

VMS System Generation Utility Manual

Order Number: AA-LA30A-TE

April 1988

This document describes the System Generation Utility for use on VAX processors.

Revision/Update Information: This document supersedes the *VAX/VMS System Generation Utility Reference Manual, Version 4.0.*

Software Version: VMS Version 5.0

**digital equipment corporation
maynard, massachusetts**

April 1988

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Preface

Intended Audience

This manual is intended for VMS system managers, operators, and system programmers.

Document Structure

This document consists of the following six sections:

- Description—Provides an overview and detailed usage information for the System Generation Utility (SYSGEN).
- Usage Summary—Outlines the following SYSGEN information:
 - Invoking the utility
 - Exiting from the utility
 - Directing output
 - Restrictions or privileges required
- Commands—Describes SYSGEN commands including format, parameters, and examples.
- Appendix A—Provides complete descriptions of SYSGEN parameters.
- Appendix B—Lists the characteristics of all DIGITAL UNIBUS and Q22 bus devices.
- Appendix C—Lists the characteristics of all DIGITAL VAXstation 2000/ MicroVAX 2000 devices.

Associated Documents

For additional information about the topics covered in this document, refer to the following documents:

- *VMS DCL Dictionary*
- *Guide to Setting Up a VMS System*
- *Guide to VMS Performance Management*
- *VMS Device Support Manual*

Conventions

Convention	Meaning
<code>RET</code>	In examples, a key name (usually abbreviated) shown within a box indicates that you press a key on the keyboard; in text, a key name is not enclosed in a box. In this example, the key is the RETURN key. (Note that the RETURN key is not usually shown in syntax statements or in all examples; however, assume that you must press the RETURN key after entering a command or responding to a prompt.)
<code>CTRL/C</code>	A key combination, shown in uppercase with a slash separating two key names, indicates that you hold down the first key while you press the second key. For example, the key combination CTRL/C indicates that you hold down the key labeled CTRL while you press the key labeled C. In examples, a key combination is enclosed in a box.
<code>\$ SHOW TIME</code> <code>05-JUN-1988 11:55:22</code>	In examples, system output (what the system displays) is shown in black. User input (what you enter) is shown in red.
<code>\$ TYPE MYFILE.DAT</code> . . .	In examples, a vertical series of periods, or ellipsis, means either that not all the data that the system would display in response to a command is shown or that not all the data a user would enter is shown.
<code>input-file, . . .</code>	In examples, a horizontal ellipsis indicates that additional parameters, values, or other information can be entered, that preceding items can be repeated one or more times, or that optional arguments in a statement have been omitted.
<code>[logical-name]</code>	Brackets indicate that the enclosed item is optional. (Brackets are not, however, optional in the syntax of a directory name in a file specification or in the syntax of a substring specification in an assignment statement.)
quotation marks apostrophes	The term quotation marks is used to refer to double quotation marks ("). The term apostrophe (') is used to refer to a single quotation mark.

New and Changed Features

A new class of system parameters, MULTIPROCESSING, has been added to the System Generation Utility (SYSGEN) for VMS Version 5.0. The MULTIPROCESSING class of parameters contains system parameters associated with symmetric multiprocessing (SMP). In addition, new parameters have been added to the CLUSTER and SYS classes of SYSGEN parameters. These new parameters are listed in the following table:

Class	Parameter Name
CLUSTER	EXPECTED_VOTES
	MSCP_BUFFER
	MSCP_CREDITS
	MSCP_LOAD
	MSCP_SERVE_ALL
	NISCS_CONV_BOOT
	NISCS_LOAD_PEA0
NISCS_PORT_SERV	
MULTIPROCESSING	MULTIPROCESSING
	SMP_CPUS
	SMP_LNGSPINWAIT
	SMP_SANITY_CNT
	SMP_SPINWAIT
SYS	DUMPSTYLE
	ERRORLOGBUFFERS
	MPW_IOLIMIT
	MPW_LOWAITLIMIT
	SHADOWING
	TAPE_MVTIMEOUT
WINDOW_SYSTEM	

See Appendix A for descriptions of these new SYSGEN parameters.

The following system parameters have been removed from the SYSGEN manual for VMS Version 5.0:

- QUORUM
- TAILORED



SYSGEN Description

The System Generation Utility (SYSGEN) is a system management tool used to tailor a system for a specific hardware and software configuration. Use SYSGEN commands to manipulate specific parts of the operating system, as follows:

- System parameters—DISABLE, ENABLE, SET, SHOW, USE, and WRITE
- Devices and device drivers—AUTOCONFIGURE, CONFIGURE, CONNECT, LOAD, RELOAD, SHOW/CONFIGURATION, SHOW/DEVICE, SHOW/DRIVER, and SHOW/UNIBUS. The SYSGEN device table (Table B-1) lists the characteristics of all DIGITAL devices that SYSGEN configures automatically. For a complete description of devices and device drivers, refer to the *VMS Device Support Manual*.
- System files—CREATE and INSTALL
- Startup command procedure—SET/STARTUP and SHOW/STARTUP
- Multiport memory—SHARE and SHARE/INITIALIZE

You can use a subset of the SYSGEN commands when you invoke the SYSBOOT facility during bootstrap operations; see the installation instructions for your VAX processor and the *Guide to Setting Up a VMS System* for more information.

1 Specifying Values for SYSGEN Qualifiers and Parameters

Normally, you specify values as an integer, keyword, or file specification. For parameters, integer values must be within the defined maximum and minimum values for the parameter unless the SYSGEN command DISABLE CHECKS was specified.

You can specify values for certain SYSGEN qualifiers and parameters in hexadecimal or octal radices and for others as an ASCII string. To specify a value in octal or hexadecimal, precede the value with %O or %X, respectively. To specify a value in ASCII, enclose the value string in quotation marks (" ").

2 Active and Current Parameter Values

It is important to understand the terms active and current when they are used to refer to system parameters. The term *active parameters* refers to the parameter values that are active when the system is running. The only active parameters that can be changed on a running system are those that are categorized as dynamic parameters (see Section A.1). The term *current parameters* refers to those values stored on disk (SYS\$SYSTEM:VAXVMSSYS.PAR) that are used to boot the system. The current parameters become the active parameters when the system boots.

Modifying active parameters with SYSGEN has no effect on the values of the stored current parameters; you change the values of these parameters only while the system is running. The next time you bootstrap the system, the old values of the current parameters are established as the active parameters. When you want to change the values of the current parameters on disk, you must use the SYSGEN command WRITE CURRENT. When you want to

SYSGEN Description

change the value of any active parameter that is not in the dynamic category, you must enter the `WRITE CURRENT` command and reboot the system.

SYSGEN Usage Summary

The System Generation Utility (SYSGEN) is a system management tool that performs certain privileged system configuration functions. With SYSGEN, you can create and modify system parameters, load device drivers, and create additional page and swap files.

FORMAT **RUN SYS\$SYSTEM:SYSGEN**

PARAMETERS *None.*

usage summary

To invoke SYSGEN, type RUN SYS\$SYSTEM:SYSGEN at the DCL command prompt. At the SYSGEN> prompt, enter any of the SYSGEN commands described in the following section. These commands follow the standard rules of grammar as specified in the *VMS DCL Dictionary*.

To exit from SYSGEN, enter the SYSGEN command EXIT at the SYSGEN> prompt or press CTRL/Z. You can direct output from a SYSGEN session to an output file using the SET/OUTPUT command. By default, output is written to SYS\$OUTPUT.

Note: DIGITAL recommends the use of the AUTOGEN command procedure when modifying system parameters, loading device drivers, or creating additional page and swap files. Refer to the *Guide to Setting Up a VMS System* for a description of AUTOGEN.

SYSGEN

SYSGEN Commands

SYSGEN COMMANDS

This section explains SYSGEN commands and provides examples of their use. The following SYSGEN commands are described:

AUTOCONFIGURE
CONFIGURE
CONNECT/ADAPTER
CONNECT/NOADAPTER
CONNECT CONSOLE
CREATE
DISABLE CHECKS
ENABLE CHECKS
EXIT
HELP
INSTALL
LOAD
MSCP
RELOAD
SET/OUTPUT
SET
SET/STARTUP
SHARE
SHARE/INITIALIZE
SHOW/ADAPTER
SHOW/CONFIGURATION
SHOW/DEVICE
SHOW/DRIVER
SHOW
SHOW/STARTUP
SHOW/UNIBUS
TERMINAL/ECHO
USE
WRITE

AUTOCONFIGURE

Automatically connects devices that are physically attached to the system and loads their drivers.

Use of the AUTOCONFIGURE command requires the CMKRNL privilege.

FORMAT **AUTOCONFIGURE** *adapter-spec*
AUTOCONFIGURE ALL

PARAMETER *adapter-spec*
Specifies the adapter specification (backplane interconnect arbitration line) or slot number of the single UNIBUS or MASSBUS adapter that is to be configured. The adapter specification can be expressed as an integer or with one of the names listed by the SYSGEN command SHOW/ADAPTER.

You can specify AUTOCONFIGURE ALL to configure all standard devices attached to the system.

QUALIFIERS ***/EXCLUDE=(device-name[,...])***
Specifies the device types that you do not want automatically configured.

You can specify a device-type code as shown in Table SGN-1 or a standard device name as shown in Table B-1. You can include a controller designation but not a unit number. If the controller designation is omitted, all devices of the specified type are excluded. The device-name specification defaults to all devices on the adapter.

Do not use this qualifier with the */SELECT* qualifier.

/LOG
Produces a display of the controller and its units on the current SYS\$OUTPUT device after they have been successfully autoconfigured. Each controller and its associated units are displayed only after AUTOCONFIGURE has found the next controller. Therefore, the error message displays precede the display of the controller and units that caused the error.

/SELECT=(device-name[,...])
Specifies the device types that you want automatically configured.

You can specify a device-type code as shown in Table SGN-1 or a standard device name as shown in Table B-1. You can include a controller designation but not a unit number. If the controller designation is omitted, all devices of the specified type are selected. The device-name specification defaults to all devices on the adapter.

Do not use */SELECT* with the */EXCLUDE* qualifier.

SYSGEN

AUTOCONFIGURE

Table SGN-1 Device Type Codes

Code	Device Type
CR	Card Reader
CS	Console Storage Device
DB	RP05, RP06 Disk
DD	TU58 Cartridge Tape
DJ	RA 60 Disk
DL	RL02 Cartridge Disk
DM	RK06, RK07 Cartridge Disk
DQ	RL02 Cartridge Disk, R80 Disk
DR	RM03, RM05, RM80, RP07 Disk
DU	UDA Disk
DX	RX01 Floppy Diskette
DY	RX02 Floppy Diskette
LA	LPA 11-K Laboratory Peripheral Accelerator
LC	Line Printer on DMF32
LP	Line Printer on LP11
MB	Mailbox
MF	TU78 Magnetic Tape
MS	TS11 Magnetic Tape
MT	TE16, TU45, TU77 Magnetic Tape
MU	Tape Class Driver
NET	Network Communications Logical Device
NL	System "Null" Device
OP	Operator's Console
PA	Computer Interconnect (CI)
PT	TU81 Magnetic Tape
PU	UDA-50
RT	Remote Terminal
TT	Interactive Terminal on DZ11
TX	Interactive Terminal on DMF32, DMZ32, DHU11, or DMB32
XA	DR11-W General Purpose DMA Interface
XD	DMP-11 Synchronous Communications Line
XF	DR32 Interface Adapter
XG	DMF32 Synchronous Communications Line
XI	DR Interface on DMF-32
XJ	DUP11 Synchronous Communications Line
XM	DMC11 Synchronous Communications Line

EXAMPLES

1 SYSGEN> AUTOCONFIGURE ALL

The command in this example automatically configures all standard devices.

2 SYSGEN> AUTOCONFIGURE ALL/SELECT=(TT,MTA,LP)

The command in this example automatically configures all terminals, all magnetic tape units on controller A, and all line printers.

3 SYSGEN> AUTOCONFIGURE ALL/EXCLUDE=XM

The command in this example illustrates the use of the /EXCLUDE qualifier to autoconfigure all but the DMC11 devices, assuming DECnet-VAX will not be operating on this system.

SYSGEN CONFIGURE

CONFIGURE

Requests UNIBUS device names and issues the set of CSR and vector addresses that AUTOCONFIGURE will use.

FORMAT CONFIGURE

PARAMETERS *None.*

QUALIFIERS

/INPUT=file-spec

Specifies the name of an input file from which previously prepared data is read. By default, input data is read from SYS\$INPUT.

/OUTPUT=file-spec

Specifies the name of an output file to which output from CONFIGURE is written. By default, output is directed to SYS\$OUTPUT. The default file type is LIS.

/[NO]RESET

Controls whether controller names are reset. The /NORESET qualifier is useful with multiple UNIBUS systems. When you specify /NORESET, it is not necessary to specify the second parameter (*p*) on subsequent CONFIGURE commands, since the controller names are not reset. By default, if you omit /NORESET, the controller names are reset.

DESCRIPTION

CONFIGURE issues the following prompt:

DEVICE>

Input should be in the following form, where *device* is the name of the controller:

device[[,*n*],*p*]

Possible controller names are listed in the second column in Table B-1. You cannot abbreviate controller names.

You can optionally specify *n*, the number of devices on the UNIBUS being configured, and *p*, the optional number of devices on all previous UNIBUS devices in a multiple UNIBUS system. Note that *p* affects only the device names, not the addresses generated. By default, *n* is 1 and *p* is 0.

SYSGEN continues to prompt for devices until you respond with CTRL/Z. It then displays the control and status register (CSR) and vector addresses for the devices specified.

EXAMPLE

```
SYSGEN> CONFIGURE
DEVICE> DZ11,3,2
DEVICE> LP11
DEVICE> DMC11,2
DEVICE> CTRL/Z
```

The system displays the following data:

Device:	RK611	Name:	DMA	CSR:	777440	Vector:	210	Support:	yes
Device:	LP11	Name:	LPA	CSR:	777514	Vector:	200	Support:	yes
Device:	DMC11	Name:	XMA	CSR:	760070*	Vector:	300*	Support:	yes
Device:	DMC11	Name:	XMB	CSR:	760100*	Vector:	310*	Support:	yes
Device:	DZ11	Name:	TTC	CSR:	760120*	Vector:	320*	Support:	yes
Device:	DZ11	Name:	TTD	CSR:	760130*	Vector:	330*	Support:	yes
Device:	DZ11	Name:	TTE	CSR:	760140*	Vector:	340*	Support:	yes

* Indicates a floating address. See
Appendix B for a description of floating addresses.

This example illustrates the use of the CONFIGURE command to calculate the UNIBUS CSR and vector addresses. The support field in the display indicates whether DIGITAL provides a supported driver for this device with the VMS operating system.

SYSGEN

CONNECT/ADAPTER=adapter-spec

CONNECT/ADAPTER=adapter-spec

Connects a hardware device and loads its driver if the driver is not already loaded. The adapter specification is the name of the UNIBUS or MASSBUS adapter to which the device is attached. The value can be expressed as an integer or as one of the names listed by the SYSGEN command SHOW/ADAPTER.

Use of the CONNECT/ADAPTER=adapter-spec command requires the CMKRNL privilege.

FORMAT **CONNECT/ADAPTER=adapter-spec** *device*

PARAMETER *device*
Specifies the name of the hardware device to be connected. It should be specified in the following form: device-type, controller, unit. For example, LPA0 specifies the line printer (LP) on controller A at unit number 0. When specifying the device name, do *not* follow it with a colon (:).

QUALIFIERS **/ADPUNIT=unit-number**
Unit number of a device on the MASSBUS adapter. The unit number for a disk drive is the number of the plug on the drive. For magnetic tape drives, the unit number corresponds to the tape controller's number.

/CSR=csr-addr
Specifies the UNIBUS address of the first addressable location on the controller (usually the status register) for the device. This qualifier must be specified for UNIBUS devices. For devices on multiple device boards (for example, the DMF32), the address must be the CSR address specified in the output of the CONFIGURE command. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/CSR_OFFSET=value
For devices on multiple device boards, specifies the offset from the CSR address of the multiple device board to the CSR address for the specific device being connected. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/DRIVERNAME=driver
Specifies the name of the driver as recorded in the prolog table. If the driver has not been loaded, the system acts as if the driver name is also the name of an executable image (file type of EXE) in the SYS\$LOADABLE_IMAGES directory and loads the driver. The driver name defaults to the first two characters of the device name concatenated with "DRIVER" (for example, LPDRIVER).

/MAXUNITS=max-unit-cnt

Specifies the maximum number of units the controller can support (that is, the number of UCB slots in the IDB). The default is the number specified in the prolog table of the driver, or 8 if the number is not specified in the prolog table.

/NUMVEC=vector-cnt

Specifies the number of interrupt vectors for the device. By default, the vector count is 1.

/SYSIDHIGH=value

Specifies the high-order 16 bits of the 48-bit system identification number and must be 0. To specify the value in octal or hexadecimal, precede the value with %O or %X, respectively.

/SYSIDLOW=value

Specifies the low-order 32 bits of the 48-bit system identification number. The value must be identical to the DECnet-VAX node number. To specify the value in octal or hexadecimal, precede the value with %O or %X, respectively.

/VECTOR=vector-addr

Specifies the UNIBUS address of the interrupt vector for the device or the lowest vector, if there is more than one. This qualifier must be specified for UNIBUS devices. For devices on multiple device boards (for example, the DMF32), the address must be the interrupt vector address for the multiple device board specified in the output of the CONFIGURE command. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

/VECTOR_OFFSET=value

For devices on multiple device boards, specifies the offset from the interrupt vector address of the multiple device board to the interrupt vector address for the specific device being connected. To specify the address in octal or hexadecimal, precede the address with %O or %X, respectively.

DESCRIPTION

Use this command to connect devices that are not physically attached to the system or whose drivers are not standard.

Caution: Exercise extreme caution when using the **CONNECT/ADAPTER=adapter-spec** command because the system does little error checking. An incorrect vector address or misspelled device name, for example, will damage the I/O database and usually causes the system to fail. The *VMS Device Support Manual* contains more detailed information on loading device drivers and connecting devices.

EXAMPLE

```
SYSGEN> CONNECT LPA0/ADAPTER=3/CSR=%0777514 -
SYSGEN> /DRIVERNAME=LP2DRIVER/VECTOR=%0200
```

The command in this example connects the device named LPA0 to the driver named LP2DRIVER and loads the driver if it is not already loaded.

SYSGEN

CONNECT/NOADAPTER

CONNECT/NOADAPTER

Connects a software device and loads its driver if it is not already loaded. Use of the CONNECT/NOADAPTER command requires the CMKRNL privilege.

FORMAT **CONNECT/NOADAPTER** *device*

PARAMETER *device*
Specifies the name of the software device to be connected.

QUALIFIER */DRIVERNAME=driver*
Specifies the name of the driver as recorded in the prolog table. If the driver has not been loaded, the system acts as if the driver name is also the name of an executable image (file type of EXE) in the SYS\$LOADABLE_IMAGES directory and loads the driver. The default is the first two characters of the device name concatenated with "DRIVER" (for example, LPDRIVER). The driver prolog table must specify ADAPTER=NULL for this command to work.

EXAMPLE

SYSGEN> CONNECT NET/NOADAPTER/DRIVER=NETDRIVER

The command in this example connects the device NET to the driver NETDRIVER and loads the driver if it is not already loaded.

CONNECT CONSOLE

The **CONNECT CONSOLE** command connects the console block storage devices and loads the driver. The console block storage device driver is **CSDRIVER.EXE**.

