iSeries. mySeries.

Introducing IBM eServer® i5 & i5/OS™

Announcement May 4, 2004
GA June 11, 2004

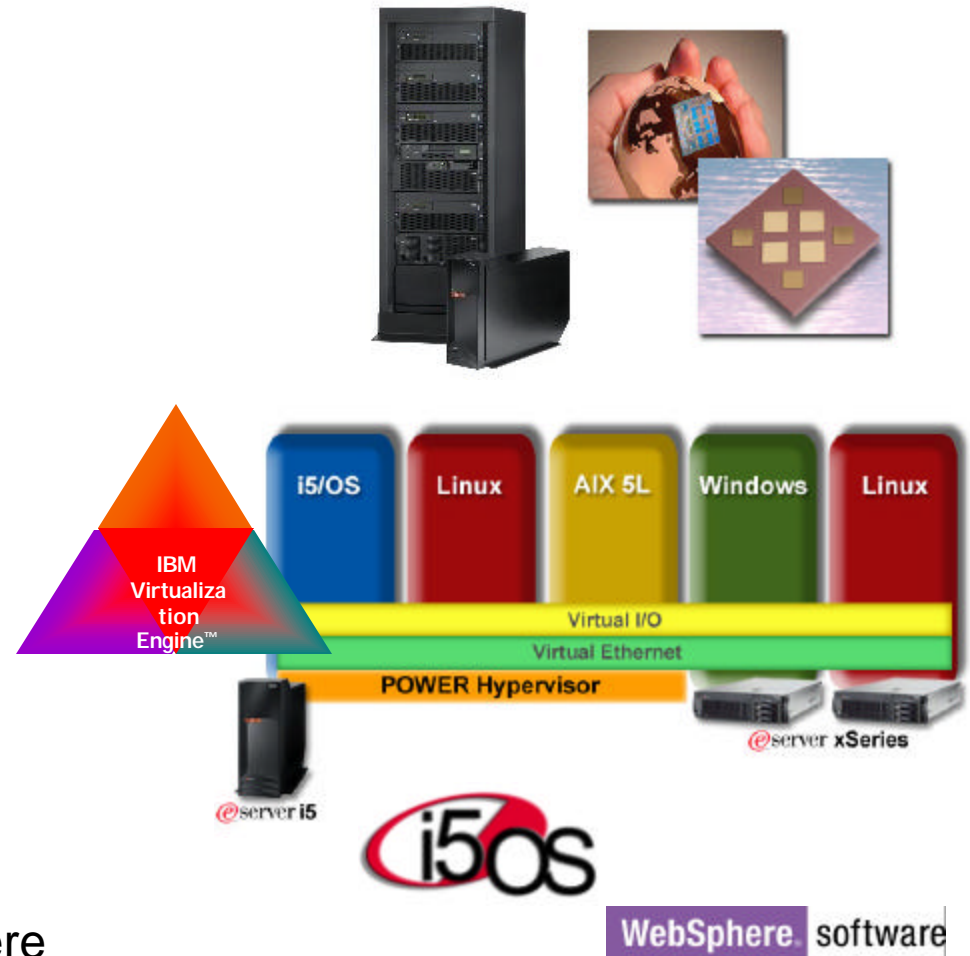# IBM eServer i5 and i5/OS V5R3 - Highlights

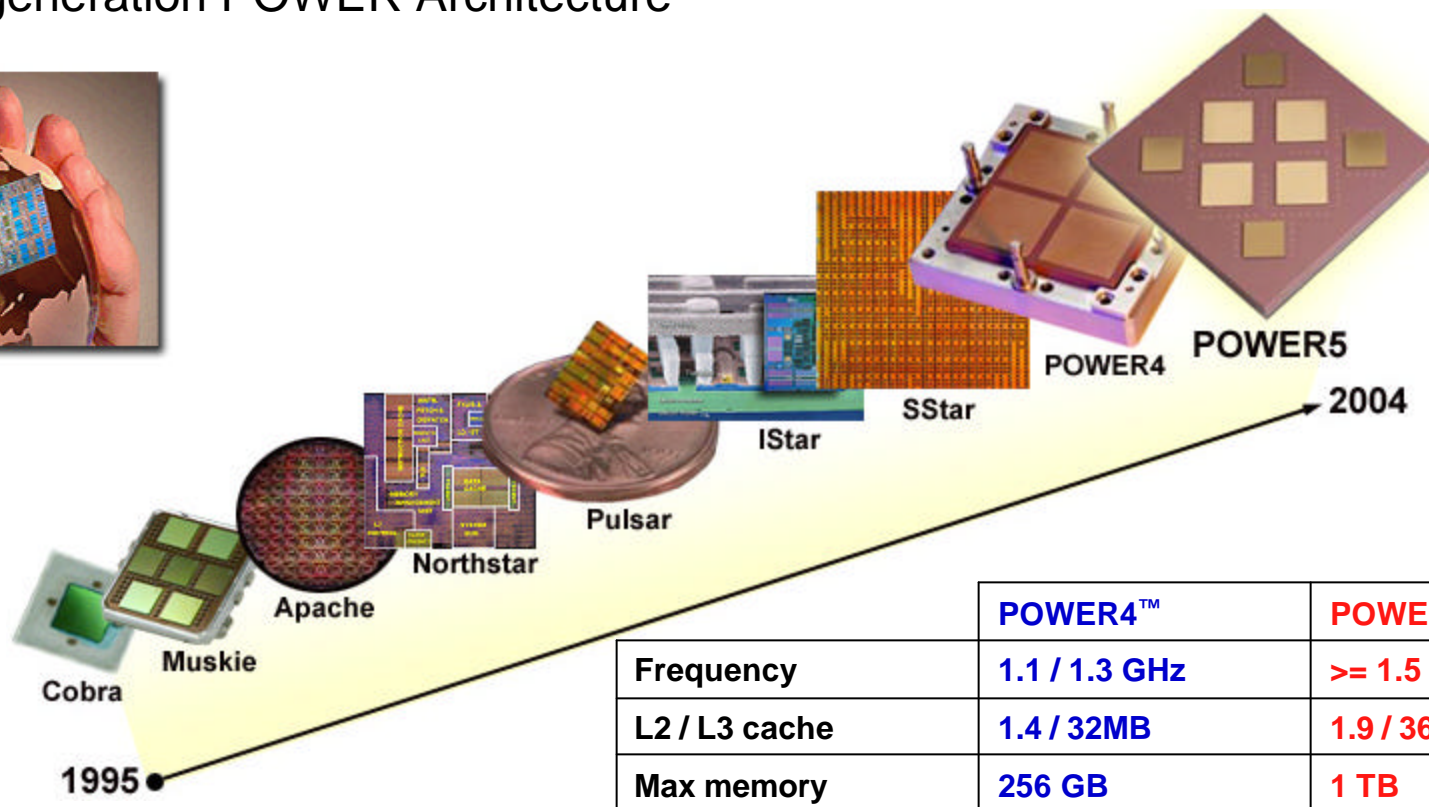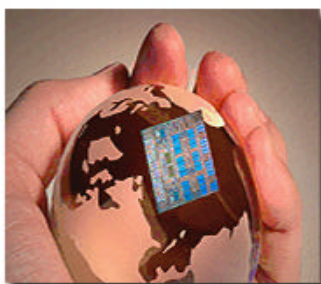|	
IBM eServer i5	✎ The next generation of iSeries™ servers ✎ First POWER5™ processor-based servers in industry
IBM i5/OS V5R3	✎ The next generation of OS/400® ✎ Builds on and extends the capabilities of OS/400 V5R2
Simplify Your Infrastructure	✎ Run i5/OS, Linux, AIX 5L™ and Windows® Server in a single server ✎ Share resources, maximize utilization with IBM Virtualization Engine™ ✎ Manage infrastructure with IBM Director Multiplatform
Integrate to Innovate	✎ Exploit i5/OS integration with IBM software ✎ Personalize application access with WebSphere® Portal ✎ Foster interaction and collaboration with Lotus® Workplace
Deliver Without Disruption	✎ Extend Capacity on Demand leadership with Memory & Reserve CoD ✎ Strive for continuous operations with fault tolerant technologies ✎ Deliver robust, open database solutions with IBM DB2® UDB

iSeries. mySeries.

