

Main Software for NEC Storage M Series

Category	Software Product Name	M100	M300	M500	Description
Storage management	Device management				
	NEC Storage Manager	✓	✓*1	✓*1	Basic functions to enable integrated storage operations management
	NEC Storage Manager Integration Base	✓	✓*1	✓*1	Functions to achieve integrated storage operations by in collaboration with SigmaSystemCenter
	NEC Storage Manager Suite	✓			Package product including both NEC Storage Manager and NEC Storage Manager Integration Base
	Performance management				
	NEC Storage PerformanceMonitor	✓	✓	✓	Functions to monitor storage performance in real-time and accumulate monitoring data
Storage control	Storage control				
	NEC Storage BaseProduct				Basic functions to control storage
	NEC Storage Manager Express	✓*2	✓*1	✓*1	Basic functions to enable storage operations management
	NEC Storage ControlCommand	✓	✓	✓	CLI functions to perform operations such as replication and data protection on an application server
	Replication				
	NEC Storage DynamicDataReplication	✓*3*4	✓	✓	Functions to create a fully replicated volume in the same storage unit
	NEC Storage RemoteDataReplication	✓*3	✓	✓	Functions to create a fully replicated volume in a remote storage unit.
	NEC Storage RemoteDataReplication Asynchronous	✓*3	✓	✓	Functions to asynchronously create a fully replicated volume in a remote store unit by using a low-speed line
	NEC Storage DynamicSnapVolume	✓*3*5	✓*5	✓*5	Functions to create a differential replicated volume
	NEC Storage ReplicationControl SQL Option	✓	✓	✓	Option to enable non-disruptive backup of Microsoft SQL Server
	NEC Storage ReplicationControl FileSystem Option	✓	✓	✓	Option to enable non-disruptive backup of file systems.
	Disaster recovery				
NEC Storage RemoteDataReplication/DisasterRecovery*6			✓	Functions to perform the remote replication essential for a disaster prevention and response system	
NEC Storage VirtualCachePartitioning		✓*6	✓*6	Functions to divide storage resources and manage the divided storage resources as virtual storage.	
Resource control					
NEC Storage ThinProvisioning	✓*2	✓*1	✓*1	Functions to enhance the capacity usage efficiency by setting the virtual logical capacity and reducing the physical capacity to be allocated	
NEC Storage StoragePowerConserver	✓*2	✓*1	✓*1	Functions to reduce the power consumption of a storage unit by controlling the running and stopping of a HDD	
NEC Storage PerforOptimizer		✓	✓	Functions to optimize performance by distributing the volume load and changing physical volume allocations without stopping jobs	
NEC Storage PerforCache*6	✓*7	✓	✓	Functions to use a SSD as cache memory	
NEC Storage DataMigration	✓	✓	✓	Functions to migrate data from an existing storage unit to a new one	
NEC Storage VolumeProtect	✓	✓	✓	Functions to protect data from tampering and guarantee data integrity for each volume	
High availability					
NEC Storage PathManager	✓*2	✓	✓	Functions to automatically switch paths and distribute the I/O loads.	

*1: Bundled with NEC Storage BaseProduct.
 *2: Bundled with M100.
 *3: Not supported by a single controller model.
 *4: NEC Storage DynamicDataReplication Express is bundled for M100.
 *5: Bundled with NEC Storage DynamicDataReplication
 *6: Planned for support in the second quarter of CY2012.
 *7: Planned for support in the third quarter of CY2012.

Environmental compliance	M100	M300	M500
<p>Eco Symbol Star The Eco Symbol Star is a label placed on innovative, environment-friendly products that satisfy the qualification standards as a leading product within NEC and the industry.</p> 	✓		
<p>Eco Symbol The Eco Symbol is a label placed on products that meet NEC prescribed environmental soundness standards. Eco Symbol products must be environmentally superior and assure transparency.</p> 	✓	✓	✓
<p>RoHS Compliance This product complies with the European Union directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).</p>	✓	✓	✓

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Safety notice Before you use this product, please read carefully and comply with the cautions and warnings in manuals such as User's Guide and Installation Guide. Incorrect use may cause a fire, electrical shock or injury.

