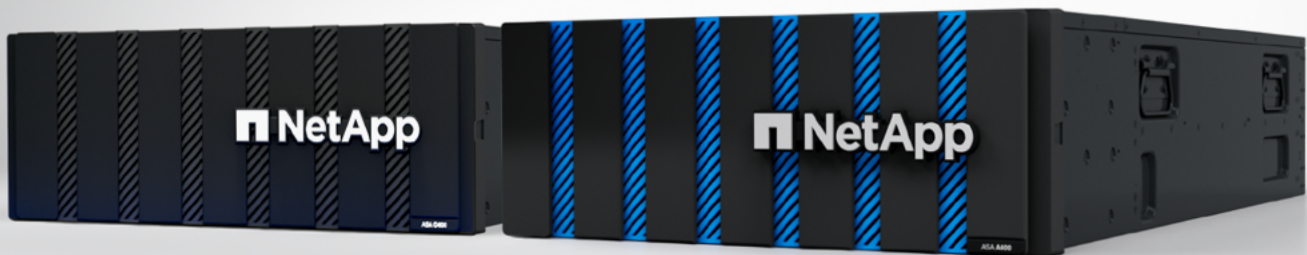


# NETAPP ASA



## SAN-optimized storage for critical enterprise applications

### The challenge

Enterprise customers typically have both SAN-based workloads (ERP, databases, VDI) and unstructured data NAS workloads in their environment. Some customers separate these workloads based on internal policies that require dedicated storage to isolate some or all of the SAN workloads. Those SAN workloads need high performance, continuous availability, and operational efficiency to address constrained budgets.

### The solution

NetApp® ASA systems have you covered. These all-flash arrays deliver a simplified and consistent SAN experience for mission-critical databases and other SAN workloads. Built on an end-to-end NVMe architecture, the NetApp ASA systems deliver industry-leading availability, superior performance, and simplified data management across your hybrid cloud.

### All-flash block storage powered by ONTAP

NetApp ASA systems deliver modern solutions to your SAN infrastructure. They enable you to accelerate your business-critical applications, make sure that your data is always available, and simplify your operations. The ASA systems include A-Series models designed for the most performance-demanding and mission-critical applications, and C-Series models optimized for cost-effective deployment of business-critical applications. Together, the ASA A-Series and C-Series systems:

- Deliver exceptional performance to improve customer experience and reduce time to results.
- Keep business-critical data available, protected, and secure.
- Provide more effective capacity for any workload, backed by the industry's most effective guarantee.

## Fuel your applications with the right performance

NetApp ASA arrays are primed to take on any SAN workloads. Multitasking is not a problem. These systems stay sharp even while encrypting, compressing, deduplicating, and protecting your data.

Build a trusted SAN environment with the powerful ASA systems that:

- Support both NVMe/FC and NVMe/TCP, providing latency as low as 100 microseconds with ASA A-Series systems and millions of IOPS in a cluster.
- Accelerate your VMware infrastructure, Oracle, SAP, and Microsoft SQL Server applications to improve customer experience and reduce time to results.
- Meet the performance objectives for all your applications even while encrypting, replicating, and storing the data efficiently.

## Keep important data available, protected, and secure

As organizations become more data driven, the business impact of data loss can be increasingly dramatic—and costly. IT must protect data from both internal and external threats, ensure data availability, eliminate maintenance disruptions, and quickly recover from failures.

### Access your data with continuous availability

ASA systems provide continuous access to your data during unplanned outages with symmetric, active-active multipathing. With both active controllers capable of communicating to a LUN, the multipathing gives you uninterrupted access to your data, with rapid failover recovery.

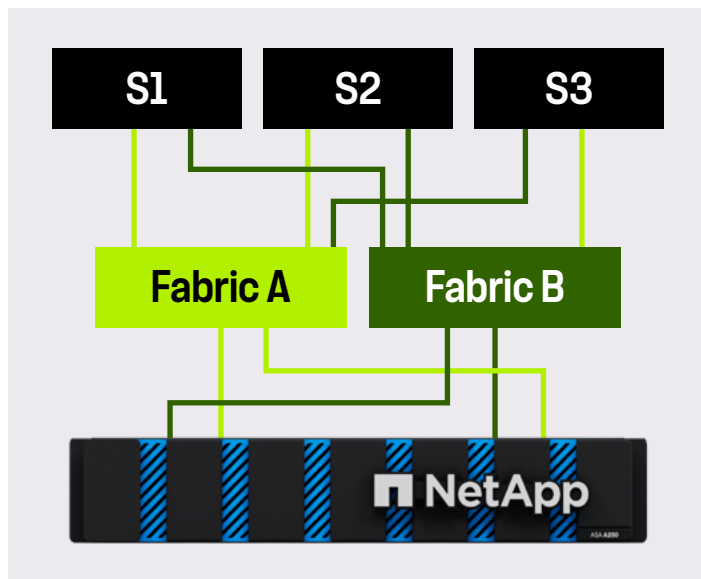


Figure 1) Symmetric active-active topology.

