



**Hitachi Data Systems**

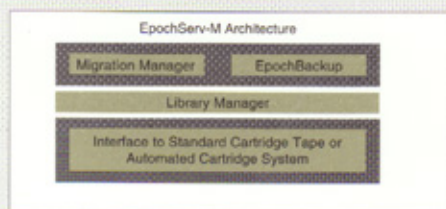
HITACHI EPOCHSERV-M  
NETWORK DATA MANAGER  
RELEASE 2.1

*Technical Overview*

Hitachi EpochServ-M adds to Osiris™ a high-capacity, automatic storage management application. This application extends the capacity of a typical, disk-based file system to provide file systems with virtually unlimited space.

EpochServ-M increases file system capacity by adding and managing another level of on-line data storage using either an automated tape library or stand-alone tape drives. In this capacity, EpochServ-M provides hierarchical storage management (HSM) capability to HDS' Osiris family of network systems management products. In addition, EpochServ-M offers comprehensive backup, operational recovery, and disaster recovery to data stored on Osiris, or distributed on platforms on the network. These functions are integrated with HSM features to ensure faster disaster recovery.

Residing on the mainframe—as an application running under HI-OSF/1-M—EpochServ-M uses high-performance, high-capacity mainframe I/O subsystems to integrate and automate all functions vital to comprehensive data management. In conjunction with HI-OSF/1-M, EpochServ-M extends these capabilities beyond the mainframe and out to files on distributed processors.



### Components

Migration Manager, Library Manager, and EpochBackup are integral components of EpochServ-M. Use of the migration or backup capability is managed by the customer. These components extend long-term hierarchical storage management to an entire open systems network.

**Migration Manager.** This capability provides file migration from disk to secondary storage for centrally stored data, using "high watermarks" to define capacity thresholds.

Migration Manager determines which files to migrate, where they should go, and when to move them. The migration trigger can be default periods, either user-defined or event-driven. The ability to support storage media for capacities up to multiple terabytes ensures that large amounts of high-performance on-line storage are available to network users. Centrally stored active files can be kept on magnetic disk,

while the least active files reside on the automated storage library system, or on a cartridge tape subsystem.

Under Migration Manager, all data stored under a UNIX® File System (UFS) and VERITAS File System (VxFS-M) resident on Osiris can be archived and staged economically and efficiently within a high-security MIS environment. Data resident on Osiris can include network client NFS data mounted on Osiris. To enhance performance, Migration Manager creates staging "trails" which ensure that related files are staged on the same volumes.

**Library Manager.** This component tracks and manages all removable media in supported robotic libraries, for every storage management application running under EpochServ-M. It controls allocation, scheduling, and tracking of all removable media stored by EpochServ-M in the tape library. Services include electronic tape volume labeling, volume location tracking, volume scheduling, volume allocation and recycling, on-line volume compaction, and tape lifecycling. Tapes managed by EpochServ-M cannot be read in another tape management system.

EpochServ-M provides volume and robotic library management for StorageTek tape silos, helping to preserve the customer's investment in large-capacity tape libraries. EpochServ-M library management capability enables the sharing of the StorageTek ACS silo

between MVS and HI-OSF/1-M.

EpochServ-M can interface with either the StorageTek MVS- resident Library Station Manager, or the StorageTek Automated Cartridge System Library Software (ACSL) resident on the network library management unit. This enables Osiris customers to obtain optimum leverage from their existing hardware investment.

**EpochBackup.** EpochServ-M provides backup, recovery, and migration support services for UFS and VxFS-M file systems under EpochBackup. Release 2.1 of EpochServ-M includes the older Backup Manager, so that existing sites can continue operating during the conversion to EpochBackup. Backup Manager will be dropped from the next major release of EpochServ-M.

EpochBackup provides regular, unattended backups for any network client that is defined as part of the backup configuration, and any local file systems on the server. EpochBackup scales easily from small to extremely large networks, and includes central backup and recovery, supporting terabyte capacities with unattended "lights-out" operation. It delivers reliable, automated backups for all file systems under EpochServ-M control, whether they are in primary or secondary storage. Backups can be handled on-line so that users will have continuous access to their files throughout the backup procedure.

EpochBackup performs full backups and the complete range of incremental backups. Baseline backups are valid only for stageable file systems on EpochServ-M—that is, the EpochBackup local client. Partial or complete backups are supported, and user-friendliness is improved through “true image” recovery, including updated renaming and deletions that may have taken place since the last backup.

EpochBackup reduces the time required to perform a full backup because, through multiplexing, it optimizes the use of backup devices. In addition, the disaster recovery support capability permits backup or recovery of gigabytes and terabytes. This is possible because EpochBackup combines incremental backups with baseline backups (a complete backup of stable files) to accomplish more efficient recovery.

Baseline backups use the same format as Migration Manager. Fully operational disaster recovery is faster than traditional backup systems because backed-up data needs to be “migrated in” only as required. EpochBackup does not require operator involvement when backup is to an ACS because it performs and updates its backups automatically at intervals specified by the system administrator. EpochBackup simplifies archival management using a capability for storing and tracking backup tapes that are stored off-site for disaster recovery. EpochBackup delivers mainframe-class security and disaster recovery to Osiris HI-OSF/1-M operating system and network clients using the TCP/IP protocol.

## Support

EpochServ-M supports the following:

- Single and multiprocessor installations of the Osiris HI-OSF/1-M operating system (Release 2.0 or greater).
- IDRC compression.
- File migration and backup for Hitachi VxFS-M on Osiris.
- HDS 7480, 7490, 7490E (and compatible) Cartridge Tape Subsystems.<sup>TM</sup> Eighteen-track tape drives, such as the 7480 and 7490 devices, cannot read or append to tapes that have been written to 36-track drives such as the 7490E. Therefore, they cannot be mixed for use by EpochServ-M.
- StorageTek Nearline Automated Cartridge System ACS 4400, Wolfcreek, and associated tape drives. This support is transparent so customers can keep current silo administration under the control of MVS StorageTek 4400 ACS only. They can also allocate parts of the cartridge tape pool to EpochServ-M operations.
- Backup of data on network clients through either TCP/IP or NFS protocols. A client software component is required on each TCP/IP-connected network platform which is to be included in the EpochServ-M management scheme. To improve manageability, client software components can be downloaded from Osiris.
- Most workstation platforms such as HP9000; IBM RS/6000; Silicon Graphics; Sun workstations running SunOS or Solaris; and selected Intel-based Novell servers. (Check with your HDS representative for additional clients that are supported).

## Features

- Network-wide hierarchical storage management
- Server-based network data management software
- Backup and migration of data under UFS
- Transparent sharing between Osiris HI-OSF/1-M and MVS of StorageTek Automated Cartridge Systems
- Automatic, transparent file migration of inactive data to low-cost storage
- Volume and robotic library management
- Highly scalable and flexible backup and recovery
- Disaster recovery support
- Off-site archival management
- Sophisticated catalog management
- Backup of raw partition for enhanced data administration
- Flexible file migration controls
- Configuration flexibility and scalability
- GUI for EpochBackup administration and recovery
- Standard file system support
- True image recovery for directories
- Backup of a wide range of distributed UNIX clients and Novell servers
- Backup of DOS, OS/2, and Windows clients of NetWare file servers.

## Prerequisites

- HI-OSF/1-M operating system, Release 2.0 or above
- Hitachi C-compiler
- Minimum of two cartridge tape drives of compatible type, either stand-alone or in the StorageTek ACS. (If both migration and backup are enabled.)

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