IBM eServer i5 Announcement

- Delivering the industry first POWER5 based servers

- Exploiting a common eServer platform with pSeries™

- Realigning price with value via the new economic model

- Completing the vision of an on demand operating environment

- Introducing the first implementation of the IBM Virtualization Engine

- Extending the value of open integration with i5/OS and WebSphere

A Decade of 64-bit Processor Excellence

- 9th generation 64-bit processor
- 5th generation POWER Architecture

	POWER4™	POWER5
Frequency	1.1 / 1.3 GHz	>= 1.5 GHz
L2 / L3 cache	1.4 / 32MB	1.9 / 36MB
Max memory	256 GB	1 TB

Common eServer Platform

IBM eServer pSeries	**Make no compromises, accept no limits in an on demand world** Feature innovative and affordable POWER systems to serve the multiple workloads of the UNIX and Linux marketplace
IBM eServer i5	**Simplicity in an on demand world** Feature fully integrated solutions including IBM middleware with maximum flexibility in operating system choice

IBM eServer POWER5 Common Platform

POWER5 servers are the industry's most powerful and flexible servers, running multiple operating environments simultaneously and dynamically adjusting to changing requirements. Exactly what you need to simplify IT infrastructure, drive down costs and drive up productivity in today's on demand world.
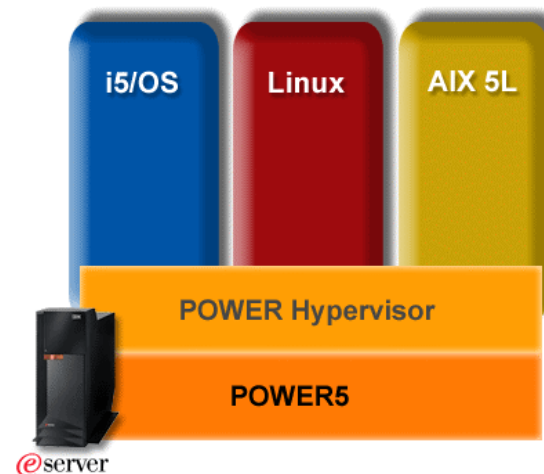
i5/OS   Linux   AIX 5L

POWER Hypervisor

POWER5

*e*server

iSeries. my Series.

New Economic Model Realigns Price with Value

- **Common price for common hardware**
  - Same price as pSeries for memory, disk, processor activations etc

- **Capture value of i5/OS and IBM middleware with Editions**
  - Aggressive price/performance improvements on Editions

- **Attractive new entry prices target new customer growth**
  - Rich configurations of 520 Express Edition starting at $11,500

- **Price actions on existing iSeries products provide attractive alternatives for customers that require V5R2**
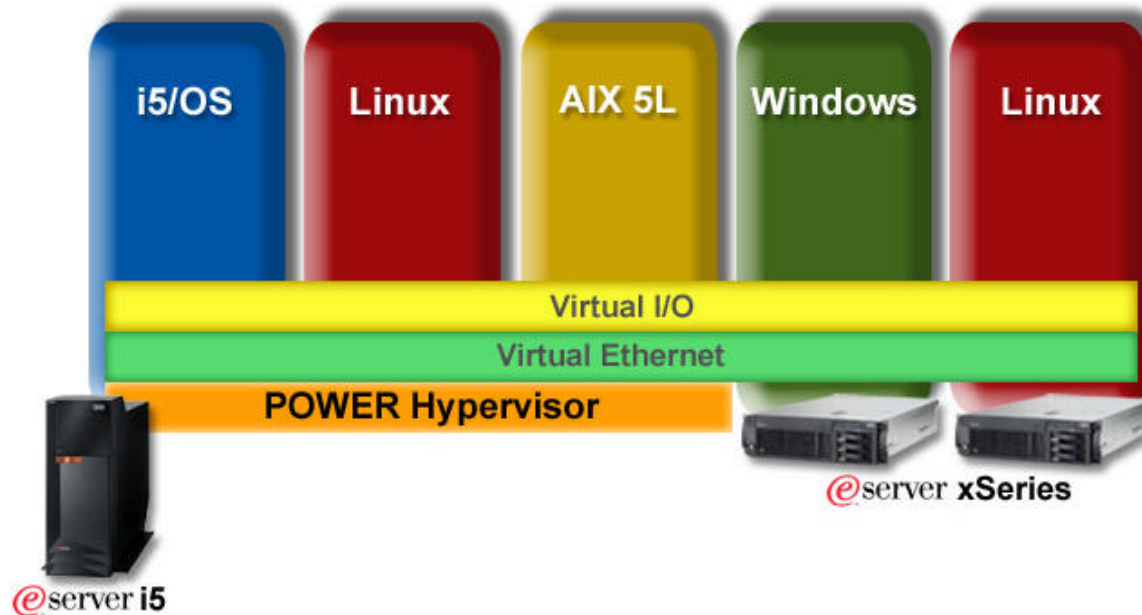
=

=

Tivoli software

Lotus software

WebSphere software

DB2 Data Management Software

i5OS

iSeries. mySeries.

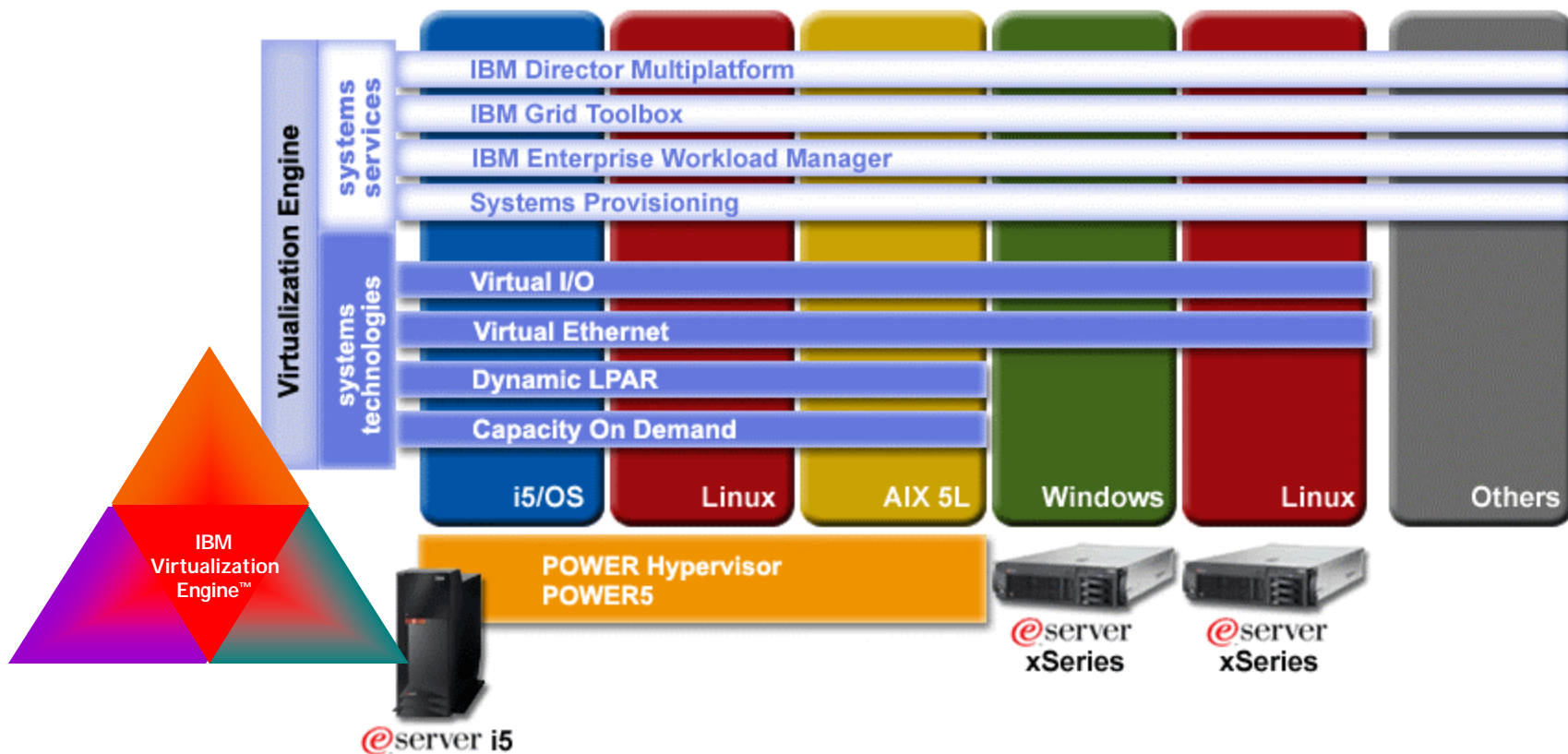# IBM eServer i5 On Demand Operating Environment

- POWER Hypervisor™ supports i5/OS, AIX 5L, Linux

- Improve server utilization rates across multiple workloads with automatic processor balancing with uncapped partitions

"As well as consolidating physical servers, the iSeries provides an easy way to integrate multiple environments. iSeries is the ultimate server for integration, and it has delivered immediate and significant advantages."

