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# Utilizing Linux in the Enterprise Environment

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*Linux Gets Down to Real Business*

**Mark Murphy**

*Sr. Linux Solutions Specialist*

*IBM America's Linux Team*

*markm1@us.ibm.com*

*303.773.5037*

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# Agenda

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- Linux Defined
- Linux in the Press
- Linux Adoption Trends
- Companies with Linux in Production
- Linux Deployment Models
- IBM's \$1B Investment

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# What is Linux

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- **Operating System that runs on virtually every platform**
  - **Linux is Unix-like, not Unix**
- **Developed by Linus Torvalds, 1991**
- **Developed / tested by the Open Source community**
- **Packaged and shipped by distributors**
  - **Red Hat**
  - **UnitedLinux**
    - **SuSE, Turbolinux and Conectiva**
  - **Other Regional Distributors (Red Flag, YellowDog, Tall Frog, etc...)**
- **Fastest growing OS in the history of the World**



# Linux in the Press

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“Schwab saw a 3:1 improvement in performance and a 25:1 improvement in hardware costs when the company moved its entire Schwab.com platform to Linux” – Banking Technology News, 8/14/2003

“Linux will soon overtake Unix as the operating system of choice for several major enterprise segments, including high-performance computing, carrier-grade, mission-critical systems and database hosting.”  
– Aberdeen Group 8/1/2003

“Microsoft underbids Linux solution by \$12M and comes up empty handed in Munich.”  
- USA Today, 7/14/2003

“weather.com saved \$2.3M by switching from Solaris to Linux”  
- The New York Times

Morgan Stanley’s projected 5 year savings: \$100M  
- Jeffrey Birnbaum, Managing Director of Computing



# Linux in the Press

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“Today Linux has become the hottest thing in corporate America since e-mail.”

– Fortune

“On Wall Street, Linux is quickly gaining ground on Unix and Windows as a mission-critical operating system within the financial industry”

– Computer World

“Orbitz saved \$6M by replacing Sun Solaris servers with Linux servers”

– InfoWorld

“Verizon saved \$6M in hardware costs by switching programmers to Linux”

– CNET

“Linux continues to grow share on Intel Servers, and for investors in Microsoft the ramifications are obvious.”

