



IBM eServer iSeries

# Why Linux for iSeries



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# Linux

## *...The Game Changer*

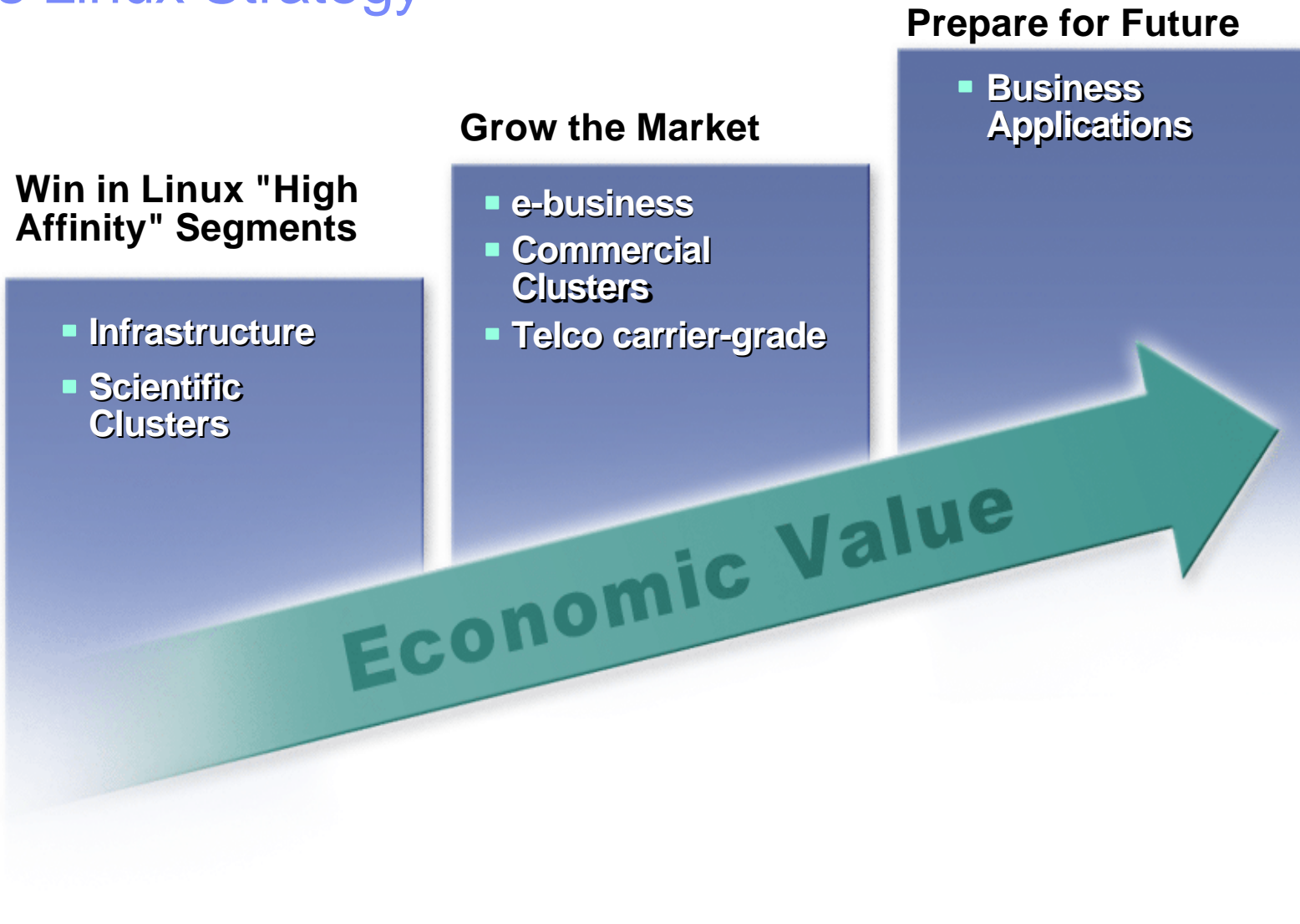
