

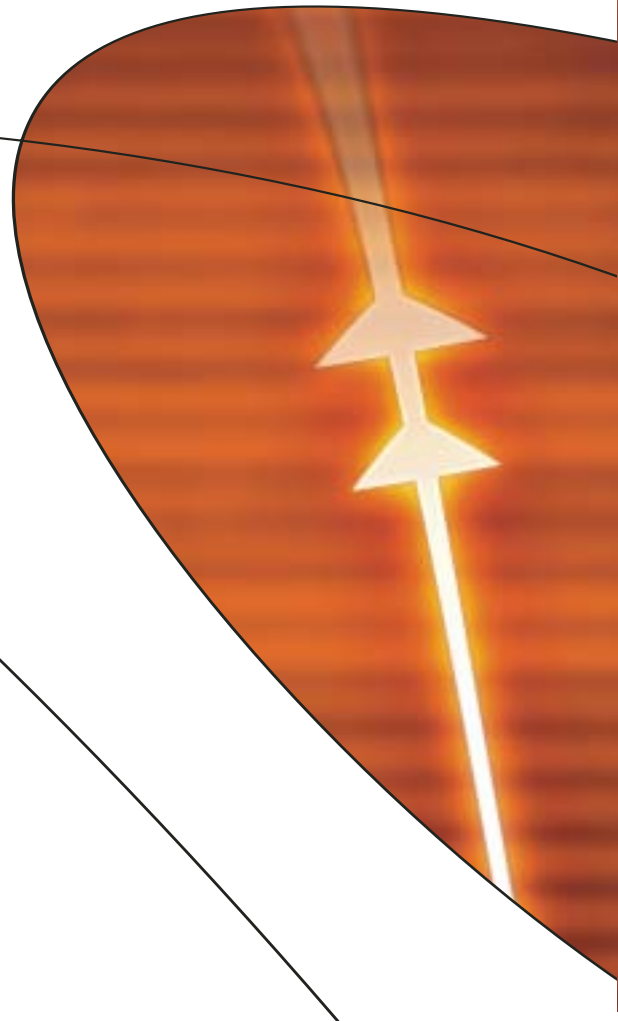
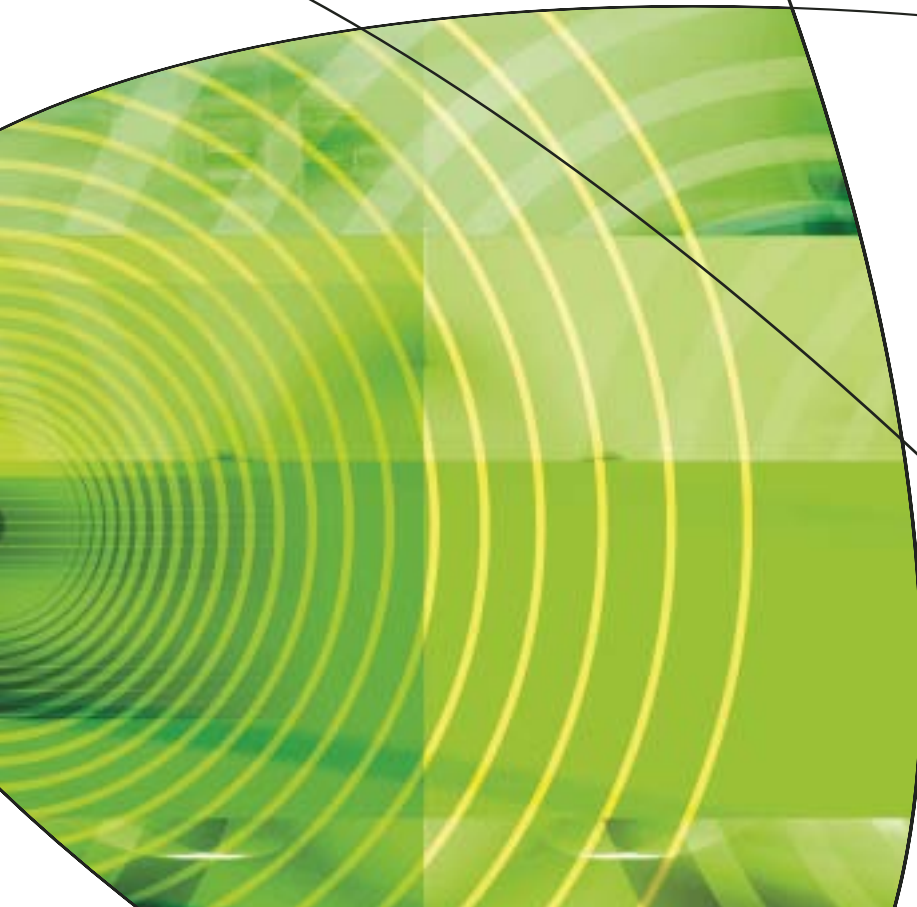


HITACHI
DATA SYSTEMS

Hitachi Thunder 9500™ V Series

Modular Storage Systems

Partner Beyond Technology



Thunder 9500™ V Series systems have redefined the notion of modular storage. While a predictable choice for small- to mid-sized companies and distributed environments, these systems have also earned their place within tiered storage architectures of today's largest enterprises, including those led by the revolutionary Hitachi TagmaStore™ Universal Storage Platform and Hitachi Lightning 9900™ V Series enterprise storage systems.

Hitachi Thunder 9500™ V Series Modular Storage Systems

As key components of Hitachi Application Optimized Storage™ solutions, Thunder 9500 V Series systems provide industry-leading capacity, performance, and connectivity in a small footprint. With optional software, these systems can grow with your business, handily addressing applications such as data replication, message archiving, and regulatory compliance.

Thunder 9500 V Series modular storage systems—not just for centralized and distributed strategies, but ideal for tiered storage architectures, too

Reaching 64 terabytes in capacity, the versatile Thunder 9500 V Series storage systems offer you maximum flexibility with high performance for demanding applications and native intelligence for simplified management. You'll find that these systems smoothly scale and upgrade in an affordable and easy-to-grow footprint, so you can meet rapidly evolving application requirements without difficulty.

