

Winning with HP Industry Standard Servers

Itanium Roadmap and Strategy

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Intel® Itanium® processor provides higher performance than RISC architectures



intel®
invent

Next generation

Performance



Itanium® architecture
Explicitly Parallel
Instruction Computing (EPIC)

Superscalar RISC
 ≈ 2 instructions/cycle

RISC
 ≤ 1 instruction/cycle

CISC

.3 ins/cycle

1 micron -> .5 micron --> .35 micron --> .25 micron --> .18 micron --> .13 micron

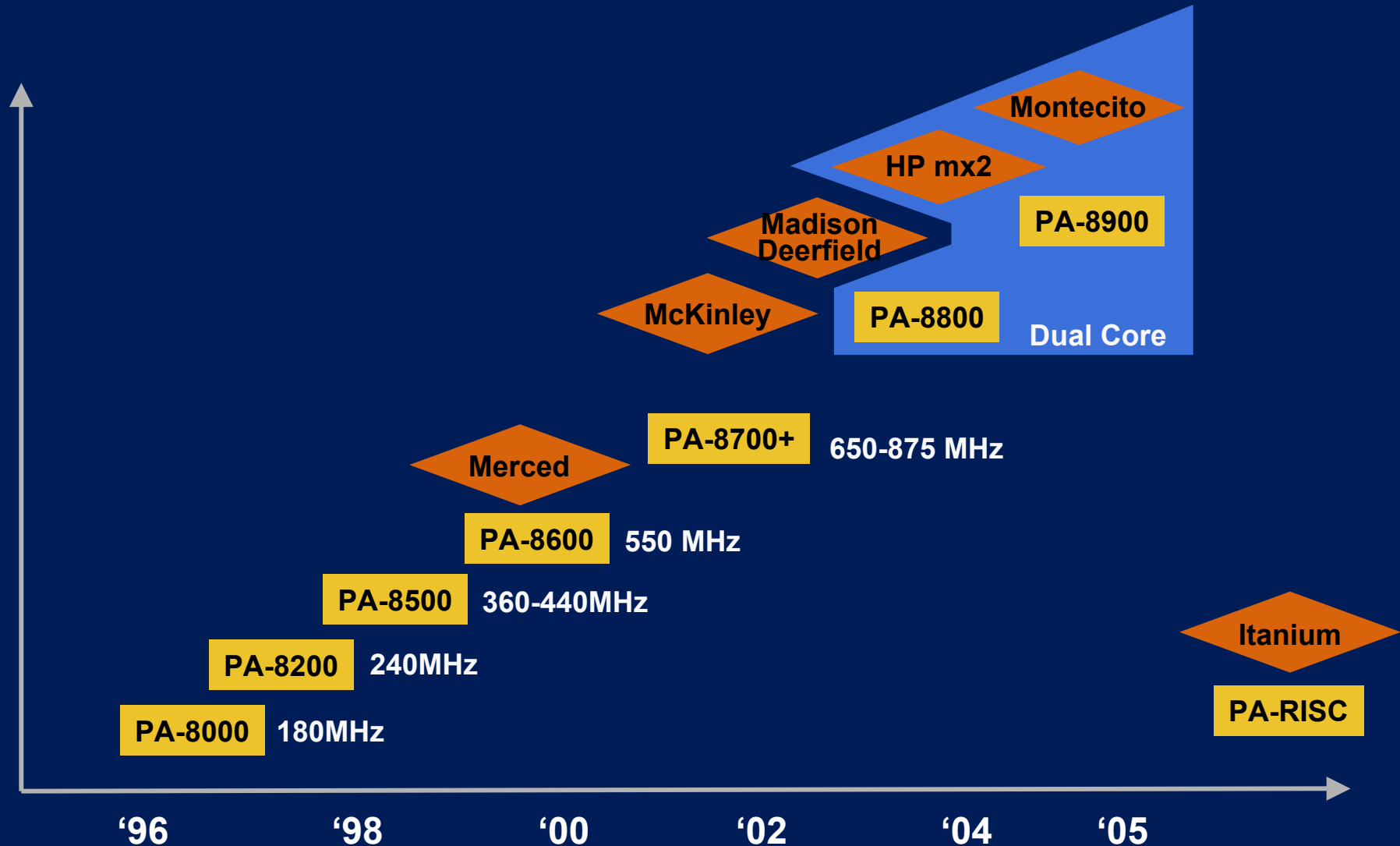
20-30% increase per year due
to advances in underlying
semiconductor technology

Time



Microprocessor roadmap

HP 9000 and HP Integrity servers



Processor count doubles with dual core

PA-8700+

Superdome 64-way



128-way

rp8400 16-way



32-way

rp7410 8-way



16-way

rp5470 4-way



8-way
new 4U chassis

rp2470 2-way



4-way
new 2U chassis

Today

Q1 2004

Q2 2004

Operating environment strategy

Access services

- Applications
- Customization

Application services

- Applications
- Flexibility
- Scalability

Database services

- Applications
- Scalability
- Mission critical



Linux open source community leadership for optimized solutions spanning the enterprise: from secure Web serving to supercomputing clusters