## Linux Defined

*A Radical New Concept in Software Development*

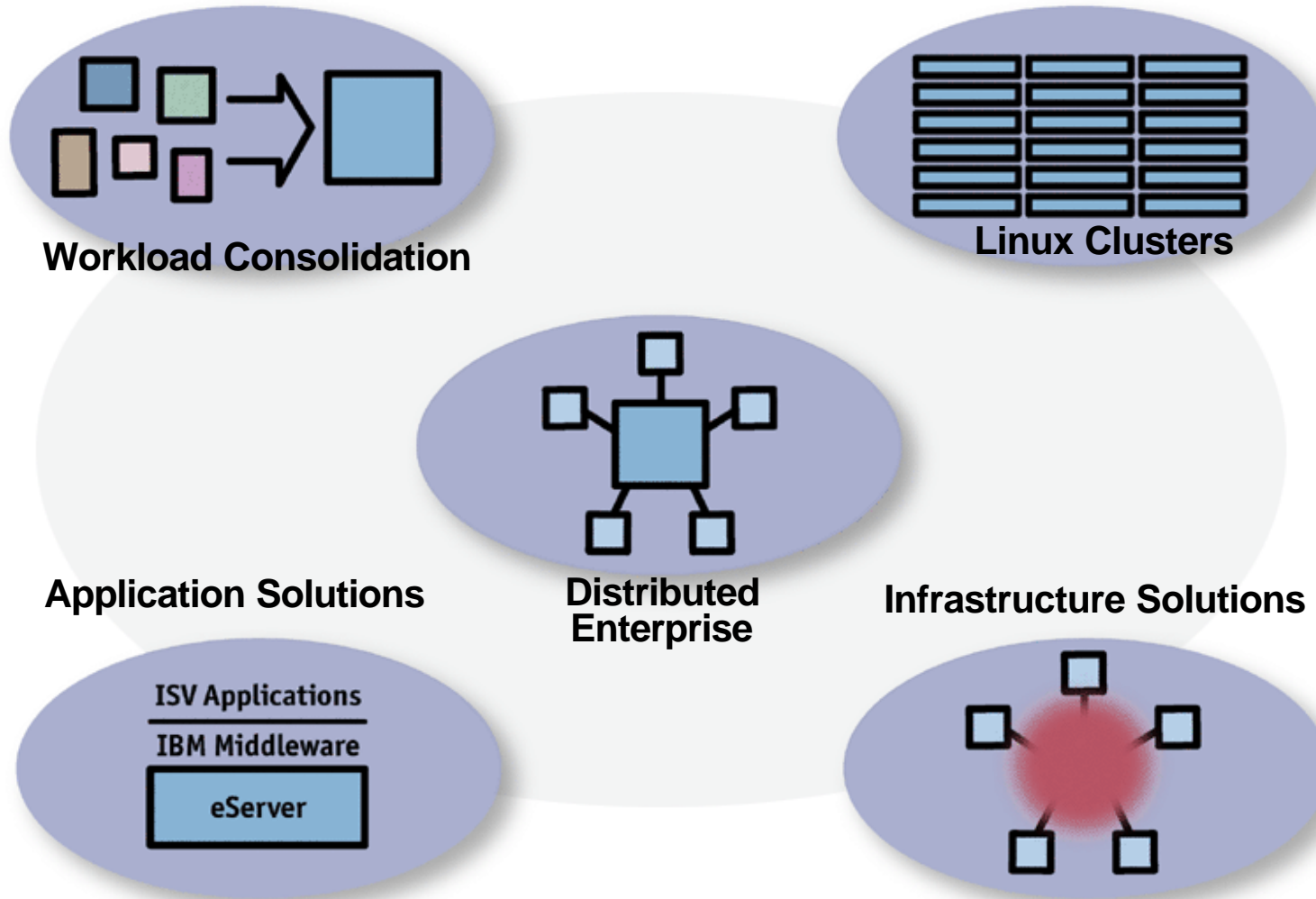
- UNIX-like operating system
- Supported by a global community
- Unprecedented flexibility



