ONLY HPE DMF KNOWS WHERE ALL DATA IS

HPE ProLiant DL rack servers – HPE Apollo systems - HPE Superdome Flex 280 – HPE Cray supercomputer – HPE Cray EX supercomputer

InfiniBand HDR – 100/200 Gb Ethernet

HPE Parallel File System Storage
First & only IBM Spectrum Scale-based system with cost-effective x86 industry-standard rack servers without capacity-based licensing.

GPFS policy engine

SSD

IBM Spectrum Scale

HPE Data Management Framework (DMF7)
Data management for parallel file systems including data movement between heterogenous namespaces

Zero watt storage (Fastest recovery)

Cray ClusterStor E1000 Storage System
First & only Lustre-based system with zero bottleneck PCIe 4.0 storage controllers that get more performance from each storage drive to the compute nodes.

SSD

CrayClusterStor data services

Public cloud storage (Remote recovery)

Tape storage (Lowest cost recovery)
DATA MANAGEMENT WITH DMF
DMF Knows Where Data Is

Protect
- Continuous Deep Protection of Primary Data
  - Forever incremental file-based backup
  - Rapid namespace recovery

Move
- Managed Horizontal Data Movement
  - Safely migrate data among managed namespaces
  - Background media management

Scale
- Unlimited Oversubscription of Primary Storage
  - Transparently & seamlessly expand namespace to low-cost storage
CONTINUOUS DEEP PROTECTION

• Forever-incremental, file-granular file system backup
  • Files are automatically copied to append-only backend media as they stabilize
  • Tape Libraries, Nearline disk, and Multi-Cloud are supported as backend
  • As files are modified, change is new backend versions are created
  • Namespace state is captured at scheduled intervals
  • Older namespace captures are removed over time
  • Backend copies no longer referenced by captures are released and media is scheduled for compaction

• Rapid namespace recovery
  • Point-in-time restore of any file or entire file system
  • Recovery point capture, including directory structure and file stubs, is staged to namespace
  • Namespace becomes available to users and applications before all content is restored
  • File content is recalled just-in-time on access
  • Remaining content is rehydrated in background
HORIZONTAL DATA MOVEMENT

- Safely migrate data among managed namespaces
  - Movement granularity is a dataset that may contain a single file or an entire namespace
  - Data is moved in parallel across multiple nodes and between diverse filesystem types
  - Number of copy threads are scaled dynamically to target throughput, including bandwidth and files per second
  - Changes to source file are detected and transfer is restarted
  - Access to destination file is intercepted and I/O is delayed until completion
  - Incomplete transfers are automatically resumed
  - Movement is bidirectional with conflict resolution via backend versioning

- Manage media lifecycle in background
  - Policy-driven, unattended backend technology migration
  - Automatic backend media compaction
  - Asymmetric media migration, such as tape to cloud
  - Single versioned namespace for backend data ocean
UNLIMITED OVERSUBSCRIPTION

- Large-scale data lakes, such as parallel file systems, have fixed capacity limits
- Rapidly growing unstructured data causes depletion of capacity leading to performance degradation, application errors, and data loss
- DMF automatically identifies large, infrequently accessed data files and transparently copies them to low-cost media, such as nearline disk, tape or cloud
- Once data is copied and secured, DMF automatically releases space consumed by these files, while retaining file metadata inside namespace
- When application opens released file, DMF seamlessly restores file content to primary storage and delivers it to application
**DMF 7 CUSTOMER EXAMPLE**

Data Protection for Lustre & Spectrum Scale

- Multiple, highly active managed filesystems
- Home & Project use cases
- Lustre & Spectrum Scale
- DMF consolidated view of all data sets
- Moving datasets across managed filesystems
- Copying files & directories to backend for disaster recovery
- Parallel streaming to large number of high-speed tape drives
THANK YOU

And now it’s time for Q&A