

OpenVMS in the new HP

Chris Brown

OpenVMS Systems
Hewlett-Packard Corporation



HP will leverage its portfolio of products, services and partners to redefine the value proposition of IT, with a focus on increasing business value and reducing costs by way of:

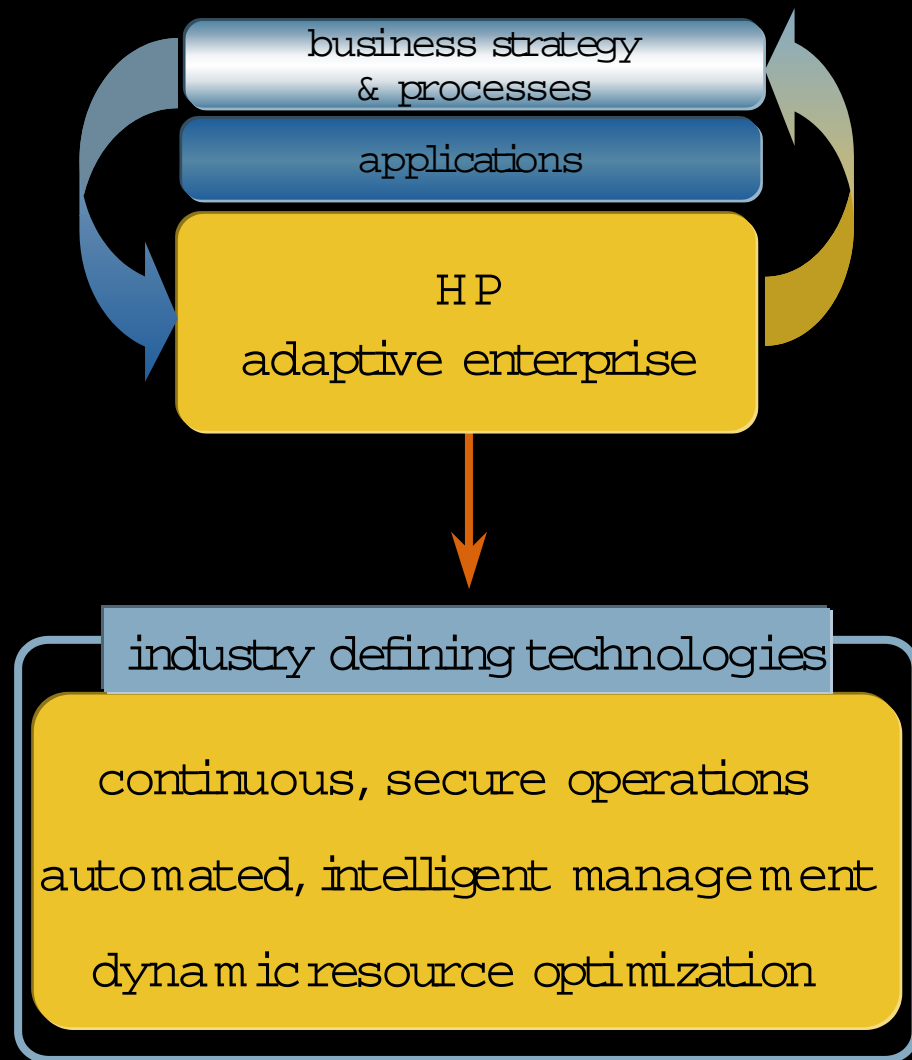
- Standards-based and modular systems that lower acquisition costs and increase flexibility
- Focused innovation to improve manageability and utilization
- Software and services that deliver reduced complexity and business agility



best return on
information
technology
("best RoIT")

HP adaptive enterprise for business agility

- Industry defining technologies
- Unifying standards
- Collaborative industry partnerships
- Scalable to your unique environment
- Integrated with services and solutions



Adaptive Enterprise delivers customer value

Demands on IT:

- More capacity with less money
- Always available
- Avoid over/under capacity
- Robust and secure environment
- Fewer people managing more equipment
- Flexibility
- Deriving more value from assets
- Integrating new technologies

BCS areas of focus:

- Continuous and secure operation
- Dynamic resource optimization
- Automated and intelligent management
- Foundation for the future

BCS Portfolio Simplification

	today	future
processor technology	PA-RISC Itanium® processor family Alpha MIPS®	Itanium® processor family
server platform	HP Servers HP NonStop Servers HP e3000 Servers HP AlphaServer Systems HP Blade Server	HP Servers HP NonStop Servers HP Blade Server
operating system	HP-UX HP Tru64 UNIX® HP MPE/ix Linux® HP NonStop Kernel HP OpenVMS	HP-UX (with Tru64 UNIX® features) Linux® HP NonStop Kernel HP OpenVMS Windows® /64

BCS server portfolio

World's broadest, most robust enterprise offering

high-end



AlphaServer GS Series
(32 way)



AlphaServer SC series



Superdome

NonStop S76000/S86000



mid-range



AlphaServer GS Series
(8,16 way)



rp7405



rp7410



rp8400

NonStop S76 series



entry-level



AlphaServer DS Series



AlphaServer ES Series



rp2405



rp2430/70



rx2600



rp5405



rp5430/70



rx5670

OpenVMS Core Strengths



OpenVMS

Mission Critical Leadership

- ✓ Availability
- ✓ Reliability
- ✓ Security
- ✓ Global Services
- ✓ Solutions



Finance



Government



Healthcare



Telecom m



Manufacturing

The adaptive enterprise and our offering



Areas of focus:

VMS Solutions From HP And Our Partners:

Continuous & secure operations

- OpenVMS Clustering
- Security Excellence
- Mission Critical Quality
- Superior Services
- Solutions with Partners