For further information, please contact:

● Specifications and designs in this catalog are subject to change for improvement without notice.

SAN Storage Product Family

M Series Disk Array

The New SAN.
The Next Generation of Storage.

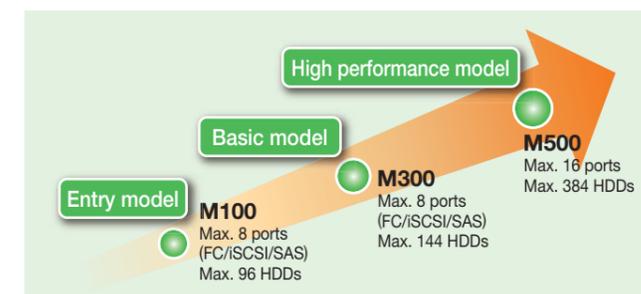


NEC Storage M Series, the new SAN storage infrastructure. Awakening the true potential of storage units in IT environments of the future.

M Series Disk Array

Responding to ballooning data, preparing for virtualization and cloud environments, and responding to environmental and power-saving needs. The drastically changing environment of IT infrastructure requires a storage unit that meets these needs. M Series has been developed to satisfy these needs by bringing together the high reliability technology and innovative ability that NEC has acquired during the development of the NEC Storage products. The new SAN storage infrastructure leads the ever-evolving virtualization and cloud computing age.

M Series has superior characteristics for next-generation SAN storage units. These features address the need for high performance and high availability to support business continuity, advanced eco-friendly performance, easy installation and operations that reduce the management workload, and economic efficiency that reduces the TCO to store and archive data. M Series offers a diverse product lineup consisting of entry model *M100 Disk Array*, basic model *M300 Disk Array*, and high performance model *M500 Disk Array* that achieves a large-scale storage integration by utilizing advanced virtualization technologies such as data allocation optimization with a high-speed solid state drive (SSD) and thin provisioning, all developed to respond to the needs of the next generation.



Demands on Storage Units

- Reduce the workload required for storage management by using virtualization technology
- Efficiently manage data according to its usage frequency
- Dramatically reduce the power consumption of storage units for environmental conservation and power saving
- Ensure the continuous operations in the face of unforeseen failures
- Reduce the cost of storing ever-increasing data at businesses
- Improve the operating efficiency by integrating a server virtualization environment
- Construct a disaster response site to prepare for earthquakes and fires
- Improve problematic backup systems



High Performance & High Availability

M Series ensures the protection of data at businesses and provides high performance and high availability to support high-speed access.

- High-speed components and interfaces such as SSD are supported.
- Data can automatically be allocated to a suitable device according to its access frequency.
- Main components are made redundant and protected.
- Original high availability technologies such as Super Phoenix technology are adopted.
- Superior security functions such as self-encrypting drives are supported.

Easy Installation & Operation

M Series reduces the workload of managing storage by offering autonomous operations utilizing virtualization technologies and easy-to-use GUI.

- The advanced dynamic pool enables the expansion of capacity and performance without stopping operations.
- Thin provisioning optimally allocates storage capacity in a virtual environment.
- A backup site can be easily and economically constructed by using an iSCSI interface.
- Data can be migrated and moved between storage units without using an FC switch.
- The user-friendly GUI makes storage management and operation easy.

Advanced Eco-friendly Function

M Series promotes environmental conservation by actively adopting eco-friendly components that save power.

- The eco-friendly design employs the 80PLUS® PLATINUM (for M500) or 80PLUS® GOLD (for M100 and M300) certified high-efficiency power supplies as well as low-power processors.
- M Series can be used even in 40°C(104°F) environments, contributing to a reduced electricity cost.
- Power consumption is reduced by providing a visualization of the power consumption and implementing the autonomous MAID function.

IT Cost Optimization

M Series contributes to the reduction of TCO by optimizing the investment cost and making daily operations highly efficient.

- Devices (SAS, nearline SAS, and SSD) and interfaces (FC, iSCSI, and SAS) can be selected according to your purpose, optimizing the investment cost.
- The management software is bundled with M100.
- The management workload can be reduced with virtualized system operations.



