ACU CRU ADDRESS? >FFFF
BID RESPONSE TIMEOUT IN SECONDS? 1
RECEIVE ACK TIMEOUT IN SECONDS? 3
RECEIVE DATA TIMEOUT IN SECONDS? 20
IDLE LINE TIMEOUT IN SECONDS? 20
TRANSMIT BID THRESHOLD? 15
RECEIVE ENQ THRESHOLD? 15
TRANSMIT ENQ THRESHOLD? 15
RECEIVE NAK THRESHOLD? 0
TRANSMIT NAK THRESHOLD? 0
RECEIVE DATA THRESHOLD? 20
INTERRUPT? 7
DEVICE TYPE? VDT               ST01
VALIDATE OPENS? NO
TIME OUT? 0
CHARACTER QUEUE? 10
VDT TYPE? 931
ASSOCIATED PRINTER? NO
```

Figure 6-2. Example System Configuration File (Sheet 1 of 2)

```
SWITCHED LINE? NO
SPEED? 19200
INTERFACE TYPE? CI403
TILINE ADDRESS? >F980
CHANNEL NUMBER? 0
INTERRUPT? 11
DEVICE TYPE? VDT                    ST02
VALIDATE OPENS? NO
TIME OUT? 0
CHARACTER QUEUE? 10
VDT TYPE? 931
ASSOCIATED PRINTER? NO
SWITCHED LINE? NO
SPEED? 19200
INTERFACE TYPE? CI403
TILINE ADDRESS? >F980
CHANNEL NUMBER? 1
INTERRUPT? 11
DEVICE TYPE? VDT                    ST03
VALIDATE OPENS? NO
TIME OUT? 0
CHARACTER QUEUE? 10
VDT TYPE? 931
ASSOCIATED PRINTER? NO
SWITCHED LINE? NO
SPEED? 19200
INTERFACE TYPE? CI403
TILINE ADDRESS? >F980
CHANNEL NUMBER? 2
INTERRUPT? 11
DEVICE TYPE? LP                     LP01
VALIDATE OPENS? YES
PRINT MODE? SERIAL
EXTENDED? YES
SPEED? 4800
TIME OUT? 30
INTERFACE TYPE? CI403
TILINE ADDRESS? >F980
CHANNEL NUMBER? 3
INTERRUPT? 11
DEVICE TYPE?
ENTITY?
```

Figure 6-2. Example System Configuration File (Sheet 2 of 2)

6.3 EXAMPLE TWO — FIRST TIME SYSTEM GENERATION

In this example, suppose you want to include the following in your configuration:

- Two DS80 disk drives
- One 733 ASR
- Four 911 VDTs
- One 810 line printer

You specify an ASR as an attention device for the system log. No user-written tasks are bid when you perform an IPL. Also, you include KIF logic. The interrupt levels used are those for a 13-slot chassis (not the 990A13). You do not include an expansion chassis, since you do not respond to the parameters CARD 1 and CARD 2. You also do not include user-defined SVCs. Figure 6-3 shows the desired configuration for this example.

The following example generates the system shown in Figure 6-3.

```
[] XSGU

EXECUTE SYSTEM GENERATION UTILITY
       DATA DISK/VOLUME: DS01
     TARGET DISK/VOLUME: DS01
    INPUT CONFIGURATION:
   OUTPUT CONFIGURATION: EXAMPLE1
     ASSEMBLE AND LINK?: NO

***  SYSGEN EXECUTION BEGINS  ***
KIF?(YES)
SITE NAME? AUSTIN
SECURITY? (NO)
APPLICATION PROGRAM FILE?
LOG DEVICE?
ATTENTION DEVICE? ST01
RESTART ID? (0)
CARD 1?
CARD 2?
USER SVC TABLE PATHNAME?
COUNTRY CODE? (US)
LINE FREQUENCY? (60)
POWER FAIL RECOVERY? (NO)
ENTITY? DVC
```

The next set of parameters defines the two disk drives. The type is determined by the type of disk controller installed in the system and has no bearing on the sysgen process.

```
DEVICE TYPE? DS
TILINE ADDRESS? (>F800)
DRIVES? (1) 2
DEFAULT RECORD SIZE? (768)
INTERRUPT? (13)
```

LEFT SIDE (P1)					RIGHT SIDE (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1	SMI				1	SMI			
2	AU				2	AU			
3	MEMORY CONTROL				3	MEMORY CONTROL			
4	MEMORY				4	MEMORY			
5	MEMORY				5	MEMORY			
6					6				
7	DS80		>F800	13	7	DS80		>F800	13
8	MT1600 TAPE		>F880		8	MT1600 TAPE		>F880	9
9					9				
10	911 VDT #4	>0E0		12	10	911 VDT #3	>0C0		11
11	911 VDT #2	>0A0		3	11	911 VDT #1	>080		7
12	810 LP	>060		14	12	LP600	>040		4
13					13	733 ASR	>000		6

2279338

Figure 6-3. Example 2 — Configuration Table

The next set of parameters defines an ASR:

```
DEVICE TYPE? ASR
CRU ADDRESS? >0
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
CASSETTE OPENS VALIDATED? (YES)
INTERRUPT? (6)
```

The next set of parameters defines four 911 VDTs:

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? >0080
INTERRUPT? (10) 7

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? >0080
*** WARNING : THAT ADDRESS HAS BEEN PREVIOUSLY DEFINED ***
INTERRUPT? (10) 3

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? >00C0
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? >00E0
INTERRUPT? (10) 12
```

In the example, you made an error when you defined the CRU address for the second VDT. You will correct it shortly.

The next set of parameters defines an 810 line printer. This example and all others that define 810 printers assume that the extended character set is present.

```
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? TTY/EIA
CRU ADDRESS? >0060
INTERRUPT? (14)
DEVICE TYPE?
ENTITY?
```

After you define all of the devices, press the Return key. The System Generation utility prompts for another entity. At this time, correct the error that you made earlier; you must correct errors before terminating the System Generation utility. Press the Command key. This places the System Generation utility in command mode, and you can change or delete any device. This is the format:

```
DEVICE TYPE? <Press RETURN>
ENTITY? <Press CMD>
COMMAND? CHANGE
PARAMETER TO BE CHANGED? DVC
DEVICE NAME? ST03
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? 0A0
INTERRUPT? (10) 3
COMMAND? INQUIRE
```

6.4 EXAMPLE THREE — MODIFYING AN EXISTING CONFIGURATION FILE

In this example, you use Example Two as a starting point. You will also perform two steps to demonstrate how you can change a configuration without completing the sysgen process. The system configuration contains the following:

- Two DS80 disk drives
- One 820 KSR (replacing the 733 ASR)
- Six 911 VDTs (two VDTs added)
- One 810 line printer
- One LP600 parallel line printer (added)
- One MT1600 tape drive (added)

Figure 6-4 shows the desired configuration for this example.

LEFT SIDE (P1)					RIGHT SIDE (P2)				
SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
1	SMI				1	SMI			
2	AU				2	AU			
3	MEMORY CONTROL				3	MEMORY CONTROL			
4	MEMORY				4	MEMORY			
5	MEMORY				5	MEMORY			
6					6				
7	DS80		>F800	13	7	DS80		>F800	13
8	MT1600 TAPE		>F880	9	8	MT1600 TAPE		>F880	9
9	911 VDT #6	>120		8	9	911 VDT #5	>100		10
10	911 VDT #4	>0E0		12	10	911 VDT #3	>0C0		11
11	911 VDT #2	>0A0		3	11	911 VDT #1	>080		7
12	810 LP	>060		14	12	LP600	>040		4
13					13	820 KSR	>000		6

2285002

Figure 6-4. Example 3 — Configuration Table

First, the existing configuration must be read before it can be modified. To accomplish this, execute the XSGU command, as follows:

```
[] XSGU

EXECUTE SYSTEM GENERATION UTILITY
        DATA DISK/VOLUME: DS01
      TARGET DISK/VOLUME: DS01
     INPUT CONFIGURATION: EXAMPLE2
    OUTPUT CONFIGURATION: SYS2
      ASSEMBLE AND LINK?: NO

***  SYSGEN EXECUTION BEGINS  ***
***  CONFIGURATION IS NOW BEING READ  ***
ENTITY? <Press CMD>
```

Next, you must delete the 733 ASR and add an 820 KSR. You can accomplish this in either of two ways. You can delete the ASR first and then add the KSR as a new device, or you can use only a single step, as the following example illustrates. Either method requires entering the command to change or delete the ASR.

```
COMMAND? CHANGE
PARAMETER TO BE CHANGED? DVC
DEVICE NAME? ST01
DEVICE TYPE? KSR
TERMINAL TYPE? 820
INTERFACE TYPE? CI401
SWITCHED LINE? (NO)
BAUD RATE? 4800
ACU PRESENT? (NO)
ECHO? (YES)
CRU ADDRESS? 0
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
INTERRUPT? (6)
```

After you respond to all of the prompts for the KSR device, the utility prompts for the next step in the configuration. Respond to this COMMAND prompt with INQUIRE, and to the ENTITY prompt with DVC. The following example adds the new 911 VDTs to your system.

```
COMMAND? INQUIRE
ENTITY? DVC
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911)
CRU ADDRESS? 0100
INTERRUPT? (10)

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE (911)
CRU ADDRESS? 0120
INTERRUPT? (10) 8
DEVICE TYPE? <Press RETURN>
ENTITY? STOP
BUILD? (NO)
DO YOU WANT TO SAVE THE CONFIGURATION? (NO) YES
***  CONFIG   IS NOW BEING BUILT  ***
XSGU COMPLETE: <Press RETURN>
```