Automated & intelligent management

- Clustering
- Manageability

Dynamic resource optimization

- Mixed Architecture Clustering
- Partitioning continuum
- ENSA Extended

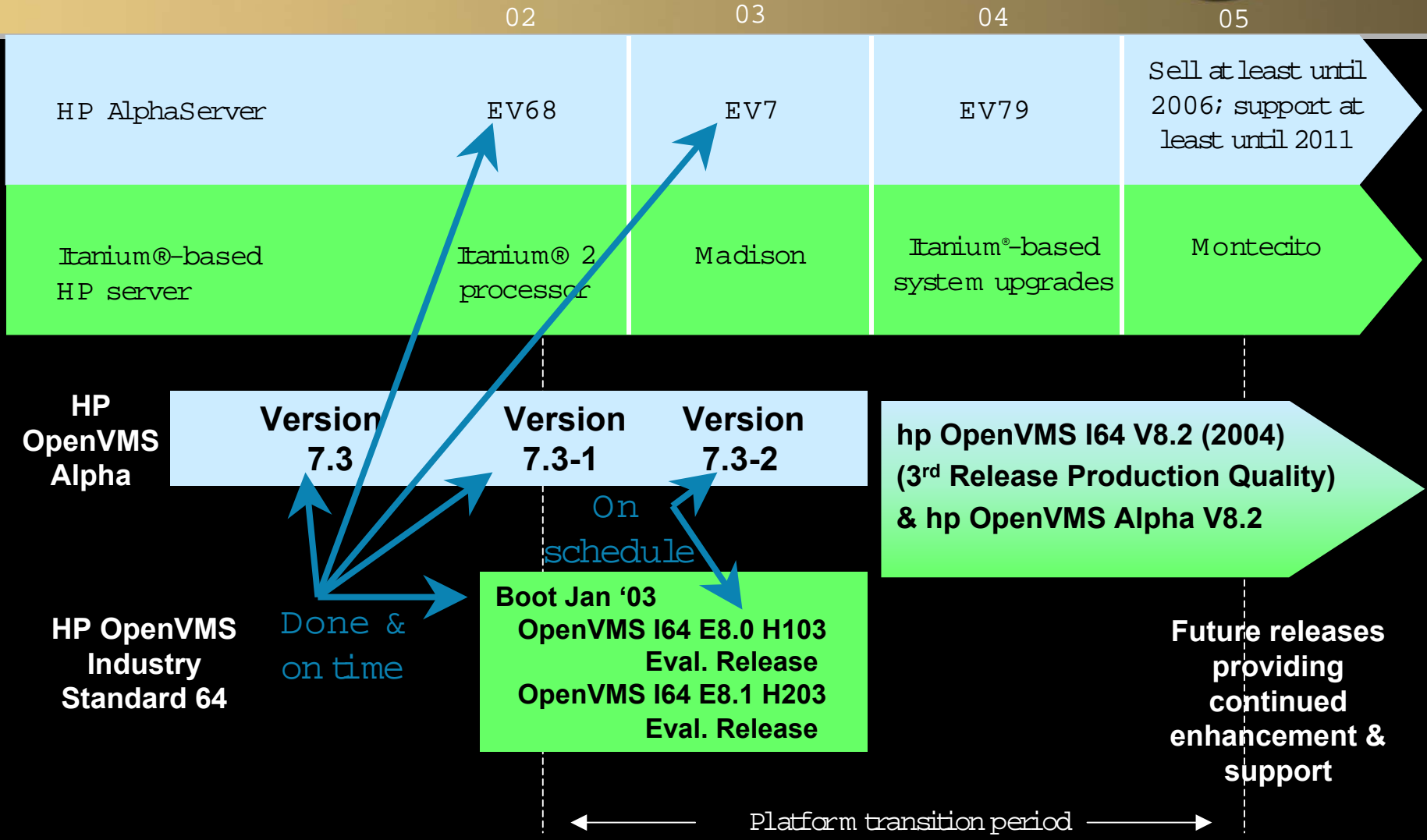
Foundation for the future

- Itanium architecture
- J2EE and .NET infrastructure
- Customer 1st program

OpenVMS Engineering Today



hp OpenVMS roadmap



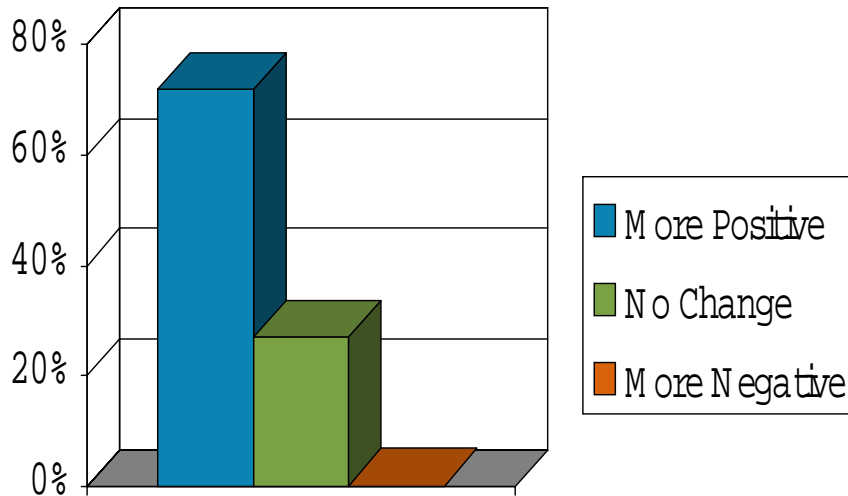
OpenVMS on Itanium at Cebit 2003



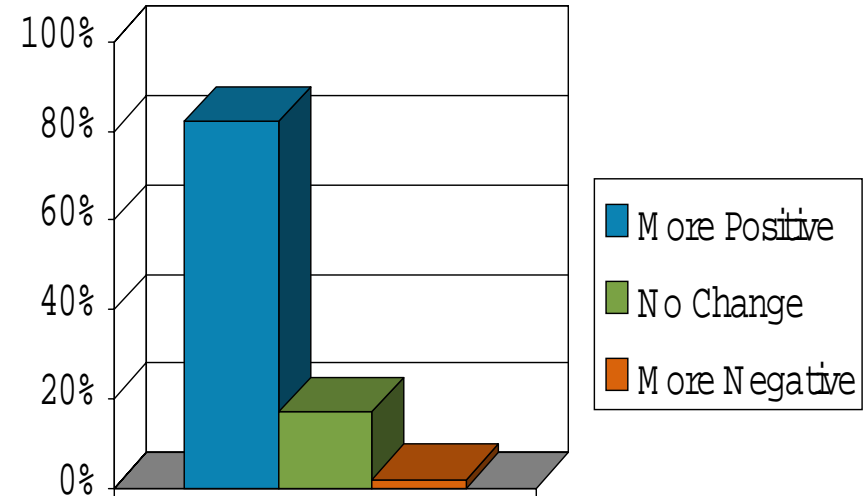
The first public showing of OpenVMS on Itanium occurred at Cebit 2003, Hannover, Germany on March 10th, 2003

Customer Reactions to VMS boot on Itanium

Impact of VMS Itanium Boot on
Customer Perception of HP



Impact of VMS Itanium Boot on
Customer Perception of VMS Future



The adaptive infrastructure and our offering

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Dynamic resource optimization

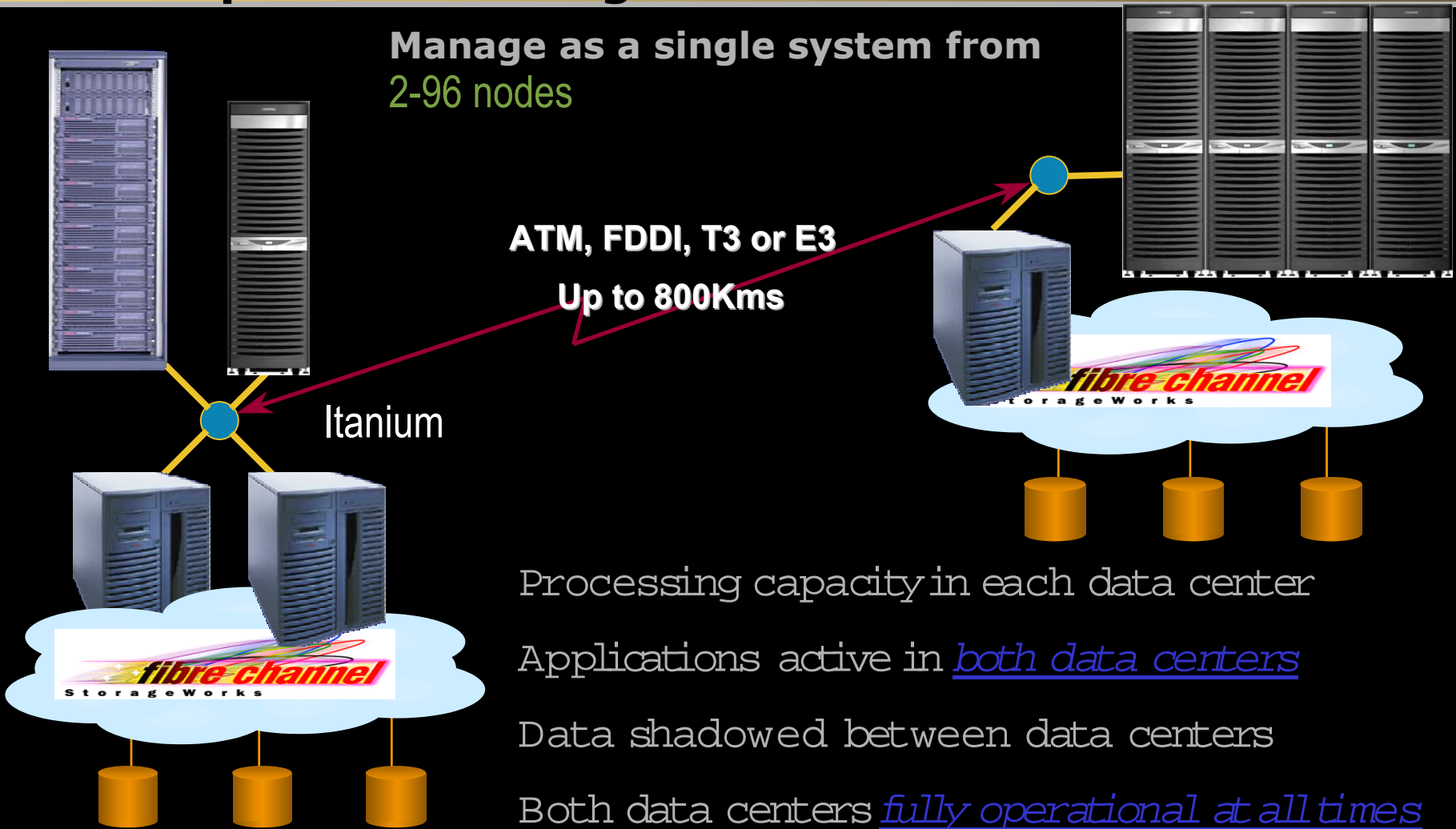
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Foundation for the future