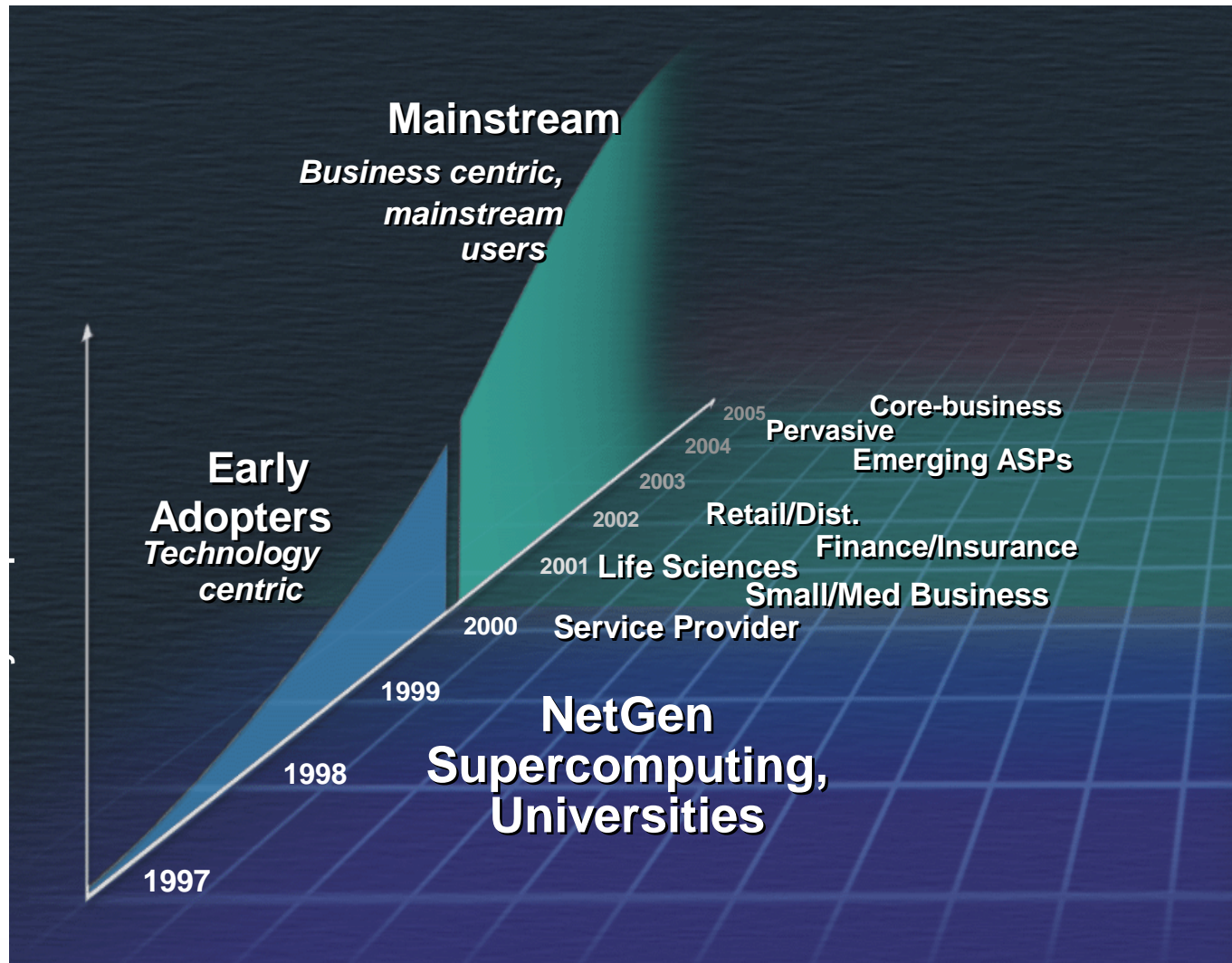
– John Connors, CFO, Microsoft

“Key milestones have been met that make Linux a strong choice for the Global 3,500.”

– Forrester



# Linux Adoption Trend

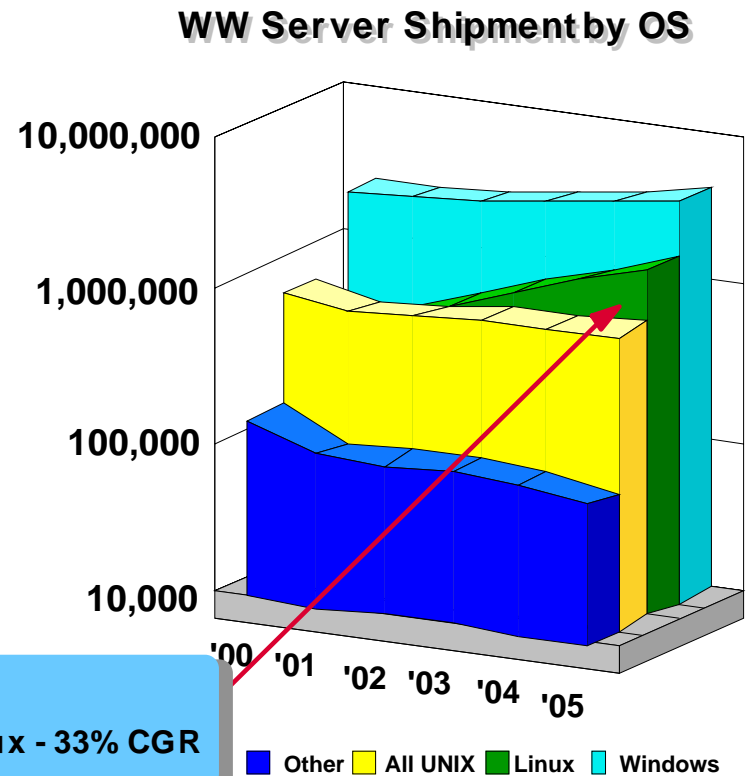


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# Linux Momentum

- Linux will become the dominant server operating system in the United States by 2005.
  - Giga
- By 2006, Linux will be a key foundation for a strategic, cross-development-platform environment, accelerating Unix server consolidation, while creating a powerful alternative to Windows .NET.
  - Gartner
- Exploring Linux - especially on the server side - should be part of an organization's IT investment portfolio. ...viewed as an insurance policy to hedge against future Microsoft incursions into your wallet.
  - META Group

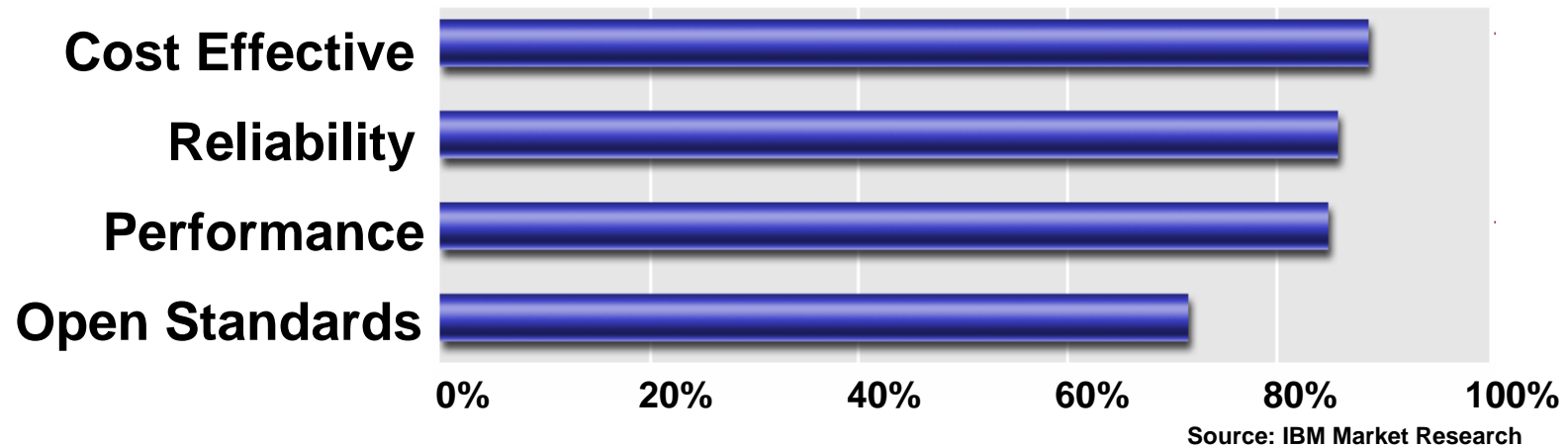


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# Linux Value

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***"It's going to be almost 30 times cheaper to run and maintain"  
(than Sun systems) – Josh Levine, CTO, e\*Trade***

