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## Network Storage: Roll over DAS

*SAN and NAS are converging, and IP SANs are taking the benefits of SAN technology to mid-sized companies, says*  
**Venkatesh Ganesh**



The shift from Direct Attached Storage (DAS) to Network Attached Storage (NAS) quickened in 2004. According to IDC India, the Indian SAN market grew at a rate of 30.7 percent, from \$39.3 million in 2003 to \$51.4 million in 2004.

If 2003 was a healthy year for the storage market, 2004 was better. According to IDC, the Indian data storage market in 2004 was worth

US \$142.3 million, up from \$129.9 million in 2003. IDC India rates HP, EMC, IBM, Network Appliance, Veritas and Sun as leading players in the Indian storage market.

IP SAN deployments accelerated the move away from DAS. For organisations contemplating networked storage that were hesitant about traditional FC SANs, which they perceived as expensive, 2004 saw the acceptance of IP SANs. IP SANs promise the performance of Fibre Channel, albeit with a slimmer price-tag and a simpler network topology. As IP SANs use the iSCSI protocol, they offer SAN-like functionality over industry-standard TCP/IP and Ethernet.

Sanjay Kharade, Principal Consultant, Cisco Systems, India and SAARC says, "IP offers cost benefits, as Ethernet is significantly less expensive than its FC equivalent. IP addresses inter-operability and network management issues." Unlike IP, Fibre Channel cannot be easily transported over a WAN. By carrying SCSI commands over IP networks, iSCSI facilitates data transfer over an intranet and helps IT teams remote manage storage from afar. The iSCSI protocol is among the key technologies expected to help SAN deployment filter down to small and medium organisations. IP networks provide enhanced security, scalability, inter-operability and network management in comparison to a traditional Fibre Channel network. "Many mid-



► **Financial Express**

sized organisations are scouting for IP SAN solutions as these work out cheaper than a Fibre Channel (FC) SAN," says B Chandrashekar, Country Manager, Intransa.

While IP SANs are gaining ground, not all vendors believe that IP SANs will be preferred for mission-critical applications. Says Shyam Gopal, Country Manager of Brocade, "An IP SAN cannot match a traditional FC SAN in performance. They are suitable for applications that aren't mission-critical."

Some vendors are pushing IP SANs as a complementary technology to traditional fibre channel SANs. P K Gupta, Director, Strategic Development, Asia Pacific, Japan and Korea, EMC Software argues, "IP SANs are ideal for mid-tier organisations, and they can help consolidate existing SANs at the high end. However, FC SAN cannot be replaced by IP for high-end applications as IP SAN is not as robust or secure as FC."

Contrary to the perception that IP SANs are being adopted by SMBs, Chandrashekar of Intransa says that the company has seen strong adoption of IP SAN solutions by businesses across the spectrum. "With our December 2004 launch of the IP 7500, we have seen deployments in media, healthcare and e-commerce companies." The company bagged Wipro Spectramind, HCL Technologies and Mphasis in 2004. Looking at the growth of IP SANs, Intransa is scouting for additional system integrators. The company already has 3i Infotech, Ramco Systems and HCL Infosystems as its system integration partners.

SMBs are going in for IP SAN solutions as the technology facilitates storage consolidation and provisioning. Organisations such as L&T (at Hazira) have deployed this technology.

### Upcoming technologies

#### Virtual SANs

Virtual SAN (VSAN) is a concept promoted by Cisco that allows organisations to partition their physical SAN into multiple VSANs. Using VSANs, it is possible to divide a large physical fabric logically into separate isolated environments to improve Fibre Channel SAN scalability and manageability. Each VSAN can be configured to contain its own dedicated fabric services and management capabilities. The use of VSANs allows traffic to be isolated within specific portions of the network. If a problem occurs in one VSAN, that problem can be handled with minimum disruption to the network.

VSANs are overlaid on top of a single physical SAN. This ability to create several logical VSAN layers increases the scalability of the SAN, allocating



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different resources to different departments. Users can be added or moved between VSANs without changing the physical structure of a SAN.

