



invent

Linux for the Real World Leadership through Innovation

LinuxBiz Luxembourg 2004

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Agenda

- Linux Market Trends
- HP's Linux Solutions Portfolio
- Customer Implementations



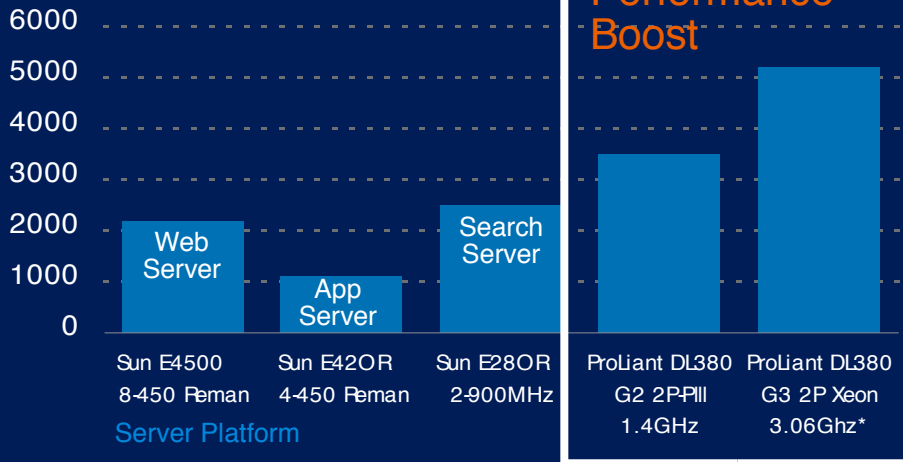
Value Proposition of Linux

- **Stable, Robust, Flexible, and Truly Open, Enterprise-Class Operating Environment**
- Unix-like Experience on Industry-Standard Platforms
 - Lower Purchase & Maintenance Costs
 - Smaller Footprint
 - Less Power Consumption & Heat Dissipation
 - Exponential Growth Potential (Intel Performance)
 - Minimal Proprietary Technology Dependence
- Widespread Business Application, Resource and Support Options
- Risk-adjusted ROI of 138–267% over 3-5 Years for Market Data System Migration (Giga, 5/03)



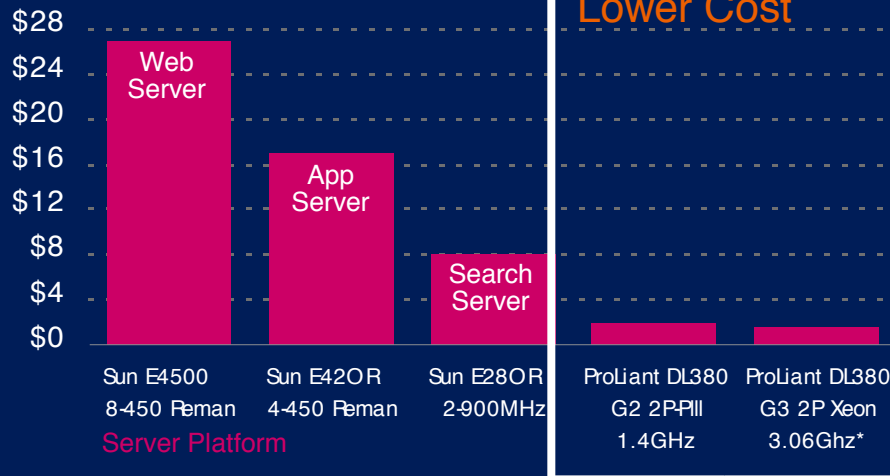
Sample Benefits of Linux Port from Solaris

SpecWeb 99 Comparison



- 2x Better Performance
- 50% Server Consolidation
- \$1.5M Less Operating Expenses
- Savings in Training, Space, Maintenance, Admin., Electricity
- More Efficient Storage Utilization
- Effective Skill Redeployment
- Simple IT Transition
- Creative Self-Funding Sources

