

for jobs that do not. However, the user is always free to modify system parameters to suit special situations or to fine-tune. For example, the user has the ability to govern the real memory limits for each job. Services are provided for monitoring system performance and for adjusting system parameters.

The user starts the system from a console and a storage device that contains the bootstrap routine. After the system starts, the user can operate the system from any terminal. An automated procedure for shutting down the system in an orderly manner (telling interactive users to log off, spinning down disks, etc.) is provided with the system.

### General Access

User access to VAX/VMS is by means of a command language. The DIGITAL Command Language (DCL), the standard command language for VAX/VMS, is supplied with the system. DCL commands take the form of a command name followed by qualifiers. The commands can be typed on the terminal, included in command procedures, and submitted as batch jobs (either from the terminal or the card reader). The commands provide basic system services, initiate system utility programs, and initiate user programs.

Many qualifiers exist to provide detailed levels of control where needed. However, most qualifiers have default values so that the typical command consists only of the command name and a few qualifiers. In addition, command names and keywords can be abbreviated. Another facility that saves keystrokes is the ability to substitute symbolic names for commands. For example, the user might equate a lengthy command to a short symbolic name. Thereafter, only the short name need be typed to execute the command.

On erroneous input, the user receives a message. The user can obtain on-line documentation by typing HELP followed by the name of a command and (optionally) a qualifier. The help facility can be used in an interactive mode and also is available within many of the interactive utility programs.

In addition to the usual services of an operating system in support of program development and operations, VAX/VMS provides the following services that enable nonprogrammers to process data:

- \* **Text processing** - The general user requires a few days to learn how to use one of the text editors supplied with the system.