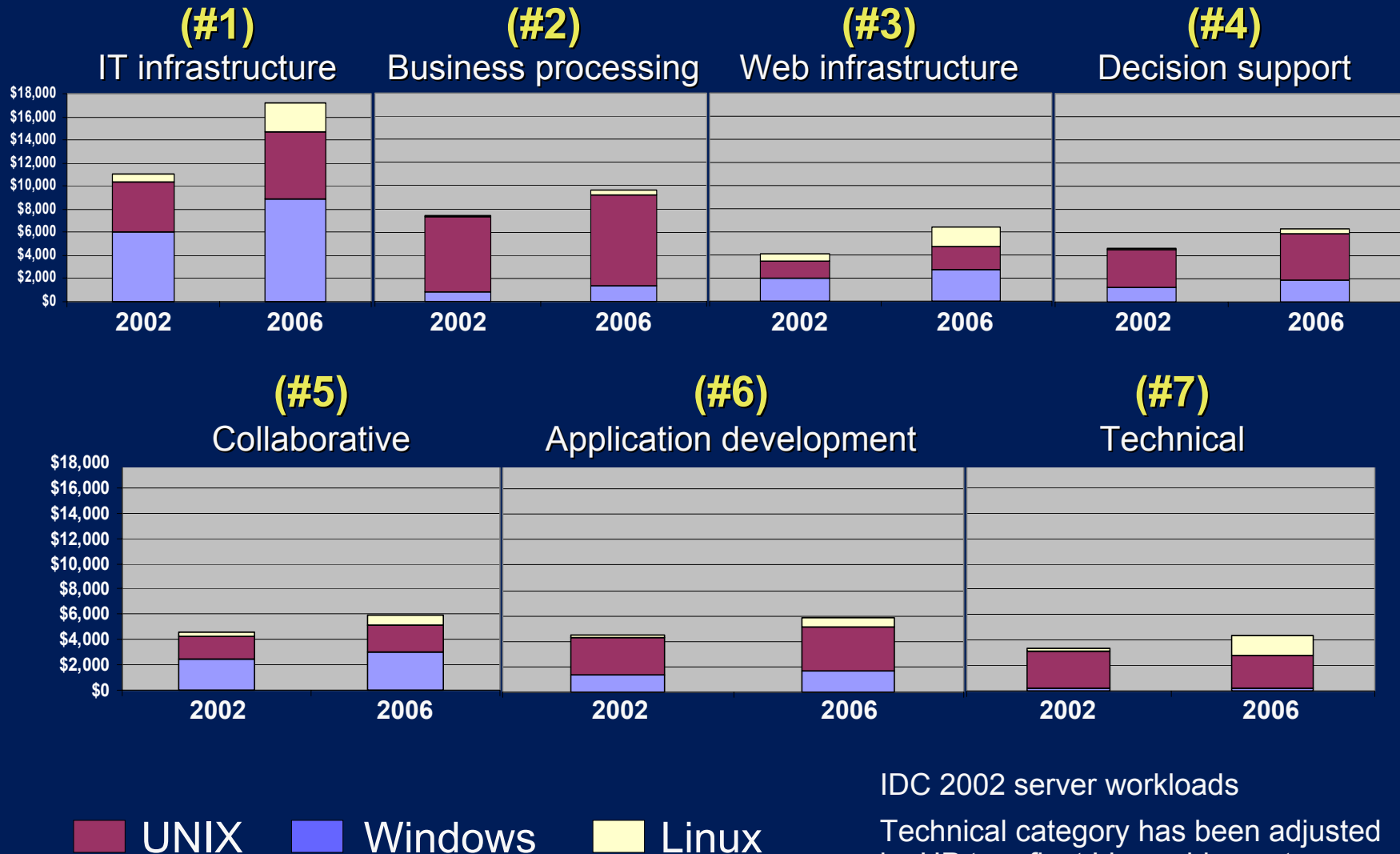
Fully-supported Windows Advanced Server LE provides #1 performance to extend Windows further into the enterprise



HP-UX 11i v1.6: leading price/performance with proven performance scalability, security, and reliability; seamless migration from RISC

With Itanium 2-based systems, Windows and Linux further extend into the enterprise and HP-UX 11i becomes more pervasive across the enterprise.

IDC workloads: 2002 and 2006 (\$ millions)



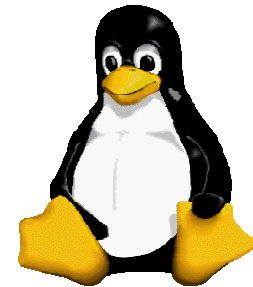
IDC 2002 server workloads

Technical category has been adjusted by HP to reflect Linux shipments

HP is the leader for every customer choice



HP is the market leader in all three...



we are executing aggressive programs –
driving for leadership in
UNIX[®], Windows[®] and Linux[®]!

HP and Windows

*707,102 tpmC @ \$9.18/tpm
on 5/20/2003*

“About half of funnel activity
for Superdome/Itanium is on
Windows or mixed HP-UX and
Windows in the same frame”

Steve Ballmer, CEO of Microsoft,
announces the general availability
of Windows Server 2003.

San Francisco
April 24, 2003



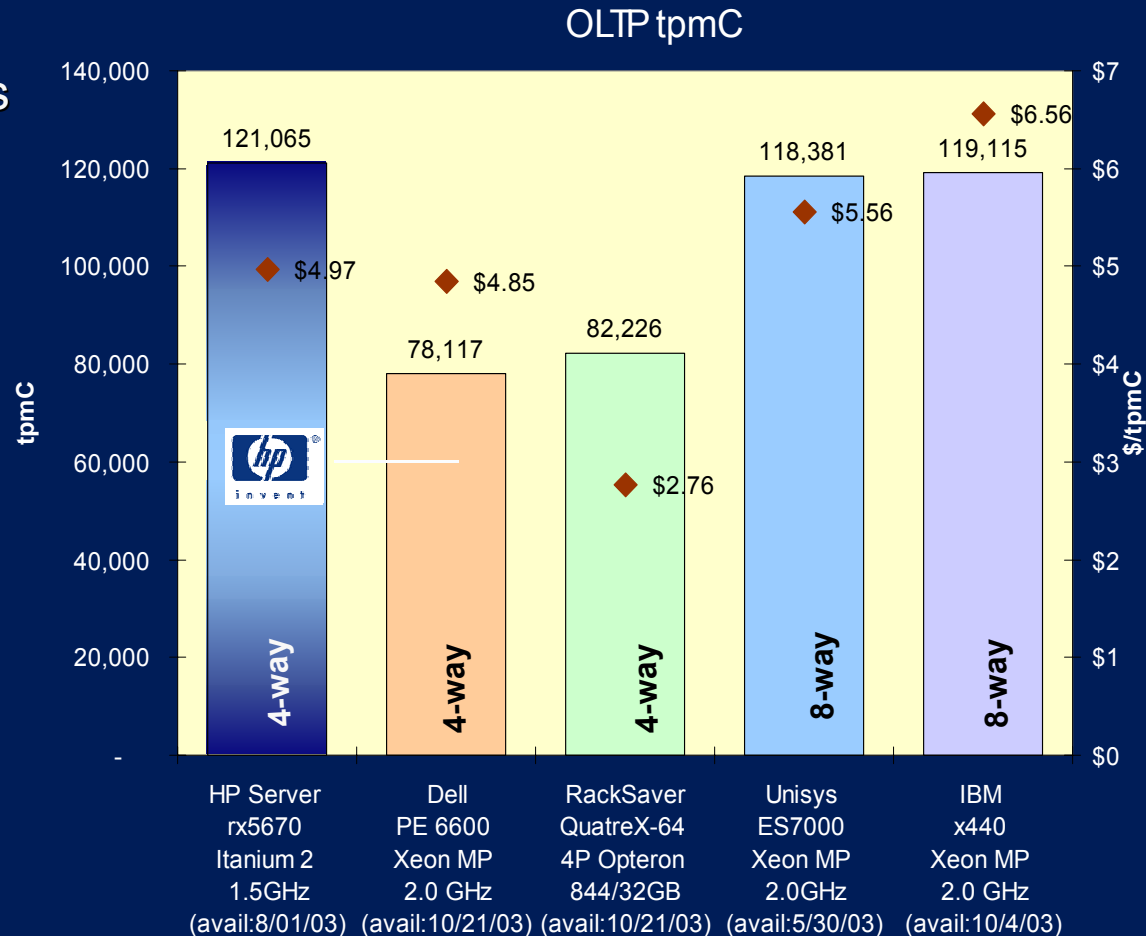
HP rx5670 — leadership TPC-C performance and price for performance

