DATASHEET

ACCELERATE PERFORMANCE WITH NETAPP EF-SERIES ALL-FLASH ARRAYS

Affordable high-density, all-flash storage systems deliver high performance and capacity for a wide range of specialized block workloads

The challenge
As the amount of data that organizations handle grows exponentially, they are challenged with managing more complex and costly information while balancing limited resources, space, and power. Enterprises of every size are finding that they must evolve and innovate to achieve business success and differentiate themselves from their competitors. They need to process, derive value, and gain insights from unstructured and structured data faster to speed time to market and meet customer demands.

Performance and availability of key business applications are tightly linked to many factors such as time to market, revenue, and customer satisfaction. Therefore, enterprises want solutions that improve the speed and responsiveness of these applications and that support them as their capacity needs grow.

They also require solutions that deliver better business value because the cost-effectiveness of operations has become equally as important as operating without disruptions and delivering consistent performance.

The solution
The NetApp® EF-Series is a family of entry-level and midrange all-flash storage arrays that can accelerate performance and access to your data to help you derive value faster. These systems offer NVMe flash storage and provide high IOPS at ultralow latency, response times under 100 microseconds, and bandwidth up to 44GB/s. They are ideal for specialized block workloads and demanding applications such as media and entertainment, high-performance computing (HPC), and AI (with NVIDIA DGX SuperPOD).

The EF-Series is packed with enterprise-proven capabilities, including:

- NVMe over Fabrics (NVMe-oF) support, providing ultralow latency and investment protection
- Fibre Channel (FC), iSCSI, and InfiniBand (IB) support for enhanced interoperability with your existing SAN infrastructure
- Redundant components with automated failover
- Advanced monitoring and diagnostics with proactive repair
- Intuitive storage management with comprehensive tuning functions
- Full-function NetApp SANtricity® Web Services embedded REST API
- SANtricity Snapshot™ technology, volume copy, mirroring for data protection where supported, and Dynamic Disk Pools (DDP)
- SANtricity data assurance (T10-PI standard) for data integrity and protection against silent data inconsistency

Together, these capabilities offer an outstanding combination of capacity, performance, and price, along with configuration flexibility and simplicity, in a compact package to help you make actionable decisions faster and more securely. The EF-Series helps protect your storage investment with systems that grow with your business needs.

Fast and affordable performance you can rely on
The EF-Series all-flash arrays offer industry-leading price, performance, and capacity in an enterprise-grade system. With support for up to 1.5PBs of flash capacity in a single modular 2U building block, the systems enable you to easily meet ever-changing business requirements. And with lower TCO and a smaller physical footprint, they help achieve more cost-efficient operations.

- The EF600 all-flash array is designed specifically for workloads that demand the highest levels of performance, while the EF300 array is designed for mixed workload environments such as big data analytics and databases. Both arrays are also available with Quad-Level Cell (QLC) drives with the NetApp EF300C and EF600C to meet a wide range of capacity needs. The NetApp EF-Series family provides the combination of speed, performance, and capacity to meet your core block storage needs. Accelerate write IOPS and read/write throughput with an end-to-end NVMe system that is purpose-built for high-performance workloads.
- Achieve better performance for analytics applications such as Splunk and Apache® Hadoop®, reducing time to actionable data.

KEY BENEFITS

Performance

- Modular and flexible configuration options to support demanding performance and cost requirements
- Industry-leading IOPS and ultralow latency to increase application responsiveness
- Support for multiple high-speed host interfaces in 2U form factor

Affordability

- Industry-leading budget and performance for both high IOPS and bandwidth
- NVMe-oF and SCSI options provide investment protection to meet future demands without forklift upgrades
- Worry-free reliability with over 1 million installations

- Significantly improve the overall efficiency of your ITOps while meeting performance requirements.
- Speed up databases, real-time analytics, and HPC and AI applications at scale with any of the enterprise parallel file systems that the EF-Series is integrated with, including BeeGFS.

Additionally, the EF300 and EF600 systems support expansion with SAS enclosures, adding a tier of spinning media to complement your ultralow latency NVMe SSDs. With various connectivity, infrastructure, and media options, the EF-Series offers investment protection so that you can meet future demands without forklift upgrades.

Proven simplicity
Modular design and simple management tools make it easy to configure, manage, and scale without adding complexity.

The EF-Series runs on the enterprise-proven NetApp SANtricity OS. Optimized for flash, the SANtricity OS enables you to maximize performance through extensive configuration flexibility and custom performance tuning.

The SANtricity System Manager graphical performance tools provide key information about storage I/O from multiple viewpoints, enabling administrators to make informed decisions about configuration adjustments to further refine performance. For more performance analysis, Splunk Enterprise and Grafana solutions are available.

