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*iSeries: Windows 2000/2003 Server Integration with IXA/IXS - Overview*

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IBM @server xSeries  
Technical Conference

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Chicago, IL



# iSeries Consolidated Server Strategy

iSeries applications from core business to e-business

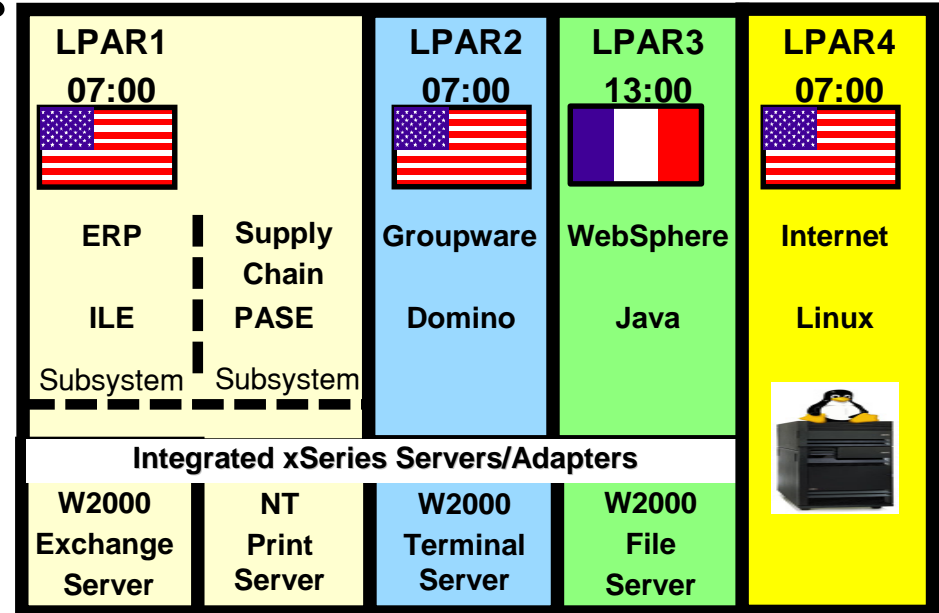
## Single server, multiple applications

- ▶ Microsoft® Windows® 2000/2003 Server
- ▶ Domino
- ▶ OS/400 Portable Applications Solution Environment (OS/400 PASE)
- ▶ Integrated File System (IFS)
- ▶ WebSphere and Java™
- ▶ Linux

## Workload management

- ▶ Subsystems
- ▶ Logical Partitioning

Incorporates pSeries, zSeries, and xSeries technology



## Windows Servers in the iSeries Marketplace

- **83% of iSeries and AS/400 midmarket customers have Windows® servers installed**
- **ISVs and IBM are delivering complementary applications with Windows Servers**
- **Customers want to consolidate servers**

Number of Servers	% of Customers
1-5	<b>57%</b>
6-10	<b>14%</b>
11-20	<b>10%</b>
21-200	17%
201+	2%

IBM IT Trends Survey - 4Q 2001, 100-999 Employee Site Data



## iSeries Customers Feeling Pain with Windows Servers

### **NT Server™ support started ending Jan 1, 2004**

- Customers should upgrade to Windows 2000 Server™
  - <http://www.microsoft.com/ntserver/ProductInfo/Availability/Retiring.asp> on 1/29/03

### **Differences in Windows 2000 Server Licensing can be costly**

- More users need Client Access Licenses
  - <http://www.microsoft.com/windows2000/server/howtobuy/pricing/model.asp> on 4/24/02

### **New servers may be required with new Microsoft™ Operating Systems**

- Each application typically require its own server

### **Growing people costs to manage server farm**

- Numerous Windows security exposures reported
- Servers are often not the same
- Capacity may be in the wrong place

### **Poor availability record**

- Is something always broken?
- Servers coming off warranty

## The Customer Challenge: Solving the Cost3 Equation

- **Cost of Acquisition**

- ▶ Upfront server, operating system and middleware price

- **Cost of Ongoing Operations**

- ▶ Ongoing cost of skills to deploy and manage solutions

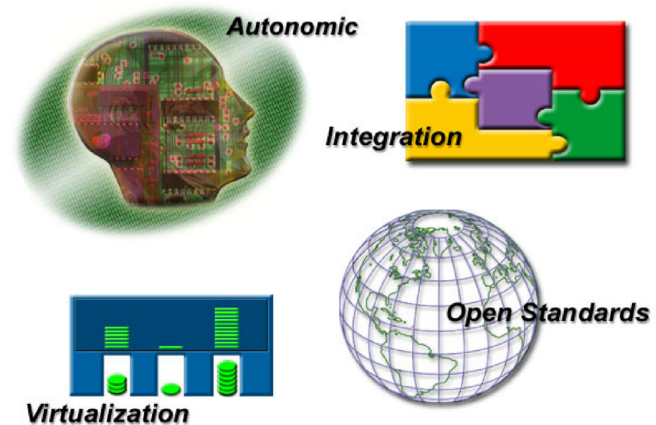
- **Cost of Technology Transition**

- ▶ Long term application and platform investment costs



## iSeries Integrated xSeries Solutions - on demand

- **Open Standards**
  - ▶ iSeries support of published and "de facto" industry standards
- **Virtualization**
  - ▶ Dynamic Virtual Storage
  - ▶ Virtual Ethernet
- **Integration**
  - ▶ Windows and OS/400 Applications
  - ▶ Server Management
  - ▶ Backup
- **Autonomic Computing**
  - ▶ Enterprise X Architecture
  - ▶ iSeries Single Level Storage
  - ▶ IBM Director



# iSeries Windows 2000/2003 Server® Integration

## ■ Solutions

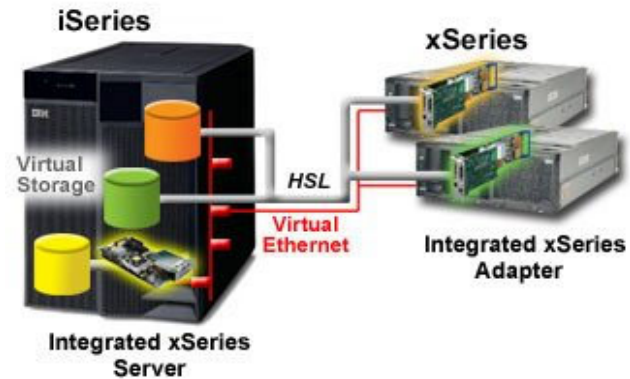
- ▶ Extend OS/400 applications with Windows™
- ▶ Consolidate Windows Servers

## ■ 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

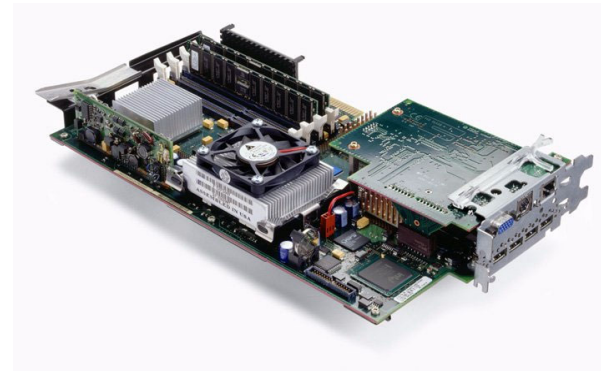


## Integrated xSeries Server



- **Low-voltage, 2.0 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 32 TB\*
  - ▶ Virtual 1 Gbps Ethernet connections
  - ▶ Shared Tape, DVD and CD-ROM
- **Supported on iSeries Models\*\***
  - ▶ OS/400 V5R2 Required
- **Hot spare supported with 1.6 Ghz Integrated xSeries Server**

- **Windows Server 2003® support**
  - ▶ Standard, Enterprise & Web Editions
- **Windows 2000 Server® support**
  - ▶ Windows 2000 Server
  - ▶ Windows 2000 Advanced Server



*Integrated operations and server management*

\*requires V5R3, otherwise 2TB





## Integrated xSeries Adapter

- **Attaches the latest 2, 4, 8-way xSeries Servers\***

- ▶ 1 GBps High-Speed Link
- ▶ x235 (1-2w), x255 (1-4w), x360/x365 (1-4w), x440/x445 (2-8w)
- ▶ [www.ibm.com/eserver/series/windowsintegration/xseriesmodels](http://www.ibm.com/eserver/series/windowsintegration/xseriesmodels)

- **Retains features and value of Integrated xSeries Server**

- ▶ Virtual disk storage
- ▶ Virtual 1 Gbps Ethernet connections
- ▶ Shared Tape, DVD & CD-ROM

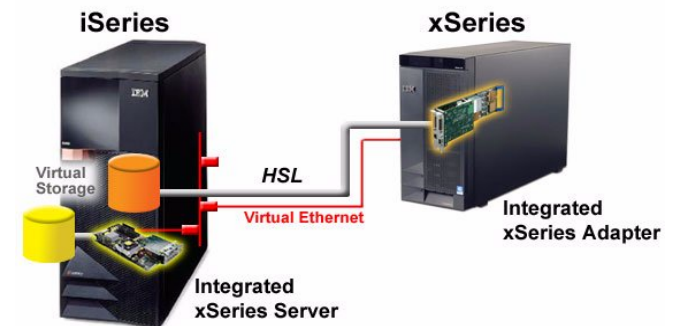
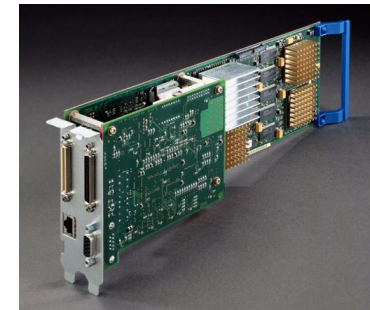
- **Supported on iSeries Models\*\***

- ▶ OS/400 V5R1 or V5R2

- **Windows Server Support**

- ▶ Windows 2000 Server and Windows 2000 Advanced Server
- ▶ Windows Server 2003 Standard, Enterprise & Web Editions

Enterprise X-Architecture™





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## Why a Direct Attach Offering

### **Scalability**

- Support larger workloads and more users

### **Availability of PCI Slots**

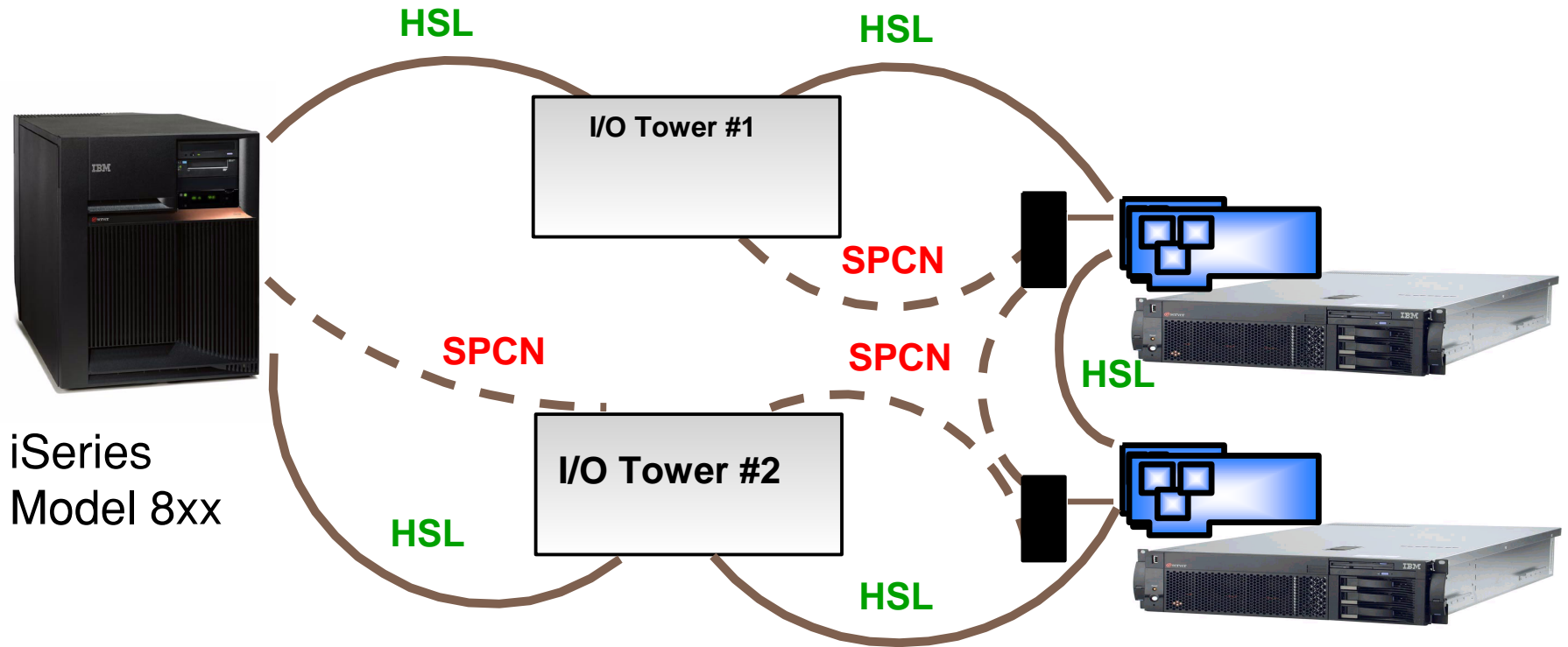
- Flexibility to attach devices (e.g., modems, CD towers)

