A SAN in Every SMB and Enterprise Workgroup? Vendors Go After Vast Market

But Will Pitches of Ease-of-Setup and Future Expansion Be Enough to Overcome the 'Human Factor'

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In a market that's being touted as the hottest sector going for storage vendors over the next four years – growing at a compound annual rate of 43% according to a research study released earlier this year – it's no wonder these companies have been more than a little preoccupied of late readying products for it.

Small to mid-sized businesses, or SMBs, comprise a vast, amorphous sea of some 8 million firms in the U.S., ranging in size from 1 to 999 employees. But, to slice it a little more realistically for our purposes here, the larger "MB" portion (medium businesses, from 100 to 999 employees) is where the main action will be for SAN adoption in the near term.

That count is 103,000 firms in the U.S. – more than a sufficient playground for SAN vendors to duke it out for the foreseeable future. Added to that are tens of thousands of large enterprise workgroups and departments, which many consider part of this market because their requirements are similar – not the least of those being a low price tag.

Taken together, there's more than enough need in this SMB market segment (also called SME, for small to mid-sized enterprises) to get the attention of vendors. Many of these customers not only have high volumes of storage to manage, but the budget to do something about it in the way of a networked solution – at least at the reduced prices
we're starting to see for storage networking products.

Vendors of storage area networks (SANs) have high hopes, with several new products being debuted for SMBs in recent months. Storage industry leaders like McData, with their Sphereon 4500 switch, starting at about $15,000, and QLogic, with their "SAN Connectivity Kit 2000," priced under $10,000, are making inroads, as are other vendors – positioning products for the legions of SAN newbies starting to come into focus out there.

SAN, of course, is the highest form of art in the world of enterprise storage – and also the most expensive (naturally), when compared to other options of direct-attached (DAS) and network-attached, or file based, storage (NAS). (See below for more on the latter.)

But SAN vendors say the enhanced benefits and expandability of their solutions merit attention by a good chunk of the smaller-company market they're now addressing. Even so, many say the majority of the SMB market is still clueless about the concept.

STEPPING UP TO SPREAD THE RELIGION

Yes, there's more than a little educating to do. And that job, of course, falls first to the vendors themselves. Then, in no small way, their channel partners must carry much of the load – that is, the resellers, solution integrators, and consultants that deal directly with the smaller customers.

But we'll take a crack at it here, too, ourselves – and try to provide some words of advice to the uninitiated: the first-time SAN customer. (In addition, we'll relate some words of wisdom from a few industry experts for the vendors themselves).

It's universally agreed that a SAN is more difficult to implement than a DAS or NAS solution, and that's due in part, experts say, to a "human-capital" component for the former, for which most SMB firms are unprepared.

Mike Karp, senior analyst at Enterprise Management Associates, puts it this way: "Any company should be sure they have the appropriate human-support structure in place before choosing a SAN solution. The typical SMB may not have fibre channel knowledge in-house."

Bill North, research director for storage software at IDC, echoes that thought: "Most SAN equipment today is fibre channel, and most small businesses have little or no knowledge of the technology, and insufficient resources – time, people, energy, desire – to learn about SAN technology."

But, again, what is small? What is medium? Broad definitions can be misleading. What's really more important than business size is the amount of storage a customer has, the rate at which it's expanding, and what the firm's unique requirements or needs are related to it.

"We're finding our recently introduced products targeted at the SME market also have strong appeal in large enterprise accounts," said Mike Tomky, a McDATA marketing manager. "We see SME buying characteristics in even the largest of these accounts – because departmental needs and lower-priority data drive customers to make
the choice for solutions that require a lower initial investment."

So, in many cases, the product is chosen based on the application or importance of the data, not necessarily the size of the customer. And, adds Tomky, "SME customers look for validation of their solutions in large enterprise accounts."

GETTING STARTED FOR THE UNINITIATED

So, what about this esoteric "FC" (fibre channel) expertise – how hard is it to come by? Never fear, say many observers, it's increasingly out there – filtering down steadily from the enterprise arena and from storage vendors themselves, where it's been practiced for years.

For example, Shravan Pargal is a longtime networking and storage technologist, recently of QLogic, and now head of SAN Consultants Inc. in Minneapolis. He says, "If the expertise is not available in-house, the customer can use a SAN consultant to reduce the learning curve and the risk involved with any initial SAN implementation. The consultant should work with the customer as his advocate when putting together an FC SAN solution. The right solution is never easy – it requires tailoring to the customer's specific needs."