Dollar per SpecWeb 99 Comparison





Linux Spanning the Enterprise

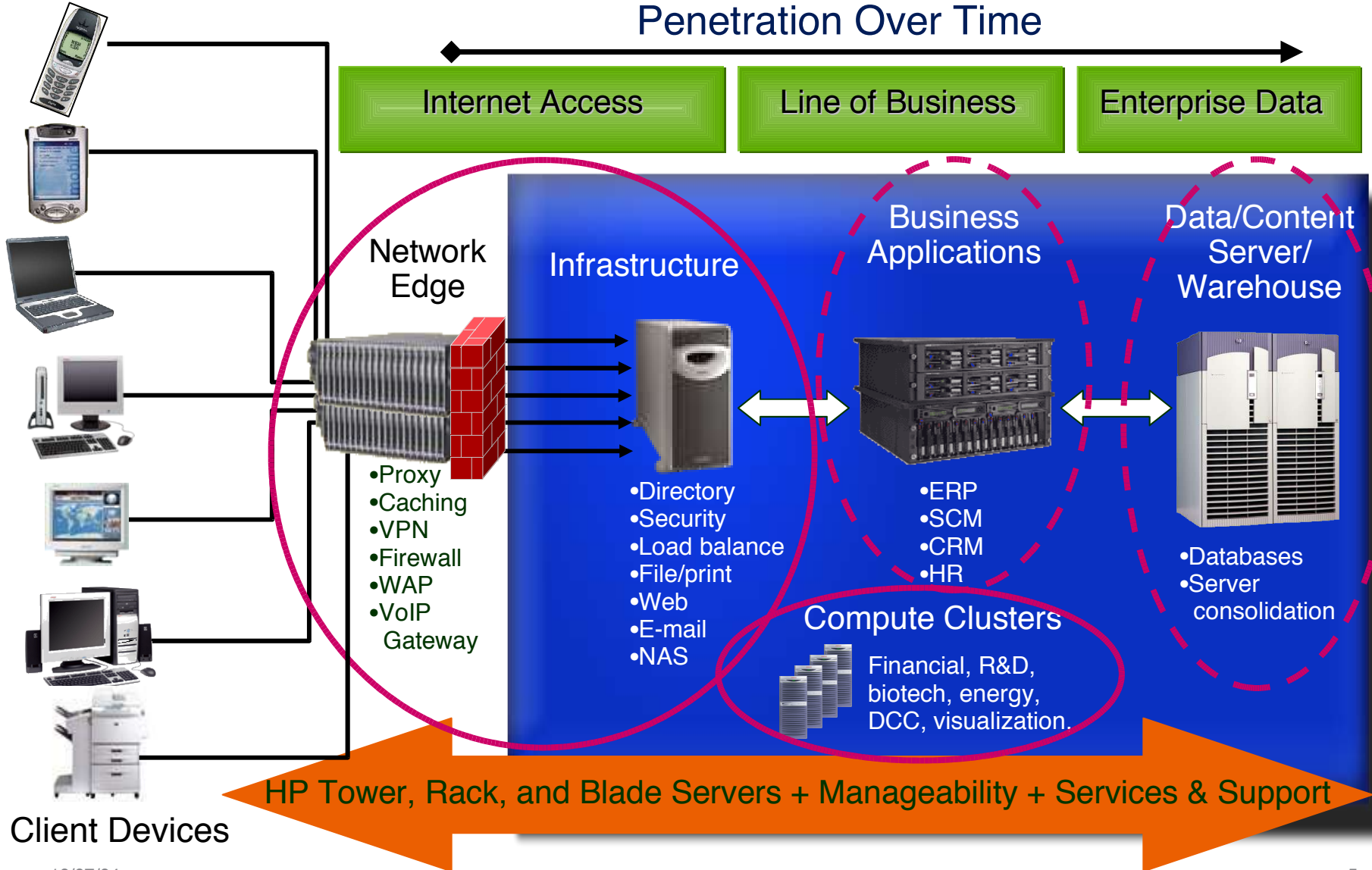
The power of HP's portfolio

Penetration Over Time

Internet Access

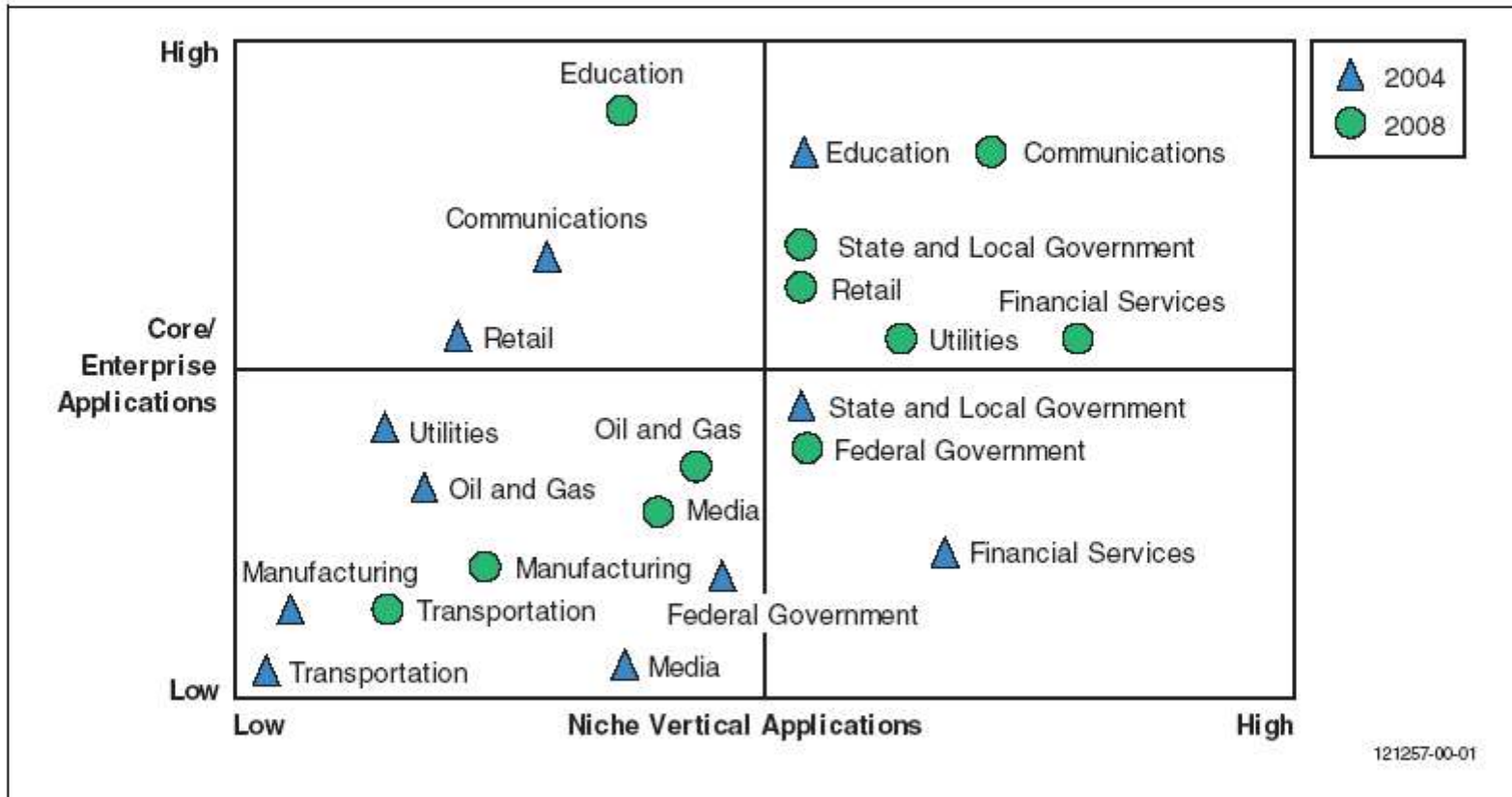
Line of Business

Enterprise Data



Gartner Application Quadrant

Vertical Interest in Linux



Source: Gartner Dataquest (April 2004)

Linux on Client Emerging

Linux Moves In On The Desktop

- Client Linux deployments fuelled by better security, easier management
- Improved ease of use, lower cost, virus protection
- Governments, developing countries, “specialized workers”, and SMB

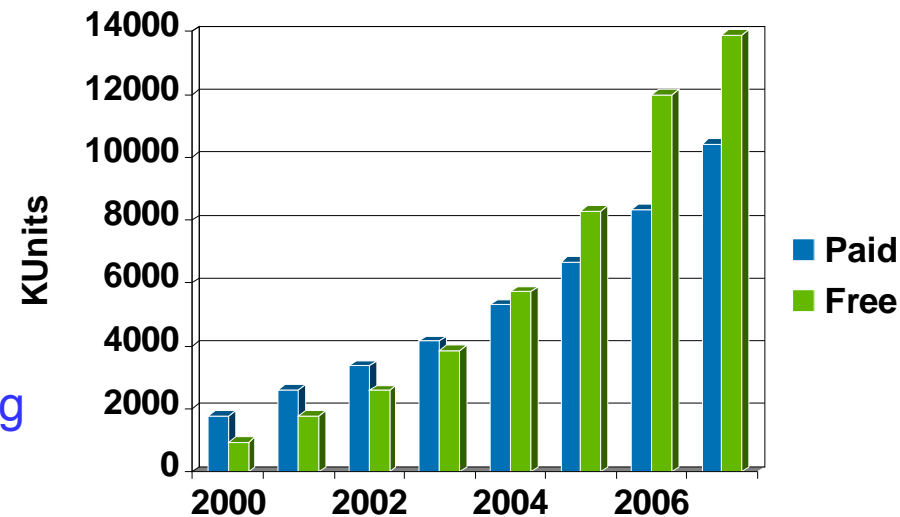
Source: *Business Week February 23, 2004*



“Large corporations are planning on moving huge amounts of desktops to Linux in the next two to three years ...”

