

Product		NEC Storage HS8 Scale-out Model					
Node Configuration	1HN Configuration	1HN+1SN Configuration	2HN Configuration	2HN+2SN Configuration	Max. Configuration (Performance Focused)	Max. Configuration (Capacity Focused)	
Number of Nodes <sup>1</sup>	Hybrid Node (HN)	1	1	2	2	165	
	Storage Node (SN)	0	1	0	2	0	163
Capacity <sup>2,3</sup>	Raw Capacity	18 TB (up to 72 TB)	144 TB	144 TB	288 TB	11.9 PB	
	Effective Capacity	240 TB (up to 960 TB)	1.92 PB	1.92 TB (1.27 PB*)	3.84 PB	158 PB	
Maximum Performance <sup>5</sup>		54.0 TB/h	63.0 TB/h	63.0 TB/h	126 TB/h	5.2 PB/h	126 TB/h
Network Interface	Standard	1000BASE-T <sub>x</sub> (Copper:RJ-45)					
	Optional	10GBASE-SR (Optical:LC) or 10GBASE-T (Copper:RJ-45)					
Number of Network Interface Ports (per Hybrid Node)	Standard	1000BASE-T <sub>x</sub> x 6					
	Optional (10GbE NIC x 1)	10GBASE-SR x 2 + 1000BASE-T <sub>x</sub> x 4 or 10GBASE-T x 2 + 1000BASE-T <sub>x</sub> x 4					
	Optional (10GbE NIC x 2)	10GBASE-SR x 4 + 1000BASE-T <sub>x</sub> x 2 or 10GBASE-T x 4 + 1000BASE-T <sub>x</sub> x 2					
Disk Drive Specifications (per Node)	Disk Interface	3.5-inch SATA (6Gbps)					
	Capacity <sup>6</sup> /Rotations/Units	6 TB/7,200 rpm/12					
Supported Protocols	NFS, CIFS, NetBackup OpenStorage, Universal Express I/O <sup>10</sup>						
Supported Backup Software <sup>7</sup>	Veritas NetBackup, Veritas BackupExec, Veritas System Recovery, APCServe Backup, NetWorker, Data Protector software, NetVault Backup, Tivoli Storage Manager, CommVault Simpana, Oracle Recovery Manager, Acronis Backup & Recovery						
Supported Archive Software <sup>7</sup>	Enterprise Vault, StorageForce, NEC Information Assessment System						
Ambient Operating Conditions	Temperature	10 to 40°C (while operating), -10 to 55°C (on standby)					
	Humidity <sup>8</sup>	20 to 80% RH (while operating), 20 to 80% RH (on standby)					
Power Supply	AC 100-240V, 50/60Hz						
Weight	32 kg	64 kg	138 kg	138 kg	5,480 kg		
Dimensions (W x D x H) <sup>9</sup>	448 x 684 x 87mm (2U)	448 x 684 x 174mm (4U)	448 x 684 x 435mm (10U)	448 x 684 x 435mm (10U)	448 x 684 x 1605.2mm (369U)		
Maximum Power Consumption (HN:10GBASE-T x 4 configuration)	665 W	1,205 W	1,396 W	2,570 W	112.8 KW	92.5 KW	


\*1: The NEC Storage HS8 scale-out model is expandable from 1 HN up to 165 (11 racks x 15 nodes/rack) total nodes. Exact configuration will vary according to your performance/capacity requirements. For details, contact us.  
 \*2: Capacity value based on 3 parties. The effective capacity is calculated assuming a compression ratio of 20:1. (The compression ratio varies with the type of data.)  
 \*3: Capacity values are calculated based on 1 GB = 1,000,000,000 bytes, 1 TB = 1,000 GB, and 1 PB = 1,000 TB.  
 \*4: Capacity for a 2 HN configuration when using clustering (6 parties). The effective capacity is calculated assuming a compression ratio of 20:1. (The compression ratio varies with the type of data.)  
 \*5: Maximum ingest rate when using OpenStorage - Deduped Transfer or Universal Express IO - Deduped Transfer feature.  
 \*6: Can also be used with 100BASE-TX/10GBASE-T.  
 \*7: Information of verified software is periodically updated. Contact us for details on supported software.  
 \*8: There should be no water condensation either when operating or when shut down.  
 \*9: Not including the front bezel, slide rails, and protrusions.  
 \*10: Proprietary protocol optimized for NEC Storage HS.