Hitachi Thunder 9500 V Series modular storage systems:

- :: Thunder 9585V™ ultra high-end modular storage
- :: Thunder 9570V™ high-end modular storage
- :: Thunder 9530V™ entry-level storage deck
- :: Thunder 9520V™ workgroup modular storage

The Hitachi Application Optimized Storage approach leverages solutions that incorporate Thunder 9500 V Series systems to closely align IT with business objectives

The Application Optimized Storage solutions enable enterprises to match storage system attributes, such as performance, availability, functionality, capacity, and cost, plus application-centric management, to their business application requirements. For example, mid-sized businesses might choose the Thunder 9585V ultra high-end system for a stand-alone I/O-intensive research application while supporting archiving or critical fixed content to the Serial ATA (SATA) Intermix Option on a Thunder 9570V high-end system. Smaller organizations can deploy the new Thunder 9520V workgroup modular storage system or the Thunder 9530V entry-level storage deck.

For core or edge applications, centralized or distributed deployment, or tiered networks, the Thunder 9500 V Series storage systems help protect your investment for the long term

Core Applications, Centralized Management:

For mid-sized businesses, centralized storage running core applications is ideal to support both simplified storage management and reduced maintenance costs. In this case, the Thunder 9585V system proves to be a clear asset, consolidating storage in the mid-sized data center, while providing high performance and high availability, and supporting applications for compliance with today's new security regulations, such as HIPAA, Basel II, and Sarbanes-Oxley.

Simplify your infrastructure with the Thunder 9585V or Thunder 9570V storage systems—easy-to-manage options for data-intensive industries that seek business benefits along with IT advantages.

Edge or Distributed Applications:

Complementing the Universal Storage Platform or Lightning 9900 V Series systems, the Thunder 9500 V Series storage systems easily support diverse large enterprises that are dependent on business continuity and immediate access to their data. Such data may be distributed across the enterprise, in life sciences for example, or separated by geography as in retail sales, which often includes multiple locations. These modular systems are so ready to work that installation is often as simple as plug-and-play for data warehousing, data archiving, and 24/7 online business transactions.

Cost-efficient support for business: Application Optimized Storage solutions are built for budgets

Companies can choose high-capacity Thunder 9585V and Thunder 9570V modular storage or the Thunder 9530V and Thunder 9520V systems to address specific tasks and reap the rewards of lower cost and simplicity. Yet there's no sacrifice of enterprise-level reliability, integrity, and sophisticated management. The Thunder 9500 V Series systems often serve where

the initial investment expense of a centralized platform is not justified over the long term.

Tiered architectures: Creating a tiered storage architecture makes optimal use of the technology by allowing today's budget-conscious enterprises to match the value of their data to the cost of their storage. At the same time, this strategy provides storage managers with the freedom to respond to the intensifying demands of data lifecycle management and compliance.

Configurations include tiering storage down from systems such as the Universal Storage Platform or Lightning 9900 V Series enterprise systems to lower-cost Thunder 9500 V Series models that meet budget requirements.

The high-performance Thunder 9585V and Thunder 9570V storage systems are ideal for data-dependent industries, such as life

sciences, which require capacity and performance for database management, visualization, and analytical tools. They are also excellent choices for health care industries that rely on rapid, HIPAA-secure access to patient records, billing, and medical images. These systems can easily support broadcast/rich media applications, including audio/video editing. And they can take on the responsibility of data lifecycle management for archiving, or frequently used collaborative business applications such as Microsoft Exchange and Lotus Notes.

SATA advantage: To help manage, back up, and secure the growing volume of mission-critical data, the Hitachi SATA Intermix Option for the Thunder 9500 V Series systems can be added to systems fitted with Fibre Channel drives, creating the world's first tiered storage "in a box."

Data Lifecycle Management: Matching the Value of Your Data to the Cost of Storage

Managing and protecting your information assets while making the most of your storage investments are the key drivers for IT decision makers. Hitachi Data Systems takes a holistic approach to data lifecycle management—all the way from high-performance data storage and access to data retention for regulatory compliance to business continuity and disaster recovery. It is viewed as a continuum in which the value of data rises and falls over time and in response to internal (customer loyalty research) and external events (legal obligations).

Hitachi Data Systems delivers across the spectrum of data lifecycle management with solutions that build on our industry-leading storage platforms—from the Universal Storage Platform to the Lightning 9900 V Series enterprise and the Thunder 9500 V Series modular storage systems—and with the Hitachi Storage Area Management (SAM) Suite of software products, including HiCommand® modules powered by AppIQ. These platforms can be deployed in a tiered architecture to match the value of data to the cost of storage. Your data from mission-critical, high-transaction rate applications can be deployed on the Universal Storage Platform or Lightning 9900 V Series systems, then moved to Thunder 9500 V Series systems as the data ages and needs to be retained to meet regulatory requirements.

Hitachi Data Systems offers two solutions that leverage Hitachi Data Retention Utility (formerly Open LDEV Guard) and are powered by Open Text/IXOS Software eCONServer: Message Archive for E-mail and Message Archive for Compliance.



Small-footprint Thunder 9500 V Series modular storage systems feature industry-leading capacity, performance, and connectivity.

Consolidate, simplify, reduce costs

With a Thunder 9585V or Thunder 9570V storage system, you can consolidate existing storage systems into one footprint. Not only do you reduce the initial purchase costs for your organization, but you also lower your total cost of ownership over each system's lifetime. By simplifying your information infrastructure and management responsibilities, you continue to save on operating and resource expenditures.

Our growing Thunder family of storage systems offers you the advantages of single-view storage management, an unflinchingly high level of availability, and the versatility to carry out tiered, centralized, or distributed storage strategies. With a broad range of configurations and support for more operating systems than any other competitor in the midrange marketplace, Thunder 9500 V Series systems help you simplify your IT operations—and your life.