### **Performance Currency**

- Offer latest xSeries server technology

### **Leverage xSeries Marketing, Channels, and Development**

# Configuration Example



## HSL Loop

- ➔ iSeries can access all devices going out either connection
- ➔ Provide redundancy and performance improvements



## What to Buy From Whom

### iSeries Channel

- iSeries 270, 8xx\* 520\* or 570\*
- iSeries Disk Drives for Windows storage
  - Up to 64 TB
- Integrated xSeries Adapter for iSeries
- HSL and SPCN cables
- OS/400 V5R1 +
- iSeries Integration for Windows Server
  - No Charge LPP, Preloaded - (5722-WSV)

### xSeries Channel

- xSeries Server - Supported Models
  - Processors and Memory
  - Ethernet LAN (on system board)
- Keyboard/Mouse
- Display
- ServerProven Adapters (optional)

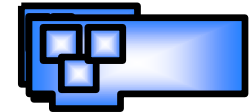
### Microsoft Channel

- Windows 2000 Server
- Windows 2000 Advanced Server
- Microsoft Server for 2003 Editions

- i890, 870, 825, 810, 800 require V5R2
- 520, 570 require V5R3



Integrated  
xSeries  
Adapter



## Windows Server 2003 Support

- New release of Microsoft Windows Server
  - ▶ Formerly .NET, renamed to Windows Server 2003
  - ▶ [www.microsoft.com/windowsserver2003](http://www.microsoft.com/windowsserver2003)
- Server software packaged in "Editions" (4)
  - ▶ [www.microsoft.com/windowsserver2003/evaluation/overview/family.msp](http://www.microsoft.com/windowsserver2003/evaluation/overview/family.msp)

		IXS Support	IXA Support
Standard Edition	◆ Up to 4-way	Available	Available
Enterprise Edition	◆ Up to 8-way ◆ Cluster Service	Available	Available
Datacenter Edition	◆ > 8-way	No plans	No plans
Web Edition	◆ Limited function & licensing ◆ Web Serving	Available	Available

- OS/400 V5R2 & additional PTF's required
  - ▶ For latest information and full details see OS/400 PTF descriptions at:
    - [www.ibm.com/servers/eserver/series/windowsintegration/win2003.html](http://www.ibm.com/servers/eserver/series/windowsintegration/win2003.html)

## iSeries Integrated xSeries Solutions Support by Model

- **Support for latest iSeries models**
  - ▶ iSeries 800, i810, i825, i870, i890
- **Integrated xSeries Server/Adapter maximums increased**
  - ▶ Enables iSeries to support for larger and more complex Windows server environments
- **i825, i870, i890 Enterprise Edition includes Integrated xSeries Server**
  - ▶ 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	48	890	48
<b>520</b>	<b>18</b>	<b>570(4w)</b>	<b>36</b>

**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	60	890	60
<b>520</b>	<b>8</b>	<b>570(4w)</b>	<b>16</b>

## IBM Technologies That Improve ROA

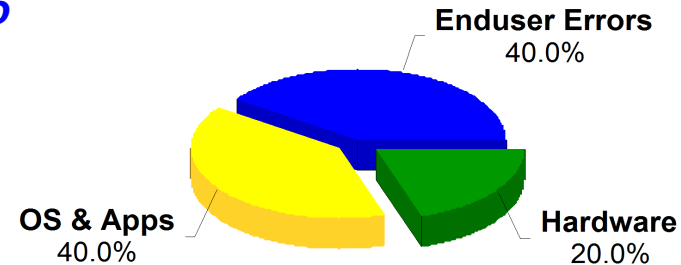
### Technologies that reduce incidents of downtime

- ▶ *Software Rejuvenation*
- ▶ *Chipkill™ memory*
- ▶ *Fuel Gauge*
- ▶ UPS
- ▶ *PFA: memory, VRMs, HDD, processors fans and power supplies*
- ▶ System Management Processor
- ▶ *Capacity Manager*
- ▶ Hot swap power supply
- ▶ Hot swap fans
- ▶ *Active™ PCI*

### Technologies that reduce the duration of downtime

- ▶ *Light Path Diagnostics™*
- ▶ *Real Time Diagnostics*
- ▶ Power Restore
- ▶ Auto Server Restart
- ▶ *Remote Supervisor Adapter*

Causes of Downtime

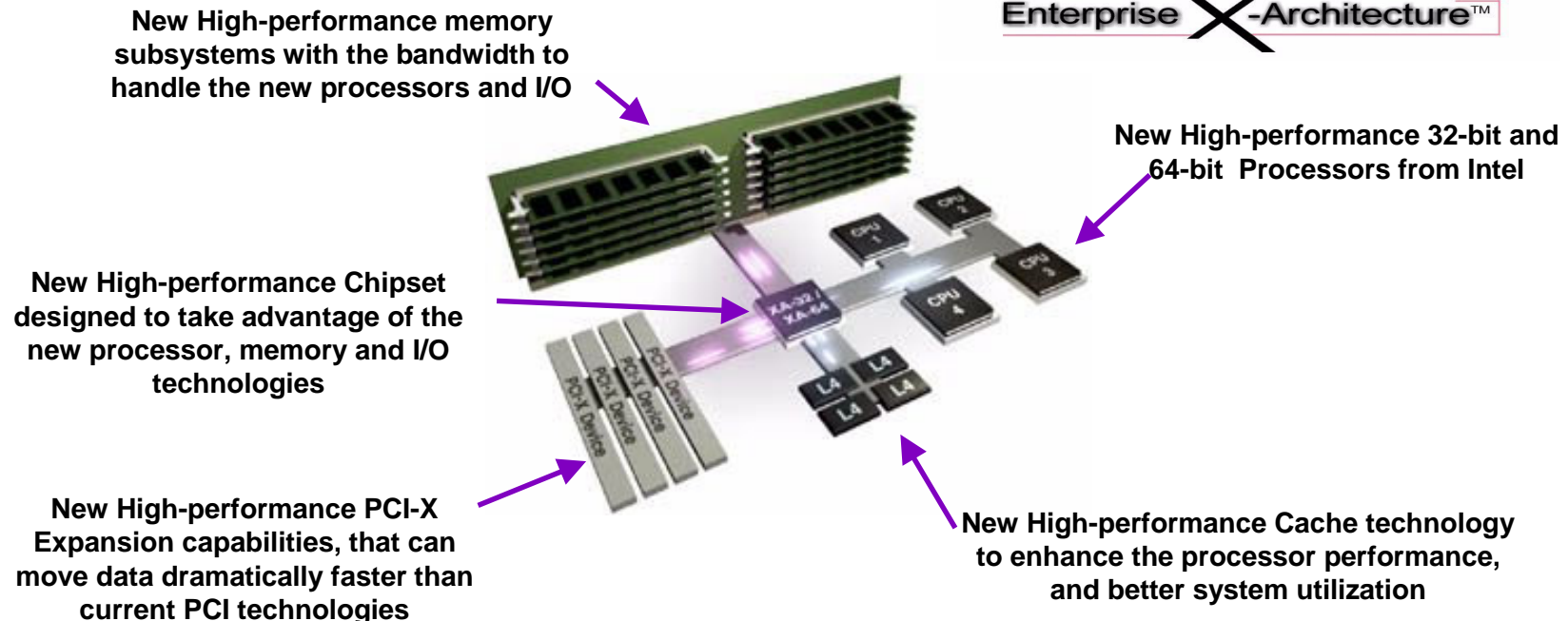


*Blue = IBM exclusive products*

# Matched, High-performance Technologies

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

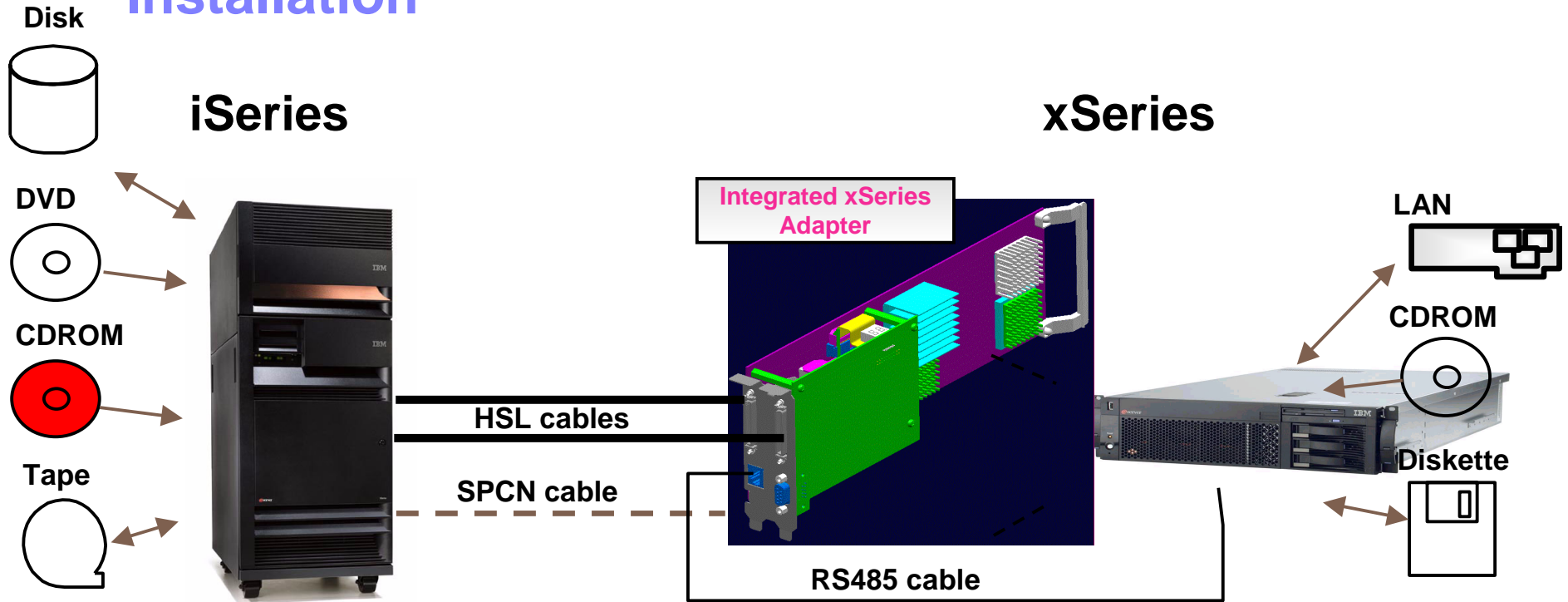
Enterprise **X**-Architecture™



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



# Installation



## Software

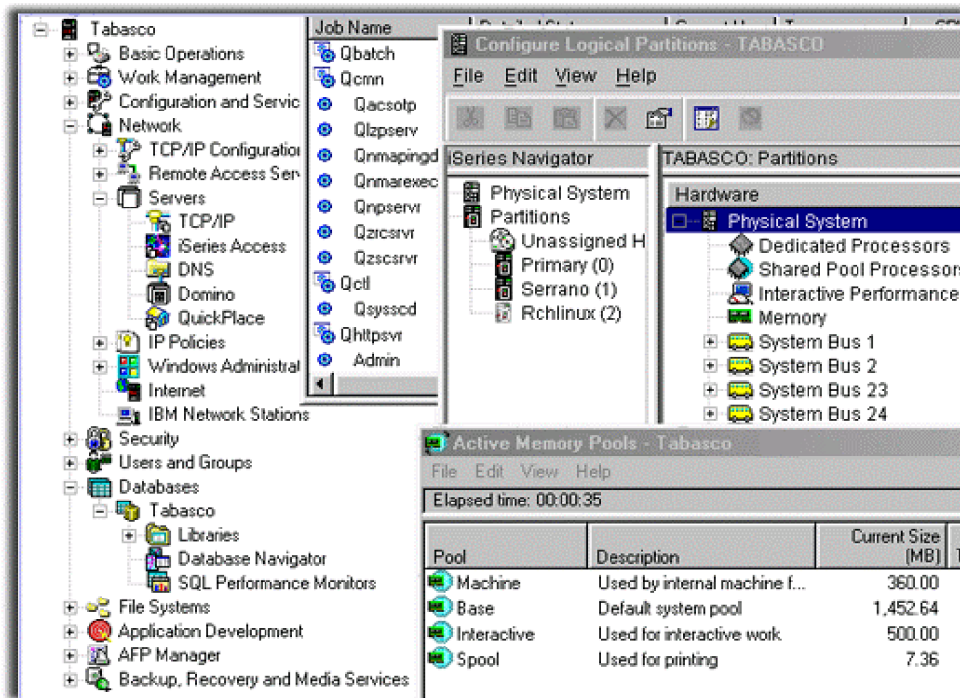
- Windows 2000 Server CD in iSeries
- Run INSWNTSVR Command to start installation
- V5R2 supports running command under iSeries Navigator