You do not need to build the files necessary to complete the system generation until the configuration is complete. However, you should save the configuration so that you can complete the sysgen process later.

```
[ ] XSGU

EXECUTE SYSTEM GENERATION UTILITY
       DATA DISK/VOLUME: DS01
     TARGET DISK/VOLUME: DS01
    INPUT CONFIGURATION: SYS2
   OUTPUT CONFIGURATION: SYS2
     ASSEMBLE AND LINK?: NO

***  SYSGEN EXECUTION BEGINS  ***
***  CONFIGURATION IS NOW BEING READ  ***
ENTITY? <Press CMD>
```

The only devices that you still must define are the additional line printer and the magnetic tape drive. You may also wish to change the site name if you are performing this system generation for another installation.

```
COMMAND? CHANGE
PARAMETER TO BE CHANGED? SITE NAME
SITE NAME? SITE2
ENTITY? DVC
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL) PARALLEL
EXTENDED? (YES) NO
SPEED? (4800)
TIME OUT? (60) 30
CRU ADDRESS? >40
INTERRUPT? (14) 4

DEVICE TYPE? MT
TILINE ADDRESS? (>F880)
DRIVES? (1)
INTERRUPT? (9)
DEVICE TYPE? <Press RETURN>
ENTITY? STOP
BUILD? (NO) YES
***  CONFIG   IS NOW BEING BUILT  ***
***  D$SOURCE IS NOW BEING BUILT  ***
***  LINKSTREAMS ARE NOW BEING BUILT  ***
***  ALGSSTRM IS NOW BEING BUILT  ***
XSGU COMPLETE: <Press RETURN>
```

This configuration is now complete and ready to be assembled and linked, patched, tested, and installed.

6.5 EXAMPLE FOUR — DEFINING SPECIAL DEVICES

This example shows the portion of the System Generation utility required to define a special device. The example is not associated with the previous configuration charts. You must supply both the device service routine (DSR) and the device information block (DIB) for the device. (See the *DNOS Systems Programmer's Guide* for details on device information blocks.) The directory .S$OSLINK.S$SGU$.SD contains the assembled DSR. The DSR is stored in file DSRLQ, where LQ is the name to be given to the special device.

```
ENTITY? DVC
DEVICE TYPE? SD
VALIDATE OPENS? (NO)
TIME OUT? (60) 30
INTERFACE TYPE? NONE
TILINE DEVICE? (NO)
CRU ADDRESS? >0100
DEVICE NAME? LQ
INTERRUPT BIT? (15)
BUFFER SIZE? (80)
IS THE PDT THE INTERRUPT WORKSPACE? (YES)
KEYBOARD? (YES) NO
INTERRUPT? (15) 10
```

If the device contains a keyboard, the System Generation utility names it according to what it has named all previous keyboard devices. However, this is not a keyboard device. It is the first device of its type named, and the utility names it LQ01. The next example illustrates the format for defining LQ02.

```
DEVICE TYPE? SD
VALIDATE OPENS? (NO)
TIME OUT? (60) 30
INTERFACE TYPE? NONE
TILINE DEVICE? (NO)
CRU ADDRESS? >0120
DEVICE NAME? LQ
INTERRUPT? (15) 10
```

A special device can be a TILINE device. The following example displays the portion of the System Generation utility required to define two special TILINE devices, with device name SS:

```
DEVICE TYPE? SD
VALIDATE OPENS? (NO)
TIME OUT? (60) 30
INTERFACE TYPE? NONE
TILINE DEVICE? (NO) YES
TILINE ADDRESS? (>F800)
DEVICE NAME? SS
IS THE PDT THE INTERRUPT WORKSPACE? (YES)
KEYBOARD? (YES) NO
INTERRUPT? (15)

DEVICE TYPE? SD
VALIDATE OPENS? (NO)
TIME OUT? (60) 30
INTERFACE TYPE? NONE
TILINE DEVICE? (NO) YES
TILINE ADDRESS? (>F800) >F810
DEVICE NAME? SS
INTERRUPT? (15) 14
DEVICE TYPE?
ENTITY?
```

6.6 EXAMPLE FIVE — DEFINING AN EXPANSION CHASSIS

This example generates a system requiring one expansion chassis. The generated system includes these devices:

- Two disk drives, both CD1400, both DS80, both DS300, or a mixture
- A 3720 emulator on a CP502 board
- A 3780 emulator on a CP502 board
- Four 810 printers, two per CI402 board
- Two LP600 printers, each on a line printer interface board
- 32 931 VDTs, four per CI403 board
- One TILINE expander
- One AUTO CALL

Figure 6-5 shows the devices as they are configured in the main chassis (a 13-slot chassis in this example). Figure 6-6 is the configuration chart for the expansion chassis.

	TOP OF CHASSIS (P1)					BOTTOM OF CHASSIS (P2)				
	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
	1	/12 LR SMI				1	/12 LR SMI			
	2	/12 LR AU				2	/12 LR AU			
	3	CACHE MEMORY				3	CACHE MEMORY			
	4	MEMORY			11	4	MEMORY			12
SEE NOTE 1	5	810 1 CI402	>B001		7	5	3720 CP502	>200		3
	6	TILINE EXPANDER	>1E0		11	6	TILINE EXPANDER	>1C0		11
	7	DISK	>1A0	>F800	9	7	DISK	>180	>F800	13
SEE NOTE 1,2 AND 3	8	810 CI402	>F00		8	8	LP600	>140		9
SEE NOTE 4	9	931 CI403	>120	>F9A0	8	9	CI403	>100	>F9A0	10
SEE NOTE 4	10	931 CI403	>0E0	>F980		10	CI403	>0C0	>F980	11
	11		>0A0		3	11	LP600	>080		7
SEE NOTE 4	12	931 CI403	>060	>F990	14	12	CI403	>040	>F990	4
	13	AUTO CALL	>020		15	13	3780 CP502	>000		6

NOTES:

(1) TWO 810 PRINTERS ARE DEFINED FOR THIS SLOT.

(2) THE CI402 CRU ADDRESS IS DETERMINED BY PENCIL SWITCHES ON THE CI402 BOARD; SEE THE CRU ADDRESS PARAGRAPH IN THE SYSTEM GENERATION PROCEDURE SECTION OF THIS MANUAL.

(3) THE P2 SIDE IS USER PROGRAMMABLE TO BE INTERRUPT 9 OR 14.

(4) FOUR 931 VDTS ARE DEFINED FOR THIS SLOT, ONE EACH ON THE CI403 CHANNELS 0,1,2, AND 3. THE CI403 BOARD FILLS BOTH HALVES OF THE SLOT.

2279339

Figure 6-5. Example 5 — Main Chassis

	LEFT SIDE (P1)					RIGHT SIDE (P2)				
	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT	SLOT	DEVICE	CRU BASE	TILINE	INTER-RUPT
	1	TILINE EXPANDER				1	TILINE EXPANDER			
	2		>6E0			2		>6C0		
	3		>6A0			3		>680		
	4		>660			4		>640		
	5		>620			5		>600		
	6		>5E0			6		>5C0		
	7		>5A0			7		>580		
	8		>560			8		>540		
SEE NOTE 1	9	931 CI403	>520	>F9F0		9	CI403	>500		11
SEE NOTE 1	10	931 CI403	>4E0	>F9E0		10	CI403	>4C0		11
SEE NOTE 1	11	931 CI403	>4A0	>F9D0		11	CI403	>480		11
SEE NOTE 1	12	931 CI403	>460	>F9C0		12	CI403	>440		11
SEE NOTE 1	13	931 CI403	>420	>F9B0		13	CI403	>400		11

NOTE:

(1) FOUR 931 VDTS ARE DEFINED FOR THIS SLOT, ONE EACH ON THE CI403 CHANNELS 0, 1, 2, AND 3. THE CI403 BOARD FILLS BOTH HALVES OF THE SLOT.

