



IBM server™ iSeries™

iSeries Windows™ Integration Overview

Integrated xSeries Solutions

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iSeries and Windows Servers

- A large majority of iSeries and AS/400 customers have Windows® servers installed
- ISVs and IBM are delivering complementary applications with Windows Servers
- Customers want to consolidate servers



iSeries Adds Value to Windows 2000 Servers

- **User Administration**
- **Networking**
- **Disk Management**
- **Backup**
- **Reliability**
- **Testing**
- **Availability**
- **Remote Server Admin**





... including "de facto" standards like Wintel servers

iSeries Windows 2000 Server® Integration

■ Solution

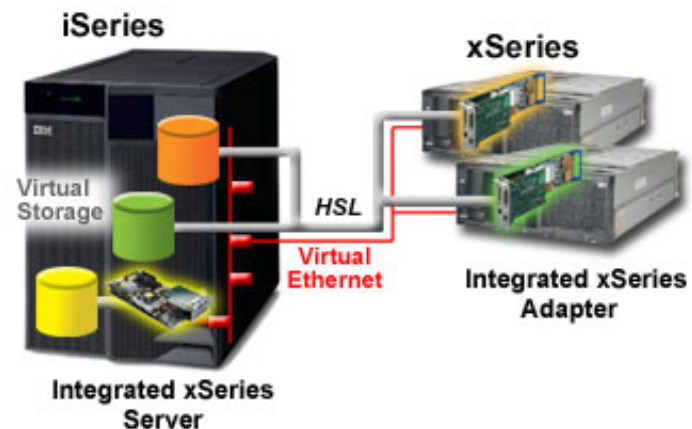
- ▶ Extend OS/400 applications with Windows™
- ▶ Consolidate Windows Servers

■ Approach

- ▶ Leverage xSeries hardware
- ▶ Use Standard Windows Server software
- ▶ Add value to Windows servers

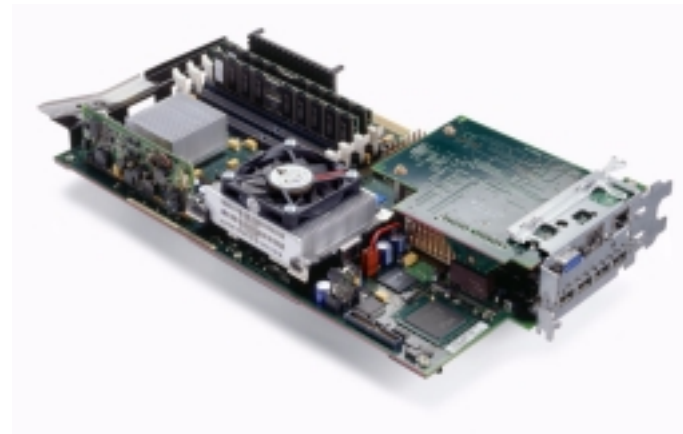
■ Choice of Offerings

- ▶ Server "under the covers" - Integrated xSeries Server
- ▶ Direct Attach xSeries Server - Integrated xSeries Adapter



Integrated xSeries Server

- **Intel® 1.6 GHz Xeon™ Processor**
 - ▶ With Hyperthreading technology
 - ▶ Up to 4 GB Memory
- **Integrated 10/100 Mbps Ethernet Adapter**
- **Leverages iSeries resources**
 - ▶ Virtual disk storage - up to 2 TB
 - ▶ Virtual 1 Gbps Ethernet connections
 - ▶ Shared Tape, DVD and CD-ROM
- **iSeries Models 270, 8xx**
 - ▶ OS/400 V5R2 Required
 - ▶ 1 GHz IXS available for V5R1
- **Windows 2000 Server® Support**
 - ▶ Windows 2000 Server
 - ▶ Windows 2000 Advanced Server®
 - ▶ Microsoft .Net®*



Integrated operations and server management

* Planned for 1Q 2003, dependent on Microsoft delivery

Integrated xSeries Adapter

- **Attaches the latest 2, 4, 8-way xSeries Servers***
 - ▶ 1 GBps High-Speed Link
 - ▶ x235 (2w), x255 (4w), x360 (4w), x440 (8w)
 - ▶ Models 270, 8xx
 - ▶ OS/400 V5R1 or V5R2
- **Retains features and value of Integrated xSeries Server**
 - ▶ Virtual disk storage
 - ▶ Virtual 1 Gbps Ethernet connections
 - ▶ Shared Tape, DVD & CD-ROM
- **iSeries Models 270, 8xx**
- **Windows 2000 Server Support**
 - ▶ Windows 2000 Server
 - ▶ Windows 2000 Advanced Server
 - ▶ Microsoft .Net**

Enterprise **X**-Architecture™



Integrated operations and server management

* Selected Open Bay models of x235, x255, x360, and x440

** Planned for 1Q 2003, dependent on Microsoft delivery

Matched, High-performance Technologies

Matching new high-performance 32 and 64-bit processor technology, with new high-performance memory and I/O subsystems.

Enterprise **X**-Architecture™

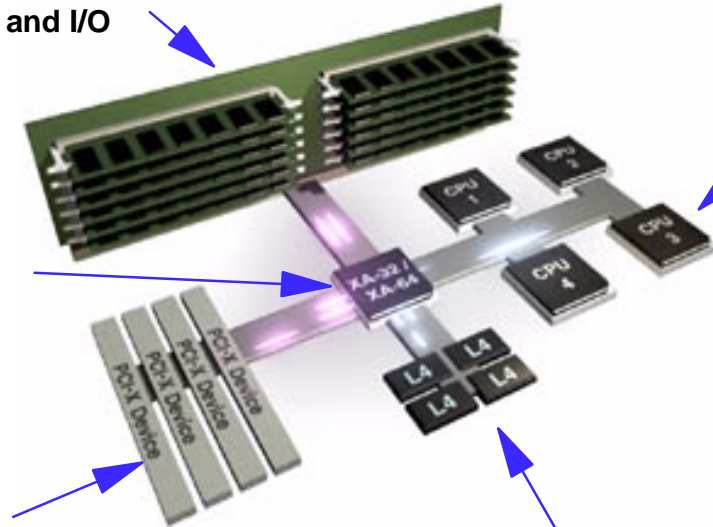
New High-performance memory subsystems with the bandwidth to handle the new processors and I/O

New High-performance 32-bit and 64-bit Processors from Intel

New High-performance Chipset designed to take advantage of the new processor, memory and I/O technologies

New High-performance PCI-X Expansion capabilities, that can move data dramatically faster than current PCI technologies

New High-performance Cache technology to enhance the processor performance, and better system utilization



Result: Increased overall performance, system utilization, scalability and availability

Integration



iSeries Integrated xSeries Solutions : What is New

- **Support for new iSeries models**

- ▶ i800, i810, i825, i870, i890

- **Integrated xSeries Server/Adapter maximums increased on 8xx**

- ▶ Enables iSeries to support for larger and more complex Windows 2000 Server environments

- **i825, i870, i890 Enterprise Package includes Integrated xSeries Server**

- ▶ 1.6 GHz Integrated xSeries Server
- ▶ Education Voucher valid for ILS iSeries Windows Implementation Class
- ▶ Service Voucher valid for iSeries Windows Integration Services