## Hardware

- Assemble xSeries server
- Install Integrated xSeries Adapter (CIF)
- Connect HSL, SPCN, RS485 cables



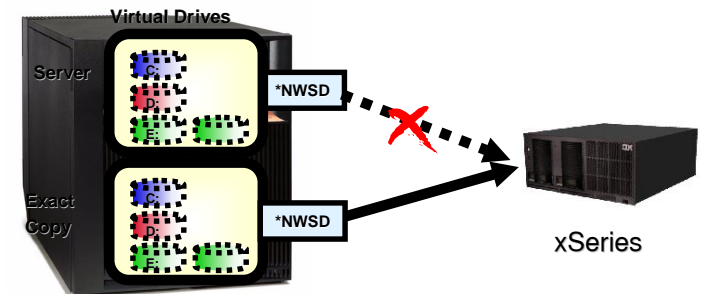
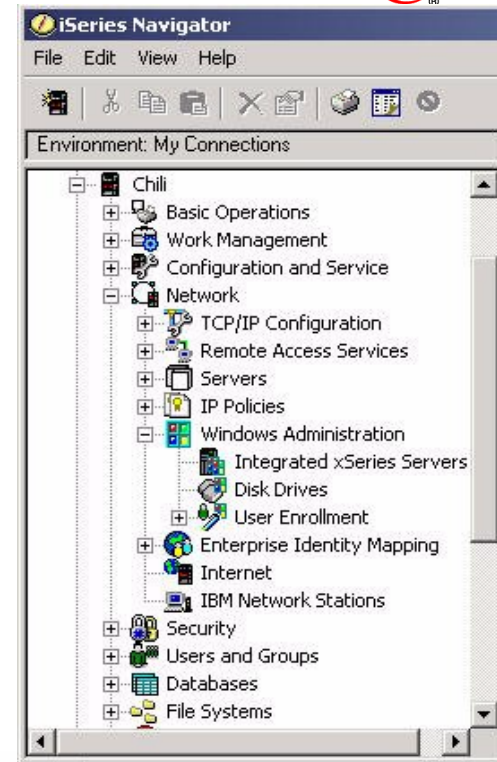
# OS/400 V5R3 & iSeries Navigator



- 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

# iSeries Integration Advantages

- **Server Management**
  - ▶ Management OS/400 and Windows servers
- **User Administration**
  - ▶ OS/400 Users, Groups, Passwords can be synchronized to Windows
- **Virtual Ethernet**
  - ▶ Communicate more securely over 1 Gbps Virtual Ethernet connections
- **Dynamic Virtual Storage**
  - ▶ Up to 32 TB per Windows server
  - ▶ Leverage iSeries storage management
- **Backup & Recovery**
  - ▶ Consolidate OS/400 and Windows backups
  - ▶ Utilize iSeries tape drives
  - ▶ Simplify and accelerate recovery, if needed
- **Hot Spare**
  - ▶ Easily switch production environment to another server
- **Testing**
  - ▶ Logical servers allow testing with the production image and hardware



# Server Management

## Problem

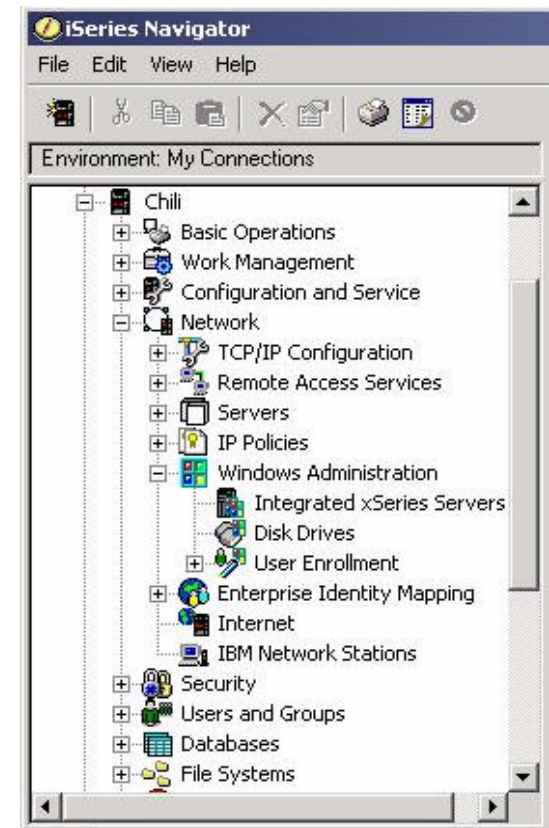
- Duplicate processes, monitoring and resources to manage multiple server platforms

## iSeries Solution

- iSeries Navigator provides centralized administration and management of multiple environments from a single interface
- Enabled for Wireless, PDA & Web Browser

## Benefit

- Enables customers to reduce cost and complexity by leveraging iSeries operations and resources to monitor and manage integrated xSeries servers



[www.ibm.com/eserver/iseries/navigator](http://www.ibm.com/eserver/iseries/navigator)

# User Administration

## Problem

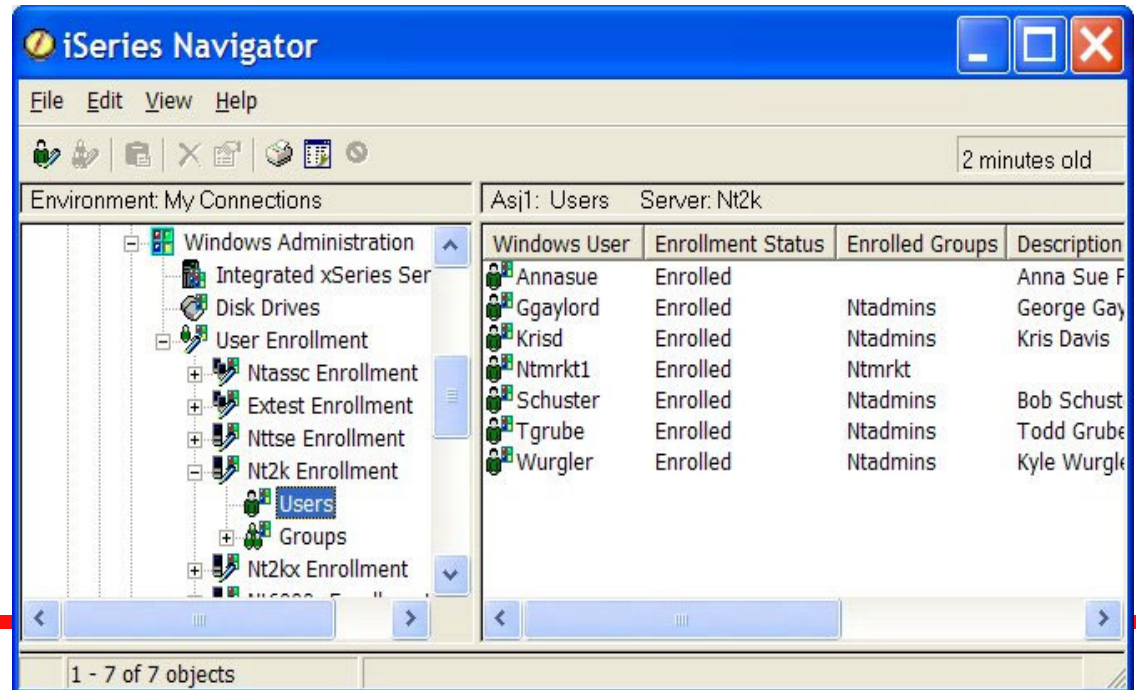
- Multiple system user management

## iSeries Solution

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

## Benefit

- Can reduce costs with integrated user management





***Virtualization***



# Virtual Networking

## Problem

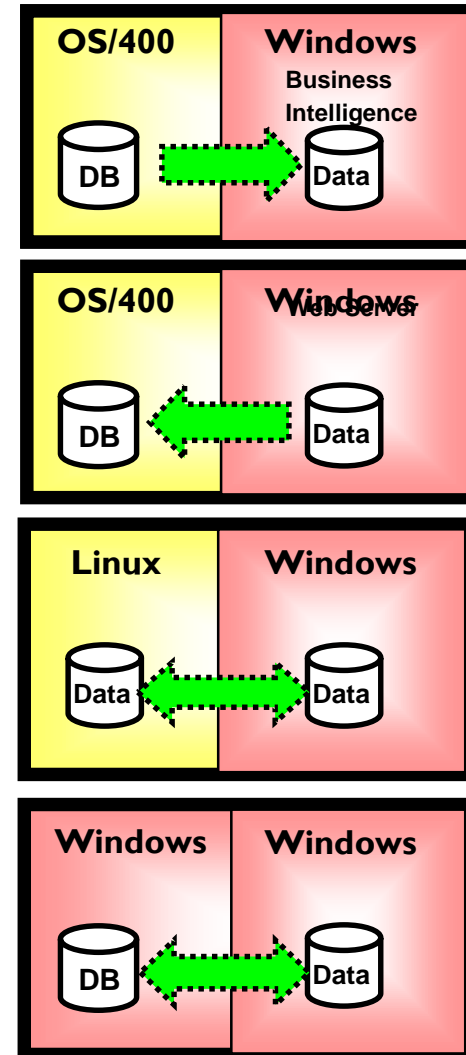
- Upgrading network infrastructure to support high-speed private networks for server-to-server communication is expensive in terms of time, resources and equipment

## 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-performance connections
- Can reduce network traffic and exposure to "sniffing"





## Virtual Storage

### Problem

- Storage management across the server farm

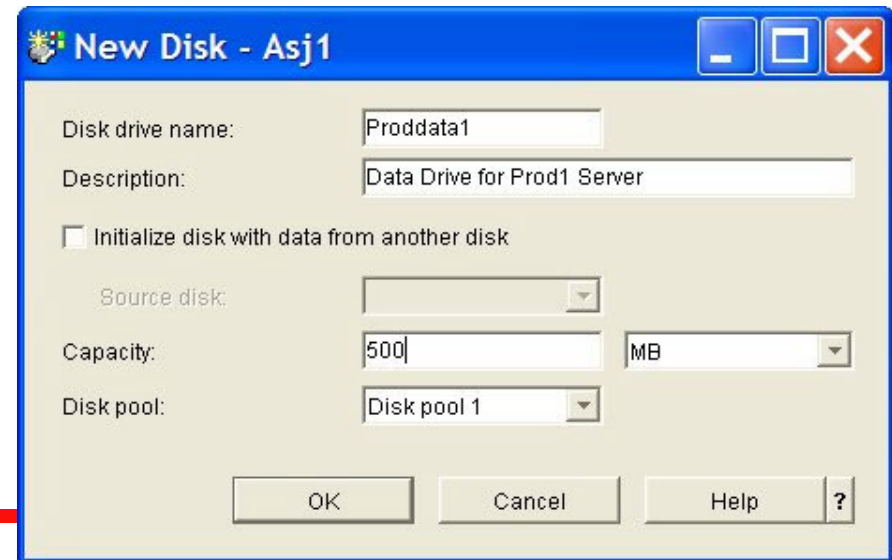
### iSeries Solution

- Flexible Virtual Disks from 1 MB to 1 TB\*
- Up to 32 TB per Windows server
- Hot add of iSeries Storage Space to Windows 2000/2003 Server

