Datasheet

NetApp Memory Accelerated Data

Accelerate your applications with enterprise data services and persistent memory

Key Features

Turbocharge Your Applications

- Give existing applications nearly instant access to data for reads and writes.
- Improve application performance with high throughput and less than 10 microseconds of latency.

Enable Enterprise Data Services for Your Applications in Persistent Memory

- Accelerate data recovery with enterprise data management features, such as mirroring, NetApp® Snapshot™ copies, and protection for persistent memory (PMEM) in a server.
- Tier data to your NetApp ONTAP® based AFF all-flash systems.
- Extend ONTAP data management capabilities into the server while providing near-memory-speed performance.

Optimize Efficiency

- Immediately take advantage of PMEM without the need for application rewrites.
- Lower your TCO by simplifying infrastructure requirements for PMEM and storage.
- Improve performance for Oracle and reduce license costs.

Move Your Business into the Future

Data is the lifeblood of future-thinking companies. These data-driven companies are harnessing unprecedented volumes of data to create new value across the organization. Companies that can adapt to take advantage of this new avalanche of data will digitally transform their business and outpace their competition.

However, taking advantage of today's big data is often easier said than done. The rapid growth in data is placing new stress on the entire IT infrastructure, particularly in the following use cases:

- Artificial intelligence, machine learning, and deep learning
- Real-time analytics
- Internet of Things (IoT)
- Video, social, mobile, and blockchain uses

These use cases depend on memory-hungry applications that are fueled by massive datasets. Data must be analyzed and shared in real time, creating a need for a new class of memory-based data services.

PMEM in the server provides low-latency, solid-state memory next to the processor, enabling performance gains that will force developers, users, and administrators to rethink how and where they store data. Until now, it has been impossible for developers to take advantage of this promising new memory tier without rearchitecting their critical applications.

Enable New Business Opportunities with Superior Performance and Ultralow Latency

NetApp makes the impossible possible with NetApp Memory Accelerated Data (MAX Data). MAX Data software runs on the application server and uses both the PMEM and the storage tier. Your application gets nearly instant access to the data for both reads and writes. MAX Data is not caching software. Caching is optimized for read-only workloads and has much higher management overhead due to cache coherency. With MAX Data, you get vastly improved application performance with high throughput and less than 10 microseconds of latency.

■ NetApp®

MAX Data on Host Server with AFF and ONTAP

- Memory-optimized file system
  - Accelerate any workload with both read and write
- Primary tier — memory
  - DRAM, NVDIMM, 3DXP
- Secondary tier — flash
  - Local flash SSD or LUN
- Ultrafast application data recovery using mirroring (memory-to-memory replication)

Application (e.g., Oracle)

POSIX API | Memory API

Snapshot copy | Mirror

NetApp Memory Accelerated File System (MAX FS)—autotiering

CPU and DRAM | NVDIMM or 3DXP

Red Hat 7.5
CentOS 7.5

MAX Recovery
Linux OS
x86
NVDIMM or 3DXP

Writes mirrored to MAX Recovery server

NetApp Memory Accelerated Snap (MAX Snap)