Optional Features (available as optional software licenses)	
Replication	Software product for replicating (copying) stored data to a remote site via a network. (Encryption scheme: AES-256bit)
DirectDataShadow	Software product that enables direct backup of data from NEC Storage M series.
WORM	Software product for preventing a file from being changed or deleted for a given period of time.
Encryption	Software product for preventing data leakage in case of theft or disposal of the HDD and/or node. (Encryption scheme: AES-256bit, Encryption Module: FIPS 140-2 validated)
OpenStorage	Software product for optimizing Symantec NetBackup. - Copies backup data from a main site to a remote site at a high speed, consolidating the management of both sites. - Offers original protocol for performing high-speed backup and restore. - Makes new full backup data from the existing full backup and incremental/differential backup, and saves in the storage unit.
Universal Express I/O	- Performs backup/restore at fast speed by using proprietary protocol. - Increases backup speed by deduplicating the data to be transferred on the backup server and reduces network load.
Synchronized Access Grid	Software product to let hybrid grids access the same file system simultaneously.

**Environmental Compliance**

● Eco Symbol	The Eco Symbol is a label placed on products that meet NEC's prescribed environmental soundness standards. Eco Symbol products must be environmentally superior and assure transparency.
● RoHS Compliance	This product complies with the European Union's directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

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	<b>Safety Notice</b>	Before using this product, please read carefully and comply with the cautions and warnings in manuals such as the Installation Guide and Safety Precautions. Incorrect use may cause a fire, electrical shock, or injury.
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For further information please contact your local NEC representative or:

Corporate Headquarters (Japan) NEC Corporation www.nec.com	North America (USA, Canada) NEC Corporation of America www.necam.com	APAC (South Asia, South East Asia, Oceania) NEC Asia Pacific Pte. Ltd. sg.nec.com	EMEA (Europe, Middle East, Africa) NEC Enterprise Solutions www.nec-enterprise.com
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Specifications and designs in this catalog are subject to change for improvement without notice.

Backup/Archive Storage

# NEC Storage HS8



# Simple & Smart Backup/Archive

- NEC Storage HS8 solves backup/archive issues.

Scattered data resources result in increasing management costs.

Efficiently integrate all backup/archive data into a single system.

Accurately predicting rapidly increasing storage requirements is difficult.

Scaling-out creates flexibility and upgradability according to needs.

Reliable, long-term data retention is required for storing valuable data.

Prevent hardware aging with incremental hardware upgrades.

Operational costs for tape-based backups are high.

Disk-based backup reduces operational cost.

The prevention of data breaches/loss is critically important.

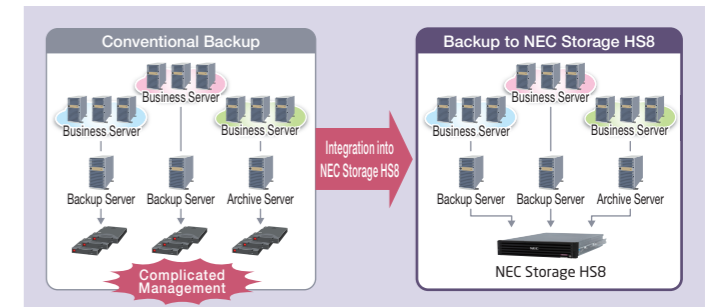
Multiple layers of data protection ensure information safety, while erasure coding achieves data resilience higher than that of RAID.

The Era of Big Data is here. New business values and services are created by huge amounts of data, and there are growing needs for storage platforms that backup/archive such important data efficiently and safely.