Jan van de Straat, Director of R&D
Gemeente Harlem

This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

iSeries. mySeries.

IBM

(e)server®

IBM Virtualization Engine and eServer i5

This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

© 2004 IBM Corporation
PAGE 8

iSeries. mySeries.

i5/OS and WebSphere - Express for iSeries

- i5/OS V5R3 is an integrated operating system that builds on and extends the capabilities of OS/400 V5R2

- i5/OS V5R3 runs on IBM eServer i5 servers, IBM eServer iSeries servers and IBM AS/400® models 720, 730, 740, 170

- WebSphere - Express for iSeries now integrated and shipped with all i5/OS

* Number of user licenses will vary based on iSeries system model and Enterprise Edition entitlements

iSeries. mySeries.

IBM eServer i5

iSeries. mySeries.

iSeries servers

eServer i5 servers

i890

i870

i825

i810

iSeries 800

570

520

Medium to Large Enterprises

Small to Medium Enterprises

iSeries. mySeries.

IBM eServer i5

Chart showing CPW performance for IBM eServer i5 models:

- **570 2/4-way** — Activated + CoD (extends to ~12000 CPW)
- **570 1/2-way** — Activated + CoD (extends to ~6000 CPW)
- **520 2-way** — Activated (~6000 CPW)
- **520** — Activated (~3300 CPW)
- **520** — Activated (~2500 CPW)
- **520** — Activated (~1000 CPW)
- **520 Value Edition** — Activated (~1100 CPW)
- **520 Value Edition** — Activated (~600 CPW)

Legend:
- Activated
- CoD

X-axis: CPW (0, 2000, 4000, 6000, 8000, 10000, 12000)

iSeries. mySeries.

Editions Continue to Realign Price With Value

Enterprise Edition

Includes maximum on demand capabilities

| Multiple operating environments |
| Optimized for IBM WebFacing |

| Virtualization Engine systems technologies |
| i5/OS, WAS-Express and DB2 licenses |

Standard Edition

Aggressively priced for e-business workloads

| License for popular e-business & datacenter management software | + |

| Maximum interactive 5250 CPW | + |

| Multiple operating environments | Processor activation for Linux or AIX 5L | + |
| Optimized for IBM WebFacing | Integrated xSeries Server | |

| Virtualization Engine systems technologies | Education and Services to accelerate | + |
| i5/OS, WAS – Express, and DB2 licenses | deployment of new workloads | |
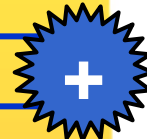
Note: [1] Edition contents vary by model. Example shown here is for eServer i5 570. WAS-Express = WebSphere Applicatoin Server – Express for iSeries

iSeries. mySeries.

Maximize Your iSeries Investments

- Upgrade servers from i810 and above

- Upgrade I/O towers
  - Support current HSL I/O towers**

- Upgrade storage
  - All 10K & 15K rpm disks are supported on POWER5 processor-based servers

- Upgrade from OS/400 V5R2 and V5R1 to i5/OS

** Except 5078 / 5075

This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.
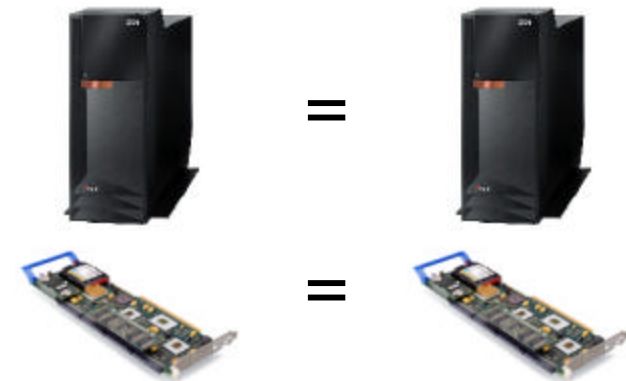
iSeries. mySeries.

IBM eServer i5 model 520

Rack mount

- Flexible configuration options
  - Desk side or rack mount
  - 1-way or 2-way POWER5 processor

- Highly scalable growth options
  - Starts at 500 CPW, up to 6000 CPW
  - Up to 32 GB memory
  - Up to 19 TB disk storage

Desk side

- Features Express, Value, Standard and Enterprise Edition options*

- Upgrades from i810 and i820

*HA Edition planned for 3Q'04
This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

iSeries. my Series.

IBM eServer i5 model 570

- Flexible configuration options
  - Rack mount featuring Capacity on Demand options
  - 1/2-way, 2/4-way POWER5 processor

- Highly scalable growth options
  - Starts at 3300 CPW, up to 11700 CPW
  - Up to 64 GB memory
  - Up to 39 TB disk storage

- Features Standard and Enterprise Edition options*

- Upgrades from i810, i820, i825, i830 and i870 (5/8-way) into 570

*HA Edition planned for 3Q'04
This presentation contains information about IBM's plans and directions. Such plans are subject to change without notice.

iSeries. mySeries.

Flexible Capacity on Demand Options

- Extend Capacity Upgrade on Demand and On/Off Capacity on Demand options to eServer i5 servers

- *New* Memory CoD*
- *New* Trial CoD*
- *New* Reserve CoD*
  - Automatically enable reserve capacity if processor utilization reaches 100%

- Immediate activation, no system restarts or database reconfiguration required

- *An IBM Virtualization Engine systems technology*

iSeries. mySeries.

The New Economic Model

iSeries. mySeries.

New Economic Model Realigns Price with Value

- **Common price for common hardware**
  - Same price as pSeries for memory, disk, processor activations etc

- **Capture value of i5/OS and IBM middleware with Editions**
  - Aggressive price/performance improvements on Editions

- **Attractive new entry prices target new customer growth**
  - Rich configurations of 520 Express Edition starting at $11,500

- **Price actions on existing iSeries products provide attractive alternatives for customers that require V5R2**

Tivoli software

Lotus software

WebSphere software

DB2 Data Management Software

i5OS

iSeries. mySeries.

Editions Price/Performance

i820	35	70	120	240	560	1050	2000
3700	$240K	$268K	$320K	$395K	$555K	$770K	$1065K
2350	$155K	$183K	$235K	$310K	$470K	$685K	
1100	$77K	$105K	$157K	$232K	$392K		
600	$41K	$69K	$121K	$196K			
370	$23K	$51K	$103K	$178K			

2003

i810	Enterprise
1020	$78 K

520	Enterprise
1000	$48 K

2004

iSeries. mySeries.

eServer i5 520 Express Edition

- Three configurations at attractive channel prices
  - Additional hardware and software included
  - Available through selected channels, fulfilled through special bid process
    - Minimum order quantity   (20 = USA, Italy, France) (10 = elsewhere)

#1 = 500/30 CPW	#2 = 500/30 CPW	#3 = 1000/60 CPW
1GB memory	1GB memory	2GB memory
(2) 10k rpm 35GB disk	(2) 15k rpm 35GB disk	(2) 15k rpm 35GB disk
30GB QIC tape	30GB QIC tape	30GB QIC tape
DVD ROM	DVD ROM	DVD ROM
Twinax	Twinax	Twinax
P05 SWMA	P05 SWMA	P10 SWMA
i5/OS (DB2 UDB, WAS Express)	i5/OS (DB2 UDB, WAS Express)	i5/OS (DB2 UDB, WAS Express)
---------------------------	DB2 Query Manager	DB2 Query Manager
Mfg Suggested List Price $11.5K*	Query/400	Query/400
Savings = $5.5K**	iSeries Access	iSeries Access
	WDS	WDS
	---------------------------	---------------------------
	Mfg Suggested List Price $14.5K*	Mfg Suggested List Price $29.9K*
	Savings = $9.2K**	Savings = $16.5K**

*U S Prices subject to change until announce
**Compared to a comparably configured build to order 520

iSeries. mySeries.