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DISASTER TOLERANCE... multiple sites – long distances

Manage as a single system from
2-96 nodes



ATM, FDDI, T3 or E3
Up to 800Kms

Itanium

Processing capacity in each data center

Applications active in both data centers

Data shadowed between data centers

Both data centers fully operational at all times

Minimal effect on performance

hp OpenVM S *"Security by design"*



From the Start

- Security built in to the O/S no add on security.
- First commercial "C2" O/S VAX/VMS V4 (1988)
- Certificate "C2" & "B1" in 1993.
- Security encompasses the entire cluster and certified! (1998 RAMP)

Now

- Supporting new Industry Standards
 - OpenSSL
 - Kerberos
 - CDSA
- Ready for new evaluations and standards
 - DII COE
 - ITSEC
 - HIPAA

Future

- Enterprise wide security external authentication for:
 - LDAP
 - Kerberos
 - User defined
- eBusiness security

**DEFCON 9 Winner
July 2001
Cool and Unhackable**



hp services

Market leader in the following areas . . .

#1 mission-critical infrastructure services

#1 services for open IT environments

#1 enterprise-ready Microsoft integration and support services

#3 in IT services

The industry's largest channel partner network

- ✓ 105 Response and Operations Centers worldwide
- ✓ 80 customer education centers
- ✓ 15 SAP/HP Competency Centers
- ✓ 65,000 service professionals with unmatched technical expertise in 160 countries:
 - 18,000 UNIX-experienced engineers
 - 5,300 experienced OpenVMS engineers
 - 5,000 Microsoft ® certified engineers
 - 23,000 Microsoft-trained specialists
 - 1,100 certified Cisco engineers
 - 4,500 experienced Cisco engineers
 - 2,100 project management professionals

OpenVMS Vertical Solutions



Finance

- **Capital Markets:** Wall Street Systems, Inc., Rolfe and Nolan, OMR, Deutsche Börse, OM Technology, Sema Capital Markets, Computershare
- **Retail Banking:** Sanchez, Real Solutions, ABSL
- **Wholesale Banking:** Montran, GIFTS, Logica

Telecom

- **Billing:** TelesensKSCL
- **Billing, SMS:** Schlumberger
Sema Group
- **SMS:** CMG/Logica
- **Cable and Satellite Television:** Convergys Solutions, Ltd.



Healthcare

- **Clinical and management information systems:** Cerner
- **Billing, scheduling, clinical systems:** IDX
- **Clinical, financial and decision support:** Siemens Medical Systems (SMS)



Government

- **Aircraft analysis, including modeling and simulation:** Lockheed Martin
- **JointStars:** Northrop Grumman
- **Military Training and Planning, Disaster planning:** BCD Modeling
- **Simulation Middleware:** MAK Technologies
- **Automated Lottery Systems:** ESSNET, GTECH, Scientific Games



Manufacturing

- **Semi-conductor MES:** Brooks-PRI Automation, Applied Materials
- **Pharmaceutical, Clinical Research Data Management:** Cincom Systems
- **Manufacturing Resource Planning:** CA
- **Utilities power brokering:** OM Technology



The adaptive enterprise and our offering

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Automated & intelligent management

- Clustering
- Manageability

Dynamic resource optimization

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Foundation for the future

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- Customer 1st program

VMS Clusters lower TCO and raise operational efficiencies



global services



- OpenVMS Clusters dramatically reduce:
 - Storage requirements
 - Staff requirements
 - Operational Resources
 - Operational Complexity

- 99.999% Uptime Guarantee
- Major improvements in Server management
 - While requiring no changes in current operational procedures and management

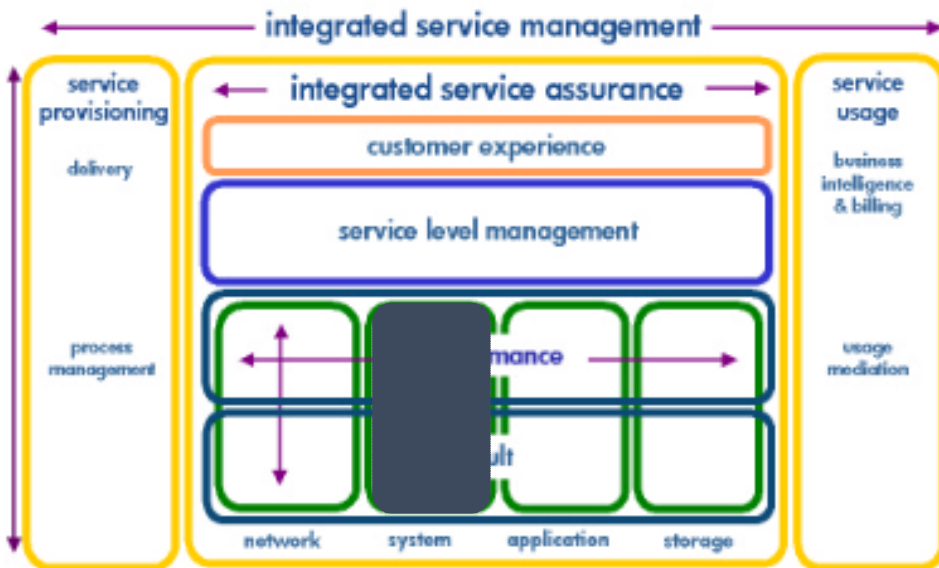


HP OPENVIEW

Works | Right | Now

- Agent support for OpenVM S
- Partnerships with many ISVs for component solutions

- CA
- BMC
- Heroix
- Legato
- PointSecure
- Itheon
- TDI
- ISE
- Fortel
- Orsyp
- Raxco
- Many more