Another viewpoint, from someone who's built several SANs, is that of Scott DesBles, a SAN specialist at Agiliti Inc., an IT infrastructure services firm in St. Paul, MN. DesBles, who has a networking background, says learning fibre channel is not all that difficult if you have networking skills to start with. "I don't see it as a big factor," he said. And that view was backed up recently in an online discussion on SearchStorage.com – specifically, a post in response to a SAN first-timer seeking advice. It came from AlanthePostman," who said, "The difference between Ethernet and FC is not so marked."

So, if you're a small or mid-sized business, just be aware you may need to hire fiber channel expertise – and it won't be cheap. But, if you have a good networking person (or your VAR or consulting firm does), they just may be able to pick up on FC and help implement your SAN. The point is, be aware this should be a topic of serious discussion before you dive in.

A DEVELOPING MARKET

How big is the SMB SAN opportunity? The research study mentioned above, from the summer of 2002, was done by AMI Partners Inc. in New York, a company that has studied the SMB marketplace for many years and maintains a vast database of knowledge about such firms. Here's how they see current and projected SAN deployment in the "SB" and "MB" markets, based on their most recent data provided for this white paper:

They say (to no surprise) that SANs are currently in place in less than 1% of U.S. small businesses (SBs). But among the 103,000 "MBs" in the U.S., AMI says 12% have implemented at least one SAN to date.

What's their projection for the next year? In 2003, AMI says 3% of SBs plan to install or upgrade a SAN, and fully 20% of MBs do. (Note these are not all new SAN customers; those upgrading existing SANs are also in these percentages.) It's no wonder, then, this market is getting vendor attention: 20% of 103,000 businesses means 20,000 MBs alone could be new buyers or returning buyers this coming year. [Is that the sound of vendor-panting I hear?]

What about the smaller SBs? "A SAN solution is just not well understood by this market -- neither technically nor from a value-proposition perspective," says Ryan Brock, senior analyst at AMI Partners. "And remember, most SBs spend only $5,000 to $25,000 a year in total on IT. Although recent SAN developments around IP are promising lower price-points and less support and maintenance overhead, prices are still just beginning to enter the high-end of the SB IT budget." [By the way, we'll touch on that IP solution, iSCSI, a little later.]

SO, WHAT DETERMINES THE NEED FOR A SAN?

Agiliti's Scott DesBles points out: "First, make sure you clearly understand the difference between SAN and NAS, and which is right for your needs." One simple way to look at it, he says, is this: "If the need is to share the same chunk of disk space with several servers, then you want NAS. Otherwise, SAN is the way to go."

DesBles, who has built a half-dozen SANs, mostly for mid-sized firms, and manages a 12-Tb SAN shared by some 60 customers at Agiliti, also has other words of caution. "Before going with the SAN approach, be sure you account for the increased need – and cost – you'll have for backup capacity to cover the increased data storage, whether that be additional tape backup capacity or more sophisticated backup solutions, such as real-time replication."

Analyst Bill North of IDC takes a pragmatic, real-world approach to the topic of why to build a SAN: "The real advantages of SAN implementations revolve around interconnection and scalability, but those advantages come at significant added cost when compared with more traditional direct-attached (DAS) solutions, which can now scale up to very large capacities with a much simpler and less expensive interconnect. This means it can be hard to build a compelling case for most SMB installations to move to a SAN."

What do the newer DAS solutions cost in comparison to a SAN? Agiliti's DesBles says "about half." Thus, all the more reason to question hard the need to go the SAN route. DesBles points out some people "sort of throw these newer DAS solutions in with SAN, because they're FC attached." He has experience with these DAS solutions as well, from suppliers such as Compaq

and Dell. "They're basically just a bulk storage array, but that's all a lot of smaller businesses need."

IDC's North says that, in the end, "simplifying the management of the total storage solution, including the storage network, is the ultimate objective. While tools are becoming available that move a long way toward this goal, most of them are aimed at the large, multi-site, multi-platform customers rather than SMB customers. As a result, they are generally too costly for smaller installations. Plus, adequate tools for many SMB customers are supplied by the device vendors – switch, storage array, etc. I believe as an industry we are still early in the adoption curve for more sophisticated tools, however, and both the cost and simplicity of the tools will improve over time. This could lead to more widespread SAN adoption in the SMB market."

What about amount of storage – isn't that a major determining factor in the decision to build a SAN, along with consolidating all of it?