2279340

Figure 6-6. Example 5 — Expansion Chassis

These steps generate the configuration:

```
[] XSGU

EXECUTE SYSTEM GENERATION UTILITY
       DATA DISK/VOLUME: DS01
     TARGET DISK/VOLUME: DS01
    INPUT CONFIGURATION:
   OUTPUT CONFIGURATION: EXAMPLE5
     ASSEMBLE AND LINK?: NO

 ***  SYSGEN EXECUTION BEGINS  ***
KIF? (YES)
SITE NAME? AUSTIN
SECURITY? (NO)
APPLICATION PROGRAM FILE?
LOG DEVICE?
ATTENTION DEVICE?
RESTART ID? (0)
CARD 1?
CARD 2?
USER SVC TABLE PATHNAME?
COUNTRY CODE? (US)
LINE FREQUENCY? (60)
POWER FAIL RECOVERY? (NO)
ENTITY? DVC
```

The disk drives can be all CD1400, all DS80, all DS300, or a mixture of these drives. (Refer to Figure 6-5.)

```
DEVICE TYPE? DS
TILINE ADDRESS? (>F800)
DRIVES? (1) 2
DEFAULT RECORD SIZE? (768)
INTERRUPT? (13)
```

Next, you define four 810 printers. The first two printers will be assigned to slot 5 on the main chassis, and the second two printers will be assigned to slot 8 on the main chassis.

```
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? 9902
CRU ADDRESS? >0B00
INTERRUPT? (14) 7

DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? 9902
CRU ADDRESS? >0B80
INTERRUPT? (14) 7

DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? 9902
CRU ADDRESS? 0F00
INTERRUPT? (14) 8

DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL)
EXTENDED? (YES)
SPEED? (4800)
TIME OUT? (60) 30
INTERFACE TYPE? 9902
CRU ADDRESS? >0F80
INTERRUPT? (14) 8
```

You must define the communications emulators being used. Enter the interrupt level and CRU TILINE address associated with the communications board. You do not need to define the ACU or the modem associated with this device during XSGU. After system generation, define the ACU and the associated 3720 emulator as part of the emulator's software installation. (Refer to the appropriate emulator object installation guide.) The modem is in the chassis for the sake of convenience only. Note that you must perform the communications installation before executing the ALGS command for this system:

```
DEVICE TYPE? COM
BOARD TYPE? CP502
CRU ADDRESS? >0200
CHANNEL NUMBER 00 PROTOCOL? (NONE) 3270
HIGHEST TERMINAL ADDRESS(0-31)? (0)
POLL TIMEOUT IN 1/4 SECOND INTERVALS? (240)
INTERRUPT? (8) 3
```

After defining a 3780 emulator, you define the first LP600 printer:

```
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL) PARALLEL
EXTENDED? (YES) NO
SPEED? (4800)
TIME OUT? (60) 30
CRU ADDRESS? >0140
INTERRUPT? (14) 9
```

After the LP600, you define the first eight 931 VDTs in the main chassis:

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9A0
CHANNEL NUMBER? (0)
INTERRUPT? (10)

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9A0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10)
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9A0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10)

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9A0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10)

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980)
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11
```

Now you define the second LP600 printer:

```
DEVICE TYPE? LP
VALIDATE OPENS? (YES)
PRINT MODE? (SERIAL) PARALLEL
EXTENDED? (YES) NO
SPEED? (4800)
TIME OUT? (60) 30
CRU ADDRESS? >0080
INTERRUPT? (14) 7
```

After defining the second LP600, you define the remaining four 931 VDTs in the main chassis:

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F990
CHANNEL NUMBER? (0)
INTERRUPT? (10) 4

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F990
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 4

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F990
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 4

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F990
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 4
```

Now you define the second 3780 emulator; this is the last device in the main chassis.

```
DEVICE TYPE? COM
BOARD TYPE? CP502
CRU ADDRESS?
CHANNEL NUMBER 00 PROTOCOL? (NONE) 3780
ACU CRU ADDRESS? (>FFFF) >0020
DIAL TYPE? (PULSE) TOUCH
BID RESPONSE TIMEOUT IN SECONDS? (01)
RECEIVE ACK TIMEOUT IN SECONDS? (03)
RECEIVE DATA TIMEOUT IN SECONDS? (20)
IDLE LINE TIMEOUT IN SECONDS? (20)
TRANSMIT BID THRESHOLD? (15)
RECEIVE ENQ THRESHOLD? (15)
TRANSMIT ENQ THRESHOLD? (15)
RECEIVE NAK THRESHOLD? (0)
TRANSMIT NAK THRESHOLD? (0)
RECEIVE DATA THRESHOLD? (20)
INTERRUPT? (8) 6
```

All the remaining 931 VDTs are installed in the expansion chassis. Because these devices are on the expansion chassis, they have the same interrupt level. Each of the slots 9 through 13 on the expansion chassis (TILINE addresses > F9B0 through > F9F0) has a CI403 board; each board will have four VDTs assigned — one VDT at each channel (0, 1, 2, and 3).

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9F0
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9F0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9F0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9F0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9E0
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9E0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9E0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9E0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9D0
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9D0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9D0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9D0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9C0
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9C0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9C0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9C0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9B0
CHANNEL NUMBER? (0)
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9B0
CHANNEL NUMBER? (0) 1
INTERRUPT? (10) 11
```

```
DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9B0
CHANNEL NUMBER? (0) 2
INTERRUPT? (10) 11

DEVICE TYPE? VDT
VALIDATE OPENS? (NO)
TIME OUT? (0)
CHARACTER QUEUE? (10)
VDT TYPE? (911) 931
ASSOCIATED PRINTER? (NO)
SWITCHED LINE? (NO)
SPEED? (19200)
INTERFACE TYPE? CI403
TILINE ADDRESS? (>F980) >F9B0
CHANNEL NUMBER? (0) 3
INTERRUPT? (10) 11
DEVICE TYPE?
ENTITY?
```

Once all devices and user-written software are included, the configuration is complete. You can now terminate the System Generation utility:

```
DEVICE TYPE? <Press RETURN>
ENTITY? STOP
BUILD? (NO) YES
***  CONFIG   IS NOW BEING BUILT  ***
***  D$SOURCE IS NOW BEING BUILT  ***
***  LINKSTREAMS ARE NOW BEING BUILT  ***
***  ALGSSTRM IS NOW BEING BUILT  ***
XSGU COMPLETE: <Press RETURN>
```

The final steps are assembling and linking, patching, testing, and installing the system. (Refer to the System Generation Procedure section in this manual.)

Appendix A

Keycap Cross-Reference

Generic keycap names that apply to all terminals are used for keys on keyboards throughout this manual. This appendix contains specific keyboard information to help you identify individual keys on any supported terminal. For instance, every terminal has an Attention key, but not all Attention keys look alike or have the same position on the keyboard. You can use the terminal information in this appendix to find the Attention key on any terminal.

The terminals supported are the 931 VDT, 911 VDT, 915 VDT, 940 EVT, the Business System terminal, and hard-copy terminals (including teleprinter devices). The 820 KSR has been used as a typical hard-copy terminal. The 915 VDT keyboard information is the same as that for the 911 VDT except where noted in the tables.

Appendix A contains three tables and keyboard drawings of the supported terminals.

Table A-1 lists the generic keycap names alphabetically and provides illustrations of the corresponding keycaps on each of the currently supported keyboards. When you need to press two keys to obtain a function, both keys are shown in the table. For example, on the 940 EVT the Attention key function is activated by pressing and holding down the Shift key while pressing the key labeled PREV FORM NEXT. Table A-1 shows the generic keycap name as Attention, and a corresponding illustration shows a key labeled SHIFT above a key named PREV FORM NEXT.

Function keys, such as F1, F2, and so on, are considered to be already generic and do not need further definition. However, a function key becomes generic when it does not appear on a certain keyboard but has an alternate key sequence. For that reason, the function keys are included in the table.

Multiple key sequences and simultaneous keystrokes can also be described in generic keycap names that are applicable to all terminals. For example, you use a multiple key sequence and simultaneous keystrokes with the log-on function. You log on by *pressing the Attention key, then holding down the Shift key while you press the exclamation (!) key.* The same information in a table appears as *Attention/(Shift)!.*

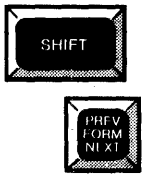
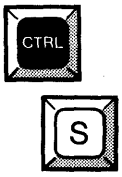
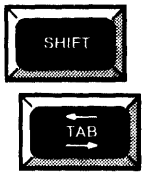
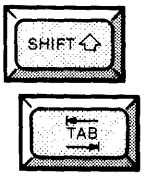
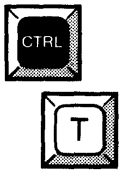
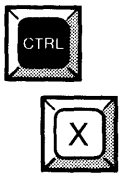
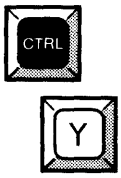
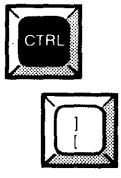
Table A-2 shows some frequently used multiple key sequences.

Table A-3 lists the generic names for 911 keycap designations used in previous manuals. You can use this table to translate existing documentation into generic keycap documentation.

Figures A-1 through A-5 show diagrams of the 911 VDT, 915 VDT, 940 EVT, 931 VDT, and Business System terminal, respectively. Figure A-6 shows a diagram of the 820 KSR.

2274834 (1/14)

Table A-1. Generic Keycap Names

Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
Alternate Mode	None				None
Attention[2]					
Back Tab	None			None	
Command[2]					
Control					
Delete Character					None
Enter					
Erase Field					

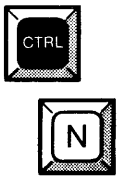
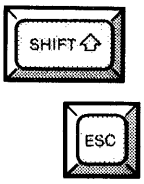
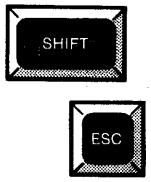
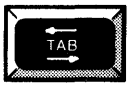
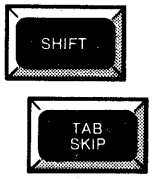
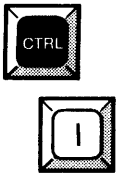
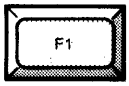
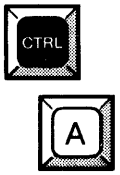
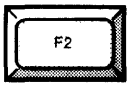
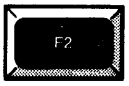
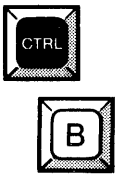
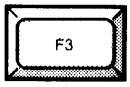
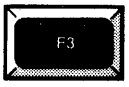
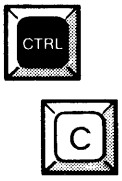
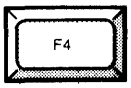
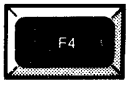
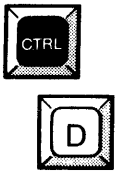
Notes:

[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

[2]On a 915 VDT the Command Key has the label F9 and the Attention Key has the label F10.

2284734 (2/14)

Table A-1. Generic Keycap Names (Continued)

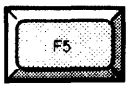
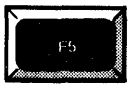
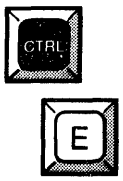
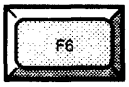
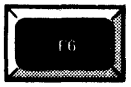
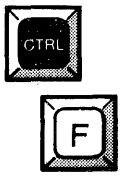
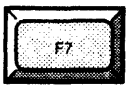
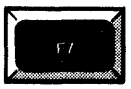
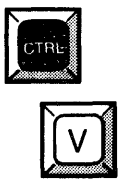
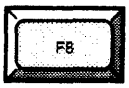
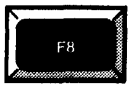
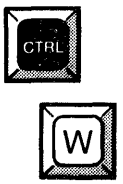
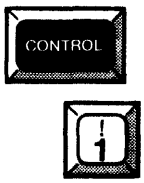
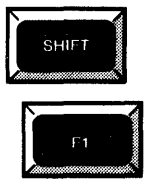
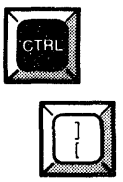
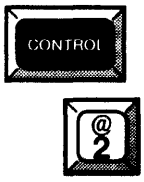
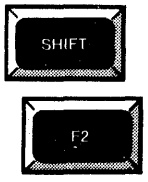
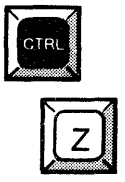
Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
Erase Input					
Exit					