NEC Storage HS8 is an advanced deduplication backup/archive storage solution that satisfies both present and future requirements. It offers low-cost operation compared to tape-based storage systems, while its scale-out capability accommodates changes quickly. Additionally, its reliability surpasses that of RAID systems, and it provides next-generation disk-based backup environment.

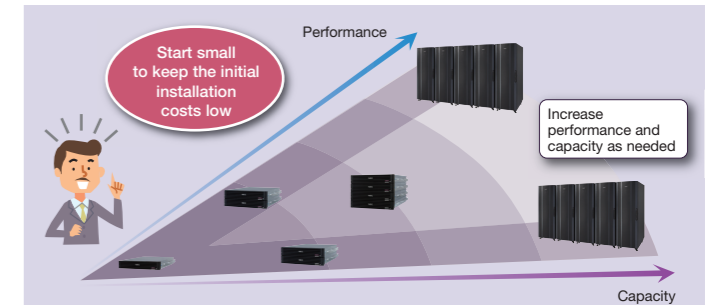
## Efficient Storage of All Corporate Data

With an increase in the amount of data, it becomes more and more inefficient and complicated to perform backup/archive individually for each server or system. NEC Storage HS8 integrates these multiple environments and enables the optimal integration of backups and archives.



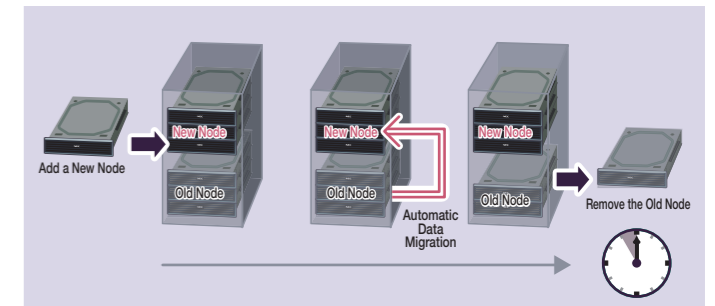
## Flexible Scale-Out to Accommodate Changes

In the age of big data, it is important to cope with unpredictable and exponential increases in the amount of data. NEC Storage HS8 is a scale-out storage system that can accommodate changes flexibly. Both capacity and performance can be enhanced by adding nodes when required without interruption to the system.



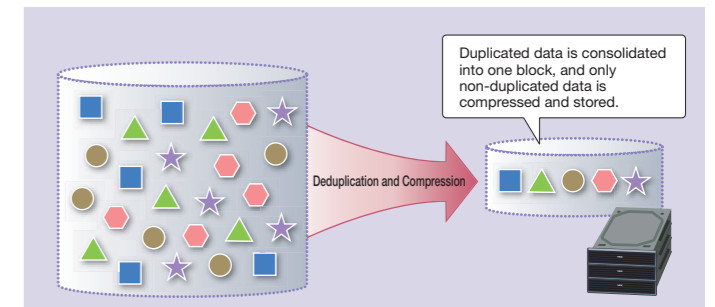
## Long-Term Data Storage Capability

NEC Storage HS8 can safely store data over extended periods of time, even decades. When replacing an old node with a new one, data is automatically migrated to the new one. By replacing old nodes in turn, data can be stored for a long time without hardware aging. This reduces costs greatly compared to creating a whole new system and migrating data. An excellent return on investment (ROI) can be achieved by this system.



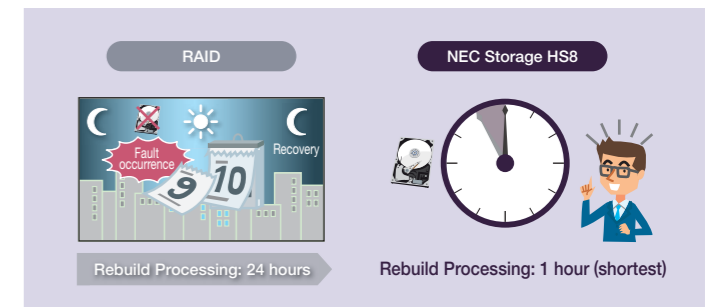
## Reduced Operating Costs Through Disk-Based Backup

