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McData's *Sphereon 4300* — Big SAN Benefits on a Small Scale

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Management Summary

Most large enterprises have deployed storage area networks (SANs) to consolidate storage, but most small- and medium-sized enterprises (SMEs) have not, yet. **This is about to change.** Early-market Fibre Channel (FC) switches – the standard SAN building block – required a level of technical breadth and financial commitment that is usually associated with large enterprises. So they benefited while other enterprises continued to struggle with the limitations of direct-attached storage (DAS). The good news is that the SAN market has matured over time, standards have evolved (and continue to), prices have come down, and management tools and techniques are more refined. **New products and price points increasingly put SANs within the reach of small-scale IT environments.**

This is good because SANs ultimately bring an economic benefit – something everyone is looking for. As a dedicated network for connecting servers and storage, a SAN consolidates storage (physically and logically) and makes it broadly accessible. It is much more flexible, sharable, and scalable than captive DAS. As a result:

- Storage management is simpler,
- Backup and restore are faster and more reliable,
- Resource utilization is higher,
- Downtime can be reduced, and
- Total cost of ownership (TCO) is lower.

These are valuable benefits, especially in light of the growing importance and amount of enterprise data.

McData, a market leader in SAN connectivity and management software, recently introduced the *Sphereon 4300*, an entry-level FC switch that is a perfect fit for smaller SANs. It has 4, 8, or 12 FC ports (2 Gb/s), a rack-mountable form factor, advanced fabric services, and hot code activation. It also comes with *SANPilot*, an embedded element manager. List prices start from $5,400.

Even enterprises with small-scale IT environments can feel the pains of data growth and management – exactly the problem a SAN addresses. **The low price and small size of McData's new Sphereon 4300 help make it more attainable.** Read on for details.

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Pain of DAS & Relief of SAN

Many businesses, and especially SMEs, still use traditional direct-attached storage (DAS). This may work fine for a single server, **but the limitations of DAS become apparent when IT infrastructure scales.** As applications and servers proliferate, it creates many disconnected and dispersed islands of data. Tasks like adding or reallocating capacity and general maintenance are performed for each server and its captive storage, so skilled administrators spend a lot of valuable time doing repetitive activities. It is also more difficult to adequately backup and protect data in this kind of fragmented environment. Backup jobs may fail or not be performed frequently enough, creating a risk of data loss. System recovery in the event of a disaster, or even just restoring a file, can take hours or days. Other common tasks like capacity expansion, data migration, application testing, and data warehouse loading can cause significant application downtime. Moreover, spare or "overhead" capacity cannot be shared among servers, so more storage than necessary is purchased. The traditional approach to storage can be costly, complex, and disruptive.

Networked storage was invented to address these limitations. In particular, SANs have become the predominant means for providing networked, block-level storage to application servers. In a SAN, storage capacity, whether from many arrays or just one, is partitioned and securely mapped to individual servers or server clusters. This networked architecture makes storage easier to manage and dynamically provision, and it facilitates data movement, such as for mirroring, backup, and recovery.[1] Fibre Channel (FC) is the de facto standard SAN interconnect and provides the benefit of high bandwidth, low latency, long cabling distances, and practically unlimited scalability.[2]

McData Sphereon 4300

In an effort to provide entry-level SAN connectivity, McData has introduced the new *Sphereon 4300*. It is an inexpensive FC switch with 4, 8, or 12 ports (2 or 1 GB/s auto-sensing) and a rack-mountable form factor. McData's own "switch-on-a-chip" ASIC[3] is inside, which helps improve reliability and cost by using a single, integrated component instead of a chip set. It supports fabric services like hardware and software zoning. It also offers a high-availability feature that is normally associated with high-end directors called *hot code activation*, which allows firmware upgrades without taking the switch offline. Power and cooling modules are not redundant like other Sphereon products, though full redundancy is achievable with a dual-switch configuration. The Sphereon 4300 interoperates and is backward-compatible with McData's entire line of switches and directors. Estimated list pricing ranges from $5,400 to $9,000, depending on configuration and options.

The base product also includes *SANPilot*, an embedded element manager that does not require software installation. SANPilot manages up to six Sphereon switches through a simple Web-browser interface and performs essential tasks like configuration, zoning, and port monitoring. A command line interface is also available, and the Sphereon 4300 supports SNMP for communicating with other management software or frameworks. McData's more advanced *SANavigator* management software can view and monitor the Sphereon 4300, but only SANPilot can configure it. This limitation suggests the product is not designed for use as an edge switch in a core-edge fabric configuration.

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[1] See *Business Continuity Goes Better With SANs – The 3 R's of Resilience* in **The Clipper Group Explorer** dated January 25, 2002, at http://www.clipper.com/research/TCG2002003.pdf.

[2] See *Fibre Channel – The Defending Champion Has Staying Power* in **The Clipper Group Explorer** dated December 14, 2001, at http://www.clipper.com/research/TCG2001012.pdf.

[3] Application-specific integrated circuit

Where It Fits

So where does the Sphereon 4300 fit best? A switch is like a pair of shoes – you want the right size, not something too large or too small. While the wrong shoe size can mean scrunched toes or an awkward gait, a poor choice of switch size can cost money and performance.

The size and price of the Sphereon 4300 make it best suited for small, standalone SANs where several (probably Windows) servers connect to one or more consolidated storage arrays. It is a good fit for SANs up to about 12 ports (or 24 in a redundant configuration). In that range, it meets the connectivity requirement while allowing the SAN to be a reasonable percentage of the overall solution cost. For SANs larger than that, it would be better to use switches with higher port counts as building blocks. Fewer ports would then be consumed by inter-switch links (ISLs)[4], reducing cost per "usable" port. It also avoids the performance bottlenecks that ISLs can introduce. Moreover, wiring and maintaining fewer devices is simpler and fits in with the trend toward consolidation. So if your SAN requirements are or will grow quickly beyond an entry-level range, consider one of McData's larger fabric switches[5] or *Intrepid* directors instead.

With that in mind, the Sphereon 4300 is a great solution for smaller environments like:

- A single application like *Microsoft Exchange* or *SAP* that has multiple servers (perhaps offered as an integrated solution by a VAR or systems integrator),
- A dedicated backup SAN that offloads traffic from an increasingly congested LAN, or
- The primary SAN for a small data center, such as in an SME or a remote/branch office of a large enterprise.

Conclusion

In addition to the general benefits of networked storage (i.e., simpler management, higher storage utilization, faster and less-disruptive backup, better availability, and lower TCO), the Sphereon 4300 uniquely offers:

- Low entry price to a high-performance FC SAN,
- An embedded, easy-to-use fabric management tool,
- A size that fits smaller IT environments, and
- The credibility of a market leader (McData leads the high-end FC director segment).

The Sphereon 4300 represents an effort by McData to expand its presence and bring networked storage to those with more modest means and requirements.

So, if your enterprise feels the pains of DAS, the McData Sphereon 4300 provides a great option for finding relief in a small-scale SAN. Its price, small port count, and easy management make a FC fabric – with its inherent performance and reliability benefits – more practical and achievable. A SAN for the rest of us!

[4] ISLs connect switches together in a mesh configuration to allow any node to connect to any other in the SAN. They also provide redundant paths for failover purposes.

[5] See *McData's Sphereon 4500 – The Switch Brick* in **The Clipper Group Navigator** dated October 16, 2002, at http://www.clipper.com/research/TCG2002040.pdf.

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