Source: *Chris Maresca, Senior Partner, Olliance Consulting Group, Palo Alto, California Computer Reseller News,*

Linux Clients - Paid/Free



Source: IDC, 2003

Worldwide Server Shipments

Linux Surpassing UNIX

2003 TOTAL

Other 8%

UNIX 13%

Microsoft 63%

Linux
16%



UNIX 12%

1H 2004

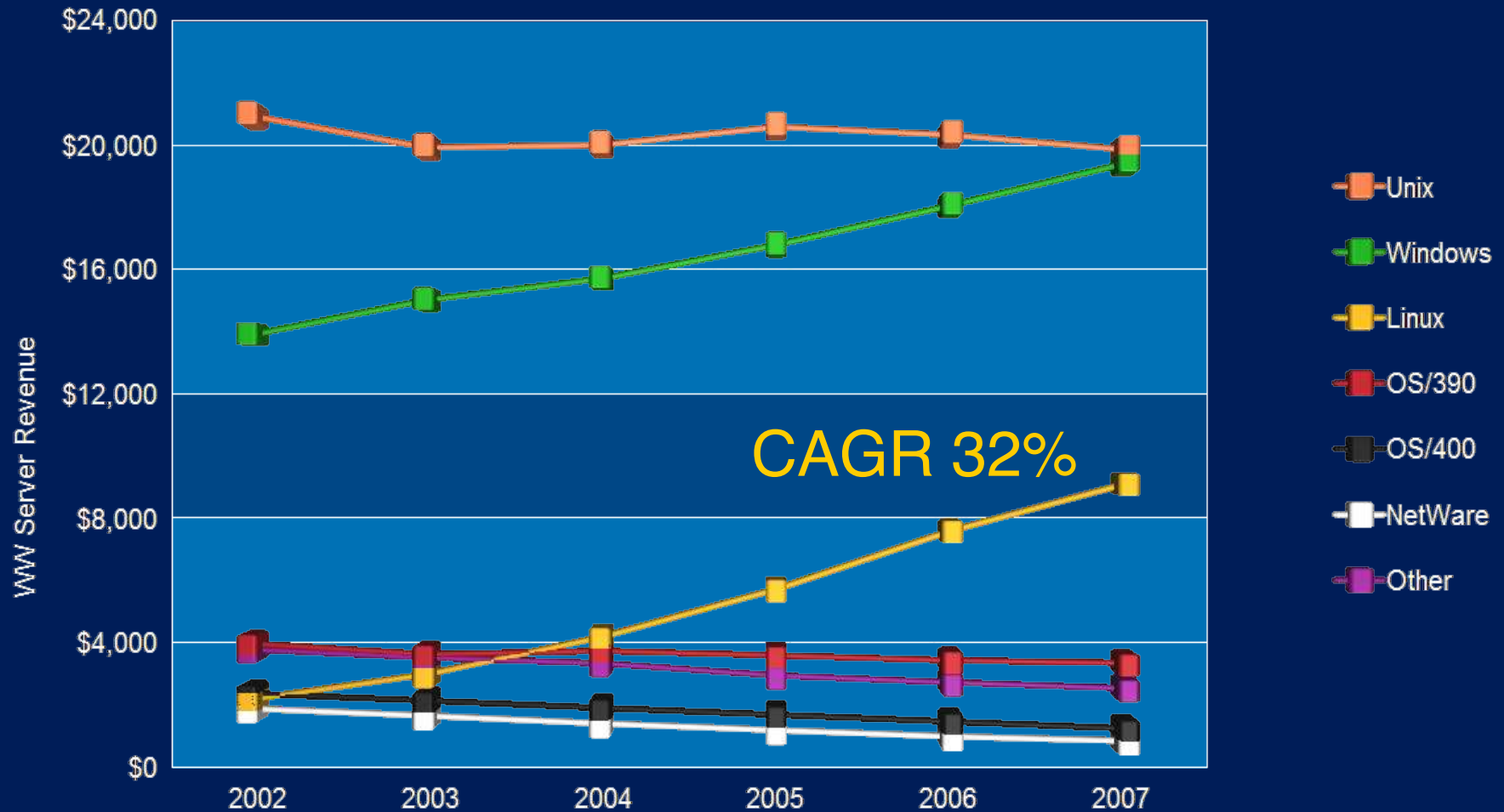
Other 6%

Microsoft 65%

Linux 17%



The Real World: Heterogeneity Persists



Source: IDC 2003

Agenda

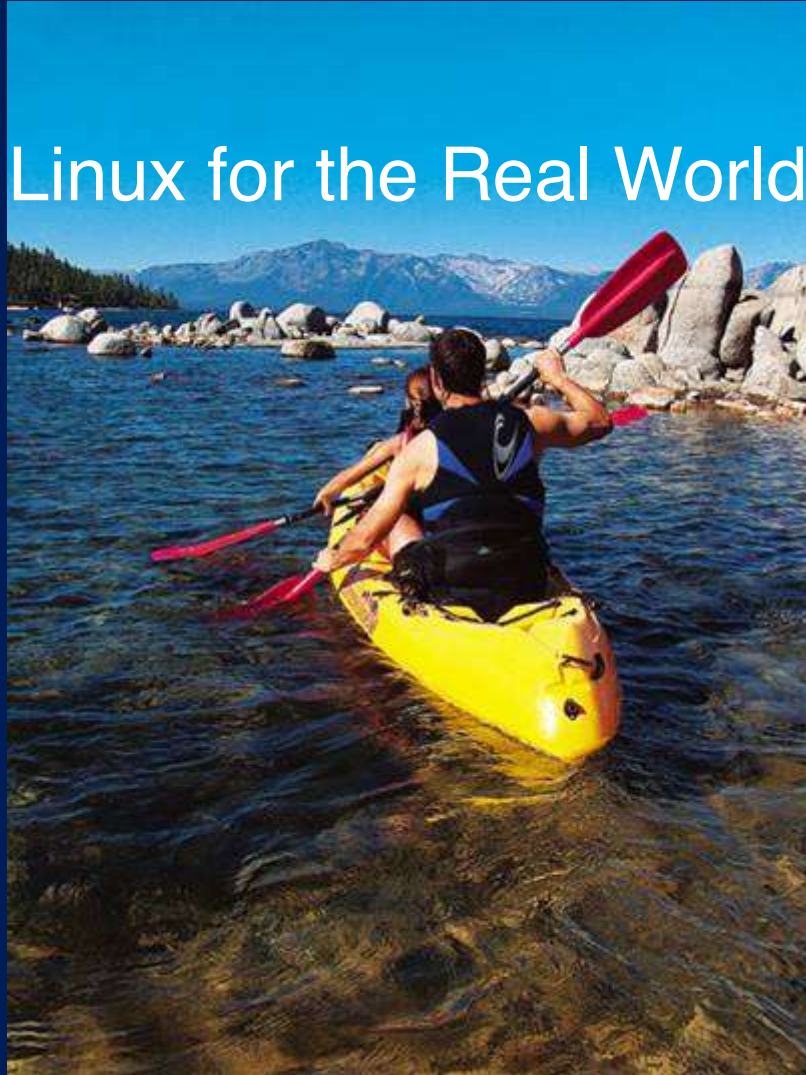
- Linux Market Trends
- HP's Linux Solutions Portfolio
- Customer Implementations



Why Linux on HP



Linux for the Real World



ROI-based Solutions on

- Industry-Standard Systems

Freedom Of Choice from

- Open, Standards-based Software
- Proven Partnerships
- Best-of-Breed Applications

Worry-Free Deployment

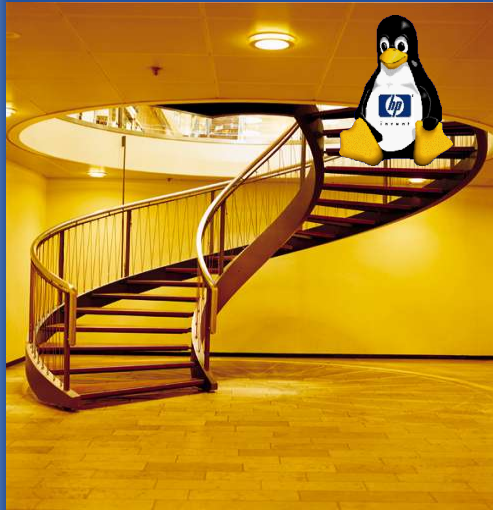
via

- End-to-end Management
- Worldwide Services & Support
- Accountability & Indemnification
- Open Source Stewardship

