

11 System Generation

When your system is installed or upgraded, a DIGITAL-supplied command procedure, AUTOGEN.COM in SYS\$UPDATE, automatically sets the values of system parameters, the sizes of the primary page, swap, and dump files, and the contents of the default installed image list (VMSIMAGES.DAT in SYS\$MANAGER). AUTOGEN makes these adjustments after evaluating your hardware configuration and estimating typical workloads.

In many cases, AUTOGEN optimizes your new system when it is invoked during routine installation or upgrade procedures. You may therefore wish to monitor performance for a period of time before making further adjustments.

If (based on system performance and suggestions in the *Guide to VAX/VMS Performance Management*) you decide to modify some system parameters or change the size of a system file, you should perform such modifications with AUTOGEN rather than with SYSGEN, because AUTOGEN analyzes your modifications and adjusts any related parameters. Sections 11.1 through 11.5 describe AUTOGEN functions and usage.

There are, however, certain system modifications that you must perform using SYSGEN. These are described in Sections 11.6 through 11.14.

11.1 AUTOGEN Functions

AUTOGEN performs one or more of the following operations on an upgraded or newly installed system:

- Collects two types of data:
 - 1 Hardware configuration characteristics.
 - 2 Current values of SYSGEN parameters. Four sets of values (listed in Tables 11-5 through 11-8 at the end of this chapter) are collected in the files OLDSITE1.DAT through OLDSITE4.DAT in SYS\$SYSTEM and conditionally written to SYS\$SYSTEM:PARAMS.DAT. (For detailed descriptions of SYSGEN parameters, refer to the *VAX/VMS System Generation Utility Reference Manual*.)
- Calculates appropriate new values for significant SYSGEN parameters (listed in Table 11-9) and sizes for the system page, swap, and dump files
- Resets system parameter values and file sizes if necessary
- Optionally shuts down and reboots the system

You should carefully examine the PARAMS.DAT file that AUTOGEN creates at your site during routine installation or upgrade procedures to determine whether

- AUTOGEN has drawn the correct conclusions about your hardware configuration.
- The system parameter values shown are appropriate for your workload requirements.

If you are satisfied with the data in PARAMS.DAT, further adjustments are probably unnecessary.

If, on the other hand, you need to correct configuration data or modify system parameters to accommodate special conditions at your site, invoke AUTOGEN as described in the next section and follow the procedures outlined in Sections 11.3 and 11.4.

11.2 Invoking AUTOGEN

You can invoke AUTOGEN any time after an installation or an upgrade to reset parameter values and system file sizes. The new values and file sizes take effect the next time the system is bootstrapped.

To ensure that you have the required privileges, invoke AUTOGEN from the system manager's account. The format is:

```
$ $SYSSUPDATE:AUTOGEN [start-phase] [end-phase] [execution-type]
```

You can enter up to three parameters to designate the AUTOGEN operation you desire. All parameters are optional; however, missing leading parameters must be replaced by null arguments (that is, "").

Table 11-1 lists the phase parameters and their effects, including the files needed as input and the files created or changed for output. Table 11-2 summarizes execution types.

All files except VMSIMAGES.DAT reside in the directory specified by the SYSS\$SYSTEM logical name. VMSIMAGES.DAT resides in SYSS\$MANAGER.

The start phase must either precede or be identical to the end phase according to the sequence shown in Table 11-1 (the end phase defaults to the same value as the start phase). GENPARAMS is the default start phase; GENFILES may not be specified as the start phase.

Table 11-1 AUTOGEN Phase Parameters

Phase	Input Files	Output Files	Function
SAVPARAMS	None	OLDSITE.DAT	Save significant old parameters for propagation and update.
GETDATA	OLDSITE.DAT MODPARAMS.DAT	PARAMS.DAT	Collect all data that will be required by the GENPARAMS and GENFILES phases, including configuration data, old parameters, and site-specific items.
GENPARAMS	PARAMS.DAT	SETPARAMS.DAT VMSIMAGES.DAT	Generate new system parameters; create the installed image list.
TESTFILES	PARAMS.DAT	SYSS\$OUTPUT	Display the system page, swap, and dump file sizes calculated by AUTOGEN. (See Section 11.4 if you wish to specify sizes.)
GENFILES	PARAMS.DAT	PAGEFILE.SYS SWAPFILE.SYS SYSDUMP.DMP	Generate new system page, swap, and dump files if appropriate. Cannot be specified as the start phase.

Table 11-1 (Cont.) AUTOGEN Phase Parameters

Phase	Input Files	Output Files	Function
SETPARAMS	SETPARAMS.DAT	VAXVMSSYS.PAR AUTOGEN.PAR	Run SYSGEN to set system parameters specified by the SETPARAMS.DAT and to generate a new AUTOGEN.PAR file.
SHUTDOWN	None	None	Prepare the system to await a manual reboot.
REBOOT	None	None	Automatically reboot the system.

Table 11-2 Execution Types

Type	Meaning
INITIAL	Specifies that AUTOGEN is being executed as part of an initial system installation. The SAVPARAMS phase is never executed in this case.
V4UPGRADE	Specifies that AUTOGEN is being executed as part of an upgrade from a Version 4.n system or that interactive tuning is being performed. V4UPGRADE is the default execution type.
V3UPGRADE	Specifies that AUTOGEN is being executed as part of an upgrade from a Version 3.n system to a Version 4.n system.

The commands and examples in the next sections illustrate AUTOGEN procedures you would use to adjust a typical Version 4.4 system after an upgrade.

11.3 Collecting Data for AUTOGEN Calculations

To collect the data AUTOGEN needs to perform its calculations, issue the following command:

```
* @SYS$UPDATE:AUTOGEN SAVPARAMS GETDATA
```

This command instructs AUTOGEN to

- Create OLDSITE*.DAT files that store system parameter data from the current system
- Collect system version, identification, and hardware configuration data
- Collect user-specified data, if any, from MODPARAMS.DAT (see Section 11.4)
- Write data to a PARAMS.DAT file for use in subsequent calculations or propagation to the new system

Example 11-1 shows a typical PARAMS.DAT file. The first group of items is a list of AUTOGEN's conclusions about the system version, system ID, and hardware components. (Table 11-3 defines these items.) You should scrutinize the Boolean items to verify that AUTOGEN has drawn the correct conclusions about your hardware configuration.

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The next items are system parameter values collected in OLDSITE*.DAT files or specified in MODPARAMS.DAT. Parameters preceded by an OLD_ prefix will be used within calculations. Other parameters will be written to SETPARAMS.DAT and propagated to the new system.

Note: Values displayed in PARAMS.DAT as input from MODPARAMS.DAT override corresponding configuration values and values from OLDSITE*.DAT files.