High Performance model M500 Disk Array

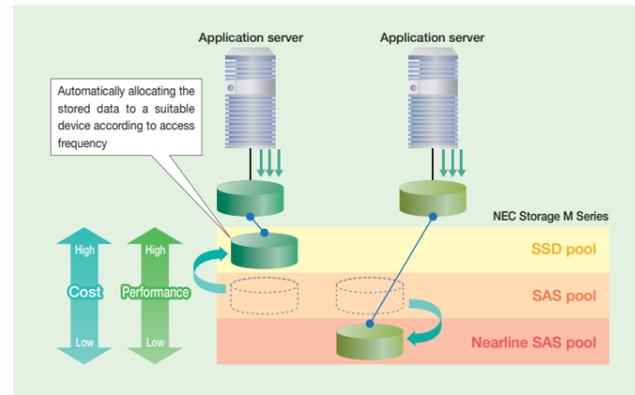
- Up to 384 HDDs (SAS, Nearline SAS, and SSD) can be installed.
 - 16 8-Gbps FC ports, 8 1-Gbps iSCSI ports, and 8 10-Gbps iSCSI ports
 - Supports RAID-0, 1, 5, 6, 10, 50, 60, TM (triple mirror)
- * The front bezel is available for separate purchase.

Innovate virtualization with NEC Storage M Series

Automatically allocating data to a suitable device according to access frequency

M Series enables the creation of layers of different types of devices such as SSD that allows high-speed data access, high-performance SAS HDD, and high-capacity and low bit-cost nearline SAS HDD. The stored data is automatically re-allocated in suitable storage layers by routine monitoring so that frequently accessed data is moved to a SSD pool and infrequently accessed data is moved to a nearline SAS pool. This maximizes storage performance and optimizes the investment cost of the storage units.

M300 M500

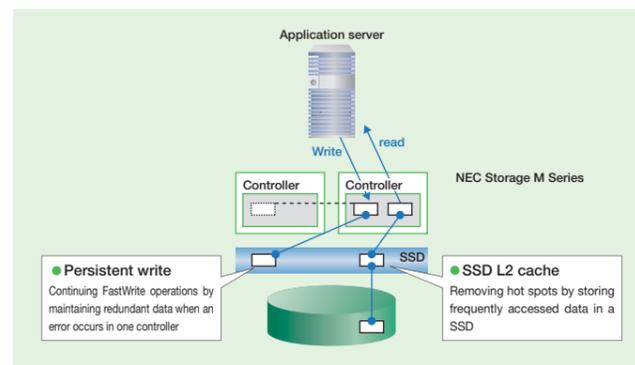


SSD L2 cache & persistent write, ensuring stable, high-speed performance

M Series was developed to achieve higher levels of performance through utilization of SSD. The throughput of frequently accessed data was improved to remove hot spots by using SSD, which has a readout performance of superior speed, as an L2 cache. In addition, a persistent write cache can continue FastWrite operations by storing redundant data in SSD when an error occurs in one controller.

*The SSD L2 cache function is planned for support in the second quarter of CY2012.

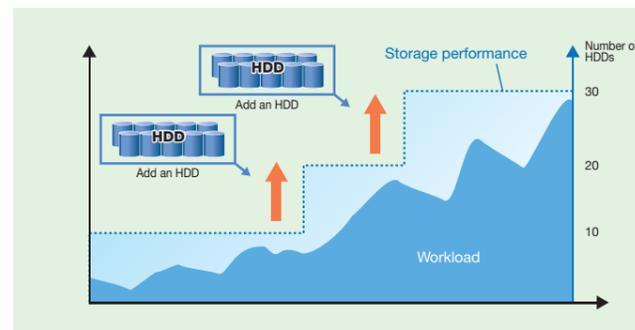
M300 M500



Advanced dynamic pool, expanding the capacity and performance simply by adding HDD

The flexibility to respond to a sudden increase in data is vital in this age of constant change. NEC Storage M Series offers an advanced dynamic pool that NEC recently developed by elevating the level of existing virtual pools. The advanced dynamic pool enables the automatic increase in pool capacity during capacity shortages simply by adding HDD, and improved performance of the entire pool by automatically optimizing data allocation to distribute data.

