Session #: E1087

Linux on IBM ^ : Opportunity for the Future is Here Today!

Speaker(s): Kay A. Tate, ^   Solutions Enablement

IBM developerWorks **Live!**
The Technical Conference with More
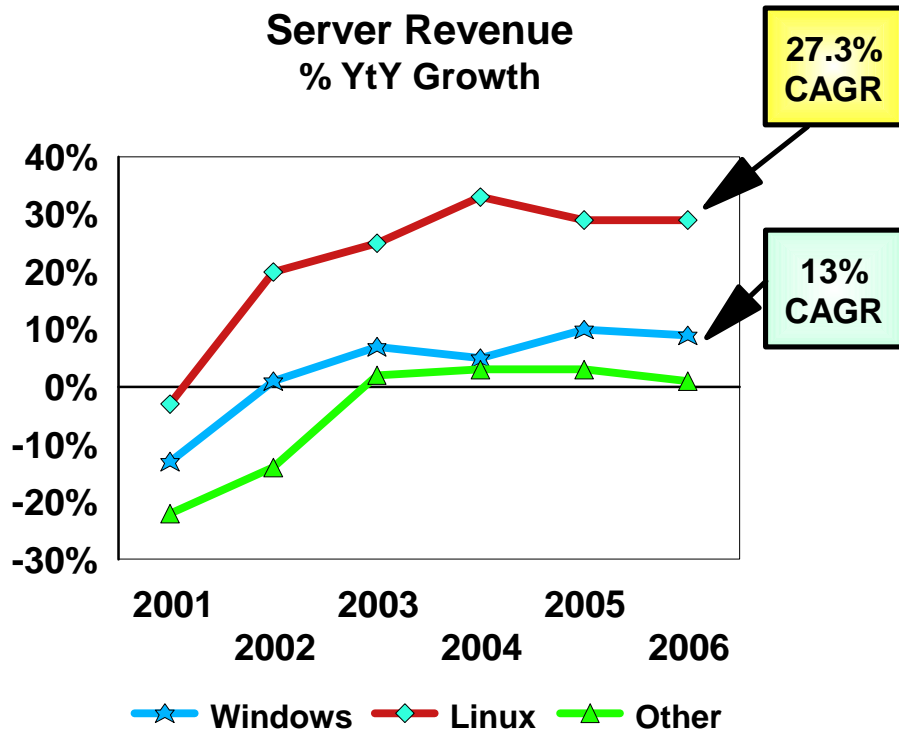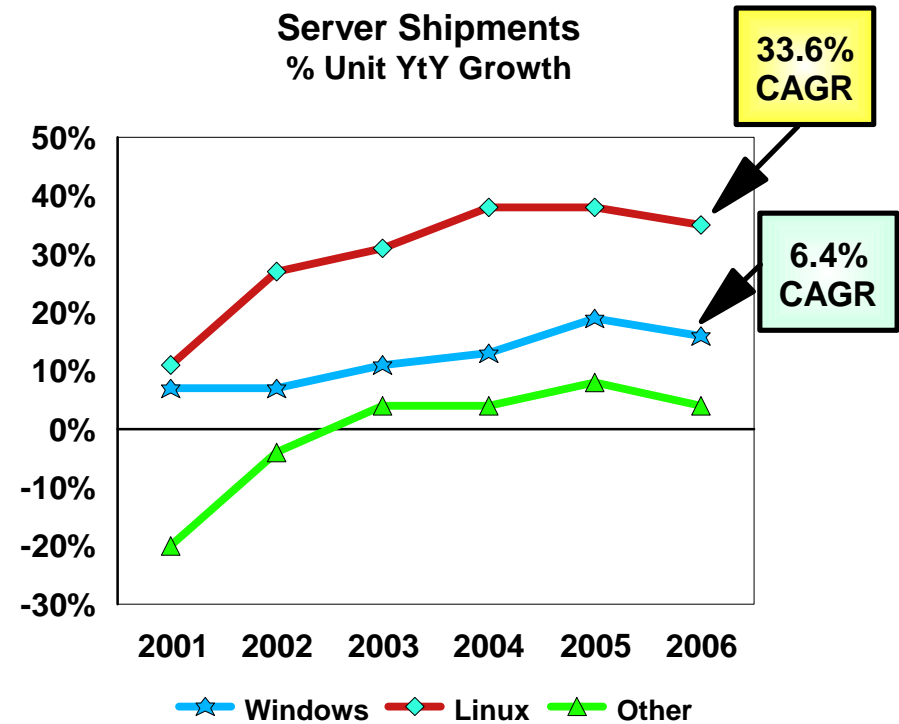
Agenda

- Emerging Opportunity of Linux

- Value of Linux

- Moving your Linux Application to a (New) IBM ^ Series

- Linux on IBM ^ Series

- Making Your Linux Solution "Compelling" on IBM ^ Series

- Resources

Linux Growth: Emerging Opportunity

Greater than 2X growth of Windows & represents 12% of total server revenue by 2006

Greater than 5X growth of Windows & represents 25% of total server shipments by 2006

Server Revenue
% YtY Growth

27.3% CAGR

13% CAGR

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |

Y-axis: 40%, 30%, 20%, 10%, 0%, -10%, -20%, -30%

Legend: Windows, Linux, Other

Server Shipments
% Unit YtY Growth

33.6% CAGR

6.4% CAGR

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |

Y-axis: 50%, 40%, 30%, 20%, 10%, 0%, -10%, -20%, -30%

Legend: Windows, Linux, Other

Source: IDC Server Market Quarterly Forecast (September 2002)

Linux Customer Usage Trends

Linux operating system growth remains strong for infrastructure and scientific uses while gaining momentum in adjacent business application areas