Use of the **CONNECT CONSOLE** command requires the **CMKRNL** privilege.

FORMAT	CONNECT CONSOLE
---------------	------------------------

PARAMETERS	<i>None.</i>
-------------------	--------------

QUALIFIERS	<i>/NI</i> Enables a port for a console connected through the NI.
	<i>/REMOTE</i> Enables a remote diagnostic port for a second console or terminal connected to a VAX 8600 or VAX 8650 system.
	<i>/USER</i> Enables a port for a system user terminal connected to a VAX 8800 system.

SYSGEN

CREATE

CREATE

Creates or extends a file that can be used as a page, swap, or dump file.

FORMAT **CREATE** *file-spec*

PARAMETER ***file-spec***
Specifies the name of the page, swap, or dump file. The default file type is SYS. Primary page and swap files have the names SYS\$SYSTEM:PAGEFILE.SYS and SYS\$SYSTEM:SWAPFILE.SYS.

The dump file name is SYS\$SYSTEM:SYSDUMP.DMP. When you create a new SYSDUMP.DMP file, you must explicitly specify the file type DMP.

QUALIFIERS ***/[NO]CONTIGUOUS***
Controls whether CREATE creates a contiguous file. The default is /NOCONTIGUOUS, which implies a contiguous-best-try file. If /NOCONTIGUOUS is specified, the following logic is used:

- 1 If the file does not exist, SYSGEN creates it.
- 2 If the file does exist, and the size specified by the /SIZE qualifier is smaller than the current size, SYSGEN creates a new file of the new size.
- 3 If the file does exist, and the size specified by the /SIZE qualifier is larger than the current size, SYSGEN extends the current file to the new size.

The /CONTIGUOUS qualifier forces the creation of a new file and guarantees that the file will be contiguous.

/SIZE=block-count
Specifies the number of blocks to be allocated to the file when the operation is complete.

DESCRIPTION You do not have to enter this command directly for the creation of primary files because the installation of VMS creates them. However, you should execute the command procedure SYS\$UPDATE:SWAPFILES to change the size of the primary files.

A secondary page or swap file only takes effect after you install it with the SYSGEN command INSTALL. The only way to make a new SYSDUMP.DMP file active is by rebooting the system.

Files created with SYSGEN receive the default protection of the process that invoked SYSGEN. DIGITAL recommends that you use the SWAPFILES command procedure, which includes a SET PROTECTION command, to establish appropriate protection for the files after it creates them with SYSGEN.

EXAMPLES

1 SYSGEN> CREATE SYS\$SYSTEM:PAGEFILE/SIZE=95000/CONTIGUOUS
%SYSGEN-I-CREATED, SYS\$SYSROOT:[SYSEXE]PAGEFILE.SYS;2 created

The command in this example creates a contiguous page file of 95,000 blocks.

2 SYSGEN> CREATE SYS\$SYSTEM:PAGEFILE/SIZE=100000
%SYSGEN-I-EXTENDED, SYS\$SYSROOT:[SYSEXE]PAGEFILE.SYS;2 extended

The command in this example extends the file created in Example 1 to 100,000 blocks.

SYSGEN

DISABLE CHECKS

DISABLE CHECKS

Inhibits range checks on parameter values specified in SET commands.

FORMAT	DISABLE CHECKS
---------------	-----------------------

PARAMETERS	<i>None.</i>
-------------------	--------------

QUALIFIERS	<i>None.</i>
-------------------	--------------

DESCRIPTION	Initially, checks are enabled. If you specify a value above the maximum, the system sets the parameter to the maximum and issues an error message. If you specify a value below the minimum, the system sets the parameter to the minimum and issues an error message. The DISABLE CHECKS command allows you to override maximum and minimum values.
--------------------	--

Caution: The minimum and maximum values established by DIGITAL are intended as strict guidelines. Setting parameter values outside these limits can result in system failures or hangs. The use of DISABLE CHECKS is not recommended.

EXAMPLE

```
SYSGEN> SET WSMAX 20
%SYSGEN-W-SETMIN, Value set to minimum for parameter WSMAX
SYSGEN> DISABLE CHECKS
SYSGEN> SET WSMAX 20
```

In this example, the initial attempt to set WSMAX below the minimum fails because range checks are enabled. However, once the user disables range checks, the SET WSMAX command succeeds.

ENABLE CHECKS

Ensures that range checks are in effect.

Initially, range checks are enabled. Use **ENABLE CHECKS** only after you enter a **DISABLE CHECKS** command.

FORMAT ENABLE CHECKS

PARAMETERS *None.*

QUALIFIERS *None.*

EXAMPLE

```
SYSGEN> DISABLE CHECKS
SYSGEN> SET WSMAX 20
SYSGEN> ENABLE CHECKS
SYSGEN> SET WSMAX 30
%SYSGEN-W-SETMIN, Value set to minimum for parameter WSMAX
```

This example illustrates the use of the **ENABLE CHECKS** command to reenables parameter value checks.

SYSGEN

EXIT

EXIT

Returns you to command level. You can also return to command level by pressing CTRL/Z.

FORMAT

EXIT

PARAMETERS

None.

QUALIFIERS

None.

HELP

Lists and explains the SYSGEN commands.

FORMAT **HELP** *[command-name]*

PARAMETER *command-name*
Specifies the name of a SYSGEN command or the keyword PARAMETERS.
The command HELP PARAMETERS displays a list of all parameters and
prompts for a parameter name.

QUALIFIERS *None.*

DESCRIPTION If you do not specify either a command name or the keyword PARAMETERS,
HELP displays general information on the commands for which help is
available. It then prompts with "Topic?". You can supply a command
name, the keyword PARAMETERS, or press RETURN. When you specify
a command name and qualifiers, you get detailed information about that
command. If you respond by pressing RETURN, you exit from the HELP
command. You can also exit from the HELP command by pressing CTRL/Z.
Do not respond with CTRL/Y unless you want to exit from both HELP and
SYSGEN.

If the command for which you request help accepts qualifiers, the display
of information for the command is followed by a prompt that includes the
command name and the prompt "Subtopic?". Respond to this prompt with a
qualifier name or by pressing RETURN. If you respond by pressing RETURN,
you move to the first level of HELP and HELP prompts with "Topic?". If you
want to exit the HELP command directly from any level, press CTRL/Z.

EXAMPLE

```
SYSGEN> HELP AUTOCONFIGURE
```

```
AUTOCONFIGURE
```

```
Automatically configures the device driver database. It locates each  
device unit physically attached to the system, loads the appropriate  
driver, creates the appropriate data structures, and connects the driver  
to the device's interrupt.
```

```
Format
```

```
    AUTOCONFIGURE ALL
```

```
    AUTOCONFIGURE adapter-spec
```

```
CMKRNL privilege required
```

SYSGEN

HELP

Additional information available:

adapter-spec	ALL	qualifiers
/SELECT	/EXCLUDE	/LOG

AUTOCONFIGURE Suptopic?

The HELP command in this example displays information about the AUTOCONFIGURE command.

INSTALL

Activates a secondary page or swap file. The new page or swap file is effective until system shutdown.

Use of the INSTALL command requires the CMKRNL privilege.

FORMAT **INSTALL** *file-spec*

PARAMETER *file-spec*
Specifies the name of the secondary page or swap file created with the SYSGEN command CREATE. The default file type is SYS.

QUALIFIERS ***/PAGEFILE***
Specifies that the file is to be installed as an additional page file. All processes created after the page file is installed use the page file with the most available free space; processes created before the additional page file is installed continue to use the page file to which they are assigned.

/SWAPFILE
Specifies that the file is to be installed as an additional swap file. This swap file augments the swap file installed during the bootstrap process.

EXAMPLE

SYSGEN> INSTALL SYS\$SYSTEM:PAGEFILE.SYS/PAGEFILE

The command in this example installs a secondary page file.

SYSGEN

LOAD

LOAD

Loads an I/O driver.

Use of the LOAD command requires the CMKRNL privilege.

FORMAT **LOAD** *file-spec*

PARAMETER *file-spec*

Specifies the file specification of the driver image to be loaded. The default file type is EXE.

If the entire file specification is the same as that of a driver already loaded, no load takes place. If only the file name is the same as that of a driver that is already loaded (but the file specification is different), the specified driver replaces the existing driver.

QUALIFIERS *None.*

DESCRIPTION Refer to the *VMS Device Support Manual* for a complete description of the LOAD command.

EXAMPLE

SYSGEN> LOAD SYS\$SYSTEM:RTTDRIVER

The command in this example loads the standard driver for a remote terminal.

MSCP

Loads and starts the MSCP server.

This method of loading the MSCP server has been superseded for VMS Version 5.0 by the SYSGEN parameter MSCP_LOAD. To load the MSCP server, set the MSCP_LOAD parameter to 1. Define the disks to be served with the MSCP_SERVE_ALL parameter. See Appendix A for descriptions of the MSCP parameters.

FORMAT

MSCP

SYSGEN

RELOAD

RELOAD

Replaces a loaded device driver with a new version.
Use of the RELOAD command requires the CMKRNL privilege.

FORMAT **RELOAD** *file-spec*

PARAMETER *file-spec*
The file specification of the new driver image. The default file type is EXE. The specified image is loaded and replaces any existing driver with the same file specification.

QUALIFIERS *None.*

DESCRIPTION Refer to the *VMS Device Support Manual* for a complete description of the RELOAD command.

EXAMPLE

```
SYSGEN> RELOAD SYS$SYSTEM:RTTDRIVER
```

The command in this example reloads the remote terminal driver.

SET/OUTPUT

Establishes a file to be used for output during the session. By default the output is written to SYS\$OUTPUT, but you can use the SET/OUTPUT command to designate a disk file.

At any time you can direct the output back to SYS\$OUTPUT by using the SET/OUTPUT=SYS\$OUTPUT command.

FORMAT **SET/OUTPUT[=] *file-spec***

PARAMETER ***file-spec***

The name of the output file. The default file type is LIS. The equal sign (=) is optional.

EXAMPLE

```
SYSGEN> SET/OUTPUT=PARAMS.LIS
SYSGEN> SHOW/ALL
SYSGEN> SHOW/SPECIAL
SYSGEN> EXIT
```

In this example, output is directed to the file PARAMS.LIS to capture a complete list of all the system parameters (including the SPECIAL parameters reserved for DIGITAL use) and their values.

SYSGEN

SET parameter-name

SET parameter-name

Assigns a value to a system parameter in the SYSGEN work area.

This command does not modify parameter files, the current system parameter file on disk, or the active system; for information on performing these modifications, see the WRITE command.

FORMAT **SET parameter-name value**

PARAMETERS ***parameter-name***

Specifies the name of a system parameter. If you enter a period (.), it is interpreted as a request for the system parameter specified in the last SET or SHOW command. See the description of the SHOW [parameter] command for an example of the use of the period in place of a parameter name.

You can display the system parameters and request information on them with the SYSGEN command HELP PARAMETERS.

value

Usually specifies an integer or the keyword DEFAULT. Integer values must be within the defined minimum and maximum values for the parameter unless the SYSGEN command DISABLE CHECKS was specified.

The keyword DEFAULT specifies the default value for the parameter. You can display the maximum, minimum, and default values for any parameter with the SYSGEN command SHOW [parameter].

You can specify values for certain SYSGEN parameters in hexadecimal or octal radices and for others as an ASCII string. To specify a value in octal or hexadecimal, precede the value with %O or %X, respectively. To specify a value in ASCII, enclose the value string in quotation marks (" ").

QUALIFIERS *None.*

EXAMPLES

1 SYSGEN> SET PFCDEFAULT 20

The command in this example assigns a value of 20 to the PFCDEFAULT parameter.

2 SYSGEN> SET GBLSECTIONS DEFAULT

The command in this example assigns the default value (40) to the GBLSECTIONS parameter.

SET/STARTUP

Names the site-independent startup command procedure to be associated with a parameter file for subsequent bootstrap operations.

FORMAT **SET/STARTUP** *file-spec*

PARAMETER *file-spec*
The file specification of a startup command procedure on the system disk (maximum of 31 characters). The initial site-independent startup command procedure (as named in the software distribution kit) is SYS\$SYSTEM:STARTUP.COM.

EXAMPLE

SYSGEN> SET/STARTUP SYS\$SYSTEM:XSTARTUP.COM

The command in this example assigns SYS\$SYSTEM:XSTARTUP.COM as the current site-independent startup command procedure.

SYSGEN

SHARE

SHARE

Connects a processor to a multiport memory unit already initialized by this or another processor. The number and name of the specified multiport memory unit must be those of an initialized unit, or an error condition results.

Use of the SHARE command requires the CMKRNL privilege.

FORMAT **SHARE** *MPMn* *MPM-name*

PARAMETERS ***MPMn***
Specifies the number on the front panel of the multiport memory unit being connected.

MPM-name
The name of the multiport memory unit as specified in a previous SHARE/INITIALIZE command.

EXAMPLE

SYSGEN> SHARE MPM1 SHR_MEM_1

The command in this example connects a multiport memory unit. Since no qualifiers are specified, defaults apply to all the parameters.

The unit with a 1 on the front panel must be initialized with the name SHR_MEM_1 for the command to work.

SHARE/INITIALIZE

Initializes a multiport memory unit and connects it to the processor on which SYSGEN is running.

Use of the SHARE/INITIALIZE command requires the CMKRNL privilege.

FORMAT **SHARE/INITIALIZE** *MPMn MPM-name*

PARAMETERS ***MPMn***
Specifies the number on the front panel of the multiport memory unit being connected.

MPM-name
Specifies the name by which the multiport memory unit is to be known to systems using it. The MPM-name is a 1 through 15 alphanumeric character string that may contain dollar signs (\$) and underscores (_).

QUALIFIERS ***/CEFCLUSTERS=cef***
Specifies the total number of common event flag clusters permitted in the multiport memory unit. The cef value is an integer with a default of 32.

/GBLSECTIONS=gbl
Specifies the total number of global sections permitted in the multiport memory unit. The gbl value is an integer with a default of 32.

/MAILBOXES=mail
Specifies the total number of mailboxes permitted in the multiport memory unit. The mail value is an integer with a default of 32.

/MAXCEFCLUSTERS=max-cef
Specifies the maximum number of common event flag clusters that the processor can create in the multiport memory unit. The default is no limit.

/MAXGBLSECTIONS=max-gbl
Specifies the maximum number of global sections that the processor can create in the multiport memory unit. The default is no limit.

/MAXMAILBOXES=max-mail
Specifies the maximum number of mailboxes the processor can create in the multiport memory unit. The default is no limit.

/POOLBCOUNT=block-cnt
Specifies the number of blocks allocated to the multiport memory unit's dynamic pool. The block-cnt value is an integer with a default of 128.

/POOLBSIZE=block-size
Specifies the size of each block in the dynamic pool. The block-size value is an integer with a default of 128 bytes.

SYSGEN

SHARE/INITIALIZE

/PRQCOUNT=prq-cnt

Specifies the number of interprocessor request blocks (PRQs) allocated. The prq-cnt value is an integer with a default of 64.

DESCRIPTION

If the specified multiport memory unit is already initialized and connected to other active processors, the gbl, mail, cef, block-cnt, block-size, and prq-cnt parameter values are ignored, and the unit is simply connected to the processor.

EXAMPLE

```
SYSGEN> SHARE MPM1 SHR_MEM_1/INITIALIZE -  
SYSGEN> /GBLSECTIONS=128/MAILBOXES=64/CEFCLUSTERS=0
```

The command in this example initializes a multiport memory unit with defaults on all but the gbl, mail, and cef parameters. In this example, assume that the number of the multiport memory unit as it appears on the front panel is 1, and the unit name is SHR_MEM_1.

SHOW/ADAPTER

Lists all the nexus numbers and generic names on the adapter.

Use of the SHOW/ADAPTER command requires the CMEXEC privilege.

FORMAT **SHOW/ADAPTER**

PARAMETERS *None.*

QUALIFIERS *None.*

EXAMPLE

SYSGEN> SHOW/ADAPTER

The following is a sample display produced by the SHOW/ADAPTER command:

CPU Type: 11/780

Nexus	Generic Name or Description
1	16K memory, non-interleaved
3	UB0
8	MBO
9	MB1

SYSGEN

SHOW/CONFIGURATION

SHOW/CONFIGURATION

Displays information on the device configuration.

Use of the SHOW/CONFIGURATION command requires the CMEXEC privilege.

FORMAT SHOW/CONFIGURATION

PARAMETERS *None.*

QUALIFIERS

/ADAPTER=nexus

Specifies the number of MASSBUS or UNIBUS adapters to be displayed. The nexus value can be expressed as an integer or with one of the generic names listed by the SYSGEN command SHOW/ADAPTER.

/COMMAND_FILE

Specifies that SYSGEN formats all the device data into CONNECT/ADAPTER=adapter-spec commands and writes the commands in an output file you specify. In this way, you can completely reconfigure a system for UNIBUS devices without the use of the SYSGEN command AUTOCONFIGURE.

/OUTPUT=file-spec

Specifies the file specification of an optional output file. If you specify the /OUTPUT qualifier but omit the file type, the default is LIS. However, if you specify /COMMAND_FILE and /OUTPUT qualifiers together, the default file type for the output file is COM.

DESCRIPTION

SHOW/CONFIGURATION shows devices by name, number of units, nexus number, and adapter type, as well as by CSR and vector addresses. You can specify an output file with the /OUTPUT qualifier.

Note that you can remove a device from the middle of the floating addresses without completely redoing jumpers to the CSR and vector addresses of the remaining devices by following the steps outlined below:

- 1 Modify your site-independent STARTUP.COM file to invoke the command file specified with the /OUTPUT qualifier instead of entering an AUTOCONFIGURE ALL command.
- 2 Enter the SHOW/CONFIGURATION/COMMAND_FILE/OUTPUT command to format and save the device data. If you must bring the system down for service and remove a board, SYS\$SYSTEM:STARTUP.COM invokes your output file as a command procedure when the system reboots, and the system automatically configures the system's UNIBUS devices and MASSBUS devices for you.

SYSGEN

SHOW/CONFIGURATION

Remember that a new version of SYS\$SYSTEM:STARTUP.COM is provided with each major release, so you would need to repeat any modifications you have made to SYS\$SYSTEM:STARTUP.COM after you install the new version.

Note: Although this technique can offer a convenient short-term solution, you should use AUTOCONFIGURE ALL when possible.