Forward Tab					
F1					
F2					
F3					
F4					

Notes:

[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

2284734 (3/14)

Table A-1. Generic Keycap Names (Continued)

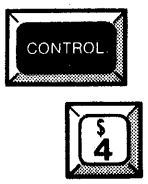
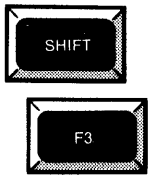
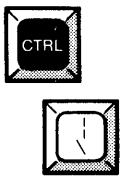
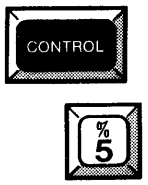
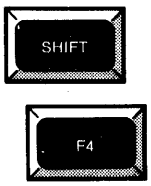
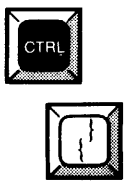
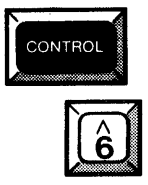
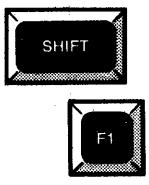
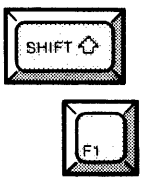
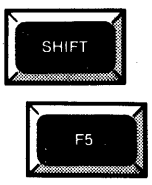
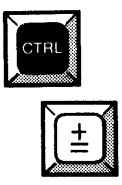
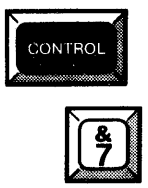
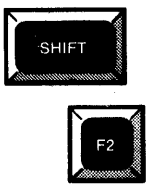
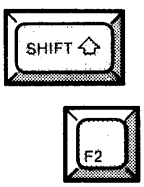
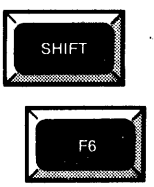
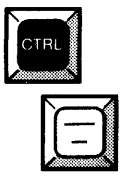
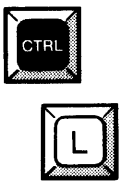
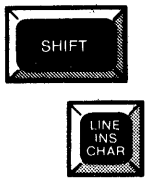
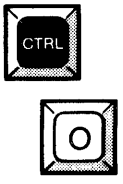
Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
F5					
F6					
F7					
F8					
F9					
F10					

Notes:

[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

2284734 (4/14)

Table A-1. Generic Keycap Names (Continued)

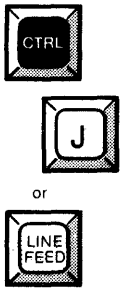
Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
F11					
F12					
F13					
F14					
Home					
Initialize Input					

Notes:

[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

2284734 (5/14)

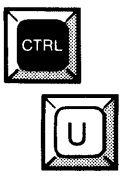
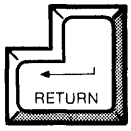
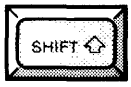
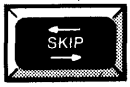
Table A-1. Generic Keycap Names (Continued)

Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
Insert Character					None
Next Character	 or  				None
Next Field	 		 	 	None
Next Line					
Previous Character	 or 				None
Previous Field		 			None

Notes:
[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

2284734 (6/14)

Table A-1. Generic Keycap Names (Continued)

Generic Name	911 VDT	940 EVT	931 VDT	Business System Terminal	820[1] KSR
Previous Line					
Print					None
Repeat		See Note 3	See Note 3	See Note 3	None
Return					
Shift					
Skip					None
Uppercase Lock					

Notes:

[1]The 820 KSR terminal has been used as a typical hard-copy terminal with the TPD Device Service Routine (DSR). Keys on other TPD devices may be missing or have different functions.

[3]The keyboard is typamatic, and no repeat key is needed.

2284734 (7/14)

Table A-2. Frequently Used Key Sequences

Function	Key Sequence
Log-on	Attention/(Shift)!
Hard-break	Attention/(Control)x
Hold	Attention
Resume	Any key

Table A-3. 911 Keycap Name Equivalents

911 Phrase	Generic Name
Blank gray	Initialize Input
Blank orange	Attention
Down arrow	Next Line
Escape	Exit
Left arrow	Previous Character
Right arrow	Next Character
Up arrow	Previous Line

2284734 (8/14)

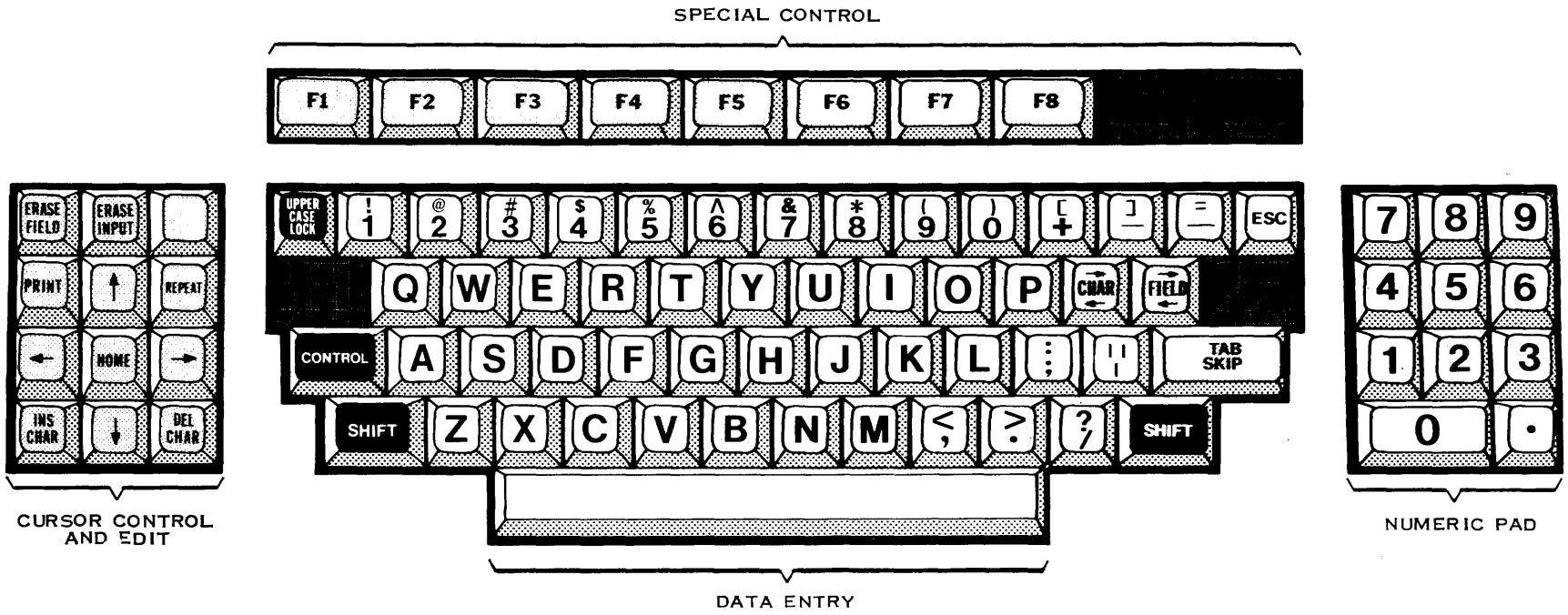
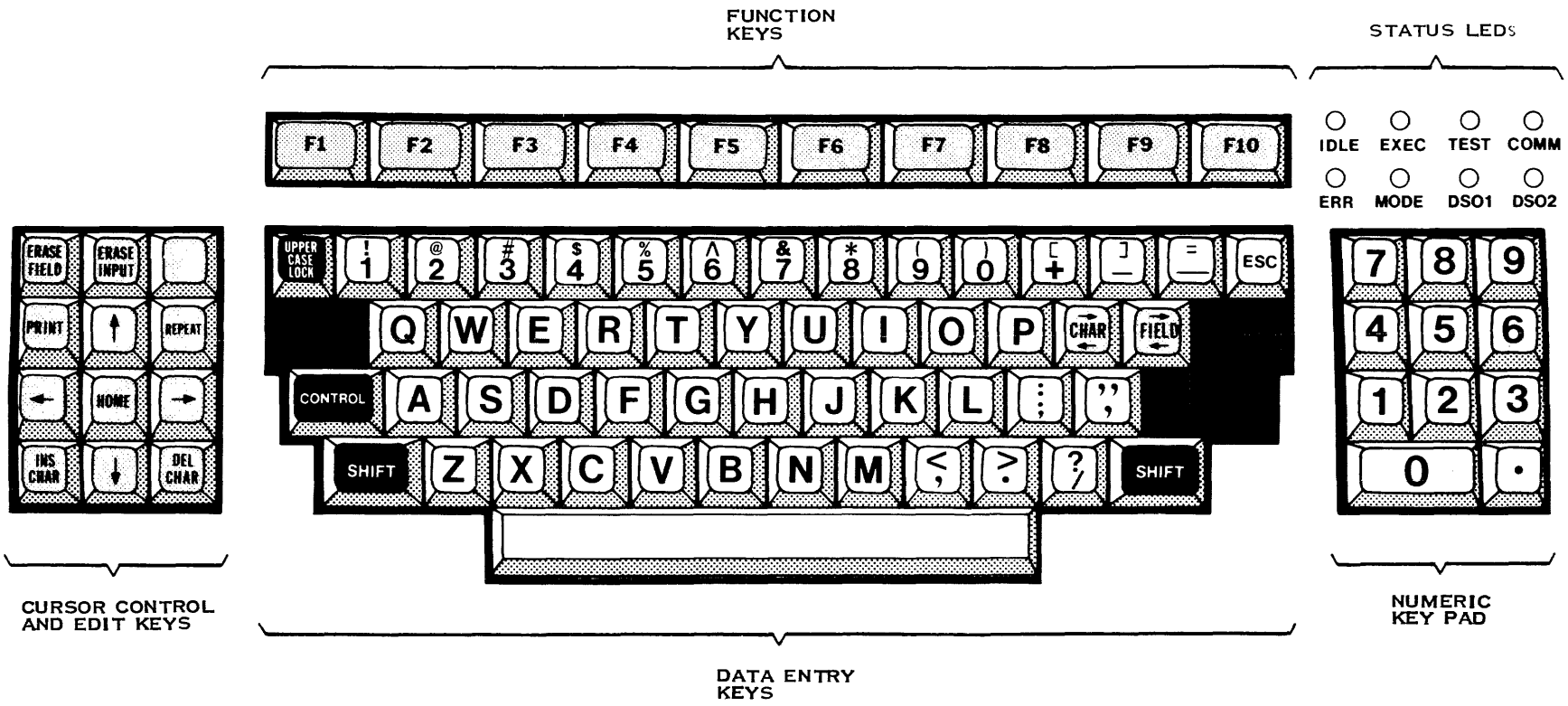
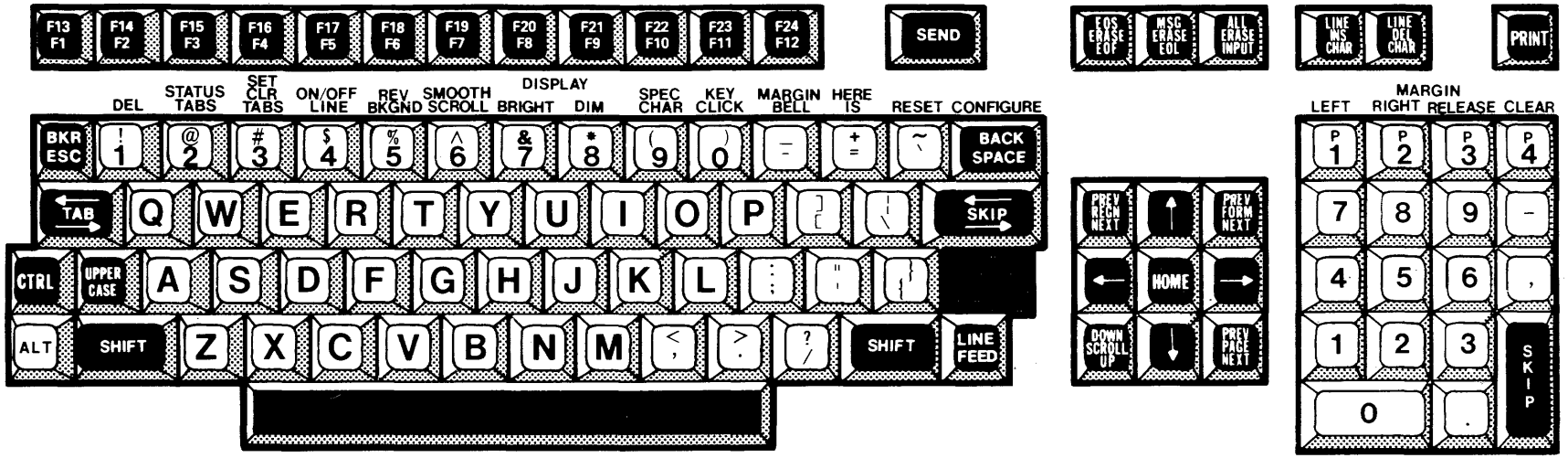


Figure A-1. 911 VDT Standard Keyboard Layout



2284734 (10/14)

Figure A-2. 915 VDT Standard Keyboard Layout



2284734 (11/14)

Figure A-3. 940 EVT Standard Keyboard Layout

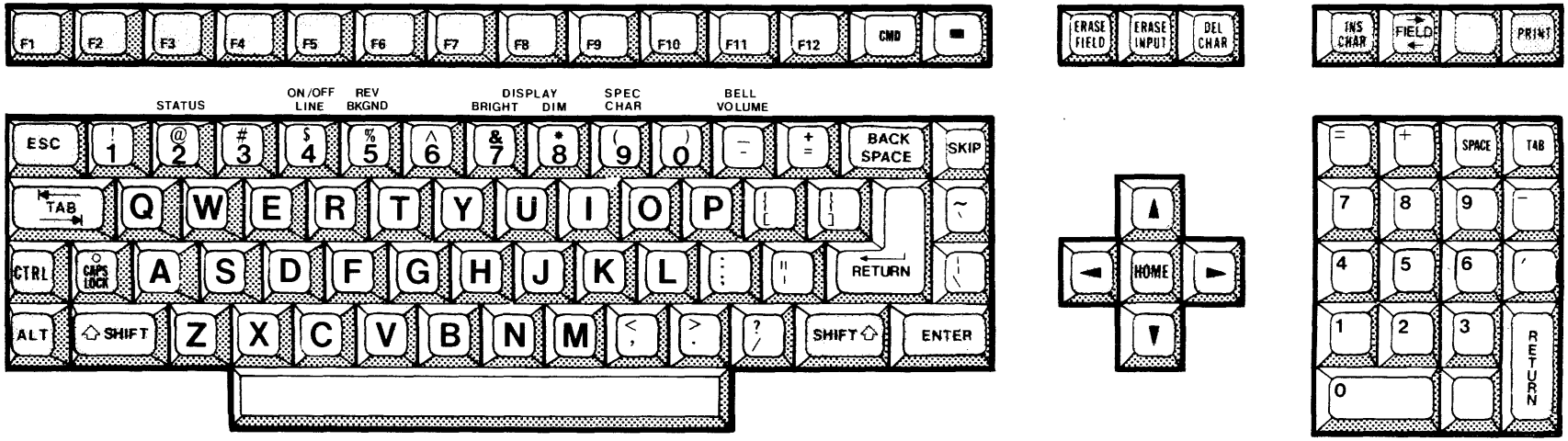
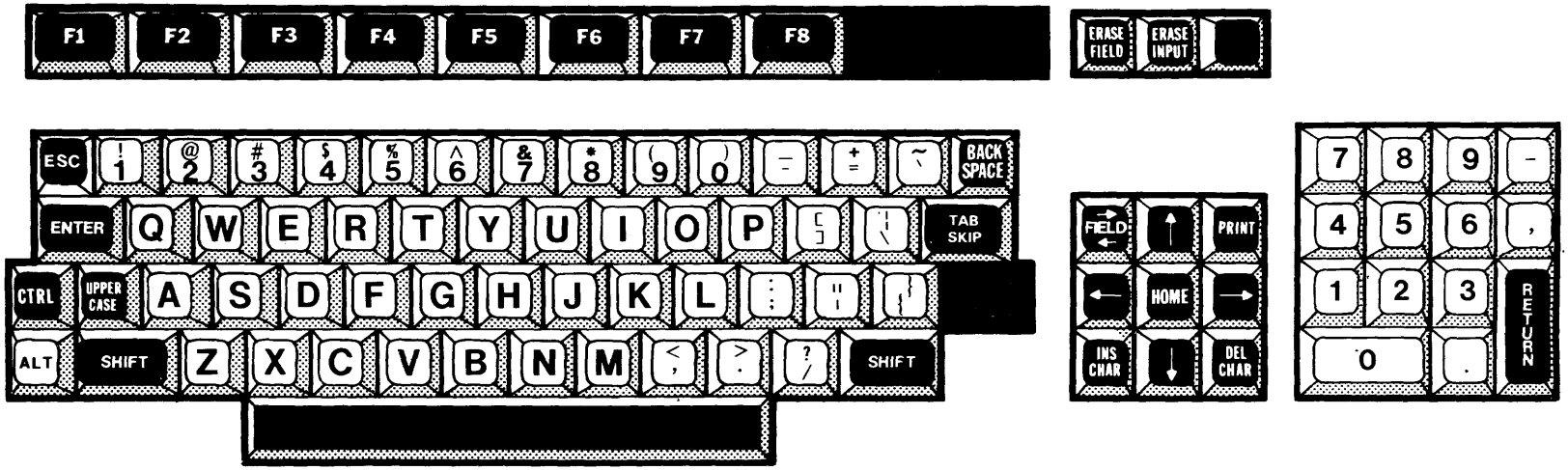
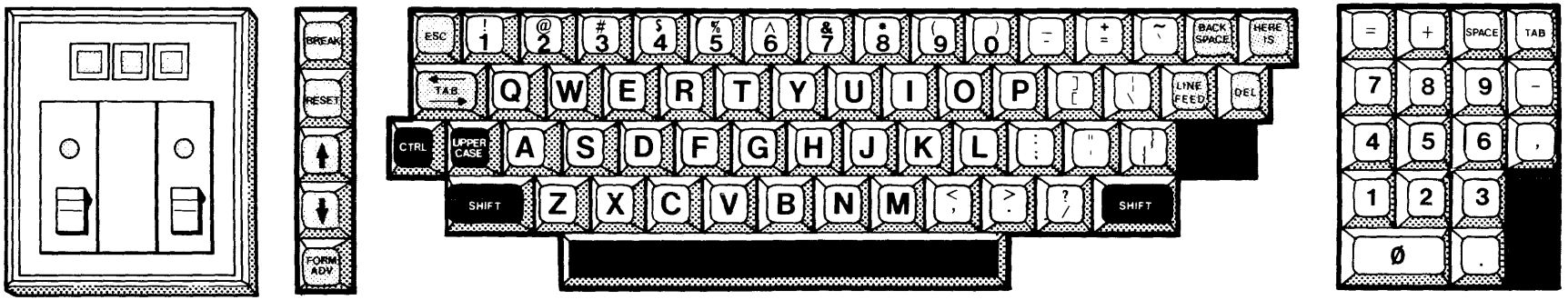


Figure A-4. 931 VDT Standard Keyboard Layout



2284734 (13/14)

Figure A-5. Business System Terminal Standard Keyboard Layout



2284734 (14/14)

Figure A-6. 820 KSR Standard Keyboard Layout

Alphabetical Index

Introduction

This index lists key topics of this manual and specifies where each topic is discussed as follows:

- Sections — Sections are represented as *Section n* where *n* represents the section number.

- Appendixes — Appendixes are represented by *Appendix Y* where *Y* represents the appendix letter.

- Paragraphs — Paragraph references appear as alphanumeric characters separated by decimal points. The first character refers to the section or appendix containing the paragraph and any other numbers indicate the sequence of the paragraph within the section or appendix:

  Examples: *3.5.2* refers to Section 3, paragraph 5.2.
  A.2 refers to Appendix A, paragraph 2.

- Tables — Tables references appear as *Tn-x,* where *n* represents the section or appendix containing the table, and *x* represents the number of the table within the section or appendix:

  Examples: *T3-10* refers to the tenth table in Section 3.
  TB-4 refers to the fourth table in Appendix B.

- Figures — Figures appear as *Fn-x* where *n* represents the section or appendix containing the figure, and *x* represents the number of the figure within the section or appendix.

  Examples: *F2-7* refers to the seventh figure in Section 2.
  FG-1 refers to the first figure in Appendix G.

- See and See also references — *See* and *See also* direct you to other entries in the index.

  See Data Base Administrator refers to the index entry *Data Base Administrator.*

You can find the page numbers that correspond to these references in the table of contents.

Abort Prompt 5.3
Accounting SVC 3.5.2.1
ACU CRU 3.5.1.1
ACU CRU Subparameter 3.5.1.1
ACU Present 3.5.1.2
ACU PRESENT Subparameter 3.5.1.2
Address:
  CRU 3.1.1, 3.5.1.10
  TILINE 3.1.4, 3.5.1.28
ALGS Command 1.3.2, 3.1, 3.3.5, 3.6
ALGSLIST 1.3.2
ALGSSTRM 1.3.2