IBM Linux References by Type**

Business Applications

Infrastructure and Analytical

Years (2000 - 1Q2003)
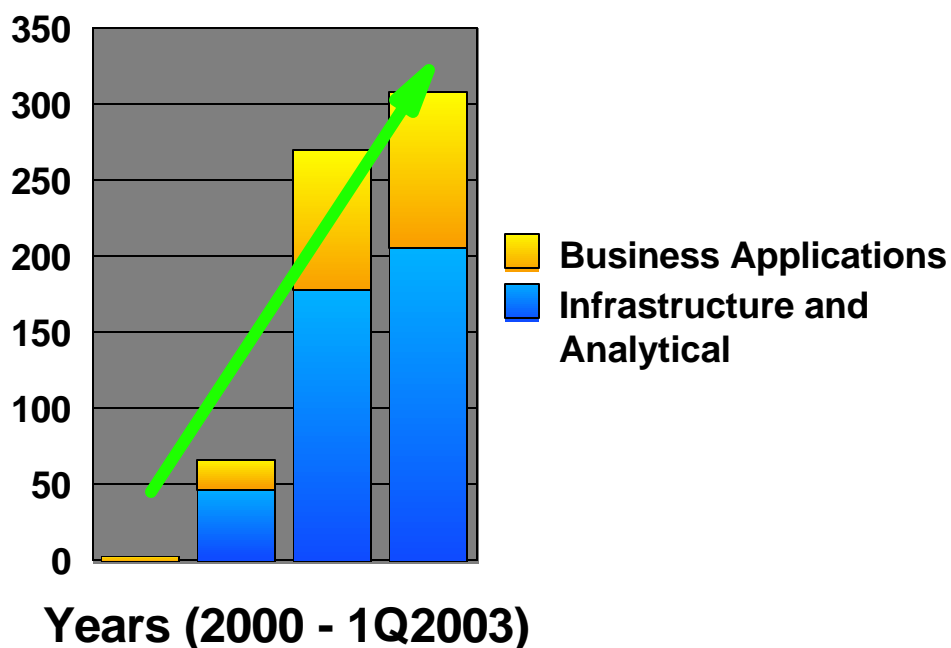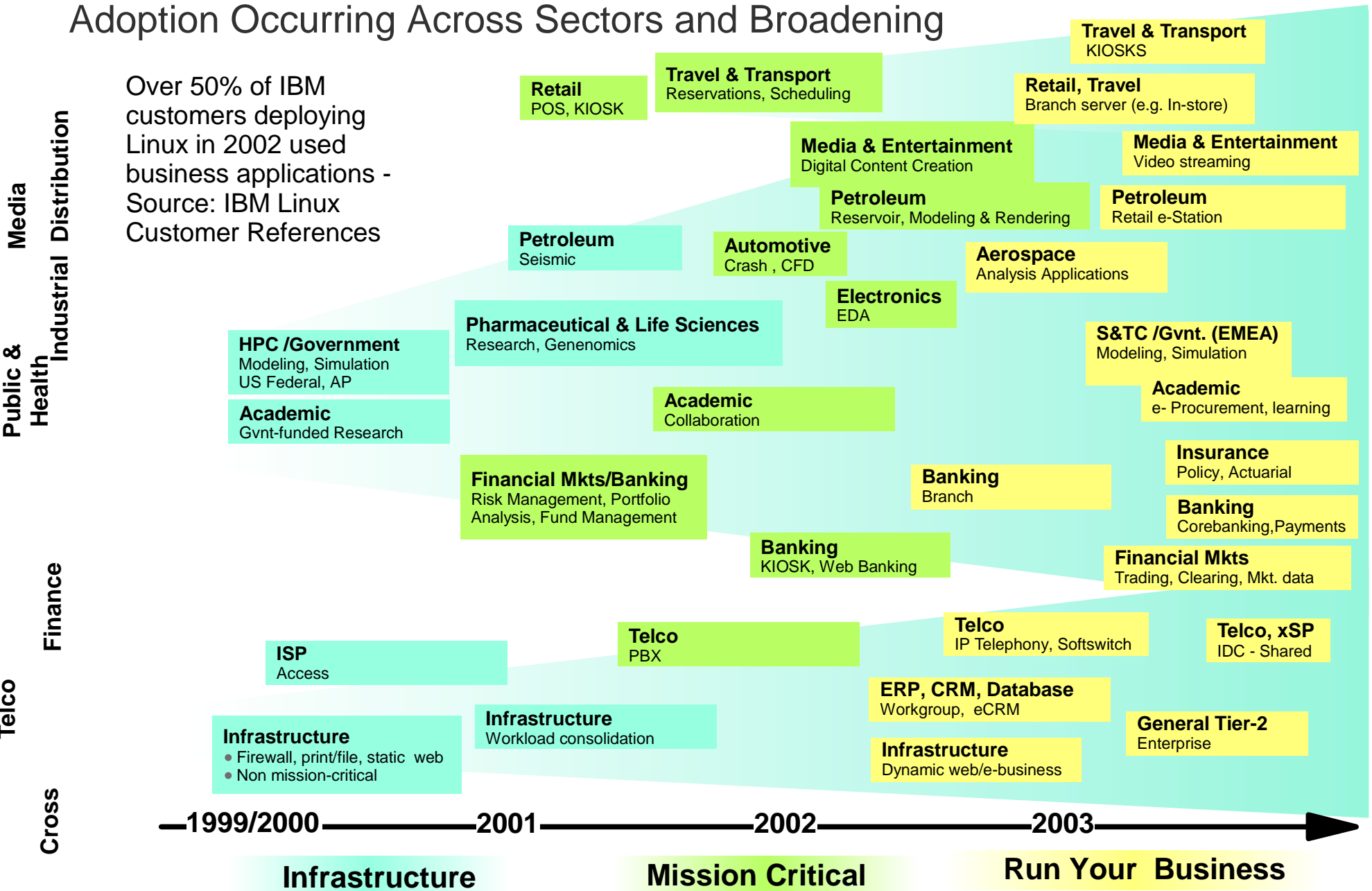
Trend towards increased business usage

- **Web serving to eBusiness (e.g. web banking)**
- **Scientific clusters to Commercial clusters (e.g. Financial risk mgmt., Digital content creation)**
- **Retail POS, Kiosk, in-store server**

** Source: IBM Linux Customer References

Where Companies are Deploying Linux

Adoption Occurring Across Sectors and Broadening

Over 50% of IBM customers deploying Linux in 2002 used business applications - Source: IBM Linux Customer References

Travel & Transport
KIOSKS

Travel & Transport
Reservations, Scheduling

Retail
POS, KIOSK

Retail, Travel
Branch server (e.g. In-store)

Media & Entertainment
Digital Content Creation

Media & Entertainment
Video streaming

Petroleum
Reservoir, Modeling & Rendering

Petroleum
Retail e-Station

Petroleum
Seismic

Automotive
Crash , CFD

Aerospace
Analysis Applications

Electronics
EDA

Pharmaceutical & Life Sciences
Research, Genenomics

S&TC /Gvnt. (EMEA)
Modeling, Simulation

HPC /Government
Modeling, Simulation
US Federal, AP

Academic
e- Procurement, learning

Academic
Gvnt-funded Research

Academic
Collaboration

Insurance
Policy, Actuarial

Financial Mkts/Banking
Risk Management, Portfolio Analysis, Fund Management

Banking
Branch

Banking
Corebanking,Payments

Banking
KIOSK, Web Banking

Financial Mkts
Trading, Clearing, Mkt. data

Telco
PBX

Telco
IP Telephony, Softswitch

Telco, xSP
IDC - Shared

ISP
Access

ERP, CRM, Database
Workgroup, eCRM

General Tier-2
Enterprise

Infrastructure
Workload consolidation

Infrastructure
Dynamic web/e-business

Infrastructure
• Firewall, print/file, static web
• Non mission-critical

Media Industrial Distribution

Public & Health

Finance

Telco

Cross

1999/2000 —— 2001 —— 2002 —— 2003 →

Infrastructure   **Mission Critical**   **Run Your Business**

Value of Linux

- ► **Predictable, Stable Linux OS**
  - ► 2.4 kernel effectively supports a new commercial application base
- ■ **Continued Linux Technology Advances**
  - ► Linux Open Source Community encourages best-of-breed
  - ► IBM is contributing to Linux technology via the Linux Technology Center
- ■ **Breadth of hardware platforms and key software support**
  - ► Same Source Code base across Intel IA32/64, AMD, IBM POWER, IBM zSeries
  - ► Middleware/tools support from industry leaders (e.g. IBM, CA, Borland,...)
- ■ **Linux Industry Standards Rapidly Evolving**
  - ► Linux Standards Base established with ongoing enhancements
  - ► Focus on Application Binary Interface conformance yields increased compatibility across different platforms

Linux Value to Customers

- Initial Price
- Reliability/Availability
- Issues with Microsoft Licensing
- Ongoing Cost of Operations
- Availability of Applications
- Open Source Model
- Linux features and functions
- Reduce dependence on Current OS vendors

"Linux offers several value propositions that encourage user migration from other platforms. The primary motivators include lower cost hardware,less expensive upgrades,reduce or no license fees,a choice of technical support and service provider,avoiding vendor lock-in, and reliability and high availability advantages.

These are real driving forces. UNIX users are particularly interested in lower cost hardware and upgrades. The savings can be substantial, even reaching a factor of ten."

D.H. Brown Associates

Research Report, August 2002

Linux Reduces Cost of Infrastructure (TCO)

Total Cost Of Ownership Comparison
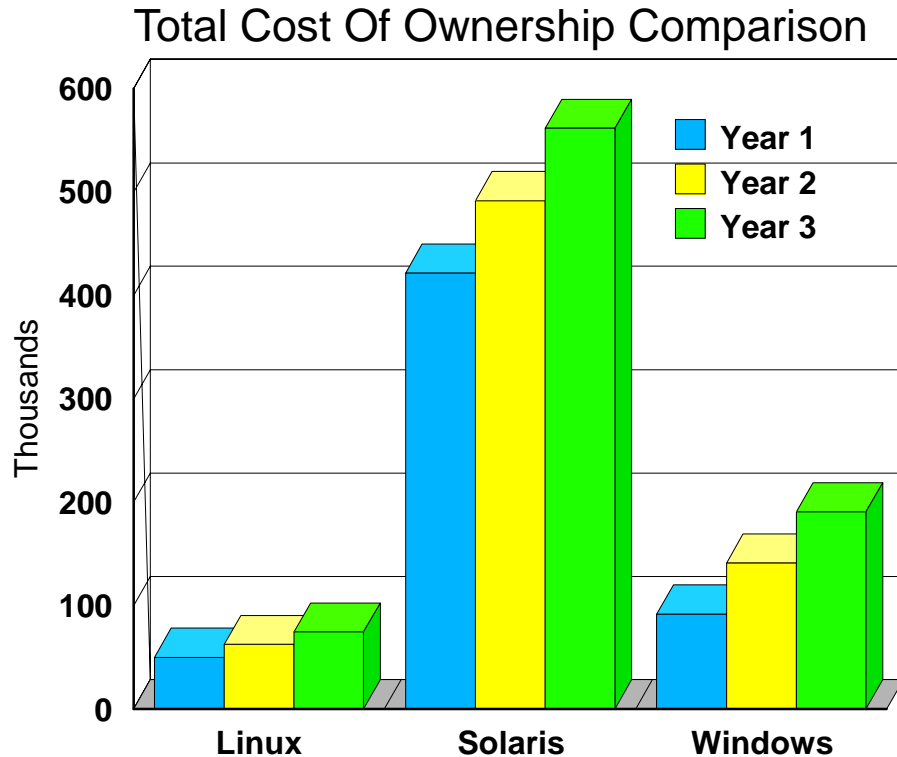
Based on Web deployment experiences of 14 customers