### Benefit

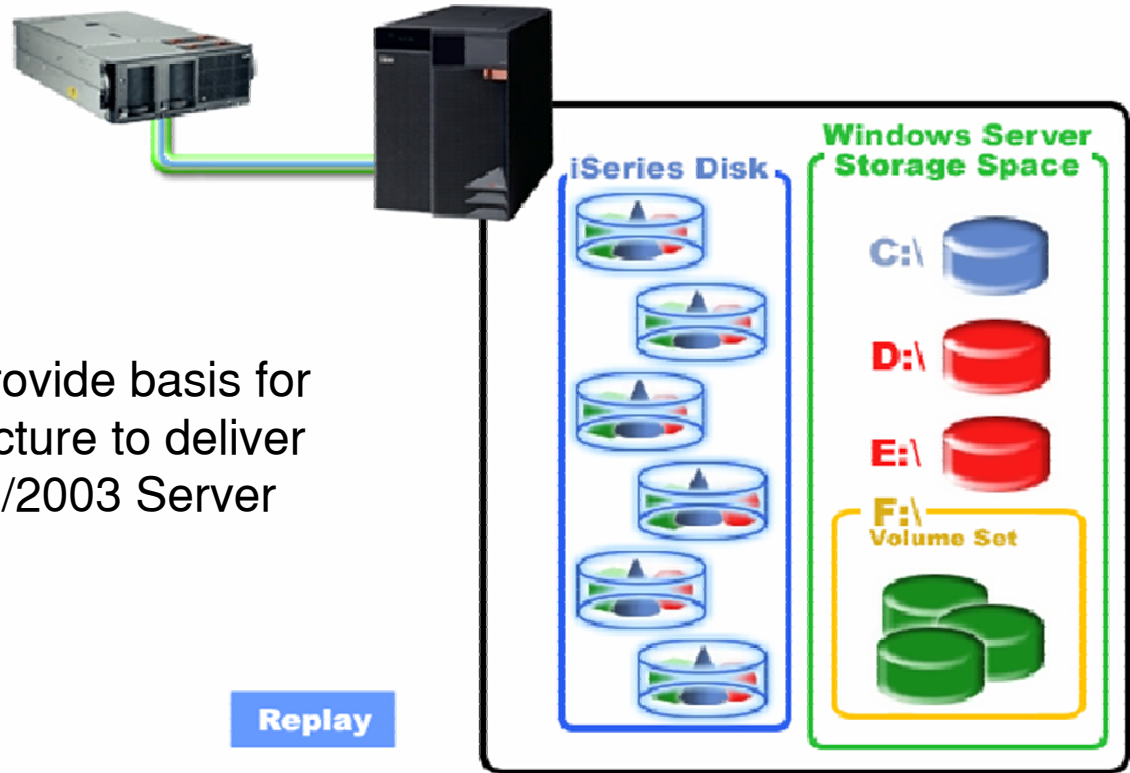
- Can reduce costs with flexible, centralized storage management

\*requires V5R3



**iSeries. mySeries.**

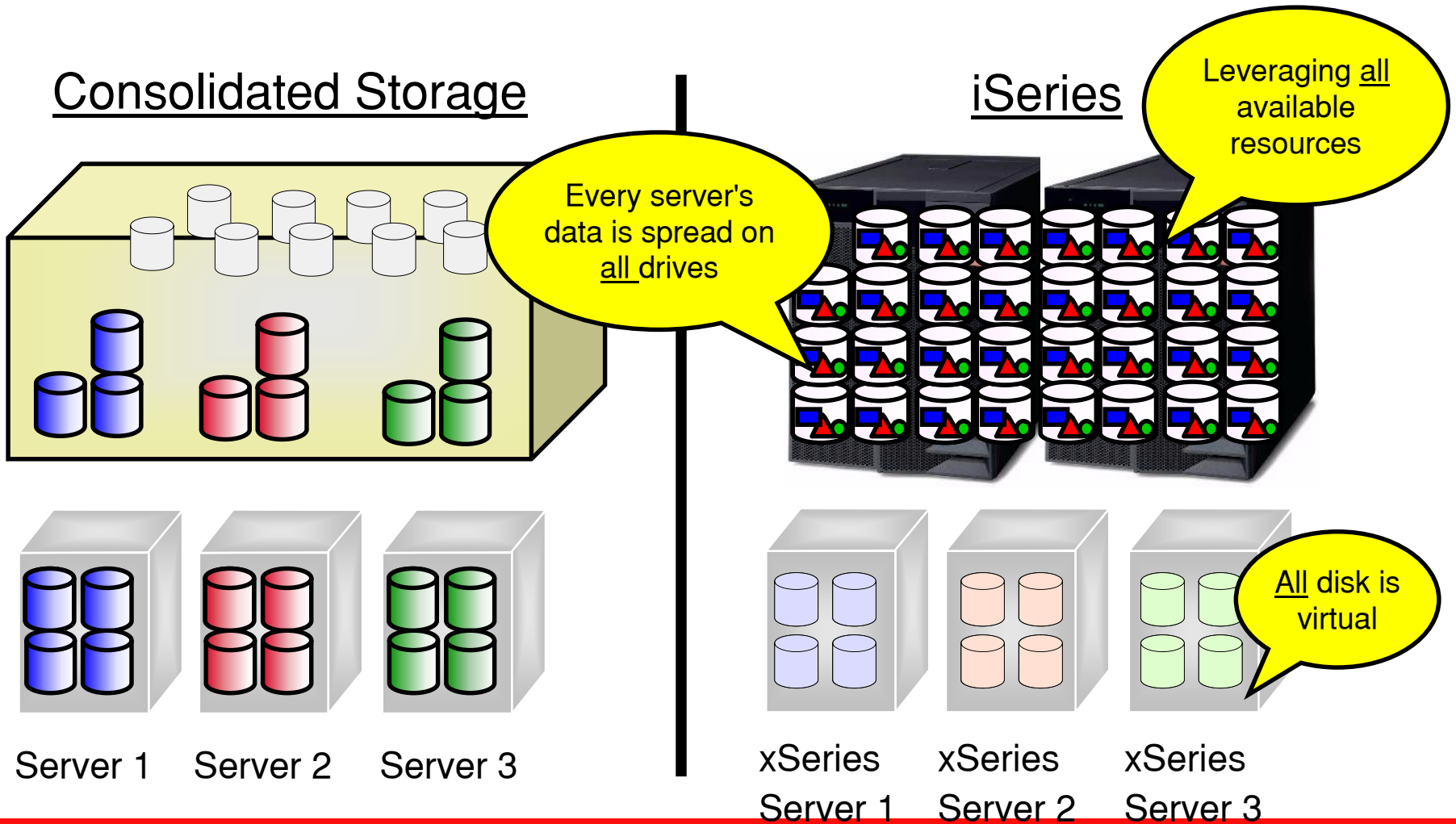
# iSeries Storage Virtualization for Windows 2000/2003 Server



- Storage Space Objects provide basis for leveraging iSeries architecture to deliver benefits to Windows 2000/2003 Server
  - ▶ Performance
  - ▶ Consolidated Backup
  - ▶ Hot Spare
  - ▶ Testing



# iSeries Storage Consolidation Advantages



# Integrated Backup

## Problem

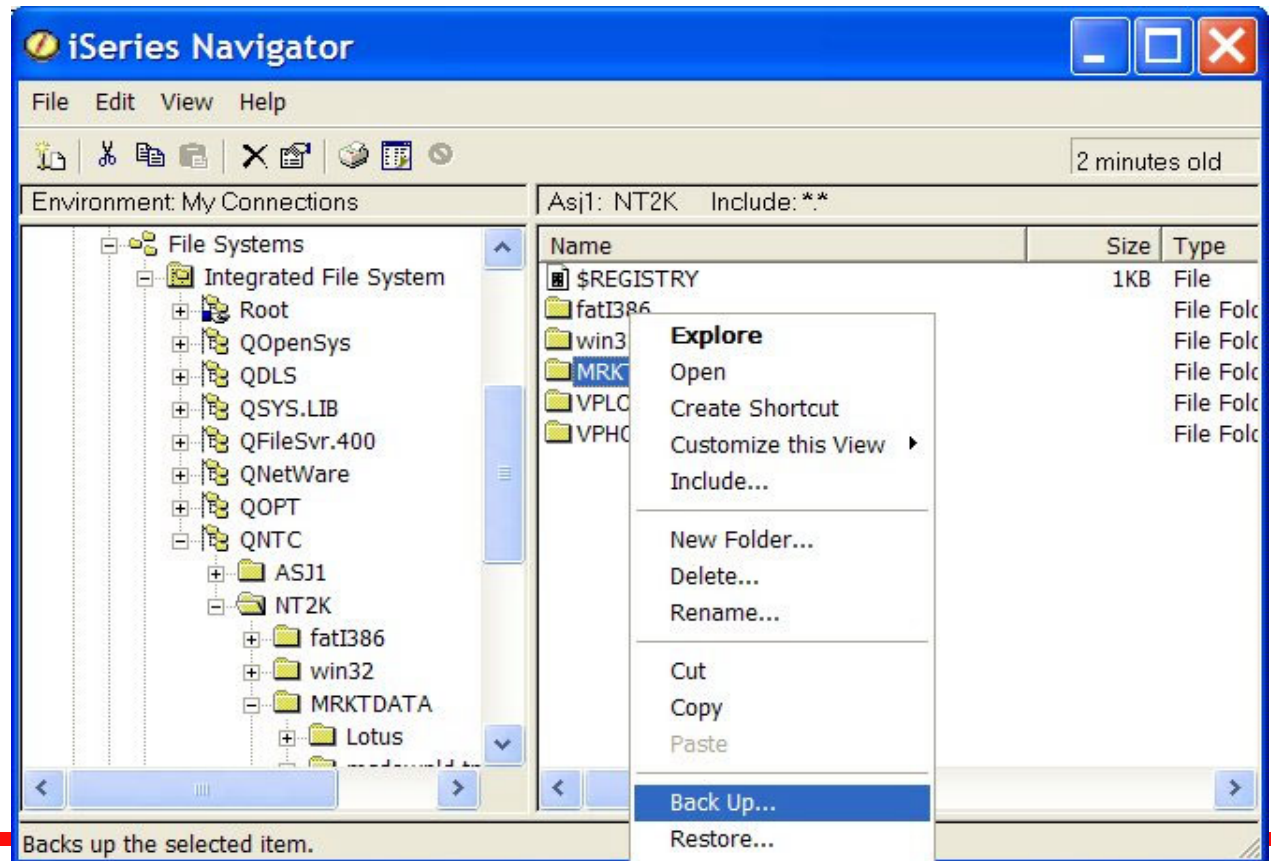
- Managing and automating heterogeneous backups

## iSeries Solution

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

## Benefit

- Can reduce costs by leveraging iSeries resources and skills
- Can reduce the time and complexity of an infrastructure restore





## Notes: Business Recovery Protection

There are several approaches to backup of the xSeries Server:

### 1) Full server backup for disaster recovery.

Backup of the complete Windows disks or storage spaces is excellent for weekly or monthly backups as part of a complete system save; it is also the fastest, but least flexible method of backup. Using this method does not allow you to restore a single file from the storage space. To backup the complete disk images (or storage spaces) of an Integrated xSeries Server to iSeries tape, you first need to vary off the Windows server. The performance of this backup depends on your iSeries model and tape drive speed, but is similar to the performance of any other OS/400 object backup on the system.

### 2) Daily file level backup via OS/400 tools.

With OS/400 V4R5 Integrated File System backup SAV command can be used for incremental backup of individual files and directories from Windows server running on the Integrated xSeries Server.