LUN

HA

SnapMirror® mirroring to disaster recovery site

Secondary high-throughput tier

amazon web services
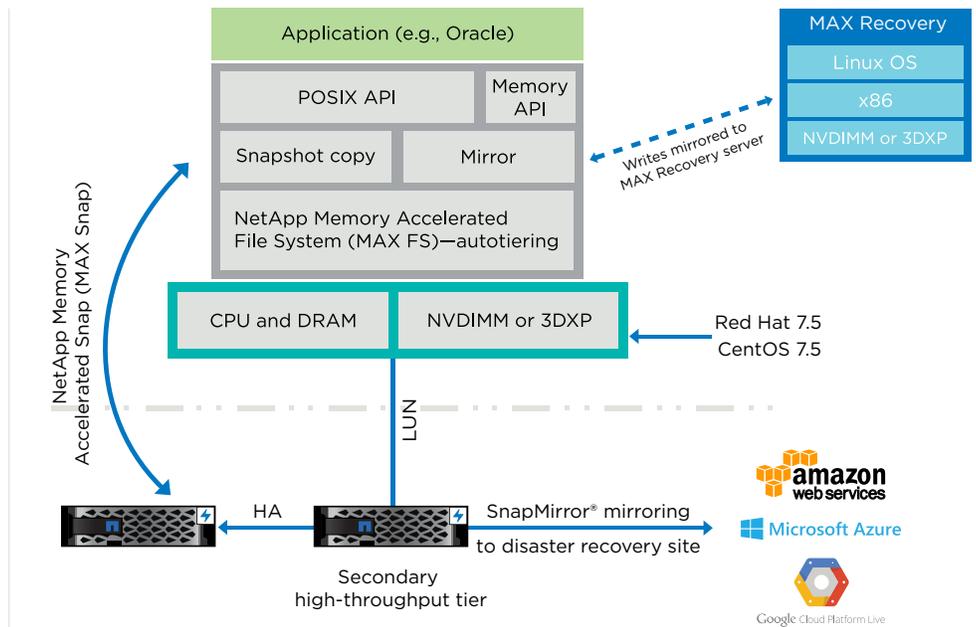Microsoft Azure
Google Cloud Platform Live

Figure 1) MAX Data is memory-centric, server-side storage software that accelerates application performance.

What is the best part? Taking advantage of this capability does not require any application rewrites. You can take advantage of PMEM today for Oracle, MongoDB, and many other real-time applications.

MAXimum Performance—Faster Than Flash

With MAX Data, you can realize the promise of real-time data analytics to deliver orders-of-magnitude faster transactions for business applications, such as Oracle, and for NoSQL databases, such as MongoDB. MAX Data gives you the tools to unlock the value of enormous datasets with in-memory and machine-learning applications at near-memory speed.

Faster-than-flash performance can be a game changer for financial services companies, where faster trading results in higher revenue. Credit card companies can accelerate fraud detection to reduce loss due to theft. And for e-commerce companies, faster analytics can drive better personalization; more clicks mean more sales.

MAXimum Data Services

In the past, nonvolatile memory could support only reads, limiting real-time applications to volatile memory. Today, PMEM supports both reads and writes. But to take full advantage of PMEM for real-time workloads, you need a way to back up and protect that data by using enterprise data services.

Being able to use PMEM is one thing; making it resilient to server failure is much more complicated. MAX Data enables data resilience with minimal impact on performance and provides last-write safety. The NetApp Memory Accelerated Recovery (MAX Recovery) feature enables you to mirror and protect PMEM in a server and to use Snapshot copies for fast data recovery.

As data ages, you can tier it to an ONTAP based AFF system and leverage all the data management capabilities in ONTAP, including high availability, cloning, Snapshot copies, backup, and disaster recovery.

MAXimum Efficiency

With the performance gains from MAX Data, you will need fewer servers to achieve high performance and lower latency for more application workloads, simplifying your infrastructure requirements and lowering your TCO. For example, with MAX Data, you can dramatically improve performance of your Oracle applications, reduce license costs, and accelerate recovery during a node failure.

MAX Data also enables in-memory databases—such as MongoDB, Cassandra, Couchbase, and Redis—and emerging machine-learning applications to run huge datasets at near-memory speed. You can speed time to value while simplifying infrastructure and reducing costs. With MAX Data, artificial intelligence applications can benefit from the ability to analyze larger working datasets (several times more than memory size) with ultralow latency for real-time decisions. And by converging memory and storage into one layer, MAX Data can improve efficiency and further reduce costs.

Get Ready for the Future with MAX Data

Your ability to support new applications and to take advantage of exploding data growth is the key to enabling digital transformation. There's no question that when it comes to enabling high performance and low latency for big data, PMEM is a silver bullet. With MAX Data, you can take advantage of PMEM today without rearchitecting your applications. Why wait? Take advantage of tomorrow's technology today.

Don't Look Back

The NetApp Data Fabric is built for the future, supporting both traditional and emerging applications, such as NoSQL databases and artificial intelligence. It offers the industry's only unified data management platform that supports SAN and NAS, all-flash storage, software-defined storage, hybrid cloud, and cloud. You can scale up and out dynamically in seconds or in minutes, instead of taking hours or days. And you can allocate applications to where they run best, whether it's on the premises or in the cloud.

About NetApp

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit **www.netapp.com**. #DataDriven