Yes, says senior analyst Anne Skamarock of Enterprise Management Associates. "But many SMBs don't feel they have enough data to warrant a SAN, according to our research. Those who are struggling with managing their capacities are waiting for prices to come down further on the products. There are several companies who have bundled 'starter' kits, including Qlogic, Vixel, and even Brocade. Even so, at $10K for infrastructure, not including any storage, that can still be a high price for many small firms."

Skamarock continues: "Because of the ease of installation and low entry cost, most SMBs we've talked with are going with a NAS solution to consolidate or manage storage. But there are limited options here if you want help with your Exchange server."

DID SOMEONE SAY "EXCHANGE"?

Yes, now we get to a not-so-subtle point. Microsoft, it turns out, gets a continuous, thundering round of applause from SAN product vendors everywhere. "A super-important dimension to consider in determining the need for a SAN is the application that must run on it," says consultant Shravan Pargal. "And Exchange is that primary app. If it weren't for Microsoft and the inherent file size bloat that comes with every new OS release, there would be a much smaller market for SANs. All my clients thus far say their number-one SAN application is Exchange. Then comes SQL and backup/restore of shared files."

OTHER FACTORS IN THE SAN-NAS DECISION

Pargal agrees that NAS solutions may work for a majority of SMB customers. "However, NAS does not provide the scalability and reliability that is needed when you get to the 2Tb or greater storage requirement," he says.

"When I look at the SMB market, I slice it into two dimensions: first, the amount of usable storage needed, and, second, the class of applications running on the storage. The amount of storage needed breaks into two groups: less than 2Tb and greater than 2Tb. The less than 2Tb group will be able to use NAS, and maybe even DAS, successfully. Performance requirements are limited, and connectivity is most important. For the group needing 2Tb or more, a SAN is a better solution – because it allows storage scaling over time and provides all the familiar high availability, high performance, storage scalability, and ease of management benefits."

Familiar, yes – maybe to sophisticated, big enterprises, and to SAN vendors. But, again, realize much of this is all-new to most SMB buyers. They must be educated and sold on the benefits.

A TYPICAL PROCESS IN BUILDING A SAN

It may be helpful, if you're a first-timer (or know someone who is), to get an idea of how a typical SAN-building process plays out – or should. Doubtless, there are horror stories a-plenty out there, too. But we'll focus here on how to do it right. Here's how one of our experts summarizes it:

"What I recommend to most clients starting off with building new SANs are the following steps," says Shravan Pargal, who founded SAN Consultants Inc. in Minneapolis this past year:

"First, keep the initial installation simple. Use a homogeneous server OS environment (Microsoft or Unix), a small number of servers (less than four), and one storage device. Secondly, define a prototype project that is not business critical. Remember, you will make mistakes the first time out, and this should be acceptable. And pick a single application to target the SAN. Thirdly, understand and document the connectivity requirements of the planned topology. Draw up which servers are connected to which switch ports, and which switch ports are connected to which storage ports."

He continues: "Build the SAN and run your prototype application on it. To do this, first look for a solution that fits your needs. A storage VAR will let you pick-and-choose your equipment. Alternatively, reduce your risk by getting a SAN consultant to help you buy and set up a SAN starter kit that has all the following in it: two HBAs, a switch (an 8-port 1Gb fiber channel switch is fine, but you can probably now get a 2Gb switch now for the same price), and a RAID or JBOD storage device."

Sounds easy, doesn't it? You wish! "Once your basic SAN is set up, other things you'll need to consider include determining how you will monitor the SAN," says Pargal. "Your favorite SNMP package will do the trick. Also, determine your security needs. Can each server see all the storage, or do you need to limit what is visible? If you're starting with one server, don't worry about this part yet."

And there you have it, if only life were that simple. Pargal adds: "Implementing a prototype solution and understanding it completely is a must for building a strong foundation for subsequent SAN solutions." The point being: do it right the first time, or it only gets harder.

WHAT ABOUT iSCSI VS. FIBRE CHANNEL?

Any white paper on storage networking today can not be complete without at least a reference to a much-talked-about newer technology, vying to replace fiber channel, at least in part. It's one that's particularly aimed at smaller enterprises, too – due to its relative simplicity, its IP networking base, and its expected lower costs. Cisco has been an early and strong backer of iSCSI, and other vendors have also made recent product announcements, including Qlogic. However, it's still a nascent market, with few iSCSI customer installations having yet occurred. And, though iSCSI supporters think it will see broad adoption eventually, other experts say fiber channel will never die out.