V5R1 added performance increases via PTFs and configuration parms.. see website for details

**3) IBM Tivoli Storage Manager (previously ADSM)** is an enterprise-wide solution integrating unattended network backup and archive with storage management and powerful disaster recovery planning functions. Tivoli Storage Manager, OS/400 server provides backup and archive services to multiple client platforms including Windows NT and 2000 Server on the Integrated xSeries Server as well as a variety of leading database and groupware products. This broad range of support makes Tivoli Storage Manager a comprehensive storage management solution for heterogeneous networks.

### 4) Daily file level backup via Windows server tools.

You can use the same Windows backup utilities as you use today on PC-based servers, but target an iSeries tape drive. This OS/400 tape support provides good performance that varies depending on system and tape drive models. The supported backup tools include Windows server's integrated backup applet and also Seagate's Backup Exec and Computer Associates (Cheyenne) ARCserve for Windows NT. While using the Windows tape support, the iSeries tape drive must be varied off, and thus is not available for other tape operations from OS/400 commands. Once varied off, the tape is locked from the Windows Server before using the Windows backup utility. Backups from OS/400 save operations cannot be mixed on tapes that contain backups from Windows utilities. All the common tape drives sold today on the iSeries RISC models including 3570 can be used with these backup tools. LTO drives require integration Service Pack on V5R1- SI02669 or later. The 3480, 3490, 3490e and reel-to-reel drives, however, are not supported.

Windows 2000 IXS and IXA Backup Performance Improvement

<http://www-1.ibm.com/servers/eserver/iseries/windowsintegration/savbackupperf.html>

### 5) Data Replication.

There are Windows Server products that support Data Replication. MIMIX for Windows® provides real-time replication for Windows NT/2000 environments running on integrated xSeries servers or xSeries Server with integrated xSeries Adapters in iSeries environments. MIMIX for Windows continuously monitors and replicates changes made to open files as they occur, replicating them to one or more xSeries servers over standard network connections. MIMIX can be effectively deployed in an LPAR environment or in just about any iSeries network structure, including one-to-one, broadcast, many-to-one, cascade or mixed topologies. Vision Solutions also has a data replication product call Orion.



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## 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 820
- ▶ 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

# Recovery

## Problem

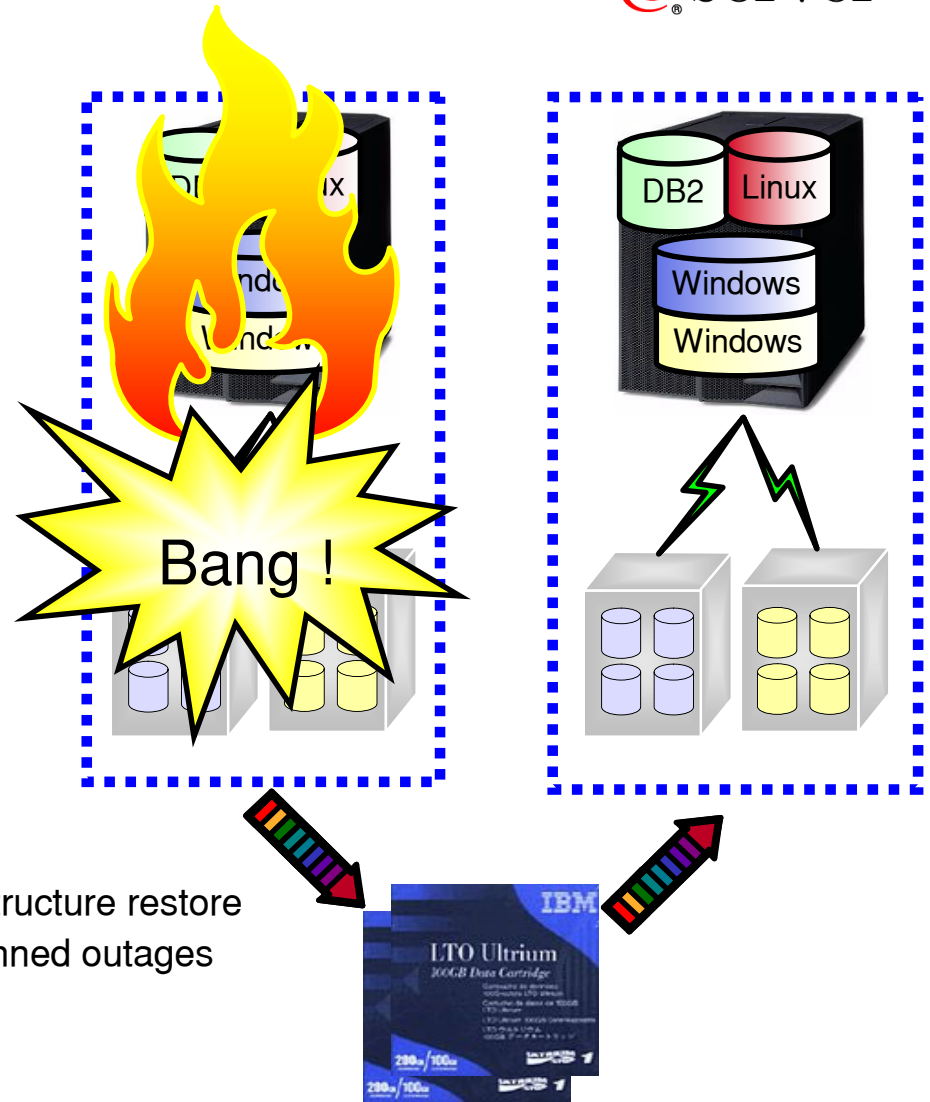
- ▶ Recovery is complex, prone to error and time consuming in a multi-tier application environment

## iSeries Solution

- ▶ iSeries' architecture and integration enables customers to build a complete infrastructure that is easily backed up and rapidly restored

## Benefit

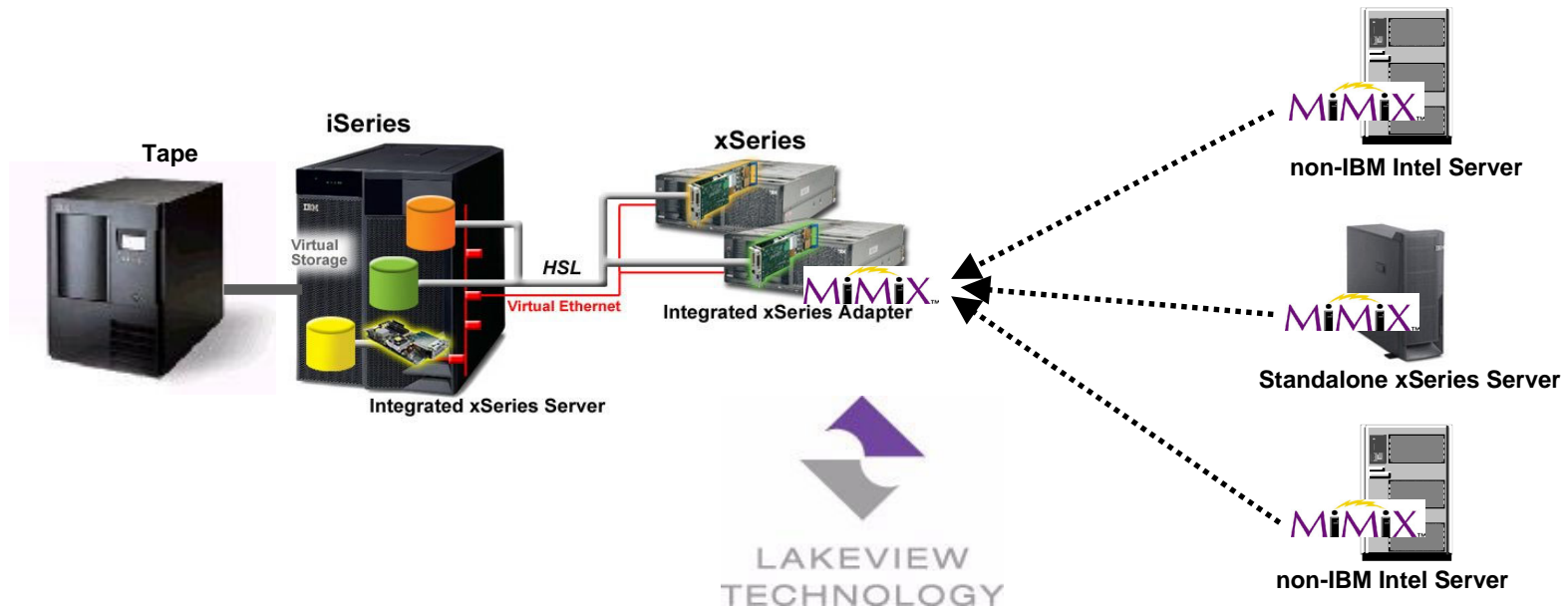
- ▶ Can reduce the time and complexity of an infrastructure restore
- ▶ Can reduce the impact a disaster or other unplanned outages





## Providing Value in a heterogenous Intel environment

*Lakeview Technology's Mimix for Windows and iSeries  
Integrated xSeries Solutions can provide replication  
services for multiple heterogenous Windows servers to a  
single point of consolidated backup*







## Huhtamaki



*“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.”*



# Reliability

## Problem

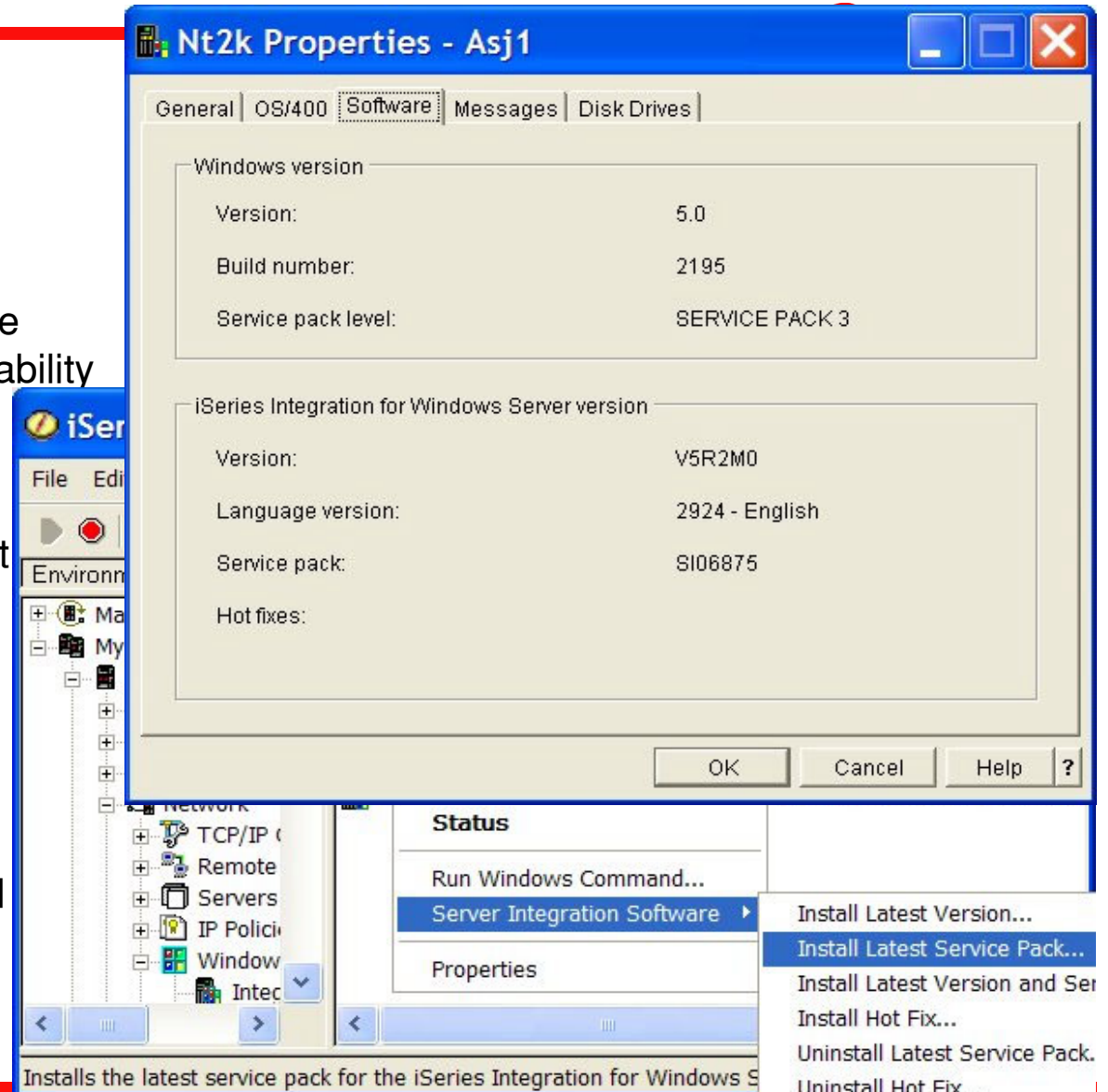
- ▶ Different hardware and device drivers can cause server instability