With NEC's proprietary technology, backup data is compressed on a ratio of 20:1 of its original size\* on average and efficiently stored in the NEC storage HS8. This enables NEC Storage HS8 to achieve lower per-unit capacity costs than those of tapes. Apart from per-capacity costs, operational costs and space requirements are also reduced compared to tape-based backup solutions. By reducing the amount of data, the network infrastructure required for remote backup is also reduced. Therefore, the total cost for backups can be reduced comprehensively. \*Compression rate varies according to the type of data being stored.



## Highly Reliable Data Protection

Distributed Resilient Data technology gives NEC Storage HS8 a high level of robustness that can tolerate simultaneous faults in three disk drives, while the automatic recovery function quickly completes the rebuilding process. With these advanced technologies, NEC Storage HS8 minimizes the risk of data loss, achieving high reliability surpassing that of RAID6. NEC Storage HS8 also offers an encryption function for preventing data leakage, a write protection function for protecting data from malicious falsification and erroneous operations, and a physical data erasing function to completely erase unnecessary data.



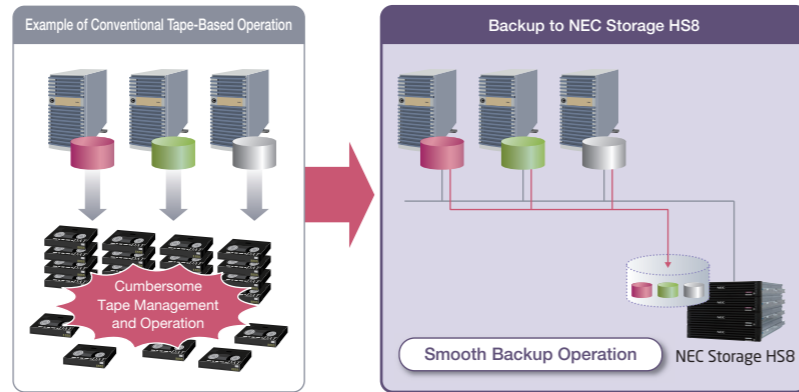
# Providing backup/archive solutions according to customers' needs.

## Solutions

### Disk-Based Backup Solution that Replaces Tape-Based Backup

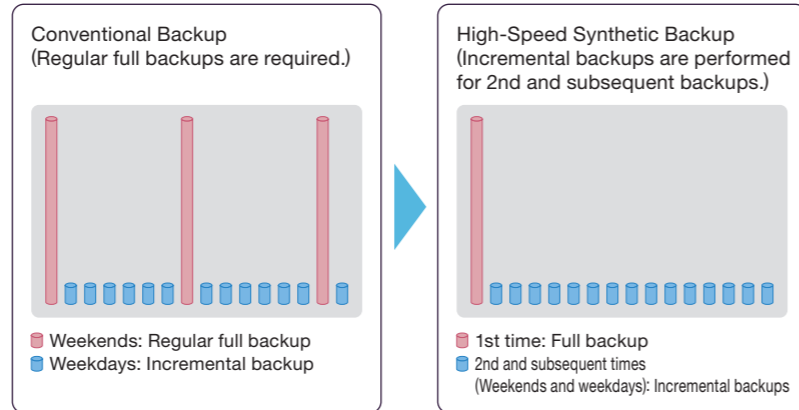
In conventional tape-based backup environments, a large number of staff and considerable amounts of labor are required because there are many operations that can only be completed manually such as handling and replacing the tape cartridges, transportation, physical storage, and so on. Furthermore, as the volume of data increases, tape-based operations will become more and more cumbersome.

NEC Storage HS8 offers a disk-based backup solution that is simple to operate and has low operational costs. With the deduplication function, NEC Storage HS8 can store large amounts of data efficiently. Due to the automation of operations, the manual work required is reduced. The cost and time needed for backup/archive can also be lowered significantly.