Application Program File 3.4.4
Area:
  Buffer Table 4.7, 5.6.2
  File Manager Table 4.6, 5.6.2
  Segment Manager Table 4.5, 5.6.2
  System Table 3.6, 5.6.2
ASR 3.5.1.6
ASR Device Subparameter
  Responses T3-11
Assemble and Link Generated System
  (ALGS) Command 1.3.2, 3.1,
    3.3.5, 3.6
Assemble and Link Prompt 3.3.5, 3.6
Assemble Error 3.6
Assignment:
  13-Slot Chassis, Interrupt F3-8
  17-Slot Chassis, Interrupt F3-9
Assignments, Recommended TILINE
  Address T3-4
Associated Printer 3.5.1.3
ASSOCIATED PRINTER
  Subparameter 3.5.1.3
Attention Device 3.4.6

Base Configuration 3.1
Base Configuration in .S$SHIP T3-1
Base System Configuration 13-Slot
  Chassis F3-2
Base System Configuration 17-Slot
  Chassis F3-3
Base System Configuration 990A13
  13-Slot Chassis F3-1
Batch Job Limit 4.9
Baud Rate 3.5.1.4
BAUD RATE Subparameter 3.5.1.4
Beginning System Generation 3.2
Bell 202S Modem 3.5.1.18
Bit, Interrupt 3.5.1.21
Block, Device Information 1.3.3
BOARD TYPE Subparameter 3.5.1.5
  Responses:
    CIPC, Communications T3-15
    Except CIPC, Communications T3-14
Buffer Table Area 4.7, 5.6.2
Build:
  Command 3.5.4
  Prompt 1.3.2, 2.3.4, 3.4

Calls (SVC), Supervisor 3.5.2
Capabilities, DNOS Functional 1.1
Card Reader Device Subparameter
  Responses T3-19
Card 1 .....3.4.8, 3.5.1.15, 3.5.1.16
Card 2 .....3.4.9, 3.5.1.15, 3.5.1.16
Cassette Opens Validate 3.5.1.6
CASSETTE OPENS VALIDATED
  Subparameter 3.5.1.6
CDE 5.9, 5.9.1
CDT 5.9, 5.9.1
CFDSR 1.3.2
Change Command 2.3, 4.1
CHANNEL NUMBER
  Subparameter 3.5.1.7
CHANNEL NUMBER 00 PROTOCOL
  Subparameter 3.5.1.8
Channel Protocol 3.5.1.8
Character Queue 3.5.1.9
CHARACTER QUEUE
  Subparameter 3.5.1.9
CIPC, Communications Board Type
  Subparameter Responses T3-15
CI402 CRU Address 3.5.1.10
CLNKCSWS 1.3.2
Clock 4.3
CMAPCSWS 1.3.2
Codes, Valid Country T3-8, T5-2
Collating Sequence 3.4.11
COMA, Communications Protocol
  Subparameter Responses T3-17
Combinations, DNOS Supported
  Device-Controller T3-5
COMIF 3.5.1.19, 3.5.1.25
Command:
  ALGS 1.3.2, 3.1, 3.3.5, 3.6
  Assemble and Link Generated System
    (ALGS) 1.3.2, 3.1, 3.3.5, 3.6
  Build 3.5.4
  Change 2.3, 4.1
Command Definition:
  Entry 5.9, 5.9.1
  Table 5.9, 5.9.1
Command Definition Table Listing F5-3
Command:
  Delete 2.3, 2.3.2
  Execute Performance Data (XPD) 5.6.1
  Execute System Configuration Utility
    (XSCU) 5.2, 5.7
  Execute System Generation Utility
    (XSGU) 1.3.2, 3.3
  IGS 3.1, 3.9, 5.10
  Inquire 2.3, 2.3.3
  Install Generated System
    (IGS) 3.1, 3.9, 5.10
  LDC 5.4
  List 2.3, 2.3.3
    Device Configuration (LDC) 5.4
  MCC 5.7

MCDT 5.9.1, 5.9.2
MDC 5.5
MDS 3.5.1.24
Mode 2.3
Modify Command Definition Table (MCDT) 5.9.1, 5.9.2
Modify Country Code (MCC) 5.7
Modify Device Configuration (MDC) 5.5
Modify Device State (MDS) 3.5.1.24
Modify Scheduler/Swap Parameters (MSP) 5.8
Modify System Table (MST) 5.6.2
Modify Terminal Status (MTS) 3.2
MSP 5.8
MST 5.6.2
MTS 3.2
Patch Generated System (PGS) 3.1, 3.7
PGS 3.1, 3.7
Prompt 2.3.1, 4.1
QSCU 5.2, 5.3, 5.5, 5.6.2, 5.7
Quit System Configuration Utility (QSCU) 5.2, 5.3, 5.5, 5.6.2, 5.7
SBS 3.6
SCC 5.7
SCDT 5.9.1
Show Background Status (SBS) 3.6
Show Command Definition Table (SCDT) 5.9.1
Show Country Code (SCC) 5.7
Stop 2.3, 2.3.4, 3.5.1, 3.5.3
Test Generated System (TGS) 3.1, 3.8, 5.10
TGS 3.1, 3.8, 5.10
W 3.6
Wait (W) 3.6
XPD 5.6.1
XSCU 5.2, 5.7
XSGU 1.3.2, 3.3
Commands, VDT T2-1
Common 4.2
Communications:
BOARD TYPE Subparameter Responses:
CIPC T3-15
Except CIPC T3-14
Device Subparameter Responses T3-12
Installation 3.10
Protocol Subparameter Responses:
COMA T3-17
2780/3780 ..... T3-16
Protocol/Board Type Validation T3-13
COMPATCH 1.3.2
COMSWS 1.3.2
CONFIG 1.3.2
Configuration:
Base 3.1
List 2.3.3
Configuration Table:
Example 1 ..... F6-1
Example 2 ..... F6-3
Example 3 ..... F6-4
Example 5 ..... F6-5, F6-6
Configuration Utility, System 5.1
Configuration (LDC) Command, List Device 5.4
Country Code 3.4.11
Country Codes, Valid 5.7.2
CRU:
ACU 3.5.1.1
Address 3.1.1, 3.5.1.10
CRU Address, CI402 ..... 3.5.1.10
CRU ADDRESS Subparameter 3.5.1.10
CRU Addresses and Interrupts:
9902 Interface T3-2
9903 Interface T3-2
CRU Base Address:
17-Slot Chassis F3-5, F3-6
990A13 and 13-Slot Chassis F3-4
CRU Base Addresses Expansion Chassis, Offset T3-3

Data Disk/Volume Prompt 1.3, 3.3.1
Default Record Size 3.5.1.11
DEFAULT RECORD SIZE Subparameter 3.5.1.11
Default Values:
Interrupt 3.5.1.20, T3-27
Time-Out 3.5.1.29, T3-28
Validate Opens 3.5.1.30, T3-29
Defining a Special Device Example 6.5
Defining an Expansion Chassis Example 6.6
Definition Entry, Command 5.9.1
Definition Table, Command 5.9.1
Delete Command 2.3, 2.3.2
Device:
Attention 3.4.6
Configuration (LDC) Command, List 5.4
Disk 3.5.1.11
Log 3.4.5
Name 3.5.1.12
Special 1.3.3
Device Information Block 1.3.3, 3.5.1.12, 3.5.1.22, 3.5.1.23
DEVICE NAME Subparameter 3.5.1.12
Device Subparameter Responses, Communications T3-12
Device Type:
Prompt 3.5.1
Responses T3-10
Device-controller Combinations, DNOS Supported T3-5
DIB 1.3.3, 3.5.1.12, 3.5.1.22, 3.5.1.23
Directories, DNOS Object T1-1
Directory, User-SVC 1.3.3
Disk Device 3.5.1.11
DISK DEVICE Subparameter Responses T3-20
Disk Drive 3.5.1.13
DMAP < protocol name > 1.3.2
DMJOB 1.3.2
DMLINK 1.3.2
DMMAP 1.3.2

DNOS Functional Capabilities 1.1
DNOS Object Directories T1-1