In many instances, you can replace your existing server-internal or external JBOD storage with a single Thunder 9585V or Thunder 9570V storage system. Featuring virtual ports and secure Host Storage Domains, both systems allow host pooling at the LUN level, optimizing connectivity and reducing the network infrastructure, while Host Storage Domains and Hitachi Volume Security software (formerly SANTinel) ensure authorized access. Ultimately, this lowers your IT costs and

extends your capital investment by consolidating storage resources and sharing information across disparate platforms.

- ∴ Form centralized host group pools
- ∴ Replace several systems with one—reduce environmental expenses (floor space, power, cooling) to simplify and save
- ∴ Reduce management tasks—lower staff costs
- ∴ Reduce software licensing and maintenance costs

Hitachi Thunder 9520V™ workgroup modular storage allows you to ease into your first SAN or an archive solution

The Thunder 9520V workgroup modular storage system offers best-of-class scalability and performance. This compact anchor for Application Optimized Storage solutions more than holds its own for multiple Microsoft Windows server storage consolidation or any other deployment of a quick and easy storage area network (SAN). The Thunder 9520V system is also ideal for archival storage in tiered environments.

Are you looking for an easy-to-manage SAN optimized for Microsoft Office, Oracle-based collaborative applications, Web serving, and other “cannot go down” applications—fast? Or, do you want to add Hitachi storage optimized for nearline data, tamperproof archiving, or remote deployment? If so, then this system is for you—it's unique in the level of scalability and performance it delivers within its class.

Greater capacity (up to 13TB), less fuss

- :: You can scale higher and support as many as 512 LUNs, granularity essential for growing businesses and enterprises that seek an archival solution. And diskless boot is provided for all servers attached to your SAN.

Fastest in category

- :: At 4.2GB/sec of cached bandwidth, you gain greater performance than with systems that try to compete.

Unmatched data availability and protection

- :: You obtain the same enhanced Serial ATA data protection available for the high end of the Thunder 9500 V Series. Plus, the Hi-Track® 24/7 "call home" service/remote maintenance tool keeps potential issues from becoming problems.
- :: You gain seamless compatibility with other tiers of Hitachi storage under Hitachi SAM Suite software.

Smaller operations, special applications? With the Thunder 9530V entry-level storage deck—you have the freedom to choose.

The Thunder 9530V entry-level storage deck consists of an expandable "do it yourself" single Command Module, which can range from 180GB to 2TB in capacity with up to 4GB memory. This versatility makes it a valuable addition for large enterprises with local storage needs in branch and district offices, for retail operations that seek to supply seamless service to their customers (electronic or brick-and-mortar), as well as for small- and medium-sized businesses, such as professional offices that require business continuity on a small, but upgradeable scale. You determine capacity required now—then, expand as needed.

In this smaller, configurable advanced modular option, you gain the same high-speed characteristics in each of today's Thunder 9500 V Series storage systems, including a hot-swappable component design and innovative Hi-PER Architecture™ (high-performance RAID architecture). These

attributes allow each system to assume key responsibilities in support of sustained growth. Or, you can set up distributed strategies for reliable information sharing.

- :: Deploy for truly manageable SAN strategies
- :: Implement for disaster recovery assurance
- :: Use for broadly distributed environments
- :: Upgrade to the Thunder 9570V when more capacity is needed

Deploy Hitachi Thunder 9500 V Series modular storage systems to simplify your storage infrastructure for easy management

- :: Streamline your storage infrastructure with up to 1,204 virtual storage ports and Host Storage Domains
- :: Centralize storage management of your Thunder 9500 V Series systems with the Hitachi SAM Suite of software, including HiCommand modules powered by award-winning ApplIQ technology

- :: Protect your investment with the highly expandable Thunder 9585V ultra high-end modular storage system and Thunder 9570V high-end modular storage systems; upgrade path for the Thunder 9530V entry-level storage deck
- :: Benefit from the ease-of-use and cost-savings of cross-system commonality of features, functions, and software in Hitachi Lightning and Hitachi Thunder family storage
- :: Easily support SAN and network attached storage (NAS) data access with any one of the plug-and-play Thunder 9500 V Series products

Choose the perfect fit for your business from four Thunder 9500 V Series models that are equipped to meet a variety of operational and application needs

Employ Thunder 9500 V Series systems to:

Simplify

- :: Consolidate and centralize management resources
- :: Easy to install, configure, and expand
- :: Versatile solutions meet diverse application and business needs
- :: Fewer software licenses, lower cost of ownership

