Texas Memory Systems an IBM's Company

Flash optimized storage infrastructure

What Are We Announcing?

IBM and Texas Memory Systems (TMS) have entered into a definitive agreement for IBM to acquire TMS, a Texas based company that focuses on flash optimized systems

Who is Texas Memory Systems?
- TMS is a privately-held company that designs and sells high-performance solid state storage systems.
- Over its 34-year history, TMS has developed a variety of in-server and shared storage systems that turbocharge IT infrastructures of organizations around the world.
- Today, the majority of TMS revenue comes from flash storage products, including the award-winning RamSan product line.

What does Texas Memory Systems do?
- TMS has a comprehensive portfolio of proven flash products built on generations of development.
- They deliver industry-superior performance and density.
- They serve over 300 customers today in multiple industries including DoD, financial services, e-commerce, HPC, and telecom.
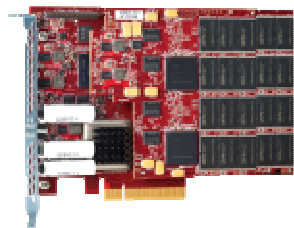
Benefits of Texas Memory Systems to IBM
- Provides IBM clients with flash optimized storage infrastructure solutions
- Will enhance the performance, efficiency, reliability and design of a wide spectrum of IBM solutions
- Demonstrates IBM flash leadership and provides the foundation for future organic IBM flash solutions
- Will deliver enhanced value to our clients and help their businesses thrive in the next era of IT

Key Verticals & Applications

FINANCIAL	GOVERNMENT	E-COMMERCE	HPC	TELECOM
• Trading Systems	• Oracle Databases	• Web Databases	• Scientific Computing	• OLTP Databases
• Messaging Systems	• Metadata	• Shared Content	• Seismic Processing	• Batch Processing
• Periodic Reporting	• Data Acquisition	• Online Gaming	• Rendering	• Data Warehousing
• Batch Processing	• Data Warehousing	• Online Communities	• Video on Demand	• CRM
• Data Acquisition	• Airborne Data Centers		• Data Acquisition	

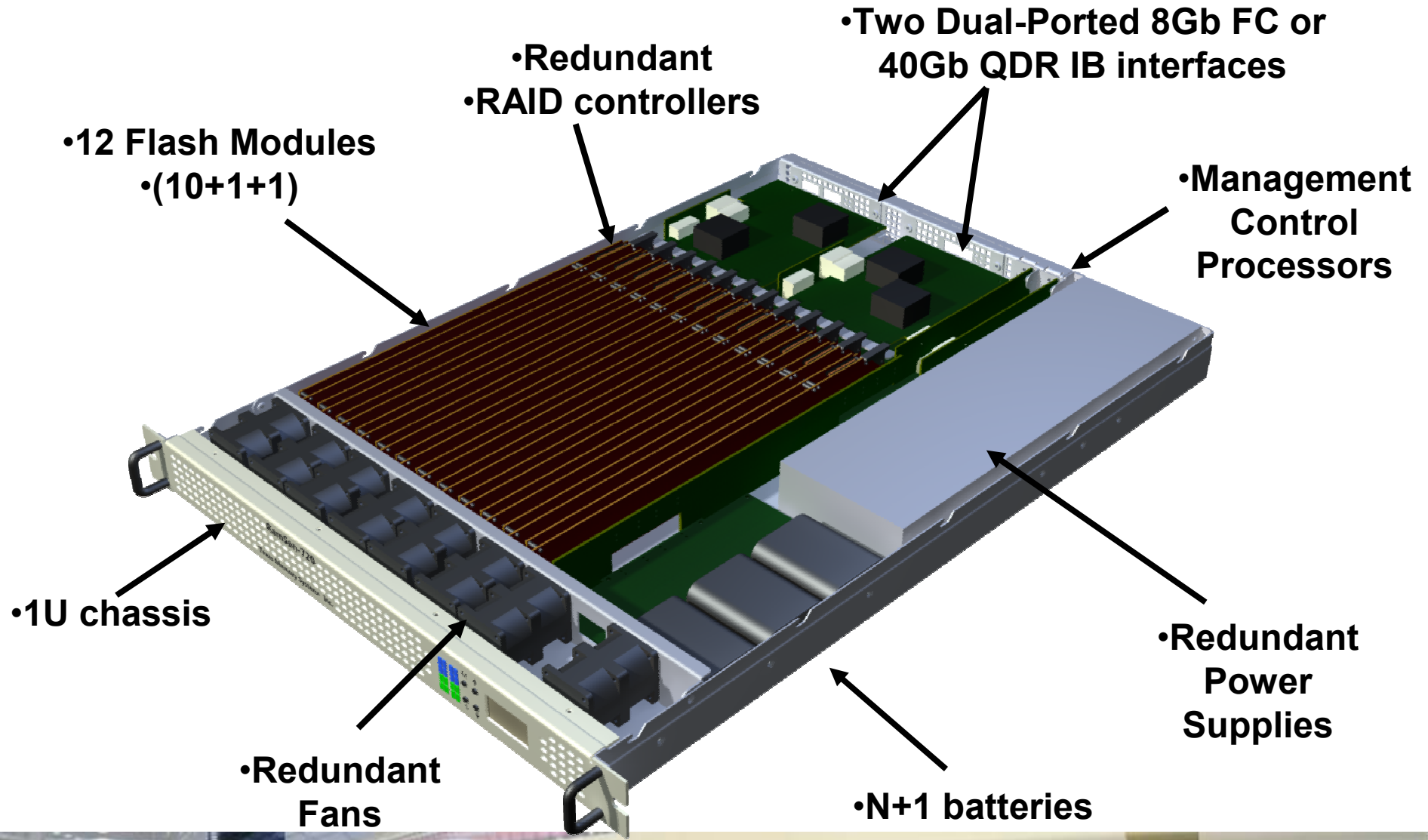**Database Acceleration** (Oracle, DB2, SQL Server, etc)