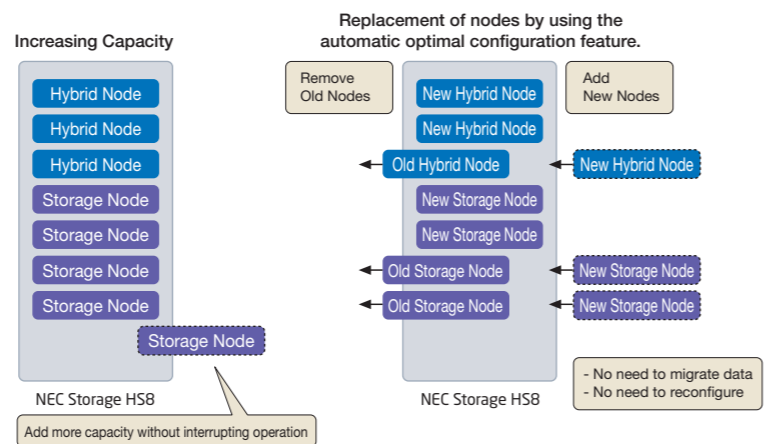
### Reduced File Server Backup Time

NEC Storage HS8 eliminates the need for regular full backups. By performing only daily incremental backups, a full backup is automatically synthesized at high speed within the NEC Storage HS8. This reduces the load of the business servers and networks, as well as significantly reducing the backup time.



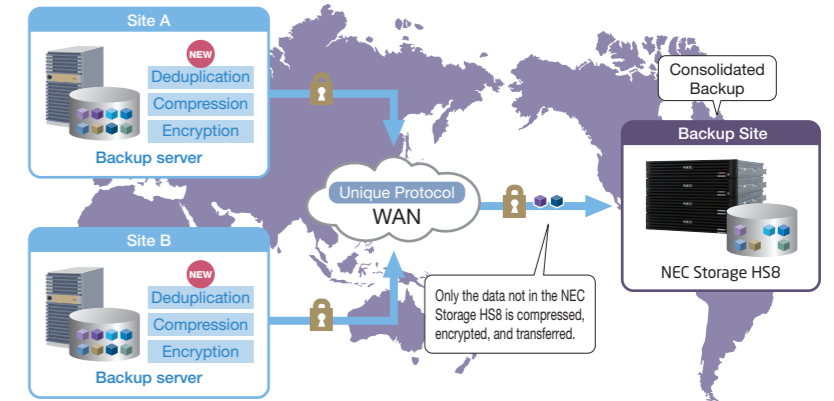
### Efficient Management of Long-Term Data Storage

Recently, data that needs to be stored for extended periods of time has been increasing rapidly, including backups of accounting data and archives of e-mails. The capacity of NEC Storage HS8 can be expanded easily as the amount of data grows, with its automatic optimal configuration. NEC Storage HS8 stores long-term archive data safely with "Distributed Resilient Data". Data is automatically migrated from an old node to a new one at the time of replacement. This enables old nodes to be replaced with new ones in real time, without inconveniencing the users. Node replacement can also vastly reduce costs by extending the life of an existing system compared to creating a completely new system.



### Consolidated Backup

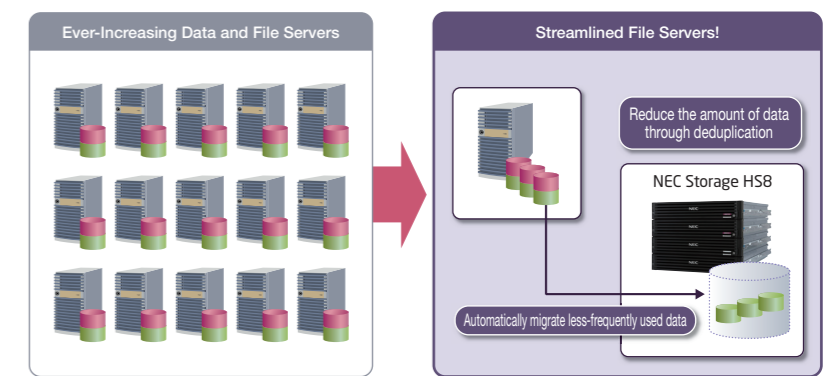
With the deduplication function of NEC Storage HS8, backups in various regional offices can be consolidated into a single safe and secure backup site at a low cost. As large amounts of data will be deduplicated and compressed by backup servers at each site, backup data can be transferred fast through an inexpensive WAN. The transferred data is encrypted to ensure safety on the way.