HP Delivers *Linux for the Real World*



Complete
Solutions



Freedom &
Flexibility



Deployment with
Confidence



Industry-Leading, Open Standard Architectures



Worldwide Linux Distribution



Asianux (and AP support)

- Commercial, Distribution
- Leading Growth Asia
- Regional



- Turbo Linux language support
- Joint HP & MII Linux lab in Beijing



- Distribution on Industry Standard HP ProLiant & Integrity Servers

HP Linux Client Offerings

Pre-Loaded upon Request



Business Desktops



d200/2000 Series
Essential features
at affordable prices



D325 Series
AMD Performance
& outstanding graphics



dc5000
Mainstream Features
and Flexibility



D530 Series
Stable and
Manageable

Business Notebooks



nx5000



nc6000



nc8000



nw8000

Pentium/Xeon Workstations



Power users

Dual-processor
PCI-X; 5 drive bays

High Performance Features & I/O

Greater memory expansion: 4-16 GB

64-bit Extension Technology
32-bit apps run under 64-bit O/S w/o recompile

Professional 2D/quad 2D, 3D OpenGL graphics

Thin Clients



- Xfce Windows for easy configurability
- Altiris Deployment Solution for manageability
- Security through remote BIOS config, hardened user profile, & partitioning

Technical Application Certification

HP's Printer Leadership Extends to Linux

- Unparalleled Support for Over 200 HP Printers
- Only Printer Vendor to Provide Fully Open Source Drivers
- Widespread Coverage of Market Leading HP Printer Portfolio Spans Deskjet, Officejet, Photosmart, Business Inkjet, & Laserjets
- Recently Expanded All-in-One Printer Support For Linux
- Support for All Major Linux Distributions Worldwide
- Breadth, Print Quality, Speed, and Commitment to Open Source Earns HP Highest Rating by www.linuxprinting.org



Linux Reference Architectures from HP

Supported by 6,500 Linux Service Professionals Worldwide



HP Services, Customer Support, Consulting & Integration

Partners

Workload-specific Software



Solution Applications



Value-add/
Completers

Management Tools

HP OpenView / HP Systems Insight Manager

Availability Tools

HP Serviceguard

Backup Tools



Foundation

System Software

agents
drivers
kernel features

Linux Distribution



Hardware Platform

HP StorageWorks

HP ProLiant / HP Integrity Servers

Comprehensive and Accountable HP Services for Linux and Open Source



- Mission critical support
- Proactive planning & assistance
- Reactive multi-vendor hardware & software support

- Planning, implementation, staffing, and ongoing operations

- Linux education & industry (LPI) certification

- OS application porting & migration

- Integration services
- Onsite installation
- Data center services

- Solution design & implementation

- Single point of accountability

- Database apps
- Clustering
- Web infrastructure
- Security
- HPTC, telco, financial services

HP's Linux support services rated "Best Value" by Network Computing



6,500 Trained HP Linux Professionals

HP Delivers *Linux for the Real World*



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Solutions



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Flexibility



Deployment with
Confidence



Industry-Leading, Open Standard Architectures



Commitment to Open Source & Linux

- **Organizational Leadership**

- Sponsorships of Linux International (since 1995), Free Software Foundation, Free Standards Group, Open Source Software Institute, Open Source Dev Labs
- Instrumental to Defining Carrier Grade Linux (telecom)

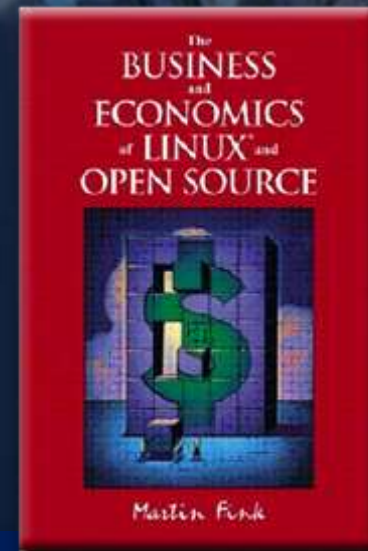
- **Project Development**

- Dedicated HP Linux and Open Source Lab
- Leader in Eclipse Development Environment
- Drove Open SSI Cluster Project
- Founder and Maintainer of handhelds.org
- Intel® Itanium® (IA-64) Kernel Maintenance

- **Individual Community Activism**

- Extensive Support of SAMBA and Apache Projects
- Debian Project Leadership and Maintenance

- See: www.opensource.hp.com



Linux ISV Programs

HP as Linux Partner of Choice



Linux Channel Differentiators

- Compelling and complete Linux customer solutions generating record revenues
- Software stack based on Open Source and commercial software partners
- Aggressive Linux ISV go-to-market programs

ISV Integration on Emerging Linux Platforms

Blade Servers

IPF-based Servers

Opteron-based Servers

HP Linux Reference Architectures

ISV Business Applications

ISV Middleware & Application Infrastructure

HP Software, Servers, & Storage

HP Support and Services

Solaris-to-Linux ISV Program

Migration Assistance

Self-service Linux test beds

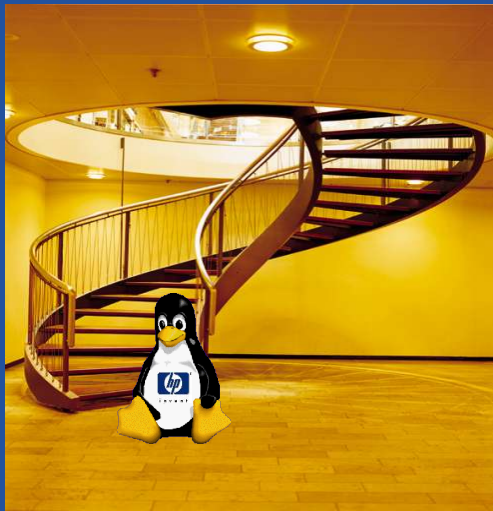
Joint testing & characterization

HP migration services

HP Delivers *Linux for the Real World*



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Industry-Leading, Open Standard Architectures



Indemnification. Deploy not Distress!



- Unprecedented degree of risk protection
- Facilitates customer focus on Linux deployment rather than litigation avoidance
- Helps defend customer from cost and risk of potential SCO lawsuit



The Linux Indemnity Program requires customers to sign an indemnity agreement that outlines the covered claims, rights, and responsibilities of HP and customer. For more details, please visit www.hp.com/linux. HP reserves the right to modify or cancel the indemnity program at any time.

Enhanced Linux Security from HP



HP Committed to Common Criteria Certification for Linux



- CAPP certification increasingly necessary in Government and public sector procurements worldwide
- Red Hat EAL 2 certification on HP ProLiant completed 2/04
- CAPP certification at EAL 3+ complete 10/04
 - Verification on both Red Hat and Novell SUSE
 - HP ProLiant* and Integrity Systems
 - *Opteron and Carrier Grade systems included, plus Red Hat on workstations



Multi-level Security Certification (LSPP) Planning Underway

- Incremental mandatory access controls and labeling
- Supports ultra-high level security for top and ultra top secret clearanc



NetTop – Services-led SE Linux-based Security Solutions

- U.S. Government licensed security technology incorporated into

HP ServiceGuard for Linux

Enabling Enterprise Capability – High Availability Software



- Completely Integrated High Availability Clustering Solution
- Available across HP Storage & Servers
- Provides Efficient, Continuous Access to Mission-critical Applications, Information, & Services

Designed, Developed, Delivered & Supported By



Bringing Enterprise-Strength High Availability to the Linux Platform

HP Systems Insight Manager

Comprehensive and complementary systems management



Enterprise management integration modules

- HP OpenView
- Tivoli
- CA
- BMC

HP Systems Insight Manager core services

Discovery, inventory, fault management, enhanced security, roles, distributed tasks,....