#### 4 Gbps FC switches

Brocade, Cisco and McDATA have launched 4 Gbps FC switches. As 4 Gbps FC products are backward compatible with the installed base of 1 Gbps and 2 Gbps SAN equipment, it is relatively easy for customers to integrate high performance applications with their existing SANs. To encourage the adoption of this technology, vendors are offering 4 Gbps SAN switches at nearly the same price as that commanded by 2 Gbps switches.

Unlike the 10 Gbps FC standard that is not backward compatible, 4 Gbps products can work with 2 Gbps and 1 Gbps products. 4 Gbps products are intelligent enough to sense whether they are connecting with 2 Gbps or 1 Gbps products and adjust their speed accordingly. While some companies today need a 4 Gbps product, vendors are hoping that by pricing products at a level comparable to 2 Gbps products, they can encourage IT managers to buy this new technology. Another possible use of 4 Gbps products can be for consolidating storage. With 4 Gbps products, it is possible to consolidate hundreds of connections at the FC port level. The usage of 4 Gbps products can alleviate the need to purchase additional ports and switches.



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#### Virtualisation reduces SAN complexity





While SANs promise superior performance and flexibility, their benefits are outweighed by their complexity. Many Indian enterprises are adopting the concept of storage virtualisation to take full advantage of SAN technology. Explains Phil Sargeant, Research Director, Servers and Storage, Gartner, "Storage virtualisation addresses the increasing complexity of managing storage and reduces associated costs. Its principal purpose is to fully exploit of the benefits promised by a SAN." As complexity grows with companies having storage subsystems from different vendors, enterprises deploying SANs will also need a storage virtualisation solution. According to Gartner, about 60 to 70 percent of enterprises will be using some form of virtualised

storage to take full advantage of SAN technology by 2004-05.

Through storage virtualisation, storage devices from several vendors can be consolidated into a virtual storage device. Comments Shailesh Agarwal the Country Manager, Storage, IBM India, "Storage virtualisation permits the consolidation of resources, policy-based automation as well as automated backups."

Virtualised storage is not restricted by the capacity, speed or reliability limitations of physical devices making up the virtual storage pool. This gives customers the ability to choose storage hardware independent of the functionality that they need from it, and to change it and upgrade hardware without disrupting existing data.

Virtualisation also allows companies to choose storage devices that best meet their needs, and then carve up these physical devices into logical volumes. Early deployments of storage virtualisation have taken place in the BFSI, telecom, and oil and gas verticals. This is logical considering that these sectors were early SAN adopters and how they are realising the advantages of storage virtualisation. In the final analysis, combining storage virtualisation with storage resource management allows IT staff to visualise and monitor all the resources on the network, plan for capacity growth and allocate resources according to business priorities. Users can opt for hardware vendors as needed and cross-train staff to use a single set of tools across the IT environment. The cost savings are significant, and solutions are consistent across platforms.

			
Enterprise-class storage device attributes like reliability, high availability and scalability are being brought to mid-range systems  <b>Shailesh Agarwal</b> Country Manager, Storage IBM India	Networked storage has become affordable and SMBs are investing in NAS devices  <b>George Thomas</b> Country Manager Network Appliance Systems (India) Limited	IP SANs cannot match a traditional Fibre Channel SAN in performance  <b>Shyam Gopal</b> Country Manager, India, Brocade	Many mid-sized organisations are scouting for IP SAN solutions as these work out cheaper than a Fibre Channel (FC) SAN  <b>B Chandrashekar</b> Country Manager, India, Intransa

**SMBs show potential**

IDC expects Indian SMBs to be the biggest spenders on storage this year. There is also a diminishing gap between mid-range and enterprise storage systems. Concur Shailesh Agarwal, Country Manager, Storage Solutions, IBM India, "Enterprise class storage device attributes such as reliability, high availability and

scalability are being brought to mid-range systems." Storage vendors are bringing all these attributes to mid-range systems sensing the immense potential that this category holds.

