SOLUTION BRIEF

SIMPLIFY SAN DISASTER RECOVERY WITH NETAPP ASA SYSTEMS AND SNAPMIRROR ACTIVE SYNC

Continuous data availability with zero data loss and zero downtime for your mission-critical SAN workloads

Are your mission-critical SAN data services prepared for potential disasters?

For applications and SAN data services whose downtime can significantly disrupt your business, it's vital to conduct thorough evaluations of your solutions and infrastructure. These assessments should address crucial questions such as the types of maintenance and disaster scenarios your business must prepare for, the acceptable amount of data loss if a disaster occurs, and the required speed of recovery.

The recovery point objective (RPO) defines how much data, in terms of time, can be lost or the point to which you can recover your data. Meanwhile, the recovery time objective (RTO) indicates the maximum allowable downtime or how swiftly data services must be restored.

With a traditional backup and restore disaster recovery strategy, an hourly backup schedule implies that a company could potentially lose an hour's worth of data; any changes made since the last backup might be lost in a disaster.

Restoring data from backups can take several hours or even days, especially if an infrastructure disaster occurs and bringing a replacement infrastructure online takes time.

Ensuring zero RPO is essential to prevent any data loss, and it's equally important to achieve a very low RTO to promptly restore data services and sustain business continuity. Do you have a disaster recovery plan in place, and are your mission-critical SAN data services safeguarded against potential disasters?

Recover swiftly with ONTAP Snapshot copies and maintain business continuity with ONTAP SnapMirror active sync

The new NetApp® ASA scale-out storage systems are simple, powerful, and optimized for block deployments, and they support advanced data management and protection features. The ASA systems are all-flash SAN arrays that support IP-based and FC-based SAN protocols with symmetric active-active multipathing.

Table 1 highlights some of the key technical specifications of the new NetApp ASA A-Series systems. (For specification details of each ASA model and its supported limits, refer to the NetApp ASA datasheet and NetApp Hardware Universe.)

Using the NetApp Snapshot™ technology in NetApp ONTAP® software, your mission-critical SAN data services deployed on ASA systems can rapidly restore data from Snapshot based backups.

To further protect against potential infrastructure disasters such as fires, hurricanes, or tornadoes, safeguard your data with multisite NetApp ASA clusters. You can achieve synchronous data replication by configuring the NetApp SnapMirror® active sync feature to replicate SAN data included in application-specific consistency groups. This delivers zero RPO and RTO, maintaining seamless business continuity.

Understanding the SnapMirror active sync synchronous data replication solution

SnapMirror active sync (SM-as), previously known as SnapMirror Business Continuity (SM-BC), keeps business services operational during a complete site failure. The following overview describes how SM-as achieves business continuity. (For further details, refer to the ONTAP SnapMirror active sync documentation.)

KEY BENEFITS

- NetApp ASA highly available storage systems provide symmetric active-active SAN multipathing support for mission-critical SAN workloads.
- SnapMirror active sync (SM-as), which is an ONTAP data protection feature, performs bidirectional replication of application-specific workload data in consistency groups across multisite ASA storage clusters.
- ONTAP Mediator, ideally deployed at a third failure domain, checks controller health, provides HA metadata storage, and aids in quorum determination for SM-as failover operation.
- The SM-as solution delivers zero RPO and zero RTO for continuous data availability.
- The solution provides seamless failover support for mission-critical workloads such as Microsoft SQL Server and Oracle RAC databases and VMware vSphere Metro Storage Cluster (vMSC).

Select specifications	ASA A1K	ASA A90	ASA A70	ASA A50	ASA A30	ASA A20
Form factor	2 × 2U	4U	4U	2U	2U	2U
Max cluster size	12 nodes	12 nodes	12 nodes	12 nodes	8 nodes	6 nodes
Max raw capacity per HA pair	2.67PB	2.67PB	2.67PB	1.8PB	1.1PB	734TB
Max raw capacity per cluster	16PB	16PB	16PB	11PB	4.4PB	2.2PB
PCIe expansion slots per HA pair	18	18	18	8	8	8
Max FC speed	64Gbps	64Gbps	64Gbps	64Gbps	64Gbps	64Gbps
Max Ethernet speed	200Gbps	200Gbps	200Gbps	100Gbps	100Gbps	100Gbps

Table 1) Select specifications for NetApp ASA A-Series storage systems.