EXAMPLES

1 SYSGEN> SHOW/CONFIGURATION

The command in this example displays the current system I/O database. The following illustrates a typical display produced by this command:

System CSR and Vectors on 15-NOV-1988 13:49:26.84

```
Name: DRA Units: 3 Nexus:4 (MBA)
Name: DBA Units: 1 Nexus:4 (MBA)
Name: DBB Units: 2 Nexus:5 (MBA)
Name: DRB Units: 1 Nexus:5 (MBA)
Name: MTA Units: 2 Nexus:5 (MBA)
Name: DMA Units: 2 Nexus:8 (UBA) CSR: 777440 Vector1: 210 Vector2: 000
Name: LPA Units: 1 Nexus:8 (UBA) CSR: 777514 Vector1: 200 Vector2: 000
Name: DYA Units: 2 Nexus:8 (UBA) CSR: 777170 Vector1: 264 Vector2: 000
Name: XMA Units: 1 Nexus:8 (UBA) CSR: 760070 Vector1: 300 Vector2: 304
Name: XMB Units: 1 Nexus:8 (UBA) CSR: 760100 Vector1: 310 Vector2: 314
Name: XMC Units: 1 Nexus:8 (UBA) CSR: 760110 Vector1: 320 Vector2: 324
Name: TTA Units: 8 Nexus:8 (UBA) CSR: 760130 Vector1: 330 Vector2: 334
Name: TTB Units: 8 Nexus:8 (UBA) CSR: 760140 Vector1: 340 Vector2: 344
Name: TTC Units: 8 Nexus:8 (UBA) CSR: 760150 Vector1: 350 Vector2: 354
Name: TTD Units: 8 Nexus:8 (UBA) CSR: 760160 Vector1: 360 Vector2: 364
Name: TTE Units: 8 Nexus:8 (UBA) CSR: 760170 Vector1: 370 Vector2: 374
Name: TTF Units: 8 Nexus:8 (UBA) CSR: 760200 Vector1: 400 Vector2: 404
```

2 SYSGEN> SHOW/CONFIGURATION/COMMAND_FILE/OUTPUT=CONFIG.COM

The command in this example formats all device data into CONNECT/ADAPTER=adapter-spec commands and writes the commands to the command file CONFIG.COM. The following is a typical command file produced by this command:

```
$ RUN SYS$SYSTEM:SYSGEN
AUTOCONFIGURE 4
AUTOCONFIGURE 5
CONNECT DMA0 /ADAP=8 /CSR=%0777440 /VECT=%0210 /NUMV=01 /DRIVER=DMDRIVER
CONNECT DMA1 /ADAP=8 /CSR=%0777440 /VECT=%0210 /NUMV=01 /DRIVER=DMDRIVER
CONNECT LPA0 /ADAP=8 /CSR=%0777514 /VECT=%0200 /NUMV=01 /DRIVER=LPDRIVER
CONNECT DYA0 /ADAP=8 /CSR=%0777170 /VECT=%0264 /NUMV=01 /DRIVER=DYDRIVER
CONNECT DYA1 /ADAP=8 /CSR=%0777170 /VECT=%0264 /NUMV=01 /DRIVER=DYDRIVER
CONNECT XMA0 /ADAP=8 /CSR=%0760070 /VECT=%0300 /NUMV=02 /DRIVER=XMDRIVER
CONNECT XMB0 /ADAP=8 /CSR=%0760100 /VECT=%0310 /NUMV=02 /DRIVER=XMDRIVER
CONNECT XMC0 /ADAP=8 /CSR=%0760110 /VECT=%0320 /NUMV=02 /DRIVER=XMDRIVER
CONNECT TTA0 /ADAP=8 /CSR=%0760130 /VECT=%0330 /NUMV=02 /DRIVER=DZDRIVER
CONNECT TTA1 /ADAP=8 /CSR=%0760130 /VECT=%0330 /NUMV=02 /DRIVER=DZDRIVER
CONNECT TTA2 /ADAP=8 /CSR=%0760130 /VECT=%0330 /NUMV=02 /DRIVER=DZDRIVER
.
.
CONNECT TTF7 /ADAP=8 /CSR=%0760200 /VECT=%0400 /NUMV=02 /DRIVER=DZDRIVER
```

SYSGEN

SHOW/DEVICE=device-driver

SHOW/DEVICE=device-driver

Displays full information on device drivers loaded into the system, the devices connected to them, and their I/O databases. All addresses are in hexadecimal and are virtual.

Use of the SHOW/DEVICE=device-driver command requires the CMEXEC privilege.

FORMAT *SHOW/DEVICE=device-driver*

PARAMETERS *None.*

QUALIFIERS *None.*

DESCRIPTION The SHOW/DEVICE=device-driver command specifies that the following information be displayed about the specified device driver:

Driver	Name of the driver
Start	Starting address of the driver
End	Ending address of the driver
Dev	Name of each device connected to the driver
DDB	Address of the device's device data block
CRB	Address of the device's channel request block
IDB	Address of the device's interrupt dispatch block
Unit	Number of each unit on the device
UCB	Address of each unit's unit control block

By default, if you omit the driver name, information is displayed for all device drivers loaded into the system.

EXAMPLE

SYSGEN> SHOW/DEVICE=DBDRIVER

The command in this example displays the following information about the DBDRIVER:

__Driver__	__Start__	__End__	__Dev__	__DDB__	__CRB__	__IDB__	__Unit__	__UCB__
DBDRIVER	80082390	80082A7E						
			DBA	80000848	800988C0	80098920		
							0	8000087C
							1	8008A4F0
							2	8008A590
							5	8008A630
							7	8008A6D00

SHOW/DRIVER=device-driver

Displays the starting and ending address of the specified device driver loaded into the system. If you omit the driver name, SHOW/DRIVER displays the starting and ending address of all device drivers loaded into the system. All addresses are in hexadecimal and are virtual.

Use of the SHOW/DRIVER command requires the CMEXEC privilege.

FORMAT *SHOW/DRIVER=device-driver*

PARAMETERS *None.*

QUALIFIERS *None.*

EXAMPLE

SYSGEN> SHOW/DRIVER

The command in this example displays the starting and ending addresses of all drivers, as follows:

__Driver__	__Start__	__End__
RTTDRIVER	800C1060	800C1960
NETDRIVER	800BAFD0	800BD4B0
TMDRIVER	800B3950	800B4BF0
DRDRIVER	800B2950	800B3290
DDDRIVER	800B1740	800B2060
DLDRIVER	800B0D10	800B15A0
DMDRIVER	800B0070	800B0990
LCDRIVER	800AFC50	800AFFB0
YCDRIVER	800AED20	800AF3E0
XGDRIVER	800AC3F0	800AE9E0
XDDRIVER	800AA5A0	800AC380
DZDRIVER	800A4F30	800A59B0
XMDRIVER	800A3E10	800A4A50
DYDRIVER	800A3300	800A3C30
LPDRIVER	800A2E90	800A3300
DBDRIVER	800DE7A0	800DEFB7
TTDRIVER	800DC770	800DE79B
OPERATOR	80001650	80001F8B
NLDRIVER	80001626	80001D20
MBDRIVER	800015FC	80001CBE

SYSGEN

SHOW [parameter]

SHOW [parameter]

Displays the values of system parameters in the SYSGEN work area, plus the default, minimum, and maximum values of the parameters and their units of measure.

FORMAT **SHOW [parameter-name]**

PARAMETER **parameter-name**
Specifies the name of a system parameter. If you enter a period (.), it is interpreted as a request for the system parameter specified in the last SET parameter-name or SHOW [parameter] command.

QUALIFIERS **/ACP**
Specifies that all ACP parameter values are displayed.

/ALL
Specifies that all parameter values other than SPECIAL parameter values are displayed.

/CLUSTER
Specifies that all CLUSTER parameter values are displayed.

/DYNAMIC
Specifies that all DYNAMIC parameter values are displayed.

/GEN
Specifies that all GEN parameter values are displayed.

/HEX
Specifies that the values of parameters be displayed in hexadecimal representation. Specify the /HEX system parameter name or the parameter type. If you specify the /HEX qualifier with the /NAMES qualifier, /HEX is ignored.

/JOB
Specifies that all JOB parameter values are displayed.

/LGI
Specifies that all LGI parameter values are displayed.

/MAJOR
Specifies that all MAJOR parameter values are displayed.

/MULTIPROCESSING
Specifies that all MULTIPROCESSING parameters are displayed.

/NAMES
Specifies that the names of all parameters are displayed.

/PQL

Specifies that all PQL parameter values are displayed.

/RMS

Specifies that all VAX RMS parameter values are displayed.

/SCS

Specifies that all SCS parameter values are displayed.

/SPECIAL

Specifies that all parameter values reserved for DIGITAL use are displayed.

/SYS

Specifies that all SYS parameter values are displayed.

/TTY

Specifies that all terminal parameter values are displayed.

DESCRIPTION

Parameter values are displayed in decimal unless the */HEX* qualifier is specified. Note that ASCII values are displayed in ASCII by default.

When parameter names are abbreviated, the first parameter matching the abbreviation is selected for display. No ambiguity checks are made. For example, a specification of *SHOW GBL* displays the *GBLSECTIONS* parameter. To display the *GBLPAGFIL* parameter, you must specify *SHOW GBLPAGF* (to avoid further ambiguity with the *GBLPAGES* parameter).

You can use a period (.) to indicate that you want to work with the system parameter that was specified in the last *SET* parameter-name or *SHOW [parameter]* command.

EXAMPLES

```
1 SYSGEN> SHOW GBLSECTIONS
    GBLSECTIONS      100      40      20      -1 Sections
SYSGEN> SET . 110
SYSGEN> SHOW .
    GBLSECTIONS      110      40      20      -1 Sections
```

In this example, the user first displays the values of the *GBLSECTIONS* parameter and then refers to the parameter with a period to set its current value to 110. The next *SHOW* command also uses the period notation to obtain confirmation that the change occurred.

SYSGEN

SHOW [parameter]

2 SYSGEN> SHOW/ACP

The command in this example produces the following output:

Parameters in use: Active

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
ACP_MULTIPLE	0	1	0	1	Boolean	D
ACP_SHARE	1	1	0	1	Boolean	
ACP_MAPCACHE	52	8	1	-1	Pages	D
ACP_HDRCACHE	138	128	2	-1	Pages	D
ACP_DIRCACHE	138	80	2	-1	Pages	D
ACP_DINDXCACHE	37	25	2	-1	Pages	D
ACP_WORKSET	0	0	0	-1	Pages	D
ACP_FIDCACHE	64	64	0	-1	File-Ids	D
ACP_EXTCACHE	64	64	0	-1	Extents	D
ACP_EXTLIMIT	300	300	0	1000	Percent/10	D
ACP_QUOCACHE	130	64	0	-1	Users	D
ACP_SYSACC	4	8	0	-1	Directories	D
ACP_MAXREAD	32	32	1	64	Blocks	D
ACP_WINDOW	7	7	1	-1	Pointers	D
ACP_WRITEBACK	1	1	0	1	Boolean	D
ACP_DATACHECK	2	2	0	3	Bit-mask	D
ACP_BASEPRIO	8	8	4	31	Priority	D
ACP_SWAPFLGS	14	15	0	15	Bit-mask	D
ACP_XQP_RES	1	1	0	1	Boolean	
ACP_REBLDSYSD	0	1	0	1	Boolean	

3 SYSGEN> SHOW/ACP/HEX

The command in this example produces a hexadecimal display of the values of the ACP system parameters, as follows:

Parameters in use: Active

Parameter Name	Current	Default	Minimum	Maximum	Unit	Dynamic
ACP_MULTIPLE	00000000	00000001	00000000	00000001	Boolean	D
ACP_SHARE	00000001	00000001	00000000	00000001	Boolean	
ACP_MAPCACHE	00000034	00000008	00000001	FFFFFFFF	Pages	D
ACP_HDRCACHE	0000008A	00000080	00000002	FFFFFFFF	Pages	D
ACP_DIRCACHE	0000008A	00000050	00000002	FFFFFFFF	Pages	D
ACP_DNDXCACHE	00000025	00000019	00000002	FFFFFFFF	Pages	D
ACP_WORKSET	00000000	00000000	00000000	FFFFFFFF	Pages	D
ACP_FIDCACHE	00000040	00000040	00000000	FFFFFFFF	File-Ids	D
ACP_EXTCACHE	00000040	00000040	00000000	FFFFFFFF	Extents	D
ACP_EXTLIMIT	0000012C	0000012C	00000000	000003E8	Percent/10	D
ACP_QUOCACHE	00000082	00000040	00000000	FFFFFFFF	Users	D
ACP_SYSACC	00000004	00000008	00000000	FFFFFFFF	Directories	D
ACP_MAXREAD	00000020	00000020	00000001	00000040	Blocks	D
ACP_WINDOW	00000007	00000007	00000001	FFFFFFFF	Pointers	D
ACP_WRITEBACK	00000001	00000001	00000000	00000001	Boolean	D
ACP_DATACHECK	00000002	00000002	00000000	00000003	Bit-mask	D
ACP_BASEPRIO	00000008	00000008	00000004	0000001F	Priority	D
ACP_SWAPFLGS	0000000E	0000000F	00000000	0000000F	Bit-mask	D
ACP_XQP_RES	00000001	00000001	00000000	00000001	Boolean	
ACP_REBLDSYSD	00000000	00000001	00000000	00000001	Boolean	

SHOW/STARTUP

Displays the name of the current site-independent startup command procedure.

FORMAT **SHOW/STARTUP**

PARAMETERS *None.*

QUALIFIERS *None.*

EXAMPLE

```
SYSGEN> SHOW/STARTUP
Startup command file = SYS$SYSTEM:STARTUP.COM
```

The command in this example displays the name of the site-independent startup command procedure.

SYSGEN

SHOW/UNIBUS

SHOW/UNIBUS

Displays the addresses in UNIBUS I/O space that can be addressed.
Use of the SHOW/UNIBUS command requires the CMKRNL privilege.

FORMAT **SHOW/UNIBUS**

PARAMETERS *None.*

QUALIFIER **/ADAPTER[=*nexus*]**
Specifies that the address of the specified UNIBUS adapter is to be displayed. The nexus value specifies the number of the UNIBUS. It can be expressed as an integer or as one of the names listed by the SYSGEN command SHOW/ADAPTER. If you do not specify a particular adapter, every UNIBUS is displayed.

DESCRIPTION The SHOW/UNIBUS command reads all device registers. For some controllers, the result might be reading a character out of a buffer or some other undesired action. Therefore, use the SHOW/UNIBUS command only when you need to debug a UNIBUS configuration.

Note: Never use the SHOW/UNIBUS command on a running system. Use of this command is valid only during a conversational bootstrap.

EXAMPLE

SYSGEN> SHOW/UNIBUS/ADAPTER=4

The command in this example displays the available addresses for nexus 4, as follows:

```
**UNIBUS map for nexus #4 on 30-DEC-1988 14:19:38.00 **
Address 760070 (8001F838) responds with value 9B6E (hex)
Address 760072 (8001F83A) responds with value 0340 (hex)
Address 760074 (8001F83C) responds with value 403C (hex)
Address 760076 (8001F83E) responds with value 0240 (hex)
Address 760100 (8001F840) responds with value 8000 (hex)
Address 760102 (8001F842) responds with value 0340 (hex)
Address 760104 (8001F844) responds with value 7DAC (hex)
Address 760106 (8001F846) responds with value 000A (hex)
Address 760110 (8001F848) responds with value 8000 (hex)
Address 760112 (8001F84A) responds with value 0340 (hex)
Address 760114 (8001F84C) responds with value AD5C (hex)
Address 760116 (8001F84E) responds with value 000A (hex)
```

SYSGEN

SHOW/UNIBUS

Address 760130 (8001F858) responds with value 9B6E (hex)
Address 760132 (8001F85A) responds with value 030D (hex)
Address 760134 (8001F85C) responds with value FF00 (hex)
Address 760136 (8001F85E) responds with value CECE (hex)
Address 760140 (8001F860) responds with value 4060 (hex)
Address 760142 (8001F862) responds with value 0761 (hex)
Address 760144 (8001F864) responds with value FF00 (hex)

SYSGEN

TERMINAL/ECHO

TERMINAL/ECHO

Modifies the CTRL/C, CTRL/O, CTRL/Y, and CTRL/Z echo strings on a systemwide basis.

FORMAT **TERMINAL/ECHO**

PARAMETERS *None.*

QUALIFIERS *None.*

DESCRIPTION Before entering the TERMINAL/ECHO command, edit the file SYSGTTSTR.MSG in SYS\$EXAMPLES. The file contains detailed instructions for the editing procedure.

When you enter the TERMINAL/ECHO command after editing the file, the modifications you have specified are carried out.

USE

Initializes the SYSGEN work area with system parameter values and the name of the site-independent startup command procedure. You specify the source for both the parameter values and the procedure name. They can be retrieved from a parameter file, the current system parameter file on disk, the active system in memory, or the default list.

Existing values in the SYSGEN work area are overwritten.

FORMAT **USE** *file-spec*

PARAMETER *file-spec*

The file specification of a system parameter file from which data is to be retrieved. The parameter file is either SYS\$SYSTEM:AUTOGEN.PAR or the name of a parameter file you created with the SYSGEN command WRITE. The default file type is PAR.

In place of a file specification, you can specify one of the following keywords:

CURRENT

Specifies that source information is to be retrieved from the current system parameter file on disk.

ACTIVE

Specifies that source information is to be retrieved from the active system in memory.

DEFAULT

Specifies that source information is to be retrieved from the default list.

QUALIFIERS *None.*

EXAMPLE

SYSGEN> USE DEFAULT

The command in this example initializes the SYSGEN work area with parameter values that should allow VMS to boot on any standard configuration. The initial values of the SYSGEN work area when the utility is invoked are the active values.

SYSGEN

WRITE

WRITE

Writes the system parameter values and the name of the site-independent startup command procedure from the SYSGEN work area to either a parameter file, the current system parameter file on disk, or the active system in memory. (Only the dynamic parameter values are written to the active system.)

Use of the WRITE ACTIVE command requires the CMKRNL privilege. Use of the WRITE CURRENT command requires the SYSPRV privilege.

FORMAT **WRITE** *file-spec*

PARAMETER ***file-spec***

The file specification of a new parameter file to be created. The default file type is PAR.

In place of a file specification, you can specify one of the following keywords:

CURRENT

Specifies that source information is to be written to the current system parameter file on disk.

ACTIVE

Specifies that source information is to be written to the active system in memory.

DEFAULT

Specifies that source information is to be written to the default list.

QUALIFIERS *None.*

DESCRIPTION Both the WRITE ACTIVE and WRITE CURRENT commands send a message to OPCOM and log the event.

EXAMPLES

1 SYSGEN> WRITE SYS\$SYSTEM:SPECIAL

The command in this example creates a new parameter specification file.

2 SYSGEN> WRITE CURRENT

The command in this example modifies the current system parameter file on disk (SYS\$SYSTEM:VAXVMSSYS.PAR).

A Supplemental SYSGEN Information

This appendix describes the functions of the VMS system parameters.

A.1 Parameter Categories

The system parameters can be divided into the following categories:

- ACP—Parameters associated with file system caches and Files-11 ancillary control processes (ACPs).
- CLUSTER—Parameters that affect VAXcluster operation.
- JOB—Job control parameters.
- LGI—Login security parameters.
- PQL—Parameters associated with process creation limits and quotas.
- RMS—Parameters associated with VMS RMS.
- SCS—Parameters that control System Communication Services (SCS) and port driver operation. The parameters that affect SCS operation have the prefix SCS. The parameters that affect the CI780/CI750 port driver have the prefix PA.
- SPECIAL—Special parameters used by DIGITAL. These parameters should be used only by DIGITAL personnel.
- SYS—Parameters that affect overall system operation.
- TTY—Parameters associated with terminal behavior.

There are also four parameters that can be user-defined: USERD1, USERD2, USER3, and USER4. USERD1 and USERD2 are dynamic.

Parameters can have one or more of the following attributes:

- DYNAMIC—Active values can be modified.
- GEN—Affect the creation and initialization of data structures at bootstrap time.
- MAJOR—Most likely to require modification.

These attributes are noted in the detailed parameter descriptions in Section A.2.

Each parameter has associated default, minimum, and maximum values that define the scope of allowable values. To determine these values, invoke SYSGEN and enter a SHOW [parameter-name] command (with appropriate qualifiers). For example, to display the values for WSMAX, you can specify SHOW WSMAX; to display the values for the TTY parameters, you can specify SHOW/TTY. You can also display parameters grouped by attributes. To display DYNAMIC parameters, for example, specify SHOW/DYNAMIC.