## KEY BENEFITS

Worry-free customer experience:

- Superior performance for your VMware workloads and database applications in the dedicated SAN environment.
- Continuous data access to support your mission-critical and business-critical workloads.
- Lower TCO and improved sustainability with significant savings on storage footprint, energy consumption, and carbon footprint.
- Effortless cloud connectivity with leading integration to Amazon Web Services, Microsoft Azure, Google Cloud, and others.
- Ability to scale performance and capacity in a cluster nondisruptively as your data grows.

NetApp business continuity solutions help you maintain constant data availability with zero data loss and zero downtime if a man-made or natural disaster occurs. NetApp MetroCluster™ software replicates your data synchronously to a separate location to protect your entire system. If something goes wrong at one site, your applications automatically switch over to the other site instantaneously. For a more tailored approach, choose NetApp SnapMirror® active sync to replicate the most critical data in a more cost-efficient way while taking advantage of the increased performance, greater flexibility, and enhanced load-balancing capability that come with the symmetric active-active architecture.

### Integrated data protection

ASA systems come with a full suite of acclaimed NetApp integrated and application-consistent data protection software. Key capabilities include:

- Native space efficiency with cloning and NetApp Snapshot™ copies that reduce storage costs and minimize performance impact. Up to 1,023 copies are supported.
- NetApp SnapCenter® software provides application-consistent data protection and clone management to simplify application management.
- NetApp SnapMirror technology replicates to any NetApp FAS or AFF system, both on premises and in the cloud, reducing overall system costs.

## Security everywhere

Encryption and key management help guard your sensitive data on premises, in the cloud, and in transit. The market-leading anti-ransomware protection for post-attack recovery safeguards your critical data from ransomware attacks and can prevent catastrophic financial consequences. With NetApp's proven and efficient security solutions, you can:

- Protect against threats with multifactor authentication, role-based access control, and multi-admin verification.
- Achieve FIPS 140-2 compliance (Level 1 and Level 2) with self-encrypting drives and use any type of drives with software-based encryption.
- Meet governance, risk, and compliance requirements with security features such as disk sanitization, logging and auditing monitors, and secure multitenancy.

## Simplify operations and reduce TCO

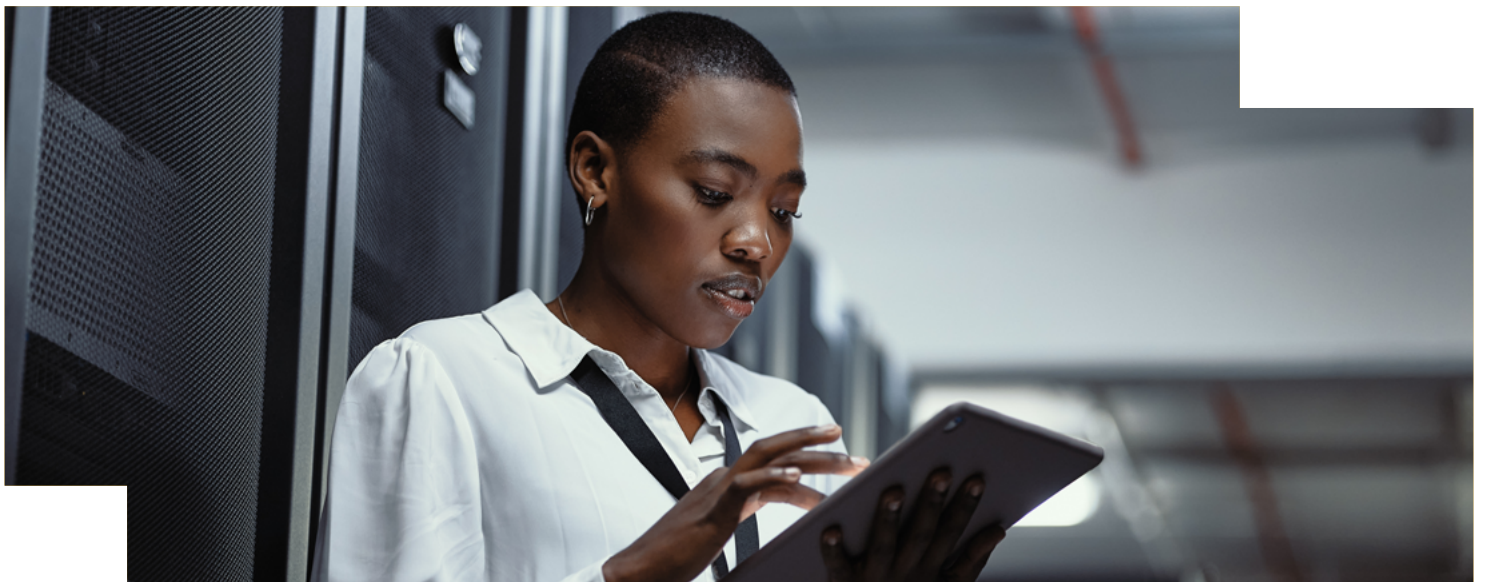
Managing your infrastructure shouldn't be complex. As seasoned veterans in this industry, we know a thing or two about what works and what doesn't. NetApp ASA block storage provides a simple SAN experience for your IT staff. The new System Manager interface creates an intuitive user experience, and the feature-rich, SAN-specific NetApp ONTAP® data management capabilities are built in, enabling your IT staff to:

- Quickly provision storage and simplify ongoing management of dedicated SAN workloads—VMware, Oracle, SAP, Microsoft SQL Server.
- Streamline data management with System Manager, which is optimized for SAN-only configurations.
- Automatically tier data across your hybrid cloud with leading cloud connectivity.
- Reduce storage footprint, power consumption, and carbon footprint significantly with high-density, highly efficient all-flash storage.

## Future-proof your infrastructure

When you purchase NetApp ASA storage, you can future-proof your investment with NetApp Advance, our best-in-class storage ownership program. Make the smart choice today and stay current with technological innovations:

- Eliminate the headache of tech refreshes with the Storage Lifecycle Program: Get a new controller every 3 years with support-managed updates included, or move to the cloud, whichever best meets your needs.
- Achieve high performance while minimizing storage cost with the Storage Efficiency Guarantee: If we don't meet your workload goals, we'll make it right at no cost to you (4:1 for SAN workloads<sup>1</sup>).
- Enjoy a Six Nines (99.9999%) Data Availability Guarantee: If you have unplanned downtime in excess of 31.56 seconds per year, we provide remediation.
- Recover data with the Ransomware Recovery Guarantee if a ransomware attack occurs. If we can't help you restore your Snapshot data, we will compensate you.





**Table 1) ASA A-Series technical specifications.**

	ASA A900	ASA A800	ASA A400	ASA A250	ASA A150
<b>Maximum scale-out</b>	12 nodes	12 nodes	12 nodes	12 nodes	12 nodes
<b>Maximum SSDs</b>	2,880	1,440	2,880	288	432
<b>Maximum effective capacity<sup>1</sup></b>	351PB	158PB	351PB	26PB	13PB
<b>Per-system specifications (active-active) dual controller</b>					
<b>Controller chassis form factor</b>	8U	4U; 48 internal SSD slots	4U	2U; 24 internal SSD slots	2U; 24 internal SSD slots
<b>PCIe expansion slots</b>	20	8	10	4	n/a
<b>FC target ports (32Gb autoranging)</b>	64	32	24	Up to 16	n/a
<b>FC target ports (16Gb autoranging)</b>	64	32	32 (with FC mezzanine card)	n/a	n/a
<b>UTA2 (16Gb FC/10GbE)</b>	64	n/a	n/a	n/a	8 (UTA2 models only)
<b>100GbE ports (40GbE autoranging)</b>	32	20	16	8 <sup>2)</sup>	n/a
<b>40GbE ports (can be 4 × 10GbE)</b>	n/a	n/a	n/a	n/a	n/a
<b>25GbE ports (10GbE autoranging)</b>	64	16	16	Up to 16	n/a
<b>10GbE ports</b>	64	32	32	n/a	4
<b>10GBASE-T (1GbE autoranging)</b>	64	n/a	16	4	8 (10GBASE-T models only)
<b>12Gb/6Gb SAS ports</b>	64	n/a	32	4	4
<b>Storage networking supported</b>	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, FC, iSCSI
<b>Software version</b>	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later
<b>Shelves and media</b>	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF)	DS224C (2U, 24 drives, 2.5" SFF), DS2246 (2U, 24 drives, 2.5", SFF)
<b>Power consumption (median)</b>	2450W (with NS224)	1463W	890W (with DS224C), 1240W (with NS224)	491W	300W <sup>3)</sup>
<b>Host/client OS supported</b>	Windows Server, Linux, Oracle Solaris, AIX, HP-UX, VMware				

<sup>1</sup>Effective capacity based on 5:1 storage efficiency ratios with the maximum number of SSDs installed; space savings vary depending on workload and use cases.