# IBM's Linux Strategy



# How Customers are Deploying Linux

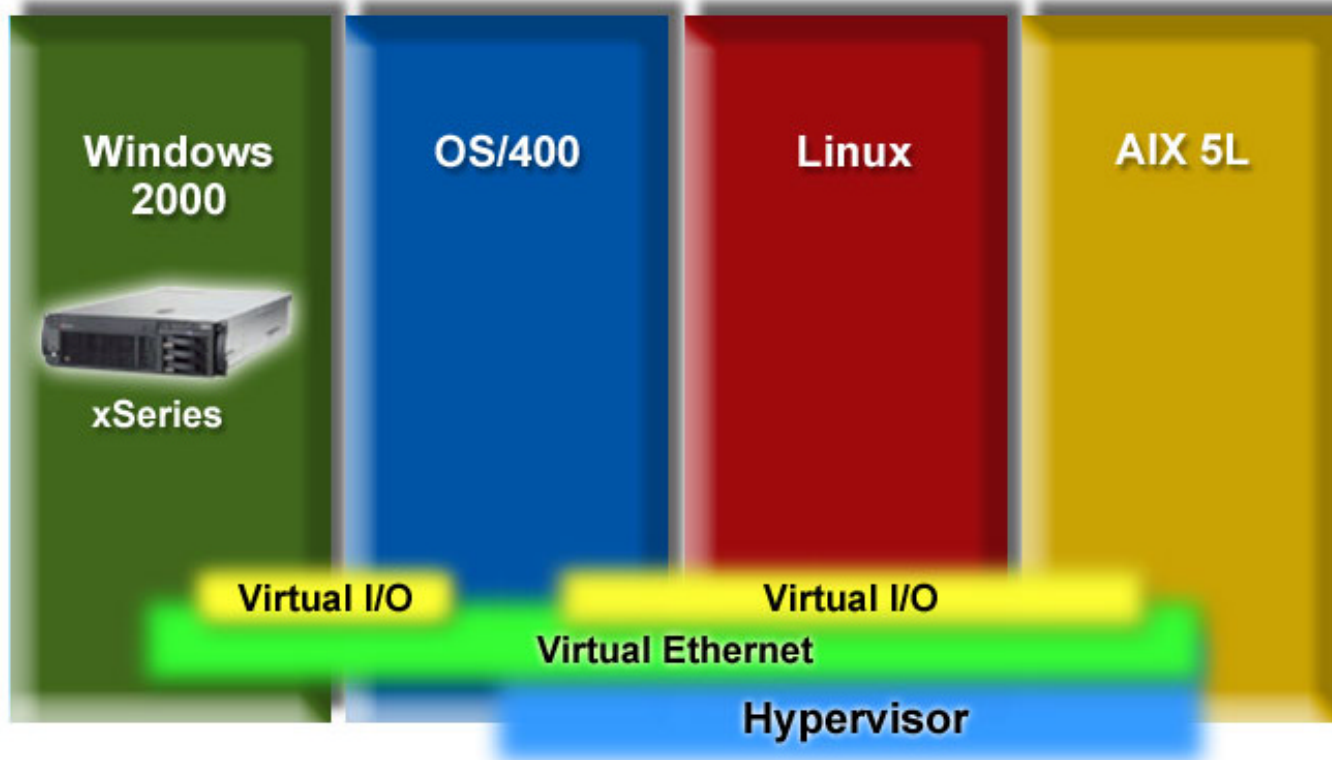


## IT Consolidation Drivers

- Reduce costs and dramatically improve TCO
- Improve service levels, simplify systems management and enhance resources utilization
- Establish a foundation for future growth around new applications
- Enable data sharing, provides interoperability
- Increase business continuity and recoverability



# iSeries - Server Consolidation & IT Optimization



**Application Flexibility**

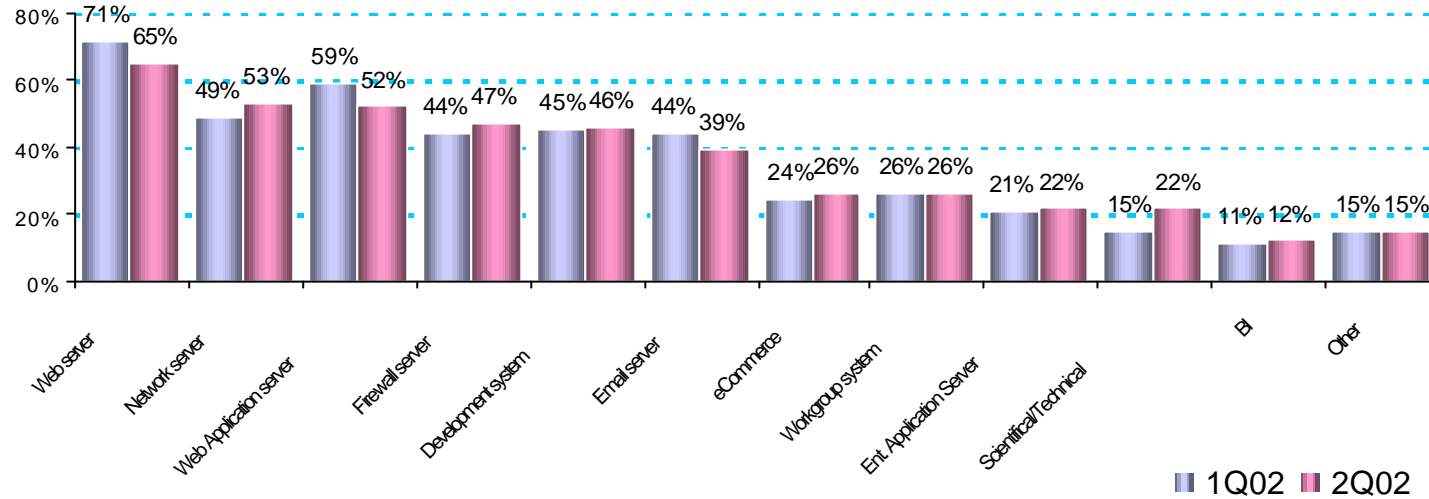
**Innovative Technology**

**Enterprise IT Management**

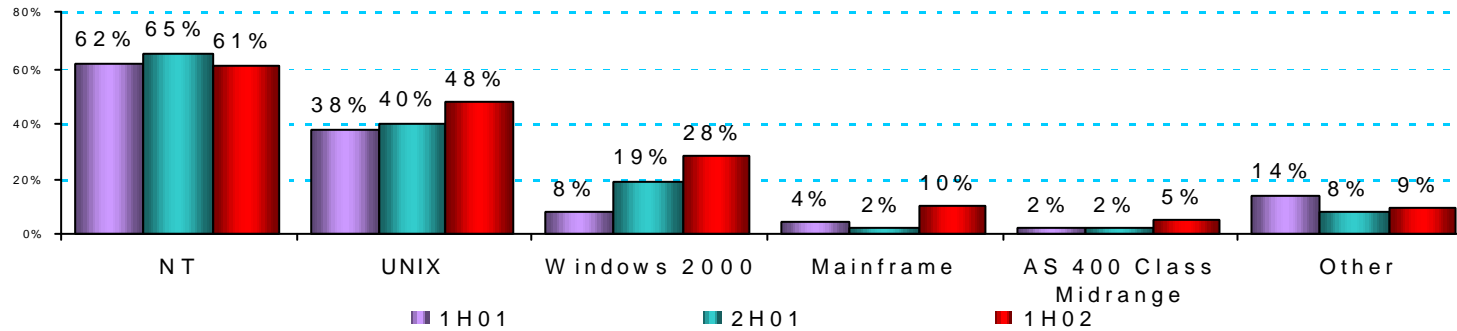
\*Statement of Direction: This presentation contains IBM plans and directions. Such plans are subject to change without notice.