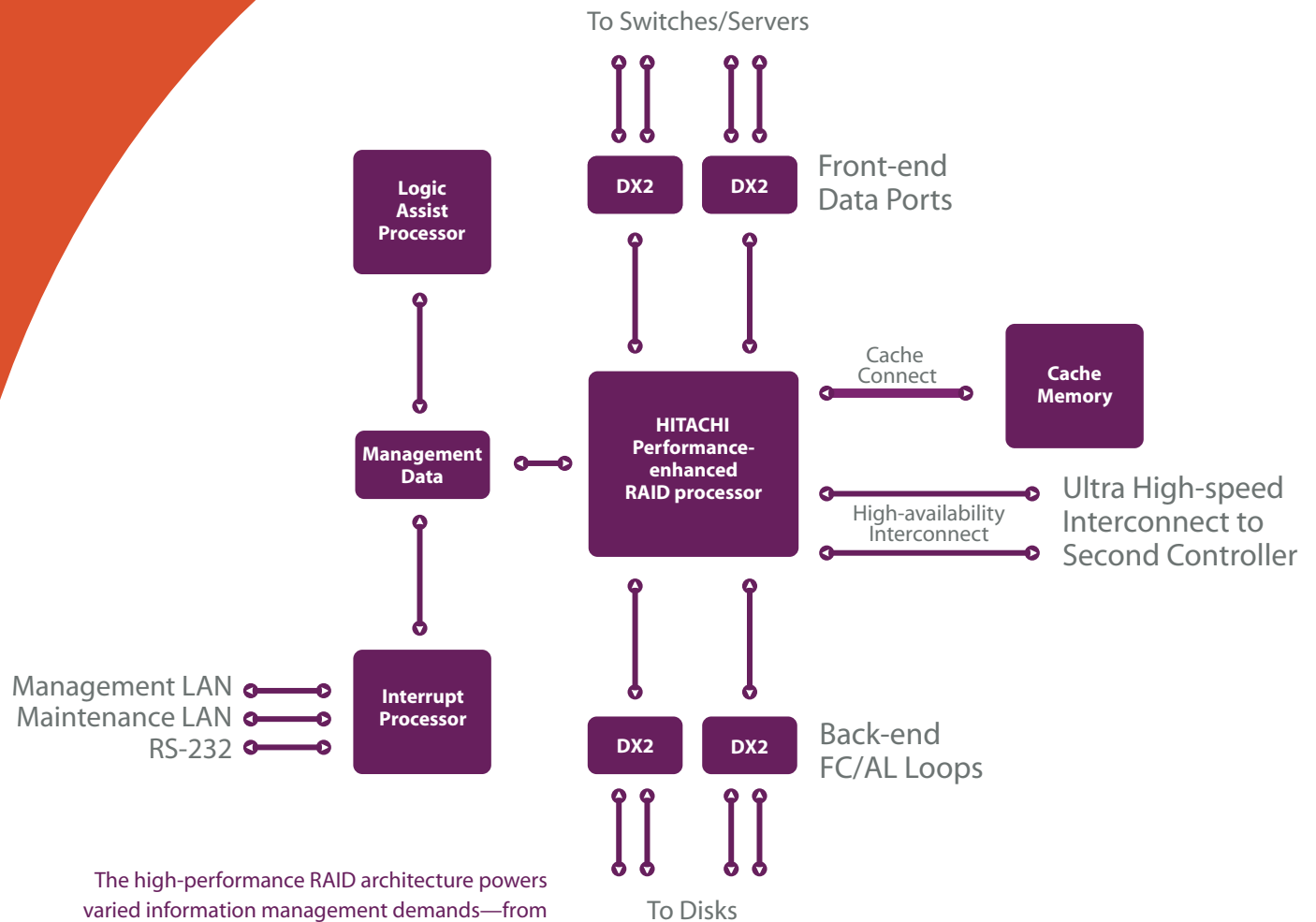
Protect

- :: Adaptive and scalable storage for investment protection and business agility

- :: Resilient architecture, advanced data protection software—keeps business-imperative applications up and running

Optimize

- :: High performance, highly scalable
- :: Easier to manage—increases staff and IT productivity
- :: World-class service and support



The high-performance RAID architecture powers varied information management demands—from collaborative business applications to business-process automation applications.

Hitachi Thunder 9500 V Series systems shake up the status quo by giving today's businesses exactly what they want.

For small- to mid-sized businesses, such as retail or professional organizations, and distributed environments in large enterprises both the Thunder 9520V and Thunder 9530V systems answer the call

Thunder 9520V storage—your first Hitachi system or extension of existing Hitachi SANs:

- :: Pain-free quick and easy solution; handle rapid growth
- :: Anchor an easy-to-manage, optimized SAN
- :: Gain more efficiency, utilization by managing storage as a single pool
- :: Simplify backup without downtime or network congestion
- :: Manage remote Thunder 9520V systems with the desired mix of local administrative autonomy or centralized efficiency and control
- :: Deploy with Hitachi SAM Suite software

Building on the capabilities of the enterprise-class Hitachi Lightning 9900 V Series systems, Thunder 9500 V Series storage systems reduce complex connectivity with a virtualization assist layer that eases management, simplifies infrastructure, and better utilizes resources.

The Thunder 9530V entry-level storage deck is:

- :: Customizable and configurable, up to 2TB capacity
- :: Able to upgrade to the Thunder 9570V high-end modular storage system
- :: Ideal for standalone or distributed deployment
- :: Easy to install, manage, and control

For strategic use in mid- to large-scale enterprises, the Thunder 9570V storage system allows you to:

- :: Move from server-internal storage to external RAID-protected storage systems

- :: Consolidate JBOD external storage across open system servers
- :: Build centralized storage pools or distribute throughout the enterprise
- :: Integrate SAN and NAS data into one storage system
- :: Reduce software licensing and/or maintenance costs
- :: Simplify management tasks, improve staff productivity

Minimize costs by reducing support and downtime while optimizing server and storage configurations for improved utilization and staff productivity. The Thunder 9585V ultra high-end modular storage system can:

- :: Form centralized storage pools
- :: Replace several systems with one—save on floor space, power, cooling
- :: Simplify and expand your connectivity
- :: Upgrade with data-in-place from Thunder 9530V to Thunder 9570V to Thunder 9585V storage systems
- :: Reduce software licensing and/or maintenance costs

- :: Simplify management tasks; improve staff productivity

With all Thunder 9500 V Series models:

- :: Exploit concurrent support for open systems, including Microsoft Windows NT, Windows 2000, and Windows Server 2003, major UNIX platforms, Linux platforms, Novell NetWare, HP OpenVMS, and HP Tru64 UNIX

All Thunder 9500 V Series systems are a perfect fit for small- and medium-sized businesses as well as for strategic deployment in the largest of enterprises, especially in a tiered storage role.