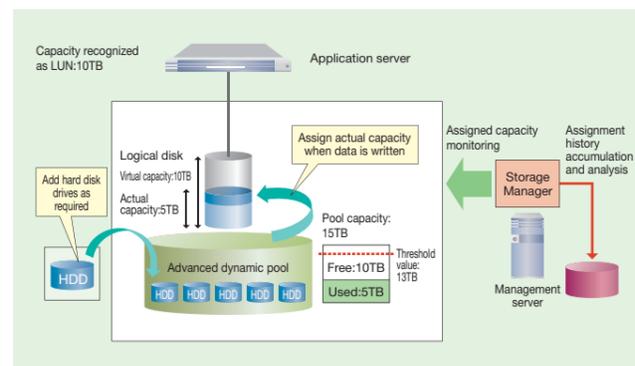
M100 M300 M500



Thin provisioning, optimally allocating storage capacity in a virtualized environment

The thin provisioning feature virtually allocates the capacity of a physical volume to a logical volume and adds HDD when the capacity of physical volume is insufficient. The storage usage is maximized because you can minimize the difference between the used space and the physical volume capacity. The initial investment cost and power consumption can also be reduced. In addition, it is not necessary to stop operations or adjust a schedule to change the capacity because HDD can be added without stopping jobs.

M100 M300 M500



Improving the operating efficiency of a server virtualization environment by integrating with a VMware environment

M Series supports VMware vStorage APIs for Array Integration (VAAI), a storage API provided by VMware, Inc. By incorporating this API, operations that were processed on a server in the past can be processed on the M Series product itself. These operations include the replication and migration of virtual machines, initialization of new virtual machines, and exclusive control of storage areas. Performing these operations without a server reduces server loads, enhances the operational efficiency of the entire virtualization environment, and increases overall performance.

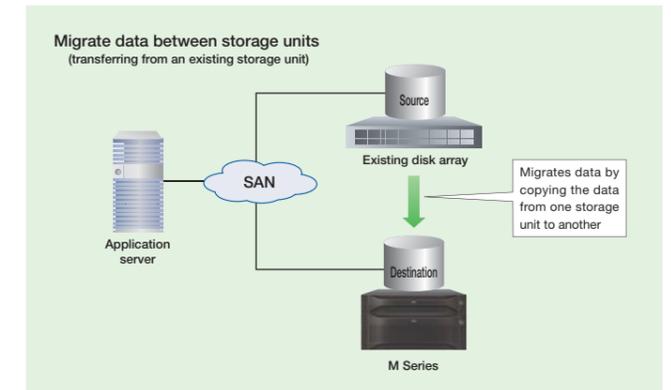
M100 M300 M500

Innovate business continuity with NEC Storage M Series

Enables the migration of data between storage units

The data migration function responds to requests to move data from an existing storage unit to the M Series unit. Even when models do not support RDR, data can be moved economically without using an FC switch or other hardware.

M100 M300 M500



RAID protects against double failures, handling increasing data capacities

The HDD capacity is becoming larger as business information rapidly increases. There is also a risk of data loss because the second HDD can fail while recovering a damaged HDD. M Series supports the NEC original RAID triple mirror feature that achieves the high-speed performance of RAID-1 and the reliability of RAID-6 in addition to the double parity configuration of RAID-6, responding to demands for both large capacities and high reliability. M Series can maintain its performance during failures with its design that duplicates main components, establishing a level of reliability equivalent to high-end models of storage units.

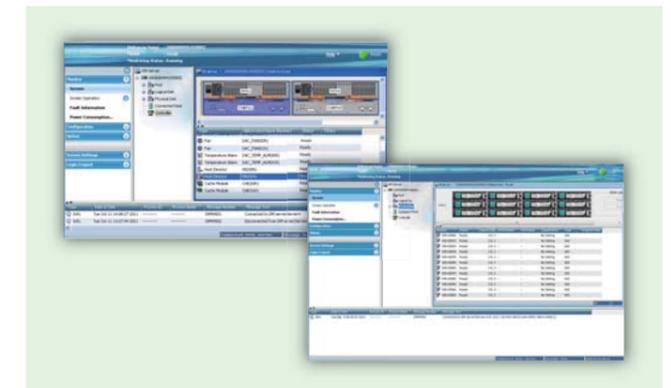
M100 M300 M500

Innovate interoperability with NEC Storage M Series

Intuitive GUI allows even first-time users to easily manage the storage unit

The storage capacity, disk load, and operational status of each component, such as a connected server, can be checked in a visual web browser window. Navigation windows show the methods for specifying the replication settings, changing the capacity, and responding to failures. The easy-to-understand GUI environment eliminates errors during operation.

