Why NEC earned the *Recommended* Ranking in DCIG's Evaluation of Sub-2 PB Midrange Arrays

Chuck Cook, DCIG Senior Analyst

NEC

COMPANY

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NEC Corporation
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North America (USA & Canada)
NEC Corporation of America
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NEC Enterprise Solutions
NEC Europe Ltd
nec-enterprise.com

APAC
NEC Asia Pacific Pte Ltd
sg.nec.com

Latin America
NEC Latin America
lasc.necam.com

Founded 1899

INDUSTRY

Data Storage

SOLUTION

NEC M310 Array

- Connectivity and Capacity for Demanding Workloads
- Management Integration for Diverse Environments
- Data Protection
- Broad Operating System and Application Integration

NEC M310 Midrange Storage Satisfies SME Requirements

As enterprises digitize critical business functions, data that once was used only by employees is now also used by suppliers and customers. Consequently, storage systems must go beyond traditional expectations for performance, scalable capacity, reliability and availability to deliver an always-on infrastructure.

The NEC M310 exemplifies the latest generation of midrange arrays that satisfy these requirements for small and midsize enterprises. For example, NEC simplifies M-Series deployments through a new all-inclusive approach to licensing. In terms of performance, the M310 more than triples the IOPS of the prior generation M300, achieving 132K SPC-1 IOPS in an all-HDD configuration. The M310 further accelerates applications by utilizing up to 4 TB of SSD cache.

DCIG Ranks NEC M310 Array as *Recommended*

- **Connectivity and Capacity for Demanding Workloads.** The NEC M310 array provides 10GbE and 16Gb Fibre Channel (FC) interfaces for external network connectivity. NEC M-Series arrays provide native SAN protocol support and uses a NAS gateway appliance for unified storage capabilities. The M310 is one of three Recommended arrays that utilizes 12 Gb SAS backend connectivity to HDDs and SSDs to unlock performance with increased bandwidth. The array scales up to 480 drives with a maximum raw capacity of more than 1.9 PB, and soon 2.4 PB utilizing 10 TB HDDs.

- **Management Integration for Diverse Environments.** NEC arrays integrate seamlessly into any data center. These arrays simplify storage management through a unified interface and through integration with OpenStack, Microsoft Systems Center Virtual Machine Manager (SCVMM), SMI-S and VMware vCenter—including VVols.

- **Data Protection.** NEC arrays incorporate multiple strategies to protect data from loss and theft. The M310 supports synchronous replication which can be configured at a datastore or VM level. The M310 protects data from theft by using self-encrypting drives (SED), and DoD-compliant data erasure technology.

> *"NEC's versatile midrange arrays deliver capacity, performance and features to meet diverse business requirements."*
>
> — **Chuck Cook,** *DCIG Senior Analyst*

- **Broad Operating System and Application Integration.** The NEC M310 has broad operating system support, including HP-UX and IBM AIX. NEC also certifies seven of the eight applications surveyed, including Hadoop and Oracle RAC. SAP HANA is an increasingly important business intelligence and analytics platform providing a real-time view of business operations. NEC is one of three *Recommended* vendors offering SAP HANA certified products. The M310 supports up to 8 SAP HANA nodes.

2017-18 SUB-2PB MIDRANGE STORAGE ARRAY BULLETIN
Overall Rankings

RANKING	PRODUCT
RECOMMENDED	NEC M310*
	Dell EMC VNX5400
	FUJITSU Limited ETERNUS DX100 S3
	HPE 3PAR StoreServ 8200
	Tegile T3300
	Tegile T3200
	Tegile T3100
EXCELLENT	NEC M110*
	Dell EMC VNX5200
	IBM XIV
	iXsystems TrueNAS Z30
	iXsystems TrueNAS Z20
	NetApp FAS2520
	Nimble Storage CS215
GOOD	AMI StorTrends 3500i
	Dell EMC VNXe3200 Hybrid
	Dell Storage PS6210XS
	Dell Storage PS4210XS
	Dell Storage SC4020
	FUJITSU Limited ETERNUS DX60 S3
	IBM Storwize V3700
	Pivot3 N5-1000 Hybrid Flash Array

* The licensing provider is listed at the beginning of each ranking category in which its products are included.
  One should not draw any negative inferences about any other products included in that ranking.