### Streamlined File Server Environment

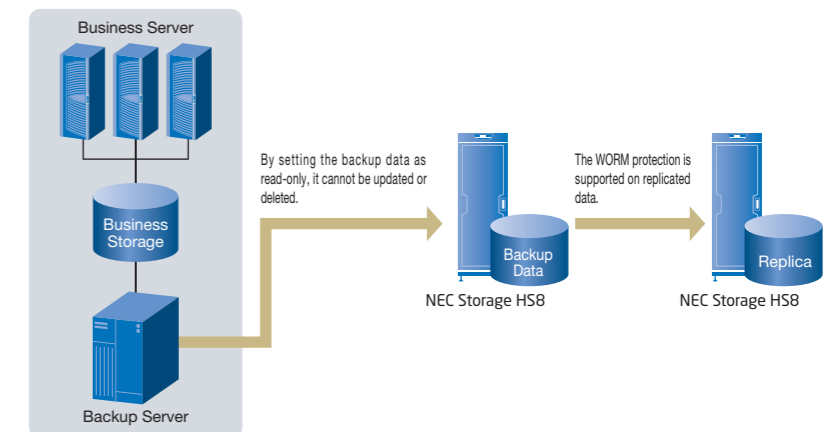
Data migration software migrates less frequently used files to NEC Storage HS8 in order to increase usable capacity on the file servers and reduce the costs for primary storage. The migrated data is deduplicated and stored in NEC Storage HS8 efficiently.

Furthermore, as the amount of file servers' data to be backed up is reduced, the backup window can be shortened.



### Falsification Prevention for Data Protection

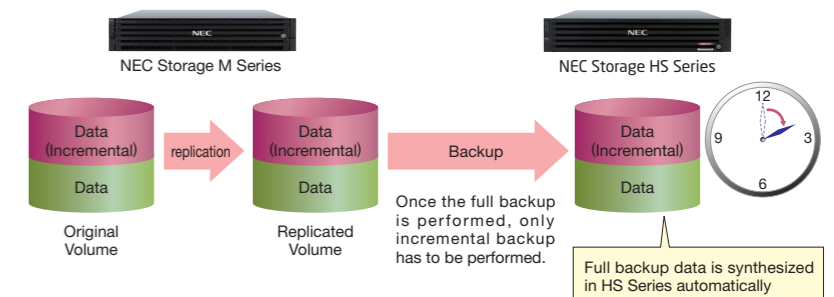
NEC Storage HS8 provides a Write Once Read Many (WORM) feature, which protects data from illegal falsification and erroneous operations. A protection period can be specified on each file, and once the protection is enabled, even the administrator cannot update the file until the set period has expired. As the WORM protection is also supported on data replicated, the data at backup sites is protected during same period as the original data. Additionally, NEC Storage HS8 has a function to erase unnecessary data completely to prevent it from being restored and used improperly.



### Direct Backup/Restore by Collaborating with NEC Storage M Series

NEC Storage HS8 provides functionality to collaborate with the NEC Storage M Series unified storage, which enables backup and restoration to be performed directly between the NEC Storage HS8 and the NEC Storage M series. As a full backup is required only at the first time and incremental backups are performed from second or later, backup time is reduced drastically.

This solution eliminates the need for a dedicated backup server and software, and reduces the cost of implementing and operating a backup/restore system.



