Datasheet

NetApp EF600
All-Flash NVMe Array

Derive faster, more actionable results from databases, high-performance computing, and analytics workloads

Key Benefits

Powerful Performance
- Industry-leading IOPS and GB/s; <100 microseconds latency
- Twice the performance of SAS-based all-flash arrays

Smart Value
- Industry-leading price/performance for enterprise workloads
- Investment protection (NVMe/IB, NVMe/RoCE, NVMe/FC, and FC) to meet future demands without forklift upgrades

Trusted Simplicity
- SQL Server setup in less than 6 minutes
- Proven reliability with over 1 million installations
- Fifth-generation all-flash system

The Challenge

Organizations today are looking for ways to improve the speed and responsiveness of the applications that control their key business operations. Because the performance of these applications is tightly linked to time to market, revenue, and customer satisfaction, it's crucial that they operate at the highest levels with maximum efficiency. Getting value and insights quickly and reliably from a range of mixed workload environments can differentiate your organization from the competition and accelerate time to market.

The Solution

The all-flash midrange NetApp® EF600, NetApp's first all-NVMe EF-Series platform, can accelerate access to your data so you can derive value from it faster. The EF600 doubles the performance of SAS all-flash arrays. You can accelerate write IOPS and read/write throughput with an end-to-end NVMe storage platform that's purpose-built for high-performance workloads.

Get the most powerful performance, smart value, and trusted simplicity in dense, 2U enterprise packaging to derive faster, more actionable results. Unlock the value in your data and rapidly develop insights that were previously unrealistic for performance-sensitive workloads such as Oracle databases, real-time analytics, and high-performance computing applications on top of a BeeGFS high-performance parallel file system.

The EF600 all-flash array combines extreme IOPS, response times of less than 100 microseconds, and up to 44GBps of bandwidth with leading, enterprise-proven availability features, including:

- NVMe/IB, NVMe/RoCE, and NVMe/FC support, offering low latency and superior investment protection
- Redundant components with automated failover
- Intuitive storage management with comprehensive tuning functions
- Full-function SANtricity® Web Services embedded REST API
- Advanced monitoring and diagnostics with proactive repair
- NetApp SANtricity Snapshot™ technology, volume copy, and Dynamic Disk Pools (DDPs)

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Combined, these capabilities offer leading price/performance, configuration flexibility, and simplicity in a compact package to help you make decisions faster, more actionable, and more secure.

Powerful Performance
Designed specifically for workloads that demand the highest levels of performance, the EF600 all-flash array delivers 2M sustained IOPS, response times under 100 microseconds, and 44GBps of throughput. Get twice the performance for your high-performance workloads, such as Oracle and BeeGFS, compared to SAS-based all-flash arrays.

The EF600 is the only end-to-end NVMe system to support 100Gb NVMe over InfiniBand, 100Gb NVMe over RoCE, 200Gb NVMe over InfiniBand, 200Gb NVMe over RoCE, 32Gb NVMe over FC, and 32Gb FC.

Smart Value
The EF600 all-flash array offers a leading price/performance ratio for enterprise workloads. With support for up to 367TB of capacity in a modular 2U building block, the ultradense EF600 enables you to easily address ever-changing business requirements. The EF600 offers investment protection so that you can meet future demands without forklift upgrades.

The EF600 boasts 99.9999% availability with automated failover and advanced monitoring, so you can be confident that your data will be there when you need it.

Trusted Simplicity
Modular design and simple management tools make it easy to scale the EF600 without adding management complexity. The SANtricity System Manager modern, on-box, browser-based GUI enables you to simplify deployment and get access to your data in as little as 6 minutes.

Optimized for flash, SANtricity software allows you to maximize performance through extensive configuration flexibility, custom performance tuning, and complete control over data placement. The SANtricity System Manager graphical performance tools provide key information about storage I/O from multiple viewpoints, allowing administrators to make informed decisions about configuration adjustments to further refine performance. For additional performance analysis, solutions for Splunk Enterprise and Grafana are available.

The EF600 offers proven, fifth-generation hardware reliability with over 1 million installations worldwide. Proactive drive-health-monitoring capabilities detect issues before drives fail. In the event of a failure, Dynamic Disk Pool technology means faster drive rebuilds than with RAID 5 or RAID 6. DDP also removes the complications of RAID group configurations, so storage administrators can focus on capacity allocation.