RamSan-720/820 at a Glance

- 720 is SLC based Enclosure

- 820 is eMLC based Enclosure

- 1 EIA Unit tall and 25" deep, fits in standard 19" rack.
  - 30 degrees C Max 820

- Performance - RAID 5
  - 450K Read IOPs
  - 300K Write IOPs
  - 190K SPC1
  - 3GB/sec Read sequential (8Gb FC)
  - 4GB/sec Read sequential (IB)
  - 1.5GB/sec Write Sequential RAID 5
  - 2GB/sec Write RAID 0

- Interfaces
  - Four 4/8 FC
    - FCAL and switched
  - Four QDR IB with SRP only

- 32 nm Toshiba Flash
  - 10, 20 TB options RAID 5
  - 24 TB RAID 0

- System Management
  - Easy to use, install and setup
  - Simple CLI and Web based GUI
  - Supports SNMP, SNMP traps, e-mail notification, user-management/LDAP

- RAS
  - Concurrent maintenance of Flash modules
  - Scheduled maintenance for code loads
  - RAID 5 (only) with hot spares (Fixed configs) and no JBOF
  - Full End to End checking inside enclosure

- Other
  - Full SCSI 3 Reservations
  - LUN Masking

- Interoperability
  - Power N and N-1, Z Linux, X portfolio,
  - IBM-i only through VIOS.
  - All versions of Linux on Power and AIX
  - Subset of switches which covers 90% of market.
  - Supports HP, Dell, Oracle

IBM

•Redundant
•RAID controllers

•Two Dual-Ported 8Gb FC or
40Gb QDR IB interfaces

•Management
Control
Processors

•12 Flash Modules
•(10+1+1)

•1U chassis

•Redundant
Power
Supplies

•Redundant
Fans

•N+1 batteries

Texas Memory Systems Product Portfolio

Texas Memory Systems (TMS) products help clients accelerate application and hardware performance. TMS sells the highest performance and density in the industry, with exceptional enterprise class reliability.

The current TMS portfolio includes:

SAN Flash Storage

PCIe Storage

TMS PCIe products are flash-based adapters that connect directly into PCIe slots in the server. These adapters offer the advantage of bringing solid state storage as close as possible to the CPU, minimizing the latency added by disk and RAID controllers.

Flash technology is rapidly becoming a pervasive element in enterprise data center storage. TMS was one of the first to offer flash-based storage solutions that were reliable and fast enough for enterprise deployment.

RAM Storage & Digital Signal Processing (DSP)

TMS RAM Storage products offer low latency and high performance. TMS's RamSan® products has helped hundreds of customers around the world accelerate databases, SANs, and other high performance applications.

RamSan-70	RamSan-710/810	RamSan-720/820	RamSan-440
SLC Flash	SLC/eMLC Flash	SLC/eMLC Flash	Persistent DRAM
900 GB	5/10 TB	12/24 TB	128-512GB
90us/20us R/W Latency	100us/30us R/W Latency	100us/30us R/W Latency	13us FC Latency
650K IOPS	400K/320K IOPS	500K/450K IOPS	600K IOPS
2.7 GB/s	5/4 GB/s	5/4 GB/s	3.2 GBps Bandwidth
Full-height, half-length PCIe x8 2.0	1U rackmount, 4x QDR IB or 4x 8GB FC ports		4U rack mount, 8x 4Gb FC ports

Key References

See all of these and more in the Success Stories section of http://RamSan.com.