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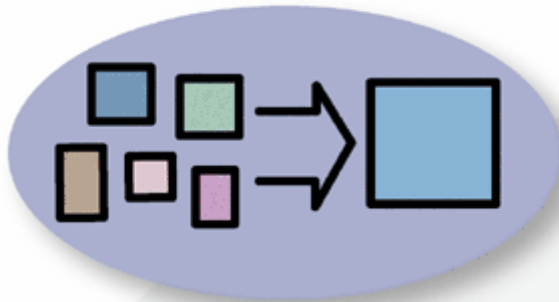




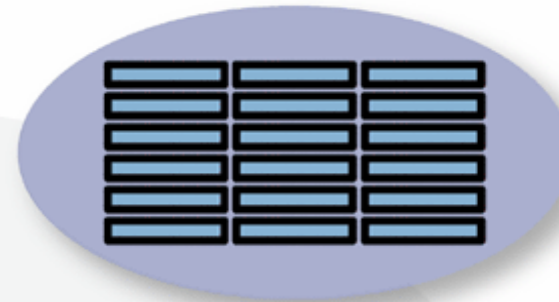
# Enterprises with Linux in Production



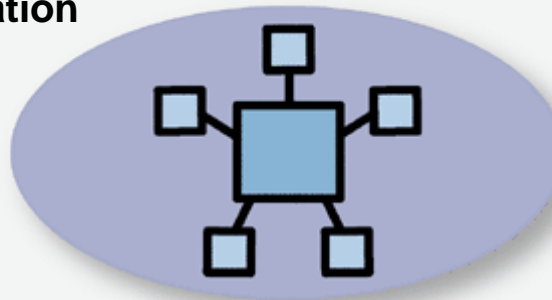
# How Customers are Deploying Linux



**Workload Consolidation**



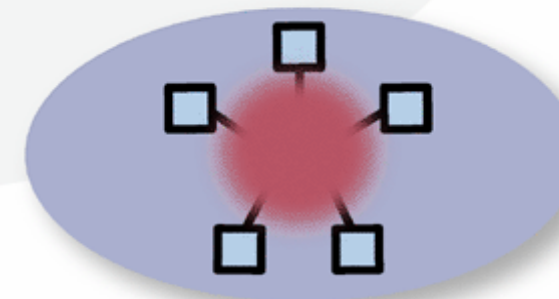
**Linux Clusters**



**Distributed  
Enterprise**



**Application Solutions**



**Infrastructure Solutions**

**IBM**

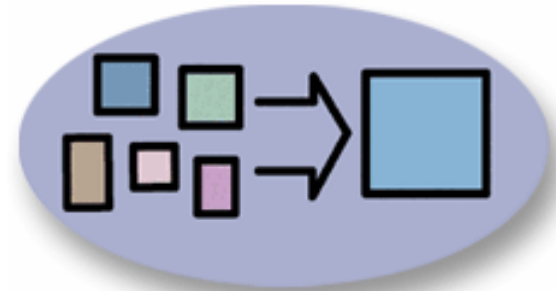


# Server Consolidation

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## *Simplified Infrastructure with IBM and Linux*

- **Workload Consolidation**
  - Replace many with few
  - Optimize assets
- **Advantages:**
  - Reduce costs
  - eServer proven reliability
  - Virtualize servers
  - Dynamically manage workloads
  - Enabled across all eServer products



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# E\*Trade

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*xSeries Linux Application Servers Replace Sun Servers*

## Challenge

- Reduce infrastructure costs
- 100+ Sun servers were under utilized and increasingly difficult to manage

## Solution

- IBM Porting Services
- 100+ Sun servers displaced by lower cost xSeries



**START HERE**

Select your  
location and  
preferred  
language:



## Benefits

- “30 times cheaper to acquire and manage than my previous Sun environment” – Josh Levine, CTO
- More flexible scaling
- On-demand compute capacity

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# Winnebago

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## *Consolidate email on Linux on zSeries*

- **Challenge**
  - Upgrade e-mail - problems with calendaring and attachment corruption
  - Minimize impact to existing Exchange users
  - Cost less than US\$100,000 to upgrade
- **Solution**
  - Bynari Insight Server for e-mail and calendar
  - SuSE Linux virtual server via VM on an IBM zSeries
- **Benefits**
  - Software cost is 1/3<sup>rd</sup> of competing solution
  - Higher availability of a mainframe solution

"Bynari Insight Server gave us a more cost-effective alternative to Microsoft Exchange, ... it showed us that Linux for the mainframe is ideal for enterprise applications. ...it's not only more reliable but it's also just cheaper and easier to run."

Dave Ennen, Technical Support Manager at Winnebago.



