Take Advantage of the Industry’s Best to Power the Creation of Great Work

In the production of film, videos, games and commercials, quality and speed are critical. Hitachi Data Systems works with you to solve your storage and data management bottlenecks, delivering cost-effective solutions that are highly scalable for post-production tasks. Whether for CGI animation, rendering, or transcoding, Hitachi Data Systems powers your digital workflows, enabling extraordinary creative and business achievements.

The dynamic world of visual effects animation and design requires innovations in storage solutions that keep pace with the creative process. By carefully applying new technology, studios have been able to improve artistic quality, shave time off production schedules, and create more scenes. The many benefits include higher-quality work, faster time to market, more simultaneous projects, and greater revenue.

In the production of films, games and commercials worldwide, Hitachi Data Systems network storage platforms are the very core of our customers’ computer graphics networks. These systems’ industry-leading performance is driving stunning improvements in rendering speeds and dramatically reducing artist wait times. Hitachi Data Systems storage systems remove the bottlenecks from even the most powerful render farms, resulting in faster renders, fewer dropped frames, and far less rework. With storage systems, faster data access enables artists and producers to focus on delivering their creative vision, rather than worrying about storage capacity.

Large concurrent projects, whether for ingest, post-production or delivery, often require fast deployment for storage upgrades. These projects also present studios with unpredictable data requirements. Our networked storage has a unique modular architecture that makes it easy and affordable to support this dynamic...
environment, with features to adapt to spiring market and creative demands (see Figure 1).

- **Flash-Based Performance and Hardware Acceleration**: Employs unique Hitachi architecture; enables speedier media workflows with higher performing Tier-0 storage.
- **Capacity Efficiency (Primary Dedupe)**: Leverages Hitachi NAS Platform (HNAS) hardware-accelerated primary deduplication to minimize cost of the storage infrastructure without sacrificing performance.
- **Intelligent Tiered Storage**: Enables consolidation and deployment of different types of storage within the same network attached storage (NAS) system, based on the profile of post-production applications, and optimizes active-file disk drives with lower cost archival disk drives.

**SOLUTION ELEMENTS AND CAPABILITIES**

- **Massive Scaling**: Allows up to 8-nodes and 32PB usable capacity in a single namespace.
- **Extreme Throughput**: Supports industry-leading I/O rate of up to 1.2M NFS operations per second (SPECsfs) and an industry-leading throughput of up to 2000MB/sec.
- **Dynamic Read Caching**: Scales NFS read-based workload profiles, accelerating read-intensive application performance.
- **Easy Upgrades**: Futureproofs with software upgradeable nondisruptive upgrades; universal migrator feature helps simplify and decrease migration times from 3rd-party NAS systems.

By partnering with Hitachi Data Systems you can remove storage constraints. These systems reduce artist idle times, while opening and closing source files, by providing smooth, simultaneous access to shared data sets. This access removes the need for duplicate data sets, reducing versioning errors and greatly simplifying data management.

**Unmatched Performance and Lower Production Costs**

Built on patented hardware-accelerated architecture, all Hitachi NAS Platform systems deliver flexible, highly scalable, high-performance storage solutions.

By improving data access and user loads with extremely low latency, these systems simplify collaboration among teams of artists. Their enterprise-class management tools provide ongoing access to each creative project’s critical files, which leads to increased productivity in the digital pipeline through improved performance and capacity.

**Storage Systems That Scale With Your Digital Workflow**

Studios with heavy renders require maximum throughput, while others might require lower throughput, at a reduced cost. To scale capacity and performance, most storage systems require an expensive and potentially disruptive “forklift” upgrade.

**HNAS storage systems drive our creative workflow. Their incredibly reliable performance has accelerated our current work — and our company’s ability to take on bigger and more varied projects.**

David Algar
Principal Systems Administrator
Rainmaker

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**Figure 1. High-Performance Solutions for Media Workflows**
Innovation is the engine of change, and information is its fuel. Innovate intelligently to lead your market, grow your company, and change the world. Manage your information with Hitachi Data Systems.

Hitachi Unified Storage and Hitachi NAS Platform eliminate these issues by delivering modular, cost-effective scalability for a variety of storage needs and budgets (see Figure 2). For midrange requirements up to 16PB, and extreme requirements reaching 32PB, this product line delivers remarkable performance, regardless of capacity. This approach enables creative teams to lower their TCO while also ramping up to take on new projects, hire more artists, or assume higher-resolution engagements. In addition, these systems are designed to support even higher capacities, ensuring that today’s storage investment will scale seamlessly with your changing needs.

Intelligent Tiered Storage for Ultimate Flexibility

Today’s environment for post-production studios mandates that efficient media workflows deliver files to appropriate storage tiers that balance cost, capacity, high-performance and archive. Unlike traditional solutions that require a separate storage server to address each need, Hitachi Data Systems intelligent tiered storage supports any combination of disk drives behind a single Hitachi NAS Platform system. With flash technology, storage administrators can automatically migrate higher-priority data to high-performance storage tiers. The storage architecture enables administrators to manage throughput, storage capacity and budgets, depending on digital workflow requirements. This architecture provides the ultimate in flexibility and helps drive down costs.