Simplify Your Infrastructure

*e*server®

i5/OS V5R3 Dynamic Logical Partitioning

- Features IBM POWER Hypervisor™ supporting i5/OS, AIX 5L and Linux and up to 254* partitions

- Improve server utilization rates across multiple workloads
  - Automatic processor balancing with uncapped partitions

- Improve fault tolerance and lower partition management costs
  - Primary partition replaced by Hardware Management Console (HMC)

- *An IBM Virtualization Engine systems technology*
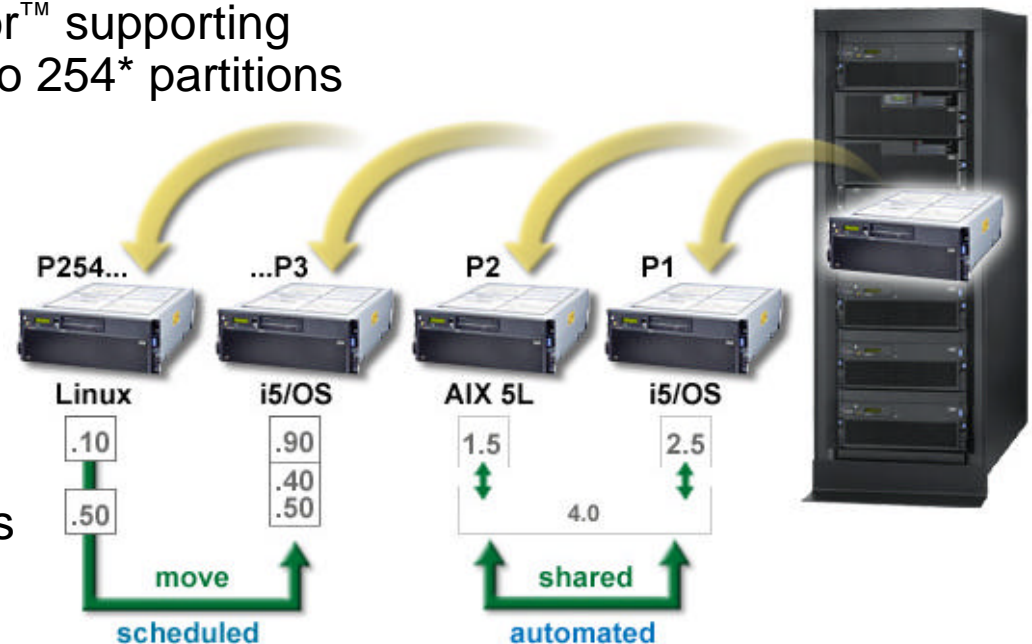
P254...   ...P3   P2   P1

Linux   i5/OS   AIX 5L   i5/OS

.10   .90   1.5   2.5
.50   .40
       .50   4.0

move   shared
scheduled   automated

iSeries. my Series.

IBM Director Multiplatform*

- Centralize management and monitoring for multiple operating environments
  - i5/OS, AIX 5L, Linux, and Windows operating systems

- Open standards-based heterogeneous management tool

- Complements iSeries Navigator

- Integrated with PM iSeries for collecting and reporting multi-OS CPU utilization and capacity planning

- *An IBM Virtualization Engine systems service*
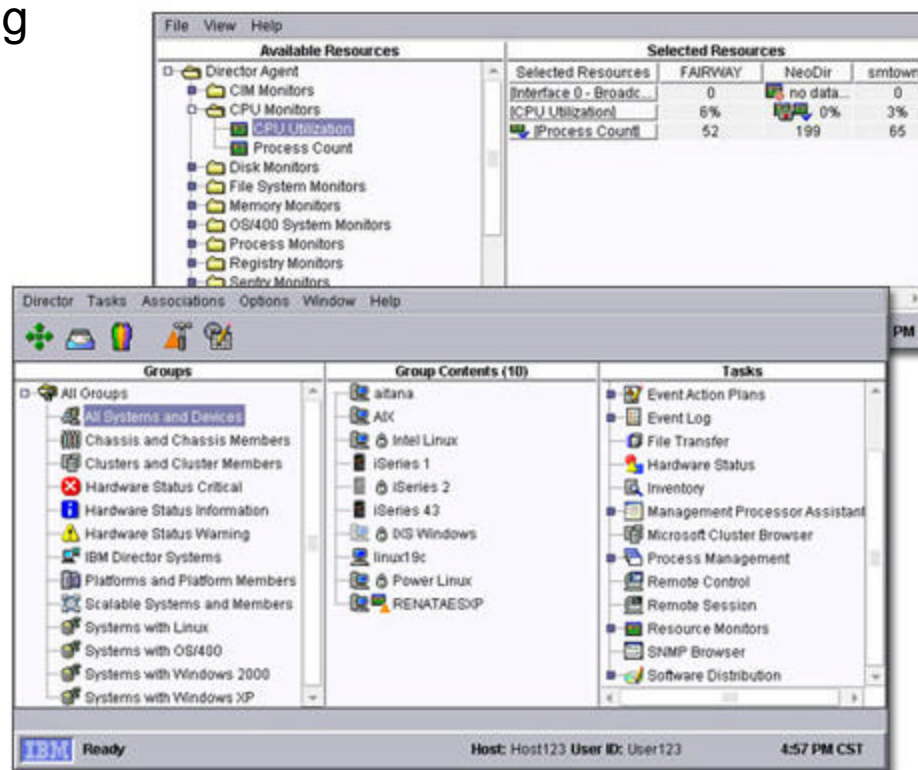
iSeries. mySeries.

IBM

@server

AIX 5L and IBM eServer i5*

- Consolidate and manage UNIX® solutions

- Extend i5/OS with complementary AIX 5L applications

- Available on all eServer i5 servers

- Runs AIX 5L natively

- IBM Director Multiplatform provides management & monitoring tools

iSeries. mySeries.

Linux and IBM eServer i5*

- Common Linux distribution for POWER5 processor – based servers
  - Automatic processor balancing with uncapped partitions

- iSeries Navigator V5R3 enhancements
  - Start up, shut down Linux servers
  - Create/manage virtual storage spaces

- IBM Director Multiplatform provides management & monitoring tools

Integrating Windows & Linux Servers
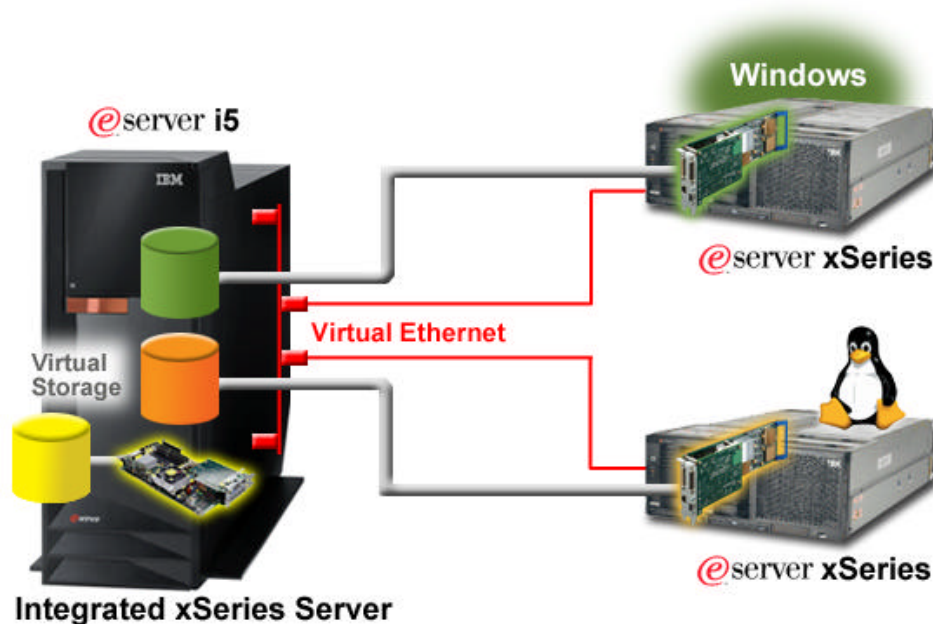
- Consolidate Intel® processor-based Windows & Linux servers with the Integrated xSeries® Server & Integrated xSeries Adapter

- Windows Server™ 2003
  - Flexible options to manage passwords for OS/400 and Windows users
  - Increase storage space size up to 1TB, with maximum of 32TB per server
- Linux
  - IBM intends to provide support on selected IXS and xSeries servers attached to eServer i5 via the IXS and IXA*
  - Extends Linux application options

- IBM Director Multiplatform provides management & monitoring tools

iSeries. mySeries.