M100 M300 M500

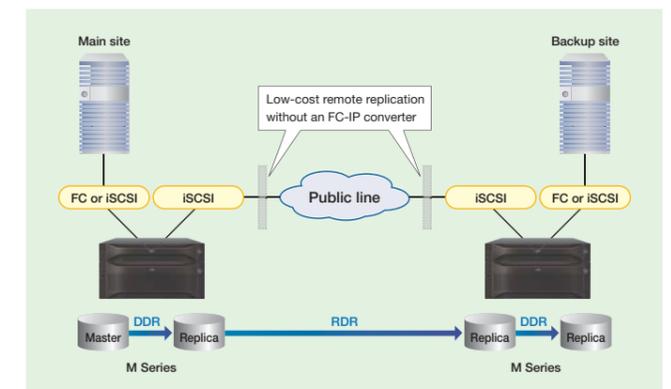


iSCSI RDR economically counters disaster through remote replication

Constructing a backup site to protect valuable data against disasters such as earthquakes and fires can cost a great deal of money and resources. With M Series, an IP line is used with iSCSI, making an FC-IP converter unnecessary and enabling the development of cost-efficient disaster prevention and response measures. In addition, low-cost operation is possible due to a reduction of line cost.

*This function is planned for support in the second quarter of CY2012.

M100 M300 M500



Green innovation with NEC Storage M Series

Reducing power consumption with advanced power saving technology

To offer top-class eco-friendly storage units, NEC has developed M Series by applying advanced energy saving technology so that its power consumption is significantly less than previous models. It promotes power saving of the entire storage unit by incorporating a low-power processor as its CPU and enabling autonomous control.

For the power supply, M Series employs the 80PLUS PLATINUM (for M500)* or 80PLUS GOLD (for M100 and M300) certified high-efficiency power supplies. In addition, M Series incorporates as many power saving components as possible, and achieves a significant reduction in the total number of components. M Series can be used in 40°C (104°F) environments, reducing the power consumed by air conditioning.

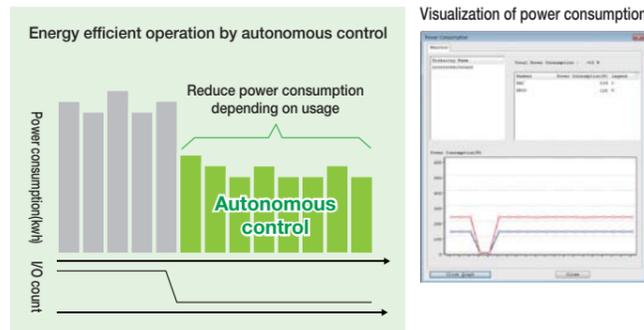
*The disk enclosures employ 80 PLUS GOLD certified power supplies.

M100 M300 M500

Realizing low-power operations by visualization of power consumption and autonomous device control

The power consumption of all M Series units in the same infrastructure environment can be managed with real-time visualizations. In addition, components such as CPU, fan and HDD can autonomously control power consumption based on storage unit usage, Energy efficient operations are promoted by reducing unnecessary power consumption as much as possible when the storage unit is idle.