Integrated xSeries Server (IXS)

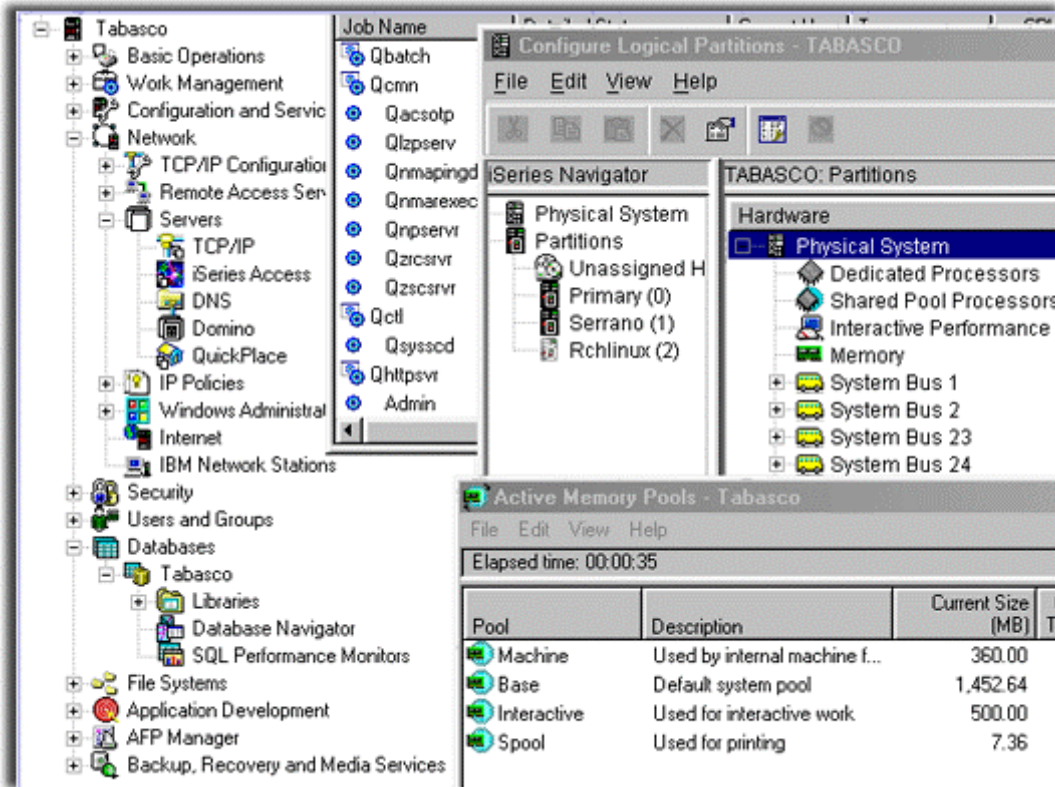
Model	Max IXS	Model	Max IXS
		800	4
270	3	810	13
820	12	825	36
830	28	870	48
840	32	890	48



Integrated xSeries Adapter (IXA)

Model	Max IXA	Model	Max IXA
		800	3
270	2	810	7
820	8	825	18
830	16	870	60
840	32	890	60

OS/400 V5R2 & iSeries Navigator



- Improve operator productivity with extensive automation for workload management
- Centralized administration of multiple operating environments across LPARs and Integrated xSeries servers
- Integrated management for enterprise middleware solutions

User Administration

Problem

- Multiple system user management

iSeries Solution

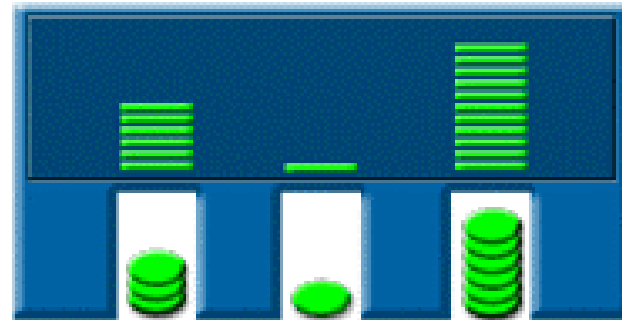
- Adding OS/400 Users and Groups to Windows 2000 Server Domains and Synchronizing Passwords

Benefit

- Can reduce costs with integrated user management

The screenshot displays the iSeries Navigator interface. The left pane shows a tree view under 'Environment: My Connections' with 'User Enrollment' expanded to show 'Users' and 'Groups'. The right pane shows a table of users for 'Asj1: Users' on 'Server: Nt2k'.

Windows User	Enrollment Status	Enrolled Groups
Annasue	Enrolled	
Ggaylord	Enrolled	Ntadmins
Krisd	Enrolled	Ntadmins
Ntmrkt1	Enrolled	Ntmrkt
Schuster	Enrolled	Ntadmins
Tgrube	Enrolled	Ntadmins
Wurgler	Enrolled	Ntadmins



Virtualization

Virtual Networking

Problem

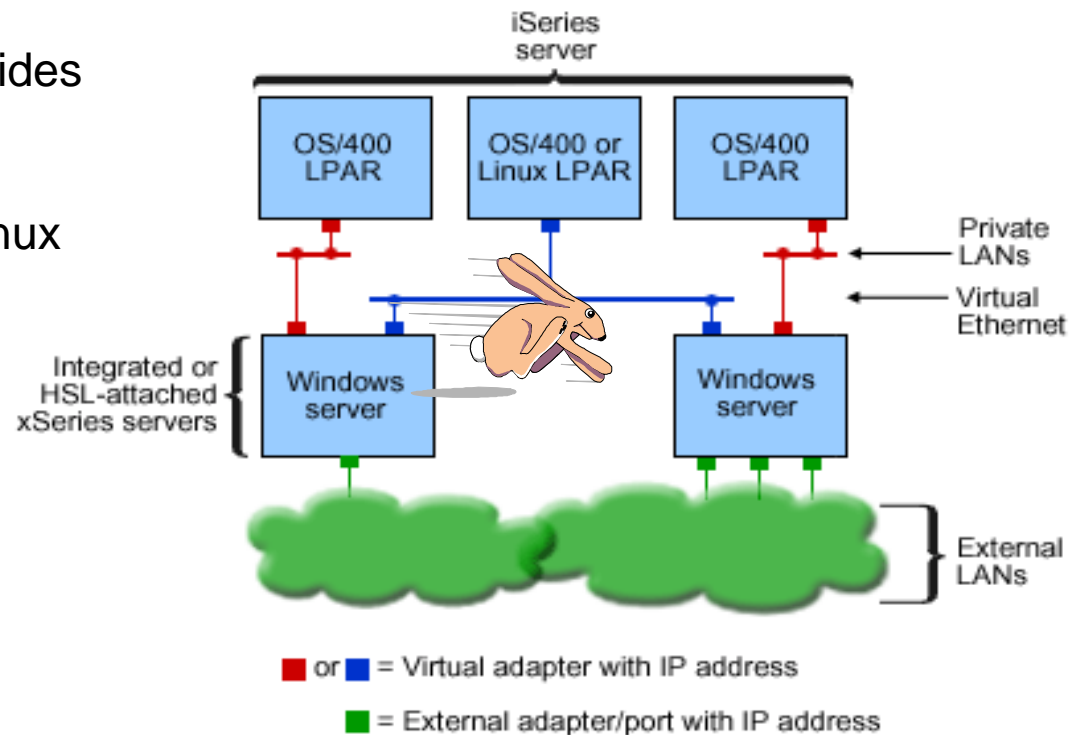
- Upgrading network infrastructure to support high-speed application communication is expensive in terms of time, resources and equipment

iSeries Solution

- Virtual Ethernet at OS/400 V5R2 provides 1 Gb Connections with no LAN Adapters/Switches
- Windows to Windows to OS/400 to Linux
- Up to 5 Connections per IXS / IXA