Cluster peering
To withstand a site failure, two NetApp ASA ONTAP clusters are deployed at a safe distance to minimize the risk of simultaneous site failures due to power loss or natural disasters. These clusters are peered and configured with SnapMirror active sync for data replication and disaster recovery.

Consistency group
A consistency group comprises LUNs that provide a consistency guarantee for applications requiring protection for business continuity. For instance, a consistency group for an Oracle RAC database might include LUNs for databases, redo logs, and cluster registry and voting disks. This approach enables a simultaneous quiescence and snapshot of the entire dataset, providing a consistent restore point across all LUNs in the consistency group.

ONTAP mediator
Along with the ASA ONTAP clusters, the ONTAP Mediator completes the quorum for the SM-as solution. Typically deployed in a third failure domain, the ONTAP Mediator receives health information from the peered clusters and nodes, orchestrating between them to determine their status. This health data helps clusters distinguish between various types of failures and decide whether to perform an automated failover.

Symmetric active-active multipathing support
As illustrated in Figure 1, enterprise applications can be deployed on a storage client using iSCSI-based storage LUNs hosted by two ASA ONTAP clusters configured for synchronous data replication between sites. A consistency group, shown in the diagram, includes three LUNs where data is synchronously replicated to the peered cluster.

The LUNs in an SM-as solution are accessible at both cluster sites, allowing the client operating system to view all paths from both storage clusters as active-optimized by default. This approach enables reading and writing of LUNs from both sites, supporting clustered applications. If a site disaster occurs, ONTAP directs the surviving site to continue all I/O operations for mission-critical applications such as Microsoft SQL Server and Oracle RAC databases, and VMware vSphere Metro Storage Cluster (vMSC).

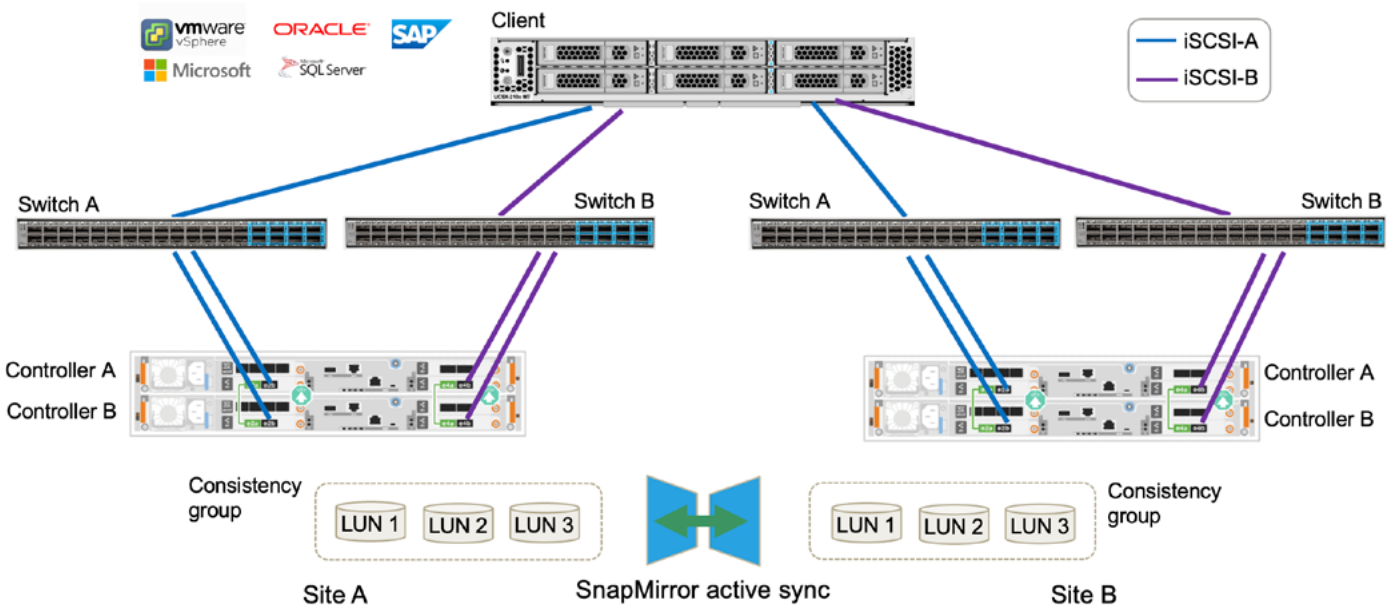

Figure 1. SnapMirror active sync supports symmetric active-active SAN multipathing.