Supplemental SYSGEN Information

A.1 Parameter Categories

Following is a list of system parameters grouped according to category. An asterisk indicates that a parameter is dynamic.

ACP Parameters

ACP_BASEPRIO*	ACP_DATACHECK*	ACP_DINDXCACHE*
ACP_DIRCACHE*	DJTQUOTA*	ACP_EXTCACHE*
ACP_EXTLIMIT*	ACP_FIDCACHE*	ACP_HDRCACHE*
ACP_MAPCACHE*	ACP_MAXREAD*	MJTQUOTA
ACP_MULTIPLE*	ACP_QUOCACHE*	ACP_REBLDSYSD
ACP_SHARE*	ACP_SWAPFLGS*	ACP_SYSACC*
ACP_WINDOW*	ACP_WRITEBACK*	ACP_WORKSET*
ACP_XQP_RES*		

CLUSTER Parameters

ALLOCLASS*	DISK_QUORUM*	EXPECTED_VOTES
LOCKDIRWT	MSCP_BUFFER	MSCP_CREDITS
MSCP_LOAD	MSCP_SERVE_ALL	NISCS_CONV_BOOT
NISCS_LOAD_PEA0	NISCS_PORT_SERV	RECNXINTERVAL*
QDSKINTERVAL	QDKSVOTES	VAXCLUSTER
VOTES		

JOB Parameters

BJOBLIM*	DEFPRI*	DEFQUEPRI*
IJOBLIM*	MAXQUEPRI*	NJOBLIM*
RJOBLIM*		

LGI Parameters

LGI_BRK_DISUSER*	LGI_BRK_LIM*	LGI_BRK_TERM*
LGI_BRK_TMO*	LGI_HID_TIM*	LGI_RETRY_LIM*
LGI_RETRY_TMO*		

MULTIPROCESSING Parameters

MULTIPROCESSING	SMP_CPUS	SMP_LNGSPINWAIT
SMP_SANITY	SMP_SPINWAIT	

Supplemental SYSGEN Information

A.1 Parameter Categories

PQL Parameters

PQL_DASTLM*	PQL_DBIOLM*	PQL_DBYTLM*
PQL_DCPULM*	PQL_DDIOLM*	PQL_DENQLM*
PQL_DFILLM*	PQL_DPGFLQUOTA*	PQL_DPRCLM*
PQL_DTQELM*	PQL_DWSDEFAULT	PQL_DWSEXTENT*
PQL_DWSQUOTA*	PQL_MASTLM*	PQL_MBIOLM*
PQL_MBYTLM*	PQL_MCPULM*	PQL_MDIOLM*
PQL_MENQLM*	PQL_MFILLM*	PQL_MPGFLQUOTA*
PQL_MPRCLM*	PQL_MTQELM*	PQL_MWSDEFAULT
PQL_MWSEXTENT*	PQL_MWSQUOTA*	

RMS Parameters

RMS_DFMBC*	RMS_DFMBFSDK*	RMS_DFMBFSMT*
RMS_DFMBFSUR*	RMS_DFMBFREL*	RMS_DFMBFIDX*
RMS_DFMBFHS*	RMS_DFNBC*	RMS_PROLOGUE*
RMS_EXTEND_SIZE*	RMS_FILEPROT	RMS_GBLBUFQUO*

SCS Parameters

SCSBUFFCNT	SCSCONNCNT	SCSRESPCNT
SCSMAXDG	SCSMAXMSG	SCSFLOWCUSH*
SCSSYSTEMID	SCSSYSTEMIDH	SCSNODE
PRCPOLINTERVAL*	PASTIMOUT*	PASTDGBUF
PANUMPOLL*	PAMAXPORT*	PAPOLLINTERVAL*
PAPOOLINTERVAL*	PASANITY*	PANOPOLL*
UDABURSTRATE		

Special Parameters

CHANNELCNT	CONCEAL_DEVICES	DLCKEXTRASTK
EXUSRSTK	IMGIOCNT	IOTA
LOCKRETRY	LPRMIN	MPW_PPIO
NOAUTOCONFIG	NOCLOCK	NOCLUSTER
PAGTBLPFC	PFRATS	PHYSICALPAGES
PIXSCAN	PSEUDOLOA	QBUS_MULT_INTR
RESALLOC	SO_PAGING	SMP_TICK_CNT
SRPMIN	SSINHIBIT	SWP_PPIO

Supplemental SYSGEN Information

A.1 Parameter Categories

Special Parameters

SWPALLOCINC	SWPFAIL	SWPRATE
SYSPFC	TBSKIPWSL	VMS
WRITABLESYS		

SYS Parameters

AWSMIN*	AWSTIME*	BALSETCNT
BORROWLIM*	BUGCHECKFATAL*	BUGREBOOT*
CLISYMTBL*	CRDENABLE	DEADLOCK_WAIT*
DEFMBXBUFQUO*	DEFMBXMXMSG*	DEFMBXNUMMSG*
DEFPRI*	DISMOUMSG*	DORMANTWAIT*
DUMPCBUG	DUMPSTYLE	ERRORLOGBUFFERS
EXTRACPU*	FREEGOAL	FREELIM
GBLPAGES	GBLPAGFIL	GBLSECTIONS
GROWLIM*	INTSTKPAGES	IRPCOUNT
IRPCOUNTV	LAMAPREGS	LNMPHASHTBL
LNMSHASHTBL	LOCKIDTBL	LOCKIDTBL_MAX*
LONGWAIT*	LRPCOUNT	LRPCOUNTV
LRPSIZE	MAXBUF*	MAXPROCESSCNT
MAXSYSGROUP*	MINWSCNT	MOUNTMSG*
MPW_HILIMIT	MPW_IOLIMIT	MPW_LOLIMIT
MPW_LOWAITLIMIT*	MPW_THRESH*	MPW_WAITLIMIT*
MPW_WRTCLUSTER	MVTIMEOUT*	NPAGEDYN
NPAGEVIR	PAGEDYN	PAGFILCNT
PFCDEFAULT*	PFRATH*	PFRATL*
PROCSECTCNT	QUANTUM*	REALTIME_SPTS
RESHASHTBL	SAVEDUMP	SETTIME
SPTREQ	SRPCOUNT	SRPCOUNTV
STARTUP_P1-8	SWPFILCNT	SWPOUTPGCNT*
SYSMWCNT	TAPE_MVTIMEOUT*	TIMEPROMPTWAIT
UAFALTERNATE	VIRTUALPAGECNT	WINDOW_SYSTEM
WSDEC*	WSINC*	WSMAX
XFMAXRATE*		

TTY Parameters

TTY_ALTYPAMD	TTY_ALTALARM	TTY_AUTOCHAR
TTY_BUF	TTY_CLASSNAME	TTY_DEFCHAR
TTY_DEFCHAR2	TTY_DIALTYPE	TTY_DMASIZE*

Supplemental SYSGEN Information

A.1 Parameter Categories

TTY Parameters

TTY_OWNER	TTY_PARITY	TTY_PROT
TTY_RSPEED	TTY_SCANDELTA	TTY_SILOTIME
TTY_SPEED	TTY_TIMEOUT	TTY_TYPAHDSZ

A.2 Parameter Descriptions

This section describes system parameters and provides guidelines to help you decide whether you should consider modifying them. The parameters are presented in alphabetical order, and the attributes DYNAMIC, GEN, and MAJOR are indicated as follows:

DYNAMIC—D
GEN—G
MAJOR—M

Default values for SYSGEN parameters allow booting on any supported VMS configuration and are usually adequate. SYSGEN displays these default values under the heading "default" when you enter the SYSGEN command SHOW [parameter] for one of the parameter categories or attributes. Reset the default parameter values with the USE DEFAULT command.

The computed, installed value referred to in this section is the value derived by the AUTOGEN command procedure (see the *Guide to Maintaining a VMS System*).

Descriptions for the SPECIAL system parameters are listed in a separate section at the end of the appendix.

Note: In versions of the VMS operating system before Version 4.0, a separate process, the Ancillary Control Process (ACP), performed file operations such as file opens, closes, and window turns. Version 4.0 introduced the XQP (extended QIO procedure), which allows every process on the system to perform these operations. Consequently, many ACP parameters are applicable only when Files-11 structure level 1 disks are mounted or when an ACP is specifically requested during a mount command. For compatibility reasons, the names of the parameters have not changed.

System Parameters

ACP_BASEPRIO (D)

ACP_BASEPRIO sets the base priority for all ACPs. The DCL command SET PROCESS/PRIORITY can be used to reset the base priorities of individual ACPs. ACP_BASEPRIO is not applicable for XQPs.

ACP_DATACHECK (D)

ACP_DATACHECK enables verification of reading and writing of file structure data (for example, directories and file headers). A specification of 3 means read and write checks; 2 means write check only; 1 means read check only; 0 means no checks. On a read check, the XQP information is read twice and compared. On a write check, the XQP information is written, and then read and compared.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

ACP_DIRCACHE (D)

ACP_DIRCACHE sets the number of pages for caching directory blocks. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the directory data block cache.

ACP_DINDXCACHE (D)

ACP_DINDXCACHE controls the size of the directory index cache and the number of buffers used on a cache-wide basis. In addition, ACP_DINDXCACHE builds a temporary index into the directory file, thereby reducing search time and directory header lookup operations. This parameter replaces the ACP_SYSACC parameter for Files-11 ODS-2 disks.

ACP_EXTCACHE (D)

ACP_EXTCACHE sets the number of entries in the extent cache. Each entry points to one contiguous area of free space on disk. A specification of 0 means no cache. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the extent cache.

ACP_EXTLIMIT (D)

ACP_EXTLIMIT specifies the maximum amount of free space to which the extent cache can point, expressed in thousandths of the currently available free blocks on the disk. For example, if available free space on the disk is 20,000 blocks, a specification of 10 limits the extent cache to 200 blocks.

The computed, installed value is usually adequate. Users with 4 or more VAXcluster node systems may want to adjust this parameter.

ACP_FIDCACHE (D)

ACP_FIDCACHE sets the number of file identification slots cached. A specification of 1 means no cache. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the FID caches.

ACP_HDRCACHE (D)

ACP_HDRCACHE sets the number of pages for caching file header blocks. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the file header caches.

ACP_MAPCACHE (D)

ACP_MAPCACHE sets the number of pages for caching index file bit map blocks. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the bit map cache.

ACP_MAXREAD (D)

ACP_MAXREAD sets the maximum number of directory blocks read in one I/O operation.

ACP_MULTIPLE (D)

ACP_MULTIPLE enables or disables the default creation of a separate disk XQP cache for each volume mounted on a different device type. Prior to Version 4.0, a separate ACP process was created for each device type if this parameter was enabled. Since ACP operations are now handled by

Supplemental SYSGEN Information

A.2 Parameter Descriptions

the per process XQP, such separate processes are no longer created. In general, there is no reason to have multiple caches. One large cache is more efficient than several small ones. ACP_MULTIPLE can be overridden on an individual-volume basis with the DCL command MOUNT.

ACP_QUOCACHE (D)

ACP_QUOCACHE sets the number of quota file entries cached. A specification of 0 means no cache. Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the quota caches.

ACP_REBLDSYSD

ACP_REBLDSYSD specifies whether the system disk should be rebuilt if it was improperly dismounted with extent caching, file number caching, or disk quota caching enabled. The ACP_REBLDSYSD default value (1) ensures that the system disk is rebuilt.

Depending on the amount of caching enabled on the volume before it was dismounted, the rebuild operation may consume a considerable amount of time. Setting the value of ACP_REBLDSYSD to 0 specifies that the disk should be returned to active service immediately. If you set ACP_REBLDSYSD to 0, you can enter the DCL command SET VOLUME/REBUILD at any time to rebuild the disk.

ACP_SHARE (D)

ACP_SHARE enables or disables the creation of a global section for the first ACP used, enabling succeeding ACPs to share its code. This parameter should be set on (0) when ACP_MULTIPLE is on.

ACP_SWAPFLGS (D)

ACP_SWAPFLGS enables or disables swap through the value of a 4-bit number for the following four classes of ACPs:

Bit	Class of ACP
0	Disks mounted by MOUNT/SYSTEM
1	Disks mounted by MOUNT/GROUP
2	Private disks
3	Magnetic tape ACP

If the value of the bit is 1, the corresponding class of ACPs can be swapped. The value of decimal 15 (hexadecimal F—all bits on) enables swap for all classes of ACP. A value of decimal 14 disables swap for ACPs for volumes mounted with the /SYSTEM qualifier but leaves swap enabled for all other ACPs. Note that one will only have disk ACPs present if they are specifically requested at mount time or if a Files-11 structure level 1 disk is mounted. In general, only bit 3 is significant since there will usually be no file ACPs.

ACP_SYSACC (D)

ACP_SYSACC sets the number of directory file control blocks (FCBs) that will be cached for disks mounted with the /SYSTEM qualifier. Each directory FCB contains a 16-byte array containing the first letter of the last entry in each block of the directory (or group of blocks if the directory exceeds 16 blocks). Since entries in a directory are alphabetical, the cached FCB provides quick access to a required directory block. This parameter value should be roughly

Supplemental SYSGEN Information

A.2 Parameter Descriptions

equivalent to the number of directories that will be in use concurrently on each system volume. It may be overridden on a per-volume basis with the /ACCESSED qualifier to the DCL command MOUNT. The value should be kept low in systems with small physical memory and little file activity, because the FCBs require a significant amount of space in the nonpaged dynamic pool.

Too small a value causes excessive XQP I/O operations, while too large a value causes excessive physical memory to be consumed by the FCB caches.

ACP_WINDOW (D)

ACP_WINDOW sets the default number of window pointers to be allocated in a window for a default file access, for disks mounted with the /SYSTEM qualifier.

ACP_WORKSET (D)

ACP_WORKSET sets the default size of a working set for an ACP. A value of 0 permits the ACP to calculate the size. This value should be nonzero only on small systems where memory is tight. Too small a value causes excessive ACP page, while too large a value causes excessive physical memory to be consumed by the ACP. Note that this parameter has no effect on the per process XQP.

ACP_WRITEBACK (D)

ACP_WRITEBACK enables the deferred writing of file headers by default. A specification of 0 causes all modifications of file headers to be written to disk immediately.

ACP_XQP_RES (D)

ACP_XQP_RES controls whether the XQP is currently in memory. The default value (1), specifies that the XQP is permanently in memory. Change the default only on restricted memory systems with a small number of users and little or no file activity that would require XQP intervention. Such activity includes file opens, closes, directory lookups, and window turns.

ALLOCLASS (D)

ALLOCLASS determines the device allocation class for the system. The device allocation class is used to derive a common lock resource name for multiple access paths to the same device.

AWSMIN (D)

AWSMIN establishes the lowest number of pages to which a working set limit can be decreased by automatic working set adjustment.

AWSTIME (D)

AWSTIME specifies the minimum amount of processor time that must elapse for the system to collect a significant sample of a working set's page fault rate. The time is expressed in units of 10 milliseconds. The default value of 20, for example, is 200 milliseconds.

BALSETCNT (G,M)

BALSETCNT sets the number of balance set slots in the system page table. Each memory-resident working set requires 1 balance set slot. Each balance set slot requires 4 bytes of permanently resident memory per 128 virtual pages (as specified in the VIRTUALPAGECNT parameter).

Supplemental SYSGEN Information

A.2 Parameter Descriptions

You can monitor the active system with the DCL command SHOW MEMORY or the MONITOR PROCESSES command of the Monitor Utility to determine the actual maximum number of working sets in memory. If this number is significantly lower than the value of BALSETCNT, this parameter value may be lowered. If all balance set slots are being used, raise the value of BALSETCNT.

BALSETCNT should never be set to a value higher than 2 less than MAXPROCESSCNT. If physical memory is a significant system constraint, you should consider lowering this value even further. However, if your system runs with a number of processes nearly equal to MAXPROCESSCNT, lowering BALSETCNT will force swapping to occur, which can affect system performance.

BJOBLIM (D)

BJOBLIM enables the limit for batch jobs.

BORROWLIM (D,M)

BORROWLIM defines the minimum number of pages required on the free page list before the system will permit process growth beyond the working set quota (WSQUOTA) for the process. This parameter should always be greater than FREELIM.

This parameter allows a process to grow beyond the value set by the working set quota (WSQUOTA) to the working set quota extent (WSEXTENT) on a system that has a substantial memory on the free page list. This automatic working set adjustment also depends upon the values of parameters WSINC, PFRATH, and AWSTIME.

Working set growth attempts to alleviate heavy page faulting. To make use of this growth, you must also set the user's WSEXTENT authorization quota to a larger number than the WSQUOTA value.

BUGCHECKFATAL (D)

BUGCHECKFATAL enables or disables the conversion of nonfatal bugchecks into fatal bugchecks. The system must be rebooted on a fatal bugcheck. A nonfatal bugcheck places an entry only in the error log and deletes the corresponding process.

This parameter should normally be off (0); you should set it on (1) only when the executive is being debugged.

BUGREBOOT (D)

BUGREBOOT enables or disables automatic rebooting of the system if a fatal bugcheck occurs. This parameter should normally be on (1); set it off (0) only when the executive is being debugged.

CLISYMTBL (D)

CLISYMTBL sets the size of the command interpreter symbol table, which controls the number of DCL or MCR symbols that can be created.

CRDENABLE

CRDENABLE enables or disables detection and logging of memory-corrected read data (ECC) errors. This parameter should normally be on (1).

Supplemental SYSGEN Information

A.2 Parameter Descriptions

DEADLOCK_WAIT (D)

DEADLOCK_WAIT defines the number of seconds that a lock request must wait before the system initiates a deadlock search on behalf of that lock. Setting DEADLOCK_WAIT to 0 disables deadlock checking. Setting DEADLOCK_WAIT to a value greater than 0 but still less than the default setting provides faster detection of deadlocks but requires more CPU usage.

DEFMBXBUFQUO (D)

DEFMBXBUFQUO sets the default for the mailbox buffer quota size in bytes when this value is not specified in a Create Mailbox (\$CREMBX) system service call.

DEFMBXMXMSG (D)

DEFMBXMXMSG sets the default for the mailbox maximum message size in bytes when this value is not specified in a Create Mailbox (\$CREMBX) system service call.

DEFMBXNUMMSG (D)

DEFMBXNUMMSG enables the default number of messages for mailbox creation.

DEFPRI (D)

DEFPRI sets the base default priority for processes.

DEFQUEPRI (D)

DEFQUEPRI establishes the scheduling priority for jobs entered in batch and output (printer, server, and terminal) queues when no explicit scheduling priority is specified by the submitter. The value of this parameter can range from 0 to 255; the default value is 100.

The value of DEFQUEPRI should be less than or equal to MAXQUEPRI.

Note: DEFQUEPRI refers to relative queue scheduling priority, not the execution priority of the job.

DISK_QUORUM (D)

The DISK_QUORUM parameter is the name of an optional quorum disk in ASCII. ASCII spaces indicate that no quorum disk is being used.

DISMOUMSG (D)

DISMOUMSG controls whether the messages that log volume dismounts appear on the operator's terminal and in the operator's log. The default value of 0 disables the reporting of these messages.