"I've spoken with a couple of customers who have opted for an iSCSI solution," says analyst Skamarock of Enterprise Management Associates.
"This has allowed them to use their current infrastructure and, perhaps more importantly, the same person to manage the network."

A point consultant Pargal makes, however, is that "iSCSI solutions being proposed thus far have fiber channel SANs on the backend, so that's a bit of a problem if you want to stay pure Ethernet; you still need fibre channel expertise."

CHOOSING A SWITCH VENDOR

"The switch supplier decision is important, but not as much as the storage and server decisions," says Pargal – perhaps because, together, the latter two cost much more. "As a percentage of the total cost, the switch should not be more than about 10% of the total solution. The type of switch to use is dependent on the SAN characteristics you're trying to achieve. For instance, a larger enterprise might want a high-end 'director' type switch to do port consolidation, from a firm like McDATA, who's the leader there. For starter SMB SANs, though, a small, 8-port switch does the trick for most configurations."

On the latter point, McDATA now has a low-priced entry-point as well for the SMB – the Sphereon 4500 switch. This product was especially designed for this market and allows for easy expansion via a technology called "Flexport," exclusive to McDATA. It lets the first-time SAN customer pay only for the port capacity it needs today, then add more ports in a "pay as you grow" approach. The customer can start with an 8-port, 2Gb switch at about $15,000 – then, as its capacity needs expand, can add more ports in 8-port increments, turning them up with absolutely no disruption or time-consuming reconfiguration. It's all achieved through a unique software key technique, which is implemented by the McDATA reseller.

Others agree on the importance of the switch-vendor choice. SAN engineer/administrator Scott DesBles agrees but says it comes "in second place to the storage array decision." Agiliti has a relationship with XIOtech, – a major player in the array business, and a company that has a serious initiative of its own in the SMB market.

"The SMB market wants a real value proposition," says Rob Peglar, corporate architect at XIOtech, "including reduction of complexity, not worrying about more management of increasing storage complexity. We've been positioned squarely in the SMB market for five years."

Are there good choices for SMBs in the fibre channel switch world these days, reasonably priced for their size of businesses? "Yes, all the major switch vendors now have 'entry-level' products to try to draw these folks in," said Anne Skamarock of Enterprise Management Associates. "For example, Qlogic has a 'SAN-in-a-box' bundle, which includes 2 HBAs (host bus adapters), an 8-port switch, and all cables for $9,995. Also, switch prices in general are dropping."

WHAT ABOUT "SAN-IN-A-BOX"?

Some analysts, including Enterprise Management Associates, are recommending first-timers consider this type of starter product. Though none were available with free shipping from

Amazon.com this past Christmas – vendors are hoping many SMB IT managers had these product-bundles on their year-end "wish lists."

"It's a choice that lowers the cost of entry and ownership for a SAN," says consultant Pargal. "It's basically all the plumbing. But the customer still needs someone to put the SAN together – meaning hooking the server to the SAN and configuring the storage and the application. If you don't have that expertise in-house, you need a SAN consultant." QLogic's version is called the SAN Connectivity Kit 2000.

THE IMPORTANCE OF THE CHANNEL

It's a topic we touched on earlier. But, in closing, it deserves mention again.
Vendors aiming at this vast market simply cannot succeed without the right channel partners.

Here's how AMI analyst Ryan Brock speaks to this important issue: "We have to understand how SBs deploy and manage IT," he says. "For the vast majority of SBs, and even some MBs, there's little or no in-house IT staff. Instead, most IT-related issues are managed by the firm's external support resources – generally a small VAR or independent consultant."

He continues: "Whether selling into the SB or MB, the first and most important issue for SAN vendors is to ensure that the channel is empowered to articulate the value of their solutions – and also educated and prepared to handle their technical deployment and maintenance. Just as there are distinct segments of the SMB market (based on individual IT needs), there are also clear segments of the IT reseller/consultant community with different levels of IT sophistication. The higher-competency VARs are more likely to be supporting SMBs with advanced IT solutions in place – that is, those that may be good candidates for SANs. Thus, it's important for vendors to be able to identify and target the appropriate channel partners as part of their strategy to sell SANs into SMBs."

So, two words to the wise in SMB-SAN vendor-land: education and channel.

Put them together with right-priced solutions, and there's a bright future ahead for the storage industry in this huge, growing market segment.

ABOUT THE AUTHOR

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