Benefit

- Extremely secure and reliable server communication over high-performanc connections
- Can reduce network traffic and expos "sniffing"



RZAHQ016-3

Virtual Storage

Problem

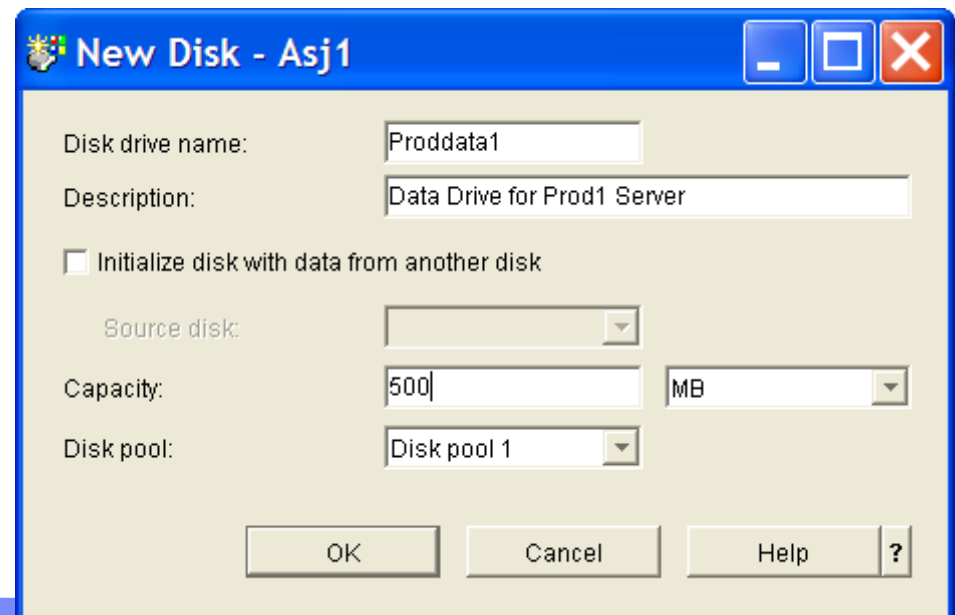
- Storage management across the server farm

iSeries Solution

- Flexible Virtual Disks from 1 MB to 64 GB.
- Up to 2 TB per Windows server
- Hot add of iSeries Storage Space to Windows 2000 Server

Benefit

- Can reduce costs with flexible, centralized storage management



New Disk - Asj1

Disk drive name: Proddata1

Description: Data Drive for Prod1 Server

Initialize disk with data from another disk

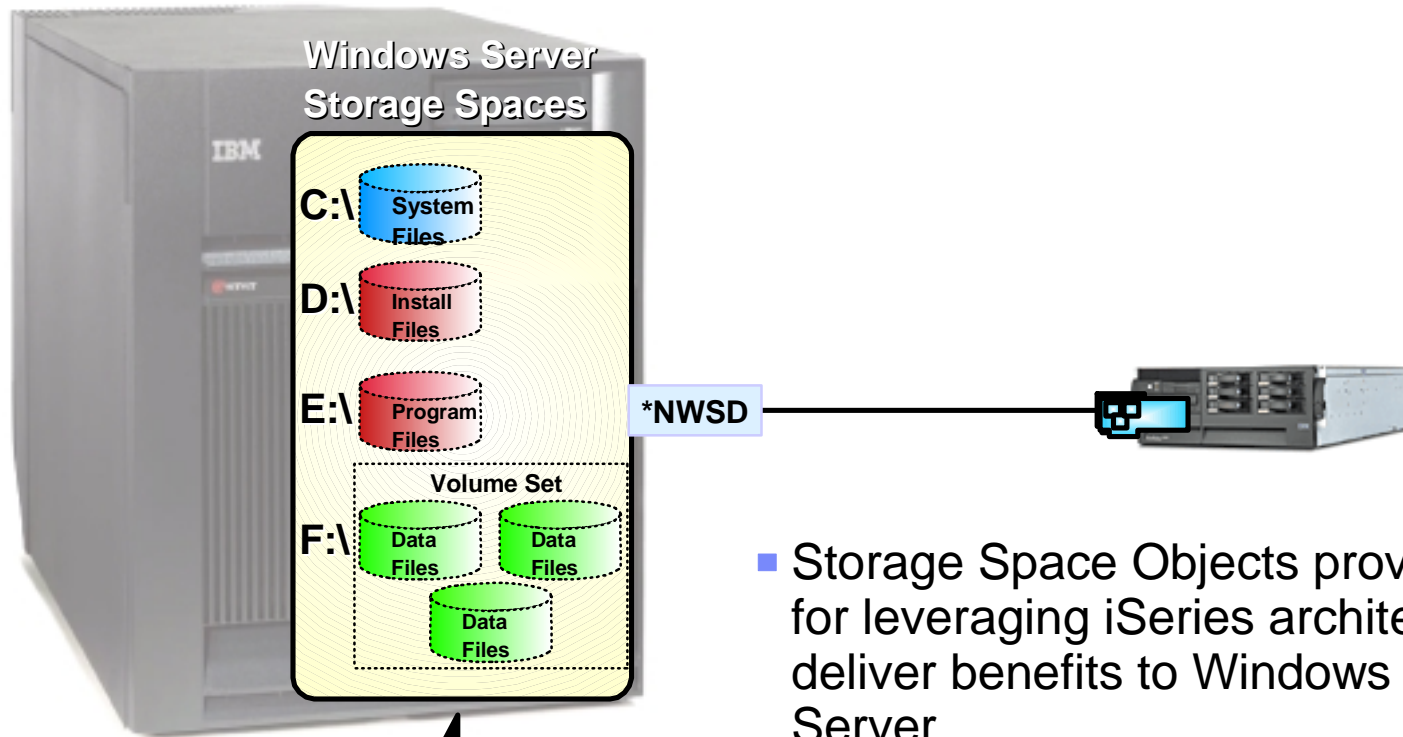
Source disk: [Dropdown]

Capacity: 500 MB

Disk pool: Disk pool 1

OK Cancel Help ?

