

# COMMUNICATING WITH SAM

## Windows Storage Strategies: Taking Lessons from the iSeries

### Question:

Over the past few years our server farm of Windows-based servers has grown exponentially to accommodate peripheral applications. While the iSeries still remains the centre of our data strategy, these additional servers play an important role in supporting the business. However, while our management has embraced these new applications, they have been overwhelmed by the operational activity necessary to support these servers. The amount of disk space we require seems to grow in leaps and bounds on a daily basis, while the complexity of managing that disk capacity seems to grow exponentially relative to the capacity increases. We have been spoiled by the simplicity of the AS/400 platform, and the architectural benefits such as virtual storage that simplifies tasks such as storage management and back-up procedures. What recommendations can you make on how we can bring some of the order and discipline of our iSeries platform to our Windows environment?



**Sam Johnston**

### Answer:

CIOs all over the globe are struggling with the same issue. They realize first hand that the main issue today is storage management. "Recent studies have found that for every dollar spent on storage hardware, as much as nine dollars may be spent on managing it." For this reason storage networking in the form of either, Network Attached Storage (NAS) or Storage Area Networks (SANs) are becoming the solutions of choice. By virtualization of storage hardware these solutions are bringing some of the benefits of storage management to other computing platforms that iSeries customers have built into OS/400 and have enjoyed for quite some time.

However, while we all understand the virtues of a storage management solution, the capital investment can be significant and many CIOs struggle in developing the business case to justify the investment. It is often difficult to isolate the costs associated with managing storage without a proper solution, making it difficult to calculate ROI.

There is more to NAS & SAN than just Storage Devices, HBAs, Switches, Fibre Cabling, & Storage Gateway Routers. Software is required for operation and management of these devices.

Many different hardware and software components are available from different manufacturers. The issue of inter-operability testing and solution verification is a major consideration in selecting a solution. If you don't have the time to research which elements are right for your environment, or the money to buy a complete tested solution, fortunately you have another option, which is to leverage iSeries investment and integrate your Windows environment into your iSeries. In other words turn your iSeries into a SAN for your Windows environment.

With a little hardware and V5R1 or V5R2 you have a complete SAN solution that is tested end-to-end. By using your iSeries disk to service both your Windows SAN and your production OS/400 needs, it should deliver economies of scale, reduced operating expenses ongoing by consolidating platforms for SAN purposes and should significantly lower the capital upgrade necessary. This should make it easier for the CIO to build a business case for introducing a SAN.