HP Server rx5670 with next generation Itanium 2 processors and 64-bit Windows delivers an unparalleled combination of database performance AND price for performance

- #1 published 4-way performance at **121,065 tpmC**. Results top all other 4- and 8-way server architectures¹.
- Exceptional performance, at an excellent 4-way price for performance² of **\$4.97/tpmC**.

¹ HP server architecture is Itanium-based, Dell, IBM and Unisys are IA-32, RackSaver is Opteron

² HP, Dell, IBM, Unisys and RackSaver results on Windows



Data as of April 24, 2003. See complete results at www.tpc.org.

HP and Linux: Extending the lead for HP Integrity systems



Targeted markets for 2003

- HPTC – technical market growing fast at Sun's expense
- Java – deployments with BEA WebLogic
- Larger database – Oracle, Sybase, DB2, ...
- SAP R/3 4.6 – first customer shipments
- Linux bias: Government, Telco

Delivering customer value

- Dedicated Linux division
- Itanium kernel development and maintenance
- David Mosberger at HP Labs is the primary architect of the IPF Linux kernel and is the maintainer of the Linux kernel on IPF
- Numerous HPTC customer successes



"World's best UNIX"

Ranked #1 in all five categories

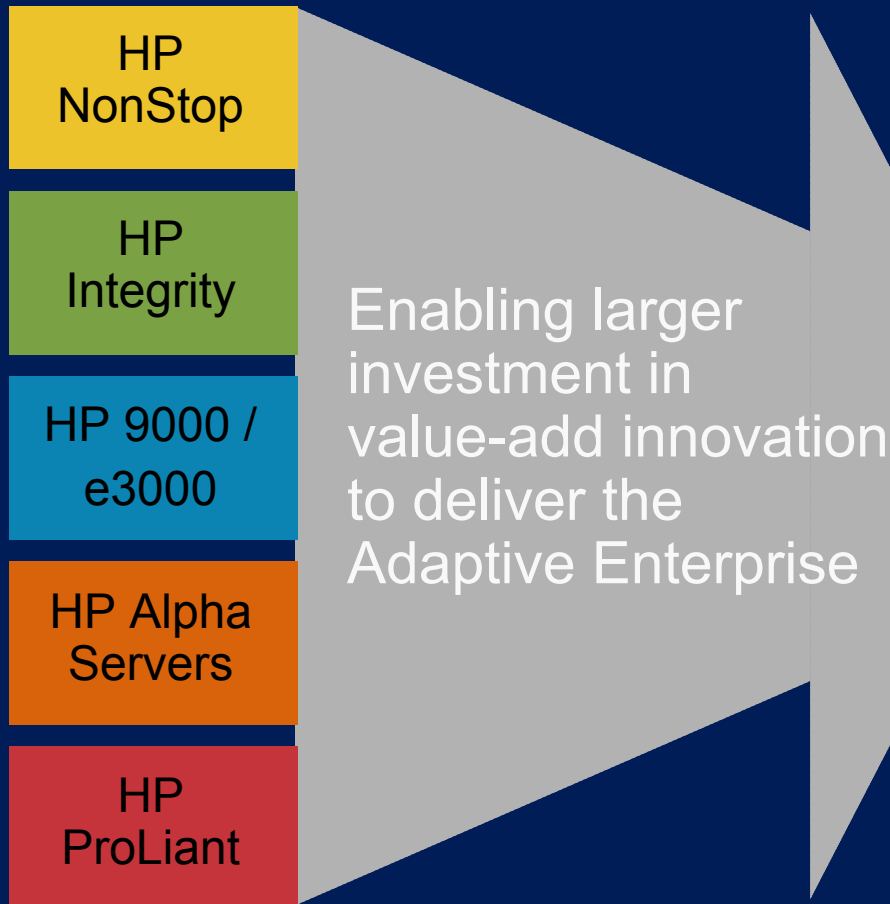
- Scalability
- Reliability, availability and serviceability
- Systems management
- Internet and web application services
- Directory and security services

2002 UNIX Function Review

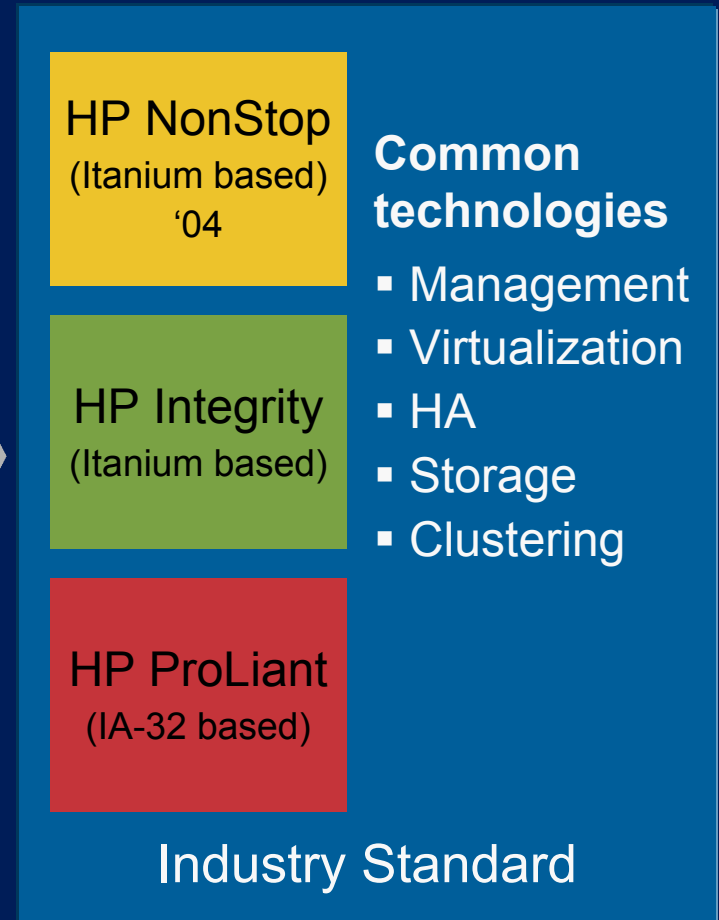
D.H. BROWN
ASSOCIATES, INC.