DORMANTWAIT (D)

DORMANTWAIT specifies, in seconds, the amount of time that can elapse without a significant event before the system treats a low-priority computable process as a DORMANT process for scheduling purposes. (A low-priority process is a non-real-time process whose current priority is equal to or less than the value specified by the SYSGEN parameter DEFPRI (default=4).) After SUSP (suspended) processes, DORMANT processes are the most likely candidates for memory reclamation by the swapper.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

DUMPBUG

DUMPBUG enables or disables the writing of error log buffers and memory contents to SYS\$SYSTEM:SYSDUMP.DMP when a fatal bugcheck occurs. This parameter should be off (0) only when the executive is being debugged.

DUMPSTYLE

DUMPSTYLE specifies the method of writing system dumps. Specify one of the following values:

Value	Meaning
0	The entire contents of physical memory will be written to the dump file. This is the default.
1	Selective portions of memory will be written to the dump file as space permits.

If you have a large memory system and the dump file is too small to contain a complete system dump of physical memory, set DUMPSTYLE to 1 to specify a partial memory dump.

ERRORLOGBUFFERS

ERRORLOGBUFFERS specifies the amount of physical memory (in pages) reserved for system error log entries.

If ERRORLOGBUFFERS is too low, messages might not be written to the error log file. If it is too high, too many physical pages can be consumed by the error log buffers.

If you increase ERRORLOGBUFFERS, you also need to increase the size of the system dump file by an equal amount. For example, if you increase ERRORLOGBUFFERS from 4 (the default) to 6, you must also increase the size of the dump file by 2 blocks.

EXPECTED_VOTES

EXPECTED_VOTES specifies the maximum number of votes that may be present in a VAXcluster at any given time. Set it to a value that is equal to the sum of the vote parameters of all VAXcluster members, plus any votes that are contributed by the quorum disk. This value is used to automatically derive the number of votes that must be present for the VAXcluster to function (quorum).

EXTRACPU (D)

EXTRACPU sets the time, in units of 10 milliseconds, allotted to each of a process's exit handlers (for each access mode) after the process times out (that is, reaches its CPU time limit).

FREEGOAL (M)

FREEGOAL establishes the number of pages that you want to reestablish on the free page list following a system memory shortage. Memory shortages occur when the system drops below the minimum number of pages required on the free page list (FREELIM). The value of FREEGOAL must always be greater than or equal to the value of FREELIM.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

FREELIM (M)

FREELIM sets the minimum number of pages that must be on the free page list. The system will write pages from the modified page list, swap out working sets, or reduce the size of the working sets to maintain the minimum count.

While the larger free page list generally means less page I/O, it also means less space for the balance set, which tends to result in more swap I/O. You can monitor the size of the free page list, the amount of page, and the amount of swap with the MONITOR IO command of the Monitor Utility.

GBLPAGES (G,M)

GBLPAGES sets the number of global page table entries allocated at bootstrap time. Each global section requires 1 global page table entry per section page, plus 2 entries, with the total rounded up to an even number. Every 128 global page table entries add 4 bytes to permanently resident memory in the form of a system page table entry.

The default value is sufficient for the images normally installed as shared in the system startup command procedures. Once the system is running and all global sections are created, you can examine the actual requirements with the /GLOBAL qualifier of the Install Utility and reduce the value of GBLPAGES accordingly. However, the value of this parameter should not be set too low, since the page table entries use little permanently resident memory. If you plan to install many user images as shared, or if user programs are likely to create many global sections, you must increase the value of this parameter.

Note that as you increase GBLPAGES beyond its default setting, you must make an adjustment to SYSMWCNT. For every 128 pages you add to GBLPAGES, increase SYSMWCNT by 1.

GBLPAGFIL

GBLPAGFIL defines the maximum number of systemwide pages allowed for global page-file sections (scratch global sections that can be used without being mapped to a file). These global page-file sections can be temporary, permanent, system, or group, and are allocated from the page file specified in the system process header at bootstrap time. When you allow pages for global page-file sections, you must increase the size of the page file accordingly.

Global page-file sections are created with the Create and Map Section (\$CRMPSC) system service without an explicit disk file. These sections are used for the VMS RMS global buffers required for shared files. Users of shared files should note that global page-file sections cause both the global page table and the default system page file (PAGEFILE.SYS) to be used. If the value of GBLPAGFIL is too small, \$CRMPSC issues an error message when you attempt to create global page-file sections.

You need scratch global sections if you use VMS RMS global buffers. Each file using global buffers requires, in the system page file, the file's bucket size multiplied by the number of global buffers for that file. If the file's bucket size varies, as with VMS RMS indexed files, use the maximum bucket size. For shared sequential files, use the multi-block count of the first stream to perform the \$CONNECT service in place of the file's bucket size.

The default value for this parameter is adequate for most systems. However, if your site uses VMS RMS global buffering to a significant extent, you may need to raise the value of GBLPAGFIL. Use the /GLOBAL qualifier of the Install Utility to examine the number of pages consumed by VMS RMS global

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buffers. The global sections used by VMS RMS for global buffers have the prefix RMS\$ followed by 8 hexadecimal digits.

Global buffers are enabled with the DCL command SET FILE/GLOBAL_BUFFERS, which is described in the *VMS DCL Dictionary*.

GBLSECTIONS (G,M)

GBLSECTIONS sets the number of global section descriptors allocated in the system header at bootstrap time. Each global section requires 1 descriptor. Each descriptor takes 32 bytes of permanently resident memory.

The default value is sufficient for the images normally installed as shared in the system startup command procedures. Once the system is running and all global sections are created, you can examine the actual requirements with the /GLOBAL qualifier of the Install Utility and reduce the value of GBLSECTIONS accordingly. However, the value of this parameter should not be set too low. If you plan to install many user images as shared, or if user programs are likely to create many global sections, you must increase the value of this parameter.

If the value of GBLSECTIONS is too small, you receive a message from the Install Utility at system startup time or whenever you install images manually. Note that too large a value for GBLSECTIONS wastes physical memory.

GROWLIM (D,M)

GROWLIM sets the number of pages that the system must have on the free page list so that a process can add a page to its working set when it is above quota. GROWLIM has no effect if the process is below its working set quota. GROWLIM acts as a fast shutoff to the working set extent mechanism based on the system's free memory.

IJOB LIM (D)

IJOB LIM sets the maximum number of interactive jobs that can be on the system concurrently. You can control the maximum number of concurrent interactive users on the system with the DCL command SET LOGINS/INTERACTIVE.

INTSTKPAGES (D,G,M)

INTSTKPAGES sets the size of the interrupt stack in pages. Each page on the interrupt stack requires a page of permanently resident memory.

Use the default value of 2 unless interrupt-stack-not-valid exceptions occur. These may be caused by either an unusually large number of devices or a driver that requires a large amount of stack space.

IRPCOUNT (G,M)

IRPCOUNT sets the number of preallocated intermediate request packets. Each packet requires 160 bytes of permanently resident memory. If IRPCOUNT is too large, physical memory is wasted. If IRPCOUNT is too small, the system increases its value automatically, as needed, to permit proper performance. However, the system cannot increase IRPCOUNT beyond the value of IRPCOUNTV.

There is a physical memory penalty for allowing this growth. If IRPCOUNT is underconfigured, the penalty is 4 percent of physical memory from the configured value to the actual value on the running system.

You can use the DCL command SHOW MEMORY/POOL/FULL to determine IRPCOUNT usage.

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IRPCOUNTV (G)

IRPCOUNTV establishes the upper limit to which IRPCOUNT can be automatically increased by the system.

If this parameter is set too low, system performance can be adversely affected because IRPCOUNTV cannot be used for nonpaged pool requests.

There is a penalty of 1 percent of physical memory for any unused growth space (1 longword for every 3 unused intermediate request packets).

LAMAPREGS (G)

LAMAPREGS sets the number of UNIBUS map registers allocated to an LPA11 driver when the driver is loaded, and limits the registers for the driver to that number. A value of 0 permits dynamic allocation of an unlimited number of registers.

LGI_BRK_DISUSER (D)

LGI_BRK_DISUSER turns on the DISUSER flag in the UAF record when an attempted break-in is detected, thus permanently locking out that account. The parameter is off by default. You should set the parameter only under extreme security watch conditions, since it results in severely restricted user service.

LGI_BRK_LIM (D)

LGI_BRK_LIM specifies the number of failures that can occur at login time before the system will take action against a possible break-in. The count of failures applies independently to login attempts by each user name, terminal, and node. Whenever login attempts from any of these sources reach the break-in limit specified by LGI_BRK_LIM, the system assumes it is under attack and will initiate evasive action as specified by the LGI_HID_TIM parameter.

The default value is usually adequate.

LGI_BRK_TERM (D)

LGI_BRK_TERM causes the terminal name to be part of the association string for the terminal mode of break-in detection. When off, association is done on user name only. LGI_BRK_TERM is set by default. It should be cleared if physical terminal names are created dynamically (that is, if LAT is installed) and effective break-in detection is desired.

LGI_BRK_TMO (D)

LGI_BRK_TMO specifies the number of seconds that a user, terminal, or node is permitted to attempt a login before the system assumes that a break-in attempt is occurring and takes evasive action. Note that LGI_BRK_LIM may be exceeded before the LGI_BRK_TMO timeout and vice versa. The evasive action is specified by the LGI_HID_TIM parameter.

LGI_HID_TIM (D)

LGI_HID_TIM specifies the number of seconds that evasive action will persist following the detection of a possible break-in attempt. The system refuses to allow any logins during this period, even if a valid user name and password are specified.

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LGI_RETRY_LIM (D)

LGI_RETRY_LIM specifies the number of retry attempts allowed for users attempting to log in over dialup lines. If this parameter is greater than 0, and a legitimate user fails to log in correctly because of typing errors, the user will not automatically lose the carrier. Instead (provided that LGI_RETRY_TMO has not elapsed), by pressing the RETURN key, the user is prompted to enter the user name and password again. Once the specified number of attempts has been made without success, the user loses the carrier. As long as neither LGI_BRK_LIM nor LGI_BRK_TMO has elapsed, the user can dial in again and reattempt login.

LGI_RETRY_TMO (D)

LGI_RETRY_TMO specifies the number of seconds allowed between login retry attempts after each login failure. (Users can initiate login retries by pressing the RETURN key.) This parameter is intended for use in conjunction with the LGI_RETRY_LIM parameter and gives dialup users a reasonable amount of time and number of opportunities to attempt logins before they lose the carrier.

LGI_PWD_TMO (D)

LGI_PWD_TMO specifies, in seconds, the period of time a user has to enter the correct system password (if used).

LNMPHASHTBL (G)

LNMPHASHTBL sets the size of the process logical name hash table. Logical names are hashed using a function of the name length and contents. The LNMPHASHTBL parameter determines the number of entries for process-private logical names. The recommended setting is the average number of process-private logical names. Note that the hashed values are rounded up to the nearest power of 2.

LNMSHASHTBL (G)

LNMSHASHTBL sets the size of the system logical name hash table. Logical names are hashed using a function of the name length and contents. The LNMSHASHTBL parameter determines the number of entries for shareable logical names. These names include all names from the system, group, and job logical name tables. The recommended setting allows for one to four logical names per hash table entry. The default setting is usually adequate, unless your installation has a large number of groups, or many jobs are active simultaneously. In that case, an increase in the value of the next higher power of 2 might improve logical name translation performance. Note that the hashed values are rounded up to the nearest power of 2.

LOCKDIRWT

LOCKDIRWT determines the portion of lock manager directory that will be handled by this system. The default value is usually adequate.

LOCKIDTBL (M)

LOCKIDTBL sets initial number of entries in the system Lock ID table and defines the amount by which the Lock ID table is extended whenever the system runs out of locks. There must be one entry for each lock in the system; each entry requires four bytes.

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For simple timesharing systems, the default value is adequate. If your application uses many locks, as in the case of heavy VMS RMS file sharing or a database management application, you should increase this parameter. When you change the value of LOCKIDTBL, examine the value of RESHASHTBL and change it if necessary.

(The VMS Lock Management Facility is described in the *VMS System Services Reference Manual*). You can monitor locks with the MONITOR LOCK command of the Monitor Utility.

LOCKIDTBL_MAX (D,G,M)

LOCKIDTBL_MAX establishes the maximum size of the Lock ID table.

If you set this parameter value too low, programs receive the following error message:

```
%SYSTEM-E-NOLOCKID, no lock id. available
```

LONGWAIT (D,G,M)

LONGWAIT defines how much real time (in seconds) must elapse before the swapper considers a process to be temporarily idle. This parameter is applied to local event flag (LEF) and hibernate (HIB) waits to detect such conditions as an inactive terminal or ACP.

LRPCOUNT

LRPCOUNT sets the number of preallocated large request packets. Each packet requires an amount of permanently resident memory that is equal to the number of bytes specified by the LRPSIZE parameter. (Normally LRPSIZE is 576 bytes.) If LRPCOUNT is too large, physical memory is wasted. If LRPCOUNT is too small, the system increases its value automatically, as needed, to permit the system to perform properly. However, the system cannot increase LRPCOUNT beyond the value of LRPCOUNTV. If LRPCOUNT is underconfigured, the penalty is 4 percent of physical memory from the configured value to the actual value on the running system.

You can use the DCL command SHOW MEMORY/POOL/FULL to determine LRPCOUNT usage.

LRPCOUNTV (G,M)

LRPCOUNTV establishes the upper limit to which LRPCOUNT can be automatically increased by the system. If this parameter is set too low, system performance can be adversely affected by preventing the system from using this memory allocation mechanism for nonpaged pool requests. There is a penalty of 1 percent of physical memory for any unused growth space (approximately one longword for every unused large request packet, if the default size is used).

LRPSIZE (G,M)

LRPSIZE is the size (in bytes) of the large request packets. The actual physical memory consumed by a large request packet is LRPSIZE plus overhead for buffer management.

Normally the default value is adequate. However, for performance reasons, this parameter should be the same as the DECnet NCP parameter BUFFER SIZE in the executor database.

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MAXBUF (D)

MAXBUF sets the maximum size of a buffered I/O transfer (card readers, console floppy diskettes, line printers, mailboxes, and terminals). The space for a buffered I/O operation is allocated from the permanently resident nonpaged dynamic pool. Note that, for header information, the system adds from 16 to 64 bytes (depending on the device driver and the nature of the I/O) to a buffer at allocation time for header information. Therefore, the largest possible size transfer is reduced by this amount.

MAXPROCESSCNT (G,M)

MAXPROCESSCNT sets the number of process entry slots allocated at bootstrap time. One slot is required for each concurrent process on the system. Each slot requires 6 bytes of permanently resident memory.

The default value is normally generously configured to allow you to create the desired number of processes. If the following message appears, you will have to increase the value of MAXPROCESSCNT:

```
%SYSTEM-F-NOSLOT, No PCB to create process
```

MAXQUEPRI (D)

MAXQUEPRI determines the highest scheduling priority that can be assigned to jobs entered in batch and output (printer, server, and terminal) queues without the submitter process having OPER or ALTPRI privilege. The value of this parameter can range from 0 to 255; the default is 100. The value of MAXQUEPRI should be greater than or equal to DEFQUEPRI.

Note: MAXQUEPRI refers to relative queue scheduling priority, not the execution priority of the job.

MAXSYSGROUP (D)

MAXSYSGROUP sets the highest value that a group number can have and still be classified as a system UIC group number. Note that the specification is not in octal unless preceded by the %O radix indicator. This parameter is normally left at 8 (10 octal).

MINWSCNT

MINWSCNT sets the minimum number of fluid pages (pages not locked in the working set) required for the execution of a process. This value added to the size of the process header establishes the minimum working set size.

The value of MINWSCNT must provide sufficient space to execute any VAX instruction. Theoretically, the longest instruction requires 52 pages; however, all VMS code can run with 20 fluid pages. An insufficient value may inhibit system performance or even put a process into an infinite loop on some instructions.

MOUNTMSG (D)

MOUNTMSG controls whether or not the messages that log volume mounts appear on the operator's terminal and in the operator's log. The default value of 0 disables the reporting of these messages. This parameter does not control the messages generated by mount assistance requests.

MPW_HILIMIT (G)

MPW_HILIMIT sets an upper limit for the modified page list. When the list accumulates the number of pages specified by this limit, writing of the list begins. The pages that are written are then transferred to the free page list.

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If MPW_HILIMIT is too low, excessive page faulting can occur from the page file. If it is too high, too many physical pages can be consumed by the modified page list.

If you increase MPW_HILIMIT, you might also need to increase MPW_WAITLIMIT. Note that if MPW_WAITLIMIT is less than MPW_HILIMIT, a system deadlock will occur. The values for the two parameters are normally equal.

MPW_IOLIMIT

MPW_IOLIMIT specifies the number of outstanding I/Os to the modified page writer. Prior to VMS Version 5.0, the modified page writer never had more than one I/O outstanding. For VMS V5.0, the modified page writer can have up to 127 I/Os outstanding. The default is 4.

Each I/O requires a permanent, non-paged pool allocation (in bytes) equal to the following formula:

$$I/O_{request} \text{ packet length} + (6 * MPW_WRTCLUSTER)$$

With the default MPW_WRTCLUSTER of 96, for example, you must allocate 772 bytes for each I/O.

MPW_LOLIMIT (G)

MPW_LOLIMIT sets a lower limit for the modified page list. When writing of the list causes the number of pages on the list to drop to or below this limit, writing stops.

MPW_LOLIMIT ensures that a certain number of pages are available on the modified page list for page faults. If the number is too small, the caching effectiveness of the modified page list is reduced. If it is too high, less memory is available for processes, so that swap (and page) may increase.

MPW_LOWAITLIMIT (D)

MPW_LOWAITLIMIT specifies the threshold at which processes in the miscellaneous wait state MPWBUSY are allowed to resume. Prior to VMS Version 5.0, processes were not removed from the MPWBUSY wait state until the size of the modified page list was reduced to MPW_LOLIMIT. MPW_LOWAITLIMIT increases system performance for fast processors with large memories by reducing the amount of time processes spend in the MPWBUSY wait state.

MPW_THRESH (D)

MPW_THRESH sets a lower bound of pages that must exist on the modified page list before the swapper writes this list to acquire free pages. If this requirement is met, the swapper tries to write the modified page list rather than taking pages away from or swapping out a process.

MPW_WAITLIMIT (D)

MPW_WAITLIMIT sets the number of pages on the modified page list that will cause a process to wait until the next time the modified page writer writes the modified list. This parameter limits the rate at which any single process can produce modified pages. If this value is less than MPW_HILIMIT, a system deadlock occurs. The value for this parameter is normally equal to MPW_HILIMIT.

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MPW_WRTCLUSTER (G)

MPW_WRTCLUSTER sets the number of pages to be written during one I/O operation from the modified page list to the page file or a section file. The actual size of the cluster may be limited by the number of pages available for the I/O operation. This parameter can range in value from 16 to 120, in multiples of 8. Each page in the cluster requires 6 bytes of permanently resident memory.

If MPW_WRTCLUSTER is too small, it takes many I/O operations to empty the modified page list. If MPW_WRTCLUSTER is too large for the speed of the disk that holds the page file, other I/O operations are held up for the modified page list write.

MSCP_BUFFER

MSCP_BUFFER specifies the number of pages to be allocated to the MSCP server's local buffer area. This buffer area is the space used by the server to transfer data between client systems and local disks.

MSCP_CREDITS

MSCP_CREDITS specifies the number of outstanding I/O requests that can be active from one client system.

MSCP_LOAD

MSCP_LOAD controls the loading of the MSCP server during a system boot. Specify one of the following values:

Value	Meaning
0	Do not load the MSCP server. This is the default value.
1	Load the MSCP server and serve disks as specified by the MSCP_SERVE_ALL parameter.

