Arrow Competitive Insights

IBM® DS8000™

ARROW

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Arrow Competitive Insights

This guide is designed to give Arrow sellers an overview of the competitive landscape for the DS8870 high end disk market. It contains a brief comparison of the major competitive products and how they relate to the IBM DS8870. This guide can also serves as a reference to some key IBM competitive resources.

IBM has a number of high end products (DS800 series, XIV Gen 3, SONAS, Storwize V7000) considered mission critical and enterprise class. A clear view of the customer's requirements and growth plans will enable the proper product selection and positioning.

IDEAS International Competitive Briefs

IDEAS International has produced and **regularly updates** competitive briefs to track select IBM storage products against some of the major competitors. This analysis is very valuable in quickly assessing the competitive situation and provides brief but in-depth comparisons including the following topics:

- Top selling points
- Product comparisons
- Benchmark analysis
- Price comparisons
- Product strengths
- Product limitations
- Overcoming objections – Claims/Responses

Hitachi

- [HDS vs. IBM Enterprise SAN Arrays](#)
- [HDS vs. IBM Storage Platform Software](#)

HP

- [HP vs. IBM Enterprise SAN Arrays](#)
- [HP vs. IBM Storage Platform Software](#)

EMC

- [EMC vs. IBM Enterprise SAN Arrays](#)
- [EMC vs. IBM Storage Platform Software](#)
- [EMC Storage Service and Support vs. IBM Storage Service and Support](#)

IBM Competitive Support for Business Partners

IBM has a very responsive, knowledgeable team of subject matter experts available to assist with channel sales efforts. These experts can provide detailed product and competitive information to assist with your specific sales opportunity. Engage these competitive resources by sending a brief email outlining your opportunity to compline@us.ibm.com or call PartnerLine at 1-800-426-9990.

Storage Benchmarks

IBM provides a current performance update presentation with specific benchmarks of storage systems and storage software.   Benchmarks are a continually moving target. The IBM DS8870 and IBM XIV Gen 3 are represented well in benchmark performance. IBM has a number of presentations, explanations and responses to benchmarking results. PartnerWorld and the current product presentations will have updated information. Here is an example of IBM's presentation based upon the IBM DS8870 release 7.0

Storage Performance Council (SPC) Industry Standard Benchmarks

SPC-1 emulates I/O patterns of typical On-Line Transaction Processing (OLTP) applications

- Primarily random data access with a sequential component
- 40% reads / 60% writes / 8KB average IO size
- Application examples - resource planning, order entry, e-mail, financial services,
- scheduling, reservations systems
- Link to current SPC-1 Results

SPC-2 emulates applications that read and write large blocks of data in a sequential manner

- Consists of three workloads and a composite score that aggregates all of the workload results into a single metric
- Application examples - archival, backup, business intelligence, and video streaming
- Link to current SPC-2 Results

IBM DS8870 (2423-961 & 2423-96E)

The IBM DS8870 system is a high-performance, high-capacity storage system that supports continuous operations.

The architecture of these systems consists of the following:

- Host adapters (front-end adapters) which manage external I/O interfaces that use Fibre Channel protocols for host system attachment and for replication data between DS8000 systems.
- Device adapters (back-end adapters) which manage internal storage devices including SAS paths to drives, RAID protection, and drive sparing.
- Two internal IBM POWER processor based servers with multiple processor cores managed as a symmetric multiprocessing (SMP) pool of shared processing power.
- Management Interfaces – A variety of interfaces can be used to manage DS8000 systems including DS Storage Manager, DS Command-line interface (DS CLI), DS Open application programming interface, Tivoli Storage Productivity Center, and Tivoli Storage Productivity for Replication Manager.

The DS8870 is offered in many different configurations based upon customer need, enterprise class and business class. The business class option allows a system to be configured with up to 144 drives in a single frame with limited features and support, helping to reduce configuration costs. The business class configuration can be upgraded to the enterprise class model.

The following is a breakdown of the enterprise class configurations:

Processors	System Memory	Device adapter pairs	Drives (max)	Host adapters (max)	Expansion frames	Maximum standard drive enclosures	Storage capacity (2.5" DDMs)	Storage capacity (3.5" DDMs)
2-core	16/32	2	144	4	N/A	6	Up to 172.8TB	Up to 288TB
4-core	64	4	240	8	N/A	10	Up to 288TB	Up to 480TB
8-core	128	6	1,056	16	0-2	44	Up to 1.26PB	Up to 2.11PB
8-core	256	8	1,536	16	0-3	64	Up to 1.84PB	Up to 3PB
16-core	512	8	1,536	16	0-3	64	Up to 1.84PB	Up to 3PB
16-core	1,024	8	1,536	16	0-3	64	Up to 1.84PB	Up to 3PB

Competitive Landscape

The major competitors in the high end disk space are IBM, EMC, HDS/HP and HP/3PAR