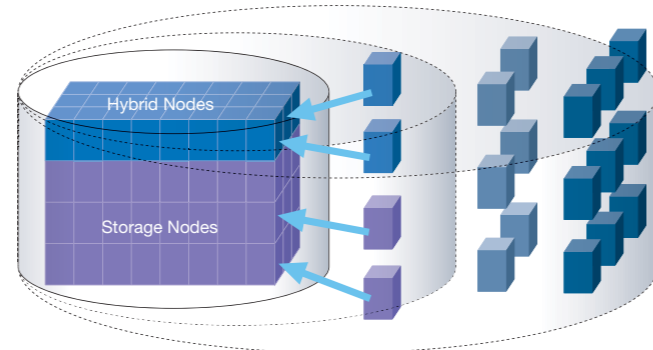
# Three core technologies to support backup/archiving.

To store day-to-day backup/archive data efficiently and safely, NEC Storage HS8 incorporates three core technologies.

## Easy, Non-Disruptive Expansion of Capacity and Performance

If it is necessary to add more capacity and improve the level of performance, Hybrid Nodes and Storage Nodes can be added easily without stopping the system. Added nodes are autonomously incorporated into the storage pool, so that load balancing and data relocation can be performed automatically and thus make the nodes usable instantaneously. Node addition does not require the storage administrator to consider where the data is located or perform any kind of configuration. This enables the increasing of capacity and performance without the concern of bottlenecks, thereby contributing to improved operational efficiency and simplified system administration.

### Automatic Optimal Configuration



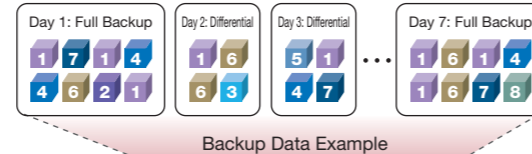
## Vastly Improved Capacity Efficiency for Reduced Cost

The data compression technology (DataRedux) checks the data blocks to be newly written against data that is already in storage, and then eliminates any duplicate data, thereby improving the data storage efficiency and writing performance.

To maximize the detection of duplication relative to the existing data, DataRedux applies intelligent variable-length division to the data. This achieves further improvement in storage efficiency and performance, especially for multi-generation backups.

### Data Compression

#### Efficient Storage of Backup/Archive Data



#### DataRedux Technology:

1. Detects duplicate data at the block level
2. Compresses and stores only non-duplicated data  
→ Efficient use of storage capacity

#### Cost Advantages of DataRedux:

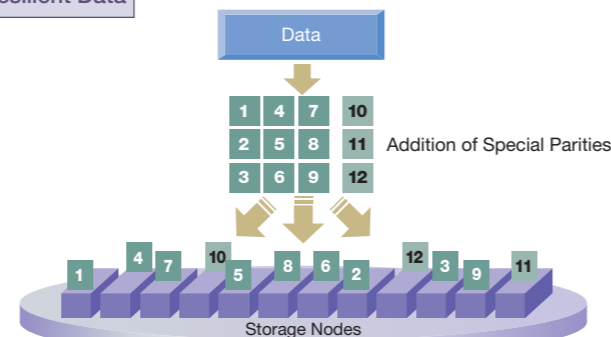
- Storage Installation Costs
- Storage Operation Costs
- Storage Maintenance Costs



## Fault Tolerance that Surpasses RAID

NEC Storage HS8 offers a high level of redundancy surpassing that of conventional storage. By dividing the backup data into multiple blocks, adding special parities to those blocks, and then distributing them to disks on multiple nodes, NEC Storage HS8 enables data restoration even if faults occur in multiple storage locations. It can accommodate up to 3 simultaneous faults not only with disk drives but also with nodes\*, preventing data loss if a fault should occur.

### Distributed Resilient Data



Additional parities are added to the data, then distributed to multiple storage locations.