MSCP_SERVE_ALL

MSCP_SERVE_ALL controls the serving of disks during a system boot. Specify one of the following values:

Value	Meaning
0	Do not serve any disks. This is the default.
1	Serve all available disks.
2	Serve only locally-attached (non-HSC) disks.

If the MSCP_LOAD system parameter is zero, MSCP_SERVE_ALL is ignored.

MULTIPROCESSING

MULTIPROCESSING controls loading of the system synchronization image. Specify one of the following values:

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Value	Meaning
0	Load uniprocessing synchronization image
1	Load full-checking multiprocessing synchronization image if CPU type is capable of SMP and two or more CPUs are present on the system.
2	Always load full-checking multiprocessing synchronization image, regardless of system configuration or CPU availability
3	Load streamlined multiprocessing image if CPU type is capable of SMP and two or more CPUs are present on the system.

The default value is 1.

MVTIMEOUT (D)

MVTIMEOUT is the time in seconds that a mount verification attempt continues on a given disk volume. If the mount verification does not recover the volume within that time, the I/O operations outstanding to the volume terminate abnormally.

NISCS_CONV_BOOT

NISCS_CONV_BOOT controls whether or not a conversational boot is permitted during a remote system boot. The default of 0 specifies that conversational boots are not permitted.

NISCS_LOAD_PEA0

NISCS_LOAD_PEA0 controls whether or not the NI-SCS port driver PEDRIVER is loaded during system boot. The default of 0 specifies that the PEDRIVER is not loaded.

NISCS_PORT_SERV

NISCS_PORT_SERV provides flag bits for PEDRIVER port services. Bits 0 and 1 set (decimal value 3) enables data checking. The remaining bits are reserved for future use.

NJOBLIM (D)

NJOBLIM establishes the limit for network jobs. The maximum number of jobs is 1024. The minimum is 0, and the default is 16.

NPAGEDYN (G,M)

NPAGEDYN sets the size of the nonpaged dynamic pool in bytes. This figure is rounded down to an integral number of pages. NPAGEDYN establishes the initial setting of the nonpaged pool size, but the pool size can be increased dynamically.

To set a value for this parameter, use the default value initially, and then monitor the amount of space actually used with the DCL command SHOW MEMORY/POOL/FULL.

There is a minor physical memory penalty for allowing this growth. If NPAGEDYN is underconfigured, the penalty is 4 percent of physical memory from the configured value to the actual value on the running system. You can decrease the value if too much space is unused and increase it if little space is unused.

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NPAGEVIR (G)

NPAGEVIR defines the maximum size to which NPAGEDYN can be increased. If this value is too small, the system could hang. If NPAGEVIR is too large, there is a penalty of 1 percent of physical memory for any unused growth space (1 longword for each 512 bytes of difference between the system's actual usage of nonpaged pool and the value of NPAGEVIR).

PAGEDYN (G,M)

PAGEDYN sets the size of the paged dynamic pool in bytes. The specified value is rounded down to an integral number of pages. Each 512 bytes of paged dynamic pool adds 4 bytes of permanently resident memory to the system page table; the paged dynamic pool has no other direct memory requirements.

The paged dynamic pool is used to allocate storage for shared logical names, resident image headers, known file list entries, and VMS RMS file-sharing structures. Substantial amounts of space for the pool can be overallocated with little effect on system performance.

The size of the paged pool can grow dynamically up to the maximum size that this parameter specifies.

PAGFILCNT (G)

PAGFILCNT defines the maximum number of page files that can be installed.

PAMAXPORT (D)

PAMAXPORT specifies the maximum port number that the CI port driver polls to discover newly initialized ports or failed remote ports.

You can decrease this parameter to reduce polling activity if the hardware configuration has fewer than 16 ports. For example, if the configuration has a total of 5 ports assigned to port numbers 0 through 4, you could set PAMAXPORT to 4.

If no CI device is configured on your system, this parameter is ignored.

PANOPOLL (D)

PANOPOLL suppresses CI polling for ports. If PANOPOLL is set to 1, a VAXcluster member node does not discover that another member node has shut down or powered down quickly or that a new member node has booted. This parameter is useful if you want to bring up a system that is isolated from the rest of the VAXcluster for checkout purposes. Setting PANOPOLL is equivalent to uncabing the system from the star coupler. The default value of 0 (off) is the normal setting and is required if you are booting from an HSC or if your system is joining a VAXcluster.

If no CI device is configured on your system, this parameter is ignored.

PANUMPOLL (D)

Establishes the number of ports to poll each polling interval. The normal setting for PANUMPOLL is 16. The parameter is useful in applications sensitive to the amount of contiguous time that VMS spends at IPL 8. Reducing PANUMPOLL reduces the amount of time spent at IPL 8 during each polling interval, while increasing the number of polls needed to discover new or failed ports.

If no CI device is configured on your system, this parameter is ignored.

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PAPOLLINTERVAL (D)

PAPOLLINTERVAL specifies in seconds the polling interval the CI port driver uses to poll for a newly booted system, a broken port-to-port virtual circuit, or a failed remote port.

This parameter trades faster response to virtual circuit failures against increased polling overhead. DIGITAL recommends that you use the default value for this parameter.

If no CI device is configured on your system, this parameter is ignored.

PAPOOLINTERVAL (D)

PAPOOLINTERVAL is the interval in seconds after which a CI or UDA port driver's suspended request for message buffer allocation from nonpaged pool is awakened to repeat the request. A request is suspended if there is insufficient nonpaged pool.

If no CI device or UDA 50/52 is configured on your system, this parameter is ignored.

The default value should always be adequate.

PASANITY (D)

PASANITY controls whether the port sanity timer is enabled to permit remote systems to detect a system that has been hung at IPL 8 or above for 100 seconds. This parameter is normally set to 1 and should be set to 0 only when you are debugging with XDELTA or planning to halt the CPU for periods of 100 seconds or more.

PASANITY is only semi-dynamic. A new value of PASANITY takes effect on the next CI port reinitialization.

If no CI device is configured on your system, this parameter is ignored.

PASTDGBUF

PASTDGBUF is the number of datagram receive buffers to queue initially for the CI port driver's configuration poller; the initial value is expanded during system operation, if needed.

If no CI device is configured on your system, this parameter is ignored.

PASTIMOUT (D)

PASTIMOUT is the basic interval at which the CI port driver wakes up to perform time-based bookkeeping operations. It is also the period after which a start handshake datagram is assumed to have timed out.

If no CI device is configured on your system, this parameter is ignored.

The default value should always be adequate.

PFCDEFAULT (D)

During execution of programs, PFCDEFAULT controls the number of image pages read from disk per I/O operation when a page fault occurs. The read I/O operations can take place from an image file or from the page file. The actual size of the cluster can be less than PFCDEFAULT, depending on the size of image sections and the pattern of page references.

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The value of this parameter should not be less than 16 to ensure adequate I/O performance. The value should not be greater than one-fourth the default size of the average working set to prevent a single page fault from displacing a major portion of a working set. Too large a value for PFCDEFAULT can hurt system performance. PFCDEFAULT can be overridden on an image-by-image basis with the CLUSTER option of the VMS Linker.

PFRATH (D,M)

PFRATH specifies the page fault rate above which the limit of a working set will be automatically increased. The unit of measure is the number of faults per 10 seconds of processor time. At a setting of 120, for example, the system will automatically increase the limit of a working set if it is faulting more than 120 pages per 10 seconds.

Decreasing the value of this parameter tends to increase the limits of the working sets, while increasing its value tends to decrease their limits.

PFRATL (D,M)

PFRATL specifies the page fault rate below which the limit of a working set is automatically decreased. The unit of measure is the number of faults per 10 seconds of processor time. At a setting of 1, for example, the system automatically decreases the limit of a working set if it is faulting less than 1 page every 10 seconds.

Increasing the value of this parameter tends to decrease the limits of the working sets, while decreasing its value tends to increase their limits.

PQL_DASTLM (D,G)

PQL_DASTLM sets the default limit on the number of pending ASTs for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DBIOLM (D,G)

PQL_DBIOLM sets the default buffered I/O count limit for the number of outstanding buffered I/O operations permitted to a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DBYTLM (D,G)

PQL_DBYTLM sets the default buffered I/O byte count limit for the amount of buffered space available to a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DCPULM (D,G)

PQL_DCPULM sets the default CPU time limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process). PQL_DCPULM specifies the time limit in increments of 10 milliseconds.

The default value of 0 imposes no limit on CPU time usage and is typically the correct value for this parameter.

PQL_DDIOLM (D,G)

PQL_DDIOLM sets the default direct I/O limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

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PQL_DENQLM (D,G)

PQL_DENQLM sets the default enqueue limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DFILLM (D,G)

PQL_DFILLM sets the default open file limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DPGFLQUOTA (D,G)

PQL_DPGFLQUOTA sets the default page file quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DJTQUOTA (D)

PQL_DJTQUOTA sets the default job table byte count quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process). PQL_DJTQUOTA specifies the number of bytes of paged pool allocated to the job table. The default value is usually adequate, unless a large number of job logical names or temporary mailboxes are used.

PQL_MJTQUOTA (D)

PQL_MJTQUOTA sets the minimum job table byte count quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DPRCLM (D,G)

PQL_DPRCLM sets the default subprocess limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DTQELM (D,G)

PQL_DTQELM sets the default number of timer queue entries for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DWSDEFAULT (G)

PQL_DWSDEFAULT sets the default working set size for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DWSEXTENT (D,G)

PQL_DWSEXTENT sets the default working set extent for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_DWSQUOTA (D,G)

PQL_DWSQUOTA sets the default working set quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

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PQL_MASTLM (D,G)

PQL_MASTLM sets a default limit on the minimum number of pending ASTs for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MBIOLM (D,G)

PQL_MBIOLM sets the minimum buffered I/O limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MBYTLM (D,G)

PQL_MBYTLM sets the minimum buffered I/O byte limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MCPULM (D,G)

PQL_MCPULM sets the minimum CPU time limit in increments of 10 milliseconds for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MDIOLM (D,G)

PQL_MDIOLM sets the minimum direct I/O limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MENQLM (D,G)

PQL_MENQLM sets the default limit on the minimum number of locks that can be queued at one time by a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MFILLM (D,G)

PQL_MFILLM sets the minimum open file limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MPGFLQUOTA (D,G)

PQL_MPGFLQUOTA sets the minimum page file quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MPRCLM (D,G)

PQL_MPRCLM sets the minimum subprocess limit for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MTQELM (D,G)

PQL_MTQELM sets the minimum number of timer queue entries for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MWSDEFAULT (G)

PQL_MWSDEFAULT sets the minimum default working set size for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

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PQL_MWSEXTENT (D,G)

PQL_MWSEXTENT sets the minimum working set extent for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PQL_MWSQUOTA (D,G)

PQL_MWSQUOTA sets the minimum working set quota for a process created by the Create Process (\$CREPRC) system service or the DCL command RUN (Process).

PRCPOLINTERVAL (D)

PRCPOLINTERVAL specifies, in seconds, the polling interval used to look for Systems Communications Services (SCS) applications, such as the Connection Manager and Mass Storage Control Protocol (MSCP) disks, on other nodes. All discovered nodes are polled during each interval.

This parameter trades polling overhead against quick recognition of new systems or servers as they appear.

PROCSECTCNT (G)

PROCSECTCNT sets the number of section descriptors that a process can contain. Each section descriptor increases the fixed portion of the process header by 32 bytes.

You should set a value greater than the maximum number of image sections in any section to be run, as indicated by the linkage memory allocation map for the image.

QDSKINTERVAL

QDSKINTERVAL establishes, in seconds, the disk quorum polling interval.

QDSKVOTES

QDSKVOTES specifies the number of votes contributed by a quorum disk in a VAXcluster.

QUANTUM (D,M)

QUANTUM defines the following:

- Processor time—maximum amount of processor time a process can receive before control passes to another process of equal priority that is ready to compute
- Balance set residency—minimum amount of service a compute-state process must receive before being swapped out to secondary storage

QUORUM

This parameter is obsolete with VMS Version 5.0. VMS automatically calculates cluster quorum from the value of the EXPECTED_VOTES parameter. See the description of the EXPECTED_VOTES parameter for more information.

REALTIME_SPTS (D,G,M)

REALTIME_SPTS reserves a number of system page table entries for mapping connect-to-interrupt processes into system space. This value should normally remain at the default (0) in an environment that is not real-time. Where connect-to-interrupt processes do use the system, this value should

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represent the maximum number of pages that all concurrent connect-to-interrupt processes must map into system space. See the *VMS Run-Time Library Routines Volume* for details.

RECNXINTERVAL (D)

RECNXINTERVAL establishes the polling interval, in seconds, during which to attempt reconnection to a remote system.

RESHASHTBL (M)

RESHASHTBL defines the number of entries in the lock management resource name hash table. Each entry requires 4 bytes. As a general guideline, there should be 1 resource hash table entry for every 4 locks in the system. Thus, RESHASHTBL should be one-quarter the value of LOCKIDTBL, rounded up to the closest power of 2.

RJOB LIM (D)

RJOB LIM defines the maximum number of remote terminals allowed in the system at any one time.

RMS_DFMBC (D)

RMS_DFMBC specifies the default disk block size used by RMS in accessing sequential files.

RMS_DFMBF HSH (D)

RMS_DFMBF HSH establishes the hashed multibuffer count.

RMS_DFMBFIDX (D)

RMS_DFMBFIDX establishes the default VMS RMS multibuffer count for indexed sequential disk operations. This value defines the number of I/O buffers that VMS RMS allocates for each indexed file. For sequential access, a larger number that allows some of the index buckets to remain in memory can improve performance.

RMS_DFMBFRE L (D)

RMS_DFMBFRE L establishes the default VMS RMS multibuffer count for relative disk operations. This value defines the number of I/O buffers that VMS RMS allocates for each relative file.

RMS_DFMBFSDK (D)

RMS_DFMBFSDK establishes the default VMS RMS multibuffer count for sequential disk operations. This value defines the number of I/O buffers that VMS RMS allocates for sequential disk files.

Normally the default value is adequate. However, if read-ahead or write-behind operations are used, a larger number will improve performance.

RMS_DFMBFSMT (D)

RMS_DFMBFSMT establishes the default VMS RMS multibuffer count for magnetic tape operations. This value defines the number of I/O buffers that VMS RMS allocates for magnetic tape files.

RMS_DFMBFSUR (D)

RMS_DFMBFSUR establishes the default multibuffer count for unit record devices.

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RMS_DFNBC (D)

RMS_DFNBC specifies a default block count for network access to remote, sequential, indexed sequential, and relative files.

The network block count value represents the number of blocks that RMS is prepared to allocate for the I/O buffers used to transmit and receive data. The buffer size used for remote file access, however, is the result of a negotiation between VMS RMS and the remote File Access Listener (FAL). The buffer size chosen is the smaller of the two sizes presented.

Thus, RMS_DFNBC places an upper limit on the network buffer size that is used. It also places an upper limit on the largest record that can be transferred to or from a remote file. In other words, the largest record that can be transferred must be less than or equal to RMS_DFNBC multiplied by 512 bytes.

RMS_EXTEND_SIZE (D)

RMS_EXTEND_SIZE specifies the number of blocks by which files are extended as they are written. This number should be chosen to balance the amount of extra disk space wasted at the ends of each file against the performance improvement provided by making large extents infrequently. When small disk quotas are used, a small number such as the disk cluster size should be specified to prevent the user's disk quota from being consumed. If the value of 0 is used, VMS RMS will allocate large extents and truncate the file back to its actual usage when it closes.

RMS_FILEPROT

RMS_FILEPROT determines the default file protection for system processes such as those that create the error log, operator log, and job controller. It also determines default file protection for processes created by the job controller (all interactive and batch processes).

Since a process always inherits its default file protection from its creator process, RMS_FILEPROT determines default file protection only for users who do not execute the DCL command SET PROTECTION/DEFAULT in their login command procedure or during an interactive session.

The protection is expressed as a mask (see the discussion of the \$CRMPSC system service in the *VMS System Services Reference Manual* for more information on specifying protection masks). By default, the mask is 64000 (decimal) or FA00 (hexadecimal), which represents the following protection:

```
(S:RWED,O:RWED,G:RE,W:)
```

RMS_GBLBUFQUO (D)

RMS_GBLBUFQUO specifies the number of global buffers that can be allocated on the system at any one time.

RMS_PROLOGUE (D)

RMS_PROLOGUE specifies the default prologue VMS RMS uses to create indexed files. The default value 0 specifies that VMS RMS should determine the prologue based on characteristics of the file. 2 specifies Prologue 2 or Prologue 1, and 3 specifies Prologue 3. The VMS RMS prologues are described in the *VMS Record Management Services Manual*.

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SAVEDUMP

SAVEDUMP specifies whether, if the dump file is saved in the page file, the page file should be saved until the dump file is analyzed. The default value 0 specifies that the page file should not be saved. A value of 1 specifies that the file should be saved.

SCSBUFFCNT (G)

SCSBUFFCNT is the number of CI buffer descriptors configured for all CI ports on the system. If no CI device is configured on your system, this parameter is ignored.

SCSCONNCNT (G)

SCSCONNCNT is the initial number of SCS connections that are configured for use by all system applications, including the one used by Directory Service Listen. The initial number will be expanded by the system if needed.

If no CI device or UDA 50/52 is configured on your system, this parameter is ignored.

The default value is adequate for all CI/UDA hardware combinations available with VMS Version 5.0.

SCSFLOWCUSH (D)

SCSFLOWCUSH is an SCS flow control parameter for sequenced messages. For each connection, SCS tracks the number of receive buffers available and communicates the number to the SCS at the remote end of the connection. However, SCS does not need to do this for each new receive buffer. Instead, SCS notifies the remote SCS of new receive buffers if the number already communicated to the remote SCS falls as low as the value of SCSFLOWCUSH.

If no CI device is configured on your system, this parameter is ignored.

SCSMAXDG (G)

SCSMAXDG is the maximum number of bytes of application data in one datagram. The amount of physical memory consumed by one datagram packet is SCSMAXDG plus overhead for buffer management.

DECnet is a primary user of SCS datagrams. For performance reasons, SCSMAXDG should be set to the same value (up to a maximum of 985) as the DECnet NCP parameter BUFFER SIZE in the executor database. (Note the the maximum value for NCP parameter BUFFER SIZE is greater than the maximum value for SCSMAXDG.)

If no CI device is configured on your system, this parameter is ignored.

SCSMAXMSG (G)

SCSMAXMSG is the maximum number of bytes of application data in one message.

If no CI device is configured on your system, this parameter is ignored.

Do not change the default value.

SCSNODE (G)

SCSNODE is the SCS system name. It should be the same as the DECnet node name (limited to six characters), since the name must be unique among all systems in the VAXcluster. Specify the parameter value as an ASCII string

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enclosed in parentheses. Note that the string may not include dollar sign (\$) or underscore (_) characters.

SCSRESPCNT (G)

SCSRESPCNT is the total number of response descriptor table entries (RDTEs) configured for use by all system applications.

If no CI device or UDA 50/52 is configured on your system, this parameter is ignored.

SCSSYSTEMID (G)

SCSSYSTEMID specifies the lower-order 32 bits of the 48-bit system identification number. It is the unique identifier of each system and is calculated as follows:

$(\text{DECnet area number} * 1024) + \text{DECnet-VAX node number}$.

For example, if the DECnet address is 2.211, then SCSSYSTEMID should be set to $(2 * 1024) + 211$.