	Disks	Capacity (maximum)	Controllers	Cache	FC Ports
IBM DS8870	1,536	3PB	Two POWER7+ 32 core controllers	1,024GB	128
IBM XIV Gen 3	180	325TB/R	15 Intel Xeon Processor E5646	720GB	24
HP 3PAR StoreServ 10400 (V400)	960	800TB	Up to four quad-core 2.8 GHz Controller Nodes	128GB Control 256GB Data	96
IBM 3PAR 10800 (V800)	1,920	1.6PB	Up to eight quad-core 2.8 GHz Controller Nodes	256GB Control 512GB Data	192
HP XP P9500 (same as HDS VSP)	2,048 SFF	1.76PB	Two Controllers	1024GB	160
HDS Virtual Storage Platform (VSP -same as HP P9500	2,048 SFF	1.76PB	Tow Controllers	1024GB	160
EMC VMAX 10K	1,560	1.5TB	Up to 8 six-core 2.8 GHz Intel Xeon Processors	384GB	64
EMC VMAX 20K	3,200	2PB	Up to 32 six-core 2.33 GHz Intel Xeon Processors	1TB	128
EMC VMAX 40K	3,200	4PB	Up to 32 six-core 2.8 GHz Intel Xeon Processors	2TB	128

Flash Value Proposition

Flash storage is pervasive in all of the traditionally HDD based storage systems. Flash has measurable performance impact by addressing the weakest link in the IT stack – storage latency. Flash is very fast storage with very low latencies. All high end disk systems now offer flash enhanced, all-SSD or hybrid SSD-HDD options. How flash is incorporated in the storage system is important to differentiate and impacts performance. SSDs are fast access disk drives using flash technology. Data placement is optimized by tiering software, like IBM Easy Tier, that locates hot data on the fastest disk type. Flash Cache is flash media used to augment the data cache of the storage system and speeds up the processing of the data (compression, internal data placement).

Flash and the type of Flash (SSD vs. cache), adds additional variables to an already difficult high-end storage evaluation process. Performance claims are even more difficult to interpret since systems can be loaded with an unrealistic amount of expensive Flash as an additional boost benchmark performance over and above the traditional benchmark performance tricks.

The seller has an opportunity to assist the customer with a drive configuration that meets's a customer's performance and capacity requirements at an attractive price. The mixture of a storage units cache sizes, HDDs (various speeds and capacities), SSDs and RAID types makes this a cross-vendor challenge. The following are general points to be considered:

IBM DS8870

- DS8870 needs as little as 3% to 5% of capacity in order to achieve a substantial increase in performance as a general rule according to IBM.
- IBM Easy Tier uses a self-management approach to automate data movement to faster storage
- IBM Easy Tier is included in the purchase of an IBM DS8870

IBM XIV

- Uses SSD's as cache not as a storage tier

EMC

- Symmetrix FAST VP sub-volume tiering feature is largely user-managed
- FAST VP is provided at an additional charge (software and maintenance)

HDS VPS

- Supports SSDs in HDD form factors and also supports a flash module that offers more efficient packaging.
- In August 2012, HDS announced a microcode enhancement to improve flash performance and publicly disclosed 1M IOPS performance based on a 100% read I/O result. In July 2013 the published SPC-1 benchmark results for an all-flash configuration. Here are the details and IBM's response.

High End Disk Taking Points

Each high end disk vendor will probably frame the discussion around the same general features then discuss how their product, architecture, and track record meet these goals. IBM has produced "Avoiding Costly Disk System Mistakes" a generic reference guide to warranty and cost issues for use with with any mid-range or high end storage purchase. The general topics customers are focused on for high-end disk system sales are the following:

- Availability
- Performance
- Ease of Management
- Total Cost of Ownership
- Functionality

IBM DS8870

IBM considers the DS8870 to have the following advantages over the EMC Symmetrix VMAX and HS VSP/HP XP P9500. Each category contains several points/counterpoints and can be used as a roadmap for discussions:

- Availability – System design eliminates single points of failure.
- Performance – Has produced several leadership public benchmarks.
- Ease of Management – GUI interface is easy to use and has automated features such as load balancing and IBM Easy tier.
- Any Distance (async) Remote Mirroring – longer distances supported.
- IBM Server Synergy – Leadership support of IBM i, z/OS.
- Total Cost of Ownership – many features that are chargeable on competitors are included in the DS8870.
- Flexible warranty – Multiple warranty options provide customers choice and flexibility.

IBM has developed a one-page "Top Questions and Answers about DS8000 for Sellers" that addresses some customer asked questions. In addition, the presentation "Handling Objections and Competitors' Attacks" is designed to help sellers address concerns. "Alternatives to Disk System Features not Supported by DS8000" is a technical guide for sellers to reference.

Hitachi VSP

- Supports a larger number of drives in one system (2,048 vs. 1,536)
- Supports thin provisioning for CKD-formatted volumes.
- Supports attaching external disk systems "behind" the VSP; can emulate FB and CKD formatted volumes
- HDS ships more Mainframe capacity than IBM – based upon IDC estimates in a press release from HDS about 2012 activity. IBM led in revenue.