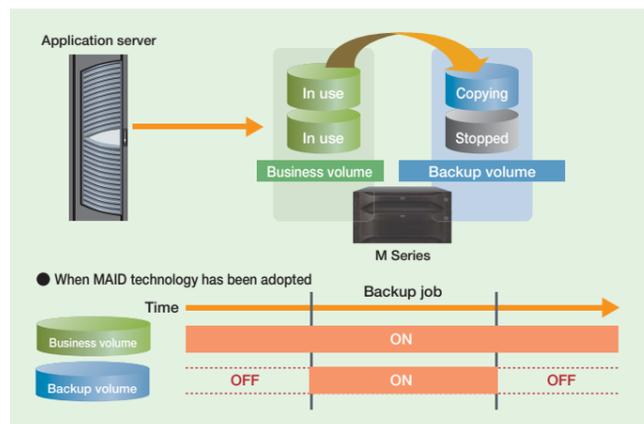
M100 M300 M500



Saving power resources with the autonomous MAID function

The larger the system is, the more power is consumed and the more the running cost is increased. M Series adopts MAID (Massive Array of Inactive Disks) technology to promote energy efficiency. For example, by managing a job schedule in pool units with dedicated software, the motor of a backup disk drive that is not being used is turned off to save power. M Series can now use up to 30% less power than previous NEC Storage models.

M100 M300 M500

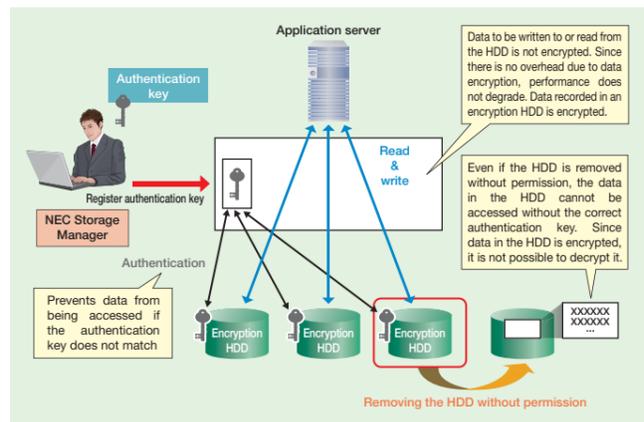


Innovate security with NEC Storage M Series

Advanced security functions such as data encryption and personal information leakage prevention

The security of storage units that store confidential business data is always threatened. M Series uses a Self-encrypting drive (SED) to encrypt data in the HDD. This function prevents data leakage when the HDD is inappropriately removed, lost, stolen, or damaged. Furthermore, M Series features a variety of security functions, including restrictions on access to logical disks, audit of logs and other records, and prevention of erroneous operations.

M100 M300 M500



Entry model	Basic model	High performance model
High performance and high availability, achieving high cost performance and a variety of storage features	Meeting the latest storage needs such as virtualization, energy efficiency, high interoperability and security	High performance and high availability model, empowering server integration and other virtualization environments
M100 Disk Array	M300 Disk Array	M500 Disk Array

M100 Disk Array

Model*	M100 Disk Array Supporting 3.5" Drive		M100 Disk Array Supporting 2.5" Drive	
	The following can be connected to a disk array controller: Up to 7 3.5" type and 2.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 96 or less.		The following can be connected to a disk array controller: Up to 7 2.5" type and 3.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 96 or less.	
Rack mount configuration	Slots in a chassis; disk array controller (3.5"); 12, disk enclosure (3.5"); 24		Slots in a chassis; disk array controller (2.5"); 24, disk enclosure (2.5"); 24, disk enclosure (3.5"); 12	
Host interface	Fibre channel (6 Gbps), iSCSI (1 Gbps or 10 Gbps), SAS (6 Gbps)			
Number of ports	FC: 4 or 8, SAS: 8, iSCSI: 4			
Cache memory	Installed capacity: 8 GB Backup method: Save to flash memory			
RAID levels**	RAID-0, 1, 5, 6, 10, 50, 60, TM SAS (6 Gbps)			
Disk drive specifications	Type	SAS HDD	3.5" 300 GB, 450 GB, 600 GB (15,000 rpm)	2.5" 300 GB, 450 GB, 600 GB, 900 GB (10,000 rpm)
	Capacity, and rotation speed	Nearline SAS HDD	3.5" 1 TB, 2 TB, 3 TB* (7,200 rpm)	2.5" 1 TB (7,200 rpm)
	SAS SSD	3.5" 400 GB		2.5" 100 GB
	Encryption SAS HDD	3.5" 600 GB (15,000 rpm)		2.5" 600 GB (10,000 rpm)
Capacity** (Maximum)	SAS HDD	44.5 TB	68.0 TB	78.1 TB
	Nearline SAS HDD	226.5 TB		836 GB
	SAS SSD	3.4 TB		44.5 TB
Number of drives to be installed**	3 to 96			
Supported OS**	Windows, Linux, VMware			
Dimensions (W x D x H)	Disk array controller (U count)	482 x 513.2 x 87.8 mm (2U, without the front bezel)/482 x 545.2 x 87.8 mm (2U, with the front bezel)**		
	Disk enclosure (U count)	482 x 513.2 x 87.8 mm (2U, without the front bezel)/482 x 545.2 x 87.8 mm (2U, with the front bezel)**		
Weight	Disk array controller	31 kg or less		
	Disk enclosure	29 kg or less		
Input voltage	Disk array controller		SAS HDD	
Power consumption (Maximum/at 25°C)	Disk array controller	Nearline SAS HDD	485 W / 400 W	485 W / 395 W
	Disk enclosure	SAS HDD	420 W / 335 W	450 W / 365 W
	Disk enclosure	Nearline SAS HDD	315 W / 265 W	310 W / 260 W
	Disk enclosure	Nearline SAS HDD	250 W / 200 W	275 W / 225 W
Ambient conditions	Temperature	5 to 40°C (41 to 104°F) (when operating), -10 to 60°C (14 to 140°F) (when non-operating)		
	Humidity	10 to 80%RH (when operating), 5 to 80%RH (when non-operating)		