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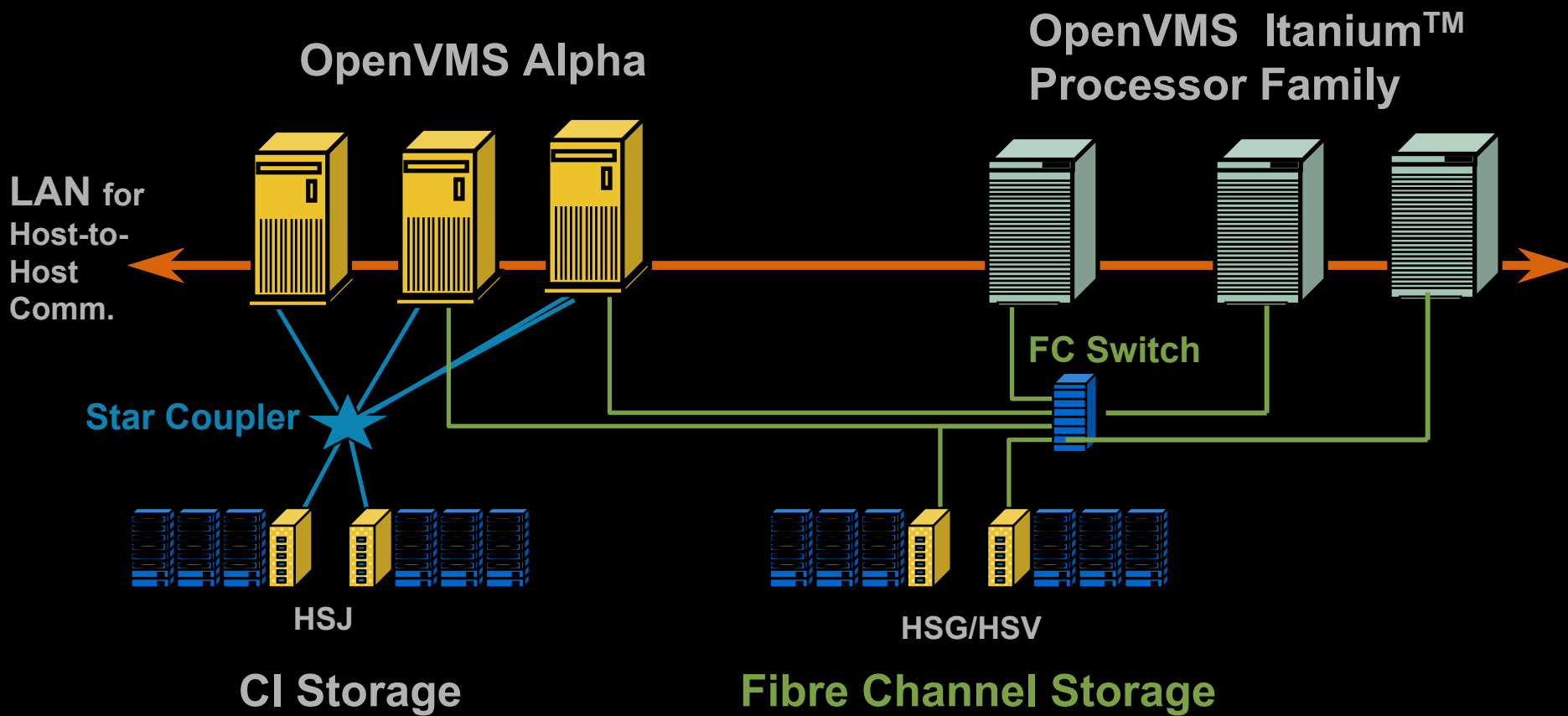
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Mixed Architecture OpenVMS Clusters