Protect critical information with the Thunder 9500 V Series modular storage systems:

- :: Recover quickly from disasters—create instant, user-defined point-in-time copies
- :: Use nondisruptive, real-time copies for backups, application testing, and data warehousing/data mining
- :: Deploy distributed models and maintain offsite redundancy for 24/7 data availability, complete integrity
- :: “Server-less” disk copy and tape backup
- :: Rely on Hi-Track “call-home” service/remote maintenance tool
- :: Achieve nondisruptive expansion to over 60TB
- :: Work with advanced and scalable backup/restore functions
- :: Obtain alternate path and clustering support

You have a choice of Thunder 9500 V Series models to help you optimize your resource utilization:

- :: Increase your data lifecycle capabilities by matching lower-cost Thunder 9500 V Series models to the value of your data and still meet stringent compliance regulations
- :: Grow with multidimensional scalability, including capacity, bandwidth, connectivity, workload mix, and embedded applications
- :: Give yourself flexibility in vertical markets supporting embedded applications from entry-level to high-capacity

- :: Choose from four models—scale to over 60TB
- :: Relax with set-and-forget policy-based management
- :: Get ready to experience easy SAN and NAS coexistence with HDS-NetApp® Enterprise NAS Gateway or through support for Microsoft Windows Storage Server 2003 file and print services

The Thunder 9500 V Series storage systems reflect the intelligence of our leading enterprise-level systems by sharing common APIs and software tools, as well as a common management infrastructure with the Lightning 9900 V Series storage systems.

Each Thunder 9500 V Series model is based on the same innovative Hi-PER Architecture for high performance and common components, such as cabinetry and microcode, for trouble-free integration. Hi-PER Architecture supports the information management demands of dynamic enterprises—from collaborative business applications to business-process automation applications.

Meeting your business objectives with increased bandwidth, capacity, availability, and ease-of-use, the Thunder 9500 V Series storage systems offer you a cost-efficient storage architecture for easy-to-manage,

open, modular form factor storage in a small footprint. With a broad range of models, these advanced modular systems are quickly installed, configured, and expanded to enhance fundamental continuity and make your life easier.

Whether Fibre Channel SANs, gigabit Ethernet NAS, or iSCSI for open systems and SAN interconnect are required, the Thunder 9500 V Series systems support them all

- :: Control large amounts of data with a single view
- :: Enable storage pooling through consolidation
- :: Reduce physical complexity and lower cost
- :: Establish reliable distributed storage environments
- :: Work with evolving virtualization architecture
- :: Optimize connectivity with ultra high-speed controller interconnects
- :: Protect investment with trouble-free integration

As the need for capacity increases, all Thunder 9500 V Series systems leverage your initial investment and scale up seamlessly

Customers, partners, and employees have learned to expect instantaneous information access. With the Thunder 9500 V Series systems, you can increase productivity, shorten time to market, and mitigate risk.

Backed by our highly integrated Hi-PER Architecture, end-to-end Fibre, and high-performance disks, the Thunder 9500 V Series systems easily handle simultaneous information access through multiple protocols and connections.

Apply the tools your business needs to thrive

With Hitachi-engineered technology and solutions at hand, you're positioned to launch exceptional storage management strategies. Getting started is easy with the Thunder 9500 V Series storage platform, which combines power and intelligence to simplify infrastructures for easy management, protect critical information, and optimize resource utilization. Couple unparalleled Hitachi storage engineering with the Hitachi SAM Suite of management software, including HiCommand modules built on *Storage* magazine's Gold Medal Award-winning AppliQ technology,

Hitachi Storage Software

Ensures availability

- :: Provides point-in-time copies for disaster recovery, tapeless data vaulting, data warehousing, data mining, or application testing
- :: Enables real-time data movement and online data migration over virtually unlimited distances
- :: Allows sophisticated and scalable backup/restore functions
- :: Provides alternate path and clustering support

Accelerates access to information

- :: Optimizes performance for business-critical online applications
- :: Maximizes scalability

Empowers the transformation of information into knowledge

- :: Supports information sharing in heterogeneous environments
- :: Allows data exchange among UNIX, Windows NT, Windows 2000, Windows Server 2003, and Linux platforms

Reduces storage management complexity and cost

- :: Supports consistent procedures and policies for large installations
- :: Provides event, performance, and configuration management
- :: Enables Hitachi storage systems management from any location

and you can handily steer the course of your operations and support your business activities.

Consider your storage system options: the dual-cabinet Thunder 9585V rackmounted model and the Thunder 9570V single cabinet model. Both are exceedingly capable of consolidation efficiency. On the other hand, the smaller Thunder 9520V is a quick-and-easy yet powerful solution to set in place, while the incredibly flexible Thunder 9530V entry-level storage deck is a fits-anywhere asset that, like the larger systems, is based on a single Command Module.

All Thunder 9500 V Series systems are a perfect fit for small- and medium-sized businesses as well as for strategic deployment in the largest of enterprises, especially in a tiered storage role

These modular storage systems can satisfy the most rigorous application requirements, security compliance, funding restrictions, and operational demands. Simply select the storage system that best supports your objectives. You'll be rewarded with new levels of availability and performance within highly productive solutions, such as SAN and NAS.