Integrate to Innovate

iSeries. mySeries.

WebSphere Application Server

- WebSphere Application Server – Express now available with every eServer i5 and upgrade to i5/OS V5R3

- Tightly integrated with i5/OS V5R3
  - Includes new IBM Survey application, in addition to IBM Telephone Directory

- Over 200 iSeries ISV's currently enabled for WAS V5
  - Plan for WAS V6 in 2H2004*
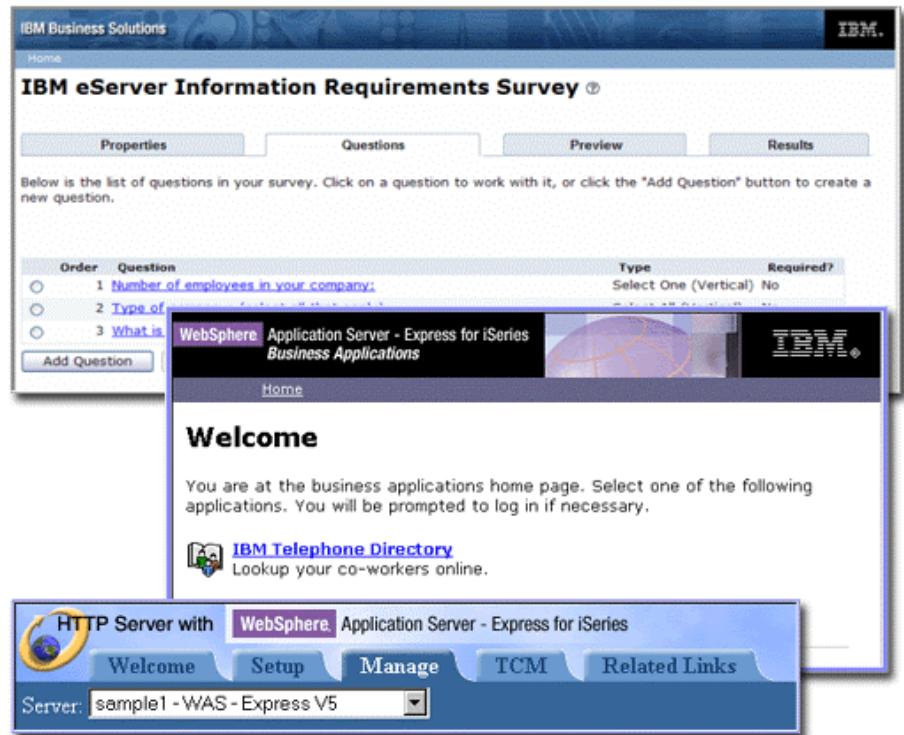
Lotus® 6.5.1 – A Unifying Release

- Synchronize Domino® based products
  - Instant Messaging and Web Conferencing (Sametime)
  - Document Manager (Domino.Doc)
  - Team Workplace (Quickplace)
  - Workflow

- Integrates Instant Messaging with Notes clients

- Supports multiple clients
  - Lotus Notes
  - Domino Web Access (Internet Explorer and Mozilla)
  - Domino Access for Microsoft Outlook
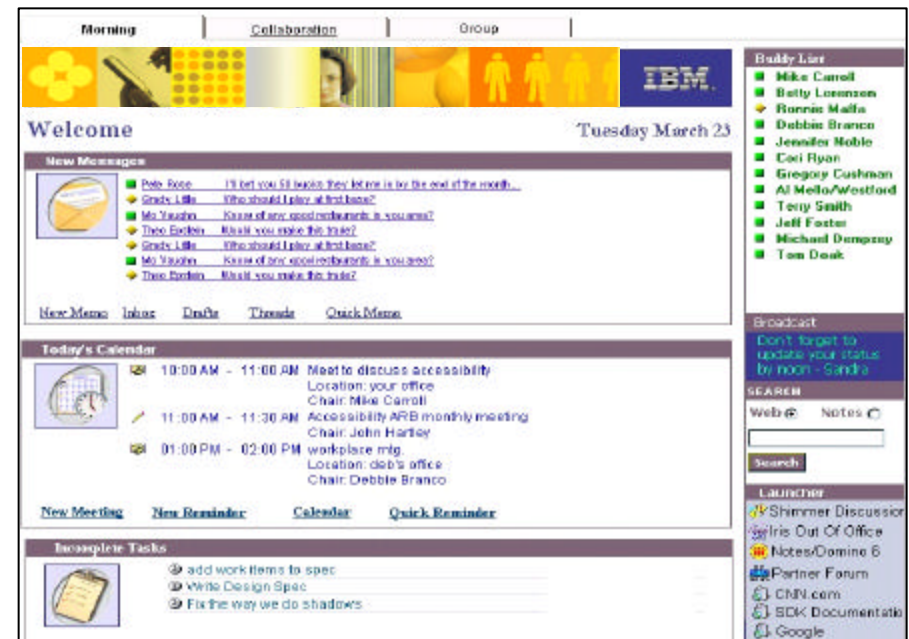
Lotus Workplace 2.0

Lotus. software

- New for eServer i5 and iSeries

- Lotus Workplace is a family of integrated collaborative applications that can be used individually or in any combination

- Built on Portal and J2EE technology

iSeries. mySeries.

WebSphere Portal Express & Express Plus

- New integrated, easy-to-use portal server
  - Express includes document management and productivity components
  - Express Plus adds collaboration center
- Simplified portal administration and installation
  - Easy-to-use iSeries setup wizards deliver a ready-to-use portal server
- Flexible per-user or per-CPU licensing
- Packaged with Enterprise Edition*
- Integrates iSeries portlet enabled applications
  - IBM WebFacing applications are portal Enabled
  - 100% 5250 applications are now portal enabled with iSeries Access for the Web
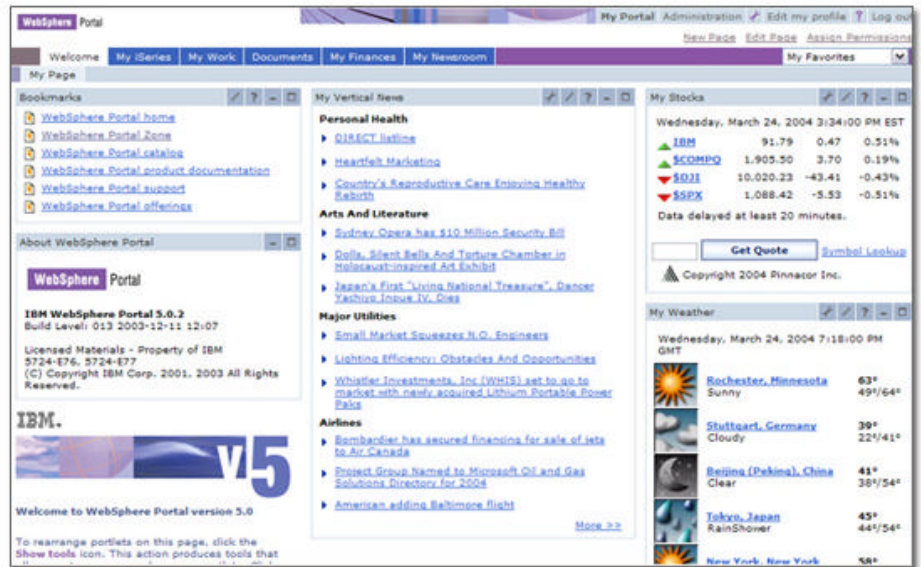
WebSphere software

* Number of user licenses will vary based on iSeries system model and Enterprise Edition entitlements

iSeries. mySeries.

iSeries Access Family

- **iSeries Access for Web**
  - Now can be deployed as portlets, presented via WebSphere Portal Express and Express Plus
  - Lotus Instant Messaging integration

- **iSeries Access for Windows**
  - Microsoft .Net data provider enables access to DB2 UDB