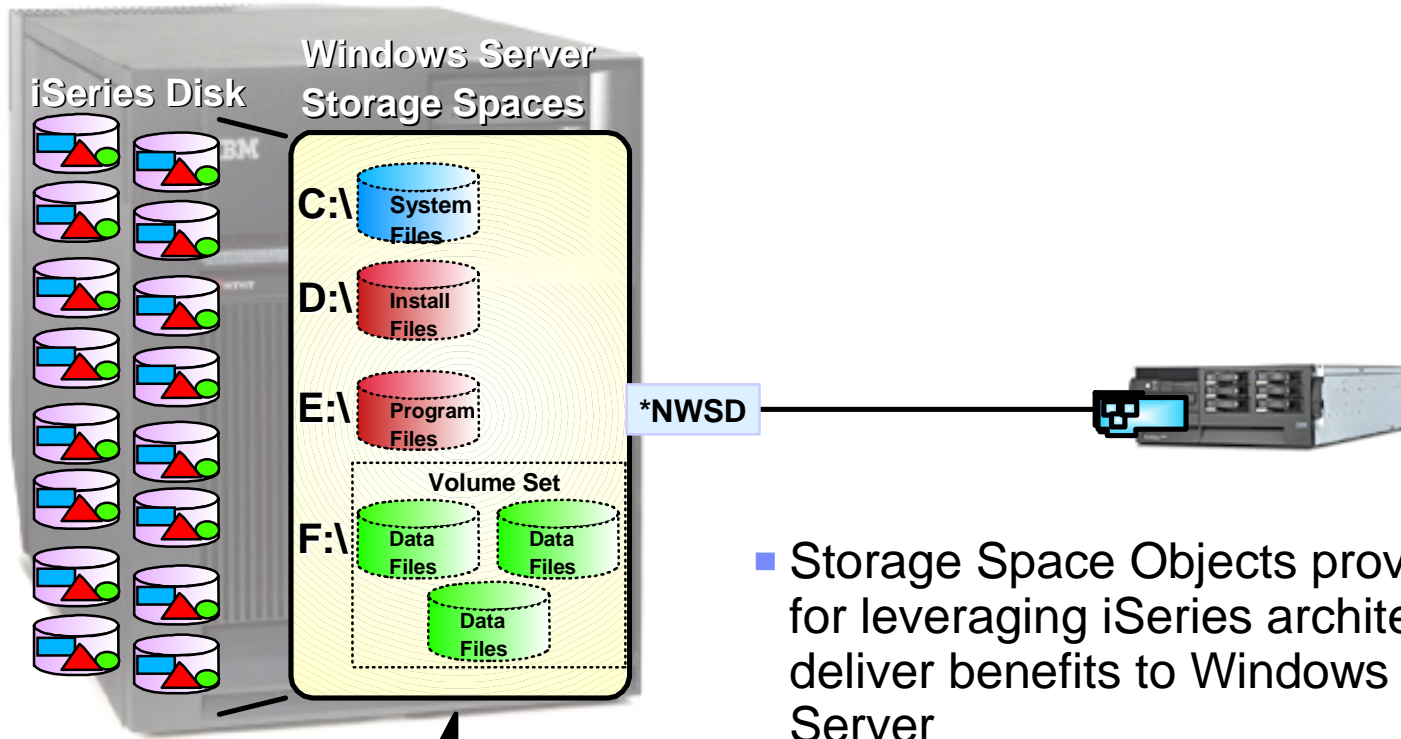
iSeries Storage Virtualization for Windows 2000 Server



Add disk storage to a Windows 2000 Server dynamically

- Storage Space Objects provide basis for leveraging iSeries architecture to deliver benefits to Windows 2000 Server
 - ▶ Performance
 - ▶ Consolidated Backup
 - ▶ Hot Spare
 - ▶ Testing

iSeries Storage Virtualization for Windows 2000 Server



Add disk storage to a Windows 2000 Server dynamically

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Coleman Cable

“Leveraging the iSeries as allowed our Windows Servers to be a lot more efficient and stable than they were in the past.”

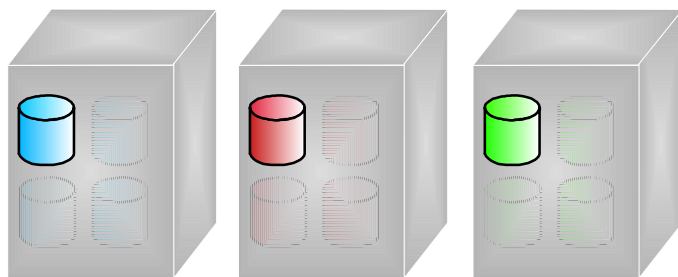
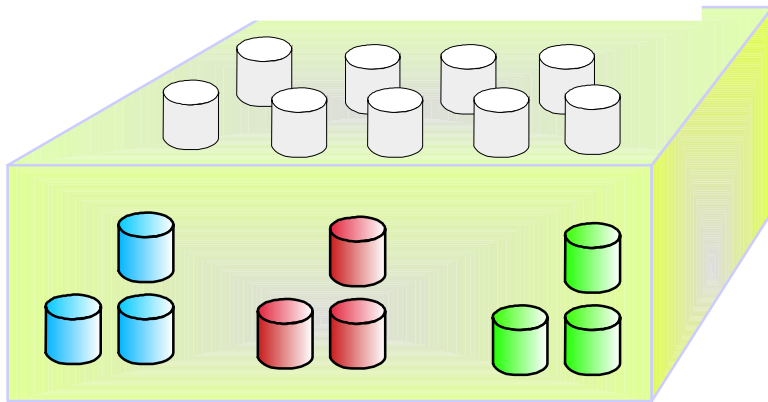
“My file server speeds are faster, as are disk access speeds. This has just exceeded my expectations.”

“When you look at the increased speed, performance and reliability – everything has improved quite dramatically.”

-- Mark Andrews, CIO, Coleman Cable

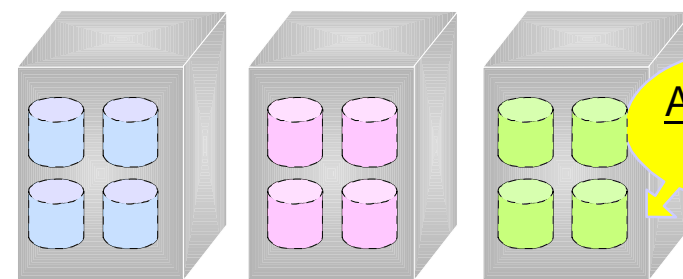
iSeries Storage Consolidation Advantages