TCO (excludes middleware, application, services)
 1) OS Purchase Prices
 2) HW Purchase/Maintenance
 3) Upgrade Prices
 4) Admin costs

Source - Robert Frances Group - July 2002

- **Use TCO to strengthen overall value proposition**
- **Deliver more value at customer's budget level**
  - ► **Solution value (e.g. optional products)**
  - ► **Additional services**
  - ► **More installations**
  - ► **Multiple phases at once**
- **Easier/faster approval**

Linux Value to ISVs

- "Develop once" and deploy across a wide spectrum of platforms
  - ► Reduce development costs
  - ► Reduce time to Market for new versions

- Ready access to new technology

- Open Source Community support

- Linux skills more readily available

$ Opens up new market opportunities

   --->   New revenue opportunities

Linux @ IBM

IBM is Committed to Linux across the Entire Business

- **Linux Technology Center**
  - ► "Help make Linux better"
  - ► 250+ developers, 21 sites working within the open source community

- **Linux Integration Center**
  - ► Technical consulting, proof of concepts, benchmarks

- **Open Source Development Lab (Founding Sponsor)**
  - ► Enabling Linux and Linux-based applications for data center and carrier-class deployment

- **Linux Porting Centers**

- **Linux for Service Providers Lab**
  - ► Assist telecomm service providers, network equipment providers and ISVs test and implement Linux solutions

- **2,000+ Linux-skilled IGS professionals**

Demonstrated IBM Commitment to Linux

Innovation & Leadership!

The First...

...Vendor pursuing a *broad* Technology and Marketing strategy

...Linux Technology Centers (LTC)

...Linux industry-specific Centers of Competency (CoC)

...Vendor to issue full public endorsement of Linux

...Integrated Linux Cluster offering

...Linux eSourcing solution

...Comprehensive Linux channel program

...Major system vendor *dedicated* to Linux open-source projects

...Linux-based Integrated Solution platform for eBusiness

...Linux across such diverse server product lines

...workload consolidation offering for Linux

It is generally pretty easy to get there...

Linux to Linux Ports

- "Linux is Linux" across many platforms

- Determine the distribution you want to use
  on the target platform
  - ► Tool sets and configuration file layout
  - ► Distributions supporting the platform
  - ► Key capabilities for your solution (e.g., 64-bit support)

- If you use Java, check the JVM level
  - ► The IBM JVM 1.3.1 is available for download
  - ► Try it!   ibm.com/developerworks/java/jdk/linux/tested.html

- C / C++, Fortran will require a recompilation for a new target architecture

- Check for hardware dependencies
  - ► Endian sensitivities in the code
  - ► Specific device driver dependencies
  - ► Assembler code in the application

- Check any middleware dependencies for availability on the target platform
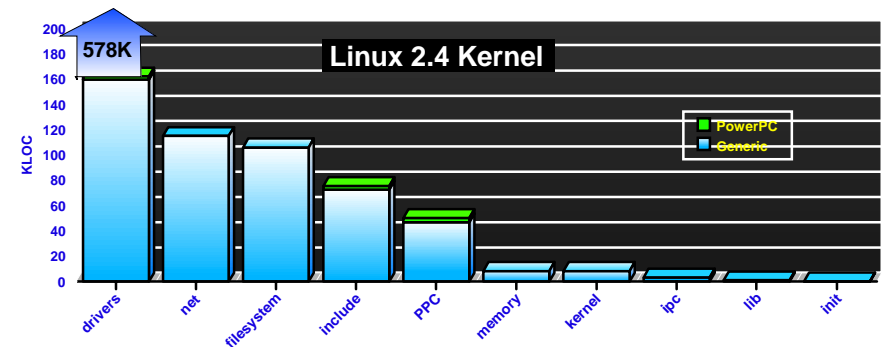
Linux to Linux Porting Resources

- ► Linux Porting Roadmap - General
- ► ibm.com/servers/enable/linux/roadmap/index.html

- ■ Technical enablement roadmaps on the Series sites
  - ► iSeries: ibm.com/servers/enable/linux/iseries.html
  - ► pSeries: ibm.com/servers/enable/linux/pseries.html
  - ► xSeries: ibm.com/servers/enable/linux/xseries.html
  - ► zSeries: ibm.com/servers/enable/linux/zseries.html

- ■ Red Books for each Series, variety of Linux-related topics
  - ► www.redbooks.ibm.com and search for the topic of interest

- ■ Linux Standards Base
  - ► www.linuxbase.org

Cross-Platform Made Easy: What ISVs are Saying

■ "The most notable aspect of 'porting' Synapse to Linux on zSeries was the fact that it was never apparent that Synapse was executing on a zSeries partition rather than one of our Intel-based Linux servers..."
Integrated Business Systems and Services (IBSS)

■ "I was impressed on how easy it was to validate our Linux General Ledger on IBM's Linux for iSeries. I finished the iSeries conversion and validation portion in 10 minutes! We ported the code to pSeries first and had the binary running on the iSeries. But to make sure that the source ports cleanly we transferred the code to the iSeries and compiled it with no problem. It worked beautifully."
Don Anderson, CEO, Linux Business Accounting Systems

For more comments on IBM's ^ enablement offerings for Linux, see :
ibm.com/servers/enable/linux/quotes.html

UNIX to Linux Ports

- If you use Java, check the JVM level (business as usual)

- High level of compatibility in system services
  - 80+% of APIs are identical
  - Less than 15% require simple translations or masks
  - Less than 5% of APIs may need rework.
  - Items to check carefully include threads, some signals and synchronization
  - Linux to Linux architectural items

- Development tool sets may be more or less compatible between UNIX platforms and Linux
  - Editors and compilers
  - Build process (make, linker, etc.)
  - Maintenance and debugging

UNIX to Linux Porting Resources

- **There is a wealth of useful material to get you started at**
  - ► ibm.com/developerworks/offers/linux-speed-start/

  _____

- **Porting UNIX Applications to Linux - Hints and Tips**
  - ► ibm.com/servers/esdd/articles/port_unix.html

- **Solaris-to-Linux Porting Guide**
  - ► ibm.com/developerworks/linux/library/l-solar/index.html

- **A Technical Guide for Porting Applications From Solaris to Linux**
  - ► ibm.com/servers/esdd/articles/porting_linux/index.html

- **PortingManager C/C++ to Linux porting tool**
  - ► alphaworks.ibm.com/tech/portingmanager/

Linux Solutions Coming from UNIX Origins

- **"According to participants in several actual projects we have monitored, migration from any POSIX-compliant Unix such as Solaris, AIX or HP-UX seems to be among the easier software conversions that can be undertaken".**

"Further easing the migration of many new applications is the fact that any Java-based application should move directly over. Large Java components in several of the projects we have monitored moved to Linux with no modification"."