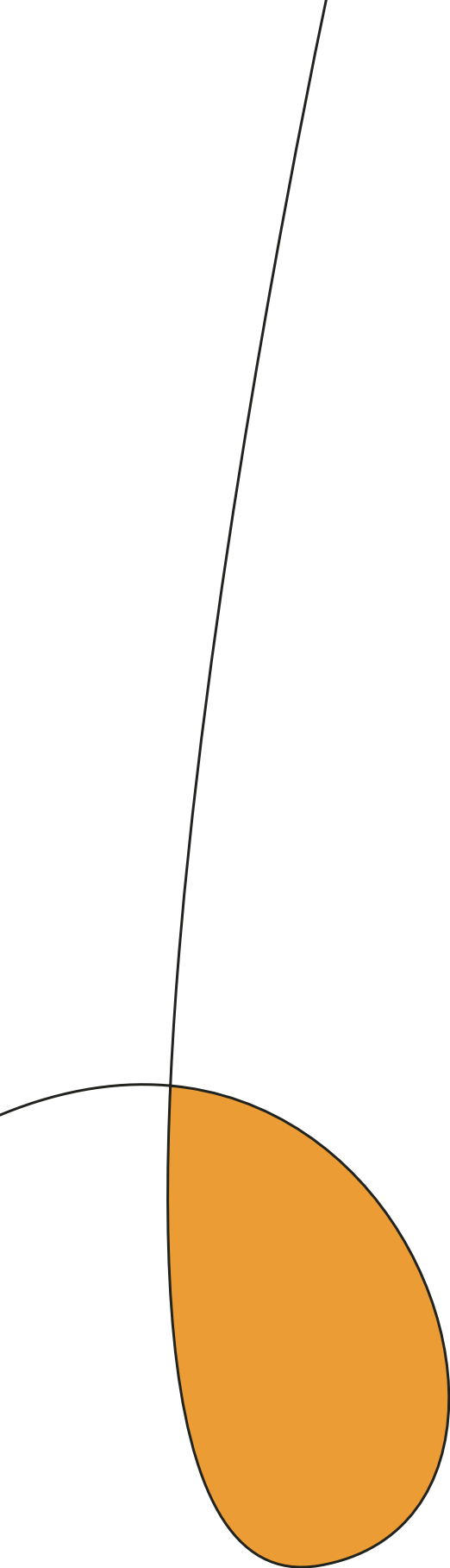
Distributed from the core in large enterprises or separated by geography, as are retail outlets, business franchises, and professional offices—whatever your environment, the modular form factor of Thunder 9500 V Series storage systems allows you to easily identify and install the ideal system to help you reduce total cost of ownership and achieve a more rapid return on your investment.

The Thunder 9500 V Series systems provide instant access to data 24/7. It's all about business continuity:

- :: No single point of failure
- :: Highly resilient optional dual controller, based on Hi-PER Architecture
- :: Redundant, hot-swappable components
- :: Global dynamic hot sparing

- :: Mirrored write cache with battery backup
- :: Error Correction Code memory
- :: Hi-Track "call-home" service/remote maintenance tool
- :: Host failover and alternate path support
- :: Nondisruptive microcode upgrades
- :: RAID-0, RAID-1, RAID-1+0, and RAID-5 support
- :: Point-in-time and remote copy software for data backup and rapid recovery

This storage technology platform meets the requirements of dynamic environments—support for demanding applications and intelligence for simplified infrastructure management.



Hitachi Storage Software for the Thunder 9500 V Series Systems

Hitachi Storage Area Management Suite

If you are looking for more than just storage to solve your business needs, Hitachi SAM Suite offers you the simplification you want, as it enables common drill-down tasks to be easily managed and essentially invisible. This suite of software brings you seamless integration and deep application management capabilities.

Hitachi HiCommand Modules

- :: HiCommand Storage Services Manager*
- :: HiCommand QoS for Microsoft Exchange*
- :: HiCommand QoS for Oracle*
- :: HiCommand QoS for File Servers*
- :: HiCommand Chargeback*
- :: HiCommand Path Provisioning*
- :: HiCommand Device Manager
- :: HiCommand Tuning Manager

Hitachi Resource Manager™ Utility Package

- :: Hitachi Cache Residency Manager (formerly FlashAccess)
- :: Host Storage Domains virtual private storage
- :: Hitachi Volume Security (formerly SANTinel)
- :: LUN Manager software LUSE-LUN size expansion, a component of LUN Manager software, dramatically improves LUN flexibility, allowing you to combine up to 36 LUNs and present them to the operating system as a single LUN to simplify management
- :: SNMP

The open Hitachi SAM Suite software is built on industry standards, including the Common Information Model (CIM) and the Storage Networking Industry

Association's Storage Management Initiative Specification (SMI-S).

Compliance with industry standards enables the management of a wide range of heterogeneous storage systems, switches, and host bus adapters (HBAs).

Hitachi Business Continuity Suite

The Business Continuity Suite of software encompasses three areas of business continuity: data replication, backup and recovery, and data movement.

Data Replication Suite

- :: Hitachi TrueCopy™ Remote Replication
- :: Hitachi ShadowImage™ In-System Replication
- :: Hitachi Dynamic Link Manager™ path manager
- :: Hitachi Copy-on-Write Snapshot (formerly QuickShadow)
- :: Hitachi Cross-System Copy (formerly HiCopy)
- :: Data Retention Utility (formerly Open LDEV Guard)

Backup and Recovery Suite

- :: VERITAS NetBackup
- :: CommVault Galaxy

Data Movement Suite

- :: ShadowImage In-System Replication
- :: TrueCopy Remote Replication
- :: Cross-System Copy

Application Optimized Storage solutions are all about business and what it needs

Application Optimized Storage offerings comprise an integrated portfolio of business-centric storage solutions. This includes hardware, software, and services that enable business and IT executives to optimize a storage infrastructure for price, performance, functionality, and availability based upon the requirements of their applications and resulting in more closely aligned business and IT objectives.

These solutions are built on a common framework of comprehensive storage, data,

**With Thunder 9500 V Series systems,
you control the bigger picture:**

- :: Simplified management
- :: Extensive open systems support
- :: Optimized resources
- :: Enhanced business continuity
- :: Reduced operational costs
- :: Maximized return on technology investment

**You gain ongoing support for your
business objectives:**

- :: Increase productivity
- :: Shorten time to market
- :: Adapt quickly to economic changes
- :: Mitigate risk
- :: Improve top and bottom line

content, and application services, providing the appropriate infrastructure, management, and data delivery to optimize storage for application requirement. Setting the right priorities and targeting the business problem or need, makes the difference in the effectiveness of a solution. The “cure” is not about how many terabytes are managed, but rather addressing the quality of the service provided to users or customers and the critical nature of the applications that serve them.

SATA Intermix Option— optimal for fixed-content storage and access

The previously Fibre Channel-only Hitachi Thunder 9570V, Thunder 9580V™, and Thunder 9585V systems now take trays of SATA drives for archival storage. To achieve sufficient reliability, Thunder 9500 V Series controllers support SATA functionality with features that safeguard data integrity, enhance data protection, and reduce drive failure rates. This SATA functionality is administered by the same management software used on all Hitachi storage systems.