Server management

Storage management:
CommandView

Client management:
Client Manager

Printer management:
Web JetAdmin

And more...

Workload Management

Security Management

Deployment

Cluster Management

Performance Management

System-specific Administration

Partition Management

3rd Party/
Home grown

Breadth of hardware

Adaptable to your environment



Complete life-cycle management

HP Factory Express for Linux

- What is it?
 - A comprehensive portfolio of configured, customized, integrated factory solutions and deployment services for customers and partners
- What products are supported?
 - Desktops, notebooks, workstations, handhelds, tablet PCs, thin clients, imaging and printing, OS, software, servers, storage, and qualified 3rd party options

Factory Express Offerings

System Customization

- Custom System Settings
- Hardware Integration
- Rack Integration & Cable Mgmt
- Software Application Load
- Special Packaging
- Asset Tagging & Labeling

Available worldwide – regional differences apply

Image Management

- Image Development
- Image Recovery

Solution Services

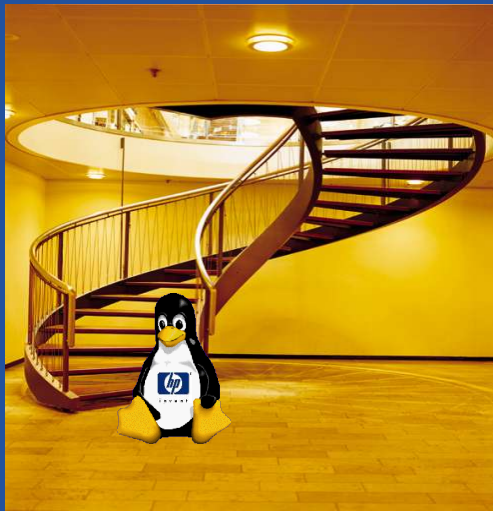
- Project Management
- Engineering
- Onsite Set-up & Turn-on



HP Delivers *Linux for the Real World*



Complete
Solutions



Freedom &
Flexibility



Deployment with
Confidence



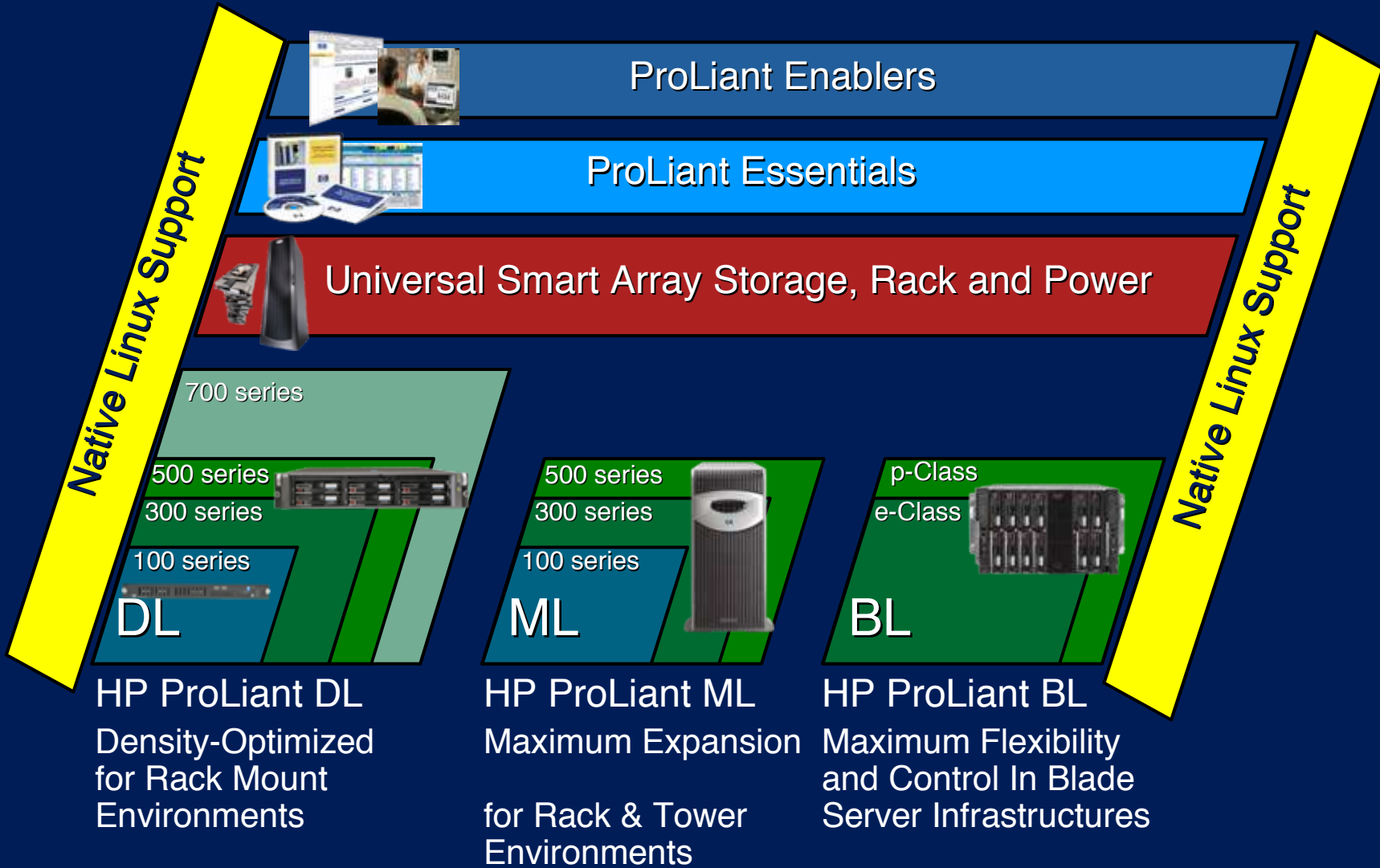
Industry-Leading, Open Standard Architectures



HP ProLiant Server Family

Industry Standard Tools for Ultimate Linux

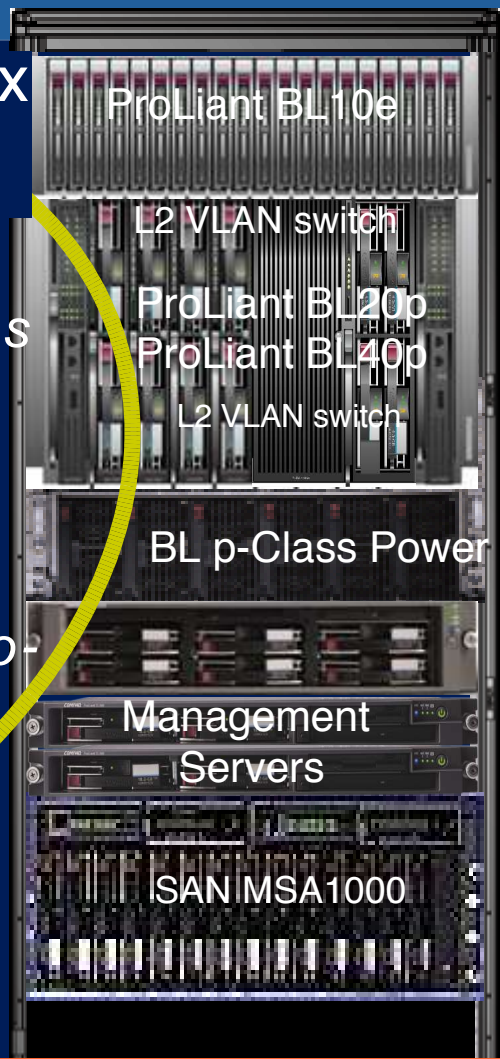
Price-Performance within an Adaptive Enterprise