EMC Symmetrix VMAX

- Supports a larger maximum number of drives in one system (10K-1,560, 20K & 40K-3,200 vs. DS8870-1,536).
- EMC Symmetrix supports 16Gb/s Fibre Channel for hosts (as of Sept/Oct 2013). The DS8870 uses 8Gb/s.
- Supports a larger number of point-in-time copy targets (DS8000 FlashCopy supports up to 12 targets per volume).
- Supports thin provisioning for CKD-formatted volumes (z/OS related).
- Manages other disk systems via Federated Tiered Storage Feature (no CKD support).
- Has a larger market share for external disk system (per IDC worldwide revenue).
- EMC Claim: 1M IOPS Symmetrix Performance for VMware – "VMAX (now called VMAX 20K) storage system with VMware vSphere 5 achieved in excess of 1,000,000 input/output operations per second (IOPS)". This claim is based upon a paper VMware published of a benchmark using an I/O pattern that was 100% reads and the data resided in cache. This does not represent real-world applications. EMC has since claimed up to 2M IOPS for the Symmetric VMAX 40K based upon a 2013 EMC press release – possibly using the same techniques.
- EMC Claim: DS8000 has only a few processors compared to Symmetrix VMAX with 8 engines – number of processors does not indicate storage system performance, EMC does not publish SPC public benchmark results for Symmetrix.

HP 3PAR

- Supports a larger number of drives in one system (1,920 vs. 1,536)
- Supports only two engines. The 3PAR 10800 supporting up to eight quad-core 2.8 GHz controller nodes

IBM XIV Gen 3

IBM considers the XIV to be "Tier 1" storage even though technically (according to Gartner's definition) it is not Tier 1 because it does not support mainframes. It is positioned as "secure, cloud-optimized enterprise storage that scales with ease".

- Grid Architecture delivers consistent, tuning-free, high performances and ease of use vs. a monolithic clustered-controller based legacy architecture
- Uses massive parallelism providing cache and processing advantages over traditional architecture.
- Now includes ability to encrypt disks in place
- Provides liner scaling up to 325TB in a single high density rack footprint
- Uses enterprise quality commodity components vs. custom hardware
- High reliability and availability via full redundancy, self healing and unprecedented rebuild speed
- Aggressive price performance

Reference Information

IBM Redbook - IBM System Storage DS8870 Architecture and Implementation

This IBM® Redbooks® publication describes the concepts, architecture, and implementation of the IBM System Storage® DS8870 storage system. The book provides reference information to assist readers who need to plan for, install, and configure the DS8870.

IBM: IBM DS8000 Information Center

Overview of the entire IBM DS8000 product line providing detailed information on the concepts and architecture, included detailed product specifications.

IBM Competitive Consultants for IBM Storage

Competitive Consultants for IBM Storage is a team in IBM STG Storage Marketing. These consultants can help you win with IBM storage products against competitive offerings. The team's responsibilities include providing information (papers and presentations) for sellers to use, much of which can be shared with clients. The team also provides information about storage competition for product development and for product line-of-business management.

IBM: DS8000 Index to Competitive Information

Index of many papers, presentations designed to help win against the competition. Tabs include Cross Competitor Topics, EMC Storage, HDS and HP Hitachi Disk, HP 3PAR Disk, Analyst Papers and Other Competitors.

IBM PartnerWorld DS8000 Sales Kit

The IBM PartnerWorld sales kit contains an index of selling assets including announcement letters and briefs, benchmark and performance information, data sheets, presentations, product positioning, proposal inserts, sales guides, solution briefs and white papers.

Comparison to EMC

ITG Consulting: TCO comparison between IBM DS8870 vs. EMC VMAX (Executive Summary, Detailed)

This June 2013 white paper from the International Technology Group (ITG) presents a detailed cost/benefit analysis of the DS8870 compared to the EMC VMAX 40K.

IBM: Insights into EMC Symmetrix VMAX 10K, 20K, and 40K

This paper provides insights to help identify various issues, limitations, and restrictions that apply to EMC Symmetrix VMAX 10K, VMAX 20K and VMAX 40K disk systems not generally found in product overview presentations.

IBM: Selling IBM DS8000 against EMC XtremeIO

This November 28th 2013 paper provides product performance and selling information on the EMC XtremeIO product.

Comparison to Hitachi

IBM: Insights into Hitachi VSP-Class Disk Systems

This paper provides insights to help identify various issues, limitations, and restrictions that apply to HDS VSP and HP P9500 disk systems not generally found in product overview presentations.

Highlights of DS8870 compared to HDS VSP and HP XP P9500

This paper provides detailed tabular comparisons identifying numerous technical and TCO advantages of DS8870 over the high-end Hitachi disk systems HDS VSP and HP 9500.

DS8870 Advantages over HDS VSP and HP XP P9500

This presentation provides comparisons of selected DS8870 advantages over high-end Hitachi-based disk systems. Speaker notes are provided for many slides.

Comparison to HP

Highlights of DS8870 compared to HP 3PAR StoreServ 1000

This one page summary of major advantages of the IBM DS8870 compared to the HP P1000 3PAR disk system, V-class models V400 and V800 may be shared with customers.