Giga Information Group

- **""The integrated IBM xSeries server solution and SteelEye LifeKeeper clustering software offerings on Linux provide us with the ability to rapidly deploy and easily manage our platforms, all with a price/performance advantage that's unbeatable."**

Andreas Walter, IT Manager for BBDO INTERACTIVE

- **"Since switching to Linux, we have had no outages at all ...Linux is a highly stable environment. The transition was incredibly smooth and easy....."**

David Spicer, Flamenco Networks, Founder, CEO and CTO

Linux Distributions for ^ Series
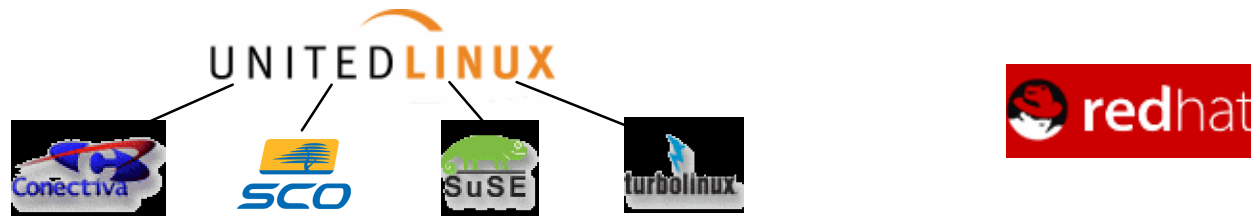
- **Linux Distributors with versions available across ^ series**
  - ► SuSE, powered by UnitedLinux (Open Industry Consortium)
  - ► Red Hat
- **Additional distributions are available for specific series or systems**
  - ► Check the series Linux web site for more information including links to placing orders
    - – iSeries: ibm.com/servers/enable/linux/iseries.html
    - – pSeries: ibm.com/servers/enable/linux/pseries.html
    - – xSeries: ibm.com/servers/enable/linux/xseries.html
    - – zSeries: ibm.com/servers/enable/linux/zseries.html

UnitedLinux (UL) - Indicator of a Maturing Industry

Before United Linux

- Different Linux Distributions strong in different regions
  - ➤ WW Coverage = many Linux Distributions
- Multiple Linux Distributions, multiple and frequent releases
  - ➤ Difficult for ISVs and enterprises to maintain stable environment
  - ➤ Inhibits IHV/ISV investments
  - ➤ Different Kernels for different platforms within the same distribution
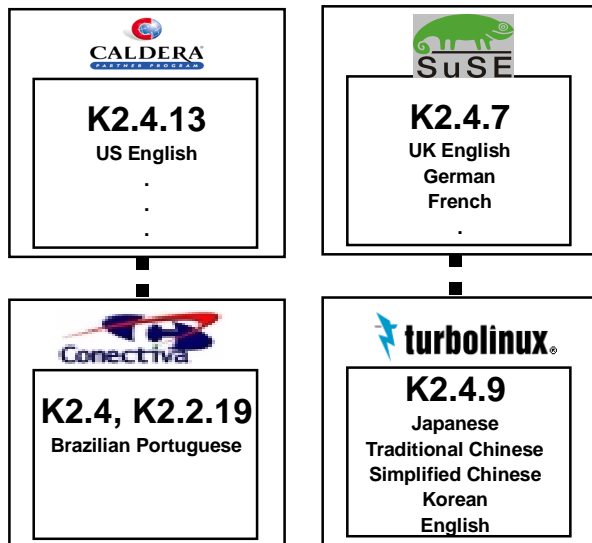
With UnitedLinux

- LDPs combining their development investment and best features
- Single code base used by all participants
  - ➤ Support many languages
  - ➤ Same code base across many platforms
  - ➤ Major release every 12 - 18 months
    - Stable base with 2-3 fix packs between releases
- Concept of "binary compatible" Linux distribution
- Reduce cost and time to market for System Vendors, ISVs, IHVs, LDPs, most importantly customers

CALDERA
PARTNER PROGRAM

K2.4.13
US English
.
.
.

SuSE

K2.4.7
UK English
German
French
.

Conectiva

K2.4, K2.2.19
Brazilian Portuguese

turbolinux.

K2.4.9
Japanese
Traditional Chinese
Simplified Chinese
Korean
English

UnitedLinux

K2.4.19
LSB
Li18nux

GB18030
US English
UK English
German
French
Italian
Spanish
Japanese
Traditional Chinese
Simplified Chinese
Korean
Portuguese

Support for Linux Across the ^ Family

- Support is available from the Linux distributors
  - ▶ SuSE
  - ▶ Red Hat
  - ▶ Others for specific hardware and systems
- Support for Linux from IBM via Linux-specific SupportLine contracts
- Support for more detailed development questions can be found in the Open Source community, often email lists
- Support for the IBM eServer series platform from IBM for suspected defects
- Other consulting and support available for Linux from IGS

- **IBM delivers the system enablement and the distributors deliver their Linux distributions**
  - ► Focus on develop once, redeploy readily
  - ► Many cross-server solutions are able to use a single application code base
  - ► eServer series strengths can help you deliver enhanced Linux solutions

- **IBM is delivering the middleware (DB2 UDB, Websphere, Tivoli,...) along with other industry players**

- **eServer advantages can often be used to enhance prototyping, development and testing activities**

- **Solutions will generally have a compilation for each architecture family**
  - ► xSeries
  - ► zSeries
  - ► POWER (iSeries and pSeries)

- **UnitedLinux tools address ABI at the architecture level**

General Steps to Enabling Your Linux Application

- **Porting**
  - ► Moving your application code to the new platform
  - ► Checking middleware dependencies

- **Building your infrastructure**
  - ► System resources
  - ► Skills of your staff
  - ► Processes for development, build, Q/A, testing

- **Tailoring your new solution**
  - ► Taking advantage of the environment
  - ► Tuning up for your new customers
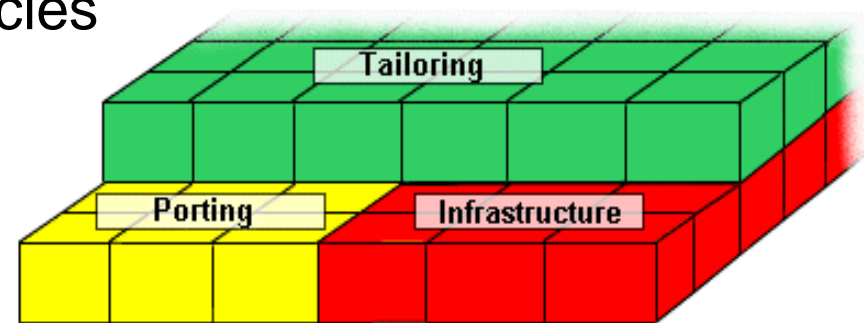
Porting Central for Linux website coming 2Q

ibm.com/servers/enable/site/porting/

About Linux on the IBM ^ Family

IBM ^ Family Supports Linux Across the Board

@server zSeries:

- Blend data richness of zSeries with web capabilities of Linux
- Industrial strength Linux environment

@server xSeries

- Built on Industry Standards
- Exploit xArchitecture

@server iSeries:

- Application Flexibility (multiple types on iSeries: OS/400, Windows, AIX, Linux)
- Industrial strength for small and medium business

@server pSeries:

- High performance computing
- UNIX and Linux working together

Linux on the zSeries

Flexible, extensible, scalable and manageable Linux environment with best integration and fastest access to mission critical data and applications

- **Value Proposition**
  - ▸ **Security and peace of mind for Linux deployments**
  - ▸ **Fast response to changes in workload**
  - ▸ **Low TCO through server consolidation**

- **Business Focus**
  - ▸ **Current S/390 customers with large, distributed e-business application deployment**
  - ▸ **Expand current customer focus to LOB applications**
  - ▸ **IDC, Net Gen with large server farm**
  - ▸ **S/390 Mid Market customers web-enabling applications**

- **Implementation**
  - ▸ **Many Linux servers on a single HW platform (hundreds +)**
  - ▸ **Unmatched scalability**
  - ▸ **Large enterprise application portfolio**
  - ▸ **Simplified systems management**
  - ▸ **Runs in an LPAR or on z/VM**
  - ▸ **64 bit & 31-bit implementations**
  - ▸ **Reduced cost of ownership**

Linux on the iSeries

New Stream of Solutions - Where Linux Complements Integrated OS/400 eBusiness Solutions

■ **Value Proposition**

- ► **Consolidation, replace competitive "farms" of servers**
- ► **Linux Integration for iSeries, enterprise RAS, ease of use and management**
- ► **New apps to complement strength as integrated core business solution**

■ **Business Focus**

- ► **Attract new workload to iSeries**
- ► **Extend current solutions to the web**
- ► **Application Flexibility (multiple application types on iSeries: OS/400, Windows, AIX, Linux)**
- ► **Small/medium business solutions**

■ **Implementation**

- ► **Linux Integration for iSeries enterprise RAS using LPAR, ease of use**
- ► **Familiar concept for iSeries customers, like Integrated xSeries Server management**
- ► **Flexible I/O management**
- ► **Large memory model (64-bit)**
- ► **Data integration with DB2 UDB on OS/400**

Linux on the pSeries

Best of both world's - only UNIX vendor to support UNIX & Linux on a single server