Simplify disaster recovery with NetApp ASA systems and SnapMirror active sync

To be fully prepared for disaster scenarios, you need more than a highly resilient storage solution. It's essential to have the corresponding compute and networking infrastructures and application clustering to keep your mission-critical data services resilient.

For a VMware virtual infrastructure, you can achieve this through the combination of VMware High Availability (HA) and vMSC implemented on NetApp ASA ONTAP clusters in an SM-as relationship, as illustrated in Figure 2. This active-active data center design allows your application to be served from both sites.

If a site disaster occurs, the SM-as solution enables data services to continue from the surviving site. Additionally,

VMware HA will restart VMs at the surviving site, allowing applications to resume operations. During normal operations, VM-host affinity rules can be configured so that VMs run from hosts at a preferred site.

When using Oracle RAC or Microsoft SQL Server deployed on bare-metal clients, the application cluster continues to provide services from the hosts at the surviving site based on the data availability from the surviving ONTAP cluster.

This solution architecture significantly simplifies disaster recovery, enabling your mission-critical data services to achieve zero RPO and zero RTO, even if a site disaster occurs.

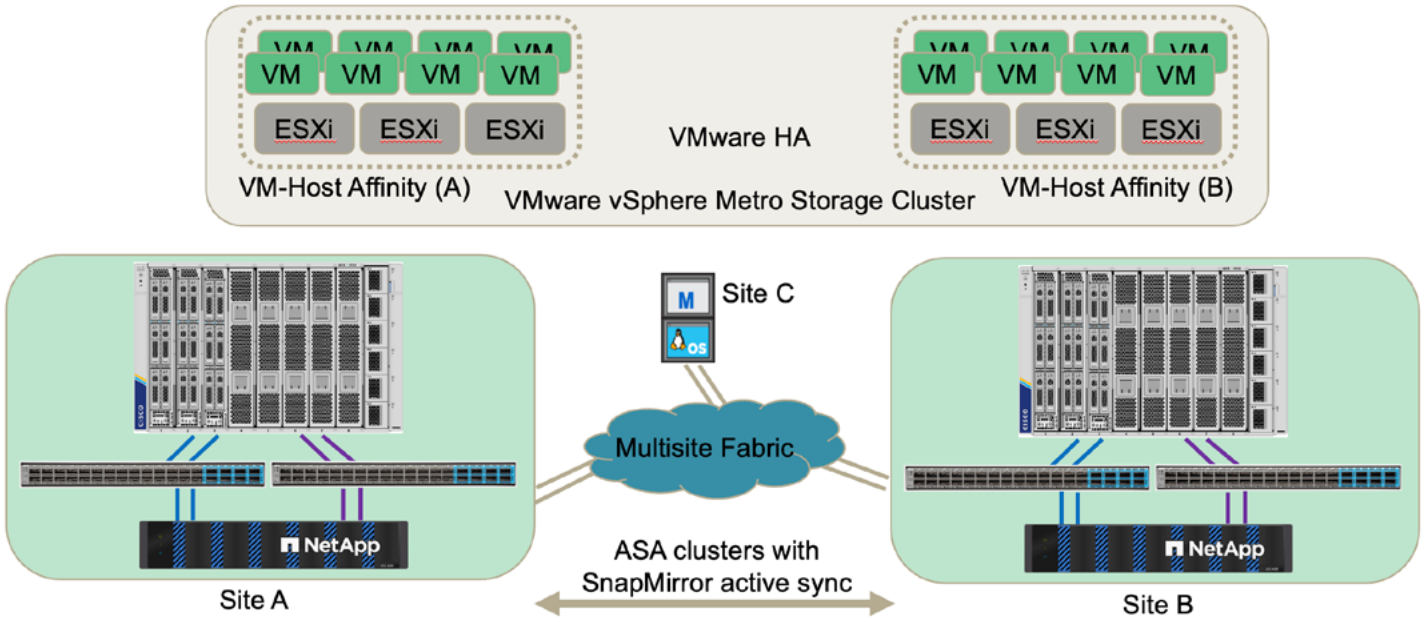

Figure 2. Multisite active-active data centers for VMware cluster with NetApp ASA and SnapMirror active sync.

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