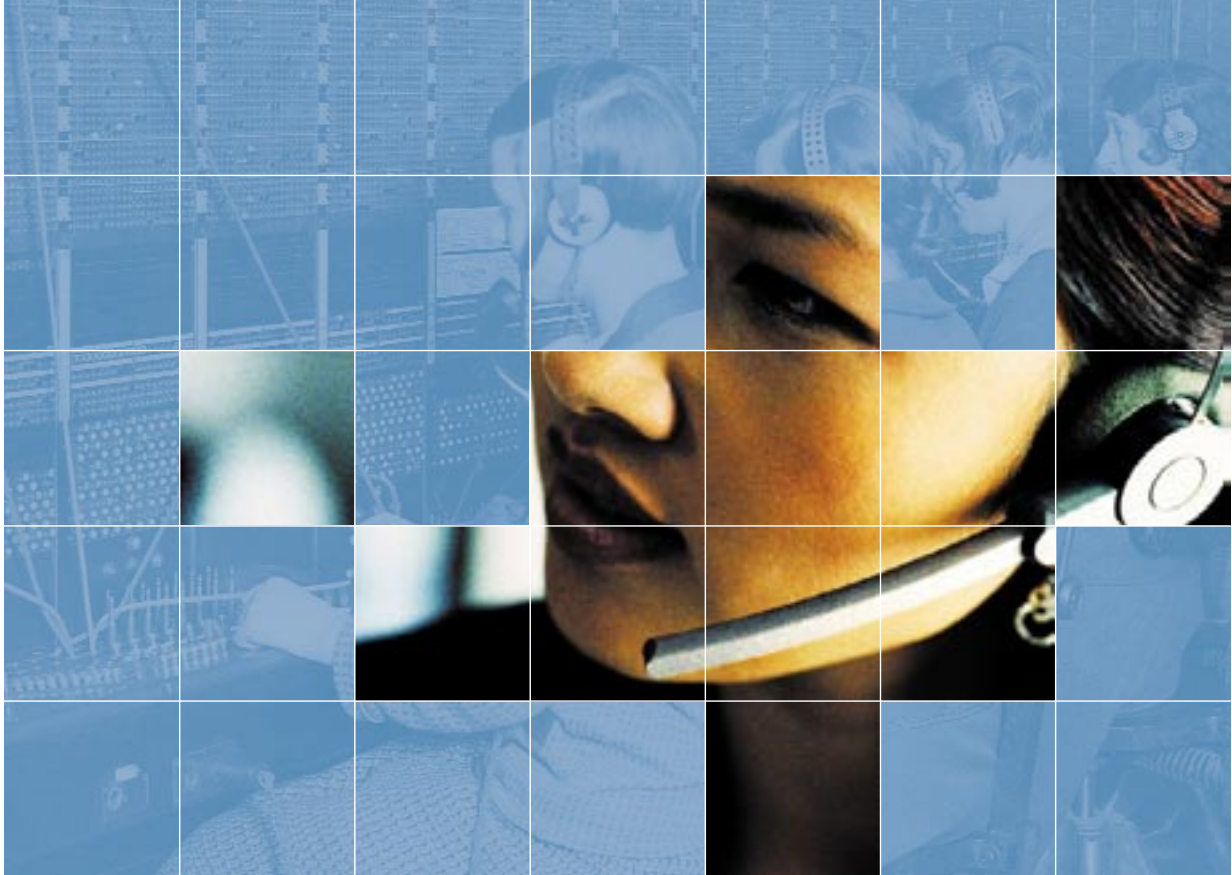
To leverage your investment in the iSeries to assist in overall storage management, we recommend using the Integrated xSeries Adaptor (IXA). The IXA is an adaptor that resides in an xSeries server and connects it to the HSL bus of an iSeries.

This approach allows you to choose from the latest and highest performance multiprocessor models the xSeries has to offer. This enables a Windows environment with much more processing capacity than on an Integrated xSeries Server (IXS). The latest i890 can support 32 IXA and 32 IXS servers

All of the disk space and storage management functions including backup to tape are performed from the iSeries. It is really having the best of both worlds. The benefits of running both OS/400 and Windows applications from a single server include:

- 1) The iSeries becomes a SAN for the Windows environment by providing the following storage functions.
  - a. Storage for multiple servers up to 2TB per server
  - b. Raid protection and mirroring
  - c. File level backup and restore
  - d. Disaster level backup and restore
  - e. Add storage dynamically to Windows server
  - f. Move storage between servers
  - g. Switch storage to another server
  - h. Share Tape, CD-ROM and DVD Resources
- 2) Reduces operations and skill costs by allowing iSeries operator to manage operations and backup for both environments.

1. IBM TotalStorage Solutions Magazine, July 2002



# Moving Forward

MAKE A FRESH START WITH YOUR COMMUNICATION.