- **Value Proposition**
  - ‣ **Support for UNIX and Linux on one platform**
  - ‣ **Broad range of Linux performance**
  - ‣ **POWER4 performance comes to Linux**
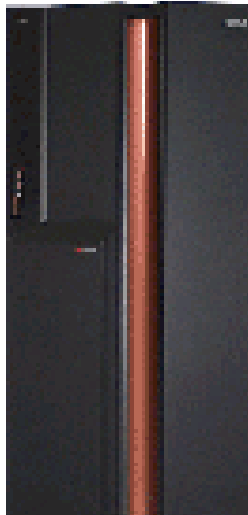
- **Business Focus**
  - ‣ **Accelerate UNIX Growth with AIX on Power at the high end**
  - ‣ **Native Linux on Power to deliver entry and stand-alone servers**
  - ‣ **Environment for Linux appl. requiring RAS, scalability of AIX**

- **Implementation**
  - ‣ **Linux in a logical partition or stand-alone**
  - ‣ **Linux Affinity (AIX 5L) for enterprise RAS, management**
  - ‣ **Large Memory model (64-bit)**
  - ‣ **Large, Complex computations**
  - ‣ **High I/O Bandwidth**

Linux on the xSeries

Cost effective platform with largest application portfolio

- **Business Focus**
  - ▸ **Exploit Windows & Unix to Lintel migration trend**
  - ▸ **Growing faster than the market, primarily through new customer acquisition**
  - ▸ **SMB & Large Enterprise solutions**
  - ▸ **Focus on Infrastructure, Scientific/Technical, Collaborative & Business Process workloads**

- **Value Proposition**
  - ▸ **Superior value at competitive prices**
  - ▸ **Scalability**
  - ▸ **Broad Linux application portfolio**

- **Implementation**
  - ▸ **Enterprise X-Architecture innovation**
  - ▸ **Scale up (x360/x440) & scale out (BladeCenter/Clusters) offerings**
  - ▸ **Advanced systems management capabilities using IBM Director**
  - ▸ **Server consolidation & virtualization using VMware**

Enterprise X-Architecture™

Key Concepts: Linux on IBM ^ Series

Linux

LPAR 1
LPAR 2
LPAR 3
LPAR 4

LPAR mgmt

Server farms
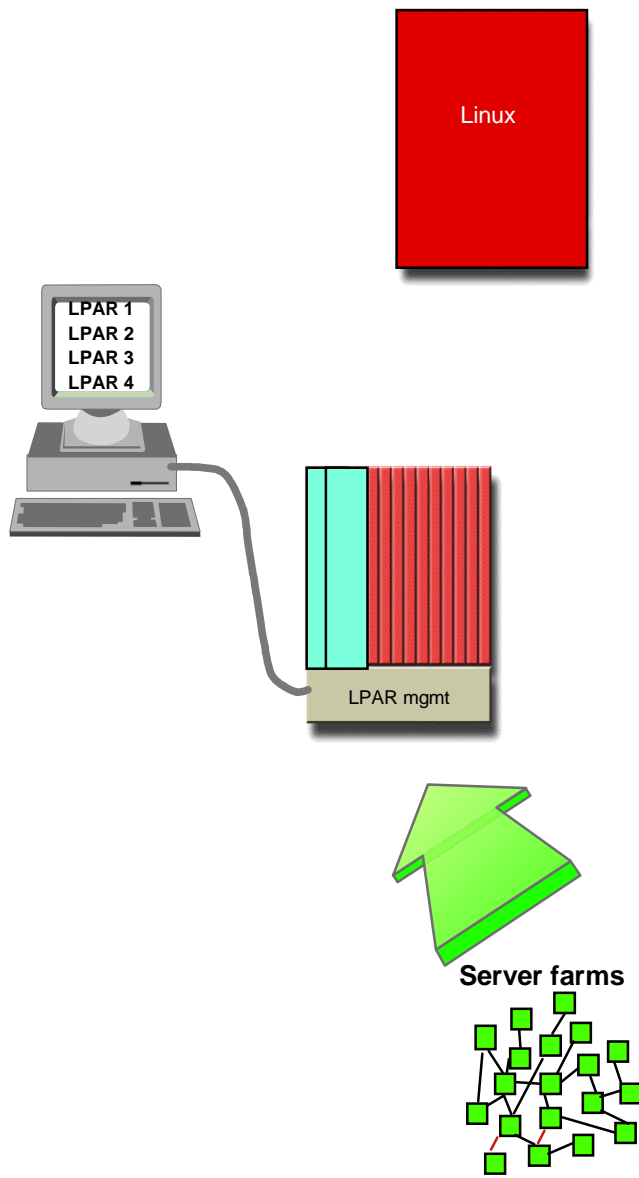
- Native (no emulation)

- Stand-alone (single image)

- Logical Partitioning of resources (LPAR)
  - ► Partition management
  - ► Static/dynamic assignment of resources
  - ► Communication between partitions

- Virtualization of resources
  - ► I/O (devices)
  - ► Virtual machine
  - ► Guest operating systems

- Server Consolidation opportunities
  - ► Value from the system environment
  - ► Interoperability with other components
  - ► Total cost of ownership advantages

IBM ^   Family Linux Enablement

@server zSeries:

- **Integrated Facility for Linux (IFL) dedicated processor**
- **LPAR, up to 15 partitions**
- **Can use z/VM for totally virtualized hardware, potentially hundreds+ of Linux guest images**
- **Virtual networking between guests**
- **zSeries - 64-bit and 31-bit Linux systems and applications**

@server iSeries:

- **Linux always runs in secondary LPAR, up to 31 partitions**
- **Requires OS/400 primary partition**
- **Dynamic LPAR for OS/400 and Linux at V5R2**
- **Virtualized or Linux LPAR-attached I/O devices**
- **64-bit and 32-bit applications**

Linux system

Linux

··· Partitions ···

Hypervisor

Hardware Resources

CPU | **Memory** | **Disk** | **Comm**
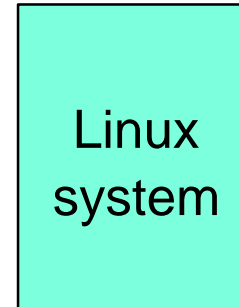
@server xSeries

- **Stand-alone Linux systems**
- **Partitioning available via third party (VMware)**
- **Clustered systems**
- **e-business configurations**
- **64-bit and 32-bit systems and applications**
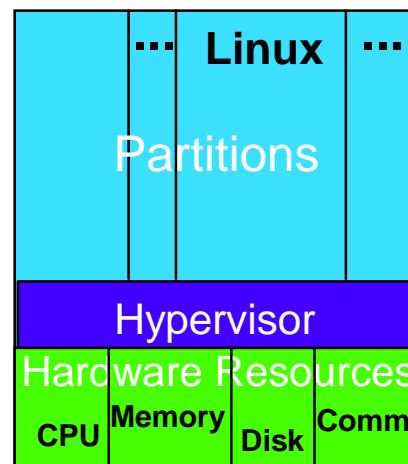
@server pSeries:

- **Stand-alone Linux**
- **Linux Affinity with AIX 5L**
- **LPARs support either/both AIX and Linux partitions, up to 16 per system**
- **Dynamic LPAR for AIX at 5.2**
- **Dedicated I/O for LPARs**
- **64-bit and 32-bit applications**

New Red Piece: "Linux Handbook: A Guide to IBM Linux Solutions and Resources" at www.redbooks.ibm.com

- **"Linux is Linux"**

- **There are common themes with technology sharing among the family series**
  - ► Native processor use (exploits the processor directly)
  - ► Enhanced RAS features provided by the hardware
  - ► Partitioning and its management

- **There are a variety of technologies used in deploying Linux across the IBM ^   family**

- **Linux application developers have the opportunity to exploit these technologies**