HP Linux Blades Offer Massive Savings



Sun SMP Architecture



HP Blade Architecture

Solaris to Linux Migration

Increase Business Effectiveness

Improved Service Management

Resources on Demand

Faster Time-to-Market

Reduced Operational Costs

Significant Cost Savings (50-70%)

Linux Supported as Tier 1 on ProLiant



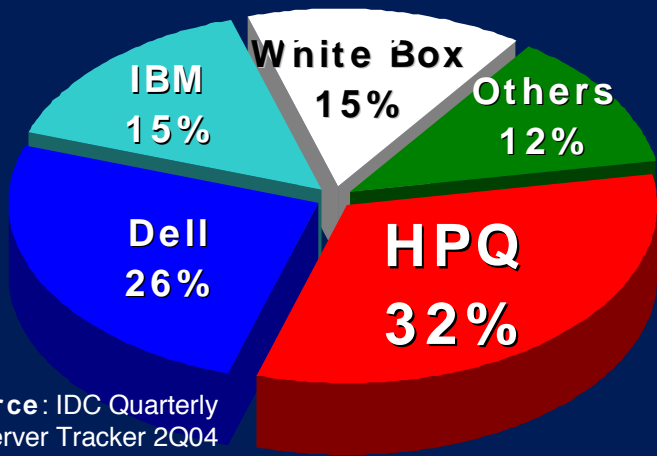
- Comprehensive Set of Complementary Base OS Drivers & Installation Scripts
- Unprecedented Array of On-line Productivity & Serviceability Tools
- Out-of-the Box, Best in Class Management
- High Availability Options



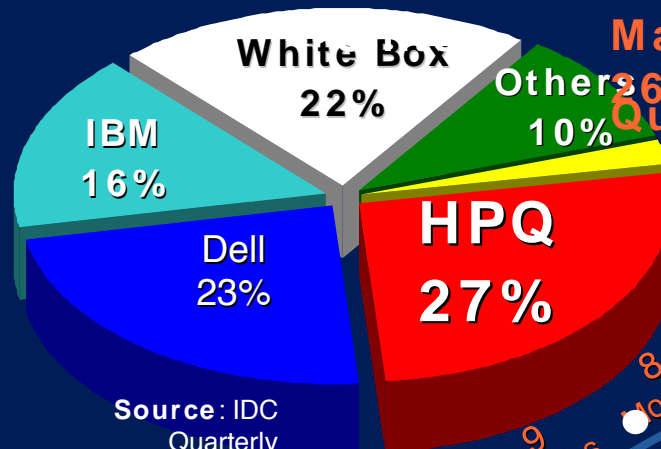
HP Industry-Standard Servers Undisputed Volume Leader Worldwide



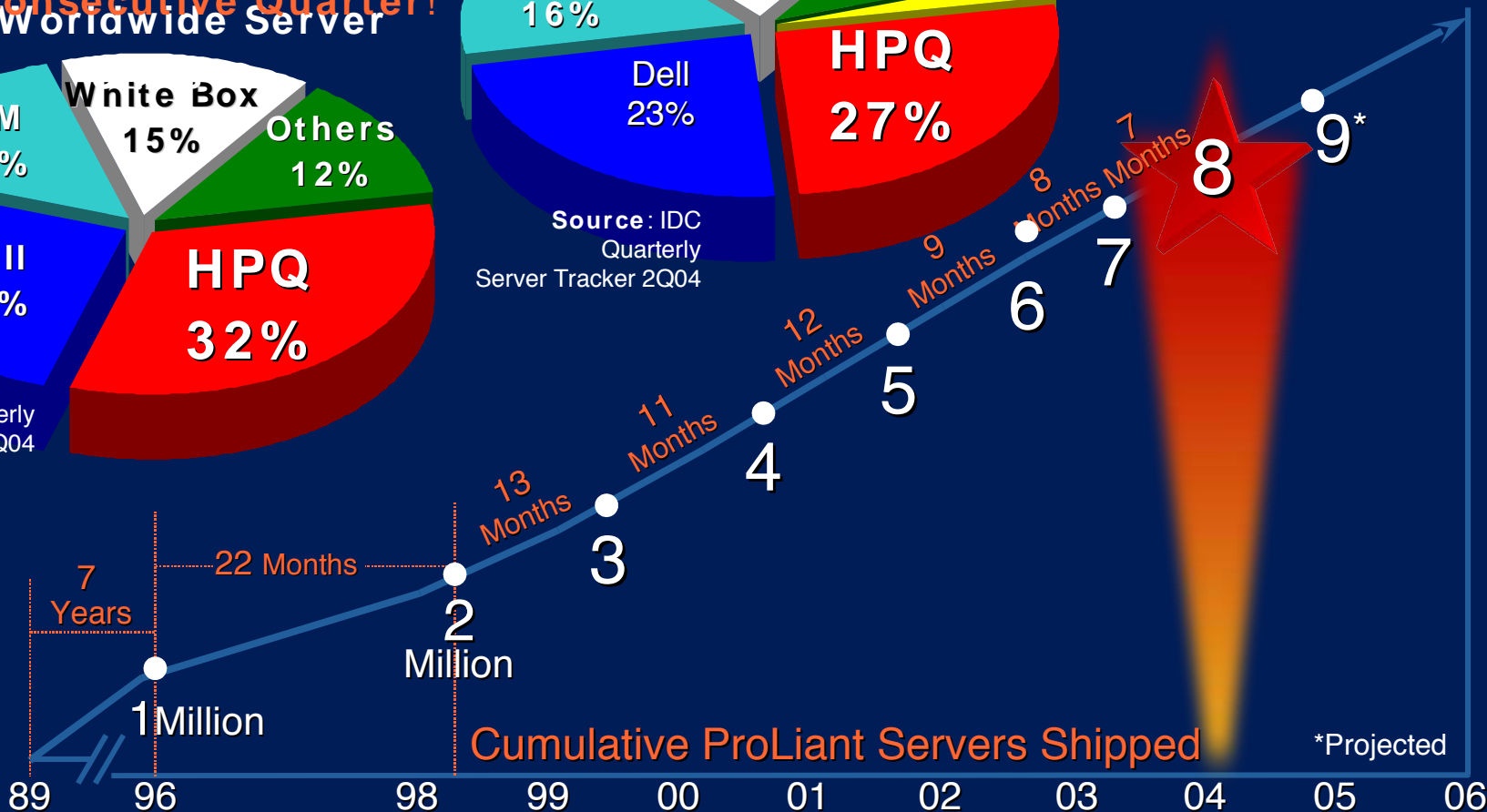
Market Share Lead for 34th Consecutive Quarter!
x86 Worldwide Server



Linux-based TOTAL Server



Market Share Lead for 26th Consecutive Quarter!