- **iSeries Access for Linux**
  - New ODBC to access DB2 UDB and full-function 5250 emulator

iSeries. mySeries.
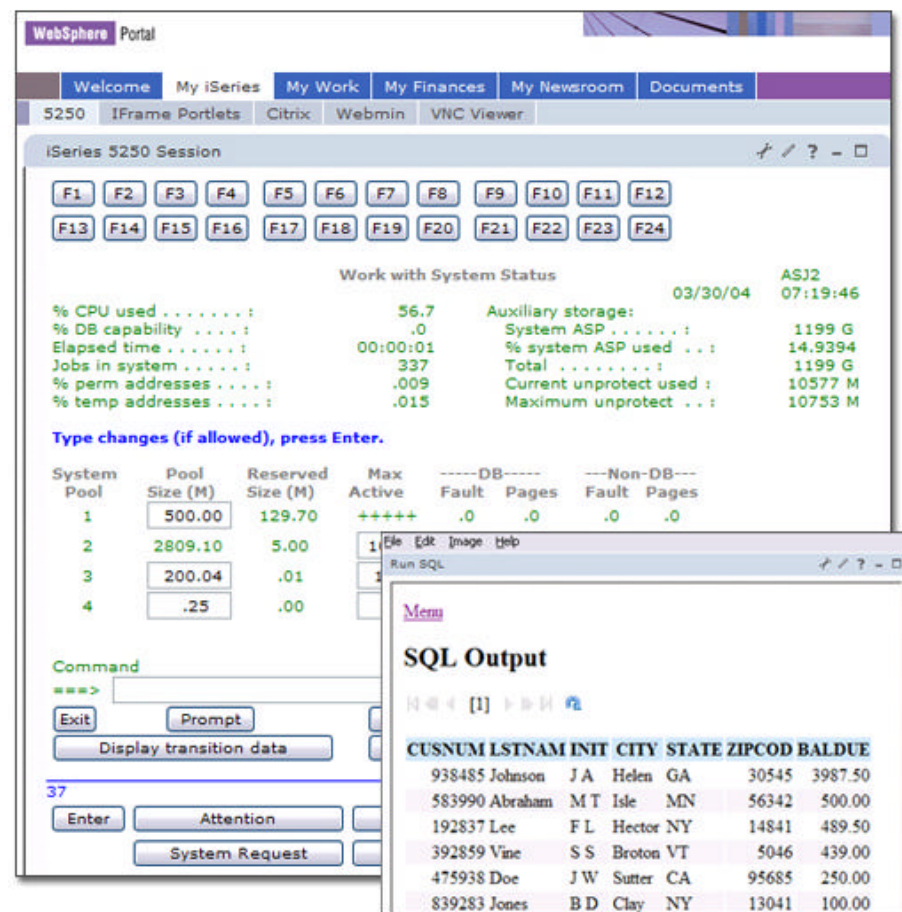
WebSphere Development Studio for iSeries

- Integrated tools unlock greater productivity by bringing order and collaboration to development teams

- Shipped 130,000 copies of WebSphere Development Studio

- IBM WebFacing Tool enhanced to dynamically convert UIM-based 5250 system screens

- Improve productivity with enhancements to Control Language (CL), RPG, Java, COBOL, OS/400 PASE* with i5/OS

Independent tools and poorly connected islands of development

WebSphere. Studio

Best-of-breed tools and teams working together in an integrated environment
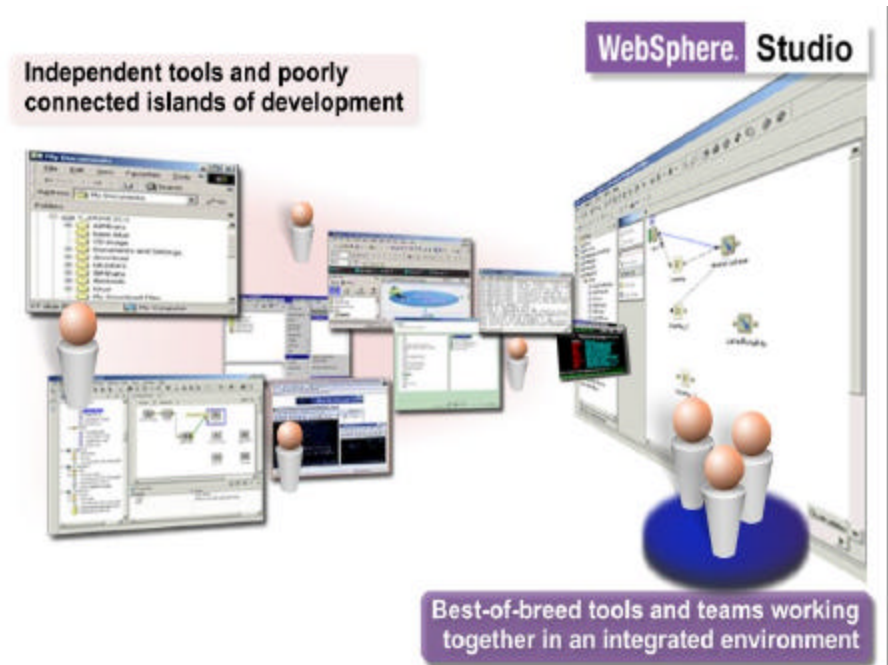
Business Communications and Printing

- Infoprint Server intelligent routing provides profiled document and report distribution
  - PDF enhancements include full color, encryption

- Significant i5/OS V5R3 output architecture enhancements
  - Unicode for worldwide document support
  - TrueType and OpenType for choice and compatibility
  - Full process color in i5/OS documents
  - Direct import of Web images (TIFF, JPEG)

- Refreshed and extended iSeries printer line
  - Color, workgroup, and midrange cutsheet 20-105 PPM

iSeries. mySeries.
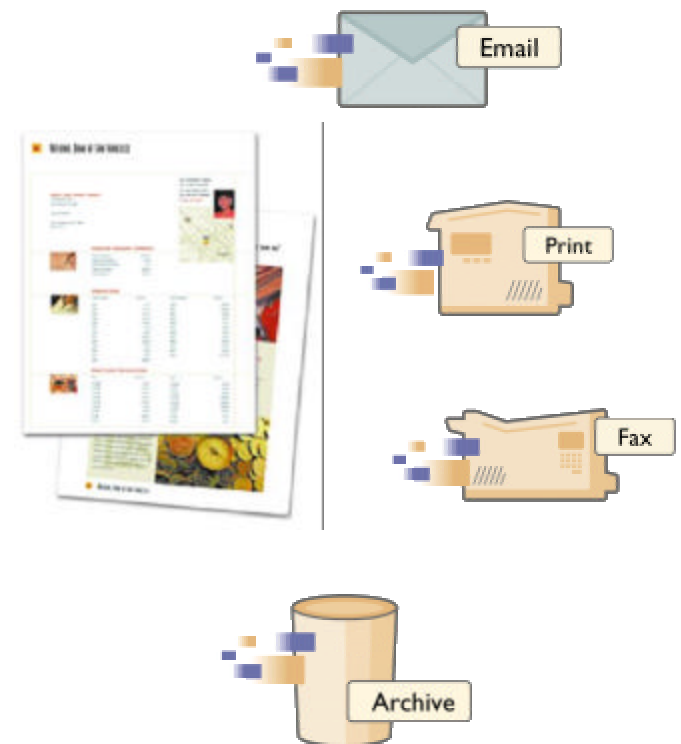
Deliver Without Disruption

Hardware Management Console (HMC)

- Single console for POWER5 servers
  - Pre-installed Linux-based workstation
  - Supports local consoles, including 5250
  - Web-based System Manager enables local or remote management for HMC control and status

