

# Inside Perspective

Helping you unleash the full power of MEDITECH

Wild

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## Do you have a storage strategy? (Part 1)

Jim Fitzgerald, Chief Technology Officer

It occurred to me as I sat down to write this column that many of our past articles in Inside Perspective have covered the “what’s” and the “how’s” of the technologies around MEDITECH—without going very far into a simple “why.”

Why should you have a Storage Area Network (SAN)? Why should you implement Integrated Serverless Backup (ISB)? Not unlike many other questions in the IT business, the answer to these last two is a resounding “It depends.” Well, depends on what? Your storage strategy, naturally. And why do I need a storage strategy? Keep reading.

As a dedicated follower of things technical at MEDITECH, I have, over the years, developed some insights into systems architecture for MAGIC and Client/Server. One of the first things I noticed is that servers running MEDITECH tend to transact a lot of business on their network ports as they service user sessions, accept data from interfaces, spool print and fax jobs, and interact with other servers. Another thing I’ve noticed is that they are constantly reading and writing data to disk. A lot. Like, all the time. Doh!

And now that I have revealed my vast knowledge as the Homer Simpson of MEDITECH Systems Architecture, let’s think about what makes for a good MEDITECH server:

- It should process network transactions quickly and efficiently.
- It should impose minimal delay in turning a user query into an actual retrieval of data.
- There should be no bottleneck between the server and the data it needs to retrieve.
- There should be no bottleneck between the server and the user client, as data is furnished to the client from the database.

Basic, yes. But if you analyze these simple, useful criteria, an important truth emerges. The technical quality of your end users’ MEDITECH HCIS experience is going to rely on three things:

1. A solid, well-managed network infrastructure
2. Servers that handle input/output effectively enough to appear transparent
3. A well-designed, efficient storage subsystem

In the early days of MAGIC, storage was a scarce and expensive resource that sat outside the server with some kind of bus level connection back to the host. Early SCSI disk arrays had no intelligence of their own; they were simply a way to organize disks so that they could be more easily managed by the server’s operating system. In legacy MEDITECH MAGIC systems, the operating system provided RAID management and protection of the SCSI disk drives. Performance and scalability went hand in hand. To handle more data, add more disk drives. To gain more input/output capacity, add more disk drives.

In this generation, and even in today’s DAS-based OSAL and Client/Server systems, MAGIC owns the responsibility of managing backups and data resynchronizations. These daily tasks can spike normal I/O rates by a factor of five times or more over regular operations, draining significant server power from applications service.

So Storage Area Networks feature sophisticated microcomputers, software, and memory of their own—dedicated to disk management, input/output optimization, and data protection. The SAN takes care of RAID operations, making copies of disk volumes, expanding and shrinking data sets, and facilitating backups. It can provide different levels of service to different applications. In effect, the SAN becomes a storage computer that effectively shares tasks with the servers. From a sheer computing power

perspective, SAN is *additive* to your servers, unlike traditional forms of storage which impose a server management overhead.

Are you starting to see why you need a storage strategy? To recap:

1. DAS Storage is managed by hardware RAID engines, but still depends on the server for key functions such as volume copy, data resynchronization, and backup. How will you know when storage is negatively impacting your applications performance?
2. SAN Storage is outside the server, and essentially self-managed. But who is going to manage the manager?
3. The nature of our applications focus in Healthcare IT is changing. As we move from automation of business processes to automation of clinical processes, the depth, volume, and complexity of the data we are managing is growing rapidly.
4. The load on servers will increase as a natural consequence of software improvements. Servers cannot continue to be burdened with input/output intensive tasks— data resynchronization, for example—that are better left to the storage system.
5. The notion of an EHR, an electronic health record, has transcended current notions of an EMR managed by the HCIS provider. The EHR embraces *all* of the patient's lifecycle data—electronically generated, manually generated, scanned from archives, resulted from laboratory tests, and digitally imaged. As the EHR has transcended data from any one application, so must our view of data management stop being exclusively server-centric. Data is an enterprise asset describing our business and our customers, and it is likely to outlive several generations of applications software and server hardware.

So, now you know why we've become such storage fanatics here at JJWild. And why we spend so much time testing SAN, backup technology, and Disaster Recovery technology with MEDITECH in our lab here in Canton. The answer is simple: improving your storage solutions may be the single most important thing we can do to improve your technical infrastructure for MEDITECH applications, and your enterprise EHR, as well.

*Next time: The role of ISB in storage strategy.*

*Jim Fitzgerald is Chief Technology Officer at JJWild. He was recently rejected for a part in the upcoming motion picture "Revenge of the Nerds—Part III" because his average golf score was actually below the cutoff at 130. Email Jim at [editor@JJWild.com](mailto:editor@JJWild.com).*

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