The software for Hitachi NAS Platform and Hitachi Unified Storage delivers a comprehensive network attached storage solution. It leads the industry in performance and scalability, and complements other powerful Hitachi storage solutions.

Hitachi NAS Platform: System Software

Enterprise-Class NAS With Advanced Data Management and Continuous Availability

Hitachi NAS Platform is designed for consolidating unstructured data. It provides efficient content indexing and "intelligent file tiering," capabilities that enable policy-based migration of data and content among storage and archive tiers. Information management, storage, sharing, backup and retrieval are improved for even the largest data sets. With new features to support continuous file availability and larger file systems, Hitachi NAS Platform maintains its status as a robust network-attached platform solution.

The combination of features makes the Hitachi NAS Platform family ideal for diverse applications, from NAS or file server consolidation to high-performance storage for VMware virtual machine (VM) environments. These features also support commercial enterprise applications.

Continuous Availability

Global-active device allows for the continuous access and availability of replicated volumes in the case of a site, storage or server failure.

- Automatic failover capability means zero recovery point and recovery time objectives (RPOs and RTOs).

- Supports environments up to 100km.
- Highly active solution enables seamless file availability in the case of a site or node failure.

Automated Data Management

Intelligent file tiering moves data among storage and archive tiers with automated, policy-driven migration tools.

- Data migration capabilities to the following targets improve upon tiering or archiving strategies.
  - Public cloud: Hitachi Cloud Services, Amazon S3, and Microsoft® Azure™.
  - Private cloud: Hitachi Content Platform.
- Cross-volume link migration tiers data between internal flash or solid-state disk (SSD), Fibre Channel, serial-attached SCSI (SAS) and SATA storage tiers.
- External volume link migration enables data migration between Hitachi NAS Platform and external devices via Network File System (NFS) v3.

Tiered file system (TFS) separates file system metadata from user data. It automatically places metadata on the highest tier for improved performance and storage cost-efficiency.

Cluster namespace creates a unified directory structure across storage pools and servers. Multiple file systems appear under a single common root, and both server message block (SMB) and NFS clients obtain global access through any cluster node.

Primary Storage Deduplication

Eliminate redundant data and achieve up to 90% capacity savings.

- **Leverages hardware-accelerated architecture (FPGA):** Primary data deduplication uses a coprocessing architecture, providing parallel processing that results in high-performance file services.
- **Automatic processing:** When the file-serving load passes beyond 50%, the deduplication engine automatically throttles back.
- **Unmatched simplicity and power:** Little to no administration, configuration or tuning is required. Scheduling is not necessary. Use up to 4 deduplication calculation engines for maximum performance.
- **Data-in-place deduplication during production:** Process reduces the need to pre-allocate capacity to be used as deduplication "workspace."

Multilayered Data Protection

- High-speed replication of objects using Hitachi NAS Replication accelerates replication over wide area networks and improves RTOs.

FEATURE HIGHLIGHTS AND SUMMARY

Continuous Availability
- Zero RTO and RPO for sites in the case of a node, storage or site failure.
- Flexibility for environments and sites up to 100km.

Support for VMware VVOL
- Increase storage efficiency through VM-centric storage allocation.
- Automated provisioning of VMs delivers quicker adjustment to business changes through Hitachi policy-driven management.
- Support for mapping individual VMs to virtual machine disks (VMDKs) delivers increased granularity and resource utilization rates.

Multitenancy
- Enables independent enterprise virtual servers (EVSs).
- Supports hosting multiple assignments on one Hitachi NAS Platform on the same IP address; delivers true separation.

Superior Capacity Efficiency
- Support for 1PB file system.
- Primary storage deduplication to eliminate copies of redundant data.

Intelligent File Tiering
- Policy-based hierarchical storage management feature spans Hitachi NAS Platform and Hitachi Content Platform.

Enhanced High Availability
- Optimized file system premount checks and improved NVRAM replay time for faster cluster failover.
- Nondisruptive cluster upgrades (NDU) to remove updates and reduce downtime.

Virtualization Services
- Hitachi Virtual Infrastructure Integrator simplifies backup, restore and cloning operation from VMware vSphere to Hitachi NAS Platform.
- VMware vStorage APIs for Array Integration (VAAI) adapter divests storage operations from VMware vSphere to Hitachi NAS Platform.
- Virtual volumes, virtual servers and cluster namespace unify the directory structure while simplifying storage capacity management tasks.

Data Management Services
- Centralized GUI management, pointer-based snapshots, Hitachi NAS Replication writable snapshots, quick file restore, hard and soft quotas (volume, group or user), NAS data migrator feature, scalable file systems, storage pools, policy-based management, and transparent data migration and relocation.

Protocols Supported
Hitachi NAS can support various protocols, including:

- Internet Content Adaptation Protocol (ICAP) support for virus scanning.
- IPv6 support: Connect using an IPv6 address or a host name resolving to an IPv6 address through the external system management unit (SMU) or SMU command line interface (CLI).

Complete Network Protocol Support
- Server Message Block (SMB) 1.0, 2.0, 3.0; Network File System (NFS) with UDP v2 and v3 or TCP v2, v3 and v4; NDMP v2, v3 and v4; File Transfer Protocol (FTP); Secure File Transfer Protocol (sFTP); File Transfer Protocol Secure (FTPs); iSCSI. SMB2.1 signing and SMB secure negotiation are supported on all Hitachi NAS Platforms.

Management and Other Protocols
- HTTP, SSL, SSH, SNMP v3, NIS, DNS, WINS, NTP and email alerts

Data Protection Services
- Active-active clustering with cluster read caching, for scalable, read-intensive NFS workload, incremental block replication (IBR), Hitachi NAS Replication high-speed replication and synchronous disaster recovery service.
- Support for Hitachi Virtual Storage Platform G1000 and Hitachi Unified Storage VM.

- Synchronous disaster recovery support with active-active geoclustering up to 100km.
- HNAS now offers the following snapshotting capabilities for data protection:
  - Point-in-time read-only snapshots of an entire file system provide local data protection.

- File clones and directory clones. Hitachi NAS File Clone enables the creation of writable snapshots (clones) of files to shorten production data copies in testing and development and virtual desktop infrastructure (VDI) environments. Directory clones enable quick and space-efficient creation of writeable snapshots of an entire set of files located under a directory.

For more information about Hitachi NAS Platform, visit www.HDS.com.

◎ Hitachi Data Systems