Moving to 3 leadership product lines – built on 2 industry standard architectures

Current

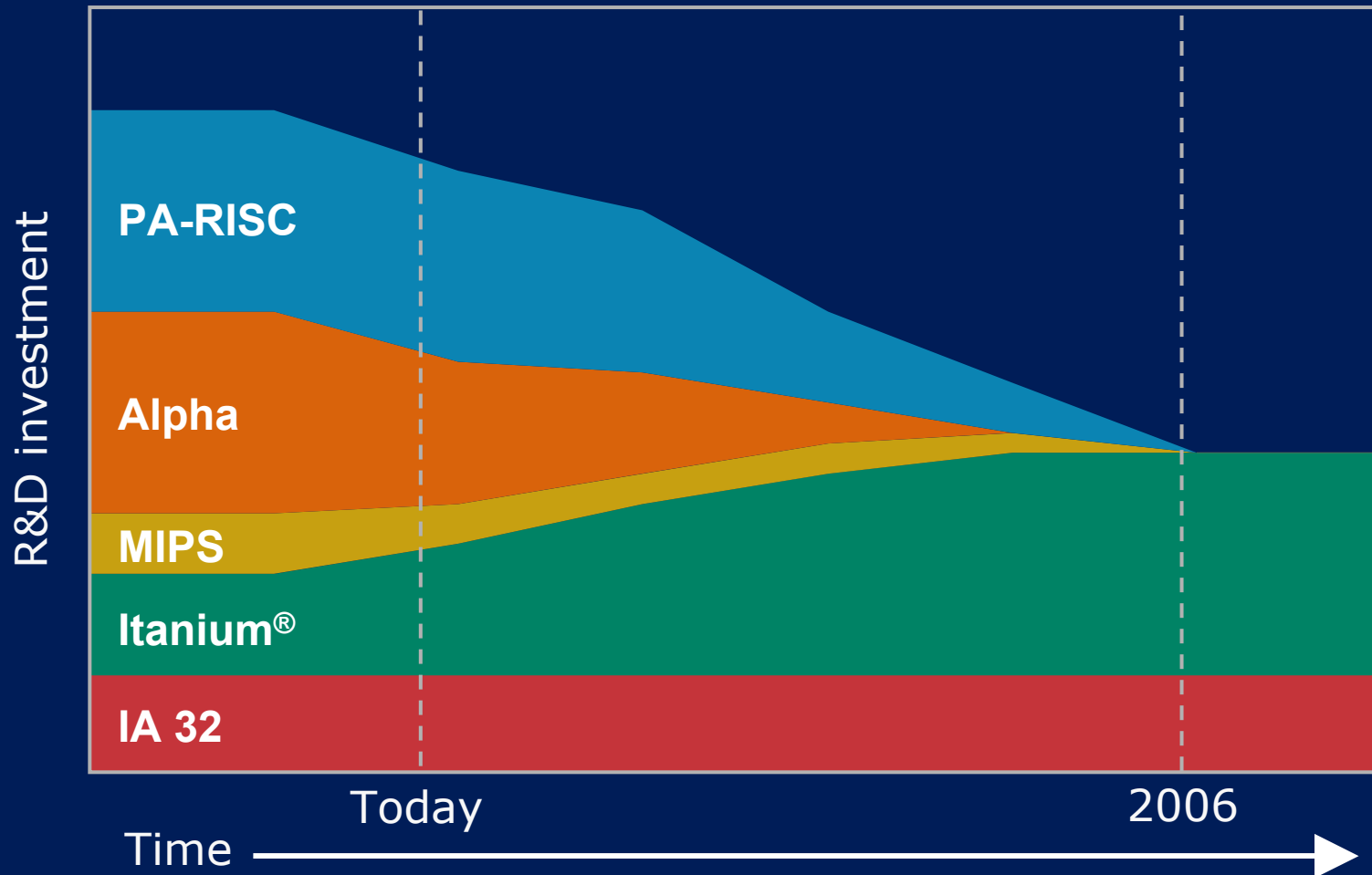


Future

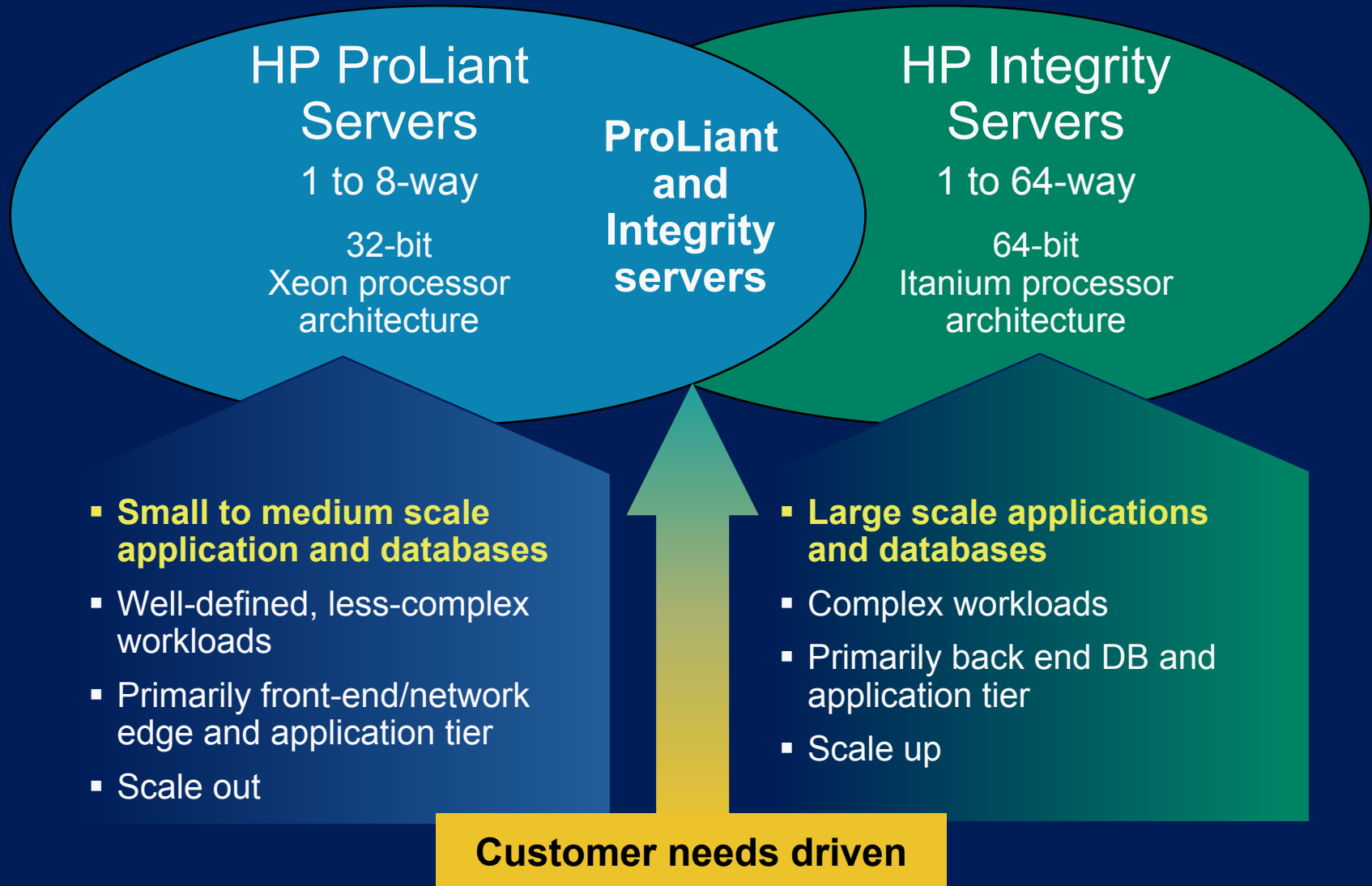


What does this mean for HP?

Beyond-the-box R&D investment