Consolidated Storage



Server 1 Server 2 Server 3

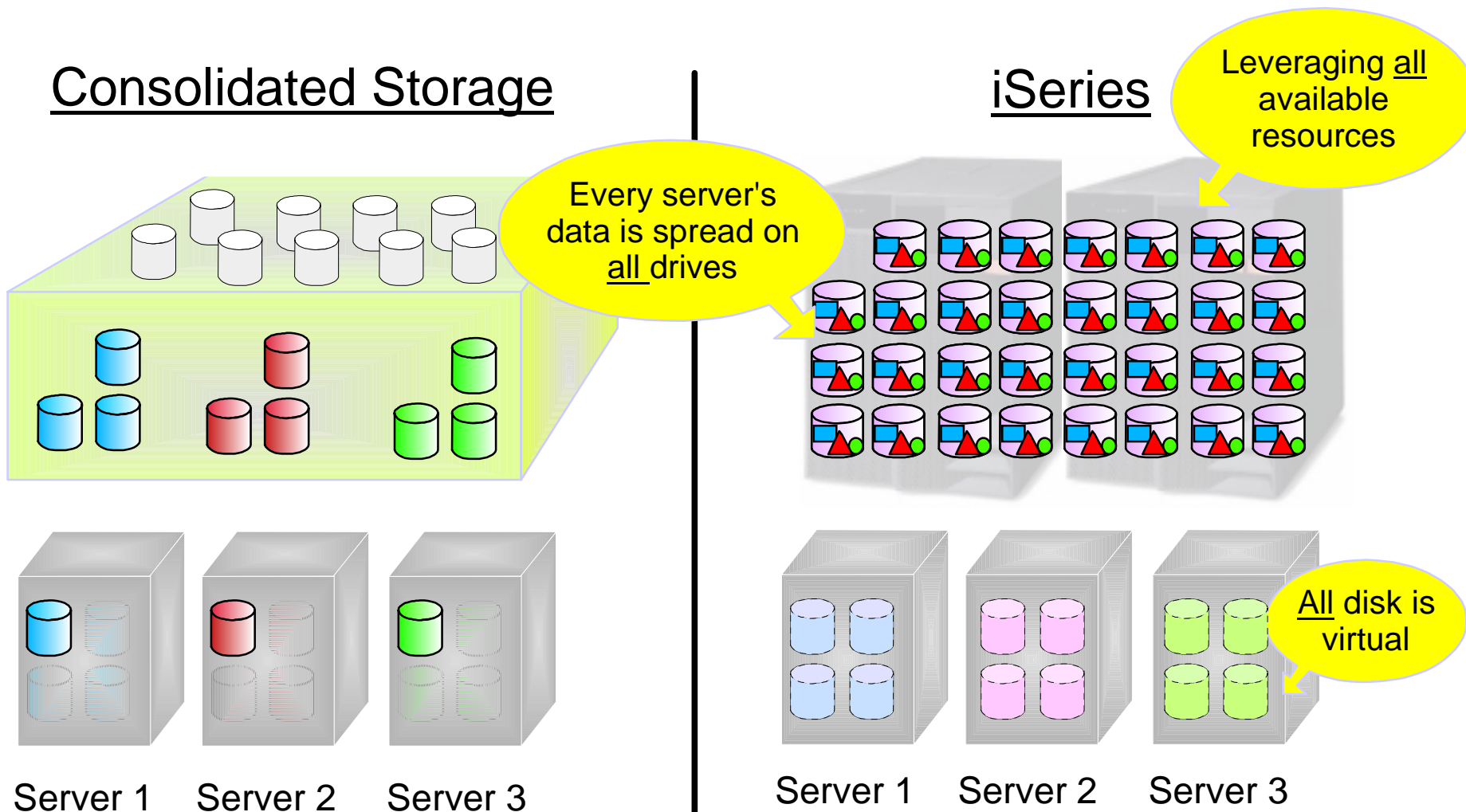
iSeries



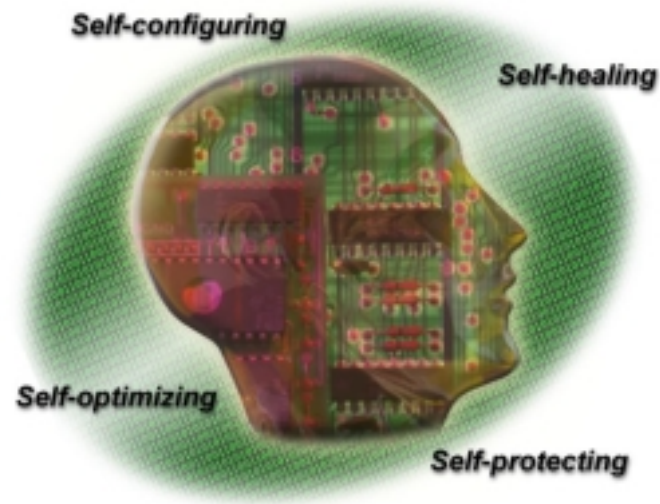
All disk is virtual

Server 1 Server 2 Server 3

iSeries Storage Consolidation Advantages



Autonomic Computing



Reliability

Problem

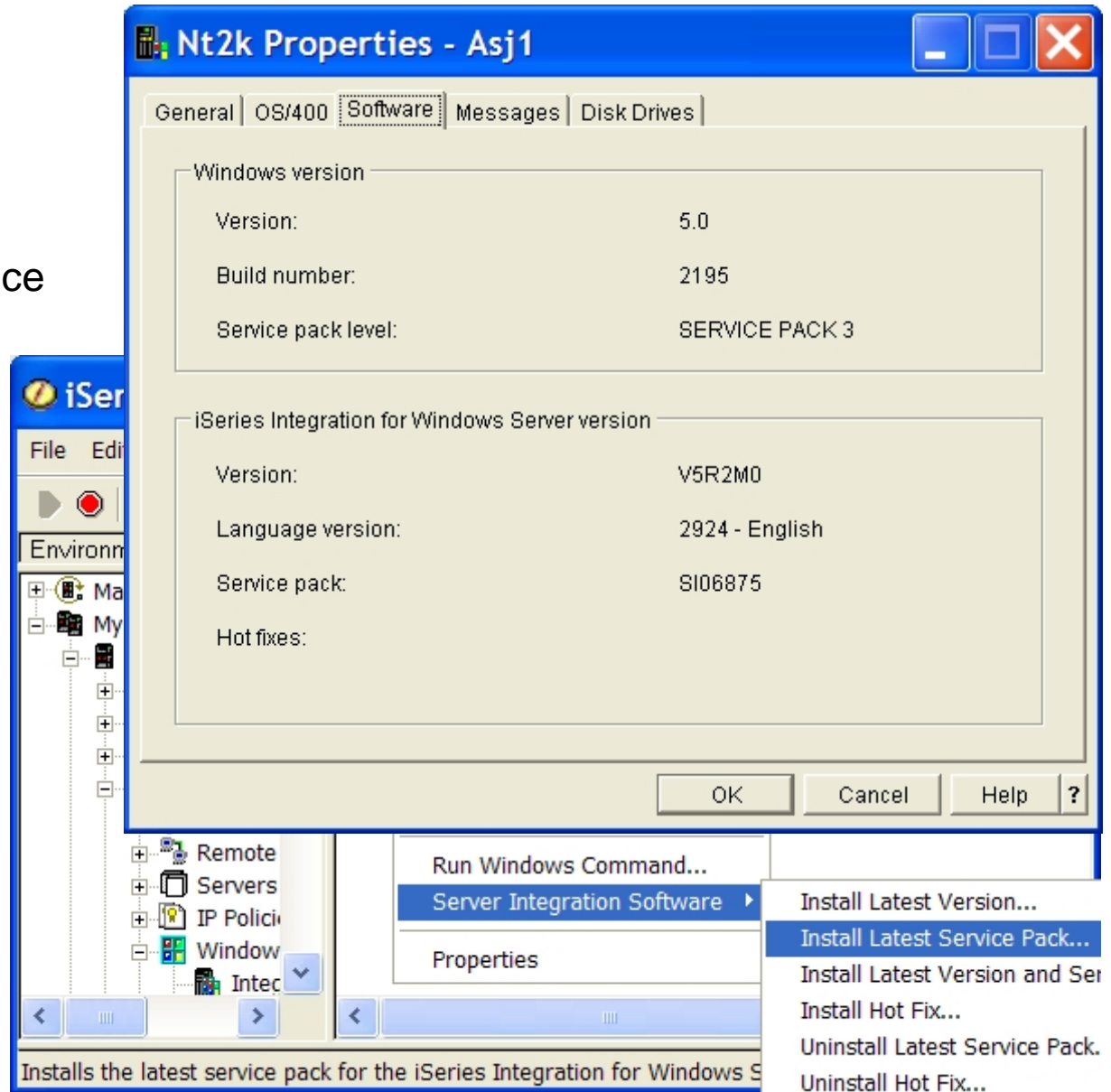
- Different hardware and device drivers can cause server instability

iSeries Solution

- IBM provides a consistent set of disk, tape, CD, and LAN hardware and device drivers that are tested to work together