M300 Disk Array

Model*	M300 Disk Array Supporting 3.5" Drive		M300 Disk Array Supporting 2.5" Drive	
	The following can be connected to a disk array controller: Up to 7 3.5" type and 2.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 144 or less.		The following can be connected to a disk array controller: Up to 7 2.5" type and 3.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 144 or less.	
Rack mount configuration	Slots in a chassis; disk array controller (3.5"); 12, disk enclosure (3.5"); 24		Slots in a chassis; disk array controller (2.5"); 24, disk enclosure (2.5"); 24, disk enclosure (3.5"); 12	
Host interface	Fibre Channel (6 Gbps), iSCSI (1 Gbps or 10 Gbps), SAS (6 Gbps)**			
Number of ports	FC: 4 or 8, SAS: 8, iSCSI: 4			
Cache memory	Installed capacity: 8 GB or 16 GB Backup method: Save to flash memory			
RAID levels**	RAID-0, 1, 5, 6, 10, 50, 60, TM SAS (6 Gbps)			
Disk drive specifications	Type	SAS HDD	3.5" 300 GB, 450 GB, 600 GB (15,000 rpm)	2.5" 300 GB, 450 GB, 600 GB, 900 GB (10,000 rpm)
	Capacity, and rotation speed	Nearline SAS HDD	3.5" 1 TB, 2 TB, 3 TB* (7,200 rpm)	2.5" 1 TB (7,200 rpm)
	SAS SSD	3.5" 400 GB		2.5" 100 GB
	Encryption SAS HDD	3.5" 600 GB (15,000 rpm)		2.5" 600 GB (10,000 rpm)
Capacity** (Maximum)	SAS HDD	44.5 TB	102.0 TB	114.2 TB
	Nearline SAS HDD	226.5 TB		836 GB
	SAS SSD	3.4 TB		66.7 TB
Number of drives to be installed**	3 to 96 (3.5" HDD), 3 to 144 (2.5" HDD)			
Supported OS**	Windows, Linux, VMware, HP-UX, AIX, Solaris			
Dimensions (W x D x H)	Disk array controller (U count)	482 x 513.2 x 87.8 mm (2U, without the front bezel)/482 x 545.2 x 87.8 mm (2U, with the front bezel)**		
	Disk enclosure (U count)	482 x 513.2 x 87.8 mm (2U, without the front bezel)/482 x 545.2 x 87.8 mm (2U, with the front bezel)**		
Weight	Disk array controller	31 kg or less		
	Disk enclosure	29 kg or less		
Input voltage	Disk array controller		SAS HDD	
Power consumption (Maximum/at 25°C)	Disk array controller	Nearline SAS HDD	510 W / 420 W	505 W / 420 W
	Disk enclosure	SAS HDD	445 W / 360 W	470 W / 385 W
	Disk enclosure	Nearline SAS HDD	315 W / 265 W	310 W / 260 W
	Disk enclosure	Nearline SAS HDD	250 W / 200 W	275 W / 225 W
Ambient conditions	Temperature	5 to 40°C (41 to 104°F) (when operating), -10 to 60°C (14 to 140°F) (when non-operating)		
	Humidity	10 to 80%RH (when operating), 5 to 80%RH (when non-operating)		