Linux on zSeries Facilities

- Most reliable hardware platform available
- Choice of Linux deployment (IFL, LPAR, z/VM)
- Virtual server Linux deployment
  - ► Virtual Linux server startup in seconds
  - ► Scalability to hundreds+ of images
- LPAR and z/VM workload insulation protects images from failures in other images
- Flexible Resource Management
  - ► Up to 15 partitions with shared CPUs managed by system weights
  - ► VM virtualizes all system resources to the images
  - ► Customer Upgrade on Demand (CUoD)
- z/VM virtual networking for fast, safe communication (channel to channel, inter-user, Guest LAN)
- Total cost of ownership advantages
  - ► Centralized management
  - ► Better leveraged system resources

z900 1C6

| Production Systems | Devmt & Test Systems |
| Linux | Linux |

| z/OS | z/OS | z/OS | z/VM |
| LPAR1 | LPAR2 | LPAR3 | LPAR |

| CP1 | CP2 | CP3 | CP4 | CP5 | | IFL0 | IFL1 | IFL2 |
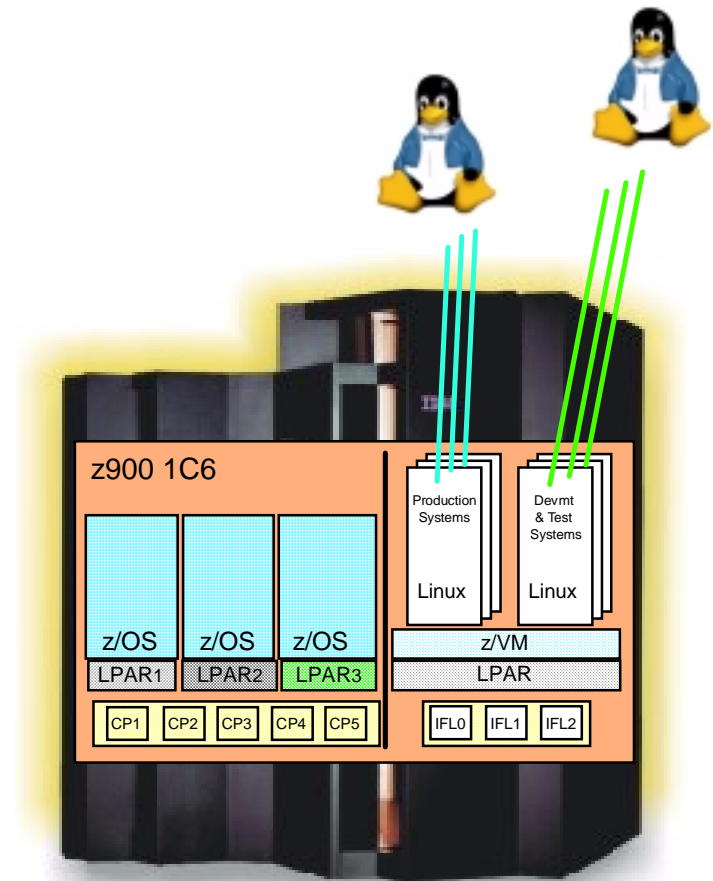
Linux on iSeries Facilities

- **Integrated computing across technologies**
- **Run up to 31 Linux partitions on one server**
- **I/O Device Virtualization**
  - ► Linux can share disk, tape, CD, DVD with OS/400 and other Linux partitions
  - ► Simple to duplicate servers
  - ► OS/400 disaster recovery for Linux data
  - ► OS/400 disk availability transparent to Linux OS
  - ► Up to 16 virtual ethernets for safe/fast communications
- **Direct Linux ownership of I/O also available**
- **Dynamic Resource Movement**
  - ► 1/100th of a processor, CUoD models
  - ► Virtual storage spaces, added dynamically
- **Linux to OS/400 Application Integration**
  - ► ODBC and JDBC (in Java Toolkit) access to DB2 on OS/400
  - ► Samba and NFS for file access
- **Management Integration**
  - ► LPAR and Storage
  - ► Linux reboot control via OS/400 operations

iSeries Disk
Virtual Drives
App
File
Web
OS/400
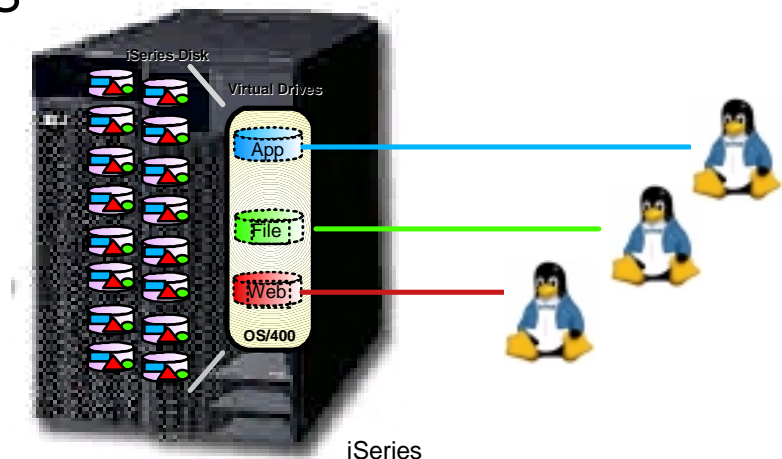
iSeries

Linux on pSeries Facilities

- High Performance, 64-bit computing
- Run Linux stand-alone on pSeries Servers
- Mix and match Linux and AIX partitions on a single server
  - ► Up to 16 total Linux and/or AIX images
- Linux applications can exploit pSeries "industrial strength" using AIX 5L Linux affinity
- Flexible Resource Movement between partitions
  - ► Dynamic adjustment for AIX
  - ► Linux reboots to take advantage of resource
  - ► CUoD models
- Linux to AIX Application Integration
  - ► Samba for file and print sharing
  - ► Security and user management integration
- Management Integration
  - ► LPAR and Hardware Management Console

partitions

partitions

Linux

AIX
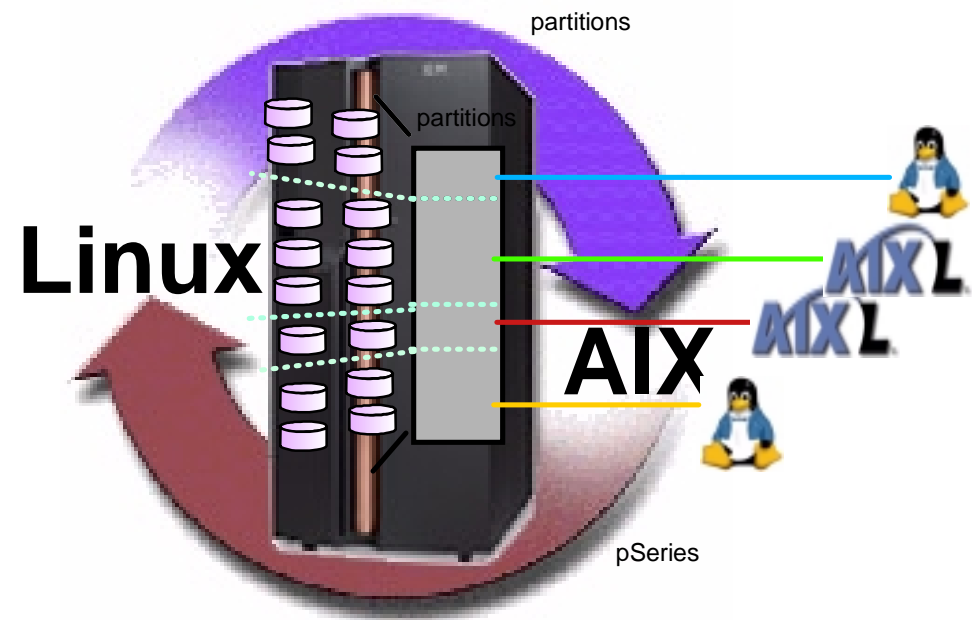
pSeries

Linux on xSeries Facilities

- Run Linux directly on xSeries servers
- Mix and match Linux and other OS images on a single server
  - ► VMware provides virtual machine
- Advanced architectural features
  - ► Real time diagnostics and visual assists
  - ► Hardware error masking, transparent to users
- Clusters and blade servers
  - ► Growth flexibility and horizontal scalability
  - ► Automated deployment
  - ► Streamlined packaging
  - ► Streamlined and remote management
- IBM Director management
  - ► System availability prediction and management
  - ► Capacity and performance analysis and recommendations
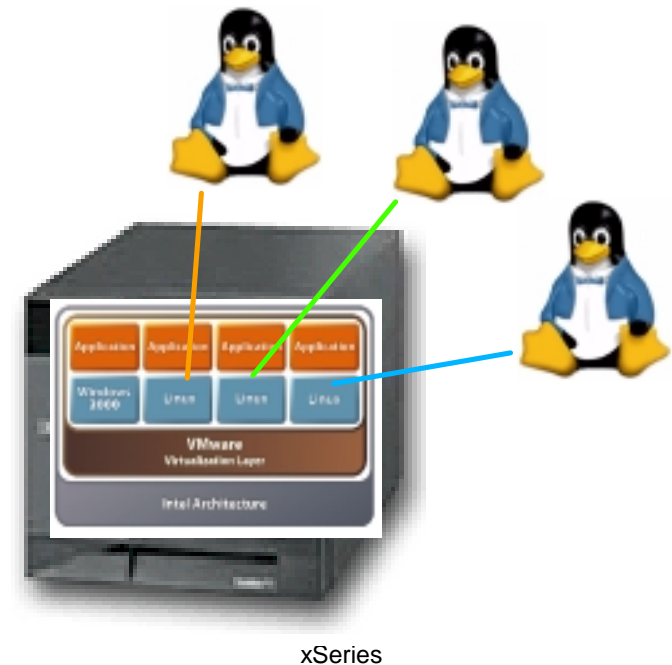
xSeries