Benefit

- Greater consistency can lead to better reliability



Integrated Backup

Problem

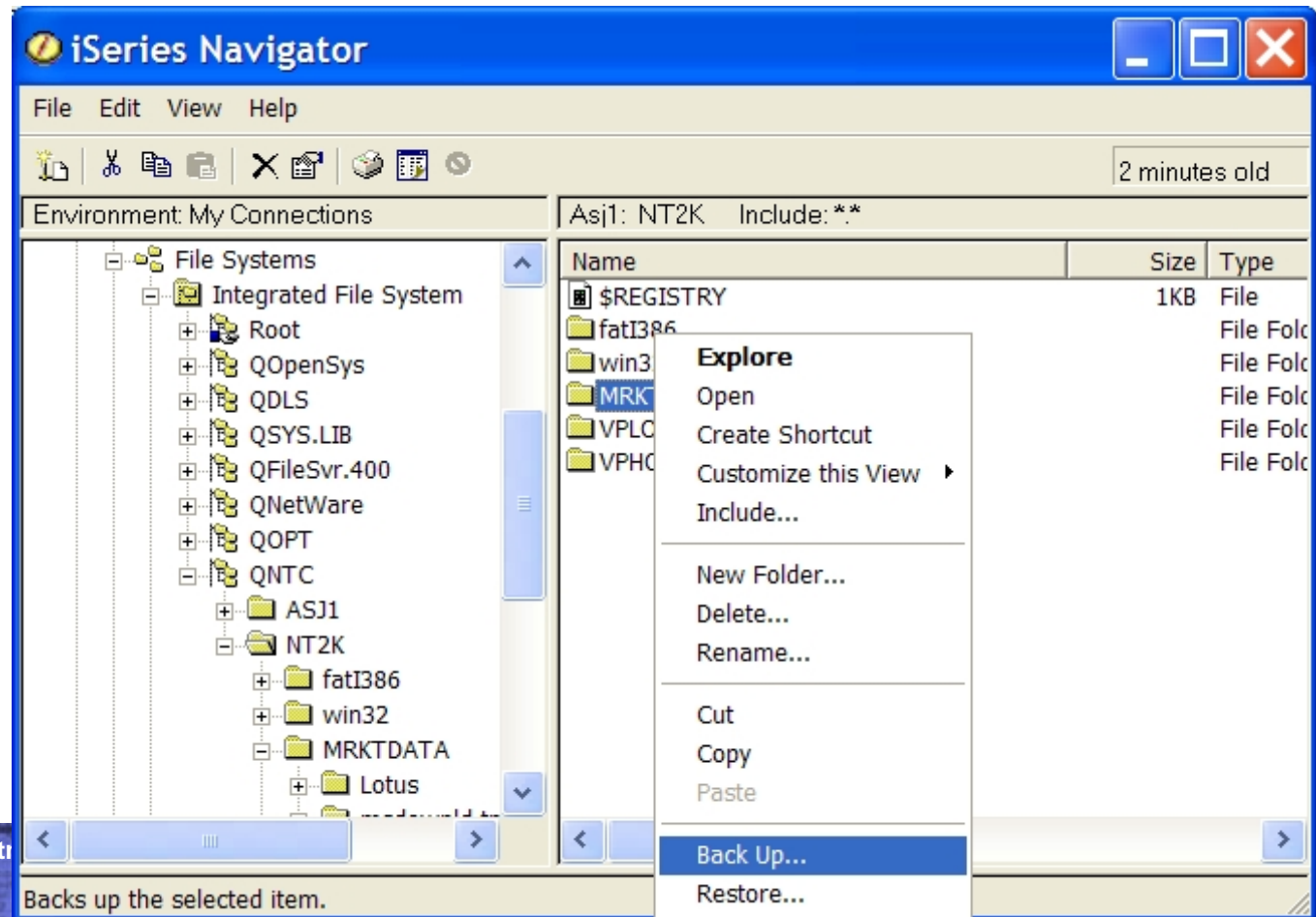
- Managing and automating heterogeneous backups

iSeries Solution

- Save OS/400 and Windows storage spaces to iSeries tape drives

Benefit

- Can reduce costs by leveraging iSeries resources and skills



Indiana University Medical Group



Background

- ▶ A practice of 100 faculty physicians at the Indiana University (IU) School of Medicine, IU Medical Group-Primary Care offers health care packages for corporations as well as services for individual patients.

Objectives

- ▶ Growing server demands
- ▶ Growing storage demands for data warehousing, file serving, e-mail and Web applications
- ▶ Consolidate 8 PC servers

Solution

- ▶ iSeries
- ▶ 4 Integrated xSeries Servers
- ▶ 2 xSeries attached to iSeries with IXA

Benefits

- ▶ Much faster backups - days to 1 hour
- ▶ Consolidated systems management
- ▶ Simplified adding capacity



Testing

Problem

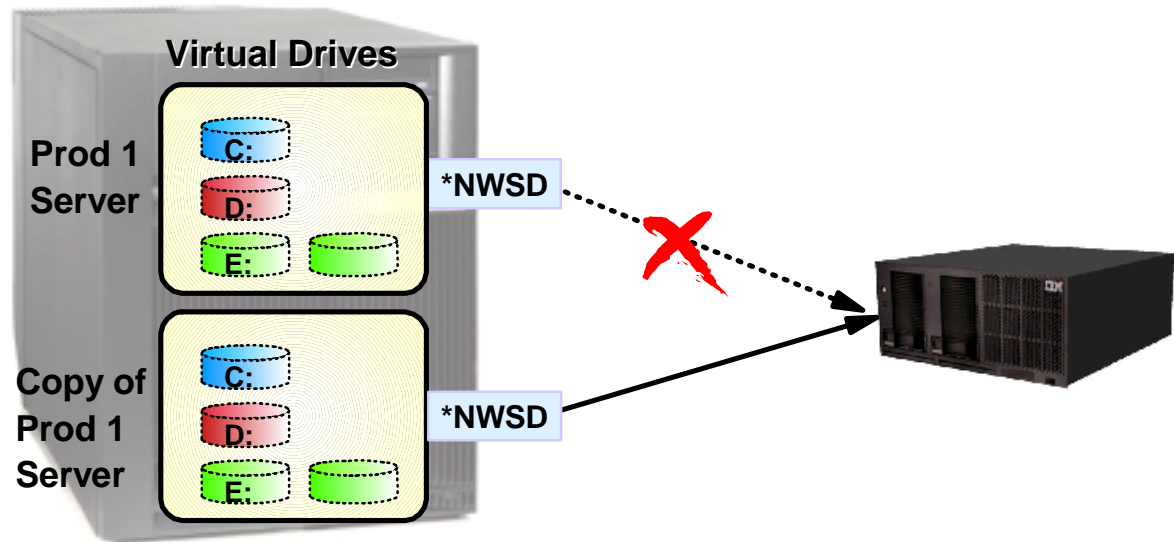
- Adequately testing Microsoft Service Packs, Application Fixes, device drivers before they are placed in production