# SUPERVALU

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*World's Largest Grocery Logistics Solutions Provider*

## Challenge

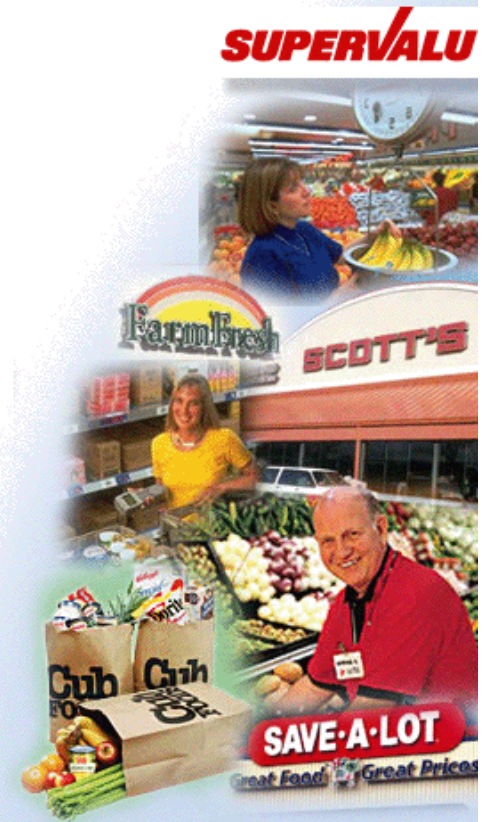
- Implement easier, more cost effective system for member stores to place orders
- Improve customer loyalty and grow customer base

## Solution

- IBM WebSphere Commerce Suite V5.1 as e-commerce platform
- SuSE on zSeries

## Benefits

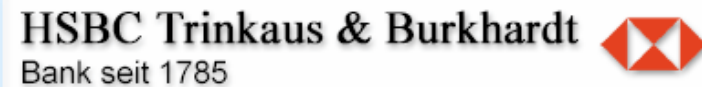
- Reduced software needs from 80 CPU licenses to 3
- Ability to add virtual servers dynamically without interruption in service
- Improved development productivity



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# Workload Consolidation Success



**Hundreds of Successful Customers**



# Linux Clusters

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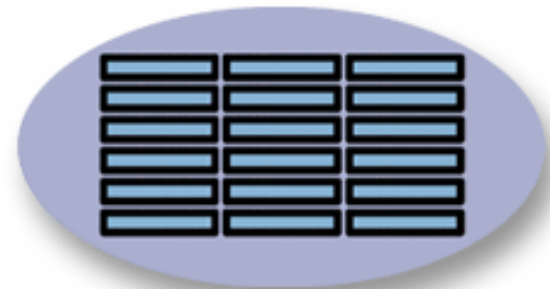
## *IBM Solutions for Complex Workloads*

### ■ Clusters with Linux:

- Computationally intensive workloads
- High performance computing
- Horizontal scalability

### ■ Advantages:

- Supercomputing performance at "mass market" prices
- Choice of eServer architecture
  - IA 32, IA 64, or PowerPC
- Industry leading IBM cluster software
  - GPFS - General Parallel File System
  - CSM - Cluster Systems Manager
- IBM factory installed and delivered



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# Chrysler

## *Linux Clusters*

### Challenge

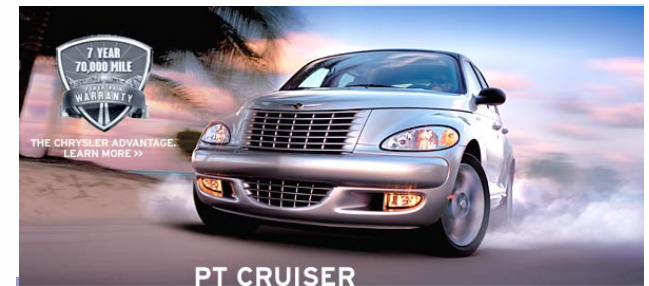
- Improve cost and performance of 70% of Chrysler Engineering's raw compute performance needs

### Solution

- IBM Linux xSeries Cluster
- 108 IBM IntelliStation M Pro 6850 workstation PCs -- dual 2.2-GHz Intel Xeon processors
- 2.6TB TotalStorage FAStT500 storage
- Red Hat Linux
- LS-DYNA crash-testing software

### Value

- Conduct 18 simultaneous impacts
- 20% improvement in simulation performance compared to competitive Unix solutions
- 40% cost savings compared to competitive Unix solutions



# Royal Dutch Shell

## Linux Clusters

### Challenge

- Insight into subsurface, increasing hit rate in the quest for new oil fields.
- Reduce the risk of drilling dry holes
- More accurate tera-scale seismic processing with outstanding price/performance
- Grow processing power by an order of magnitude
- Cost pressures