High availability and enterprise reliability
The NetApp EF-Series was engineered from the start to support applications that are at the heart of a corporation's business. Built to provide enterprise reliability in both the architecture and the software design, the EF-Series leverages expertise based on more than 20 years of development experience and more than 1 million implemented systems. Fully redundant I/O paths, advanced data protection features, and extensive diagnostic capabilities allow the EF-Series to achieve greater than 99.9999% availability with data integrity and security.

Secure data, secure management
NetApp SANtricity drive encryption combines key management with drive-level encryption. This combination creates comprehensive security for data at rest with no impact to performance. Because all drives eventually leave the data center through redeployment, retirement, or service, you can be assured that your sensitive data is not leaving with them. You can choose to manage the drive authentication keys natively for a simple, low-cost solution or use a KMIP-compliant external key manager for centralized administration. Management access to the EF-Series is protected with role-based access control (RBAC) and LDAP/Active Directory integration.

Advanced data protection
SANtricity Dynamic Disk Pools technology enables storage administrators to simplify RAID management, improve data protection, and maintain predictable performance under every condition. DDP technology evenly distributes data, protection information, and spare capacity across the drives, simplifying setup and maximizing use. This innovative technology minimizes the performance impact of a drive failure and can return the system to optimal condition up to 8 times faster than traditional RAID. With shorter rebuild times and exclusive technology to prioritize critical reconstruction, DDP significantly reduces exposure to multiple failures, offering a level of data protection that simply cannot be achieved with traditional RAID.

With the SANtricity OS, all management tasks can be performed while the storage remains online with complete read/write data access. Storage administrators can make configuration changes, conduct maintenance, and expand storage capacity without disrupting I/O to attached hosts.

SANtricity OS online capabilities include:

- Dynamic capacity and volume expansion enable administrators to increase the capacity of an existing pool, volume group, or volume.
- Dynamic segment size migration enables administrators to change the segment size of a given volume.

- Dynamic RAID-level migration changes the level of a RAID group on the existing drives without requiring the relocation of data. Supported RAID levels are 0, 1, 5, 6, and 10.
- All software/firmware updates (controller, drive) are nondisruptive, with no interruption to data access.

Administrators can use the SANtricity remote storage feature to perform online import of remote volumes over iSCSI.

DevOps ready
To enable the automation and agility that DevOps-minded teams need, robust support for Ansible is available. EF-Series Ansible collections simplify and streamline adoption by supporting all storage provisioning tasks, including setting up attached host servers. For advanced use cases, all functions available on an EF-Series array are also exposed as embedded REST APIs through SANtricity Web Services. Eliminate risk and accelerate your business with DevOps-ready storage that can be managed as code.

Validated solution reference designs
With tested solution designs for high-transaction databases, AI with NVIDIA DGX SuperPOD, and real-time analytics using Splunk, your demanding business applications with large throughput requirements built on EF-Series systems will consistently deliver high performance. You can focus on growing your business instead of worrying about your data infrastructure.

ASHRAE compliance
All EF-Series systems meet the certification requirements of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, a global society that advances human well-being through sustainable technology for the built environment. All EF-Series models are ASHRAE A4 compliant.

Get more business value with services

Whether you're planning your next-generation data center, need specialized know-how for a major storage deployment, or want to optimize the operational efficiency of your existing infrastructure, NetApp Professional Services and NetApp Certified Partners can help.

Table 1. NetApp EF-Series technical specifications

	EF600	EF600C	EF300	EF300C
Controller chassis form factor[1]	2U; 24 internal NVMe SSD slots	2U; 24 internal NVMe SSD slots	2U; 24 internal NVMe SSD slots	2U; 24 internal NVMe SSD slots
SAS Expansion shelves	Hybrid: 4U with 60 slots and 2U with 12 slots; All-flash: 2U with 24 SAS SSD slots	n/a	Hybrid: 4U with 60 slots and 2U with 12 slots; All-flash: 2U with 24 SAS SSD slots	n/a
Controller memory	32GB, 128GB	32GB, 128GB	16GB	16GB
Maximum SSDs (NVMe)	24	24	24	24
Maximum raw capacity in base system	367TB	1.5PB	367TB	1.5PB
Maximum raw capacity with expansion	9.6PB hybrid, or 1.8PB all-SSD	1.5PB	5.7PB hybrid, or 1.8PB all-SSD	1.5PB
Maximum IOPS	Up to 2,000,000	Up to 1,000,000	Up to 670,000	Up to 350,000
Maximum read bandwidth[2]	44GBps	44GBps	20GBps	20GBps
Maximum write bandwidth[2]	13GBps	13GBps	9GBps	9GBps
Power consumption	Typical: 979W Maximum: 1128W	Typical: 979W Maximum: 1128W	Typical: 643W Maximum: 870W	Typical: 643W Maximum: 870W
IO connectivity per array	4 ports 200Gb NVMe/IB, NVMe/RoCE 4 ports 200Gb iSER/IB 8 ports 100Gb NVMe/IB, NVMe.RoCE 8 ports 100Gb iSER/IB, SRP/IB 16 ports 32 Gb NVMe/FC 16 ports 32Gb SCSI FC 16 ports 25Gb iSCSI	4 ports 200Gb NVMe/IB, NVMe/RoCE 4 ports 200Gb iSER/IB 8 ports 100Gb NVMe/IB, NVMe.RoCE 8 ports 100Gb iSER/IB, SRP/IB 16 ports 32 Gb NVMe/FC 16 ports 32Gb SCSI FC 16 ports 25Gb iSCSI	4 ports 100Gb NVMe/IB, NVMe/RoCE 4 ports 100Gb iSER/IB, SRP/IB 8 ports 32 Gb NVMe/FC 8 ports 32Gb SCSI FC 8 ports 25Gb iSCSI	4 ports 100Gb NVMe/IB, NVMe/RoCE 4 ports 100Gb iSER/IB, SRP/IB 8 ports 32 Gb NVMe/FC 8 ports 32Gb SCSI FC 8 ports 25Gb iSCSI
Storage networking supported	NVMe/IB, iSER/IB, SRP/IB, NVMe/RoCE, NVMe/FC, FC, iSCSI	NVMe/IB, iSER/IB, SRP/IB, NVMe/RoCE, NVMe/FC, FC, iSCSI	NVMe/IB, iSER/IB, SRP/IB, NVMe/RoCE, NVMe/FC, FC, iSCSI	NVMe/IB, iSER/IB, SRP/IB, NVMe/RoCE, NVMe/FC, FC, iSCSI