iSeries Solution

- Logical Servers allows testing with the production image and hardware

Benefit

- Can reduce the outages caused by change



Huhtamaki



www.huhtamaki.com

“Before consolidating on the iSeries and xSeries we required at least three dedicated administrators to run our servers...now because of its ease of use, we need only two administrators to run the new system.”

Brendan Carlton
Systems Administrator,

Huhtamaki

“One of the things I enjoy most about the IBM iSeries and xSeries integration is that I have been able to take a painstaking process of building a brand new Wintel server from scratch and getting it deployed from approximately a three to four day procedure down to 20 minutes.”

Availability

Problem

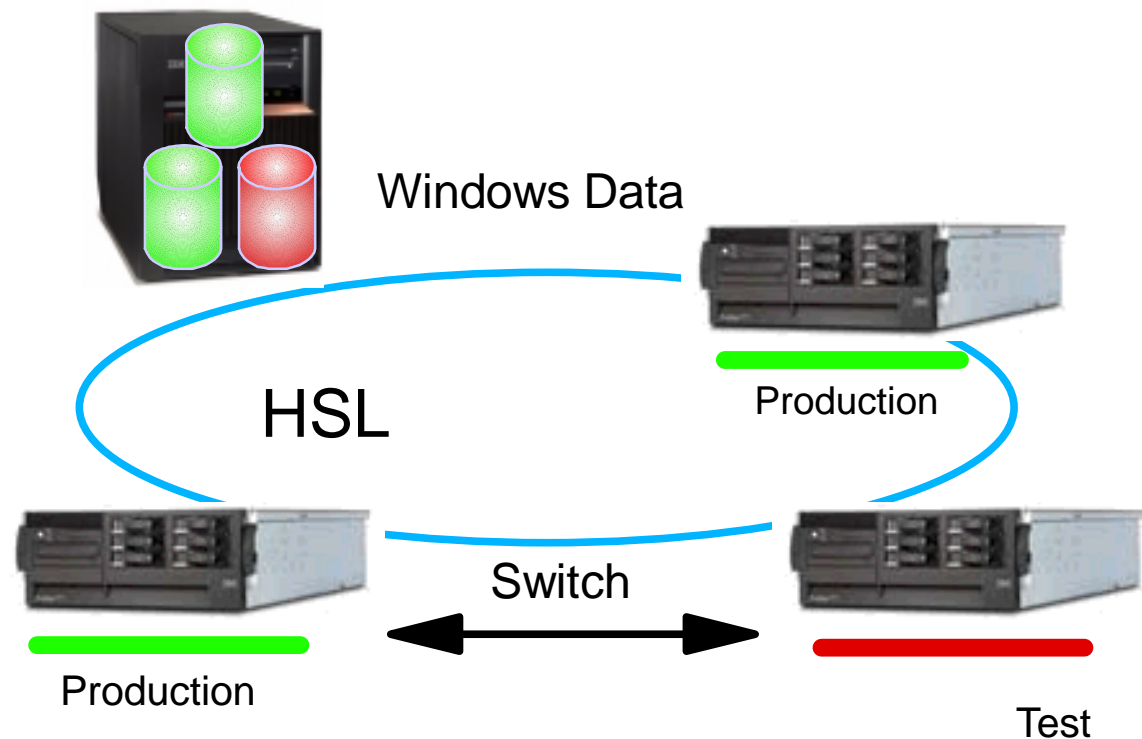
- ▶ Providing an effective and efficient availability solution

iSeries Solution

- ▶ Hot Spare allows one xSeries server to provide a backup to several production servers

Benefit

- ▶ Efficient availability solution for planned or unplanned server outages



Availability - One Computer Room

Problem

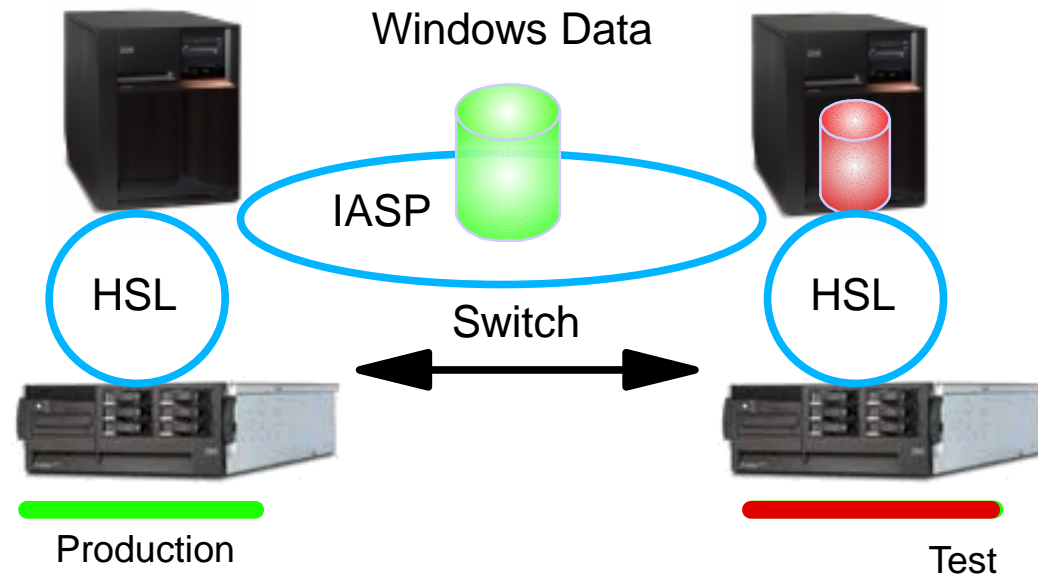
- ▶ Providing an effective and efficient availability solution

Solution

- ▶ iSeries switch disk support with Independent ASP

Benefit

- ▶ Solution for planned or unplanned server outages



Microsoft Cluster Service (V5R2)