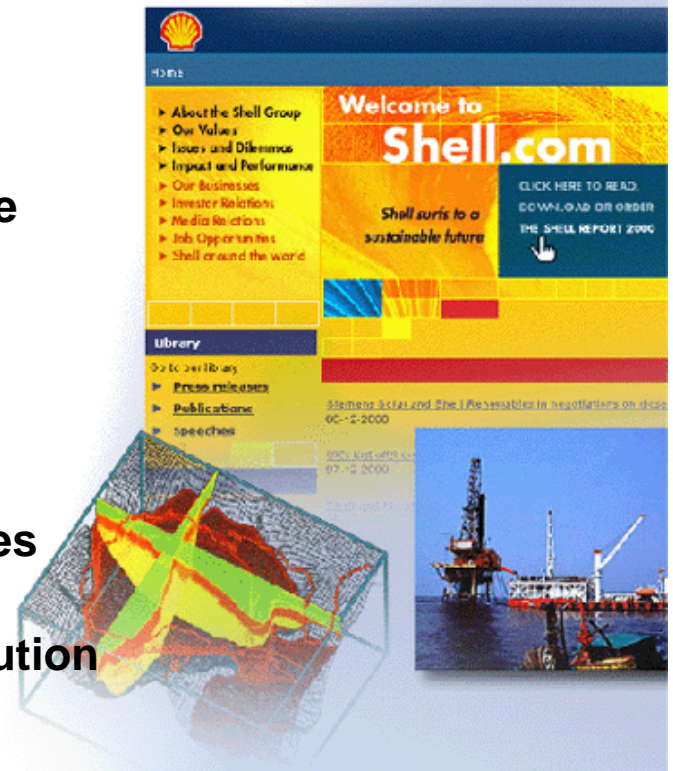
### Solution and Benefits

- 1024 IBM xSeries servers for +Tflop capability
- Solution paid for itself in 45 days
- Reduced compute time from 11 hours to 8 minutes
- Improved modeling accuracy
- 80% less expensive than the competing Unix solution

"With this Linux cluster, we find a cost-effective solution to apply the algorithms we've already developed in-house to run them faster than was possible before."

Jack Buur,

Principal Research Physicist Shell Exploration and Production B.V.



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# Warner Brothers

## *Linux cluster and neural network*

### Challenge

- Reduce support costs and animation cycle times
- Increase performance

### Solution

- IBM xSeries rendering cluster
- IBM Intellistation mPros for desktop animation
- IBM WebSphere Application Server

### Benefits

- 20% TCO reduction
- 50% increase in animators
- 40% decrease in IT support resources
- Small form factor eliminated need to expand datacenter



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# Linux Clusters Success



Renaissance  
Technologies



*Dozens of successful deployments in all industries*

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# IBM Infrastructure Solutions

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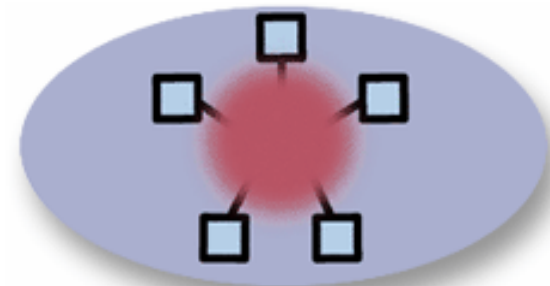
*Optimized eServer and IBM Software for Linux*

## ■ Infrastructure Servers

- File/Print
- Web/Application
- Application dev.
- Content/Caching
- Security

## ■ Advantages:

- Low cost
- Highly reliable
- Turnkey
- Rapid setup
- Innovative packaging



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# Infrastructure Successes



**Hundreds of Successful Customers**



# Distributed Applications to Serve Many Locations

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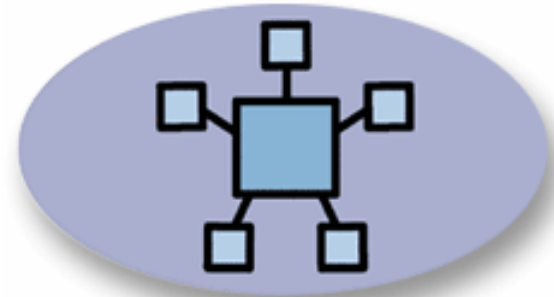
*Replicate Function Across the Enterprise*

- **Distributed solutions with Linux:**

- Geographically dispersed
- Serve more customers or employees

- **Advantages:**

- Low cost, small footprint eServer
- High reliability and stability
- Secure
- Easily replicated
- Centrally managed
- IBM worldwide support and implementation



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# Sherwin-Williams

## *Innovative Point of Sale Solution*

### Challenge

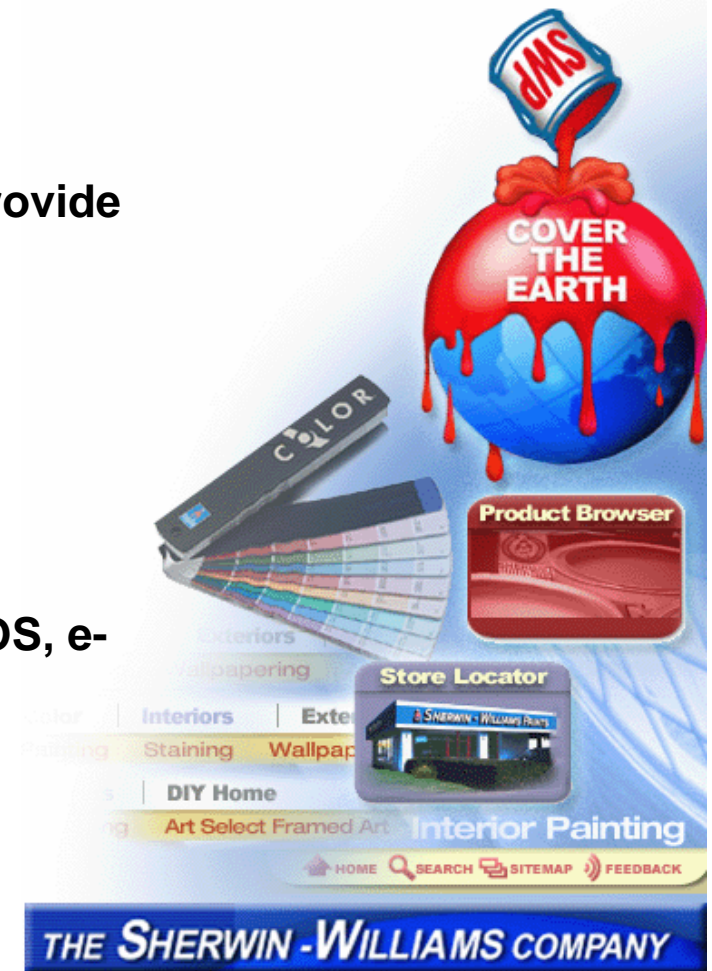
- Major manufacturer with over 2,600 outlets
- Needed to upgrade point of sale system plus provide e-mail, intranet and Internet capabilities