High Availability and Enterprise Reliability
The EF600 was engineered from the start to support applications that are the heart of a corporation's business. Built with reliability in mind, the EF600 array leverages extensive expertise based on more than 20 years of development experience and more than 1 million implemented systems to provide enterprise reliability in both the architecture and the software design. With fully redundant I/O paths, advanced data protection features, and extensive diagnostic capabilities, EF600 storage systems enable you to achieve greater than 99.9999% availability, with data integrity and security.

Designed to have no single point of failure, the EF600 has fully redundant I/O paths with automated failover and extensive diagnostic capabilities that alert on and actively help resolve failures. SANtricity data assurance (based on the T10 PI industry standard) ensures data integrity and protects against silent data corruption. Storage administrators can make configuration changes and conduct maintenance without disrupting application I/O.

One of the most critical aspects of an enterprise solution is the ability to detect and resolve issues. In this area, the EF600 offers significant depth of capabilities, including:

- Extensive capturing of diagnostic data provides comprehensive fault isolation and simplifies analysis of unanticipated events.
- Intelligent management of SSDs offers wear-life reporting and proactive warnings.
- Integrated Recovery Guru diagnoses problems and provides the applicable procedure to use for recovery.
- With NetApp DDP and RAID 6, a drive rebuild continues even when an unreadable sector or second failure is encountered.
- NetApp Active IQ® provides proactive dispatch and maintenance.

Advanced Data Protection
SANtricity DDP technology enables storage administrators to simplify RAID management, improve data protection, and maintain predictable performance under all conditions. DDP technology evenly distributes data, protection information, and spare capacity across the entire EF600 pool of 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 reconstruction, DDP significantly reduces exposure to multiple failures, offering a level of data protection that simply can't be achieved with traditional RAID.

With SANtricity software, 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 software online capabilities include:

- Dynamic capacity and volume expansion allow administrators to increase the capacity of an existing DDP, volume group, or volume.
- Dynamic segment size migration allows administrators to change the segment size of a given volume.
- Dynamic RAID-level migration changes the RAID 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 firmware updates (controller, drive) are nondisruptive, with no interruption to data access.

To protect against accidental data loss, the EF600 offers Snapshot copies to create and restore point-in-time dataset images in less than a second. The volume copy feature creates a complete physical copy (clone) of a volume for applications that require a full point-in-time copy of production data.

Secure Data, Secure Management
NetApp SANtricity drive encryption combines local key management with drive-level encryption for comprehensive security for data at rest with no impact to performance. Because all drives eventually leave the data center through redeployment, retirement, or service, it's reassuring to know that your sensitive data isn't leaving with them. Customers can choose to manage the drive authentication keys natively for a simple lowest-cost

solution or use a KMIP-compliant external key manager for centralized administration. Management access to the EF600 is protected with role-based access control and LDAP/Active Directory integration.

DevOps Ready
To enable the automation and agility that are needed in the DevOps-based IT revolution, the EF600 natively supports a full-function RESTful web services API. NetApp is a long-time contributor to the Ansible open-source IT orchestration project. Ansible modules and roles are available for policy-based orchestration and automated configuration management of the EF600.

Container Microservices
NetApp SANtricity container microservices is a Linux-based Docker Container service for preapproved OEM partners to embed applications on the EF600. It enables cost-effective converged infrastructure for targeted workloads. Examples include applications related to analytics and HPC workloads.

Validated Solution Reference Designs
With tested solution designs for Oracle databases, Microsoft SQL Server, HPC with BeeGFS, and real-time analytics, you can be confident that your critical business applications built on EF600 systems will continue to work flawlessly so that you can focus on growing your business instead of worrying about your data infrastructure.

ASHRAE Compliant

EF600 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. The EF600 is ASHRAE A4 compliant.

About NetApp Services

Gain greater business value from your investment

Whether you're planning your new storage system, need specialized know-how for a major storage deployment, or want to optimize the operational efficiency of your existing infrastructure, NetApp Services and NetApp certified partners can help. Learn more about NetApp Services.

About NetApp

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