DNOS Supported Device-Controller Combinations T3-5
Drive 3.5.1.13
  Disk 3.5.1.13
  Magnetic Tape 3.5.1.13
DRIVES Subparameter 3.5.1.13
DSR 1.3.1
  Files T1-2
DSR <protocol name> 1.3.2
DUMROOT 1.3.1
DVC 3.5.1
D$LIST 1.3.2
D$OBJECT 1.3.2
D$SOURCE 1.3.2

Echo 3.5.1.14
ECHO Subparameter 3.5.1.14
Encryption SVC 3.5.2.3
Entity 2.3, 3.4.14, 3.5.2
ENTITY Parameter Responses T3-9
Entry, Command Definition 5.9
ERRFIL 1.3.2
Error:
  Assemble 3.6
  Link 3.6
Example:
  Defining a Special Device 6.5
  Defining an Expansion Chassis 6.6
  First Time System Generation 6.3
  LDC Output F5-1
  Modifying an Existing Configuration File 6.4
  System Configuration File F6-1
  XSCU 5.10
Example 1, Configuration Table F6-2
Example 2, Configuration Table F6-3
Example 3, Configuration Table F6-4
Example 5, Configuration Table F6-5, F6-6
Except CIPC, Communications Board Type Subparameter Responses T3-14
Execute Performance Data (XPD) Command 5.6.1
Execute Performance Display Output Listing F5-2
Execute System Configuration Utility (XSCU) Command 5.2, 5.7
Execute System Generation Utility (XSGU) Command 1.3.2, 3.3
Expansion Chassis 3.1.2, 3.5.1.15
  Example, Defining an 6.6
  Offset CRU Base Addresses T3-3
EXPANSION CHASSIS Subparameter 3.5.1.15
Expansion Position 3.5.1.16
EXPANSION POSITION Subparameter 3.5.1.16
EXTENDED Subparameter 3.5.1.17
Extended (Printer Character Set) 3.5.1.17

Field Description XPD Display T5-1
Field Prompt Notation 1.4, T1-4
File:
  Application Program 3.4.4
  Key Indexed 3.4.1
File Manager Table Area 4.6, 5.6.2
Files, DSR T1-2
First Time System Generation Example 6.3
For Sysgen, Preanswered Parameters T4-1
Foreground Job Limit 4.8
Frequency, Line 3.4.12
Full Duplex Modem 3.5.1.18
FULL DUPLEX MODEM Subparameter 3.5.1.18
Functional Capabilities, DNOS 1.1

Group Name, SVC 3.5.2
Groups:
  Optional SVC 3.5.2
  SVC T3-30

ID, Restart 3.4.7
IGS Command 3.1, 3.9, 5.10
Initial Program Load (IPL) 5.2
Input Configuration Prompt 1.3.2, 3.3, 3.3.3, 3.10
Inquire Command 2.3, 2.3.3
Inquiry Mode 2.2
Install Generated System (IGS) Command 3.1, 3.9, 5.10
Installation, Communications 3.10
Interrupt Assignment:
  13-Slot Chassis 3.1.3, F3-8
  17-Slot Chassis 3.1.3, F3-9
  990A13 Chassis F3-7
Interrupt Bit 3.5.1.21
INTERRUPT BIT Subparameter 3.5.1.21
Interrupt:
  Default Values 3.5.1.20, T3-27
  Level 3.1.3, 3.5.1.15, 3.5.1.16
Intertask Communication SVC 3.5.2.2
IOULINK 1.3.2
IOUMAP 1.3.2
IOUOBJ 1.3.2
IPL 5.2
IS THE PDT THE INTERRUPT WORKSPACE Subparameter 3.5.1.22, 3.5.1.23

JCA 5.6.2
JENDAT 1.3.1
Job Communication Area (JCA) Size, System 5.6.2

Key Indexed File 3.4.1
Keyboard 3.5.1.23
KEYBOARD Subparameter 3.5.1.23
KIF 3.4.1
KSR 3.5.1.6, 3.5.1.18

KSR Device Subparameter
Responses T3-21

LDC Command 5.4
LDC Output Example F5-1
Level, Interrupt 3.1.3, 3.5.1.15, 3.5.1.16
Limit:
Batch Job 4.9
Foreground Job 4.8
Line Frequency 3.4.12
Line Printer Device Subparameter
Responses T3-22
Line, Switched 3.5.1.26
Link Error 3.6
List:
Command 2.3, 2.3.3
Configuration 2.3.3
Device Configuration (LDC)
Command 5.4
Listing, Command Definition Table F5-3
LNK<protocol name> 1.3.2
Log Device 3.4.5
Log-On Procedure 3.2
LSTCFDSR 1.3.2

Magnetic Tape Device Subparameter
Responses T3-23
Magnetic Tape Drive 3.5.1.13
MCC Command 5.7
MCDT Command 5.9.1, 5.9.2
MDC Command 5.5
MDS Command 3.5.1.24
Mode:
Command 2.3
Inquiry 2.2
Print 3.5.1.24
TTY 3.2
VDT 3.2
Modem:
Bell 202S 3.5.1.18
Full Duplex 3.5.1.18
Modify Command Definition Table
(MCDT) Command 5.9.1, 5.9.2
Modify Country Code (MCC)
Command 5.7
Modify Device Configuration (MDC)
Command 5.5
Modify Device State (MDS)
Command 3.5.1.24
Modify Scheduler/Swap Parameters
(MSP) Command 5.8
Modify System Table (MST)
Command 5.6.2
Modify Terminal Status (MTS)
Command 3.2
Modifying an Existing Configuration
File Example 6.4
MSP Command 5.8
MST Command 5.6.2
MTS Command 3.2

Name:
Device 3.5.1.12
Site 3.4.2
Notation:
Field Prompt 1.4, T1-4
Response 1.4

OBJCFDSR 1.3.2
Object Directory 1.3.1
Offset CRU Base Addresses
Expansion Chassis T3-3
Opcode, User-SVC 1.3.3
Open Default Values, Validate 3.5.1.30
Opens, Validate 3.5.1.30
Optional SVC Groups 3.5.2
Output Configuration Prompt 3.3.4, 3.10
Output Listing:
Execute Performance Display F5-2
XPD F5-2

Parallel Printer 3.5.1.24
Parameter:
Preanswered 4.1
Required 3.4
STA 5.6.2
System Table Area 5.6.2
Parameters for Sysgen,
Preanswered T4-1
Patch Generated System (PGS)
Command 3.1, 3.7
PDT 3.5.1.22, 3.5.1.23
PDT in the Interrupt
Workspace 3.5.1.22, 3.5.1.23
Performance Measurement Utility 5.6.1
PGS Command 3.1, 3.7
Physical Device Table 3.5.1.22, 3.5.1.23
Physical Memory Size 4.10
Position, Expansion 3.5.1.16
Power Fail Recovery 3.4.13
Preanswered Parameter 2.3.1, 4.1
Preanswered Parameters for Sysgen T4-1
Present, ACU 3.5.1.2
Print Mode 3.5.1.24
PRINT MODE Subparameter 3.5.1.24
Printer:
Associated 3.5.1.3
Parallel 3.5.1.24
Serial 3.5.1.24
Program Load (IPL), Initial 5.2
Prompt:
Abort 5.3
Assemble and Link 3.3.5, 3.6
Build 1.3.2, 2.3.4, 3.4
Command 2.3.1, 4.1
Data Disk/Volume 1.3, 3.3.1
Device Type 3.5.1
Input Configuration 1.3.2, 3.3, 3.3.3, 3.10
Output Configuration 3.3.4, 3.10
Save Configuration 2.3.4, 3.4

Target Disk/Volume 1.3, 3.3.2
Prompts, XGSU T3-6
Protocol, Channel 3.5.1.8
Protocol Subparameter Responses:
COMA, Communications T3-17
2780/3780, Communications T3-16