### Solution

- Custom IGS Services for Point of Sale
- NetVista for in-store processing

### Benefits

- New functionality provided for the stores for POS, e-mail and Web
  - Web browser and StarOffice as new capabilities
- Reduced administrative support
- Higher availability
  - Redundant servers and diskless POS PCs
- 35% reduction in TCO



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# Distributed Successes

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THE SHERWIN-WILLIAMS COMPANY

Hill House Hammond



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# Application Solutions

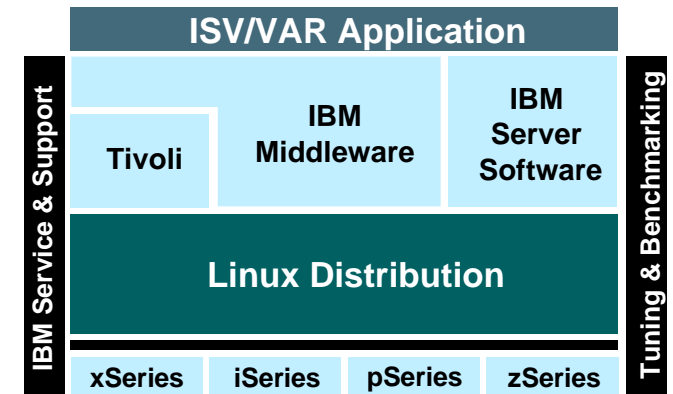
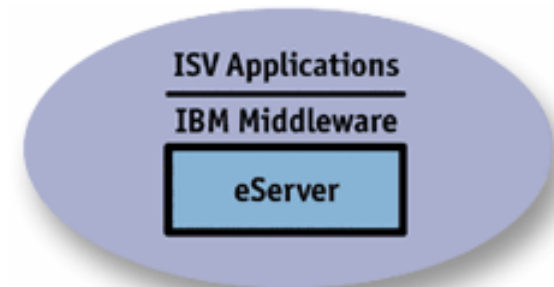
## *Affordable Integrated Solutions for Linux*

### ■ IBM Business Partner and ISV Solutions

- Enable e-business initiatives
- Deliver industry vertical applications
- Leverage Business Partner and ISV expertise

### ■ Advantages:

- Bundled eServer / IBM middleware / ISV application
- Low cost
- Optimized solutions
- Reduced implementation time



# Alcatel

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## *SAP on zSeries running Linux*

### Challenge

- Consolidate systems, improve reliability and systems management

### Solution

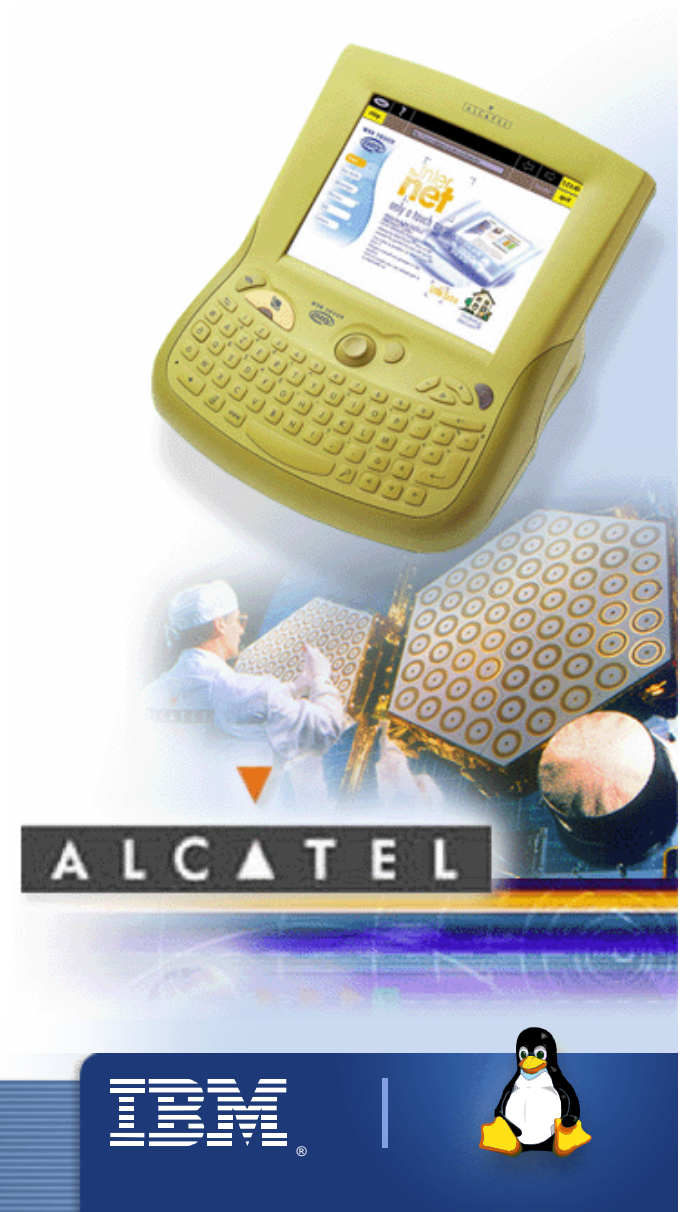
- mySAP.com on 64-bit Linux for eServer zSeries
- DB2 Universal Database