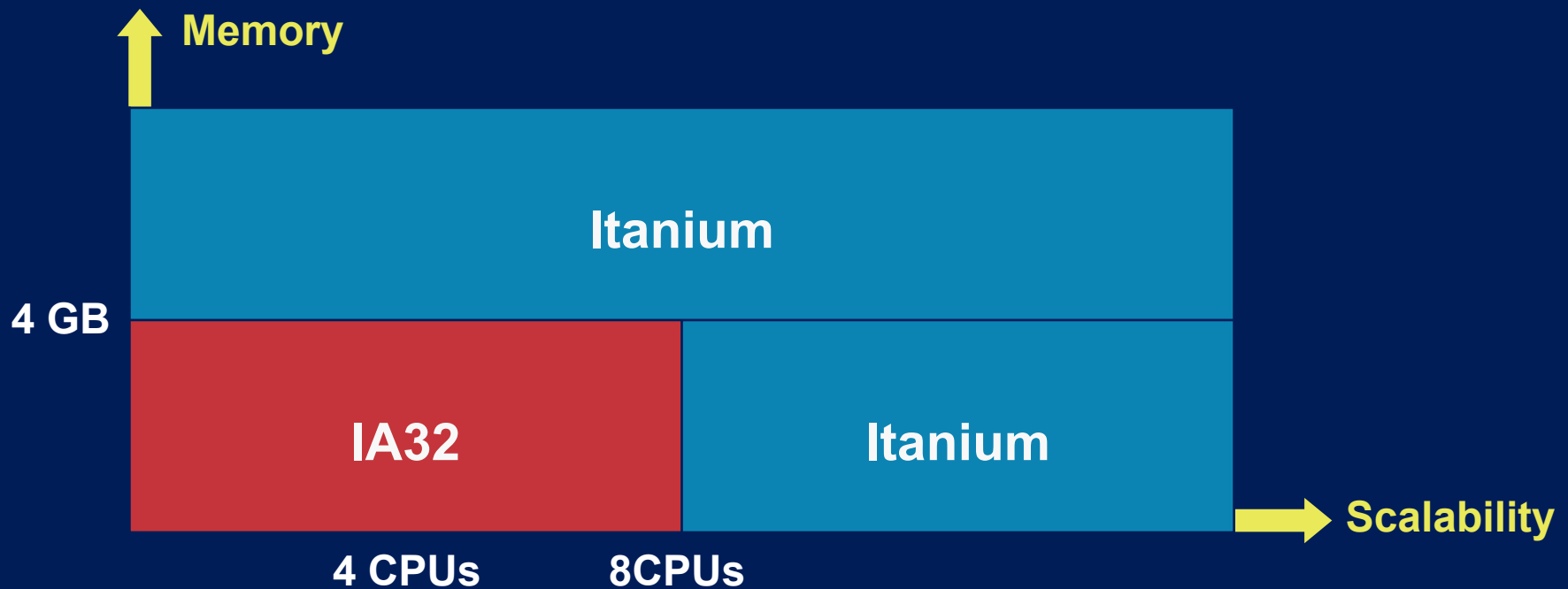


HP offers breadth of platform choice



Positioning Windows on Itanium

Consider performance: Memory and scalability



Consider features: IA32 manageability, ISV availability...