<sup>2</sup>The ASA A250 supports 8 100GbE ports for ONTAP 9.13.1 or later, and 4 ports for earlier ONTAP releases.

<sup>3</sup>Estimate under typical conditions.



Table 2) ASA C-Series technical specifications.

	ASA C800	ASA C400	ASA C250
<b>Maximum scale-out</b>	12 nodes (6 HA pairs)	12 nodes (6 HA pairs)	12 nodes (6 HA pairs)
<b>Maximum SSDs</b>	1440	576	288
<b>Maximum effective capacity<sup>1</sup></b>	176.8PB	70.7PB	35.4PB
<b>Per-system specifications (high-availability dual controller)</b>			
<b>Controller form factor</b>	4U with 48 SSD slots	4U	2U with 24 SSD slots
<b>PCIe expansion slots</b>	8	10	4
<b>FC target ports (32Gb autoranging to 16Gb/8Gb)</b>	32	40	16
<b>FC target ports (16Gb autoranging to 8Gb/4Gb)</b>	n/a	8 FC bundle option	n/a
<b>100GbE ports (40GbE autoranging)</b>	20	20	8
<b>40GbE ports (can be 4x 10GbE)</b>	n/a	n/a	n/a
<b>25GbE ports (10GbE autoranging)</b>	16	32 Ethernet bundle option 16 FC bundle option	16
<b>10GbE ports</b>	32	32	n/a
<b>10GBASE-T (1GbE autoranging)</b>	n/a	16	4
<b>Storage networking supported</b>	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI
<b>Software version</b>	ONTAP 9.13.1 P1 or later	ONTAP 9.13.1 P1 or later	ONTAP 9.13.1 P1 or later
<b>Shelves and media</b>	NS224 (2U, 24 drives, NVMe QLC SSDs)	NS224 (2U, 24 drives, NVMe QLC SSDs)	NS224 (2U, 24 drives, NVMe QLC SSDs)
<b>Power consumption (median)</b>	1463W	1240W (with NS224)	491W
<b>Host/client OS supported</b>	Windows Server, Linux, Oracle Solaris, AIX, HP-UX, macOS, VMware, ESX		

<sup>1</sup>Effective capacity based on 5:1 storage efficiency ratios with the maximum number of SSDs installed; space savings will vary according to workload and use cases.

**Table 3) ASA software.**

<b>Data access protocols</b>	<ul style="list-style-type: none"> <li>• FC, iSCSI, NVMe/FC, NVMe/TCP</li> </ul>
<b>High availability</b>	<ul style="list-style-type: none"> <li>• Active-active controller architecture</li> <li>• Symmetric active-active FCP and iSCSI multipathing</li> <li>• Nondisruptive maintenance, upgrade, and scale-out clustering</li> <li>• Multisite resilience for continuous data access</li> </ul>
<b>Storage efficiency</b>	<ul style="list-style-type: none"> <li>• Inline data compression, deduplication, and compaction</li> <li>• Space-efficient LUN and volume cloning</li> <li>• Automatic data tiering</li> </ul>
<b>Data management</b>	<ul style="list-style-type: none"> <li>• Intuitive on-board GUI, REST APIs, and automation integration</li> <li>• AI-informed predictive analytics and corrective action</li> <li>• Quality of service (QoS) workload control</li> <li>• Easy provisioning and data management from market-leading host operating systems, hypervisors, and application software</li> </ul>
<b>Data protection</b>	<ul style="list-style-type: none"> <li>• Application-consistent NetApp Snapshot copies for backup and restore</li> <li>• Integrated remote backup and disaster recovery</li> <li>• Synchronous zero-data-loss replication</li> <li>• Tamperproof Snapshot copies</li> <li>• Symmetric active-active multisite replication for business continuity</li> </ul>
<b>Security and compliance</b>	<ul style="list-style-type: none"> <li>• Multifactor admin access</li> <li>• In-flight and data-at-rest encryption</li> <li>• Regulatory-compliant data retention</li> <li>• Multi-admin verification before executing sensitive commands</li> </ul>
<b>Cloud integration</b>	<ul style="list-style-type: none"> <li>• Seamlessly tier, back up, and replicate data to private and public clouds</li> </ul>

**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.



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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](http://www.netapp.com)

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