### Value

- Twice as fast as Unix batch processing
- Higher availability
- Better system management
- Improved TCO

"The Linux installation on zSeries was simple and quick.  
...we were very pleased with the performance results."

Burghart Pohler  
Manager, Alcatel



# Tommy Hilfiger

## *B2B Portal Running on Linux*

### Challenge

- Expand presence among retailers, worldwide manufacturing facilities and employees

### Solution

- B2B portal that allows retailers to view available inventory in real time and place, track & ship orders
- Business-to-plant website links WW production facilities
- iSeries and xSeries servers running Linux and DB2

### Value

- 40% less expensive than the competing Microsoft solution
- One un-planned outage since 2/2002



tommyB2B.com



# Application Solution Successes





# ISVs Adopting Linux



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# IBM's Billion Dollar Commitment to Linux

"IBM has already recouped its \$1B investment in Linux" - Sam Palmisano



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# Next Steps

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*IBM is Ready to Help You:*

- ...get educated
- ...assess what's happening in your company
- ...develop your strategy
- ...pick and implement a pilot
- Information:  
[www.ibm.com/linux](http://www.ibm.com/linux)
- Contact:  
[markm1@us.ibm.com](mailto:markm1@us.ibm.com)







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# Healthcare Co's with Linux in Production

Baxter Worldwide



HEALTH MANAGEMENT ASSOCIATES, INC.



KAISER PERMANENTE®



CERNER®

MedPlus™



mds proteomics



MERCK



BIOMEDICUM



WIPRO  
Applying Thought



GlaxoSmithKline

CareFirst. BlueCross BlueShield



GeneFormatics™

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# Retailers with Linux in Production

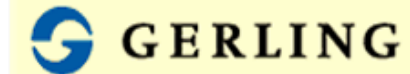
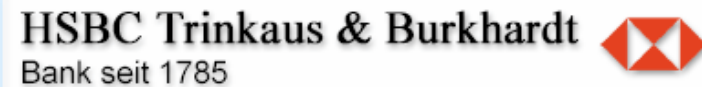