SCSSYSTEMIDH (G)

SCSSYSTEMIDH specifies the high-order 16 bits of the 48-bit system identification number and must be set to 0.

SETTIME

SETTIME enables or disables solicitation of the time of day each time the system is booted. This parameter should usually be off (0), so that the system sets the time of day at boot time to the value of the processor time-of-day register. You can reset the time after the system is up with the DCL command SET TIME (see the *VMS DCL Dictionary*).

SHADOWING

SHADOWING is a Boolean value specifying the type of disk class driver that is loaded on the system. The default value of 0 loads the normal disk class driver, DUDRIVER. A value of 1 loads the shadowing disk class driver, DSDRIVER.

SMP_CPUS

SMP_CPUS identifies which secondary processors, if available, are to be booted into the multiprocessing system at boot time. SMP_CPUS is a 32-bit mask; if the value of a bit in the mask is 1, the processor with the corresponding CPU ID is booted into the multiprocessing system (if it is available). For example, if you want to boot only the CPUs with CPU IDs 0 and 1, specify the value 3 (both bits are on).

The default value of SMP_CPUS, -1, boots all available CPUs into the multiprocessing system.

Note that, although a bit in the mask corresponds to the primary processor's CPU ID, the primary processor is always booted. That is, if the mask is set to zero, the primary CPU will still boot. Any available secondary processors will not be booted into the multiprocessing system.

This parameter is ignored if the MULTIPROCESSING parameter is set to zero.

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SMP_LNGSPINWAIT

Certain shared resources in a multiprocessing system take longer to become available than allowed for by the SMP_SPINWAIT parameter. SMP_LNGSPINWAIT establishes, in 10-microsecond intervals, the length of time a processor in a multiprocessing system waits for these resources.

A timeout causes a CPUSPINWAIT bugcheck.

SMP_SANITY_CNT

SMP_SANITY_CNT establishes, in 10-millisecond clock ticks, the timeout interval for each CPU in a symmetric multiprocessing (SMP) system. Each CPU in an SMP system monitors the sanity timer of one other CPU in the configuration to detect hardware or software failures. If allowed to go undetected, these failures could cause the cluster to hang.

A timeout causes a CPUSANITY bugcheck.

SMP_SPINWAIT

SMP_SPINWAIT establishes, in 10-microsecond intervals, the amount of time a CPU in an SMP system normally waits for access to a shared resource. This process is called *spinwaiting*.

A timeout causes a CPUSPINWAIT bugcheck.

SPTREQ

SPTREQ sets the number of system page table (SPT) entries required for mapping the following components:

- Executive image
- VMS RMS image
- SYMSG.EXE file
- Multiport memory structures
- Each MASSBUS adapter
- Each UNIBUS adapter
- Each DR32 adapter

The number of system page table entries required for all other purposes is automatically computed and added to the value of SPTREQ to yield the actual size of the system page table.

SRPCOUNT (M)

SRPCOUNT sets the number of preallocated small request packets. Each packet requires 96 bytes of permanently resident memory. If SRPCOUNT is too large, physical memory is wasted. If SRPCOUNT is too small, the system increases its value automatically, as needed, to permit proper performance.

However, the system cannot increase SRPCOUNT beyond the value of SRPCOUNTV. Furthermore, there is a minor physical memory penalty for allowing this growth. If SRPCOUNT is underconfigured, the penalty is 4 percent of physical memory from the configured value to the actual value on the running system.

You can use the DCL command SHOW MEMORY/POOL/FULL to determine SRPCOUNT usage.

SRPCOUNTV

SRPCOUNTV establishes the upper limit to which SRPCOUNT can be increased.

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If this parameter is set too low, system performance can be adversely affected by preventing the system from using this memory allocation mechanism for nonpaged pool requests. If SRPCOUNTV is set too high, there is a penalty of 1 percent of physical memory for any unused growth space (1 longword for every 5 unused small request packets if the default size is used).

STARTUP_P1-8

STARTUP_P1 specifies that a minimum sequence of system startup procedures be performed. STARTUP_P2 controls whether verification is set during the execution of a startup procedure. STARTUP_P3-P8 are not yet implemented.

SWPFILCNT

SWPFILCNT defines the maximum number of swap files that can be installed.

SWPOUTPGCNT (D)

SWPOUTPGCNT defines the minimum number of pages to which the swapper should attempt to reduce a process before swapping it out. The pages taken from the process are placed into the page system. This parameter allows the swapper an alternative mechanism before actually performing swaps.

SYSMWCNT (G,M)

SYSMWCNT sets the quota for the size of the system working set, which contains the pageable portions of the system, the paged dynamic pool, VMS RMS, and the resident portion of the system message file.

While a high value takes space away from user working sets, a low value may seriously impair system performance. Appropriate values vary depending on the level of system use. When the system is running at full load, check the rate of system faults with the MONITOR PAGE command of the Monitor Utility. An average system page fault rate of between 0 and 3 page faults per second is desirable. If the system page fault rate is high, and especially if the system seems to be slow, you should increase the value of SYSMWCNT. However, do not set this parameter so high that system page faulting never occurs.

TAPE_MVTIMEOUT (D)

TAPE_MVTIMEOUT is the time in seconds that a mount verification attempt will continue on a given magnetic tape volume. If the mount verification does not recover the volume within that time, the I/O operations outstanding to the volume will terminate abnormally.

TIMEPROMPTWAIT

TIMEPROMPTWAIT defines the number of seconds that you want a VAX processor to wait for the time and date to be entered when a system boot occurs, if the processor's time-of-year clock does not contain a valid time. (The time unit of micro-fornights is approximated as seconds in the implementation.) If the time specified by TIMEPROMPTWAIT elapses, the system continues the boot operation, and the date and time are set to the last recorded time that the system booted. For a VAX-11/730, which does not have a battery back-up clock, the system time must be supplied following a power failure.

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Note: DIGITAL recommends that you set the system time correctly before allowing the system to run, so that all functions employing time-stamping (such as the operator log, the error log, accounting records, file creation dates, and file expiration dates) will contain correct time values.

Depending upon the value specified for the TIMEPROMPTWAIT parameter, the system acts in one of the three following ways:

- If TIMEPROMPTWAIT is 0, no prompt or wait occurs; the system boots immediately, using the time of the last boot as the system time.
- If TIMEPROMPTWAIT is a positive number less than 32768, one prompt is issued and the value dictates how many seconds you can take to respond with a time. If you do not provide a time before TIMEPROMPTWAIT elapses, the system boots, using the time of the last boot as the system time.
- If TIMEPROMPTWAIT is a number in the range of 32768 through 65535, the prompt for the time is issued at intervals starting with 2 and doubling until 256 seconds is reached. If no response is received, the prompts restart, with the 2-second interval. This prompting process repeats indefinitely, until you specify a time.

TTY_ALTALARM

TTY_ALTALARM sets the size of the alternate type-ahead buffer alarm. This value indicates at what point an XOFF should be sent to terminals that use the alternate type-ahead buffers with the size specified by the TTY_ALTYPAHD parameter.

TTY_ALTYPAHD

TTY_ALTYPAHD sets the size of the alternate type-ahead buffer. Use this parameter to allow the block mode terminals and communications lines to operate more efficiently.

The default value is usually adequate. Do not exceed the maximum value of 32767 when setting this parameter.

TTY_AUTOCHAR

TTY_AUTOCHAR sets the character the terminal driver echoes when the job controller has been notified.

TTY_BUF

TTY_BUF sets the default line width for terminals.

TTY_CLASSNAME

TTY_CLASSNAME provides the 2-character prefix for the terminal class driver name that is required when booting. Changing the prefix can be useful when debugging a new terminal driver.

TTY_DEFCHAR

TTY_DEFCHAR sets the default characteristics for terminals, using a code derived by summing the following hexadecimal values:

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Characteristic	Value (HEX)	Function
NOECHO	2	Noecho mode
NOTYPEAHEAD ¹	4	No type-ahead buffer
ESCAPE	8	Escape sequence processing
HOSTSYNC	10	Host can send XON/XOFF
TTSYNC	20	Terminal can send XON/XOFF
LOWERCASE	80	Lowercase
TAB	100	Mechanical tabs
WRAP	200	Wraparound at end of line
CRFILL ¹	400	Perform carriage return fill
LFFILL ¹	800	Perform line feed fill
SCOPE	1000	Terminal is a scope
EIGHT_BIT	8000	Eight-bit terminal
MBXDSABL	10000	Disable mailbox
NOBROADCAST	20000	Prohibit broadcast
READSYNC	40000	XON/XOFF on reads
FORM	80000	Mechanical form feeds
HALFDUP	100000	Set for half-duplex operation
MODEM	200000	Set for modem signals

¹Do not set this characteristic as the default in TTY_DEFCHAR.

Where a condition is false, the value is 0.

The upper byte is the page length. The default characteristics are 24 lines per page, terminal synchronization, wraparound, lowercase, scope, and full-duplex.

TTY_DEFCHAR2

TTY_DEFCHAR2 sets a second longword of default terminal characteristics. The default characteristics are represented as a code that is derived by summing the following hexadecimal values:

Characteristic	Value	Function
LOCALECHO	1	Enable local echo terminal logic; use with the TTY_DEFCHAR NOECHO characteristic
AUTOBAUD	2	Enable autobaud detection
HANGUP	4	Hang up on logout
MODHANGUP	8	Allow modification of HANGUP without privileges
BRDCSTMBX	10	Allow sending of broadcasts to mailboxes
XON	20	(No effect in this parameter)
DMA	40	(No effect in this parameter)
ALTYPEAHD	80	Use the alternate type-ahead parameters

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Characteristic	Value	Function
SETSPEED	100	Clear to allow setting of speed without privileges
EDITING	1000	Line editing allowed
INSERT	2000	Sets default mode for insert
FALLBACK	4000	Do not set this bit with SYSGEN. Refer to the <i>VMS Terminal Fallback Utility Manual</i> for information on setting the FALLBACK terminal characteristic using the Terminal Fallback Utility.
DIALUP	8000	Terminal is a dialup line
SECURE	10000	Guarantees that no process is connected to terminal after BREAK key is pressed
DISCONNECT	20000	Allows terminal disconnect when a hangup occurs
PASTHRU	40000	Terminal is in PASTHRU mode
SYSPWD	80000	Login with system password only
SIXEL	100000	Sixel graphics
DRCS	200000	Terminal supports loadable character fonts
PRINTER	400000	Terminal has printer port
APP_KEYPAD	800000	Notifies application programs of state to set keypad on exit
ANSI_CRT	1000000	Terminal conforms to ANSI CRT programming standards
REGIS	2000000	Terminal has REGIS CRT capabilities
BLOCK_MODE	4000000	Block mode terminal
ADVANCED_VIDEO	8000000	Terminal has advanced video
EDIT	10000000	Terminal has local edit capabilities
DECCRT	20000000	Terminal is a DIGITAL CRT
DECCRT2	40000000	Terminal is a DIGITAL CRT Level 2
DECCRT3	80000000	Terminal is a DIGITAL CRT Level 3

The defaults are AUTOBAUD and EDITING.

TTY_DEFPORT

TTY_DEFPORT provides flag bits for port drivers. Bit 0 set to 1 indicates that the terminal controller does not provide automatic XON/XOFF flow control. This bit should not be set for DIGITAL controllers but is needed for some foreign controllers. Currently only the YCDRIVER (DMF32,DMZ32) uses this bit. The remaining bits are reserved for future use.

TTY_DIALTYPE

TTY_DIALTYPE provides flag bits for dialups. Bit 0 is 1 for United Kingdom dialups and 0 for all others. Bit 1 controls the modem protocol used. Bit 2 controls whether modem lines will hang up 30 seconds after seeing CARRIER if a channel is not assigned to the device. The remaining bits are reserved for future use. See the *VMS I/O User's Reference Manual: Part 1* for more information on flag bits.

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TTY_DMASIZE (D)

TTY_DMASIZE specifies the number of characters in the output buffer below which character transfers are performed, and above which DMA transfers occur, provided the controller is capable of DMA I/O.

TTY_OWNER

TTY_OWNER specifies the owner UIC against which terminal protection is set. The specification must represent the value of a standard 32-bit UIC with the group number in the high-order word and the member number in the low-order word. You should usually set TTY_OWNER to a value of hexadecimal 10004, which is UIC [1,4].

TTY_PARITY

TTY_PARITY sets terminal default parity.

TTY_PROT

TTY_PROT sets the default protection for all terminals in relation to the UIC specified for the TTY_OWNER parameter. The specification must represent the value of a standard 16-bit protection mask as described in the *VMS DCL Dictionary*. However, only read bits are meaningful. When a read bit is on, that category of user is prohibited from allocating terminals.

The default (FFF0) provides for system access only on terminals. You can change protection on a per-terminal basis with the DCL command SET PROTECTION/DEVICE, to permit user allocation of remote and application terminals.

Note that this protection does not prevent logging in on the terminal; it only prevents allocation of the terminal by another process.

TTY_RSPEED

TTY_RSPEED defines the receive speed for terminals. If TTY_RSPEED is 0, TTY_SPEED controls both the transmit and the receive speed. This parameter is only applicable for controllers that support split-speed operations, such as the DZ-32 and the DMF-32.

TTY_SCANDELTA

TTY_SCANDELTA sets the interval for polling terminals for dialup and hangup events. Shorter intervals use more processor time; longer intervals may result in missing a hangup event.

TTY_SILOTIME

TTY_SILOTIME defines the interval at which the DMF-32 hardware polls the input silo for received characters. The DMF-32 asynchronous terminal controller can delay the generation of a single input interrupt until multiple characters have accumulated in the input silo. TTY_SILOTIME specifies the number of milliseconds that the characters are allowed to accumulate prior to the generation of an input interrupt by the hardware.

TTY_SPEED

TTY_SPEED sets the system-wide default speed for terminals. Low byte is transmit speed, and high byte is receive speed. If high byte is set to 0, receive speed is identical to transmit speed. Baud rates are defined by the \$TTDEF macro.

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TTY_TIMEOUT

TTY_TIMEOUT sets the number of seconds before a process associated with a disconnected terminal is deleted. The default value (300 seconds) is usually adequate. Note that using values for TTY_TIMEOUT greater than one year (value %X01E13380) can cause overflow errors and result in a disconnected device timing out immediately.

TTY_TYPAHDSZ

TTY_TYPAHDSZ sets the size of the terminal type-ahead buffer. The default value is usually adequate. Do not exceed the maximum value of 32767 when setting this parameter.

UAFALTERNATE (D,G,M)

UAFALTERNATE enables or disables the assignment of SYSUAF as the logical name for SYSUAFALT, causing all references to the user authorization file (SYSUAF) to be translated to SYS\$SYSTEM:SYSUAFALT. Use of the normal user authorization file (SYS\$SYSTEM:SYSUAF) can be restored by deassigning the system logical name SYSUAF. This parameter should be set on (1) only when the system is being used by a restricted set of users. You must create a user authorization file named SYSUAFALT prior to setting UAFALTERNATE to 1.

UDABURSTRATE (G)

UDABURSTRATE specifies the maximum number of longwords that the UDA50 or LESI controller will transfer on the UNIBUS per DMA transfer.

Note: The UDABURSTRATE parameter is configuration- and workload-dependent. Alteration of the default value can cause serious problems. Consult your Field Service Representative before changing the default value of this parameter.

USERD1 (D)

USERD1 is a dynamic parameter that is reserved for definition at the user's site. The reserved longword is referenced by the symbol SGN\$GL_USERD1 in the module SYS\$SYSTEM:SYS.STB.

USERD2 (D)

USERD2 is a dynamic parameter that is reserved for definition at the user's site. The reserved longword is referenced by the symbol SGN\$GL_USERD2 in the module SYS\$SYSTEM:SYS.STB.

USER3

USER3 is a parameter that is reserved for definition at the user's site. The reserved longword is referenced by the symbol SGN\$GL_USER3 in the module SYS\$SYSTEM:SYS.STB.

USER4

USER4 is a parameter that is reserved for definition at the user's site. The reserved longword is referenced by the symbol SGN\$GL_USER4.

VAXCLUSTER

VAXCLUSTER controls loading of the cluster code. Specify one of the following:

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Value	Meaning
0	Never load
1	Load if SCSLOA is being loaded
2	Always load (and also load SCSLOA)

The default value is 1.

VIRTUALPAGECNT (G,M)

VIRTUALPAGECNT sets the maximum number of virtual pages that can be mapped for any one process. Every 128 virtual pages require 4 bytes of permanently resident memory in the system page table (as discussed under the BALSETCNT parameter). A program is allowed to divide its virtual space between the P0 and P1 tables in any proportion, except that the P1 table must be large enough to map 320 pages.

When the System Dump Analyzer is used, you must ensure that the value of VIRTUALPAGECNT is at least the size of the dump file plus approximately 3000 pages.

VOTES

VOTES establishes the number of votes a VAXcluster member system contributes to a quorum.

WINDOW_SYSTEM

WINDOW_SYSTEM specifies the windowing system to be used on a VAX workstation. Specify one of the following values:

Value	Meaning
1	Load the VMS DECwindows workstation environment.
2	Load the VMS UIS workstation environment. This is the default windowing system established on VAX workstations.

WSDEC (D,M)

WSDEC specifies the number of pages by which the limit of a working set is automatically decreased at each adjustment interval (which is quantum end). At a setting of 35, for example, the system will decrease the limit of a working set by 35 pages each time a decrease is required.

Increasing the value of this parameter tends to increase the speed with which working set limits are decreased when the need arises.

WSINC (D,M)

WSINC specifies the number of pages by which the limit of a working set is automatically increased at each adjustment interval (which is quantum end). At a setting of 150, for example, the system will increase the limit of a working set by 150 pages each time an increase is required.

Decreasing the value of this parameter tends to reduce the speed with which working set limits are increased when the need arises. Normally, you should keep this parameter at a high value because a rapid increase in limit is often critical to performance.

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A value of 0 for WSINC disables the automatic adjustment of working set limits for all processes. Limits stay at their base values. You can disable the automatic adjustment of working set limits on a per-process basis by using the DCL command SET WORKING_SET.

WSMAX (G,M)

WSMAX sets the maximum number of pages on a systemwide basis for any working set. The value of WSMAX also affects the allocation of permanently resident memory for the swapper map and system page table (and for this reason should not be set at an arbitrarily high number):

The amount of permanently resident memory set aside for the swapper map and system page table is calculated based on the following rules:

- Swapper map—4 bytes for each page of WSMAX
- System page table—4 bytes for each 128 pages of WSMAX, multiplied by the value of the BALSETCNT parameter

Generally, you should use as a value for WSMAX the size of the largest working set needed on your system. The default value is appropriate for normal time-sharing operations, while significantly larger values should be used only for programs with very large virtual address spaces to reduce page faulting.

XFMAXRATE (D)

XFMAXRATE limits the data transfer rate that can be set for DR32 devices. On some hardware configurations (especially those without interleaved memory), a high DR32 transfer rate could cause a machine check (CPU timeout). The *VMS I/O User's Reference Manual: Part I* describes how to encode this parameter.

Special System Parameters

CHANNELCNT

CHANNELCNT specifies the number of permanent I/O channels available to the system.

CONCEAL_DEVICES

CONCEAL_DEVICES enables or disables the use of concealed devices. By default, this parameter is set to enable concealed devices (1).

DLCEXTRASTK

DLCEXTRASTK specifies the amount of extra interrupt stack (in bytes) to leave when doing a deadlock search.

