



volume set can be backed up and restored using standard file naming conventions with selection by date. Backup/restore takes place onto previously initialized and mounted volumes or on uninitialized media. The N+1 redundant recording technique permits recovery of backed up data even if one of N blocks has been corrupted. In the case of incremental backups, detection that a file has not been modified since the last backup eliminates the unnecessary movement of data. It is also possible to completely restore a volume or volume set from a series of (for example) daily incremental backups. Backup and restoration of disk files can be selectively performed on line or a per-volume basis off line. Per-volume operations require exclusive access to the volume.

- \* **Bad block locator** - Locates and records bad blocks on a disk.
- \* **Analyze disk structure** - Validates structure information on a disk volume against the actual contents, prints structure information, and permits changes to structure information.

## Installation

VAX/VMS systems are distributed as binary kits on tape or disk. Procedures for setting up the system disk from a kit and for readying the system for day-to-day operations are simple and straightforward. The binary kit includes the following facilities:

- \* System installation package
- \* System configuration procedures
- \* User Environment Test Package
- \* Operating system kernel, including virtual memory manager, swapper, system services, and drivers for VAX/VMS supported I/O devices
- \* System generation utility (for tailoring system parameter files)
- \* User authorization control program
- \* Interactive and batch job controller and symbiont manager
- \* Card reader input symbiont
- \* Line printer output symbiont
- \* Bootstrap utility
- \* Start-up procedure
- \* Shut-down procedure
- \* Accounting manager
- \* Accounting report utility
- \* Operator communication process
- \* Message utility