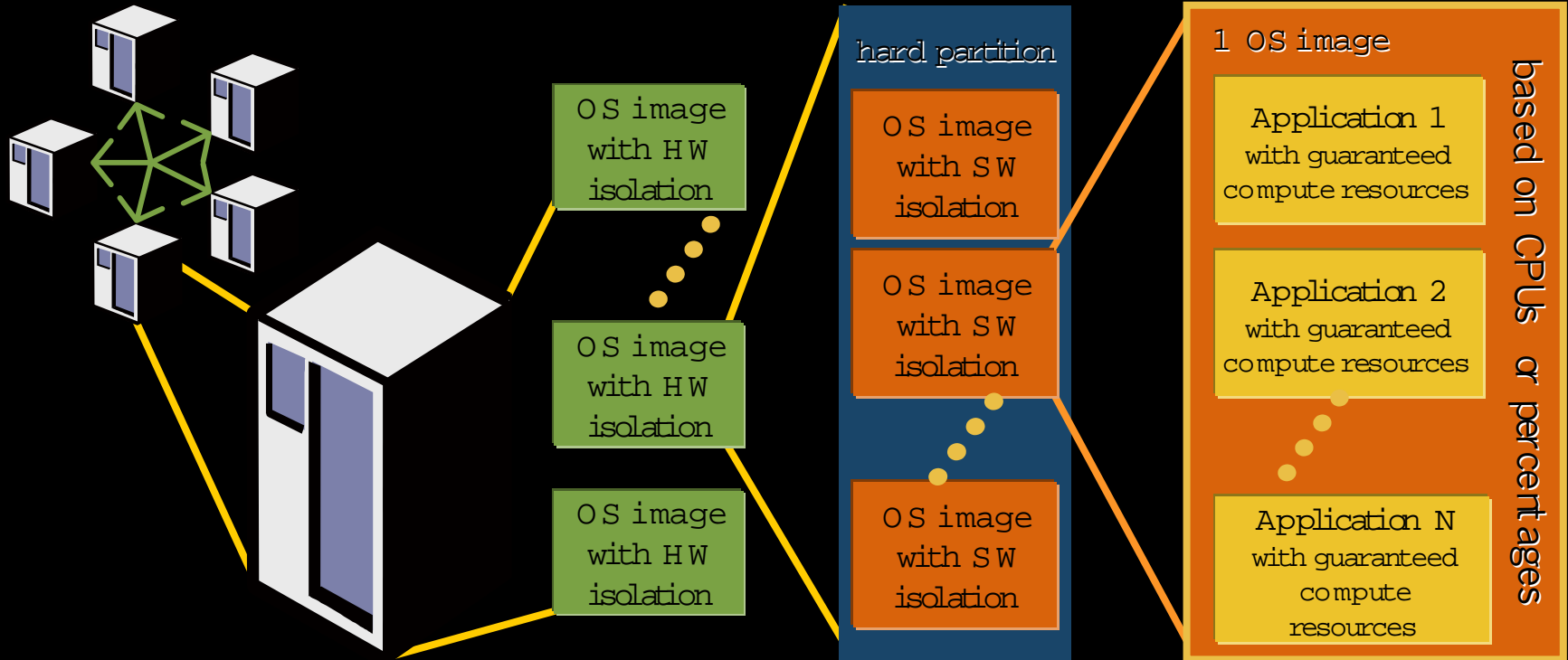
HP partitioning continuum strategy

multiple clustered nodes

hard partitions

virtual partitions

resource partitions



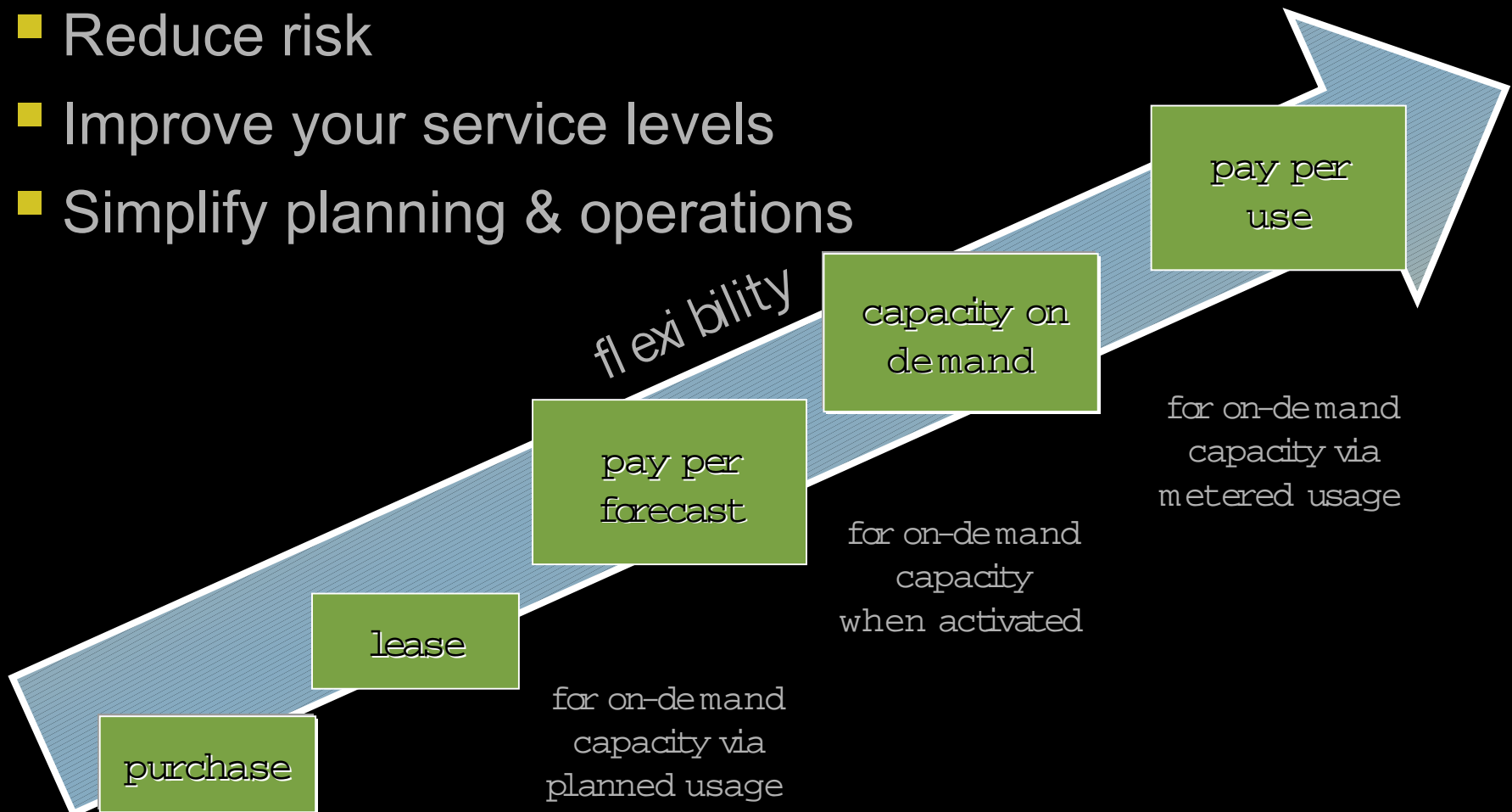
Workload Management

isolation
highest degree of separation

flexibility
highest degree of dynamic capabilities

On demand portfolio

- Align your costs to revenues
- Reduce risk
- Improve your service levels
- Simplify planning & operations










hp Storage Products



software

<p>storage area management </p> <ul style="list-style-type: none"> • device management • provisioning 	<p>data management </p> <ul style="list-style-type: none"> • data protection • data recovery 	<p>availability management </p> <ul style="list-style-type: none"> • data replication & migration • multi-pathing/ failover 	<p>storage virtualization </p> <ul style="list-style-type: none"> • heterogeneous storage services • enterprise scale
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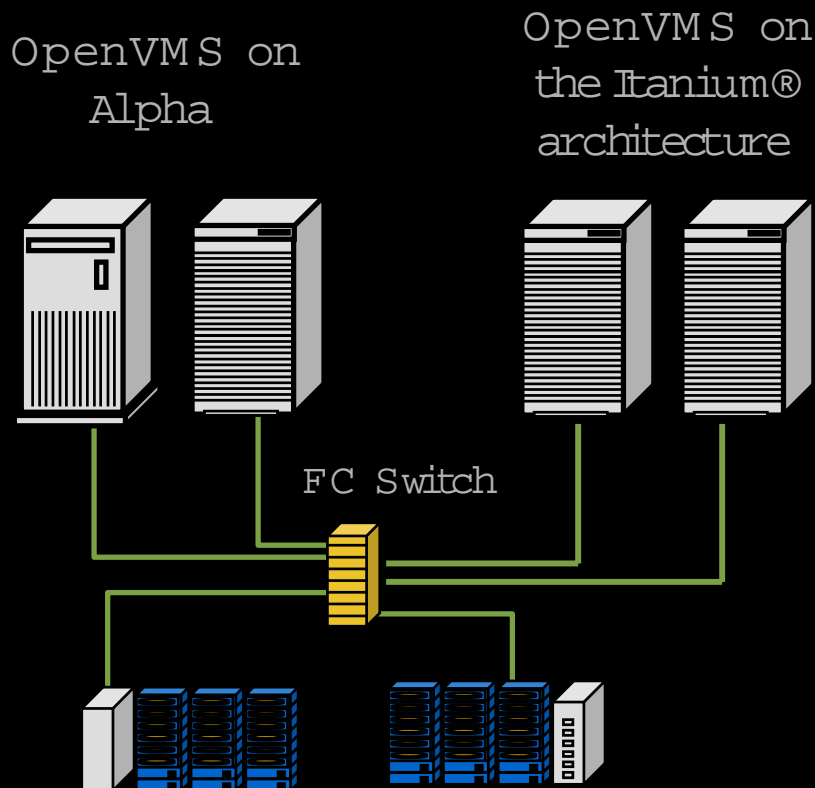
network storage

<p>E7000  B3000 NAS 8000 </p>	<p>VA7110 </p>	<p>VA7410  MSA1000 </p>	<p>MA/EMA </p>	<p>XP </p>	<p>EVA </p>
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New Enterprise Storage Management products for OpenVMS

- MSA 1000 Q3 2003 – low cost fiber storage
- DRM support for EVA platforms H1 2003, 2004
- Investigating Virtualization (SV3000, VersaStor Adaptor)
- Legato Networker (Q4 2002)
- HP OpenView Data Protector Q3 2003
- EVM, SAM H2 2003

HP OpenVMS storage co-existence



Fibre Channel Storage

- OpenVMS Alpha and Itanium® architecture-based HP servers will utilize a common SAN infrastructure as part of heterogeneous datacenter
 - common SAN fabric
 - common data management software
 - common tape libraries
- StorageWorks arrays will be supported for both platforms
 - StorageWorks Enterprise Virtual Arrays
 - Storage Works Enterprise Modular Arrays
 - Storage Works XP
 - Storage Works MSA1000
- Expect that parallel SCSI-based storage technologies will evolve to Itanium architecture, but only in non-shared model
 - HSZ40/50/70/80/KZPBA on Alpha
 - JBOD SCSI storage on either
 - backplane RAID on either
- Data migration, storage consolidation, backup and SAN implementation services are offered

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Foundation for the future

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- Customer 1st program
- Visibility

The next generation HP AlphaServer systems



AlphaServer ES47
workgroup server

- 2-4 1GHz processors
- Up to 32GB memory
- 5-32 I/O slots
- Tru64 UNIX® v5.1B,
OpenVMS v7.3-1
& Linux Red Hat v7.2
- Complements DS25
& ES45



AlphaServer ES80
departmental server

- 2-8 1GHz processors
- Up to 64GB memory
- 5-64 I/O slots
- Tru64 UNIX v5.1B,
OpenVMS v7.3-1
& Linux Red Hat v7.2
- Replaces GS80



AlphaServer GS1280
enterprise server

- 2-64 1.15GHz processors
- Announcing 8-16 now
- Up to ½ TB memory
- 10-640 I/O slots
- Tru64 UNIX v5.1B,
OpenVMS v7.3-1
- Replaces GS80, GS160 &
GS 320