- LPAR and CoD
  - Now configured via HMC

- Replaces primary partition and improves system resiliency

iSeries. mySeries.
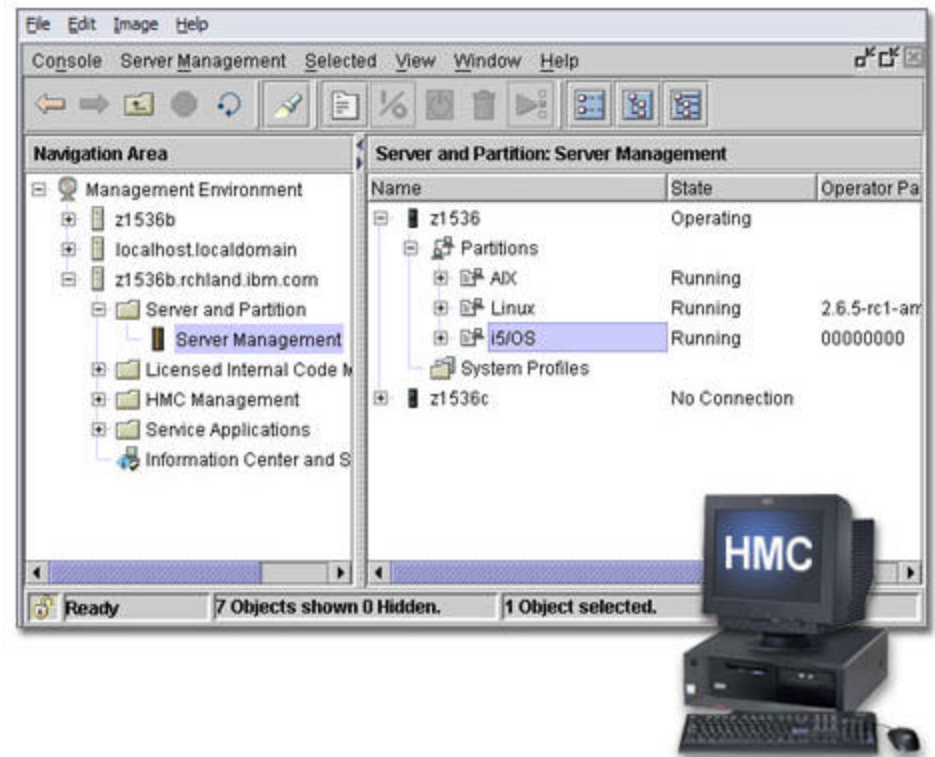
Cross Site Mirroring (XSM)

Datacenter
New York City

Disaster Recovery Center
Boston

Production Copy — IASP 33 ┈┈▶ IASP 33 Mirror Copy

Geographic mirroring over WAN or LAN
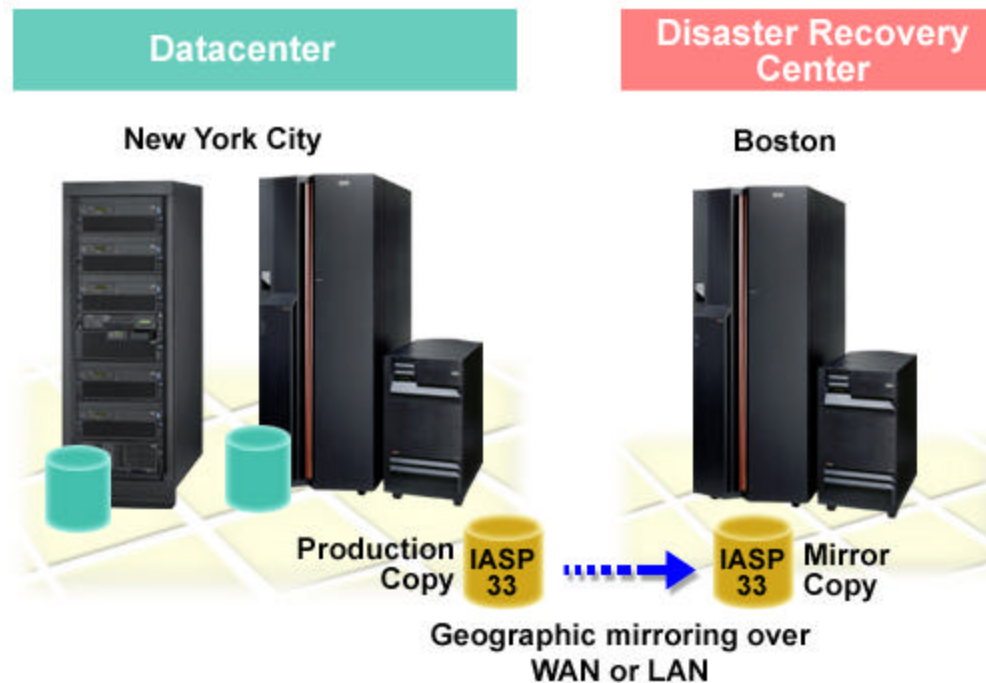
- Create a simpler disaster recovery or high availability (HA) solution
  - Should be combined with an HA solution in the datacenter

- Mirrors all objects in an Independent Auxiliary Storage Pool (IASP)

- New support for spool files in IASP

iSeries. mySeries.

Multipath I/O for Enterprise Storage Server®

- Multipath I/O provides IOP level redundancy
    - Improves fault tolerance
    - Up to eight connections can be defined to a single Logical Unit Number (LUN) in IBM ESS

- Significant SAN enhancements in 2003
    - SAN switch fabric
    - Cisco, McDATA, CNT/InRange, Brocade switches and directors
    - I/O and ESS performance enhancements in V5R2

Enterprise Storage Server

iSeries. mySeries.

Non Disruptive Operations

- Database reorganization
  - Improved performance with parallelism
  - Restart & monitoring improve operational flexibility

- Rapid Checkpoint Save-While-Active
  - New save-while-active option improves performance when applications have open commitment control transactions
  - Enables files to be saved with pending record level changes

- RAID 5 across SCSI buses extends fault tolerance

- Concurrent I/O tower and IXA add/remove*

- Automatic conversion of IFS directories to improve performance

i5OS

* Product Preview. Planned availability 3Q 2004 This presentation contains information about IBMs plans and directions. Such plans are subject to change without notice.

© 2004 IBM Corporation

PAGE 40

iSeries. mySeries.
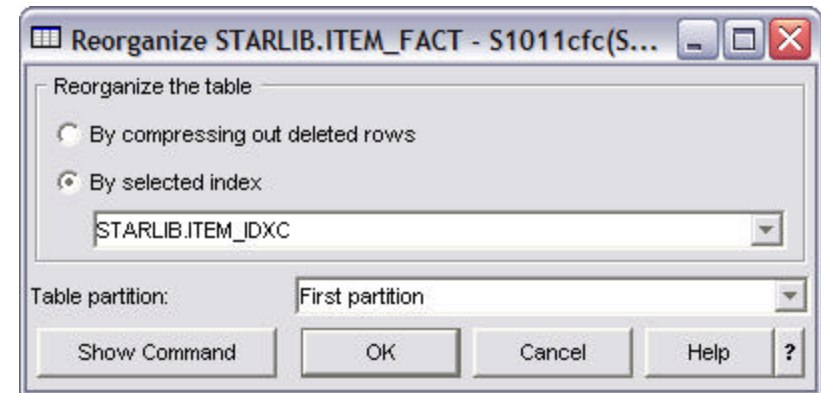
DB2® UDB for iSeries
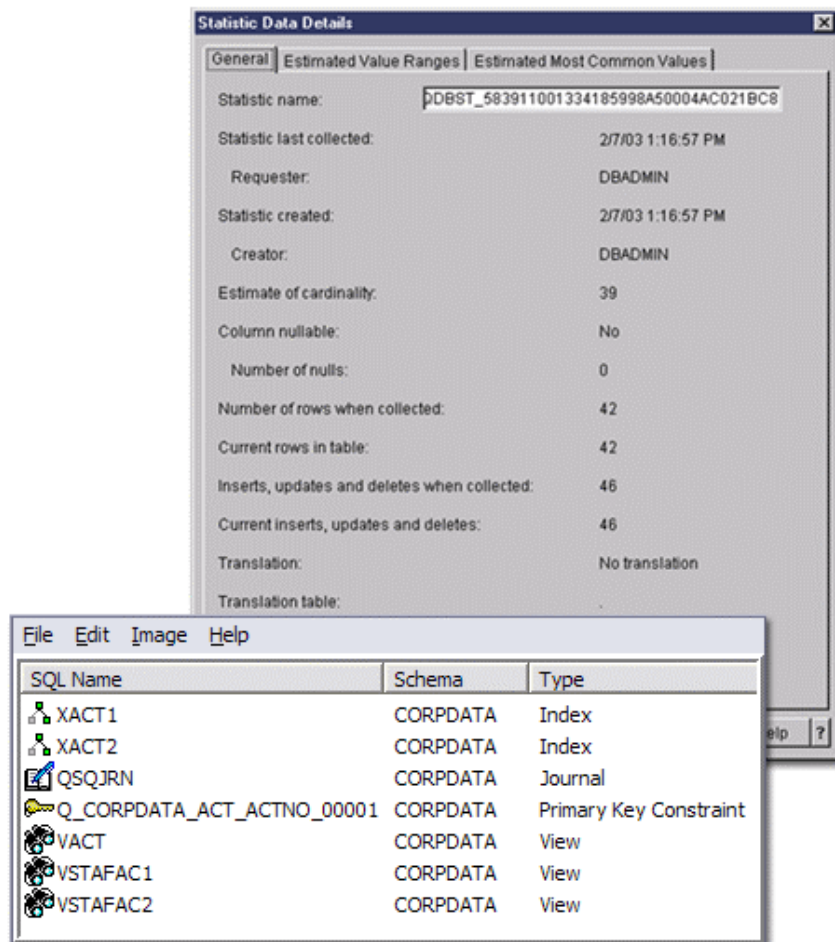
- Deliver enhanced functionality with improved performance and ease of use for data warehouse and queries
  - Star Join Recognition
  - Result set caching for re-run of same queries
  - Preview Materialized Query Table

- Extend development interfaces
  - Enhance SQL standards leadership and DB2 family compatibility
  - Support Rational XDE Modeler
  - Deliver Unicode enhancements
  - Enable .NET Managed Provider

- Single table size increased to 1.7 TB

iSeries. my Series.

