



IntelliFlash™

H-Series Storage Systems

▶ ALL-FLASH AND HYBRID-FLASH IN ONE SYSTEM

Flash storage has the power to fundamentally transform how you do business. But most solutions force you to compromise on performance, price, or features.

The IntelliFlash H-Series intelligent infrastructure is a fourth-generation storage solution that delivers an exceptional user experience through automation, analytic insights, and a variety of time-saving management features to drive your most valuable workloads in today's data centers.

The IntelliFlash H-Series hybrid flash systems combine the performance of NVMe with the economics of HDDs for a full-service intelligent storage infrastructure that's easy to manage and delivers exceptional value. H-Series systems enable multi-petabyte, multiprotocol environments that support virtualized and non-virtualized SAN and NAS workloads.

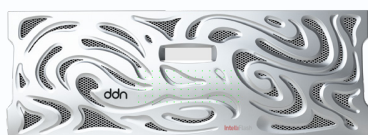
These systems deliver an ideal combination of performance and scalability for enterprise end-user file shares and AI, analytics and HPC workloads. The H-Series enables concurrent support for SAN and NAS protocols on a single system for cost-efficient workload consolidation, while incorporating powerful analytics software for faster data insights. These enterprise-grade systems also enable large scale file services without the performance degradation experienced when using other NAS systems.

H-Series: NVMe-Accelerated Hybrid Systems



- NVMe flash-based storage controller, designed to deliver consistent performance for mixed workloads
- Application-aware, simple, and flexible storage management bolstered by analytics and environmentwide insight
- Multi-parity RAID protection options for maximum resilience

H-Series: Performance That Scales for NAS Workloads



- Leverage NVMe flash to boost performance with an optimized flash-to-disk ratio
- Modular scalability with high-capacity expansion shelves
- Native data reduction boosts economics for secondary workloads
- Application-aware and easy-to-manage

▶ FEATURES

- Unified Storage – Native concurrent block (FC, iSCSI) and file (NFS, SMB3) access
- Sustained Performance – High throughput at low latency for mixed workloads
- Cloud-Based Intelligent Analytics – Visibility across all IntelliFlash systems, with insights that keep infrastructure operating at peak efficiency and availability
- Live Dataset Migration – Seamless live migration of iSCSI/FC LUNs across IntelliFlash systems
- IntelliFlash S3 Cloud Connector – Hybrid cloud capabilities, enabling connectivity to public cloud or any S3-compatible object storage
- Comprehensive Data Services – Inline deduplication and compression, snapshots, read/write clones, and thin provisioning
- Affordable Disaster Recovery – Replicate between NVMe-flash, SAS-flash, and hybrid systems
- Synchronous Replication - Provides continuous business continuity and seamless data mobility between any IntelliFlash all-flash or hybrid systems located in different data centers
- VMware® Support – vCenter® plug-in and integration with VMware SRM and VAAI NAS
- Microsoft Hyper-V Support – PowerShell Toolkit plus SMB3 Enhancements for Hyper-V

▶ BENEFITS

- Maximizes ROI by Supporting Multiple Workloads - Mix bare metal applications along with certified configurations for Oracle, Microsoft, VMware and many other environments.
- Large-Scale File Services – Enterprise grade NAS functionality for both virtualized and non-virtualized environments
- Simplified Management and Analytics – Common GUI across all IntelliFlash systems
- High Capacity and Scalability – Over 20PB† of effective hybrid flash capacity in a compact 18RU footprint
- Unified Storage – Native concurrent block (FC, iSCSI) and file (NFS, SMB3) access
- Multiple Mixed Workloads – Support bare metal applications along with certified configurations for Oracle, Microsoft, VMware and many other environments.
- Hybrid Cloud – Back up local snapshots to the cloud or quickly migrate volumes for bring-up on the public cloud or any S3-compliant object storage.
- Scalable Hybrid Performance - Multi-petabyte scalability without performance degradation makes IntelliFlash H-Series an ideal NAS platform for enterprise AI and analytics workloads.
- Reduced OPEX – With a platform that is energy efficient, offers inline data reduction, and is easy to maintain, so you can save on power, cooling, and labor