Storage vendors have trained their eyes on the SMB segment and to this end, they are pushing their prices down to accommodate the pockets of Indian customers. For instance, an entry-level SAN box in 2004 cost as little as Rs 2.2 lakh as compared to Rs 7 lakh in 2003. EMC had started by focussing on large enterprises. It is now tapping the SMB segment with the CLARiiON series of products as part of a global initiative to cater to the external storage requirements of this segment.

Says PK Gupta, Director Strategic Development, Asia Pacific, Japan and Korea, EMC, "Spending on storage is set to increase in the SMB segment."

EMC educated potential customers and gained marketshare in the process. The company's message was that storage was not about capacity and that servers did not equate to storage. On the pricing front, vendors expanded their portfolio to suit the pockets of varied customers. The shift from the high end to accommodate customers in the mid-size segment can be seen from the fact that EMC's cheapest solution used to be priced at around Rs 25 lakh, whereas now the company's entry-level box goes for around Rs 3 lakh.

### **NAS SAN convergence quickens**

The convergence of SAN and NAS is expected to accelerate this year. While SAN vendors are promoting NAS gateways, NAS vendors are pushing iSCSI. Says P P Subramanian, Managing Director, Hitachi Data Systems India, "SAN-NAS consolidation helps enterprises reap better RoI."

### **Network Attached Storage**

IDC estimates that the Indian NAS market shrank by 1.7 percent, from \$16.8 million in 2003 to \$16.5 million in 2004. The analyst firm puts Network Appliance, HP and IBM as the top three players in the Indian NAS segment. India has been a happy hunting ground for Network Appliance, contributing roughly 15 percent of its Asia Pacific revenues in 2004.

Says George Thomas, country manager, Network Appliance Systems (India) Limited, "Networked storage has become affordable and SMBs are investing in NAS devices." The company's Fabric Attached Storage (FAS) FAS900 Series and FAS200 Series have contributed significantly to its Indian sales.

SAN majors such as HP are trying to catch up with Network Appliance in the NAS sub-segment using their SAN strengths. For instance, HP is trying to use the installed base of its SAN products for selling its NAS products. HP recommends NAS boxes to its existing SAN customers for hosting non-critical applications. The biggest growth areas for HP are BPO, banking and software development. It has also seen growth from banks using NAS devices for branch-level backups. HP is positioning SAN for mission-critical applications and NAS for non-mission-

critical applications.

EMC has been capitalising on its SAN strengths to sell the EMC NetWin NAS Server (based on Windows Storage Server 2003) that is being marketed as a cost-effective solution for organisations looking to implement NAS for the first time. The same server can also be used to expand the capabilities of an existing SAN by enabling it to perform NAS functions as well. NAS gateways are products that are installed on top of SAN to provide NAS functionality.

Another development in the NAS space has been the acceptance of Microsoft's Windows Storage Server (WSS). HP and EMC, among others, have released entry-level WSS-based NAS boxes. For both vendors, WSS gave them a quick way to release a fairly robust entry-level NAS box at a competitive price point. In India, HP and Microsoft are pitching entry-level NAS boxes as a plug-and-play platform for dedicated file and print services, disaster recovery or backup and for file server consolidation. SMBs are looking for cost-effective options for storage and retrieval of e-mail mailboxes. HP wants to position its NAS boxes as a viable option for this segment. The importance of the HP-Microsoft alliance can be seen from the fact that it is targeting 5,000 Microsoft Exchange customers in India. 2004 saw small players such as Tulsient coming out with entry-level NAS boxes that cost less than \$500 per box. These devices start with a capacity of 360 GB and scale up to 2.4 TB in the same enclosure. Tulsient says that this approach is suited to SMBs, because this flexibility allows companies deploying NAS to have fixed configurations giving rise to the phenomenon of forklift upgrades.

NAS vendors have also geared up to address compliance issues. For example, Network Appliance's product, SnapLock backs up new or changed files only once. This feature is designed for use for organisations complying with regulations such as HIPAA, wherein medical records are meant to be unchanged.



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