Protocol/Board Type Validation, Communications T3-13

QSCU Command 5.2, 5.3, 5.5, 5.6.2, 5.7
Queue, Character 3.5.1.9
Quit System Configuration Utility (QSCU) Command 5.2, 5.3, 5.5, 5.6.2, 5.7

Recommended TILINE Address Assignments T3-4
Record Size, Default 3.5.1.11
Required Parameter 2.3.1, 3.4
Required Parameters, XGSU T3-7
Response:
Notation 1.4
VT Subparameter T3-26
Responses:
ASR Device Subparameter T3-11
Device Type T3-10
ENTITY Parameter T3-9
Restart ID 3.4.7
RPUDAT 3.4.10

Save Configuration Prompt 2.3.4, 3.4
SBS Command 3.6
SCC Command 5.7
SCDT Command 5.9.1
Security 3.4.3
SEED 1.3.1
Segment Manager Table Area 4.5, 5.6.2
Serial Printer 3.5.1.24
Show Background Status (SBS) Command 3.6
Show Command Definition Table (SCDT) Command 5.9.1
Show Country Code (SCC) Command 5.7
Site Name 3.4.2
Size, Physical Memory 4.10
Slice Value 4.12
Slicing, Time 4.11
Special Device 1.3.3
Special Device Subparameter Responses T3-24
Speed 3.5.1.25
SPEED Subparameter 3.5.1.25
STA Parameter 5.6.2
Stop Command 2.3, 2.3.4, 3.5.1, 3.5.3
Subparameter:
ACU CRU 3.5.1.1
ACU PRESENT 3.5.1.2
ASSOCIATED PRINTER 3.5.1.3
BAUD RATE 3.5.1.4
BOARD TYPE 3.5.1.5
CASSETTE OPENS VALIDATED 3.5.1.6
CHANNEL NUMBER 3.5.1.7
CHANNEL NUMBER 00 PROTOCOL 3.5.1.8
CHARACTER QUEUE 3.5.1.9
CRU ADDRESS 3.5.1.10
DEFAULT RECORD SIZE 3.5.1.11
DEVICE NAME 3.5.1.12
DRIVES 3.5.1.13
ECHO 3.5.1.14
EXPANSION CHASSIS 3.5.1.15
EXPANSION POSITION 3.5.1.16
EXTENDED 3.5.1.17
FULL DUPLEX MODEM 3.5.1.18
INTERRUPT BIT 3.5.1.21
IS THE PDT THE INTERRUPT WORKSPACE 3.5.1.22, 3.5.1.23
KEYBOARD 3.5.1.23
PRINT MODE 3.5.1.24
SPEED 3.5.1.25
SWITCHED LINE 3.5.1.26
TERMINAL TYPE 3.5.1.27
TILINE ADDRESS 3.5.1.28
TIME OUT 3.5.1.29
VALIDATE OPENS 3.5.1.30
VDT TYPE 3.5.1.31
Supervisor Calls (SVC) 3.5.2
SVC 3.5.2
Accounting 3.5.2.1
Encryption 3.5.2.3
Group Name 3.5.2
Groups T3-30
Optional 3.5.2
Intertask Communication 3.5.2.2
Switched Line 3.5.1.26
SWITCHED LINE Subparameter 3.5.1.26
SYSLINK 1.3.2
SYSMAP 1.3.2
SYSOBL 1.3.2
System Configuration File, Example F6-2
System Configuration Utility 5.1
System Configuration Utility (XSCU) Command, Execute 5.2
System Generation Requirements 1.3
System:
Job Communication Area (JCA) Size 5.6.2
Table 4.4
System Table Area 3.6, 5.6.2
System Table Area Parameter 5.6.2
System Table Parameters 5.6
S$OSLINK Directory 1.3
SSGU 3.3.2
SSGU Directory 1.3
S$SHIP 3.1
S$UTIL 3.4.7

Table, Command Definition 5.9
Table Parameters, System 5.6
Table, System 4.4
Tape Drive, Magnetic 3.5.1.13
Target Disk/Volume Prompt 1.3, 3.3.2
Terminal Type 3.5.1.27

TERMINAL TYPE Subparameter 3.5.1.27
Termination 2.3.4
Test Generated System (TGS)
Command 3.1, 3.8, 5.10
TGS Command 3.1, 3.8, 5.10
TILINE Address 3.1.4, 3.5.1.28
TILINE ADDRESS Subparameter 3.5.1.28
Time-Out 3.5.1.29
Default Values T3-28
TIME OUT Subparameter 3.5.1.29
Time Slicing 4.11
TTY Mode 3.2
Type:
Terminal 3.5.1.27
VDT 3.5.1.31

USERSVC 3.4.10
User-SVC:
Directory 1.3.3
Opcode 1.3.3
Table Pathname 3.4.10

Valid Country Codes 5.7.2, T3-8, T5-2
Validate:
Cassette Opens 3.5.1.6
Opens Default Values 3.5.1.30, T3-29
Opens 3.5.1.30
VALIDATE OPENS Subparameter . . . 3.5.1.30
Validation, Communications
Protocol/Board Type T3-13
VDT Device Subparameter
Responses T3-25
VDT:
Commands T2-1
Mode 3.2
Type 3.5.1.31
911 . . . . . 3.5.1.31
931 . . . . . 3.5.1.3, 3.5.1.31
940 . . . . . 3.5.1.3, 3.5.1.31
VDT TYPE Subparameter 3.5.1.31
VT Subparameter Response T3-26

W Command 3.6
Wait (W) Command 3.6

XGSU:
Prompts T3-6
Required Parameters T3-7
XPD Command 5.6.1
XPD Display, Field Description T5-1
XPD Output Listing F5-2
XSCU:
Command 5.2, 5.7
Example 5.10
XSGU Command 1.3.2, 3.3
(Device Service Routine),
(DSR) . . . . . Section 1
.S$SHIP, Base Configuration in T3-1

13-Slot Chassis:
Base System Configuration
990A13 . . . . . F3-1
CRU Base Address 990A13 and F3-4
Interrupt Assignment 3.1.3, F3-8
17-Slot Chassis:
Base System Configuration F3-3
CRU Base Address F3-5, F3-6
Interrupt Assignment 3.1.3, F3-9
2780/3780, Communications Protocol
Subparameter Responses T3-16
911 VDT 3.5.1.31
931 VDT 3.5.1.3, 3.5.1.31
940 VDT 3.5.1.3, 3.5.1.31
990A13 and 13-Slot Chassis,
CRU Base Address F3-4
990A13 Chassis, Interrupt
Assignment F3-7
9902 Interface CRU Addresses and
Interrupts T3-2
9903 Interface CRU Addresses and
Interrupts T3-2

CUT ALONG LINE

USER'S RESPONSE SHEET

Manual Title: DNOS System Generation Reference Manual (2270511-9701)

Manual Date: 15 November 1983 **Date of This Letter:** _____

User's Name: _____ **Telephone:** _____

Company: _____ **Office/Department:** _____

Street Address: _____

City/State/Zip Code: _____

Please list any discrepancy found in this manual by page, paragraph, figure, or table number in the following space. If there are any other suggestions that you wish to make, feel free to include them. Thank you.

Location in Manual	Comment/Suggestion
_____	_____
	_____
	_____
	_____
_____	_____
	_____
	_____
	_____
_____	_____
	_____
	_____
	_____

NO POSTAGE NECESSARY IF MAILED IN U.S.A.
FOLD ON TWO LINES (LOCATED ON REVERSE SIDE), TAPE AND MAIL

FOLD

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 7284 DALLAS, TX

POSTAGE WILL BE PAID BY ADDRESSEE

TEXAS INSTRUMENTS INCORPORATED
DATA SYSTEMS GROUP

ATTN: TECHNICAL PUBLICATIONS
P.O. Box 2909 M/S 2146
Austin, Texas 78769

FOLD