Observations: Overall

Small and midsize enterprises (SMEs) require the same breadth of data services as large enterprises, but at a smaller scale. Therefore, it is not surprising that most of the products in this Bulletin are the middle models in their respective product families. These arrays possess all the features of the top models, but with lower maximum capacities.

Observations: Recommended

While researching products for the D*CIG 2017-18 Sub-2PB Storage Array Bulletin,* DCIG observed that the following characteristics and features distinguish the majority of Recommended arrays from other SME and midmarket arrays:

- Metadata stored separately

- Provide advanced QoS options

- SMI-S provisioning

- Multiple self-healing options

The M310 is one of three Recommended arrays that supports 12Gb SAS backend connectivity unlocking performance with increased bandwidth. It is one of two Recommended arrays that supports five surveyed self-healing technologies and one of three Recommended arrays that supports VMware Virtual Volumes (VVol).

The Dell EMC VNX5400 is one of three products with a *Recommended* product that offers VM level replication providing continuous data protection for VMware virtual machines. These arrays provide unified storage with the addition of a 'Data Mover' appliance. The VNX5400 supports dense 60 and 120-disk drive expansion shelves with a maximum raw capacity of 1PB and a Bulletin best 52 TB/RU (TB per Rack Unit) density.

The FUJITSU Storage ETERNUS DX100 S3 is one of four products in this group that supports synchronous repli-cation. The ETERNUS DX100 S3 supports many of the data protection features surveyed and is the only vendor ranked *Recommended* that supports the T10-PI stan-dard for ensuring end-to-end data integrity. Automated

QoS policies can be set based on maximum IOPS or by using pre-defined service levels.

The HPE 3PAR StoreServ 8200 is the only array in this Bulletin that provides hardware accelerated data services via the HPE 3PAR Gen5 Thin Express ASIC (Application Specific Integrated Circuit) specifically programmed to manage thin provisioning, thin persistence and inline deduplication. The HPE arrays simplify management tasks by supporting an extensive suite of automated policy-based provisioning and QoS features. Storage templates can be created to include SLA/QoS requirements or use policies to automatically select the appropriate storage location.

> *"NEC simplifies M-Series deployments through a new all-inclusive approach to licensing, while the M310 more than triples the IOPS of the prior generation M300, achieving 132K SPC-1 IOPS in an all-HDD configuration."*
>
> — **Chuck Cook,** *DCIG Senior Analyst*

Tegile IntelliFlash Arrays natively support block and file protocols in a single appliance. The arrays can also be scaled up by adding all-flash or hybrid storage shelves. Flash drives of 8TB are supported, and flash media is warranted for 7 years. IntelliFlash is caching-oriented rather than data tiering-oriented, and is one of two product families in this Bulletin that supports all surveyed flash-based caching methods.

Observations: Excellent

While researching products for the *DCIG 2017-18 Sub-2PB Storage Array Bulletin,* DCIG observed that the following characteristics and features distinguish most *Excellent* arrays from other SME and midmarket arrays:

- Management via REST API

- Inline data compression

- Array-based data encryption

The NEC M110 shares the same architecture as its larger sibling, the *Recommended* NEC M310. It differs only in terms of scale and performance.

The Dell EMC VNX5200 shares the same architecture as its larger sibling, the VNX5400. It differs only in terms of scale and performance.

The IBM XIV is one of three arrays in this Bulletin that provides scale-out functionality and the only array indicating support for hardware accelerated compression. The XIV simplifies storage management through integration with OpenStack, REST API, SCVMM, SMI-S and VMware vCenter. The XIV is one of two arrays ranked *Excellent* certified to support SAP HANA nodes.

iXsystems TrueNAS Z30 and Z20 arrays share the same architecture but differ in scale and performance. iXsystems arrays provide inline deduplication and compression. The TrueNAS Z30 is the only array in this Bulletin which indicates support for 40GbE ports. iXsystems provides remote monitoring and proactive remediation as part of its standard 3-year warranty.

