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 unitialized 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 tayloring 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