# Linux Market

## Linux Application Use



## Platform of Origin for Linux Consolidation

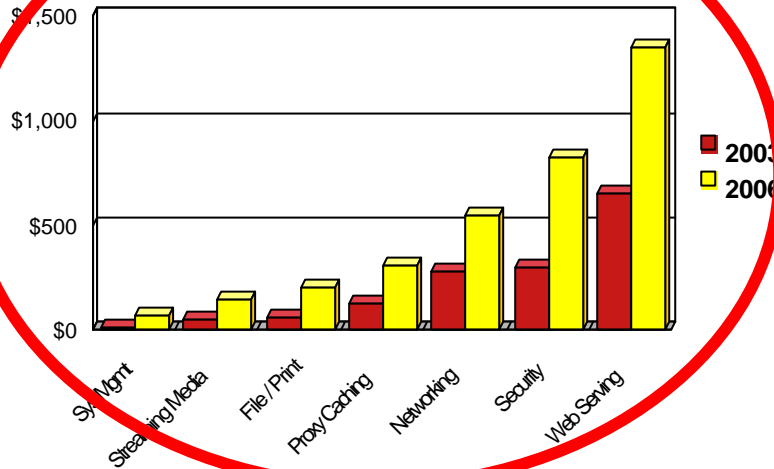


Server Brand Image Tracking: 2Q02 G7 Countries

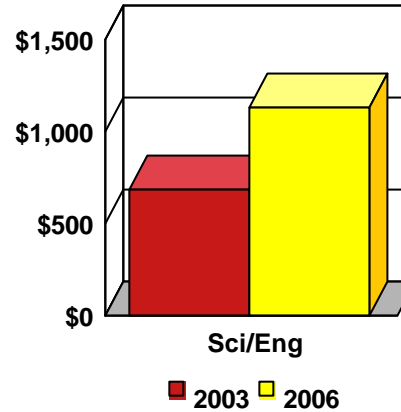


# Worldwide Linux Server Opportunity

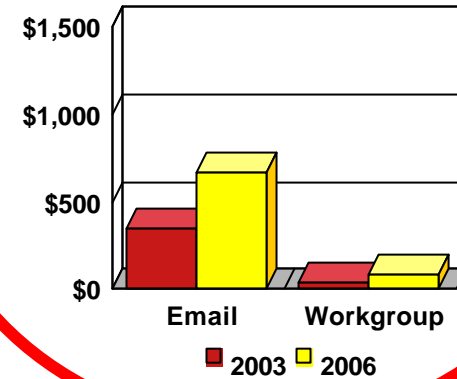
**WW Infrastructure Workloads (\$M)**



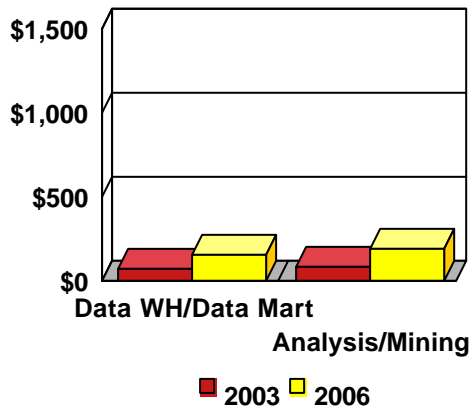
**WW Technical Workloads (\$M)**



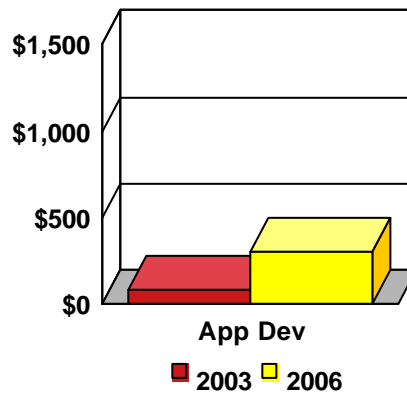
**WW Collab Workloads (\$M)**



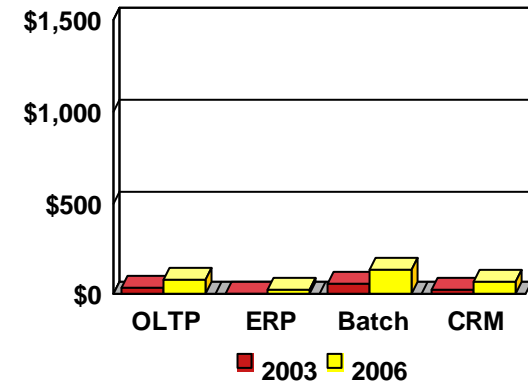
**WW Dec Supp Workloads (\$M)**



**WW App Dev Workloads (\$M)**



**WW Bus Proc Workloads (\$M)**



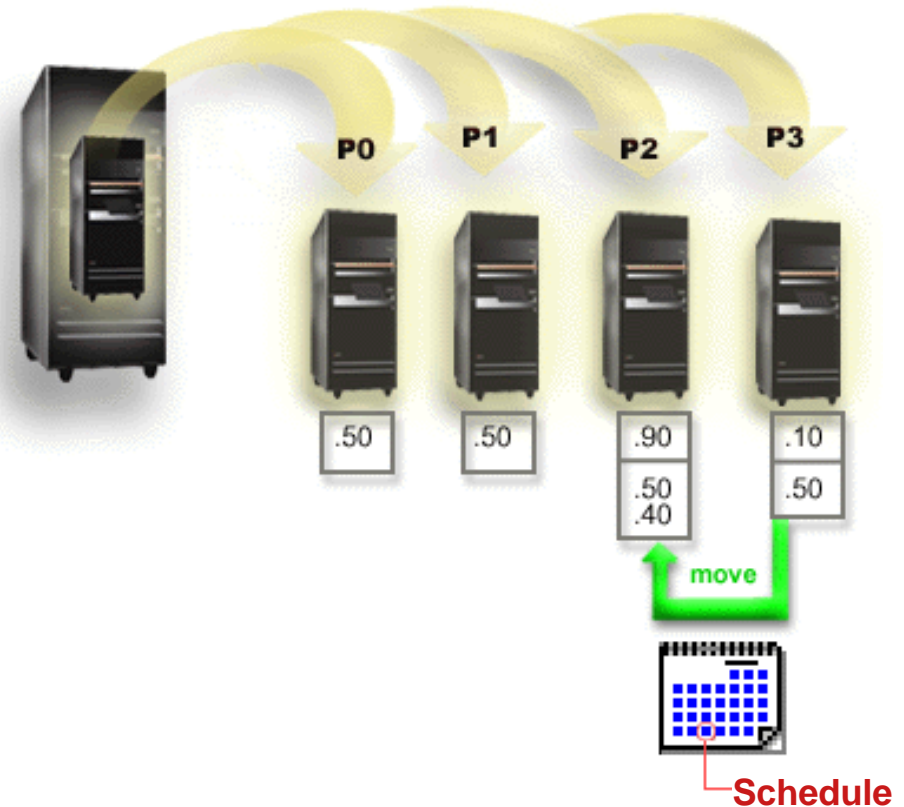
Source: 2H02 IBM GMV

# Linux for iSeries

## *...What's New*

## iSeries Logical Partitioning

- Mainframe Class Partitioning
  - ▶ Shared Processor
  - ▶ Dynamic Resource Movement
  - ▶ Virtual Ethernet
  - ▶ Heterogeneous OS Support
  - ▶ Uni-processor partitioning
  - ▶ Graphical management
- Customer Benefits
  - ▶ Quick consolidations
  - ▶ Run multiple, yet independent workloads
  - ▶ Maximize I/T investments
  - ▶ Implement High Availability Solutions