HP Integrity Servers: 64-bit Linux Leadership

Now available for the mid-range and high-end



Delivering performance and enterprise adaptability for the Linux customer

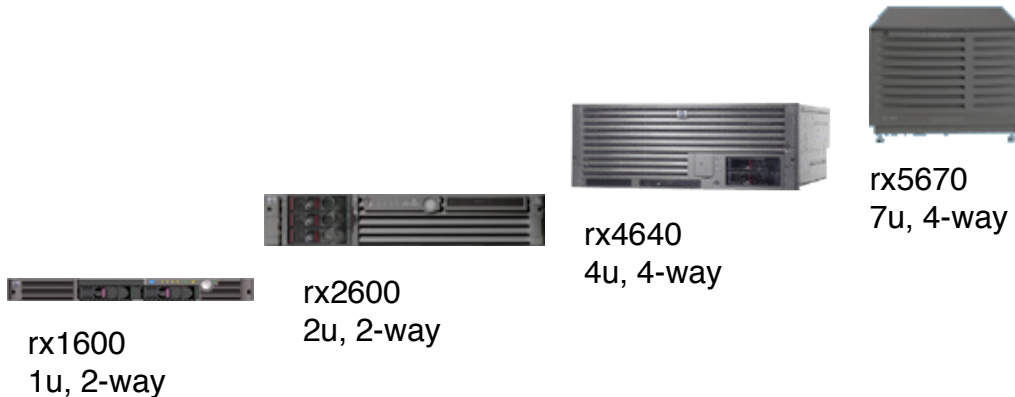


Entry-level servers



- SUSE LINUX and Red Hat shipping and available
- Numerous customer successes

<http://www.hp.com/products1/itanium/testimonials/index.html>



Integrity cx2600 – the first Itanium 2 for Telco
NEBS-Compliant for Demanding Telco Environments
4u, 2-way



Mid-range and high-end servers



rx7620
9u, 8-way

rx8620
17u, 16-way

Superdome
64-way

- Investment protection for Integrity customers
- Hard partitions (i.e., nPars) now shipping

Red Hat Enterprise Linux AS
3
HP-UX 11i
Windows Server 2003

HP Integrity Servers and Linux

Linux Supported as Tier 1 on Integrity



- Performance Leadership
- Enterprise-Class Flexibility
- High Production Capability

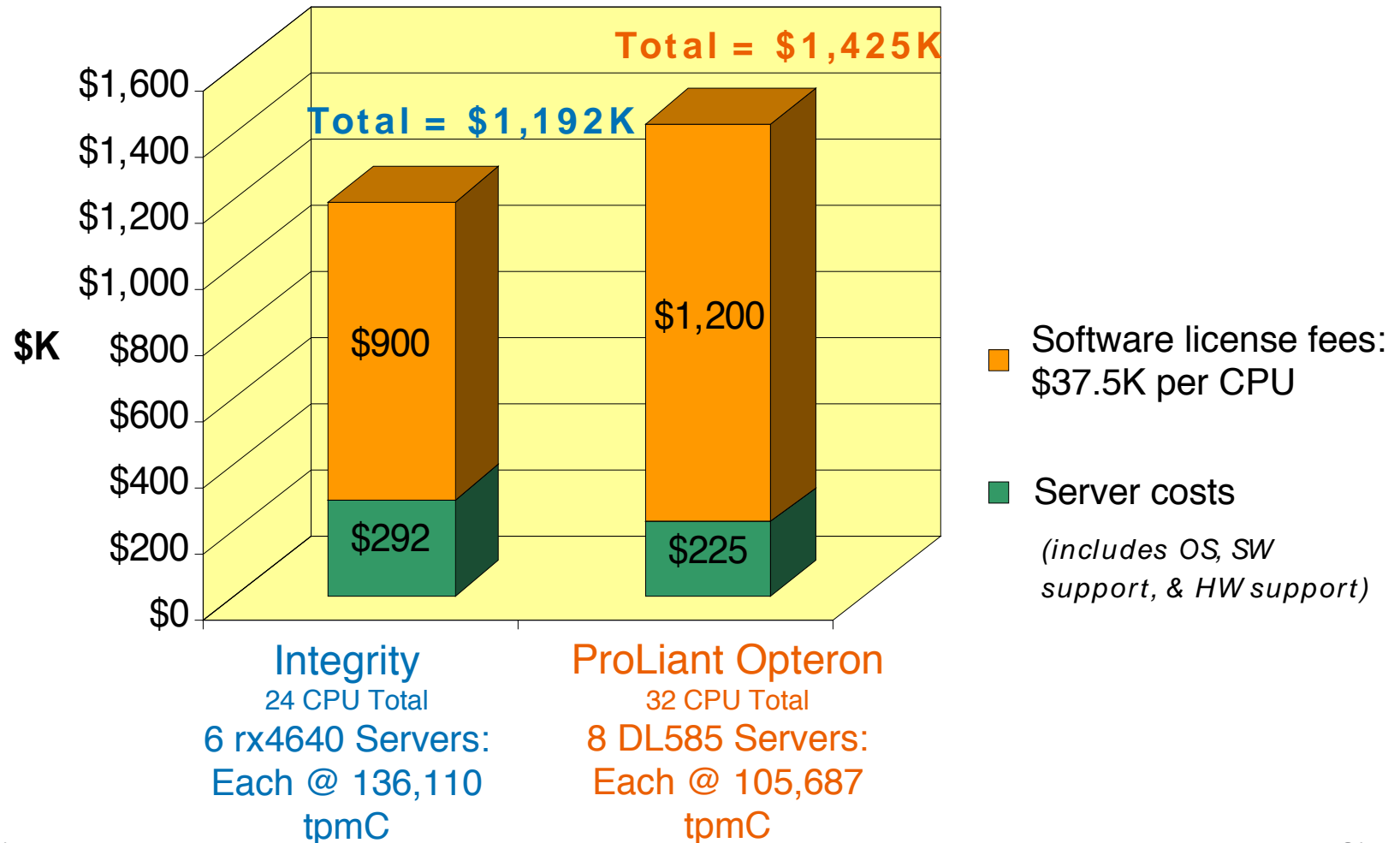




Total Solution Costs Comparison

Greater Processor Performance yields 29% Advantage for Integrity

Customer Requirement: 800,000 transactions/minute



Agenda

- Linux Market Trends
- HP's Linux Solutions Portfolio
- Customer Implementations



Sabre Holdings

Transportation Industry

Highly Transactional Airline Reservation System

Long-Term Migration of Mainframe Applications



The HP Difference:

- Vigilant Customer Support and Global Capabilities
- HP Linux Value Proposition within Heterogeneous Solution
- One-Stop Shopping / Accountability from Desktop to Datacenter



Customer Business Challenge

- Cost-Effectively Manage Exponential Surge in Transactional Activity
- Preserve System Reliability for Core eCommerce Business
- Horizontal Scalability to Accommodate Growth

Solution

- 28 PA-RISC & Multiple NSK S86000s Servers w/NS ZLE SW
- Cluster of 45 HP Integrity rx5670 Linux Servers
- 100 Clustered MySQL DB tables replicated 7X24

Results

- Lowered total cost of ownership through mainframe downsizing & workload segmentation across Linux, HP-UX & NSK
- Faster customer fulfillment & increased customer sat

Customer quote

By moving our core reservations operations from mainframes to Intel-based servers from Hewlett-Packard, we have been able to increase capacity as well as lower programming costs.