Backup Recovery Automation with BRMS

- Automate backup for i5/OS hosted Windows, Linux, AIX 5L and Domino servers
    - BRMS manages shutdown, save and restart of LPARs, Domino or Windows servers

- New reclaim media wizard condenses and reorganizes data to optimize tape utilization and save media cost

- Perform unattended system save (SAVSYS)
    - No need to start console monitor

iSeries. mySeries.
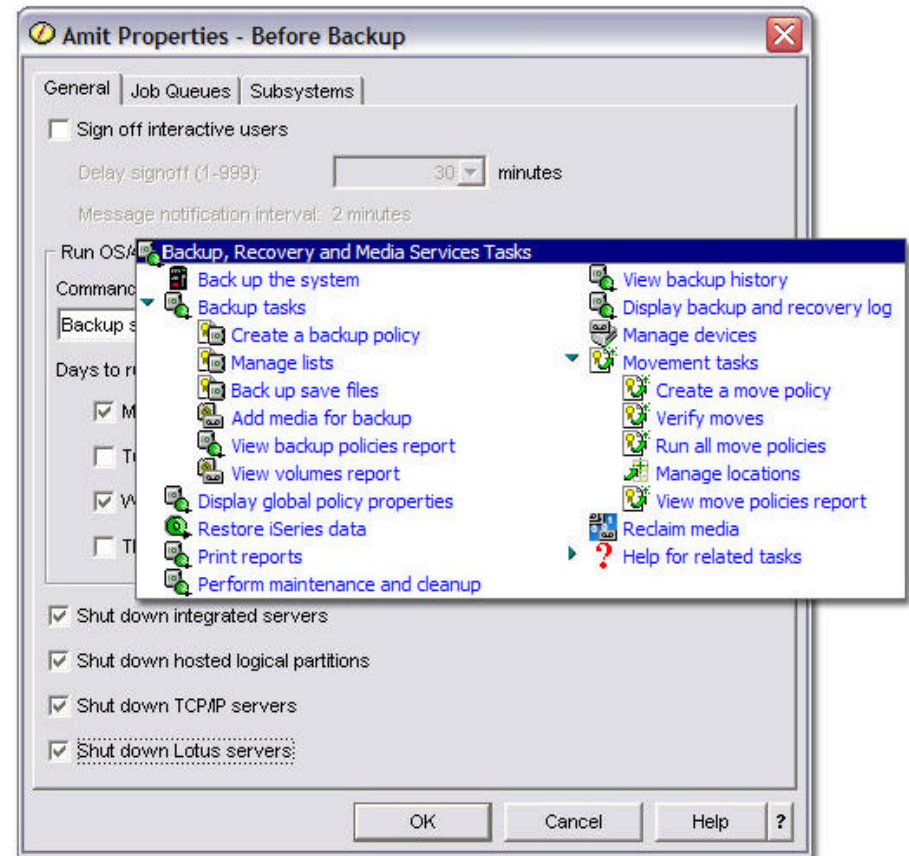
Enhancing Security with Integrated File System
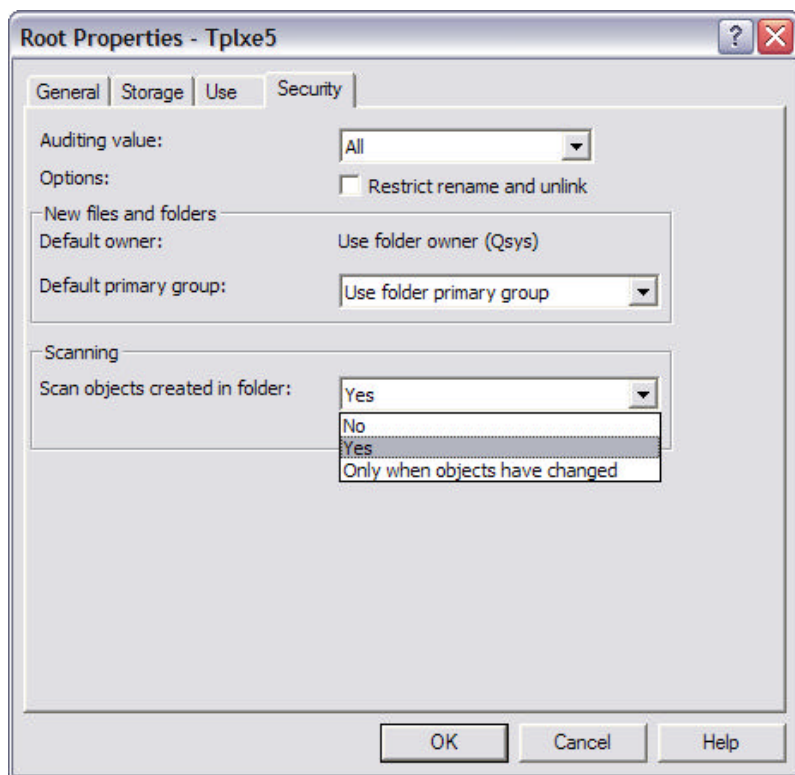
- PC file systems (including i5/OS Integrated File System) should be scanned to ensure they do not host viruses

- i5/OS V5R3 now enables native *real-time* virus protection scanning tools on the Integrated File System

- i5/OS V5R3 virus scanning enablement is exploited by BytWare StandGuard™ AntiVirus

IBM eServer i5 Announcement

- Delivering the industry first POWER5 based servers

- Exploiting a common eServer platform with pSeries

- Realigning price with value via the new economic model

- Completing the vision of an on demand operating environment

- Introducing the first implementation of the IBM Virtualization Engine

- Extending the value of open integration with i5/OS and WebSphere

IBM eServer i5 and i5/OS V5R3 - Highlights

IBM eServer i5	✍ The next generation of iSeries servers ✍ First POWER5 processor based servers in industry
IBM i5/OS V5R3	✍ The next generation of OS/400 ✍ Builds on and extends the capabilities of OS/400 V5R2
Simplify Your Infrastructure	✍ Run i5/OS, Linux, AIX 5L and Windows Server in a single server ✍ Share resources, maximize utilization with IBM Virtualization Engine ✍ Manage infrastructure with IBM Director Multiplatform
Integrate to Innovate	✍ Exploit i5/OS integration with IBM software ✍ Personalize application access with WebSphere Portal ✍ Foster interaction and collaboration with Lotus Workplace
Deliver Without Disruption	✍ Extend Capacity on Demand leadership with Memory & Reserve CoD ✍ Strive for continuous operations with fault tolerant technologies ✍ Deliver robust, open database solutions with IBM DB2 UDB

iSeries. mySeries.

IBM

Trademarks and Disclaimers

AIX	DB2 Universal	eServer	Lotus	Power Architecture	RS/6000	z/OS
AIX/L	DB2 OLAP Server	Enterprise Storage Server	MQSeries	Power Everywhere	S/390	zSeries
AIX 5L	DataPropagator	Hipersockets	Notes	POWER Hypervisor	ThinkPad	400
AIX 5L (logo)	Domino	IBM	OS/400	POWER6	Tivoli	i5/OS
AS/400	e business(logo)	IBM Virtualization Engine	POWER	pSeries	TotalStorage	
AS/400e	e(logo)business	IBM(logo)	POWER4	Quickplace	WebSphere	
DB2	e(logo)server	iSeries	POWER5	Rational	xSeries	

iSeries. mySeries.