## 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



# Testing

## Problem

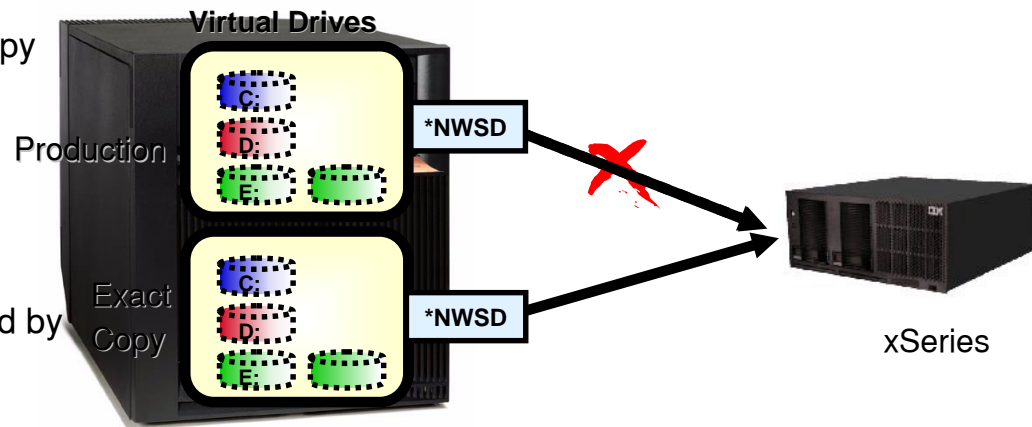
- Adequately testing Microsoft Service Packs, Application Fixes, device drivers before they are placed in production

## iSeries Solution

- iSeries virtual storage enables storage spaces to be easily duplicated, providing the capability to test of an exact copy of the production image and hardware

## Benefit

- Can reduce the outages caused by change
- Can reduce the time it takes to build a test server



# Development

## Problem

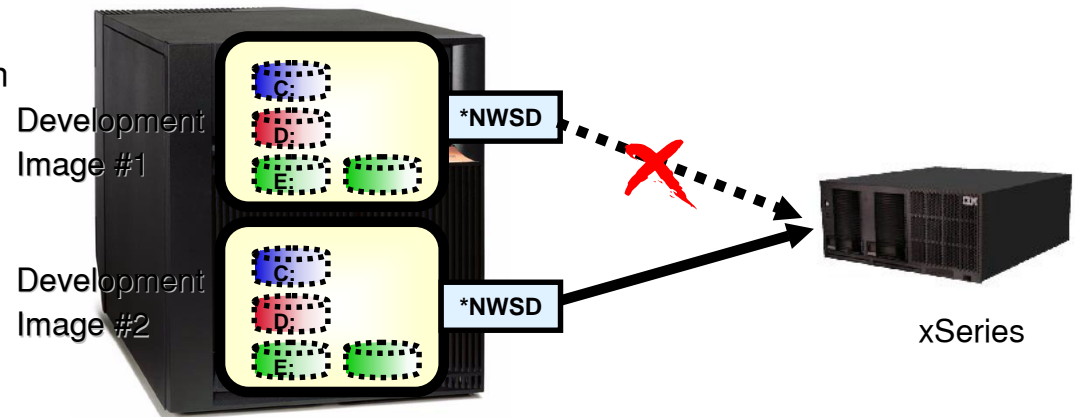
- ▶ Too many development / test servers

## iSeries Solution

- ▶ One development/test server can support multiple similar production server environments

## Benefit

- ▶ Can reduce the cost of acquiring and maintaining a server infrastructure





## New Integrated xSeries U

The iSeries Navigator interface shows a tree view of system components. The 'Network' folder is expanded, showing 'TCP/IP Configuration', 'Remote Access Services', 'Servers', 'IP Policies', 'Windows Administration', 'Integrated xSeries Serv', 'Disk Drives', 'User Enrollment', 'Enterprise Identity Mapping', 'Internet', and 'IBM Network Stations'. A context menu is open over a server icon, with 'Copy Server...' and 'Virtual Ethernet...' highlighted.

Windows Server Virtual LAN configuration dialog box for Server: RSW2004. It shows available ports and configured ports.

Port	IP Address
Virtual Port 0	
Virtual Port 1	
Virtual Port 3	
Virtual Port 4	
Virtual Port 5	
Virtual Port 6	
Virtual Port 7	

Port	IP Address
Virtual Port 2	10.10.10.2
Virtual PTP (...)	192.168.4.14

Server	0	1	2	3	4	5	6	7	8	9
RSW2000	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RSW2003	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RSW2004	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SJT2689	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WINNT40	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

LPAR Virtual LAN information not available:  
CPFBA03 - Error connecting to service.

# Availability

## Problem

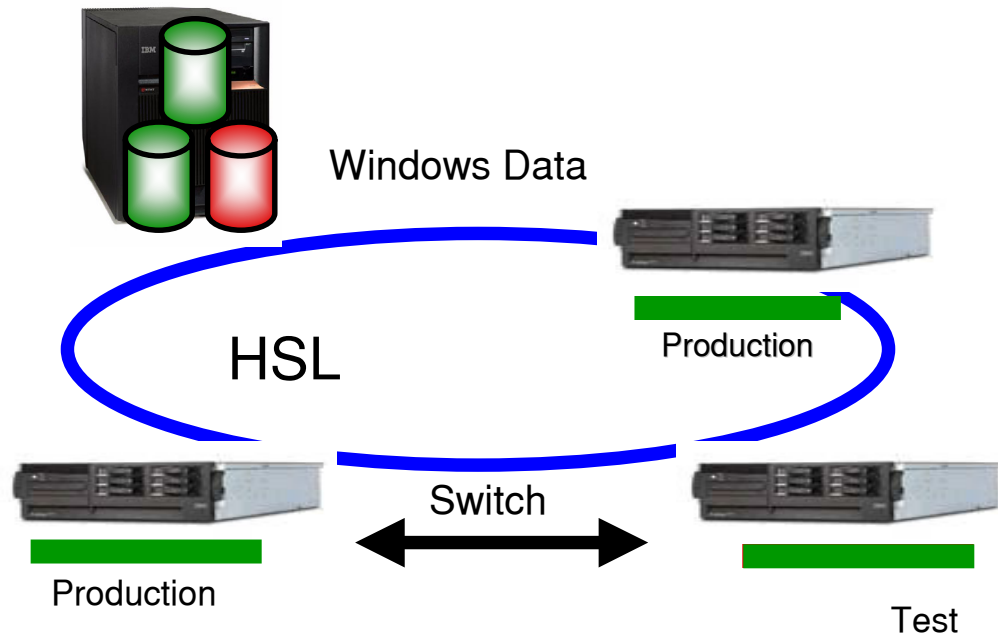
- Providing an effective and efficient availability solution

## 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





## Marshall Erdman & Associates

*"Because of the cost of redundancy, companies our size do not generally perform disaster recovery. With xSeries server storage integrated with the iSeries, we can afford to deliver redundancy and rapid-recovery capabilities - for true business recovery protection."*

**iSeries 820**

J.D. Edwards  
OneWorld



**Integrated xSeries  
Servers**

File Server

Citrix Metaframe (3)

Ron Cipolla,  
CIO

**xSeries 360**

Application Server  
Database Server  
Development/Test/Hotspare

## Availability - One Computer Room

### Problem

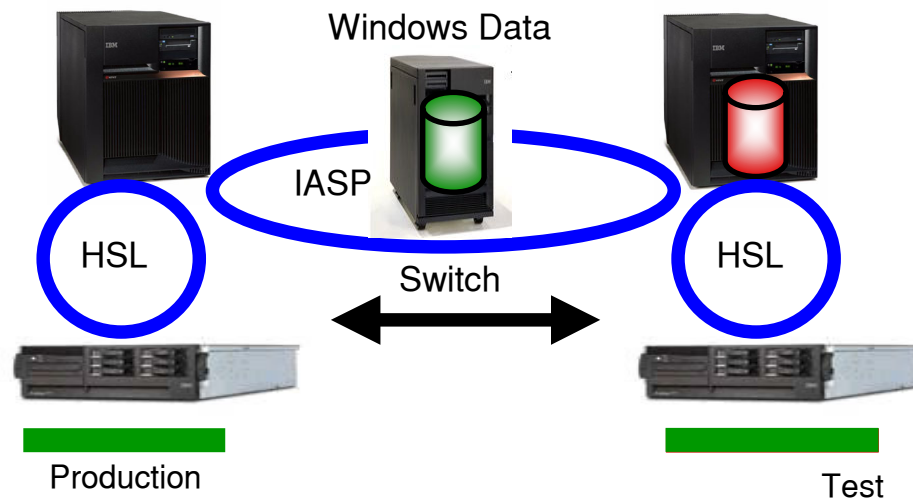
- Providing an effective and efficient availability solution

### Solution

- iSeries switch disk support with Independent ASP

### Benefit

- Solution for planned or unplanned server outages







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## Wesco Aircraft

### Background

- ▶ Wesco Aircraft is one of the largest distributors of aerospace fasteners, bearings, fittings, and installation tooling

### Objectives

- ▶ Improve management for Exchange, SQL Server and File servers
- ▶ Reduce costs for PC server farm
- ▶ Improve availability
- ▶ Consolidate AS/400 JD Edwards servers and 31 PC servers

### Benefits

- ▶ Operational costs reduced 20%, server admin costs significantly lower
- ▶ Windows server storage is much easier to manage
- ▶ Testing of new applications is more flexible
- ▶ Better utilization rates of Intel servers



# WESCO Aircraft



***"With iSeries as our single point of management, our total cost of server administration is down over 20%. Windows server storage is also much easier to manage now that it is consolidated on the iSeries and the testing of new applications is more flexible than ever."***

Morris Benoun, Director of Information Technology, WESCO Aircraft

## Microsoft Cluster Service (V5R2)

### Switch Disk Cluster

- Dynamically Switch Storage Spaces Between Windows Servers
- 16 New 1 MB to 1 TB\* Shared Storage Spaces

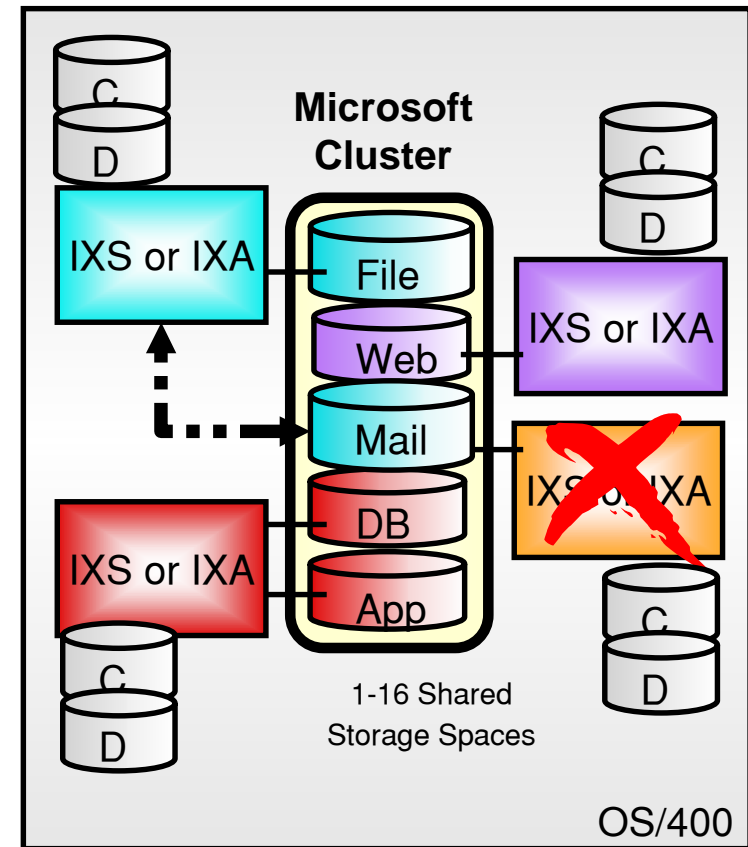
### Availability Improvements

- Planned or unplanned outages

### Requirements

- iSeries 270, 8xx
- OS/400 V5R2
- Windows 2000 Advanced Server or Windows Server 2003 Enterprise Edition