- Success
  - ▶ 3000+ LPAR Installations
    - 60% on 1-4 processor servers
  - ▶ 48% of i840s use LPAR



# LPAR: What is New

- Support for New Servers
  - ▶ Shared Processor
  - ▶ Dynamic Resource Movement
  - ▶ OS/400 and Linux
- Support for More OS/400 Partitions
  - ▶ 10 Partitions per Processor
  - ▶ Requires OS/400 V5R2 Primary
  - ▶ Supported on i825, i870, and i890 Standard and Enterprise Packages



# of Processors in Server*	Old Maximum # of OS/400 Partitions	New V5R2 Maximum # of OS/400 Partitions
2	8	20
3	12	30
4	16	32
8 and >	32	32

\* Applicable for iSeries servers with Power4 Processors only

## Linux and iSeries

- **What does Linux Bring to iSeries**
  - ▶ **Applications**
    - Open Source
    - Solution Providers
  - ▶ **Resources and Skills**
    - Virtual worldwide development team
    - Broad skill base
    - IBM investments in Linux
- **What does iSeries Bring to Linux**
  - ▶ **On Demand Virtualization**
  - ▶ **Integration**
  - ▶ **Reliability**
  - ▶ **Scalability**
  - ▶ **Low Cost of Ownership**



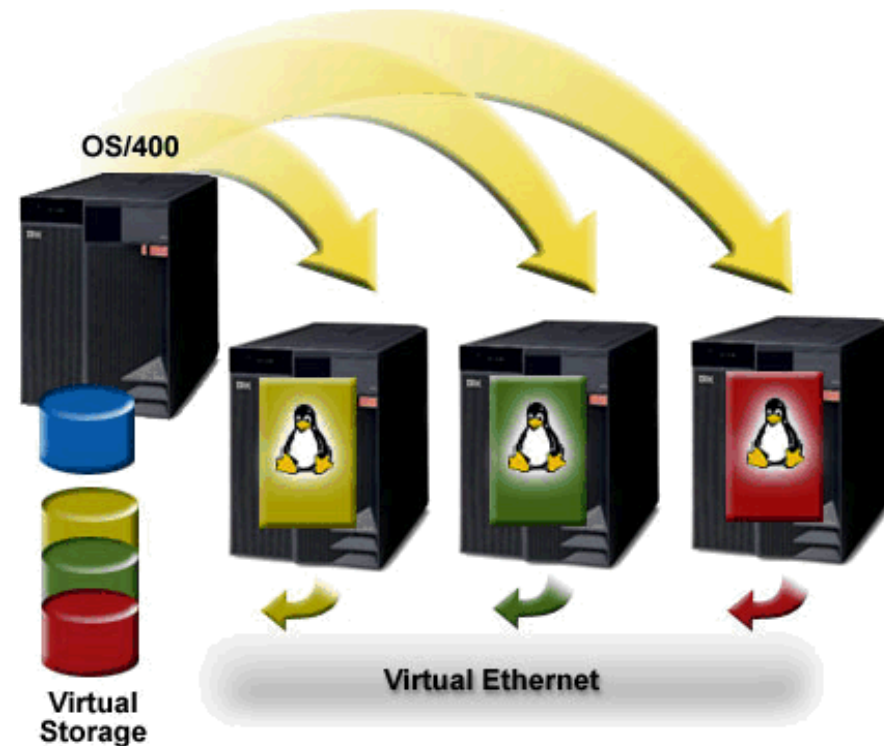
### IBM eServer iSeries Wins "Best of Show"