▶ INTELLIFLASH HYBRID H-SERIES STORAGE SYSTEMS

MODEL	H6100	H6200
NVME RAW CAPACITY (TB) ^A	46 to 368	
HDD RAW CAPACITY (TB) ^A	96 to 2016	360 to 5040
HYBRID EFFECTIVE CAPACITY (TB) ^B	384 to 8064	1440 to 20160
STORAGE CONTROLLERS	Dual Controller (active/active), fully redundant architecture	
ETHERNET DATA I/O PORTS	Up to 8x 40/100GbE or 8x 10/25GbE	
FIBRE CHANNEL DATA I/O PORTS	Up to 8x 16 Gbps Fibre Channel	
NETWORK ADMIN PORTS	4x 10GbE, 2x 1GbE (IPMI)	
CONTROLLER FORM FACTOR	2RU (24x NVMe SSDs)	
CONTROLLER PHYSICAL DIMENSIONS	3.4" x 17.6" x 33.5" (87.6mm x 446.4 mm x 850mm)	
WEIGHT (ESTIMATED)	Controller: 80lbs (36.2kg) (chassis only) and 91lbs (41.2kg) (fully populated with 24x SSDs) 24-bay expansion shelf: (64 lbs (29.0kg) (chassis only) 103 lbs (46.7kg) (fully populated with 24x HDDs)	Controller: 80lbs (36.2kg) (chassis only) and 91lbs (41.2kg) (fully populated with 24x SSDs) 90-bay expansion shelf: 91lbs (41.2kg) (chassis only) 233 lbs (105.8kg) (fully populated with 90x HDDs)
ENVIRONMENTAL SPECIFICATIONS	Operating temperature: 10 C to 25 C (50 F to 77 F) Non-operating temperature: -40 C to 70 C (-40 F to 158 F) Operating relative humidity: 20% to 90% (non-condensing) Non-operating relative humidity: 5% to 95% (non-condensing)	
EXPANSION SHELVES SUPPORTED PER SYSTEM	6	4
SOFTWARE SERVICES		
BLOCK AND FILE PROTOCOLS	SAN Protocols (iSCSI, Fibre Channel), NAS Protocols (NFS, SMB)	
CAPABILITIES	IntelliFlash Operating Environment: Real-time deduplication and compression, snapshots and clones, space efficient thin provisioning, synchronous replication, full featured file services, S3 Cloud Connector, Live Dataset Migration, data-at-rest and data-in-flight encryption	
MANAGEMENT	IntelliFlash web UI, configuration wizard, Analytics for IntelliFlash, VMware plug-in for vCenter and support for vCenter Linked Mode, RBAC, SRA and VAAI NAS; Microsoft SCVMM/SMI-S, IP-KVM, SNMP, PowerShell Toolkit	
HARDWARE AVAILABILITY	Redundant storage controllers, fans, power supplies, and network ports; removable SSDs and HDDs, SAS expansion	
WARRANTY		
BASIC	24x7 support via email and phone, next business day hardware replacement for defective parts and software updates for the first 90 days.	
OPTIONAL	Standard/Premier Service: ddn.com/support/support-plans tintri.com/company/support/intelliflash-support	

a) Values indicated are RAW capacity. One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 1,000GB (one trillion bytes) when referring to storage capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drives, the operating system and other factors.

b) Effective capacity assumes capacity after dual-parity, data protection, and metadata overhead, and includes the benefit of data reduction with inline deduplication and compression. Data Reduction is calculated based on 4:1 ratio. This efficiency can differ based on workload and/or expansion shelf configuration. Where a range is present, the values are Min - Max.

► INTELLIFLASH H-SERIES EXPANSION SHELVES

MODEL	H6100		H6200	
	HE-192	HE-336	HE-720	HE-1260
SHELF TYPE	24-Bay SAS HDD Expansion		90-Bay SAS HDD Expansion	
SUPPORTED HDD MEDIA SIZE (TB)	8	14	8	14
RAW CAPACITY (TB) ^a	96 to 192	168 to 336	360 to 720	630 to 1260
EFFECTIVE CAPACITY (TB) ^b	768	1344	2880	5040
EXPANSION SHELVES SUPPORTED PER SYSTEM	6		4	
PHYSICAL SPECIFICATIONS				
EXPANSION SHELF FORM FACTOR (EIA RACK UNITS)	4RU			
PHYSICAL DIMENSIONS	17.2"(H) X 13.7" (W) 6.9" (D) (438MM (H) X 347MM (W) X 174.4MM (D))		6.9"(H) X 17.56" (W) 42.52" (D) (175.3MM (H) X 446MM (W) X 1080MM (D))	
WEIGHT (ESTIMATED)	24-bay expansion shelf: (64 lbs (29.0kg) (chassis only) 103 lbs (46.7kg) (fully populated with 24x HDDs)		90-bay expansion shelf: 91lbs (41.2kg) (chassis only) 233 lbs (105.8kg) (fully populated with 90x HDDs)	
ENVIRONMENTAL SPECIFICATIONS	Operating temperature: 0°C to 35°C (32°F to 95°F) Non-operating temperature: -20°C to 60°C (-4°F to 140°F) Operating relative humidity: 20% to 80% (non-condensing) Non-operating relative humidity: 10% to 90% (non-condensing)		Operating temperature: 10°C to 35°C (50°F to 95°F) Non-operating temperature: -40°C to 70°C (-40°F to 158°F) Operating relative humidity: 20% to 90% (non-condensing) Non-operating relative humidity: 5% to 95% (non-condensing)	

a) Values indicated are RAW capacity. One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 1,000GB (one trillion bytes) when referring to storage capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drives, the operating system and other factors.

b) Effective capacity assumes capacity after dual-parity, data protection, and metadata overhead, and includes the benefit of data reduction with inline deduplication and compression. Data Reduction is calculated based on 4:1 ratio. This efficiency can differ based on workload and or expansion shelf configuration. Where a range is present, the values are Min - Max.