Superdome multi-O/S partitions

SQL Server running query in CMD window

HPUX
SAM

Client PC desktop

Windows partition
desktop displayed
on client PC

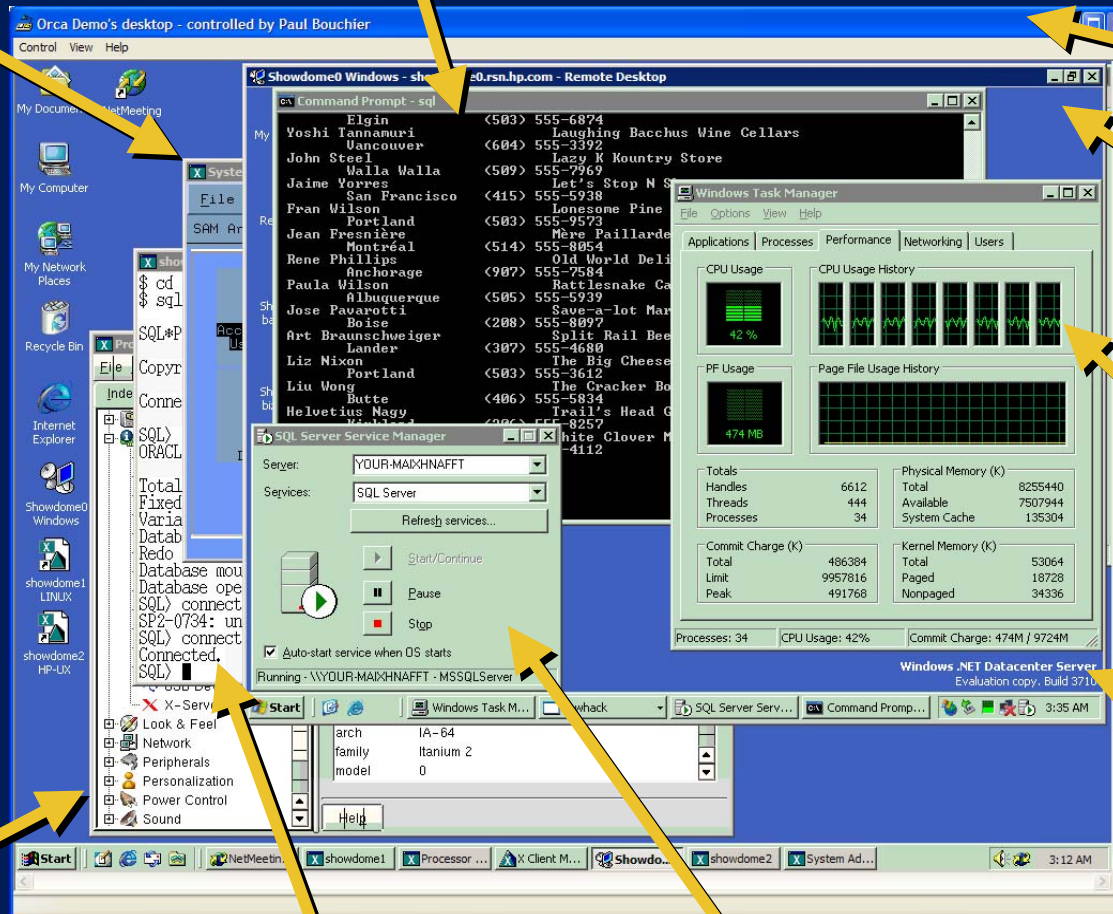
Windows Task
Manager showing
load on 8 CPUs

Windows 2003
Datacenter Server

Linux

HPterm

SQL Server Service Manager



Next generation multi-OS management

Nimbus

insight manager

sam/servicecontrol mgr

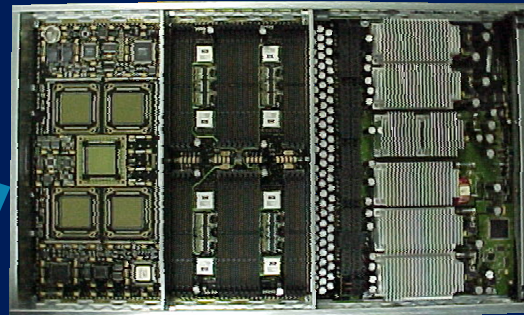


Common
look and feel

One multi-OS management
architecture with enhanced
functionality for HP-UX,
Windows and Linux
system level management

- Smooth upgrade path from IM and SCM
- Modular customizable structure for partner integration
- Leverages SNMP and web-based ProLiant agents with WBEM as go-forward strategy