LinuxWorld  
San Francisco, CA  
August 28-30, 2001



# Linux on iSeries

- **On Demand Virtualization**
  - ▶ Shared processor support
  - ▶ Dynamic resource movement
  - ▶ Virtual Storage
  - ▶ Virtual Ethernet
- **Integration**
  - ▶ Application
  - ▶ Management



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



# Linux and LPAR V5R1

- **Shared Processor Support\***
  - ▶ Linux shares processors with other OS/400 and Linux partitions
    - Up to 4 partitions per processor
    - Minimum 0.10 processor in a partition
- **Resource Movement**
  - ▶ Processor, Memory and I/O resource movement requires the Linux partition to be stopped and restarted
    - Minimum processor movement: 0.01\*
    - Minimum memory movement: 1 MB
- **Independent Resource Movement**
  - ▶ Processor, Memory, and I/O can be moved independently

## OS/400 V5R1 Primary Partition

# of Processors in Server	Maximum # of Linux Partitions*
1	3
2	7
4	15
8	31
12	31
24	31
32	31

\* Shared processor is supported on iSeries servers with SStar processors. Servers with IStar processors require a dedicated processor for Linux

# Linux and LPAR V5R2

- **Shared Processor Support\***
  - ▶ Linux shares processors with other OS/400 and Linux partitions
    - Up to 10 partitions per processor
    - Minimum 0.10 processor in a partition
- **Dynamic Resource Movement**
  - ▶ Shared Processor Units\*
    - Minimum processor movement: 0.01
    - Moved to/from Linux or OS/400 V5R2 partitions
    - Immediate, scheduled, or under program control
  - ▶ Virtual storage spaces
    - Added to Linux partitions
- **Independent Resource Movement**
  - ▶ Processor, Memory, and I/O
  - ▶ Dedicated Processors, Memory and I/O
    - Requires the Linux partition to be stopped and restarted
    - Minimum memory movement: 1 MB

## OS/400 V5R2 Primary Partition

# of Processors in Server	Maximum # of Linux Partitions*
1	9
2	19
3	29
4 and up	31



## Linux: What is New

- **Support for new servers**
  - ▶ Shared processor, Dynamic movement
  - ▶ Virtual Storage and Ethernet
- **Capacity Upgrade on Demand**
  - ▶ Permanent and Temporary
- **Enhanced Direct I/O Support**
  - ▶ New 10/100/1000 Ethernet Adapter
  - ▶ New Storage IOAs
  - ▶ Raid 5 Support for Storage IOAs
- **Linux Processor Activation**
  - ▶ Included in Enterprise Package for i870 and i890
  - ▶ Extra Processor Activation for Linux
- **Education Vouchers**
  - ▶ Included in Enterprise Package for i825, i870, i890
  - ▶ Valid for Linux on iSeries Implementation Class (AS36)
- **Service Vouchers**
  - ▶ Included in Enterprise Package for i825, i870, i890
  - ▶ Valid for iSeries Linux Integration QuickStart

### OS/400 V5R2 Primary Partition

	# of Processors	Max Number of Linux Partitions
<b>iSeries 800</b>	1	9
<b>i810</b>	1-2	9 -19
<b>i825</b>	3 -> 6	29 - 31
<b>i870</b>	8 ->16	31
<b>i890</b>	16 ->32	31

# Integrated Education & Services for iSeries ...helping customers take the first step

## ■ Getting Started with Linux for iSeries

### ▶ Integrated Services

- Installation & Configuration
  - Configure required Logical Partition (LPAR)
  - Install & Configure Linux for iSeries distribution
- Configuration of File or Web Services
- Linux Solution Readiness Review

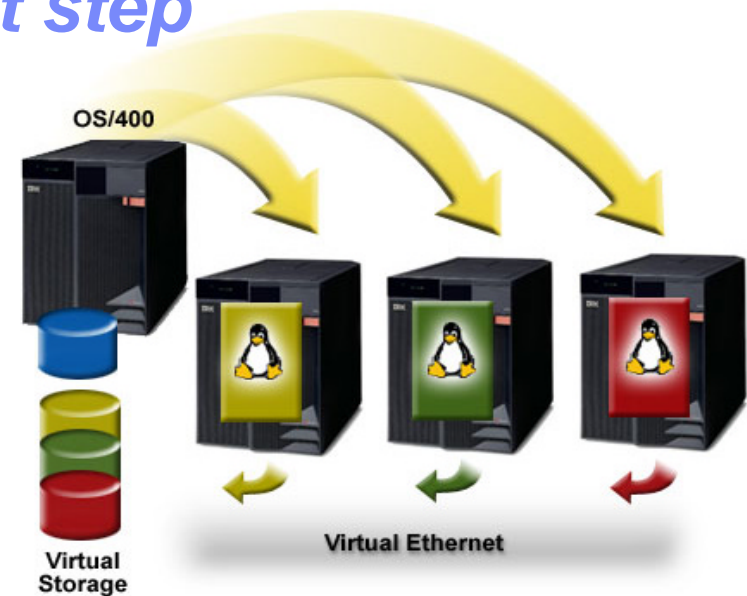
## ■ Integrated Education

- ▶ i825 – 1 voucher / i870 – 3 vouchers / i890 – 5 vouchers
- ▶ AS36/S6226 - Linux on iSeries - 3 days