\*requires V5R3





## High Availability – Mimix for Windows

*Lakeview Technology's Mimix for Windows and iSeries Integrated xSeries Solutions can provide replication services for Windows servers, delivering high-availability and disaster recovery solutions for iSeries customers that depend upon both OS/400 and Windows applications to support their business*

- NCA (Nuevo Central Argentino)
  - ▶ <http://www.mimix.com/pdf/nca.pdf>
- PFG (Performance Food Group)
  - ▶ <http://www.mimix.com/pdf/pfg.pdf>
- For more information...
  - ▶ Visit [www.lakeviewtech.com](http://www.lakeviewtech.com)

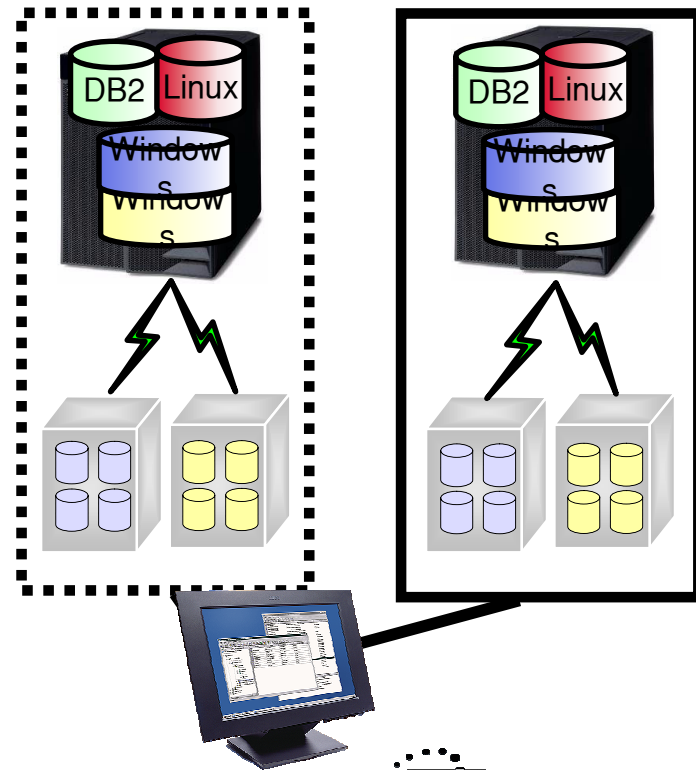




## High Availability – Vision Solutions



- Orion for Windows
  - Efficient Change Based Replication
  - Automated Switchovers and Failovers
  - Windows 2000 Server and Windows Server 2003
- Single Point of Availability Operations for Windows, Linux, and OS/400
  - *ORION* for Windows
  - *ORION* for Linux
  - *ORION* for OS/400



# iSeries Integrated xSeries Solution Scenarios

## Consolidation

- Replace Windows Infrastructure servers
- Consolidate storage, backup and simplify operations

## Solution Component

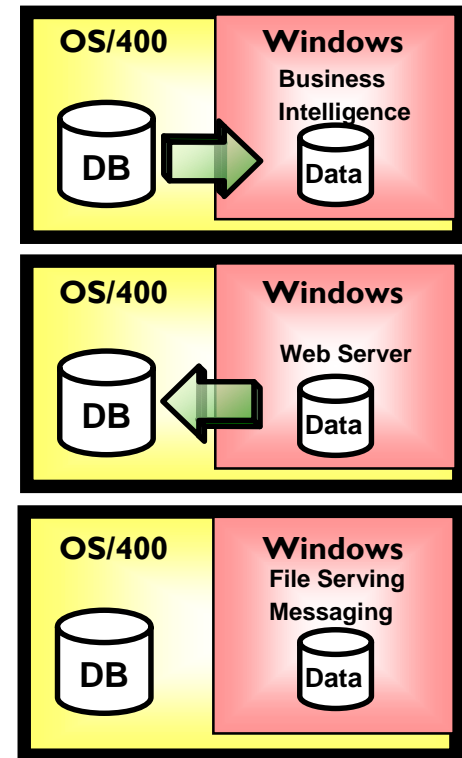
- Windows component of a key new application
- Simplify deployment of multi-tier applications

## Integration

- Extend OS/400 applications with Windows Applications
- Utilize Virtual Ethernets for application communication

## Application Flexibility

- Leverage Windows application portfolio
- Reduce complexity of managing Windows infrastructure





# The Customer Challenge: Solving the Cost3 Equation

## ■ Cost of Acquisition

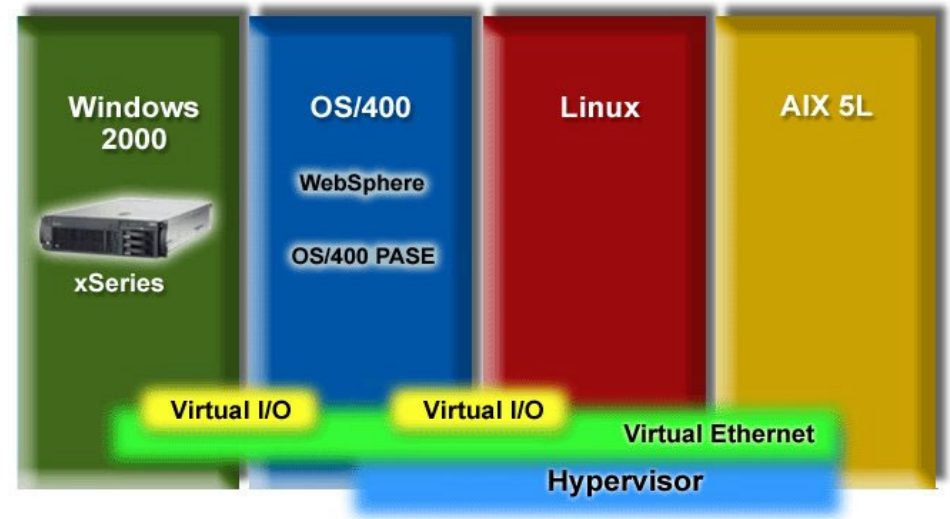
- ▶ New Integrated xSeries Server and increased support for Integrated xSeries Solutions

## ■ Cost of Ongoing Operations

- ▶ iSeries integration and virtualization enables user, storage and server management of iSeries and xSeries that can fully leverage existing resources and lower cost of operations

## ■ Cost of Technology Transition

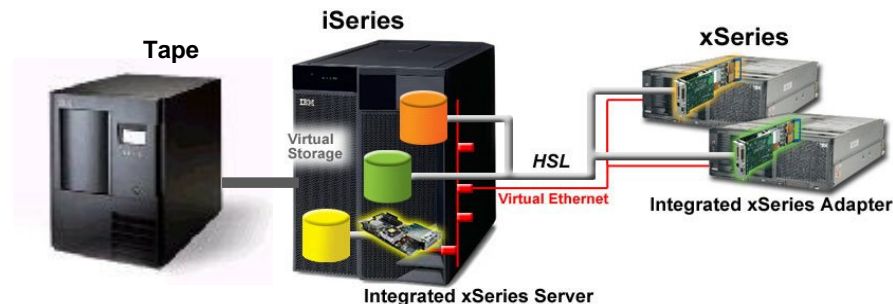
- ▶ eServer convergence strategy delivers the flexibility that can enable customers to affordably adapt to changing application requirements





## iSeries Integrated xSeries Solutions Summary

- Leverage investment in iSeries resources and operations
- Consolidate server management, backup and user administration
- Increase reliability and resiliency of critical Windows applications
- Communicate more securely over 1 Gbps Virtual Ethernet connections
- Reduce the complexity of recovering complete application infrastructure



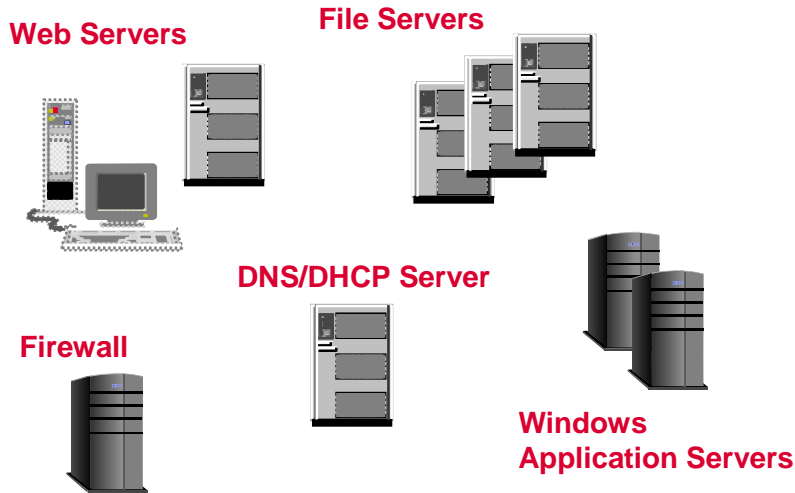
[www.ibm.com/eserver/series/windowsintegration](http://www.ibm.com/eserver/series/windowsintegration)





# iSeries Windows Server Consolidation Example

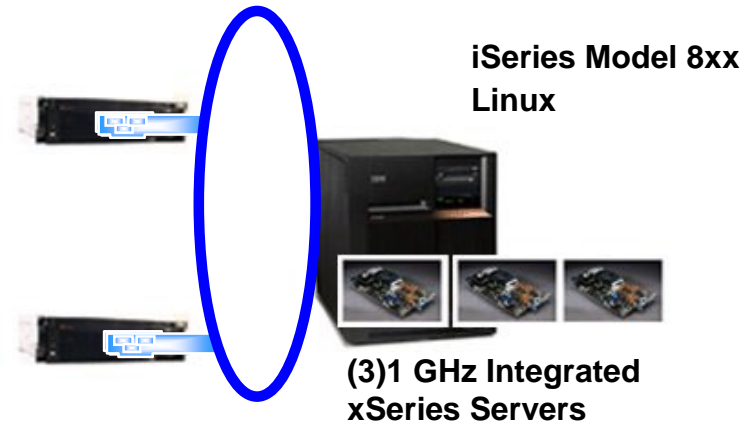
## Before



- ✗ Multiple Windows servers
- ✗ Moving to Windows 2000
- ✗ Growing operations costs and limited staff
- ✗ Poor availability
- ✗ Storage management is out of control
- ✗ Multiple, inconsistent backups
- ✗ Aging capacity in a variety of places
- ✗ Servers coming off maintenance
- ✗ No test environment

## After

(2) xSeries 360 & Integrated xSeries Adapter (IXA)



- ✓ Operations simplified
  - ★ Flexible, centralized storage management
  - ★ xSeries scalability delivers consolidation
- ✓ Outages reduced
  - ★ xSeries Enterprise X Architecture
  - ★ Test environment reduces impact of change
- ✓ Software costs reduced
  - ★ Linux OpenSource solutions



## 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

# xSeries Servers Supported with IXA

## x360/x365

- 1-4 way
- 2.8 GHz Xeon MP
- 3U Rack server



**Enterprise X-Architecture**

- First servers with new Intel Xeon™ MP™ Processors
- Active™ Memory (hot-swap and hot-add)
- Active™ PCI-X
- XpandOnDemand™ Scalability
- RXE-100 Remote Expansion Enclosure
- XceL4™ Server Accelerator Cache

## x440/x445

- 2-8 way support with IXA
- 2.8 GHz Xeon MP (2-8w)
- 3.0 GHz Xeon DP (2-4w)
- 4U Rack server



## x255

- 1-4 way
- 2.8 GHz Xeon MP
- Universal server (Tower or Rack server)



**X-Architecture Technology**

- Chipkill™ memory
- Active™ PCI & PCI-X
- Light Path Diagnostics™
- Extensive Predictive Failure Analysis
- Redundant Components
- IBM Director