Switch Disk Cluster

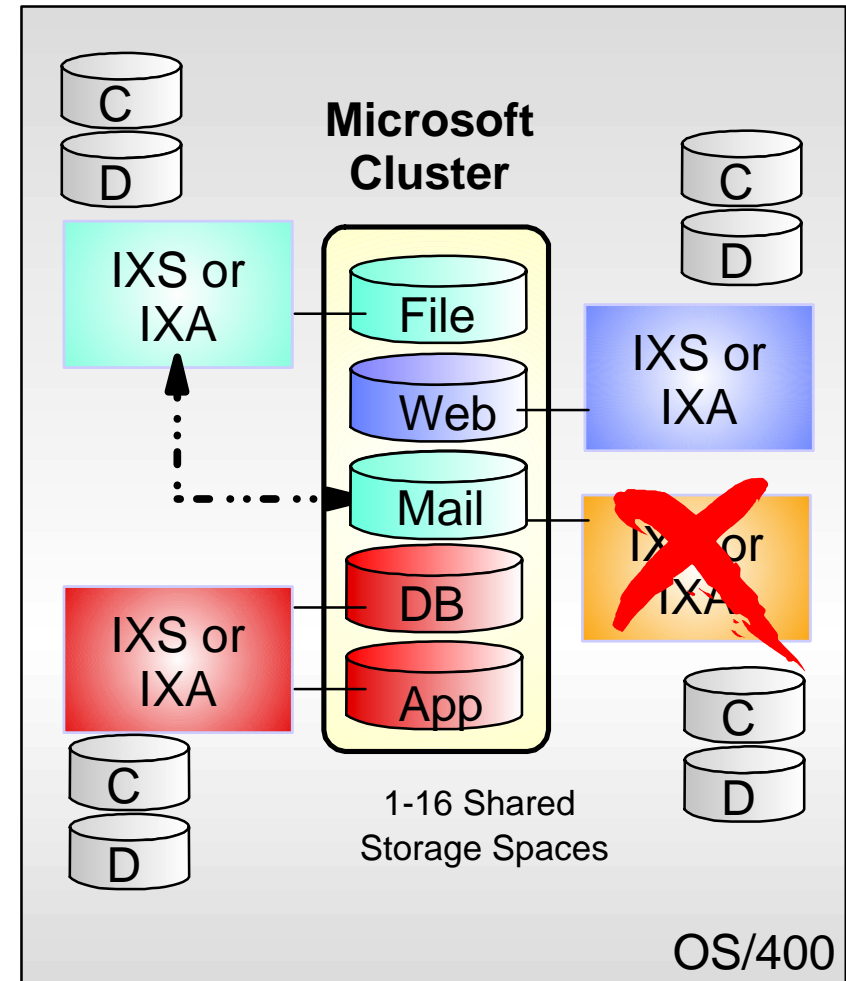
- ▶ Dynamically Switch Storage Spaces Between Windows Servers
- ▶ Up to 4 IXS or IXA Server Nodes per Cluster
- ▶ 16 New 1 MB to 64 GB Shared Storage Spaces

Availability Improvements

- ▶ Planned or unplanned outages

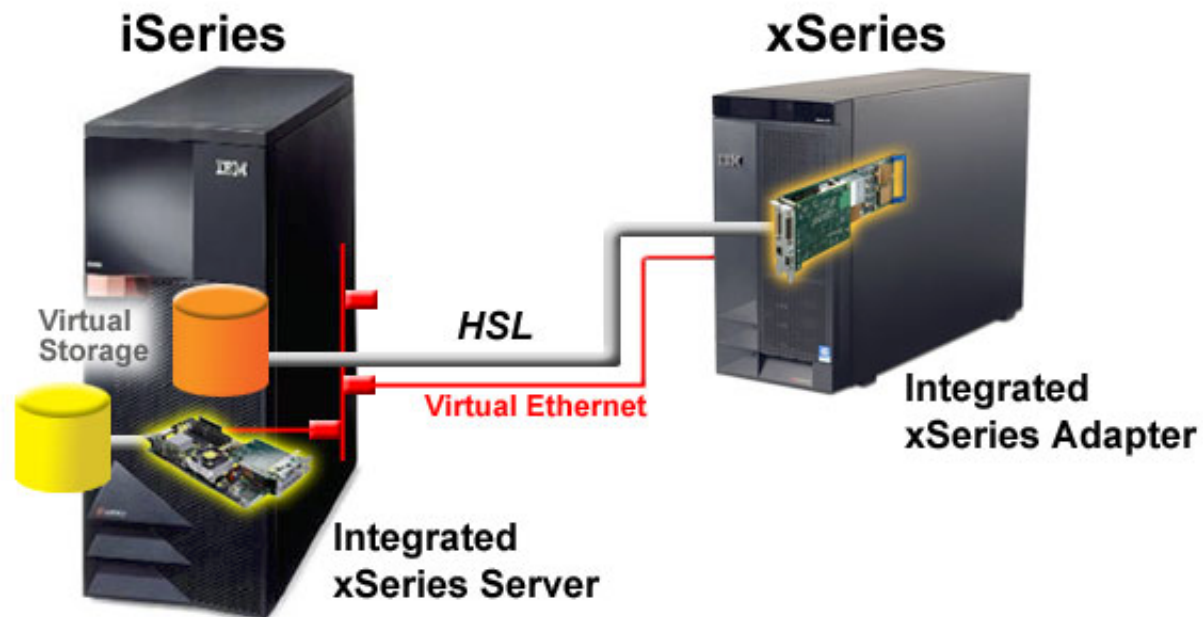
Requirements

- ▶ i270, i820, i825, i830, i840, i870 or i890
- ▶ OS/400 V5R2
- ▶ Windows 2000 Advanced Server for 2 Node Support
- ▶ Microsoft .Net Enterprise for 4 Node Support*



* Planned for 1Q 2003, dependent on Microsoft delivery

iSeries Windows 2000 Server Integration Summary



- Integrate server management and user administration
- Leverage investment in iSeries resources and operations
- Simplify server test and deployment using Virtual Storage Spaces
- Communicate more securely over 1 Gbps Virtual Ethernet connections

www.ibm.com/eserver/series/windowsintegration

Why use an iSeries Server to Manage Windows Servers

What if IXS/IXA could:

- ✓ **Save one Windows server outage a year**
 - ▶ Customers implement a standard configuration that has been thoroughly tested
 - ▶ With virtual disk support, customers can test changes on exact copies of their production servers, reducing the impact of change
 - ▶ Storage space can be dynamically added to Windows 2000 Servers
- ✓ **Save one from doubling the numbers of servers to implement Clustering**
 - ▶ With hot spare support, one additional server can efficiently provide backup for multiple production servers
- ✓ **Save a user from spending the time changing, managing, finding two passwords**
 - ▶ Users added to OS/400 can be automatically added to Windows 2000 Server
 - ▶ OS/400 password changes can automatically be synchronized with Windows 2000 Server passwords
- ✓ **Save one from buying "extra" disk space on each standalone PC server**
 - ▶ All the disk resources are centralized on the iSeries. Each Windows server is given what they need.
- ✓ **Save one from buying tape drives for each standalone PC server**
 - ▶ Each of the Windows servers can utilize the high speed iSeries tape
 - ▶ Windows backups can be consolidated with OS/400 backups and policies
- ✓ **Save one from losing a file due to inconsistent backup policies**
 - ▶ OS/400 backup procedures can be extended to Windows servers
- ✓ **Save one from traveling to the Windows server to reboot it**
 - ▶ Operations Navigator can be used to restart the Windows server from any PC
- ✓ **Save one from rebuilding a server from scratch due to a virus hit**
 - ▶ Backup of Windows image can be restored and booted in minutes

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