EXUSRSTK

EXUSRSTK specifies the amount of space provided by the image activator to recover from a stack overflow error.

IMGIOCNT

IMGIOCNT specifies the default number of pages of image I/O address space to be allocated for the image activator if not specified at program link time.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

IOTA

IOTA specifies the amount of time (in 10 millisecond units) to charge to the current residence quantum for each voluntary wait. The correct value approximates the cost of a disk I/O neglecting wait time.

LOCKRETRY

LOCKRETRY establishes the number of attempts made to lock a multiprocessor data structure.

LRPMIN

LRPMIN sets the minimum allocation request size (in bytes) for large request packets.

MPW_PRIO

MPW_PRIO sets the priority of I/O transfers initiated by the modified page writer. The maximum value is 31, the minimum is 0, and the default is 4.

NOAUTOCONFIG

NOAUTOCONFIG controls whether or not all devices are automatically configured when the system boots. The default value of 0 sets the system to automatically configure all devices. NOAUTOCONFIG should only be set to 1 (no automatic configuration) for debugging purposes.

NOCLOCK

NOCLOCK controls whether or not the interval timer is inhibited when the system boots. NOCLOCK should only be set to 1 (inhibit interval timer) for debugging purposes.

NOCLUSTER

NOCLUSTER controls whether or not page read clustering is inhibited when the system boots. NOCLUSTER should only be set to 1 (inhibit page read clustering) for debugging purposes.

PAGTBLPFC

PAGTBLPFC specifies (in pages) the maximum number of page tables to read to satisfy a fault for a nonresident page table.

PFRATS

PFRATS specifies the page fault rate threshold for the system.

PHYSICALPAGES

PHYSICALPAGES sets the maximum number of physical pages of memory to be used on the system. Decreasing this parameter allows you to test smaller configurations of memory without the need to remove memory boards.

PIXSCAN

PIXSCAN specifies the number of process index slots scanned each second for computable or computable-outswapped processes. These processes receive an automatic priority boost for 1 quantum, unless the priority of the currently executing process is greater than 15. The priority boost is done to avoid potential deadlocks on the system.

PSEUDOLOA

PSEUDOLOA specifies (in pages) the size of the PDA0 system image. This parameter is used to boot standalone BACKUP from magnetic tape.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

RESALLOC

RESALLOC controls whether or not resource allocation checking is performed. The default value of 0 disables resource allocation checking.

QBUS_MULT_INTR

QBUS_MULT_INTR enables multilevel interrupt dispatching on systems that use the Q22 bus. Refer to the *VMS Device Support Manual* for more information about the QBUS_MULT_INTR system parameter.

SMP_TICK_CNT

SMP_TICK_CNT sets the frequency of sanity timer checks by each CPU in a multiprocessing system.

S0_PAGING

S0_PAGING enables paging of system code.

SRPMIN

SRPMIN sets the minimum allocation request size (in bytes) for small request packets.

SSINHIBIT

SSINHIBIT controls whether or not system services are inhibited (on a per process basis). By default, system services are not inhibited.

SWP_PRIO

SWP_PRIO sets the priority of I/O transfers initiated by the swapper.

SWPALLOCINC

SWPALLOCINC sets the size (in blocks) to use to back up swap file space allocation in the swap or page file. Space in the file will be allocated multiples of this unit (up to WSQUOTA) to guarantee swap space.

SWPFAIL

SWPFAIL sets the number of consecutive swap failures allowed before the swap schedule algorithm is changed to ignore the swap quantum protection.

SWPRATE

SWPRATE sets the swapping rate (in 10 millisecond units). This parameter limits the amount of disk bandwidth consumed by swapping.

SYSPFC

SYSPFC sets the number of pages to be read from disk on each system paging operation. This parameter is not currently implemented.

TBSKIPWSL

TBSKIPWSL specifies the maximum number of working set list entries that may be skipped while scanning for a "good" entry to discard. Set this parameter to 0 to disable skipping.

VMS

VMSD1, VMSD2, VMSD3, VMSD4, VMS5, VMS6, VMS7, and VMS8 are parameters reserved for DIGITAL use. VMSD1 through VMSD4 are dynamic.

Supplemental SYSGEN Information

A.2 Parameter Descriptions

WRITABLESYS

WRITABLESYS controls whethers or not system code is writable. This parameter is set (value of 1) for debugging purposes only.

B UNIBUS/Q22 Bus Device Support

DIGITAL-supplied devices are attached to the UNIBUS or Q22 bus according to the following basic rules:

- A device of type A is always at a fixed and predefined CSR address; the device always interrupts at a fixed and predefined vector address; only one example of device A can be configured in each system.
- A device of type B is identical to type A except that 1 through n examples can be configured in a single system. Examples 2 through n are also located at fixed and predefined CSRs and vector addresses.
- Devices of type C (1 through n of them) are always at fixed and predefined CSR addresses; however, the interrupt vector addresses vary according to what other devices are present on the system.
- Devices of type D (1 through n of them) are at CSR addresses and vector addresses that vary according to what other devices are present on the system.

CSR and vector addresses that vary are called floating addresses. The devices must be located in floating CSR and vector space according to the order in which the devices appear in the SYSGEN device table. This table, shown in Table B-1, lists all the type A and type B devices supported by VMS. It also lists the type C and type D devices that are recognized by SYSGEN's autoconfiguration procedure.

The base of floating vector space is 300_8 . The base of floating CSR space is 760010_8 .

B.1 SYSGEN Device Table

The SYSGEN device Table B-1 lists the characteristics of all DIGITAL devices. This table indicates the following information for each device type:

- Device name
- Device controller name
- Interrupt vector
- Number of interrupt vectors per controller
- Vector alignment factor
- Address of the first device register for each controller recognized by SYSGEN (the first register is usually, but not always, the CSR)
- Number of registers per controller
- Device driver name
- Indication of whether the driver is or is not supported

UNIBUS/Q22 Bus Device Support

B.1 SYSGEN Device Table

Devices not listed in the SYSGEN device table include:

- Non-DIGITAL-supplied devices with fixed CSR and vector addresses. These devices have no effect on autoconfiguration. Customer-built devices should be assigned CSR and vector addresses beyond the floating address space reserved for DIGITAL-supplied devices.
- Those DIGITAL-supplied floating-vector devices that the AUTOCONFIGURE command does not recognize. Use the CONNECT command to attach these devices to the system.

Table B-1 SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
CR	CR11	230	1	—	777160	—	CRDRIVER	Yes
DM	RK611	210	1	—	777440	—	DMDRIVER	Yes
LP	LP11	200	—	—	777514	—	LPDRIVER	Yes
		170			764004			
		174			764014			
		270			764024			
		274			764034			
DL	RL11	160	1	—	774400	—	DLDRIVER	Yes
MS	TS11	224	1	—	772520	—	TSDRIVER	Yes
DY	RX211	264	1	—	777170	—	DYDRIVER	Yes
DQ	RB730	250	1	—	775606	—	DQDRIVER	Yes
PU	UDA	154	1	—	772150	—	PUDRIVER	Yes
PT	TU81	260	1	—	774500	—	PUDRIVER	Yes
XE	UNA	120	1	—	774510	—	XEDRIVER	Yes
XQ	QNA	120	1	—	774440	—	XQDRIVER	Yes
OM	DC11	Float	2	8	774000	—	OMDRIVER	No
					774010			
					774020			
					774030			
					.			
					.			
					32 units maximum			
DD	TU58	Float	2	8	776500	—	DDRIVER	Yes
					776510			
					776520			
					776530			
					.			
					.			
					16 units maximum			

UNIBUS/Q22 Bus Device Support

B.1 SYSGEN Device Table

Table B-1 (Cont.) SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
OB	DN11	Float	1	4	775200 775210 775220 775230 . . . 16 units maximum	—	OBDRIVER	No
YM	DM11B	Float	1	4	770500 770510 770520 770530 . . . 16 units maximum	—	YMDRIVER	No
OA	DR11C	Float	2	8	767600 767570 767560 767550 . . . 16 units maximum	—	OADRIVER	No
PR	PR611	Float	1	8	772600 772604 772610 772614 . . . 8 units maximum	—	PRDRIVER	No
PP	PP611	Float	1	8	772700 772704 772710 772714 . . . 8 units maximum	—	PPDRIVER	No

UNIBUS/Q22 Bus Device Support

B.1 SYSGEN Device Table

Table B-1 (Cont.) SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
OC	DT11	Float	2	8	777420 777422 777424 777426 . . . 8 units maximum	—	OCDRIVER	No
OD	DX11	Float	2	8	776200 776240	—	ODDRIVER	No
YL	DL11C	Float	2	8	775610 775620 775630 775640 . . . 31 units maximum	—	YLDIVER	No
YJ	DJ11	Float	2	8	Float	8	YJDRIVER	No
YH	DH11	Float	2	8	Float	16	YHDRIVER	No
OE	GT40	Float	4	8	772000 772010	—	OEDRIVER	No
LS	LPS11	Float	6	8	770400	—	LSDRIVER	No
OR	DQ11	Float	2	8	Float	8	ORDRIVER	No
OF	KW11W	Float	2	8	772400	—	OFDRIVER	No
XU	DU11	Float	2	8	Float	8	XUDRIVER	No
XV	DV11	Float	3	8	775000 775040 775100 775140	—	XVDRIVER	No
OG	LK11	Float	2	8	Float	8	OGDRIVER	No
XM	DMC11	Float	2	8	Float	8	XMDRIVER	Yes
TTA	DZ11	Float	2	8	Float	8	DZDRIVER	Yes
XK	KMC11	Float	2	8	Float	8	XKDRIVER	No
OH	LPP11	Float	2	8	Float	8	OHDRIVER	No
OI	VMV21	Float	2	8	Float	8	OIDRIVER	No
OJ	VMV31	Float	2	8	Float	16	OJDRIVER	No
OK	DWR70	Float	2	8	Float	8	OKDRIVER	No
DL	RL11	Float	1	4	Float	8	DLDRIVER	Yes

UNIBUS/Q22 Bus Device Support

B.1 SYSGEN Device Table

Table B-1 (Cont.) SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
MS	TS11	Float	1	4	772524 772530 772534	—	TSDRIVER	Yes
LA	LPA11	Float	2	8	770460	—	LADRIVER	Yes
LA	LPA11	Float	2	8	Float	16	LADRIVER	Yes
OL	KW11C	Float	2	8	Float	8	OLDRIVER	No
DY	RX211	Float	1	4	Float	8	DYDRIVER	Yes
XA	DR11W	Float	1	4	Float	8	XADRIVER	Yes
XB	DR11B	124	—	—	772410	—	XBDRIVER	No
XB	DR11B	Float	1	4	772430	—	XBDRIVER	No
XB	DR11B	Float	1	4	Float	8	XBDRIVER	No
XD	DMP11	Float	2	8	Float	8	XDDRIVER	Yes
ON	DPV11	Float	2	8	Float	8	ONDRIVER	No
IS	ISB11	Float	2	8	Float	8	ISDRIVER	No
XD	DMV11	Float	2	8	Float	16	XDDRIVER	No
XE	UNA	Float	1	4	Float	8	XEDRIVER	No
XQ	QNA	Float	1	4	774460	—	XQDRIVER	Yes
PU	UDA	Float	1	4	Float	4	PUDRIVER	Yes
XS	KMS11	Float	3	8	Float	16	XSDRIVER	No
XP	PCL11	Float	2	8	764200 764240 764300 764340	—	XPDRIVER	No
VB	VS100	Float	1	4	Float	16	VBDRIVER	No
PT	TU81	Float	1	4	Float	4	PUDRIVER	Yes
OQ	KMV11	Float	2	8	Float	16	OQDRIVER	No
UK	KCT32	Float	2	8	764400 764440 764500 764540	—	UKDRIVER	No
IX	IEQ11	Float	2	8	764100	—	IXDRIVER	No
TX	DHV11	Float	2	8	Float	16	YFDRIVER	Yes
DT	TC11	214	1	—	777340	—	DTDRIVER	No
VC	VCB01	Float	2	1	777200	—	VCDRIVER	Yes
VC	VCB01	Float	2	1	Float	64	VCDRIVER	Yes
OT	LNV11	Float	1	4	776200	—	OTDRIVER	No
LD	LNV21	Float	1	4	Float	16	LDDRIVER	No
ZQ	QTA	Float	1	4	772570	—	ZQDRIVER	No
ZQ	QTA	Float	1	4	Float	8	ZQDRIVER	No

UNIBUS/Q22 Bus Device Support

B.1 SYSGEN Device Table

Table B-1 (Cont.) SYSGEN Device Table

Device Name	Controller Name	Vector	Number of Vectors	Vector Alignment	CSR /Rank	Register Alignment	Driver Name	Support
SJ	DSV11	Float	1	4	Float	8	SJDRIVER	No
OU	ADV11C	Float	2	8	Float	8	OUDRIVER	No
OV	AAV11C	Float	0	8	770440	—	OVDRIVER	No
OV	AAV11C	Float	0	8	Float	8	OVDRIVER	No
AX	AXV11C	140	2	—	776400	—	AXDRIVER	No
AX	AXV11C	Float	2	8	Float	8	AXDRIVER	No
KZ	KWV11C	Float	2	8	770420	—	KZDRIVER	No
KZ	KWV11C	Float	2	8	Float	4	KZDRIVER	No
OF	KWV11W	Float	2	8	772400	—	OFDRIVER	No
AZ	ADV11D	Float	2	8	776410	—	AZDRIVER	No
AZ	ADV11D	Float	2	8	Float	4	AZDRIVER	No
AY	AAV11D	Float	2	8	776420	—	AYDRIVER	No
AY	AAV11D	Float	2	8	Float	4	AYDRIVER	No
VA	VCB02	Float	3	16	777400 777402 777404 777406 . . . 8 units maximum	—	VADRIVER	Yes
DN	DRV11J	Float	16	4	764160 764140 764120	—	DNDRIVER	No
HX	DRQ3B	Float	2	8	Float	16	HXDRIVER	No
VQ	VSV24	Float	1	4	Float	8	VQDRIVER	No
VV	VSV21	Float	1	4	Float	8	VVDRIVER	No
BQ	IBQ01	Float	1	4	Float	8	BQDRIVER	No
UT	MIRA	Float	2	8	Float	8	UTDRIVER	No
IX	IEQ11	Float	2	8	Float	16	IXDRIVER	No
AW	ADQ32	Float	2	8	Float	32	AWDRIVER	No
VX	DTC04	Float	2	8	Float	2	VXDRIVER	No

C VAXstation 2000/MicroVAX 2000 Device Support

VMS provides configuration support and includes drivers for standard and optional VAXstation 2000 devices. Connectors and device controllers included on the VAXstation 2000/MicroVAX 2000 system board are as follows:

- Four asynchronous serial ports for an LK201 keyboard, pointing device, modem, and printer
- A controller for a VR260 monochrome display
- A controller for disk mass storage, supporting the following options:
 - RX33 diskette drive
 - RD32 41Mb hard disk drive
 - RD53 69Mb hard disk drive
 - RD54 155Mb hard disk drive
- A controller for a TK50 cartridge tape system

In addition, an assortment of option boards is available to a VAXstation 2000/MicroVAX 2000 system, including the following:

- Additional memory
- A DESVA thinwire Ethernet controller
- A 4-plane color video controller (for VAXstation 2000)
- An 8-port serial line adapter (for MicroVAX 2000)

The actual devices that can be connected to an individual VAXstation 2000/MicroVAX 2000 system depend upon its particular configuration.

C.1 Configuring VAXstation 2000/MicroVAX 2000 Devices

The VMS System Generation Utility (SYSGEN) connects devices, loads their drivers, creates the data structures by which the VMS operating system and drivers coordinate their activities, and calls device initialization routines. In general, SYSGEN is invoked for these purposes late in system initialization during the execution of the system startup command procedure, SYS\$SYSTEM:STARTUP.COM.

At that time, STARTUP.COM issues a SYSGEN AUTOCONFIGURE ALL command. SYSGEN's Autoconfigure facility examines its table of possible VAXstation 2000/MicroVAX 2000 devices (see Table C-1), determines which devices are attached to the system, and configures existing devices using information in the table.

DIGITAL strongly recommends that you accept the default behavior of STARTUP.COM. If you must exclude a specific device from being configured, you must first prevent STARTUP.COM from performing the autoconfiguration by setting the SYSBOOT parameter NOAUTOCONFIG. After invoking

VAXstation 2000/MicroVAX 2000 Device Support

C.1 Configuring VAXstation 2000/MicroVAX 2000 Devices

SYSGEN, you should ensure that the base asynchronous serial ports are always autoconfigured. To do this, enter the following command:

```
SYSGEN> AUTOCONFIGURE ALL/SELECT=TT:
```

You can also enter an `AUTOCONFIGURE ALL/EXCLUDE=(device-name[,...])` command, making sure not to exclude the serial lines. Subsequent `CONNECT` statements should be written with the appropriate `csr_addr` value to the command's `/CSR` qualifier, as shown in Table C-1. These `csr_addr` values are actually offsets from the beginning of VAXstation 2000/MicroVAX 2000 I/O space (`EXE$GL_CPUNODSP`), thus differing from the customary bus address value traditionally specified for UNIBUS devices in the `CONNECT` command.

Table C-1 VAXstation 2000 Autoconfiguration Table

Device	Name	Driver	CSR	Number of Vectors	First Vector	Vector Offset
Standard Serial Lines	TT	YEDRIVER	^X0800	2	^O300	4
ST506 Disk Controller	DU	DVDRIVER	^X0C00	1	^O774	—
TK50 Tape Controller	MU	TVDRIVER	^X0C80	1	^O770	—
Ethernet Controller	ES	ESDRIVER	^X4E00	1	^O120	—
MicroVAX 2000 Serial Lines	YF	YFDRIVER	^X6800	2	^O104	4
32-Channel Synchronous Lines	ZS	ZSDRIVER	^X6800	1	^O110	—
Color Video Option	VA	VFDRIVER	^X6A00	2	^O104	4
Black & White Video Option	VC	VEDRIVER	^X5000	1	^O104	—

Examples of correct `CONNECT` commands for VAXstation 2000/MicroVAX 2000 devices include the following:

```
CONNECT ESAO /ADAP=0 /CSR=%X4E00 /VECT=%O120 /NUMV=01 /DRIVER=ESDRIV_R
CONNECT MUAO /ADAP=0 /CSR=%X0C80 /VECT=%O770 /NUMV=01 /DRIVER=TVDRIVER
CONNECT DUAO /ADAP=0 /CSR=%X0C00 /VECT=%O774 /NUMV=01 /DRIVER=DVDRIVER
CONNECT DUA1 /ADAP=0 /CSR=%X0C00 /VECT=%O774 /NUMV=01 /DRIVER=DVDRIVER
CONNECT DUA2 /ADAP=0 /CSR=%X0C00 /VECT=%O774 /NUMV=01 /DRIVER=DVDRIVER
CONNECT VCAO /ADAP=0 /CSR=%X5000 /VECT=%O104 /NUMV=01 /DRIVER=VEDRIVER
CONNECT VCAO /ADAP=0 /CSR=%X5000 /VECT=%O104 /NUMV=02 /DRIVER=VFDRIVER
```

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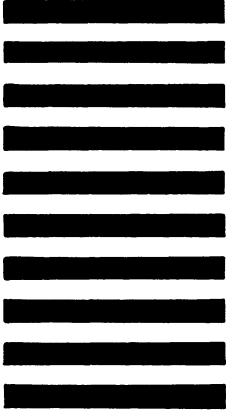


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