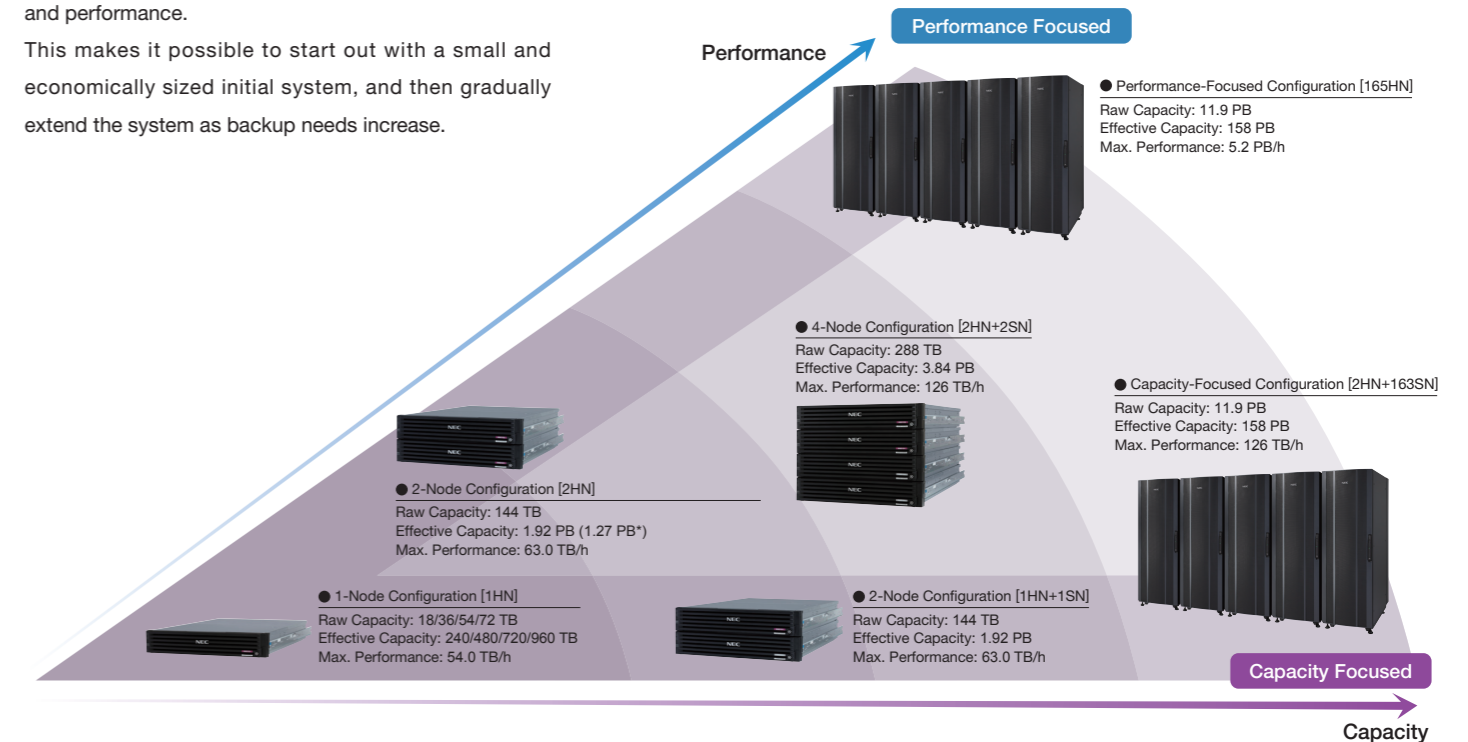
\*Depends on the node configuration and the setting of the number of parities.

## Line-Up

With the latest enhancements in hardware and software technology, NEC Storage HS8 achieves even higher levels of performance and capacity.

NEC Storage HS8 is a scale-out type system that can scale out to a total of 165 nodes to expand both capacity and performance.

This makes it possible to start out with a small and economically sized initial system, and then gradually extend the system as backup needs increase.



HN: Hybrid Node, SN: Storage Node.

The effective capacity is calculated assuming a compression ratio of 20:1. (The compression ratio varies with the type of data.)

\*Capacity for a 2HN configuration when using clustering (6 parities).