Extending your Linux Solution for Individual Series

- Target a new customer set or provide new advantages for your current customer set

- Check out the Series' advantages and match with opportunities you are looking for

- Leverage specific Series advantages like:
  - ► Delivering your solution via a pre-configured Linux disk image in a Network Server Storage Space on iSeries
  - ► Winning benchmarks with your pSeries solution performance by using the optimizing C++ and Fortran compilers
  - ► Dynamically exploiting wide horizontal scaling with many zSeries virtual Linux images
  - ► Creating high-density rack-mount clustered Linux solutions with xSeries

Linux for zSeries Solution Scenarios

■ Consolidation
- ► **Replace infrastructure servers**
- ► **Better utilize hardware resources for moderately loaded servers**
- ► **Lower cost of physical plant, management, etc.**

Infrastructure consolidation

Linux Virtual Servers

Linux Images

Server farms

Single purpose Internet-related servers
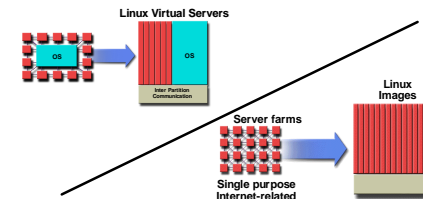
Distributed application servers

■ Integration
- ► **Run middle tier UNIX server applications**
- ► **Leverage z/OS data server back-end**
- ► **Lower cost of computing with integration**

Linux App Servers

Data and Transaction Server

Inter Partition Communication
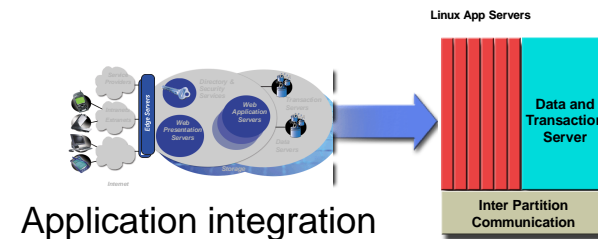
Application integration

■ Server Hosting
- ► **Support large numbers of virtual servers**
- ► **Run Linux applications on same server as z/OS**
- ► **Lower cost of computing with server flexibility**

Linux Images

Server farms

Single purpose Internet-related servers
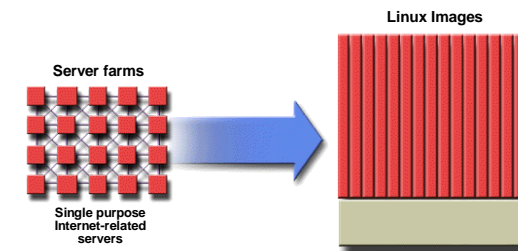
Very large scale server hosting

Linux for iSeries Solution Scenarios

- ## Consolidation
  - ▸ **Replace Windows or Linux infrastructure servers**
  - ▸ **Run multiple Linux servers in partitions**
  - ▸ **Consolidation and centralized management lowers cost of computing**

- ## Integration
  - ▸ **Extend OS/400 applications with Linux applications**
  - ▸ **Run Linux applications on same server as OS/400**
  - ▸ **Integration lowers cost of computing**

- ## Application Flexibility
  - ▸ **Leverage Linux LOB application portfolio**
  - ▸ **Run Linux applications on same server as OS/400**
  - ▸ **Flexibility lowers cost of computing**

Linux for iSeries Partitions

Server farms

O S / 4 0 0

iSeries LPAR

LPAR1 OS/400

LPAR2 Linux

DB

Web Server

LPAR1 OS/400

LPAR2 Linux

DB

DB
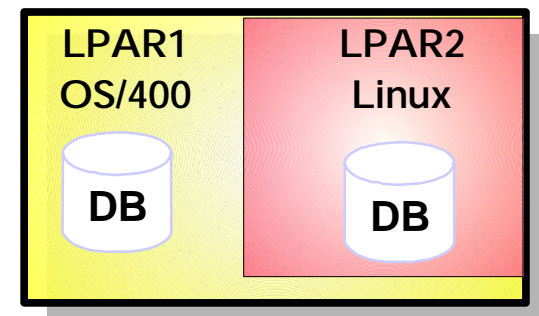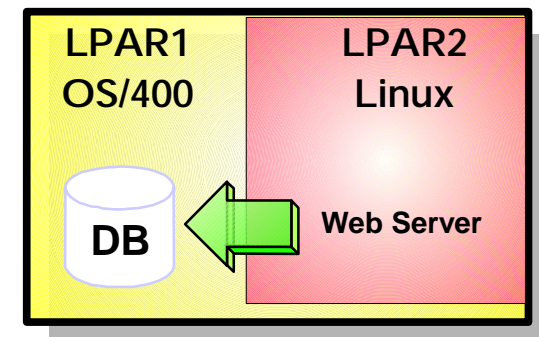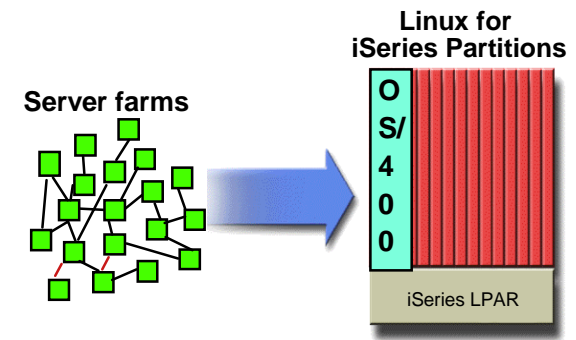
Linux for pSeries Solution Scenarios

- **High Performance Computing**
  - ▶ 64-bit high performance Linux as well as AIX
  - ▶ Scalable architecture
  - ▶ Reliable architecture

- **Low Cost Computing**
  - ▶ Linux stand-alone entry point
  - ▶ Low cost 64 bit systems
  - ▶ Run Linux applications on same server as AIX
  - ▶ Integration Lowers Cost of Computing

- **Consolidation**
  - ▶ Replace Windows or Linux Infrastructure servers
  - ▶ Run multiple Linux servers in partitions
  - ▶ Consolidation Lowers Cost of Computing

- **Integration**
  - ▶ Extend AIX applications with Linux Applications
  - ▶ Linux affinity on AIX 5L
  - ▶ Unix and Linux in a single system

AIX

Linux

LPAR 1
AIX
Business Intelligence

LPAR2
Linux

Web Server

Linux for pSeries Partitions

Server farms

A I X

pSeries LPAR
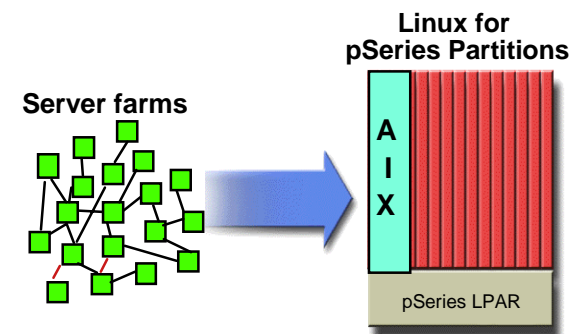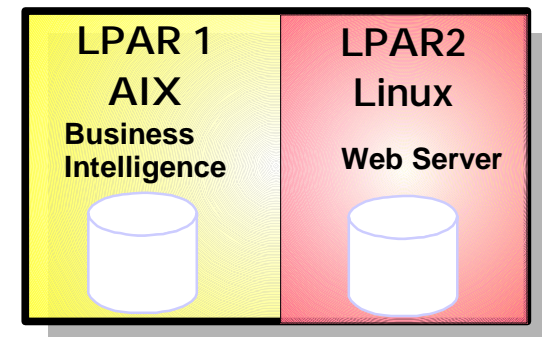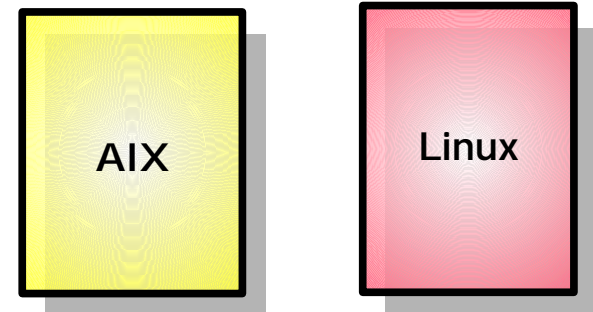
Linux for xSeries Solution Scenarios