AlphaServer Peak vs Delivered Performance

Memory Subsystem Performance

- GS140 12p: 2.1 GB/sec -> 1.1 GB/sec (copy)
- GS320 32p: 51.2 GB/s -> 24.1 GB/sec
- GS1280 64p: 1.0 TB/s -> 320 GB/sec

IO Bandwidth Performance

- GS140 12: 786 MB/sec -> 512 MB/sec
- GS320 32: 25GB/sec -> 5.5 GB/sec
- GS1280 64: 205 GB/sec -> 56.8 GB/sec

Delivered IO/sec Performance (2KRandom)

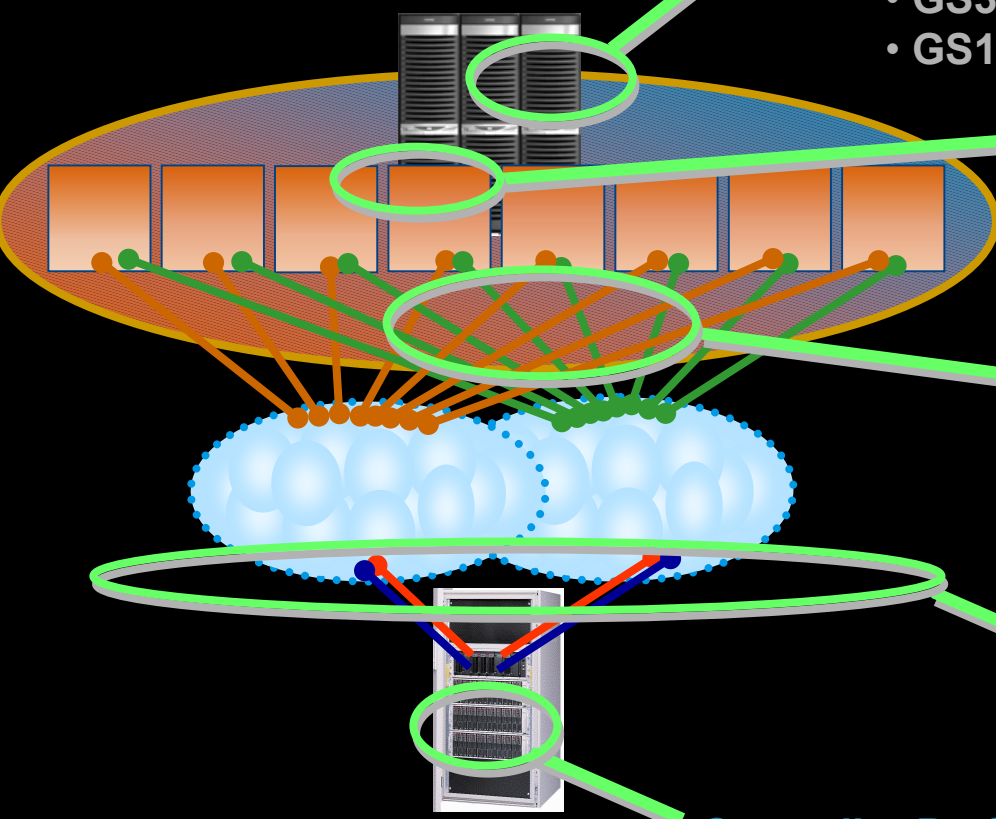
- GS140 12p : -> 22K IO/sec
- GS320 32p: -> 285K IO/sec
- GS1280 64p: -> 2M IO/sec

HBA Performance per adaptor

- KGPSA: 200 MB/s (2 Gb)
- SA5304: 380 MB/s

Controller Performance per unit

- HSG80: 80 MB/s (1 Gb)
- HSV: 540 MB/s (2 Gb)

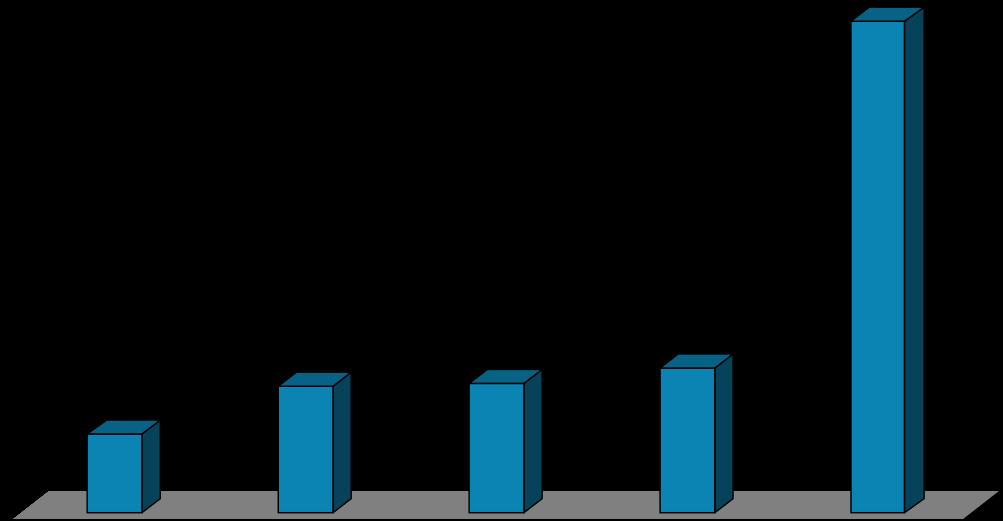


GS1280 driving customer performance gains

- Running out of capacity on existing system.
- Solution based on Cerner Millennium software
- Replace 10 CPU GS140 with 8 CPU GS1280
- **Performance increase of up to 500%** over previous GS140