## x235

- 1-2 way
- 3.06 GHz Xeon
- Universal server (Tower or Rack server)

Intel processor-based servers  
More info: xSeries 235



IBM @server xSeries



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## References & Resources

## Amelia Island Plantation

- Background: Amelia Island Plantation is Florida's premier AAA-Four Diamond destination island resort overlooking the blue water of the Atlantic
- Objective: Deploy new Windows server application requirements, replace aging Intel Server hardware, and introduce reliability to support 24X7 environment
- Solution: Consolidated 17 Intel servers to an iSeries Model 820 running JD Edwards, 6 Integrated xSeries Servers and 4 xSeries servers attached to iSeries via Integrated xSeries Adapters
- Why IBM?: "Under the new system, everything is simpler. Administration is much easier compared to standalone servers." -- Andy Cook, Windows Systems Administrator



## Asian Art Museum, San Francisco

- Largest Asian Art Collection in US
  - ▶ New 40,000 square-foot facility in San Francisco Civic Center
  - ▶ Asia Cafe & Museum Store
- Wide variety of Asian Art
  - ▶ Over 15,000 treasures spanning 6,000 years of history
- Deployed iSeries Integrated xSeries Solutions to reduce storage costs, downtime and improve backup & recovery time



*"It [iSeries with IXS] has great stability. And now backups take only two hours for 150 GB instead of 12 hours for 72 GB with the old system. And finally, we didn't have to add staff. The whole thing is run by me and one other person."*

-- Jim Horio, IT Director, Asian Art Museum\*\*\*



## Bristol-Myers Squibb, Australia

- Bristol-Myers Squibb Pharmaceuticals markets ethical medicines in the company's main therapeutic areas of cardiovascular diseases, including HIV/AIDS, and mental health.
- Upgraded iSeries Model 720 to i825
  - ✓ 4 Logical Partitions
  - ✓ Consolidated Regional BPCS EPR systems
  - ✓ Consolidated 22 servers down to 11 : 3 IXS & 8 xSeries attached via IXA)
- The Results
  - First class reliability – Mature Technology which is easily managed via Operations navigator.
  - Reduced Technical support
    - Previously 5 Engineers down to 3 - No layoffs as Engineers were redirected to alternate roles.
    - Improved Backup windows and systems availability with the introduction of LTO technologies across multiple LPAR's
  - No more server crashes
  - A heterogeneous environment
  - No need to invest in real estate
  - Reduced Infrastructure costs – Consolidated Maintenance costs by decommissioning legacy architecture



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## iSeries Integrated xSeries Resources

- **iSeries Windows Integration website**
  - ▶ [www.ibm.com/eserver/series/windowsintegration](http://www.ibm.com/eserver/series/windowsintegration)
  - ▶ Success stories, Press, Product Details, Press
  - ▶ e.g. May eServer Magazine iSeries Edition article "IT Paradise on Earth" featuring Amelia Island Plantation
- **xSeries website**
  - ▶ [www.ibm.com/eserver/xseries](http://www.ibm.com/eserver/xseries)







## JDE Whitepaper : xSeries & IXA



@server®

- iSeries Advantage: Leveraging Integrated xSeries Adapter vs. Standalone Web Server for J.D. Edwards OneWorld / ERP 8.0
  - ▶ Utilizing xSeries attached via the Integrated xSeries Adapter as a front end web server to iSeries enterprise server
- JDE Competency Center tested iSeries and x235 attached via IXA
- Discusses benefits of Integrated xSeries Solution
  - ▶ Consolidated storage, Performance
  - ▶ Virtual Ethernet, Integrated backup
- [www.ibm.com/eserver/iseries/windowsintegration](http://www.ibm.com/eserver/iseries/windowsintegration) Click on "Library" link
  - ▶ Direct link: <http://www.ibm.com/servers/eserver/iseries/windowsintegration/pdf/jdeixa.pdf>

Configuration	# users	Response Time (in secs)	xSeries CPU %	iSeries CPU %	CPU% Improvement
Standalone	300	.49	18.3	41.4	
Integrated	300	.43	19.7	41.0	12 %
Standalone	500	.84	38.0	69.0	
Integrated	500	.76	39.2	67.3	10%

Table 1. Response Time comparison between standalone xSeries and direct-attached xSeries on IXA

IBM WebSphere Portal - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print


Address [http://ibmwas.ccsllab.com/wps/myportal/.cmd/ad/.ar/sa.save\\_credentials/.pm/-/.c/202/.ce/424/.p/419#424](http://ibmwas.ccsllab.com/wps/myportal/.cmd/ad/.ar/sa.save_credentials/.pm/-/.c/202/.ce/424/.p/419#424) Go Links >>

WebSphere Portal Welcome wpsadmin! | Edit Layout | New Page | Edit my profile | Help | Log off

Welcome Work with Pages Portal Administration My Favorites

Home My Portlets Test

Citrix MetaFrame Published Applications



**Applications** Logout

Top Up

Accessories	Games	MS Office
Excel XP	Internet Explorer	Internet Explorer
Notepad	PowerPoint XP	Word XP
WordPad		

World Clock

Local Time:  
**1:51 PM** Eastern Time (US & Canada) - 8/18/03

Time Zone	Local Time
Beijing, Chongqing	1:51 AM (8/19/03)
Dublin, Edinburgh, London	6:51 PM (8/18/03)
Osaka, Sapporo, Tokyo	2:51 AM (8/19/03)
Pacific Time (US & Canada)	10:51 AM (8/18/03)

Quick Search:

Bookmarks

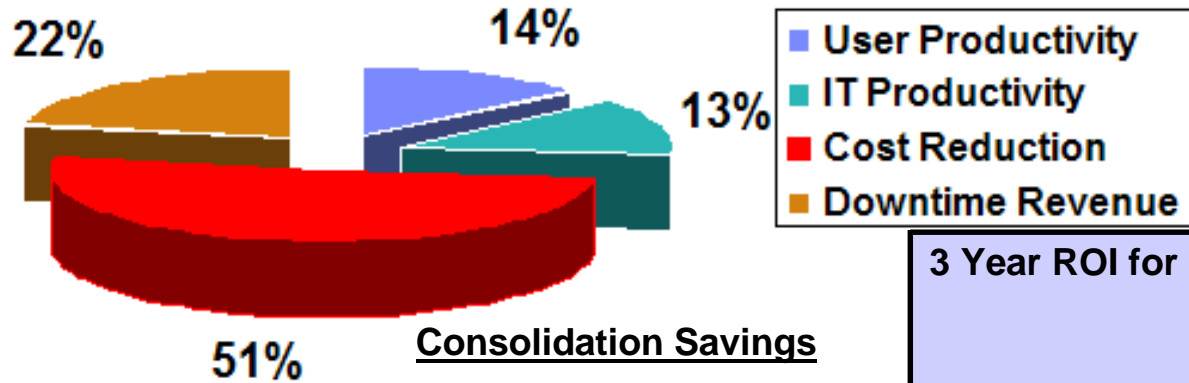
- IBM Corporation
- IBM WebSphere
- IBM WebSphere Portal
- IBM Software
- IBM Pervasive Computing
- IBM DeveloperWorks
- WebSphere Developer Domain
- IBM AlphaWorks

FT Portlet - Demonstration

**Advanced Options** Introduction | Help

Done Unknown Zone (Mixed)

# Consolidation of Windows & Linux Servers on iSeries Can Pay Back in Under 1 Year



- Customer case studies of Windows & Linux server consolidation on iSeries
- Average ROI of 213% with payback in less than 1 year
- Monthly downtime was reduced by 90%

3 Year ROI for Server Consolidation Per 100 users	
Annual cost savings	\$183,716
Net Present Value	\$302,052
Total Investment	\$141,227
ROI = NPV / Investment	213.9%
Payback	261 days
Discount Rate	12%

Source IDC White Paper July 2003: The ROI of Windows & Linux Server Consolidation on IBM eServer iSeries: Analysis and Case Studies in Small and Medium Businesses

## IDC Study Key Findings

- Consolidation on iSeries servers enables organizations to continue to expand the automation of their businesses by integrating the Windows and Linux computing environments
  - IDC found a three-year ROI of 213.9%
  - The investment in the iSeries platform began to pay off relatively quickly, with a payback period of 261 days
  
- Three-year savings of \$542,728 per 100 users
  
- Average annual savings are \$183,716
  - 51% of savings were generated through consolidation
    - Reducing the hardware, software and staffing associated with reducing servers by 40%
  - Monthly downtime was reduced by 90% from 8.2 hours to 0.8 hours

*[www.ibm.com/servers/eserver/series/const/idc\\_roi/](http://www.ibm.com/servers/eserver/series/const/idc_roi/)*

Source IDC White Paper July 2003: The ROI of Windows & Linux Server Consolidation on IBM eServer  
iSeries: Analysis and Case Studies in Small and Medium Businesses



## Leverage iSeries Website For Information

IBM

Home | Products & services | Support & downloads | My account

Servers > Midrange servers > Windows integration

### Windows integration

Windows integration delivers value to Windows servers through integrated storage, user, and management to help lower the costs of server farms.

- Integrated xSeries Server is a Microsoft Windows Server on a card that runs inside an IBM @server iSeries.
- Integrated xSeries Adapter enables direct connection of n-way xSeries for power and flexibility.

Leverage iSeries storage and systems management resources and integrate iSeries and xSeries operations to help reduce cost and complexity.

→ Overview

#### What's new

- **Press: IT Paradise on Earth**
- Support for additional x235 models
- Coming Soon! Windows 2003 Support on IXS/IXA!
- V5R2 PTFs for Microsoft Clustering Support on IXS/IXA
- **1.6 GHz IXS video alert**
- New iSeries models announced

#### Products

**Integrated xSeries Server (IXS)**

- Hardware and software overview

**iSeries Windows integration enhancements**

- New iSeries announced! Models 800, 810, 825, 870 and 890. Up to 60 IXA. Up to 48 IXS.
- iSeries 825, 870, 890 Enterprise Editions include an Integrated xSeries Server
- 1.6 GHz Xeon Integrated xSeries Server with built-in

**Press**

**References**

**Latest xSeries models supported with IXA**

[www.ibm.com/eserver/series/linux](http://www.ibm.com/eserver/series/linux)

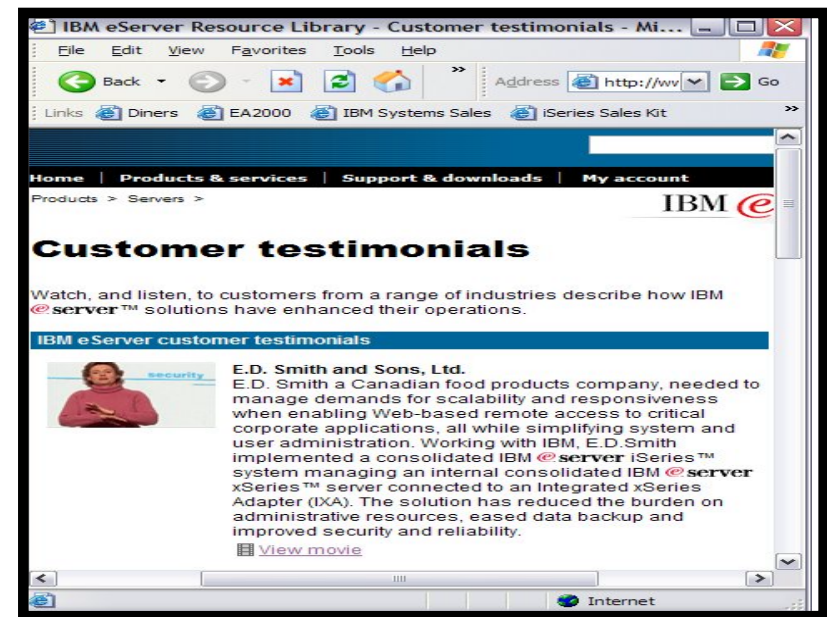
[www.ibm.com/eserver/series/windowsintegration](http://www.ibm.com/eserver/series/windowsintegration)



## Update: Windows Integration Videos

- Wesco Aircraft, Huhtamaki, E.D. Smith & Sons, Ltd.
- Stream or Download

[www.ibm.com/servers/library/testimonial.html](http://www.ibm.com/servers/library/testimonial.html)







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