- **Consolidation**
  - ► **Power and floor space reduction**
  - ► **Load balancing and better system utilization**
  - ► **Centralized management**

- **e-business Infrastructure**
  - ► **File/print serving, web, mail and messaging**
  - ► **Web serving**
  - ► **Application Servers**
  - ► **Integration Lowers Cost of Computing**

- **Clusters and blade servers**
  - ► **Dynamically extendable hardware**
  - ► **Advanced hardware detection management**
  - ► **High availability characteristics built in**
  - ► **Mission-critical applications**

Linux

Linux for
xSeries

e-business
Server farm
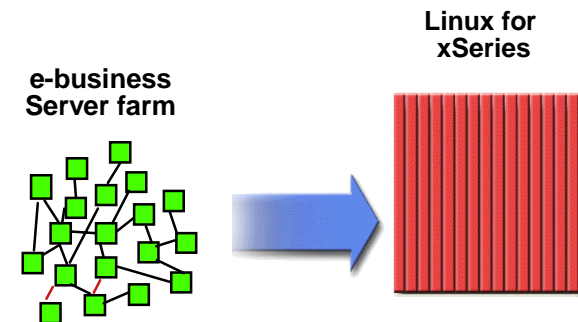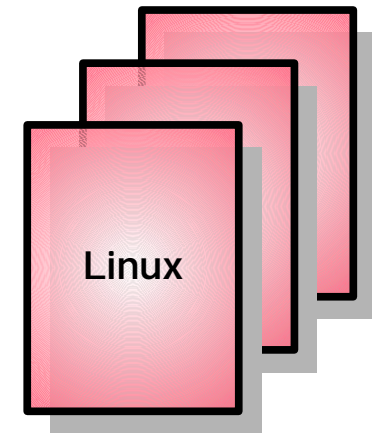
Resources

Linux Solutions Enablement Sample Offerings

- **IBM ^ Linux Web Portal** **ibm.com/servers/enable/linux/**
  ➜ *Starting point for enabling a product on Linux on any IBM ^*

- ### Enablement and Marketing Roadmap
  ➜ *A step-by-step Roadmap for each IBM ^ to help ISVs plan a port to Linux*
  - *Business case development / IBM direction*
  - *Porting tools and white papers*
  - *Redbooks*
 - *Open source tools*
  - *Extensive FAQ's and Q&A support*

DEVELOPERWORKS FOR LINUX. WELCOME TO TRAINING CAMP.

Speed-start your Linux app 2003

eServer Linux Test Drive

➜ ***Education and Skills***
- *eServer Linux Web Portal*
- *Linux Zone on developer Works*
- *Linux Classes*
- *eServer Technical Collateral*

➜ ***Technical Assistance Programs***
- *eServer Linux Competency Team (TRB)*
- *eArchitect Consult Team*
- *Solution Partnership Centers*
- *eMail / Phone Technical Support*
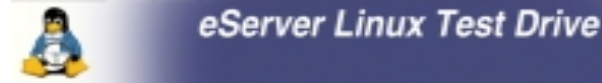
➜ ***Systems Access Programs***
- *eServer Linux Test Drive*
- *eServer Remote Development*
- *Solution Partnership Centers*
- *Hardware Lease Programs*
- *Hardware Rent/Loan Programs*

Linux Test Drive

- Designed to provide remote system access for ISVs porting applications to ^ series
  - ▶ Prototyping and porting (not a benchmarking center)
  - ▶ Limited duration
  - ▶ 24 x 7 (except for system backup)
  - ▶ Remote access to any IBM ^ Series
  - ▶ ibm.com/servers/enable/linux/testdrive

- Two levels of support
  - ▶ Linux Test Drive - free access, limited capability
    - − all ^ series
  - ▶ Linux Remote Development -
    - − fee, expanded capability and help
    - − zSeries, pSeries and iSeries

- *"... By taking advantage of the Linux on zSeries 'Test Drive', we were able expedite our release of extend(TM)5 with ACUCOBOL(TM)-GT on Linux for the IBM z900 and S/390. And, it only took us one day to port, when we had allotted a minimum of two weeks just to investigate the proof of concept! Then we did essentially the same thing again using the Linux on iSeries 'Test Drive.' "*

  Joe Seiley, Director of Business Development, Acucorp(TM)

Solution Partnership Centers

- Hands-on access for Linux on zSeries, iSeries and pSeries hardware.
  - On site engagements (typical)
  - Virtual Private Network (VPN) access may also be available
  - Linux-capable SPCs located in Chicago, San Mateo, Waltham, Hurlsey, Stuttgart, Paris, Petach-Tivka, Warsaw, Budapest, Tokyo, Seoul, Bangalore, Sydney and Shanghai.

- Technology Consultants available to assist with enablement activity

- Enablement activity is defined and finite

- Typical engagement is 10 business days with the possible extension of 5 more

- Request form at developer.ibm.com/spc/index.html

Key URLs for Enabling your Solutions on Linux

- **ibm.com/servers/enable/linux**
  - ► Portal to begin you planning for ^   Linux enablement.
- **ibm.com/software/is/mp/linux/software/pdfs/IBMSoftwareOnLinux.pdf**
  - ► IBM Software available by series
- **ibm.com/developerworks/speed**
  - ► A wealth of information / assistance from our Speed Start program
- **ibm.com/developerWorks/linux**
  - ► Comprehensive free Developer Linux Technical Information
- **ibm.com/servers/enable/linux/testdrive**
  - ► Access to the test drive systems
- **ibm.com/services/learning/us/catalog/linux/**
  - ► IBM Linux Education
- **publib-b.boulder.ibm.com/Redbooks.nsf**
  - ► Technical publications : Redbooks, search on Linux
- **www.linuxbase.org**
  - ► Linux Standard Base (LSB) information
- **oss.software.ibm.com/developerworks/opensource/linux/**
  - ► Linux Technology Center

Don't Forget to Publicize Your Solution!

IBM ^ Solution Connection

"Base" Solution Connection

Connected
- CONTENT: Connecting IBM resources (White papers, benchmarks, sizing tools, etc. to specific solutions.
- PARTNERS: Connection Reseller partner and sales linkages with solutions.

Integrated
- LINKAGES: Linkage with IBM content, sales contacts, Resellers and other valuable information that can help in decision-making and preference.
- INTEGRATION: Integrated with all major IBM solution tools - GSD, BP Connections, ISV SolutionLink, PWD - to avoid redundancy.
- BUSINESS ASSESSMENT: Customer access to no-fee business assessment (SEAS) by a qualified IBM business development consultant

Targeted
- REPORTS: Reports that align the most relevant resources available to the solution(s) and series the customer is considering.
- "GO-TO-MARKET" PORTALS: IBM and Business Partners can create customized views into Solution Connection solutions and resources for customers through portal functionality

Two "levels" of participation . . . and value

+

Add Optional "ServerProven" for more differentiation

Customer Reference

- LOGO PROGRAM: ServerProven logo program for ISVs to use in their own activities - linking back to eSC
- CUSTOMER OFFERS: Access to special offers - demonstrating IBM's support for ISV community. For example: North America rebate up to $5,000 on ^ when purchased with a ServerProven solution
- CUSTOMER SUCCESS STORIES: Customer access to ServerProven Customer Experiences (success stories) that have been confirmed by IBM

Join at:
www.ibm.com/eserver/
solutionconnection/enroll

IBM Linux Commitment Can Help You Get There!

pSeries iSeries zSeries

xSeries

ThinkPad

BladeCenter

NetVista

Storage Systems

Intellistation

Point of Sale

Network Station

IBM JVM

Linux Cluster

Websphere MQ
DB2 UDB

Integrated Platform

Solaris to Linux
Migration
Service

WebSphere App.
Developer

Workload
Consolidation
Service

VisualAge for
JAVA Pro

Websphere
Application
Server

Installation &
Configuration

eSourcing

Domino

Open Source SW
Consulting

Linux
Technology
Center

Websphere
Commerce
Suite