Bob Offutt, Senior Vice President and Chief Architect at Sabre Holdings

Fiat

Automotive Industry

Worldwide Process Integration as Competitive Edge

Simultaneous Service Innovation and Cost Containment



The HP Difference:

- HP Industry Experience and Vision
- Top Notch Hardware, Software, and Services Solution
- Partnership Focus on Meeting Our Business Needs



Customer Business Challenge	Solution	Results
<ul style="list-style-type: none">• Commodity-style competition• Costly distribution and channel inefficiencies• Differentiation in quality and service	<ul style="list-style-type: none">• 2 rx5670 & 2 rx2600 Integrity Servers, StorageWorks VA 7410, 1TB, Red Hat Enterprise Linux 2.1, Oracle 9iRAC• Oracle 9i App Server, Apache Web Server on ProLiant Servers• HP Services for planning, design, SI, EAI consulting, testing and implementation.	<ul style="list-style-type: none">• Streamlined buying process, improved customer loyalty, lower cost of sales• Customer-centric distribution to fuel sales and market share• Integration across 5,800 retailers to trim inventory costs

Customer quote

Our partnership with HP enables us to innovate not only in cars, but also in service. Our HP consultants have provided us with the best hardware and software solution. They also bring us HP's industry experience and vision. HP has steered us onto the right road — one that is wide open to the future."

Claudio Javier San Pedro, Vice President, WW Sales and Marketing Fiat's Business Unit

DreamWorks

Media and Entertainment Industry

The HP Difference:

- HP's commitment and expertise to Linux platform
- HP's engineering of 3D OpenGL/Linux platform solution
- HP's total solution for 2D, 3D, & rendering platforms for Linux



Customer business challenge

- Create higher-quality, more realistic animated films while cutting production time and costs

Solution

- High-performance Linux-based workstations & servers
- HP custom support for dual-head high-performance Linux graphics

Results

- Animated motion pictures taken to new level of realism
- More computing flexibility from ability to run Linux & Windows-based apps on same machines
- Systems no longer constraining animators'

Customer quote

“HP technology has enabled us to meet or exceed our artistic staff’s creative appetite so they can continue to raise the bar – creating richer, more visually compelling movies.” Skottie Miller, Senior Technologist, Feature Animation, DreamWorks SKG

WhiteCross Systems

Business Intelligence for Blue Chips



Blade Server Farm for Analytical Services

Migration from Proprietary to Industry Standard Architecture

The HP Difference:

- Open, Industry Standard Platform, consistent w/Linux value prop
- HP Services -- Treatment like Genuine Partner
- HP Project Management



Customer Business Challenge	Solution	Results
<ul style="list-style-type: none">• Smooth transition from company-developed Blade Server architecture• Improve data processing efficiency• Optimize MPP database development focus	<ul style="list-style-type: none">• Blade farm base on HP BL20p Servers• Red Hat Linux Distribution from HP• HP Consulting and Integration Services	<ul style="list-style-type: none">• Vastly improved Information processing (30x -- 15B rows of data per second)• Better flexibility, scalability, ease of design & operation, & security• Significant cost savings (reduction from 1000 to 300 servers)

Customer quote

HP has proven the perfect partner in this project. The support has been exceptional and we now have a guaranteed product roadmap that will help us to provide the best possible service to our customers, now, and in the future.

Roger Gaskell, Development Director, WhiteCross Systems

HP's Own Adaptive Enterprise with Linux

5,000 Systems and Growing ...

Incoming Email (3TB/year) Routed Through *RIM* Gateways

Core DNS Infrastructure (~100 systems)

Clustered Enterprise Directory (www.ldap.hp.com)

DHCP/IP Address Management

Network Time (NTP Critical Element to HP Infrastructure)

Internal & Secure Instant Messaging Network (Jabber)

Electronic Design Automation [Synopsys, etc.]

Utility Data Center Deployment (including 36-Node IA-64

Linux Cluster for HP Labs Research Computing)

Oracle 9iRAC Application Testing & Validation for

Production Deployment



hp Linux Market Leadership

\$2.5B of Business and Growing

Winning Deployments

- **# 1** in Worldwide Linux Server Revenue and Units¹ for *Past Two Years*
- **# 1** in x86 Worldwide and Linux Server Units and Revenue¹
- **# 1** in Itanium Unit and Revenue Market Share¹
- **# 1** in Disk Storage Revenue²
- **# 1** in SAN Revenue²

1 in SAP Installations >40%³

Winning Performance

- **Best** TPC-C Performance : 1.18M tpmC⁴
- **Best** TPC-C 4-way performance: 136K tpmC⁴
- **Best** TPC-C Price/performance: \$1.61 tpmC¹⁰
- **Best** TPC-C 64-bit Price/performance: \$1.80 tpmC¹¹
- **Best** TPC-H: 22,387.9 QphH⁴
- **Best** Multiple Node Performance⁵ (IA32): 1,165 TOPS
- **Best** Dual Node Performance⁶ (IA32): 431 TOPS
- **World Records** for SPECfp @2161 (IA64)⁷
- **Unique Blade Server Performance:** SPECweb99_SSL – 1340 on BL20p⁸
- **50% Better** Sendmail Performance than SUN at 40% of Price⁹

¹ IDC Worldwide Quarterly Server Tracker, August 2004

² IDC Worldwide Quarterly Disk Storage Systems Tracker, March 2004

³ SAP 2004

⁴ www.tpc.org Integrity rx5670, Red Hat Enterprise Linux 3, Oracle 10g

⁵ SPECjAppServer2002, ProLiant DL370 G3, Red Hat Advanced Server 2.1, Oracle App Server 10g (39% higher performance than IBM)

⁶ OASB, ProLiant 2-node 4 way DL580G2 (53% less cost than Sun/Solaris for 9i and 31% better performance)

⁷ <http://www.spec.org/cpu2000/>, rx4640, I2 (1.5GHz), 1/04

⁸ <http://www.spec.org/cpu2000/>

⁹ ProLiant vs. Sun/SPARC Internal HP testing

¹⁰ ProLiant ML350 using Novell SLES 9, 7/04

¹¹ Integrity rx2600 RHEL 3 using Oracle DB Std Edition, 10/04

ProLiant & Integrity Linux Price/Performance Leadership

TPC Transaction Processing
Performance Council



32-bit TPC-C leadership

1 x86 Price/Performance



- **\$1.61/tpmC** @ 18,661 tpmC
 - ProLiant ML350 (1x 3.06GHz Xeon)
 - SUSE LINUX Enterprise Server 9
 - IBM DB2 UDB Express Edition v8.1
- #1** price/performance on IBM DB2

64-bit TPC-C leadership

1 non-x86 Price/Performance



- **\$1.80/tpmC** @ 51,506 tpmC
 - Integrity rx2600 (2x 1.3GHz Itanium 2)
 - Red Hat Enterprise Linux 3
 - Oracle DB 10g Standard Edition
- #1** price/performance on Oracle
The **first** 64 bit result in Top 10

Summary:

HP Delivers Linux for the Real World

Complete Solutions

- Comprehensive Linux Ecosystem
 - Best of Breed Technology
 - Linux Reference Architectures
 - Robust HP Services Portfolio Worldwide
- 

Freedom & Flexibility

- Commitment to Open Industry Standards, not proprietary architectures
 - Maximized Value of Vendor & Partner Independence
 - Open Source leadership to preserve 'free' Linux
- 

Deployment with Confidence

- Market Leadership
 - Maximum OS and ISV Partner Reach
 - Enterprise-Strength Manageability
 - SCO Indemnification
 - Common Criteria Certification
- 

Industry-Leading, Open Standard Architectures





Check us out at:

www.hp.com/linux





i n v e n t