SAN/NAS coexistence for cost- efficient storage utilization across the enterprise

Capitalize on your Thunder 9585V or Thunder 9570V storage system by including a HDS-NetApp Enterprise NAS Gateway for NAS and SAN data coexistence within one system. There is no need to manage diverse storage systems for SAN and NAS. Instead, reduce cost and complexity and optimize the use of your storage assets. Leverage your enterprise-class SAN infrastructure and Hitachi storage systems to form flexible pools for storing SAN and NAS data formats. And deliver top-of-the-line file access for your employees and customers.

And you can also leverage support for Microsoft Windows Storage Server 2003 file and print services on your Thunder 9500 V Series modular storage systems for low-cost storage networking.

With these solutions you can:

- :: Improve utilization of storage assets
- :: Extend investment protection
- :: Reduce storage management complexity
- :: Lower storage management costs

Protect your business-critical information with maximum data availability—a continuing tradition

Thunder 9500 V Series storage systems are designed to satisfy numerous requirements, including availability, capacity, and scalability. Not only do the Thunder 9500 V Series systems consolidate and upgrade easily, but they also scale nondisruptively, which means your collaborative business applications—Microsoft Exchange, Lotus Notes—and your data warehousing, data mining, decision support, and business process automation applications—SAP, BAAN, PeopleSoft—stay online and accessible.

With no single point of failure, the Thunder 9500 V Series systems provide business continuity capabilities through seamless backup and rapid recovery. The Hi-PER Architecture redundant, online, replaceable active components and mirrored cache set the stage for nondisruptive service and data protection. The advanced Business Continuity Suite of software further ensures that your Thunder 9500 V Series systems will keep data available and your business applications running without pause.

Thunder 9500 V Series solutions protect your data and your IT investment

The Thunder 9500 V Series systems allow you to fulfill new application commitments and surges in demand—problem-free. Features that protect your information and your IT investment include:

- :: Virtualization-enabling layer
- :: Web-based management and Java serial peripheral interface/remote method invocation
- :: Extended RAID group support
- :: High-throughput 10,000RPM and 15,000RPM dual-ported Fibre Channel disk drives
- :: Fully addressable 4GB cache with dual controllers
- :: Permanently assignable LUNs to cache
- :: Extremely fast and intelligent cache algorithms
- :: Flexible LUN support
- :: Performance tuning
- :: Separate, redundant data and command paths

Optimize your resources (and your budget) for reduced total cost of ownership with the Thunder 9500 V Series systems

Install the Thunder 9585V or Thunder 9570V systems to consolidate and centralize for simplified storage networking environments. Or, deploy dedicated strategies with the smaller modular storage systems. Whatever your plan, you'll spend less time managing storage and gain more time for new business efforts. Leverage your IT investment. Reduce the amount of software. Spend less money on software licensing and maintenance fees. The payback is clear.

- :: Fewer connections
- :: Fewer storage management activities
- :: Easy-to-handle, automated tools—staff can be assigned to more productive tasks
- :: Aggressive use of intelligent management

- :: Improved capacity utilization—less equipment required, lower total cost of ownership

- :: Clustering support

Major open systems platforms supported:

- :: Sun Solaris
- :: Microsoft Windows NT
- :: Microsoft Windows 2000
- :: Microsoft Windows Server 2003
- :: IBM AIX
- :: HP-UX
- :: SGI IRIX
- :: Novell NetWare
- :: HP Tru64 UNIX
- :: Red Hat Linux
- :: SuSE Linux
- :: Turbolinux
- :: NetApp Data ONTAP
- :: HP OpenVMS

Professional Services for planning, design, and deployment for your business continuity, data migration, and massive consolidation requirements

Hitachi Data Systems Global Solution Services professional services teams provide architectural analysis, configuration planning, and enterprise assessment to ensure that you maximize your storage investment and meet your business objectives. Consultants work with structured methodologies that promote consistent results. Industry-leading Hitachi software, based on high-performance platforms, allows implementation of essential copy solutions. Consultants perform data relocation and migration tasks for massive consolidation projects and establish rock-solid backup and disaster recovery copy facilities that will keep your business up and running.

By supporting your special project activities and fully exploiting the capabilities of Hitachi storage software suites, Global Solution Services helps you quickly address

storage management challenges while preserving critical business continuity.

Justify your purchase, maximize your return on investment

Today, as a storage or IT professional, you face mounting strategic and economic challenges. You are obligated to meet rapidly increasing capacity, complexity, management, and reliability requirements. And you must do so in a business environment where shrinking IT budgets mandate exhaustive economic justification for new initiative funding. The Storage Economics Strategy Service offering from Hitachi Data Systems helps you objectively assess your current storage environment and make tactical/strategic plans to take advantage of new storage architectures. This service offering will help you to:

- :: Discover your total existing storage environment
- :: Assess your storage infrastructure and needs
- :: Design your new architecture in a collaborative workshop
- :: Analyze return on investment for multiple design options using the HiReturn™ investment analysis tool
- :: Justify and quantify your storage choice using a Hitachi Data Systems-generated report

Cold, hard facts create a solid business case for Hitachi storage and software, networked infrastructures, and consolidation. That's why the Storage Economics Strategy Service can play such a valuable role in the effort to simplify, protect, and optimize the storage environment that supports your enterprise.

Your partner beyond technology

Hitachi Data Systems believes a company's information is a strategic asset. That's why we leverage our global Hitachi R&D resources to develop storage solutions with the performance, availability, and scalability to maximize your ROI and minimize your risk. We focus on your perspective while applying the best hardware, software, and services to satisfy your business needs.

In fact, when you partner with Hitachi Data Systems, we're with you every step of the way. Our commitment to being a partner beyond technology sets us apart from other vendors in the industry. It means we're prepared to envision your future as you see it and to work alongside you to accomplish your business goals. We offer you an open and collaborative storage management framework, policy-based automation tools, virtualization capabilities, and the world's finest storage systems.