Leverage through time



Superdome "Yosemite"
PA 8600-8700+ cell

The same chassis are used for our
2003 IPF and PA 8800 products

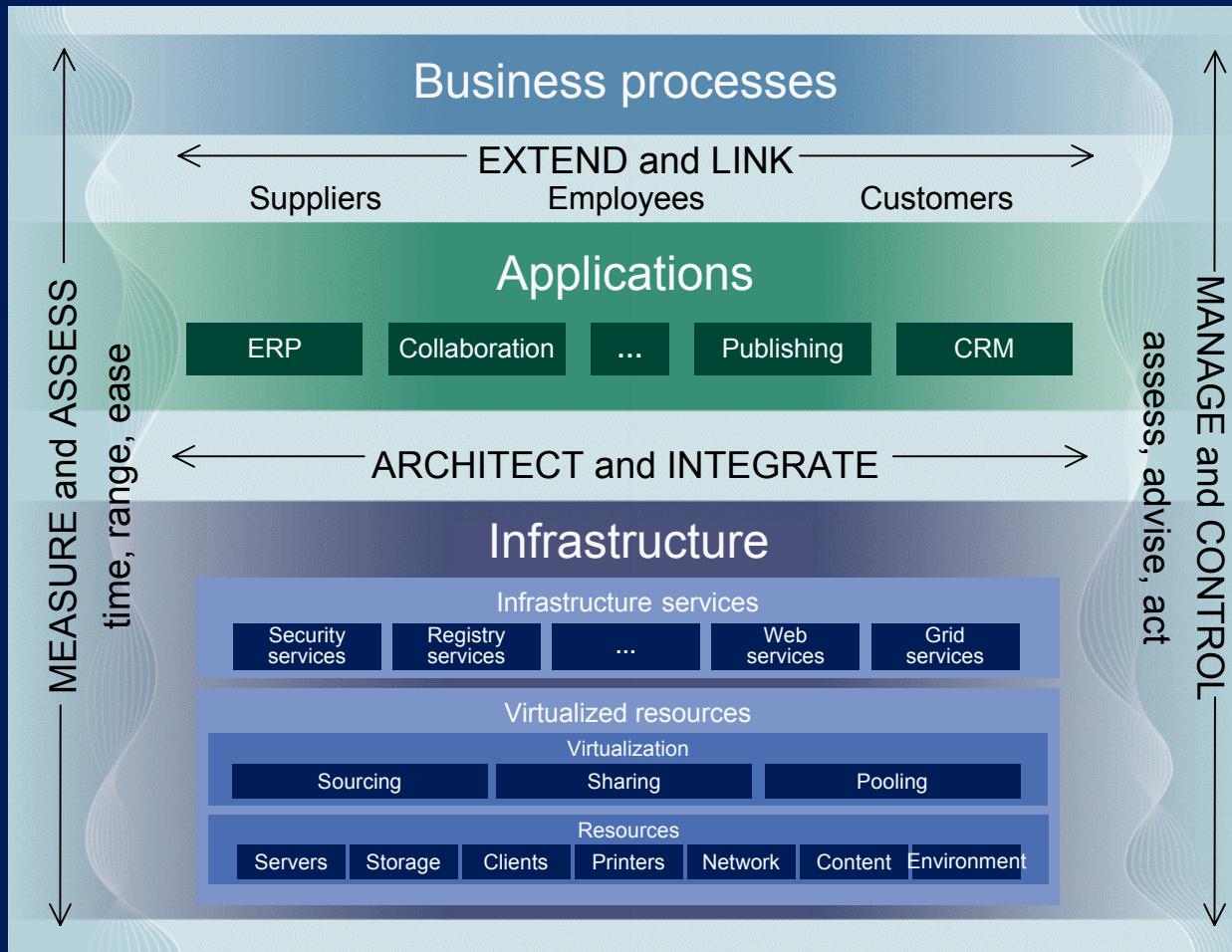


Superdome "Pinnacles"
PA 8800 and IPF cell

Infrastructure technology leadership



HP's Darwin Reference Architecture



Automated
intelligent
management

Dynamic
resource
optimization

Continuous
secure
operation

HP's Ecosystem Acceleration Program



Goal: To accelerate the deployment of Itanium® 2-based enterprise solutions

Strategy: Support rapid deployment in all aspects of the solution ecosystem

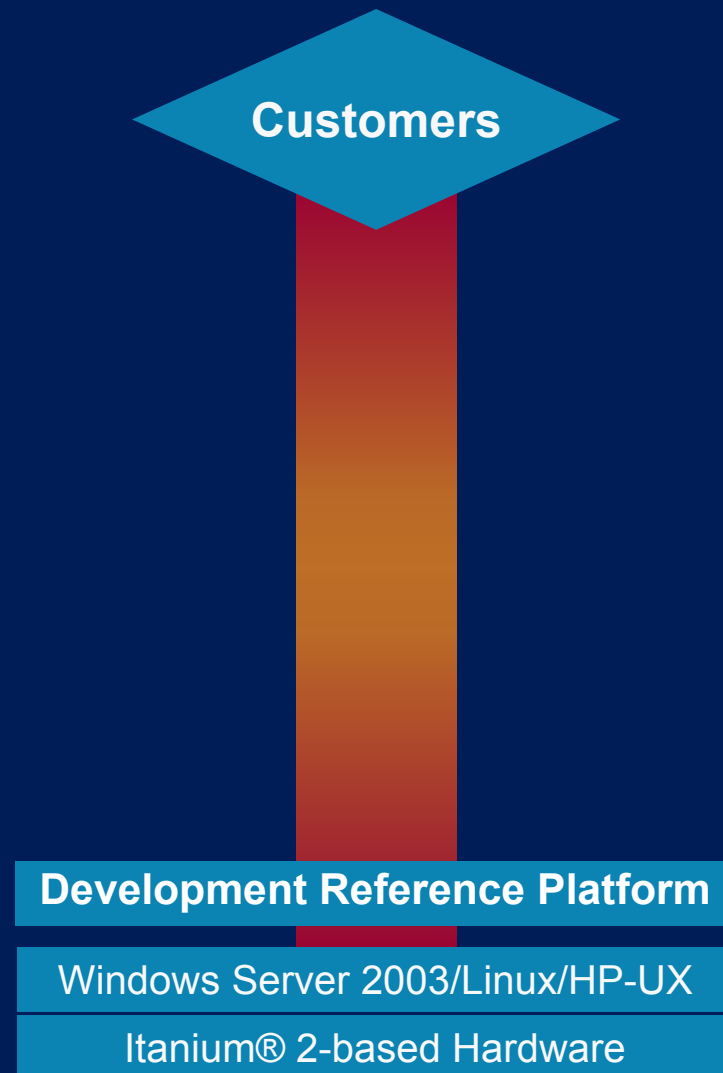
Today: Five key components

- Reference platform
- Strategic ISV and SI partnerships
- Rapid customer adoption
- HP/Intel solution centers
- Joint go-to-market programs

The reference platform: Accelerating ISV development



- Robust resource designed to help ISVs efficiently develop and port applications on Itanium® 2-based systems
- Co-developed by HP and Intel
- Available on HP-UX, Windows and Linux
- Includes HP server plus compilers, debuggers, libraries, performance analyzers, software transition kits and more
- Go to:
www.HP.com/go/referenceplatform



Highlight of major application and tools already in production in 2002



Science ——— Engineering ——— Business

Gaussian	Ansys	ProEngineer	ClearCase	Oracle 9i
Semichem	Mental Images	Unigraphics	SourcePro	BEA Jrocket
AMPAC	Mental Ray	Fluent	Jmeter	SAS Risk Dim.
NWChem	Nastran	Render Dot C	Jtune	SAS Core v9
Schrodinger	Pam-Flow	Houdini	Jprobe	SAS Analytic
Jaguar	Pam-Crash	ToonBoom	VG Studio Max GCC	SAP APO
Chemkin	LS Dyna	ActiveState Perl	Compilers	IBM DB2
MOLPRO	LS Post	System Imager	Introscope	SeeBeyond
BLAST	Adapco	Forte	Autoprobe	RSA
Volare	StarCD	Control Center	Insure C++	Zeus
Visual Numerics	Field View	ServerExpress	MicroFocus	Apache
CASTEP	CASTEP	Visibroker	AcuCorp	Sendmail
TotalView	Paralign	Codewizard	Legacy COBOL	

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Highlight of major commercial applications arriving with production releases in 2003



Windows — HP-UX — Linux

Microsoft Windows
Server 2003
Microsoft SQL Server
2000 64-bit
BEA WebLogic
BEA Tuxedo
Oracle 9i, 10i
IBM DB2
CA-Ingres
SAP R/3
SAP mySAP
SAS

724 Solutions
Ascential suite
Checkpoint
iFlex
Informatica
RSA suite
Sybase
Tibco Rendev.
SynchSort

Oracle 9i v2, 10i
BEA WebLogic
BEA Tuxedo
IBM Informix IDS
IBM Informix XPS
IBM Redbrick
SAP R/3
SAP mySAP
SAS v9.2
Siebel
CA-Ingres

IBM DB2
IBM Informix IDS
BEA WebLogic
BEA Tuxedo
Oracle 9i v9.2, 10i
SAP R/3
SAP mySAP
Sybase
SAIC TeraText

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Itanium® 2-based HP solutions: Rapid customer adoption



Microsoft

- Itanium 2-based systems powering Customer Preview Program for Windows Server 2003
- Hundreds of thousands of customer downloads with reliability, excellent response times

Delaware North Company

- Major concessions company using Superdome for business operations and reporting

Fiat

- Going live with Oracle 9i and 9i RAC on Itanium 2-based systems running HP-UX
- Powering award-winning Fiat Link portal connecting 200 dealers across Spain



Customers are piloting/using HP Integrity servers for production

HP-UX



In-store applications



Backend database for web portal



NTT Comware

BEA WebLogic server

Why HP Integrity?