Versatile, Easy-to-Manage Storage Systems

HNAS storage platforms are ideal for a range of uses, but they are particularly well suited to consolidating multiple, disparate storage systems into a single easy-to-manage storage solution. HNAS (gateway) and HUS (unified) systems support multiple applications and a large number of concurrent users, while requiring fewer storage devices than traditional storage systems. Their concurrent use of multiple protocols enables the consolidation of Microsoft® Windows® clients, UNIX and Linux clients, and clients requiring block data access, all with a single network storage solution.

Unified Storage

- Dedicated storage.
- Easy to deploy and manage.
- Utilize dynamic tiering.
- Efficient data deduplication.

<table>
<thead>
<tr>
<th>Availability</th>
<th>Number of Nodes</th>
<th>Client Connectivity</th>
<th>Storage</th>
<th>Maximum IP/ File Storage Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUS 100 Series</td>
<td>1 to 4</td>
<td>NFS, SMB, iSCSI, Fibre Channel</td>
<td>HUS 100</td>
<td>8PB Usable</td>
</tr>
<tr>
<td>HUS VM</td>
<td>1 to 4</td>
<td>NFS, SMB, iSCSI, Fibre Channel</td>
<td>HUS VM</td>
<td>8PB Usable</td>
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<tr>
<td>VSP</td>
<td>1 to 8</td>
<td>NFS, SMB, iSCSI, Fibre Channel</td>
<td>VSP</td>
<td>16PB Usable</td>
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<tr>
<td>VSP G1000 Family</td>
<td>1 to 8</td>
<td>NFS, SMB, iSCSI, Fibre Channel</td>
<td>VSP G1000</td>
<td>32PB Usable</td>
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<tr>
<td>HNAS 4040</td>
<td>1 to 2</td>
<td>NFS, SMB3, iSCSI</td>
<td>All currently supported HDS and Hitachi Storage Systems</td>
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<td>HNAS 4080</td>
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<td>NFS, SMB3, iSCSI</td>
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<td>HNAS 4100</td>
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<td>NFS, SMB3, iSCSI</td>
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</tr>
</tbody>
</table>

HUS = Hitachi Unified Storage, VSP = Hitachi Virtual Storage Platform, HNAS = Hitachi NAS Platform, HA = high availability

Figure 2. Comparison of Hitachi Unified Storage and Hitachi NAS Platform Models
SOLUTIONS THAT ENABLE EXTRAORDINARY WORK: 2 SUCCESS STORIES

CUSTOMER: Geliang Media
- Based in Beijing; visual effects company.
- Created artistic rendering for Million Dollar Crocodile.

THE CHALLENGE
- Running multiple complex projects at once.
- VFX artists accessing thousands of random files, placing huge demands on throughput and I/O performance.
- Complex production processes requiring multiple special effects terminals to process many on-screen images; demand for high performance.

THE SOLUTION
- Hitachi NAS Platform 3090 with intelligent tiered storage.
- Tier 1 (SAS disk) handled output image data and 3-D movie files.
- Tier 2 (SATA disk) provided high-bandwidth access to raw scans.

THE RESULTS
- Extra artist creation time due to higher data throughput and faster image rendering than previous system.
- Seamless scaling, enabling efficiencies in media workflow management.

CUSTOMER: Tippett Studio
- Based in Berkeley, Calif.; visual effects company that creates imagery for feature films.
- Created visual effects for numerous feature films, including The Twilight Saga, Harry Potter and the Deathly Hallows, Ted, Ghostbusters 2, and Starship Troopers.

THE CHALLENGE
- 24/7 product workload managing massive amounts of data assets.
- Evolving creative technologies to stay ahead of industry with latest stop-motion animation techniques, and digital animation tools to bring digital creatures to life.
- Develop, deploy and manage a state-of-the-art data production pipeline to support Tippett’s artists.

THE SOLUTION
- Hitachi NAS Silicon File System to drive the architectural platform.
- More than 200TB with a 2-node cluster supporting 2 tiers of storage.

THE RESULTS
- For Jimmy Kimmel Live work, Tippett tripled the amount of data stored, with a compressed production schedule.
- During the second installment of the Twilight saga series, grew the fur of the digitally created wolves from 2 million hairs to over 12 million hairs, creating more realistic and texturally opulent creatures.
- Moved the studio to the world of 3-D demands, such as moving from 24 to 48 frames per second, which puts heavier demands on the storage infrastructure.
- Prepared the studio for key sequences work in Will Smith’s After Earth, a science fiction thriller released in May 2013.

Visual effects studio Geliang Media relied on 2 clustered HNAS storage systems in creating the special effects for a number of video projects, including Million Dollar Crocodile (featured above), the TV series The Butterfly Murders, the Japanese anti-war film Yimeng, and the family ethics film War in Niu.

Tippett Studio is one of the most innovative and heavily awarded visual effects houses in the industry after nearly 3 decades of filmmaking. They sought to create a flexible pipeline with an efficient render farm for supporting their creative movie-making process.