ABOUT DDN

DataDirect Networks (DDN) is the world's leading big data storage supplier to data-intensive, global organizations. DDN has designed, developed, deployed, and optimized systems, software, and solutions that enable enterprises, service providers, research facilities, and government agencies to generate more value and to accelerate time to insight from their data and information, on premise and in the cloud.

© 2021 IntelliFlash by DDN, Inc., All Rights Reserved

Top Five Reasons To Deploy IntelliFlash™ H-Series

The IntelliFlash H-Series hybrid flash systems combine the performance of NVMe with the economics of HDDs for a full-service intelligent storage infrastructure that's easy to manage and delivers an exceptional user experience.

H-Series systems support multi-petabyte SAN and NAS workloads and autonomously optimize SSD-to-HDD ratios for all workloads running in virtualized and non-virtualized environments, with structured or unstructured data. Applications benefit from accelerated automatic data tiering and simplified flash operations, which deliver an ideal combination of performance and scalability for enterprise end-user file shares and AI, analytics and HPC workloads.

The H-Series enables concurrent multiprotocol support on a single system for cost-efficient mixed workload consolidation, while incorporating powerful analytics software for faster data insights. These enterprise-grade systems also enable large-scale file services without the performance degradation experienced when using other NAS systems.

01

MORE PERFORMANCE, MORE SCALE

NVMe-Accelerated Hybrid Storage

Your most demanding workloads deserve uncompromised performance – especially when they are key to your business success. IntelliFlash H-Series combines the power of NVMe, software-optimized flash management, and robust enterprise data services and analytics.

Our unique enterprise-class storage architecture autonomously optimizes NVMe SSD-to-HDD ratios for hybrid storage and also optimizes all-NVMe flash storage, delivering performance and capacity for all your business application needs. This flash-optimized approach also delivers the best flexibility and economics by supporting mixed storage media types.

02

COST-EFFECTIVE, ON-DEMAND SCALABILITY

Modular Architecture

Every enterprise is struggling to manage explosive growth; unfortunately, data center floor space, power, and cooling resources are key constraints that force IT administrators to find new ways of doing more with less.

A creative solution is to combine the benefits of NVMe performance and the economics of SAS HDD capacity to dynamically scale storage and improve density. When you deploy H-Series with hybrid modular expansion shelves you can get up to 20PB of effective capacity in just 18RU.

03

LARGE-SCALE FILE SERVICES

Enterprise-Grade NAS

The IntelliFlash H-Series hybrid flash systems enable file services for multiPB, multiprotocol environments supporting concurrent data access across NFS and SMB protocols.

And it scales without the performance degradation that usually accompanies large-scale file services running on other NAS platforms. IntelliFlash provides a broad spectrum of enterprise-grade data services including: snapshots, cloning, replication, encryption, deduplication, compression, thin provisioning, and backup integration.

04

HIGH-DENSITY WORKLOAD CONSOLIDATION

Multiprotocol Support

IntelliFlash H-Series systems simplify and optimize storage resources by supporting multiple storage media types, and SAN and NAS protocols concurrently in both physical and virtualized environments.

You can support specific workload requirements for performance, capacity or both simultaneously using a single platform. In addition, H-Series systems provide granular visibility, management, and integration with key enterprise ecosystems. This integration simplifies provisioning, backup, disaster recovery, cloning and other critical data services. The versatility of IntelliFlash H-Series simplifies workload consolidation and protects your investments as business needs change.

05

FAST, INTUITIVE DATA AND SYSTEM INSIGHTS

Intelligent, Self-Optimizing Analytics

IntelliFlash systems offer a differentiated combination of automation, analytic insights, and time-saving features to drive the most valuable workloads in today's data centers. IntelliFlash analytics and system monitoring capabilities simplify manageability by applying AI, rules engines, predictive decisionmaking, and data-driven workflows to improve overall system health, reliability, and predictability.

IntelliFlash© storage is proactively and autonomously managed, with future problems anticipated and resolved before users are affected. Intuitive intelligent analytics and system monitoring empowers nonexpert IT members to administer complex storage infrastructures at the application level, without the complexity of legacy storage.

For more information on how DDN IntelliFlash systems can turbo-charge your business success with simplified Intelligent Infrastructure, visit www.ddn.com/intelliflash.