- Performance
- RoIT
- Future repurposing

Windows



Data warehousing and decision support for financial advisors



Passenger reservation to flight operations systems

Why HP Integrity?

- Scaling up Windows
- Price/performance

Linux



PNNL

Biological and environmental research



Gas and oil exploration

Why HP Integrity?

- Performance
- Scalability

Customers are piloting/using HP Integrity servers for production



Windows,
HP-UX

DELAWARE NORTH

Hosting centralized
financial processes

Why HP Integrity?

- Enhanced manageability
- Scalability
- ROIT

David E. Meacham, Director of IT
Delaware North Companies

Linux,
HP-UX



Supercomputing
application development

Why HP Integrity?

- Price/performance
- Scalability

Doctor Sang-Moon Lee
Samsung Advanced Institute of Technology

Windows,
Linux, HP-UX



Major consolidation/
standardization project across
multiple operating systems

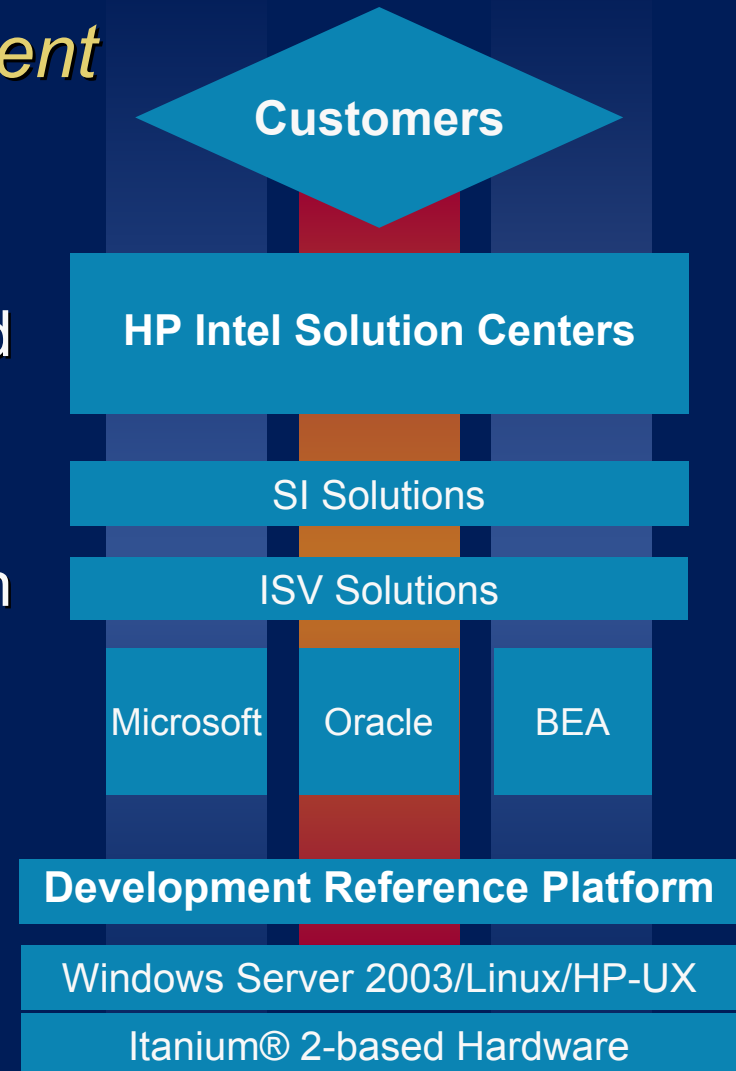
Why HP Integrity?

- Repurposing hardware
- Reducing management costs
- Flexibility

HP Intel Solution Centers

Accelerating customer deployment of Itanium®-based solutions

- Strategic resource designed to prove the value of Itanium-based solutions and act as pre-sales tool to help sales force close business
- Staffed by Itanium 2-based solution experts from HP and Intel
- Three centers worldwide today
 - Cupertino, California
 - Grenoble, France
 - Shanghai, China



Proof of solution concept at zero cost



- Test and validate the viability of Itanium-based solutions for enterprise customers in a multi-OS environment
- Enable end-to-end solution 'proof of concepts', with ISV software validation, and SI support
- Getting it right the first time: develop pre-tested value-add enterprise solutions , enabling quick deployment with confidence, reducing risk, and increasing time to solution
- Funded and staffed by HP and Intel experts
- The ideal combination of expertise, equipment, and environment in which to innovate!

Contact: Itanium_Center@HP.com
(408) 447-8857



A low-angle, upward-looking photograph of several tall, multi-story buildings in a city. The buildings are constructed from dark stone or concrete, featuring numerous windows and classical architectural details like cornices and pilasters. The sky is a pale, overcast blue. A white rectangular box is superimposed over the upper-middle portion of the image, containing the text.

**Leadership =
Character + Capability**



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Solutions and Technology Conference & Expo

Interex, Encompass and HP bring you a powerful new HP World.



Portfolio of choice: HP ProLiant and Integrity strengths deliver to customer criteria



	<i>ProLiant</i>	<i>Integrity</i>
Application/ OS preference	<p>extensive 32-bit Windows, Linux and NetWare application environment w/ 100,000's apps avail.</p> <p>Sweet spots</p> <p>Small to medium scale apps and databases</p> <p>Application server for enterprise apps (Siebel, SAP, PeopleSoft, etc)</p> <p>workgroup and departmental (file/print,): Exchange</p> <p>network edge: (caching, firewall, load balancer etc)</p> <p>Consolidation (WMP, VMWare)</p>	<p>64-bit 1000s of Enterprise applications for HP-UX, Windows Server 2003 64-bit, and Linux 64-bit (with OpenVMS in the future)</p> <p>Sweet spots</p> <p>Large scale enterprise databases: SQL, Oracle, DB2...</p> <p>LOB applications: ERP, SCM, CRM, BI</p> <p>memory intensive applications: SAP APO and LiveCache, UNICODE</p> <p>Consolidation (nPartitions, WLM for HP-UX)</p>
Scalability	<p>1-8 processors, scale out</p> <p>up to 64 GB memory</p> <p>up to 11 I/O slots</p>	<p>2-64 processors, scale up/scale out</p> <p>up to 512GB memory</p> <p>up to 192 I/O slots (with I/O expander)</p>
Price/ functionality	<p>Lowest entry price for enterprise-class functionality</p>	<p>Value add robust HA and mission-critical functionality</p>

Automated intelligent management

Management solutions for HP Integrity servers