- Learn how to plan, implement, and provide basic management for a Linux partition on an iSeries system. Learn about all aspects of Linux on iSeries in this hands-on course. Load multiple distributions of Linux in the different operating systems supported by the environments on the iSeries system: hosted, non-hosted, and a mixture of both.

## ■ For more information:

- ▶ [www.ibm.com/eserver/series/hardware/packages](http://www.ibm.com/eserver/series/hardware/packages)



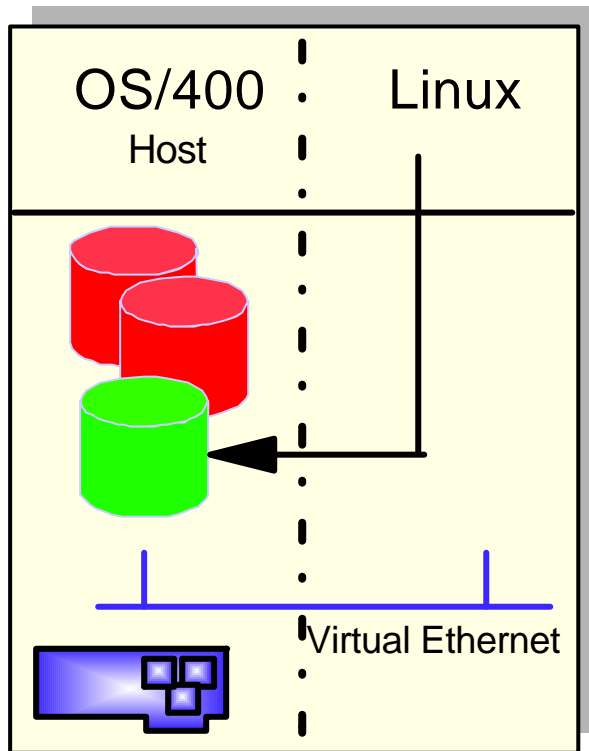
# Inside Linux

# Linux I/O Flexibility

## Virtual I/O

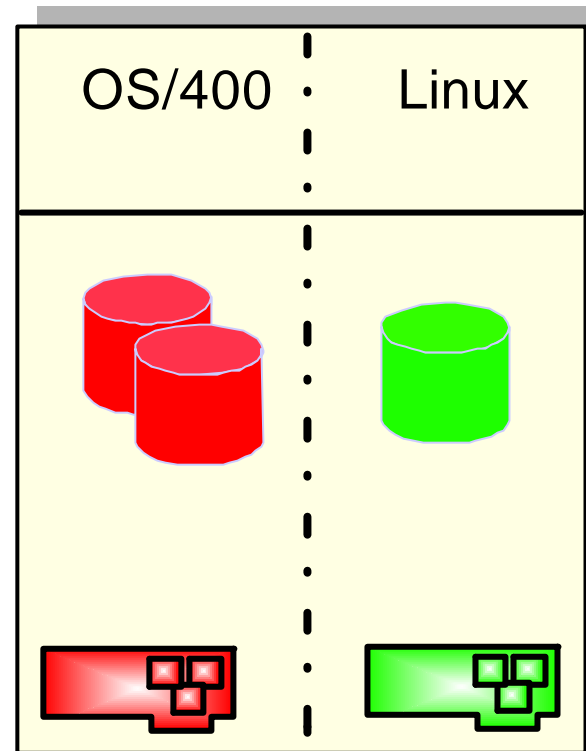
## Direct I/O

- ▶ SCSI Disk
- ▶ Fibre ESS
- ▶ Tape
- ▶ LAN
- ▶ CD, DVD



- Leverage iSeries resources
- OS/400 management

- ▶ SCSI Disk
- ▶ Fibre ESS
- ▶ Tape
- ▶ LAN
- ▶ WAN
- ▶ CD, DVD

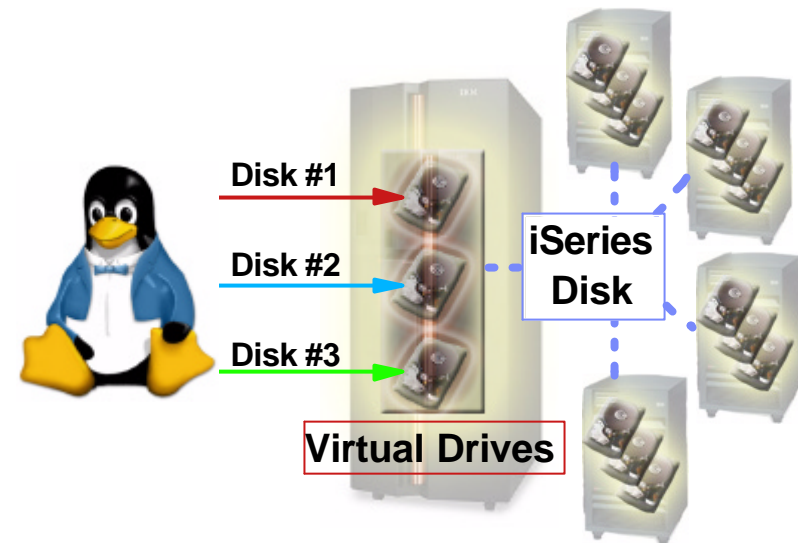


- Dedicated resources
- Linux management



## Storage Virtualization

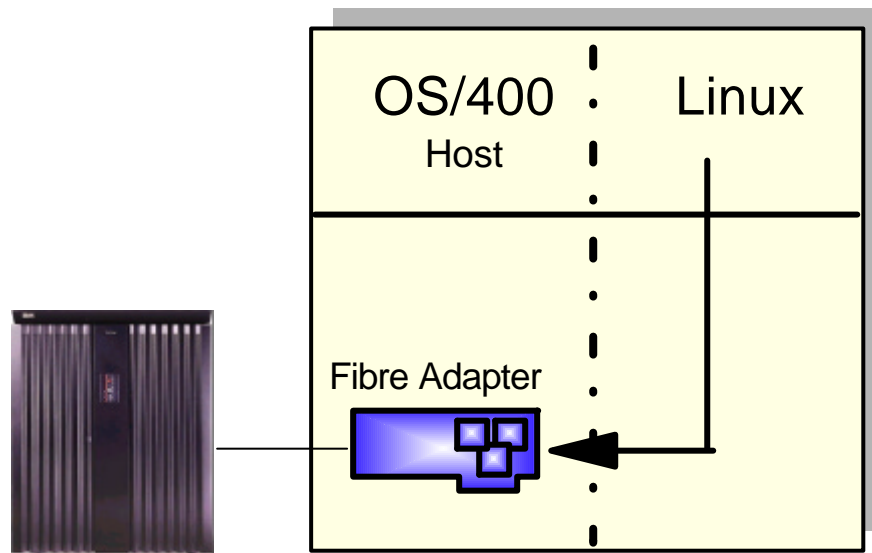
- **Storage spaces created from OS/400**
  - ▶ 1 MB to 64 GB each
  - ▶ Up to 20 per Linux partition