	EF600	EF600C	EF300	EF300C
OS version	SANtricity OS 11.70.5R1 or later	SANtricity OS 11.90R1 or later	SANtricity OS 11.70.5R1 or later	SANtricity OS 11.90R1 or later
Shelves and media	DE212C (2U, 12 drives, 3.5" NL-SAS and 2.5" SAS); DE224C (2U, 24 drives, 2.5" SAS); DE460C (4U, 60 drive, 3.5" NL-SAS and 2.5" SAS)		DE212C (2U, 12 drives, 3.5" NL-SAS and 2.5" SAS); DE224C (2U, 24 drives, 2.5" SAS); DE460C (4U, 60 drive, 3.5" NL-SAS and 2.5" SAS)	
Host/client OS supported	Windows Server, Linux, MacOS, VMware			

[1] The base system can be configured with a minimum of 6 SSDs. See the expansion options later in this Table 1.

[2] Peak system performance.

Table 2. EF-Series software: SANtricity System Manager (web-based, on-box)

High availability	• Dual active controller with automated I/O path failover • Automatic Load Balancing and path connectivity monitoring • DDP technology and traditional RAID levels • Redundant, hot-swappable storage controllers, disks, power supply units (PSUs), fans • Automatic rebuild after a drive failure • Mirrored data cache with battery-backed destaging to flash • Proactive drive health monitoring • Online upgrades and maintenance for software and firmware • Online configuration, expansion, contraction, and tuning • Data assurance (T10 PI ANSI standard for data integrity) • NetApp Active IQ • Six-nines availability (with appropriate configuration and service plans)
Data management	• Remote storage online volume import (iSCSI) • Dynamic Disk Pools technology and traditional RAID levels 0, 1, 5, 6, and 10 • On-box SANtricity System Manager • On-box SANtricity Web Services API • SANtricity Unified Manager for enterprise management • Smart NVMe SSD performance and endurance management • SANtricity SSD read cache
Data protection	• SANtricity Snapshot copy • SANtricity asynchronous mirroring
Security and compliance	• RBAC with audit log • LDAP/LDAPS for user authentication • Digital certificate management • Multifactor authentication (MFA) supported through SAML 2.0 • Internal key management supported with self-encrypting drive (SED) or FIPS drives • External key management (KMIP-compliant) supported with SED or FIPS drives • Transport Layer Security (TLS) 1.2 minimum for all management communication • SANtricity drive security data at rest encryption[1]

[1] Hardware and software for at-rest data encryption are not available in certain countries, including Russia, Belarus, Kazakhstan, and other Eurasian Customs Union countries.

Contact Us

About NetApp

NetApp is the intelligent data infrastructure company, combining unified data storage, integrated data services, and CloudOps solutions to turn a world of disruption into opportunity for every customer. NetApp creates silo-free infrastructure, harnessing observability and AI to enable the industry's best data management. As the only enterprise-grade storage service natively embedded in the world's biggest clouds, our data storage delivers seamless flexibility. In addition, our data services create a data advantage through superior cyber resilience, governance, and application agility. Our CloudOps solutions provide continuous optimization of performance and efficiency through observability and AI. No matter the data type, workload, or environment, with NetApp you can transform your data infrastructure to realize your business possibilities. www.netapp.com

NetApp

© 2025 NetApp, Inc. All Rights Reserved. NETAPP, the NETAPP logo, and the marks listed at http://www.netapp.com/TM are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners. DS-4082-0125