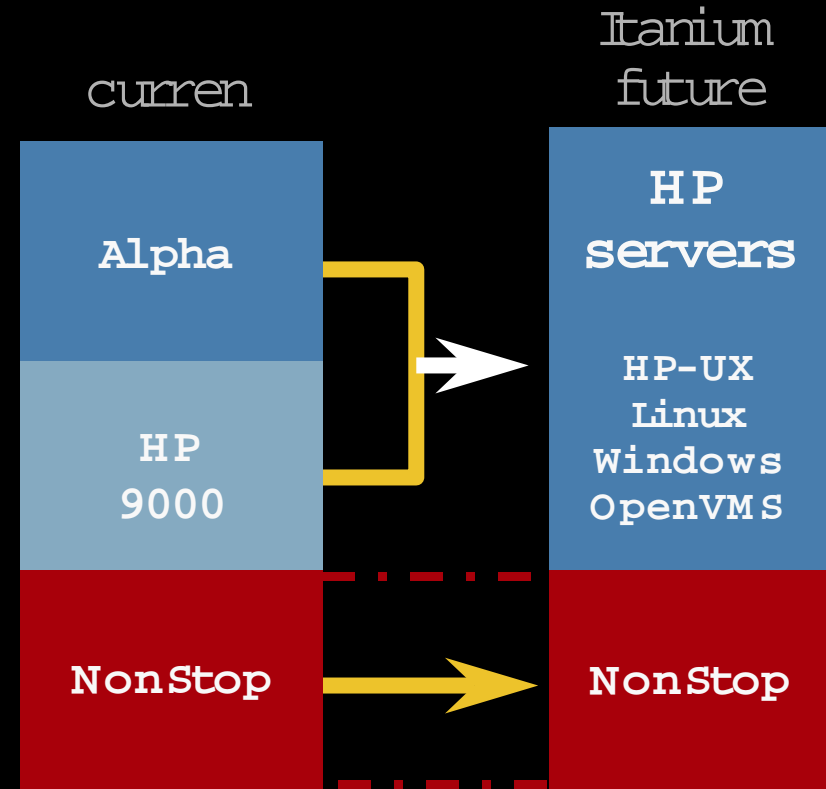


Memorial Hermann



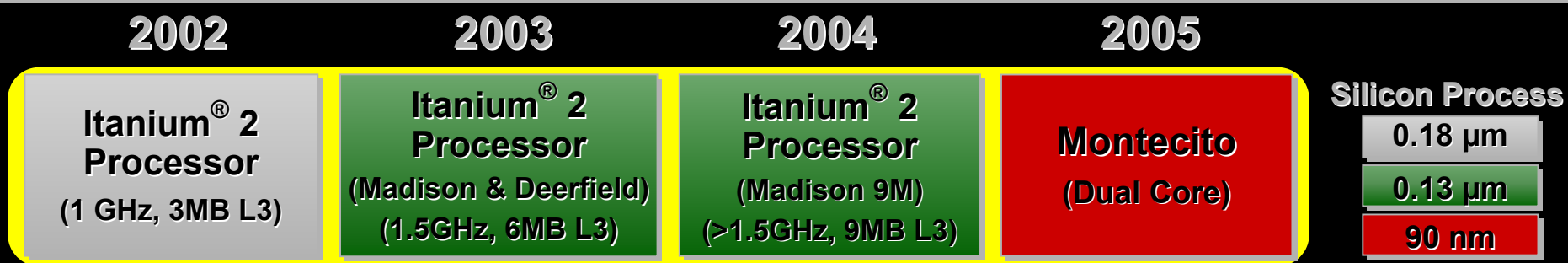
HP enterprise server Itanium strategy

- Choice & flexibility
 - One microprocessor, multiple operating environments
 - Industry standards driven
- Higher performance, lower costs
 - Economies of scale
 - Leveraged costs
 - Next-generation technology



capability & affordability

Itanium® Processor Family Roadmap



- Next Itanium® 2 Processor (Madison) on track for production in Summer of 2003
- Itanium® 2 platform maintains same socket, bus and software compatibility
- Intel will enhance Itanium® 2 processor (Madison) with larger 9M L3 cache
- Montecito processor will enable dual-core technology and enhanced microarchitecture

Roadmap maintains world class performance

The Future Look

■ High Availability

- Double Chip-kill Memory
- Redundant Oscillators in Clock Source
- Link-level Retry in Crossbar and I/O links
- 3-Ported Redundant Crossbar Topology

■ Scalability

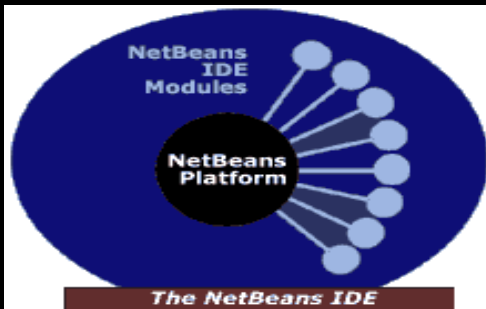
- Multi-core Modules/Processors
- 128 Processors and Beyond
- Bigger Bus Bandwidth
- Industry Leading Clustering

■ Manageability

- Multi-OS
- Multi-system
- Partitioning Continuum
- Virtual Server Environment (VSE)
- UDC

■ Industry Standards

Integration Standards with OpenVMS



COM

XML

WSDL

UDDI



New Integration Standards for OpenVM S

Shipping in 2003

- Secure Web Server V1.4, V2.0 (based on Apache 1.3.x, 2.0)
- XML V1.1
- SOAP Toolkit V1.1
- Secure Web Browser V1.2
- Java Software Development Kit (SDK) v 1.4.0, 1.4.1
- NetBeans 4.0
- COM V1.4
- Attunity Connect 4.0 “On Platform” Package
- Enterprise Directory V5.3
- BridgeWorks V2.2

Customer first program

- The world's best customer continuity programs
 - free architectural workshops
 - white papers, solutions guides
 - web-based training, newsletters
 - symposia, developers' conferences
 - porting tools, development kits
 - partner resources, loaner programs
- Evolve at your own pace
 - a choice of technology roadmaps
- Rich technology destinations
 - next-generation Itanium architecture
 - robust operating environments: HP-UX (with Tru64 functionality), OpenVMS, Linux, Windows

easiest, lowest cost path to the future

it's coming home



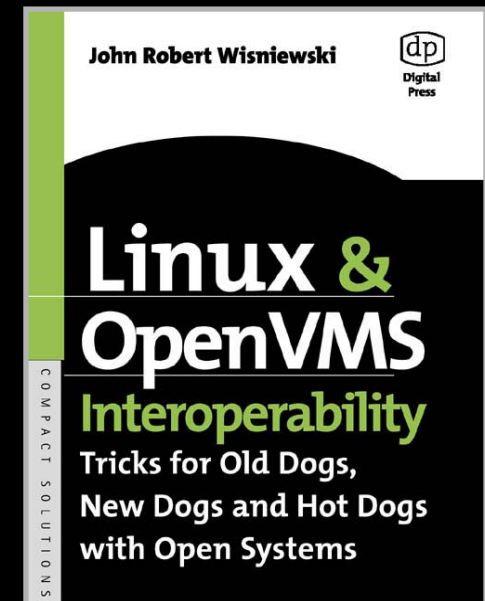
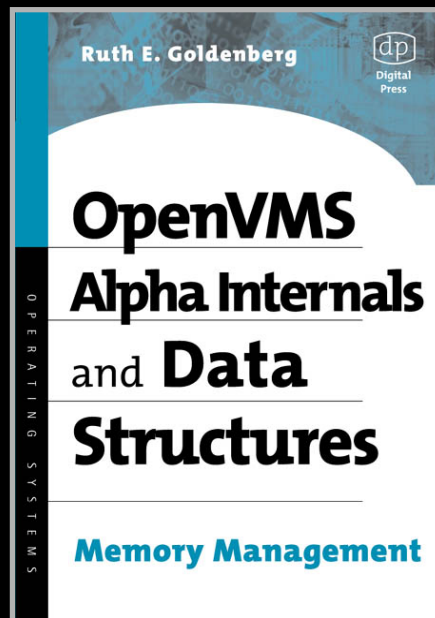
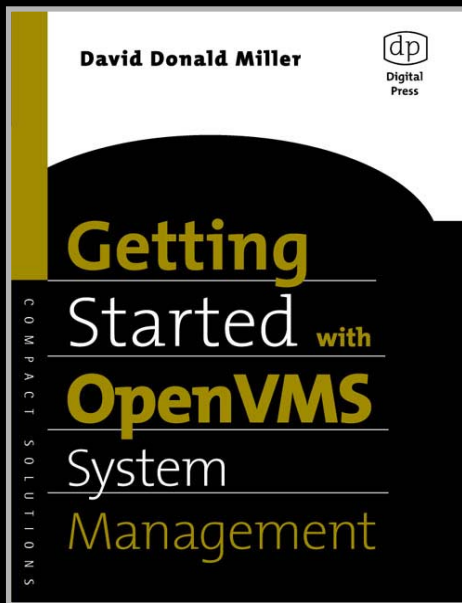
i n v e n t

hp launches the
OpenVM S
training curriculum

Training future OpenVMS resources

- CSLG: 120 educational institutions
- VMS Free License Program: 150 educational institutions
- OpenVMS Boot Camp
- HP Open World, HP Interex
- OpenVMS Advanced Technical Boot Camp
- Updated Courses
 - 2,479 Attended VMS Training Courses WW
- OpenVMS Certification Program
- New Digital Press Books
 - Apache, Internals, VMS for beginners, Clusters, Security, Disaster Tolerance, Oracle, OpenVMS and Linux Interoperability, System Management ...
- OpenVMS Technical Journal returns!
- HP North American training partners
 - Bruden Corporation
 - The Parsec Group
 - Institute for Software Advancement
- HP EMEA training partners
 - Global Knowledge (UK, Ireland, France, Netherlands, Italy)
 - Onsite Computer GmbH, GFN (Germany)
 - HOST Computer Services (UK, Ireland, EMEA)
 - Europe Train. & Ed Center (EMEA)
 - Cornerstone (Sweden)
 - CRONOS (Belgium)