For platform-specific
feature availability, please
contact your Hitachi Data
Systems account
representative or visit our
Web site at www.hds.com.

Thunder 9500 V Series—Technical Specifications

	Thunder 9520V	Thunder 9530V	Thunder 9570V	Thunder 9585V
Physical Characteristics				
Configuration	Deskside	Deskside/Rack	Deskside/Rack	Rack
Command/Expansion Modules*	3 EIA	3 EIA	3 EIA	3 EIA
Maximum number of Expansion Modules	3 (SATA only)	0	14 (15 total)	30
SATA Support	yes	no	yes, Intermix Option	yes, Intermix Option
Maximum number of disk drives	59	14	224	449
Number of back-end loops (FC/AL, 2Gbit/sec)	4	4	4	8
Maximum raw capacity				
Fibre Channel	N/A	2TB	32TB	64TB
SATA	13TB	N/A	54TB	107TB
Maximum capacity RAID-5				
Fibre Channel	N/A	2TB	30TB	60TB
SATA	12.1TB	N/A	50TB	100TB
Mirrored cache size (GB) per system	1-2	1-4	2-4	2-8
Controllers	1 or 2	1 or 2	1 or 2	2
Internal bandwidth	4.2GB/sec	4.2GB/sec	4.2GB/sec	7.5GB/sec
Disk Drives Supported (all 2Gbit/sec)				
Fibre Channel				
36GB 15,000RPM	no	yes	yes	yes
73GB 10,000RPM	no	yes	yes	yes
73GB 15,000RPM	no	yes	yes	yes
146GB 10,000RPM	no	yes	yes	yes
SATA				
250GB 7,200RPM	yes	no	yes	yes
Host Ports				
Maximum virtual storage ports	512	256	512	1024
Maximum physical ports	4	2	4	8
Speed (Gbit/sec)	2	2	2	2
Autodetect 1Gbit/sec or 2Gbit/sec	yes	yes	yes	yes
Hosts per port	128	128	128	128
Host Storage Domains	yes	yes	yes	yes
Operating systems supported	14	14	14	14
SAN-enabled	yes	yes	yes	yes
LUNs				
RAID-0**, RAID-1, RAID-1+0	yes	yes	yes	yes
RAID-5 (3–16 disk drives with floating parity)	yes	yes	yes	yes
Maximum number of RAID groups	45	7	45	90

Hitachi Thunder 9500 V Series Modular Storage Systems



Thunder 9530V
entry-level
storage deck



Thunder 9570V
high-end modular
storage system



Thunder 9585V
ultra high-end modular
storage system



Thunder 9520V
workgroup modular
storage system

	Thunder 9520V	Thunder 9530V	Thunder 9570V	Thunder 9585V
Maximum number of LUNs	512	512	512	2048
LUN Management (including free-format LUN size, LUN expansion, LUN deletion, Queuing LUN format, Quick LUN format)	yes	yes	yes	yes
Availability				
All FRU parts redundant and hot-swappable	yes	yes	yes	yes
Continuous disk background checks	yes	yes	yes	yes
Dynamic Link Manager path manager software	optional	optional	optional	optional
VERITAS DMP support	optional	optional	optional	optional
Supports most other failover software	yes	yes	yes	yes
Cache battery backup	yes	yes	yes	yes
Optional UPS battery	yes	yes	yes	yes
Maximum hot spares	15	12	15	30
Maximum LAN maintenance connections	4	4	4	4
Hi-Track	yes	mandatory	mandatory	mandatory
Software				
HiCommand Storage Services Manager	optional	optional	optional	optional
HiCommand Device Manager	optional	optional	optional	optional
HiCommand Tuning Manager	optional	optional	optional	optional
HiCommand Chargeback	optional	optional	optional	optional
HiCommand Path Provisioning	optional	optional	optional	optional
HiCommand QoS for Oracle	optional	optional	optional	optional
HiCommand QoS for Sybase	optional	optional	optional	optional
HiCommand QoS for Microsoft Exchange	optional	optional	optional	optional
HiCommand QoS for File Servers	optional	optional	optional	optional
TrueCopy Remote Replication	no	no	optional	optional
ShadowImage In-System Replication	optional	optional	optional	optional
Copy-on-Write Snapshot (formerly QuickShadow)	optional	optional	optional	optional
Cross-System Copy (formerly HiCopy)	optional	optional	optional	optional
Data Retention Utility (formerly Open LDEV Guard)	optional	optional	optional	optional
Hitachi Resource Manager Utility Package components:	included	included	required***	required***
Disk Array Management Program	included	included	included	included
LUN Management	included	included	included	included
LUN Size Expansion (LUSE)	included	included	included	included
Volume Security Port Option (formerly SANTinel)	included	included	included	included
Cache Residency Manager (formerly FlashAccess)	included	included	included	included
Password Protection	included	included	included	included
SNMP	included	included	included	included
Operating Systems Supported				
Microsoft Windows Server 2003	yes	yes	yes	yes
Microsoft Windows 2000	yes	yes	yes	yes
Microsoft Windows NT	yes	yes	yes	yes
Sun Solaris	yes	yes	yes	yes
HP-UX	yes	yes	yes	yes
IBM AIX	yes	yes	yes	yes
Red Hat Linux	yes	yes	yes	yes
SuSE Linux	yes	yes	yes	yes
TurboLinux	yes	yes	yes	yes
HP OpenVMS	yes	yes	yes	yes
HP Tru64 UNIX	yes	yes	yes	yes
Novell NetWare	yes	yes	yes	yes
SGI IRIX	yes	yes	yes	yes
NetApp Data ONTAP (with HDS-NetApp Enterprise NAS Gateway)	yes	no	yes	yes

* 1 EIA = 1 3/4 inches or 44.5mm

** RAID-0 not supported with SATA

*** One copy of Resource Manager software is required for a Thunder 9570V or Thunder 9585V system environment

Note: All capacities are based on 1GB = 1,000,000,000 bytes 1TB = 1000GB

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