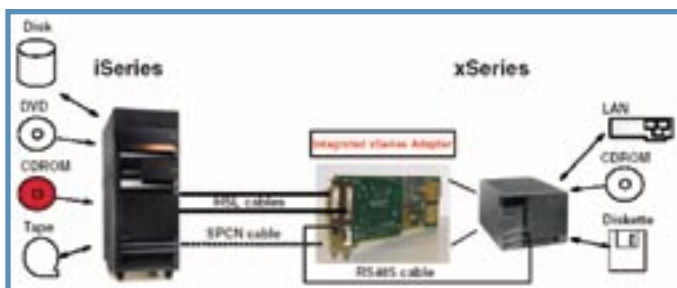
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- 3) Reduces the total cost of ownership by improving disk utilization rates. No more islands of unused capacity on a server-by-server basis. You can move capacity easily and quickly to where it is needed.
- 4) Reduce the total number of tape drives and the number of different tape formats required for backup. Since all the Windows code and data is on the iSeries the normal iSeries backup drives and routines can include your Windows environment.
- 5) Lower cost of user administration by creating users once and synchronizing the user profiles and passwords.
- 6) Consistent hardware and device drivers can improve Windows stability. The reliability of iSeries HW & SW is at the top of the most reliable list. The integration code and hardware all comes from IBM and has been thoroughly tested. Fix distribution is via OS/400 PTFs and Windows driver updates can be distributed from the iSeries. This can be centrally managed across a wide area network.
- 7) The unique hot spare facility provides high availability for mission critical Windows applications. If an xSeries server fails it is replaced without the need to reinstall Windows.
- 8) Windows environments can be deployed in clustered iSeries configurations via the IASP. If the primary node fails any IFS objects in the IASP will become visible on the secondary. If the secondary node contains the same IXA installed server you can fail over or manually switch nodes. This functionality is similar to the Microsoft Cluster Server without load sharing capability.



**Figure 1. Source: iSeries, Windows 2000 & xSeries Integration – Craig Johnson – IBM**

In other words, you can make managing your Windows disk storage as simple as your iSeries operation itself.

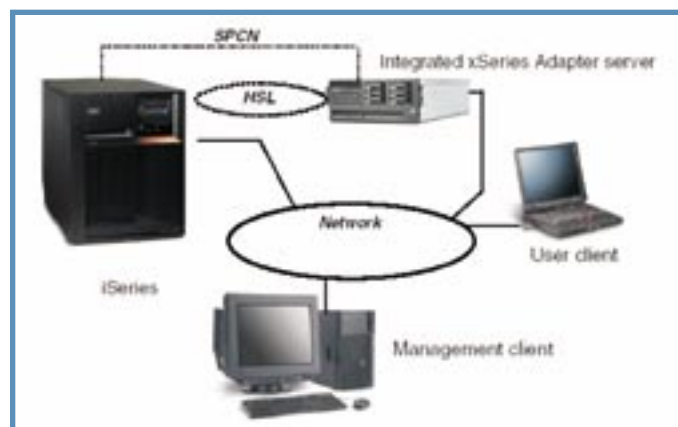
Not only has IBM improved the hardware integration; there has been a major improvement of OS/400 to simplify manageability for Windows servers. Many tasks formerly had to be performed through the green screen interface. V5R2 continues to bring enhancements to iSeries Navigator for the graphical management of the Windows environment.

The major graphical administration function areas are:

- 1) Server Management:
  - a. Start any or all Windows Servers
  - b. Shutdown and restart any or all Windows Servers

- c. Show Windows Server Status
  - d. Display a servers properties
- 2) Disk Drives
  - a. Create a new Windows disk drive or copy a drive
  - b. Link & Unlink a disk drive to a Windows server
  - c. Delete Windows disk drives
- 3) User Enrolment
  - a. Enroll OS/400 users and group profiles in Windows.
  - b. Unenroll OS/400 users and group profiles in Windows.
  - c. Display messages associated with enrollment.

Windows Servers can also be managed from any Internet enabled cell phone or PDA through iSeries Navigator for Wireless in V5R2. This requires 5722-XP1 (iSeries Access for Wireless). From this interface you can confirm the status of servers and check if any performance thresholds have been exceeded or execute commands.



**Figure 2. Source: Direct Attach xSeries for the IBM eServer iSeries Server - IBM**

The introduction of the IXA and improvements back in V5R1 have allowed iSeries users to create robust, fault tolerant, and highly available Windows environments that have all the benefits of the best Storage Area Networks. This is tried and tested technology that works and gets better in V5R2. If your need is to manage Windows 2000 and iSeries this is a very effective way to do both, especially when the iSeries is central to your overall information technology strategy, and will continue to have operational focus in terms of resources and investments.




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