# Manufacturers with Linux in Production





# Companies with Linux on zSeries in Production

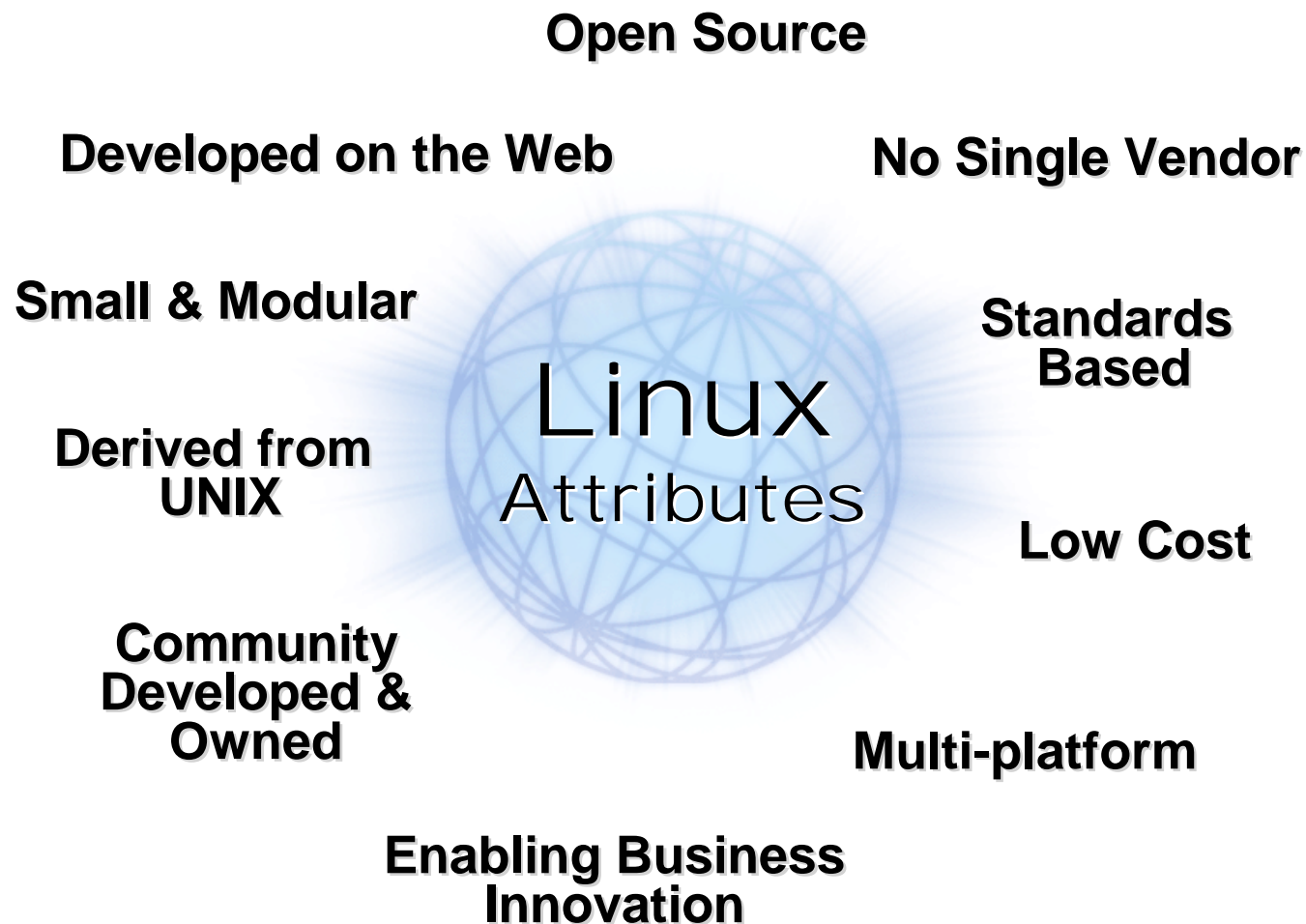


**Hundreds of Successful Customers**



# What Makes Linux Different

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## Yesterday

- Firewall
- Print/File
- Web Server
- e-mail

## Today

- Firewall
- Print/File
- Web Server
- e-mail

## Tomorrow

- Firewall
- Print/File
- Web Server
- e-mail



- Large Scale Clusters
- SW Development
- e-commerce
- Embedded devices
- Web Hosting
- Branch Automation

- Large Scale Clusters
- SW Development
- e-commerce
- Embedded devices
- Web Hosting
- Branch Automation



- Database server
- ERP, CRM, SCM
- Vertical Industry Applications

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# Dresdner Kleinwort Wasserstein

## Linux Clusters

### Challenge

- Reduce time to assess portfolio risk
- Increase efficiency in the pricing and relations of the whole bank interest rate position
- Remain in existing data center, without increasing floor space or system management personnel

### Solution

- 80 node xSeries Linux cluster

### Value

- From 11 hours to calculate the whole position to 15 minutes
- 80% cheaper than the competitive HP-UX solution
- Significant increase in competitive advantage



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# China Post

## *Distributed Linux*

### Challenge

Cut cost and increase efficiency across  
2,000 post office and 1,200 branch locations

Transform manual record keeping and  
data collecting to an electronic system

Set up an e-Post branch office

### Solution

IBM xSeries 200s running Linux

### Benefits

Increased revenue

Reduced cost

Improved customer service  
and customer satisfaction



# Salomon Smith Barney

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## *Server Consolidation*

### Challenge

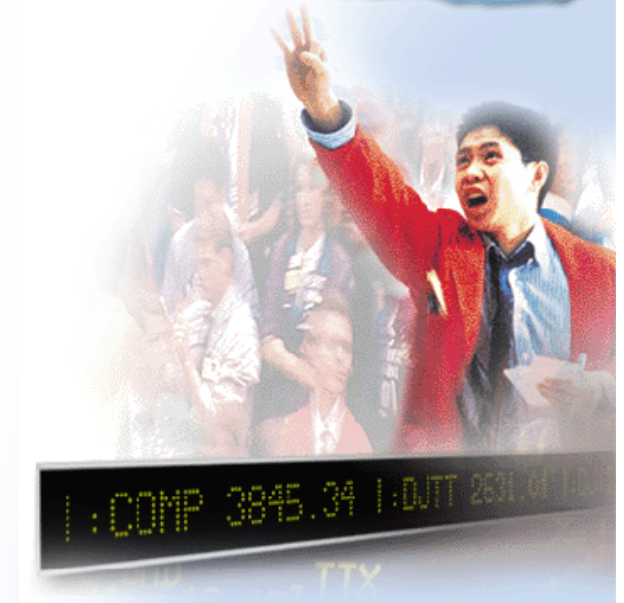
- 190M customer accounts in 100+ countries
- Evaluate upgrading its legacy Sun and Microsoft environment

### Solution

- Linux on zSeries to optimize server infrastructure
- 4 zSeries engines running 63 Linux virtual servers for firewall, web serving and browser access to CICS and DB2
- WebSphere Application Server

### Value

- 99.999% availability
- Reduced space, power and labor requirements
- Create new virtual server in 30 seconds



# Deutsche Bank

## *Linux Cluster*

### Challenge

- Reduce time to calculate profit and loss, and mark value at risk
- Long job times potentially impact following day's business

### Solution

- xSeries Linux cluster
- 40 xSeries 330's
- 224 xSeries blades

### Benefits

- Batch time reduced from 8+ hours to 20 minutes
- P&L calculation now occurs during the workday which increases responsiveness
- Significant cost savings