The NetApp FAS2520 is one of three arrays in the Bulletin that utilizes a scale-out architecture, and the only of those three that provides concurrent SAN and NAS functionality. Utilizing two high-availability pairs of controllers the FAS2520 supports 1.3PB of raw capacity.

The Nimble Storage CS215 array provides scale-up and scale-out capabilities with raw capacity over 1.2 PB. The CS215 is one of two arrays ranked Excellent that provides pre-defined QoS service levels simplifying QoS management. Its cloud-based InfoSight predictive storage analytics service continually monitors Nimble arrays which set the bar regarding proactive support for the entire storage industry.

> **"Arrays ranked as Excellent** *distinguished themselves by providing inline data services and management automation through REST API capabilities."*
>
> — **Chuck Cook,** *DCIG Senior Analyst*

Inclusion and Exclusion Criteria

The scope of IT requirements for small and midsize enterprises are like the requirements of large enterprises, but at a smaller scale. The following criteria were used when determining whether to include as a specific storage array from the DCIG Storage Array Body of Research:

- Must utilize HDDs as primary storage. The array can also use SSDs for caching or storage, but it cannot be exclusively an all-flash array.

- Must support one or more block-based (SAN) storage protocols. The array may also support NAS storage protocols.

- Maximum raw capacity of no more than 2 PB.

Disclosures

In that vein, there are several important facts to keep in mind regarding the information contained in this Bulletin and its merit.

- No vendor paid DCIG any fee to research this topic or arrive at pre-determined conclusions.

- DCIG did not guarantee any vendor that its product would be included in this Bulletin.

- DCIG did not imply or guarantee that a specific product would receive a preferential ranking, before or after completion of research.

- All research was based upon publicly available information, information provided by the vendor, and/or the expertise of those evaluating the information.

- No negative inferences can be drawn against any vendor not included in the Bulletin.

- It is a misuse of this Bulletin to make comparisons between any vendor not ranked in the Bulletin versus any vendor ranked in the Bulletin.

- This Bulletin reflects DCIG's independent research and opinion though the content developed for page one was developed specifically for the vendor licensing this Bulletin.

Because of the number of features analyzed and weighed, there was no way for DCIG to accurately predict at the outset how individual products would end up ranking. DCIG wants to emphasize that no vendor was privy to how DCIG weighted individual features. In every case the vendor only found out the rankings of its product(s) after the analysis was complete.

The Six-Step Process Used to Rank the Arrays

1. *DCIG established which features would be evaluated and which ones would not*. Prior to selecting the features which would be evaluated, DCIG quantified the features possessed by the products. As part of this process, DCIG "normalized" the list of available features such that a common name for each feature was established. In cases where a feature could not be objectively defined or understood, it was excluded from consideration.

2. *DCIG completed a survey for each vendor's product(s) and then sent the survey(s) to each vendor for verification. Each vendor was invited to review their data and respond with any corrections or edits to the DCIG-completed survey(s).* In every case, every vendor had the opportunity to review and respond to any DCIG-completed survey.

3. DCIG identified a list of products that met the DCIG definition for *"Sub-2 PB Storage Array"* based on the inclusion/exclusion criteria.

4. *DCIG weighted each feature*. The weighting of each feature was done by a team of DCIG research analysts. The weightings were used to reflect if a

feature was supported and potentially how useful and/or important the feature is to end users.

5. *Features were scored based on the information gathered from the surveys.* Features were marked as either *"supported"* or *"unsupported/undetermined"* and then scored accordingly. Rankings were finalized after any updates received from vendors had been entered.

6. *Products were ranked using standard scoring techniques.* One of the goals of this Bulletin is to establish clear lines of differentiation with conclusions that are arrived at objectively. To accomplish this goal, the mean or average score for all products was first determined and then the standard deviation. DCIG developed an overall ranking for each product based on where that product's overall score fit into standard deviation ranges.

The full set of products and feature data may be accessed in the DCIG Analysis Portal available through DCIG's website: **www.dcig.com**. ∎

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