- **Dynamically added to Linux**
  - ▶ Requires V5R2 Primary and Host
- **Shared Storage**
  - ▶ spaces can be read from multiple partitions



- **Enables Linux to Leverage Advanced iSeries Storage Architecture**
  - ▶ Data automatically spread and protected
  - ▶ More disk arms for better performance
  - ▶ Consolidated Backup of OS/400 and Linux
  - ▶ Flexible Storage Management
  - ▶ Easy setup of multiple Linux environments

# IBM's TotalStorage Enterprise Storage Server (ESS)

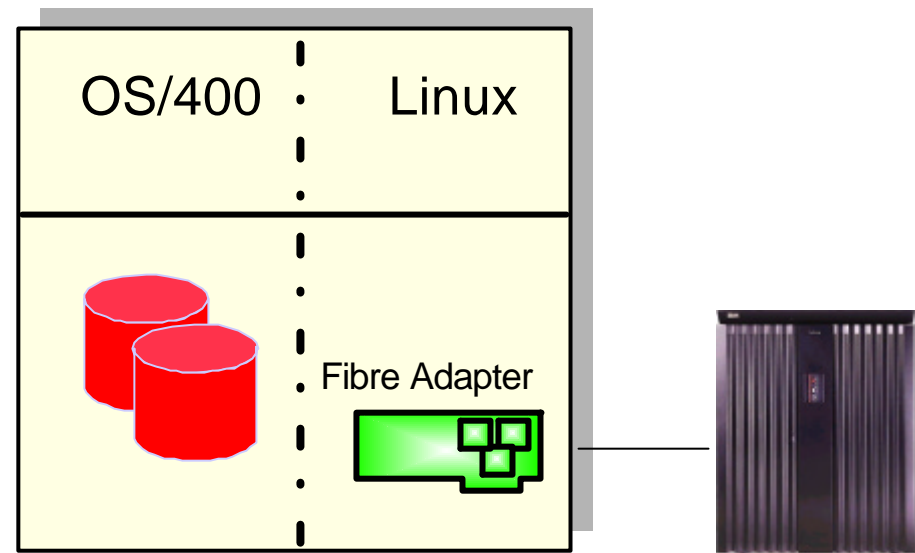
## Virtual I/O



### OS/400 Stores Data on ESS

- ▶ #2766 Fibre Adapter in OS/400 hosting partition
- ▶ OS/400 V5R1 or V5R2

## Direct I/O



### Linux Stores Data on ESS

- ▶ #0612 Fibre Adapter in Linux partition
- ▶ OS/400 V5R1 or V5R2
- ▶ Support included in SuSE SLES 7 Refresh 2 for iSeries or via download
  - [www.ibm.com/eserver/series/linux/fibre\\_channel.html](http://www.ibm.com/eserver/series/linux/fibre_channel.html)

***Enables Linux partitions to participate in a heterogeneous storage consolidation with ESS***