M500 Disk Array

Model*	M500 Disk Array Supporting 3.5" Drive		M500 Disk Array Supporting 2.5" Drive	
	The following can be connected to a disk array controller: Up to 32 3.5" type and 2.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 384 or less.		The following can be connected to a disk array controller: Up to 32 2.5" type and 3.5" type disk enclosures can be connected to the disk array controller under the condition that the total number of slots is 384 or less.	
Rack mount configuration	Slots in a chassis; disk enclosure (3.5"); 12, disk enclosure (2.5"); 24		Slots in a chassis; disk enclosure (2.5"); 24, disk enclosure (3.5"); 12	
Host interface	Fibre Channel (6 Gbps), iSCSI (1 Gbps or 10 Gbps)			
Number of ports	FC: 4 or 8, SAS: 8, iSCSI: 4			
Cache memory	Installed capacity: 12 GB, 24 GB or 48 GB Backup method: Save to flash memory			
RAID levels**	RAID-0, 1, 5, 6, 10, 50, 60, TM SAS (6 Gbps)			
Disk drive specifications	Type	SAS HDD	3.5" 300 GB, 450 GB, 600 GB (15,000 rpm)	2.5" 300 GB, 450 GB, 600 GB, 900 GB (10,000 rpm)
	Capacity, and rotation speed	Nearline SAS HDD	3.5" 1 TB, 2 TB, 3 TB* (7,200 rpm)	2.5" 1 TB (7,200 rpm)
	SAS SSD	3.5" 400 GB		2.5" 100 GB
	Encryption SAS HDD	3.5" 600 GB (15,000 rpm)		2.5" 600 GB (10,000 rpm)
Capacity** (Maximum)	SAS HDD	178.0 TB	178.0 TB	272.0 TB
	Nearline SAS HDD	906.1 TB		304.6 TB
	SAS SSD	3.4 TB		836 GB
Number of drives to be installed**	178 TB			
Supported OS**	3 to 384			
Dimensions (W x D x H)	Disk array controller (U count)	482 x 600 x 175.6 mm (4U, without the front bezel)/482 x 632 x 175.6 mm (4U, with the front bezel)**		
	Disk enclosure (U count)	482 x 513.2 x 87.8 mm (2U, without the front bezel)/482 x 545.2 x 87.8 mm (2U, with the front bezel)**		
Weight	Disk array controller	48 kg or less		
	Disk enclosure	29 kg or less		
Input voltage	Disk array controller		SAS HDD	
Power consumption (maximum)**	Disk array controller	610 W		
	Disk enclosure	315 W		
Ambient conditions	Temperature	5 to 40°C (41 to 104°F) (when operating), -10 to 60°C (14 to 140°F) (when non-operating)		
	Humidity	10 to 80%RH (when operating), 5 to 80%RH (when non-operating)		

*1: Dual controller model and single controller model are available. Single controller model supports four FC or SAS ports, two iSCSI ports, and cache memory of 4 GB.
 *2: Since RAID-0 does not have redundancy, data is lost if an error occurs in a single drive. Therefore, it is strongly recommended to use a RAID level having redundancy. Also, please contact NEC before using RAID-0.
 *3: In the case of SSD, only RAID-1, 5, 10, 50 are available.
 *4: Calculated where 1 GB = 1024³ bytes and 1 TB = 1024⁴ bytes.
 *5: Up to 12 SSDs can be installed.
 *6: For the described operating systems, there are restrictions on disk devices to be connected. For details, please contact NEC.
 *7: The front bezel is available for separate purchase.
 *8: 3TB HDD is planned to be available in the second quarter of CY2012.