Recent Digital Press OpenVMS books



OpenVMS Advanced Technical Symposium



Highly Technical OpenVMS Training, including many hands-on labs

November 11-14 2003 Sheraton Tara Hotel, Nashua, NH

Fee - \$1195

attendance limited to 200 senior level technical people from customers and partners

<http://h71000.www7.hp.com/symposium/index.html>

Any questions send mail to Susan.Skonetski@hp.com

VMS visibility improves

When it comes to interoperability, HP and BEA provide a complete heterogeneous J2EE platform for distributed applications and the integration of legacy and .NET environments. And we do it across multiple platforms and operating systems, including HP-UX, OpenVMS, NonStop Kernel, and Tru64 UNIX. We do it on Itanium 2-based systems, and we do it on Windows 2000, Windows NT and Linux. BEA's WebLogic Server is available on all of HP's key platforms and operating systems.

**BEA eWorld 2003 — Carly Fiorina
Orlando, Florida — March 3, 2003**

It is already well on its way to being ported to IA-64. We will continue to support it on IA-64. It is a very special class of operating system. We are not planning to do anything else other than to continue supporting this environment, as well as the 450,000 users around the world that are on this. So we are going to maintain it and make it run very well on Itanium. The same [is true] with the Non-Stop environment. It currently runs on the MIPS chip. It will be migrated to IA-64 as well.

**Peter Blackmore responding to a VMS question from a
Computerworld (US) reporter — March 26, 2003**

They (our customers) can have a platform that does more than just HP/UX. It also runs Windows, Linux and OpenVMS. This is my baby....

**Scott Stallard introducing the
Itanium based HP Superdome at
the Intel Developer Forum, San
Jose, California — February 18, 2003**

Hewlett-Packard engineers on Friday got the OpenVMS operating system up and running on an Itanium-based computer, a crucial step to ensuring the venerable OS doesn't suffer the fate of many of its shorter-lived contemporaries.

**Stephen Shankland
Staff Writer, CNET News.com
- February 3, 2003**

"HP의 오픈(Open) VMS"는 인텔 '아이테니엄' 프로세서를 지원해 사용자에 더욱 다양한 환경에서 강력한 컴퓨팅환경을 구현하도록 해줄 것입니다. 국내의 오픈 VMS 고객에게 최근 기술동향과 제품 로드맵을 소개하기 위한 '오픈 VMS 다이아몬드 포럼'에 참석하기 위해 방한한 HP 본사의 크리스 브라운 오픈 VMS 전략담당 책임자는 아이테니엄환경을 지원해 사용자가 원하는 수준 이상의 강력한 컴퓨팅환경을 제공할 것이라고 약속했다.



HP 크리스 브라운 오픈VMS 전략담당 책임자

"오픈 VMS 지속적 업그레이드 아이테니엄등 다양한 환경지원"

'HP 오픈VMS 포럼' 개최

제품전략·로드맵 등 공개

한국HP(대표 최준근)는 오픈 VMS 사용자를 위한 HP 오픈(Open) VMS 다이아몬드 포럼을 27일과 28일 제주도 롯데호텔에서 개최하고 제품전략과 로드맵을 공개했다.

HP는 이 자리에서 '오픈 VMS'는 앞으로 HP의 주력 운영체제(OS)로 계속 업그레이드가 될 것이며 특히 200년부터는 인텔 '아이테니엄' 플랫폼을 지원해 사용환경이 더욱 다양해질 것"이라고 밝혔다.

HP는 새로운 OS전략에 따라 앞으로 프루64와 HP-UX는 인텔 아이테니엄을 지원하는 단일

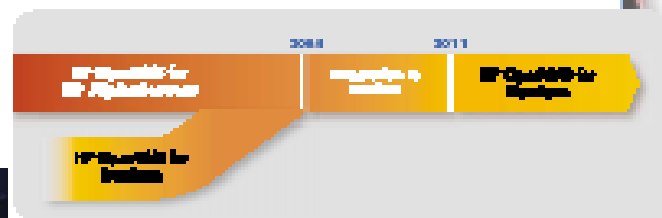
7HP는 최근 오픈 VMS 7.3-1 선이 많은 분야에서 유용한 솔루션을 내놓았습니다. 내년초에는 전으로 각광받아 왔습니다. 더욱 구조를 갖고 있습니다. 천의 경우를 예로 들더라도 '스파' (SPAR



OpenVMS is strategic as an enterprise server platform for the new hp

- Over \$200 million continuous investment in technology, people and marketing
- The part of HP OpenVMS to Itanium is already well under way, with Beta code available early next year
- HP OpenVMS application portfolio will be available on Itanium and HP AlphaServer

Is an industry full of short-term technology, HP OpenVMS is a durable platform that has stood the test of time, positioning itself into a modern operating system for the new millennium.



today: still the best pedigree in the world

Twenty years pedigree and HP OpenVMS is still the operating system of choice for the most demanding applications: Banking, Insurance, Government, Financial Institutions - where security's not an option, but a necessity. And it's the recognized industry leader in Healthcare IT.

Executive testimonial

"We know we can trust OpenVMS to keep our biggest applications up and running in our business, you have to have something you can bet your life on. OpenVMS does that for us."

Executive Member,
Group IT Director,
The Corporate Warehouse
Group PLC

hp OpenVMS - leadership in key markets:

- 90% of manufacturing of the world's CPU chips
- Over 50% of call phone billings in the world
- Over 65% of the world's short message service (SMS) subscribers
- 50% out of the world's top stock exchanges
- 75% out of the world's top derivatives exchanges
- Over 80% of automated lottery systems

Now with new HP, HP OpenVMS is gearing up for another twenty years with HP AlphaServer and Itanium.

www.openvms.compaq.com

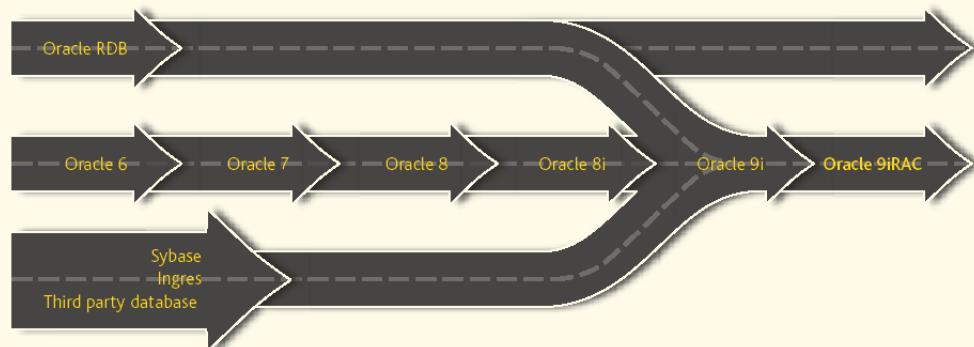


hundreds of ISVs just love new hp's OpenVMS





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Front Page Enterprise E-Business Communications

Itanium gives OpenVMS new lease on life

By [Stephen Shankland](#)
Staff Writer, CNET News.com
February 3, 2003, 1:34 PM PT

Hewlett-Packard engineers on Friday got the OpenVMS operating system up and running on an Itanium-based computer, a crucial step to ensuring the venerable OS doesn't suffer the fate of many of its shorter-lived contemporaries.

Booting OpenVMS on an HP [i2000](#) Itanium server is a momentous event for the operating system, which just passed its 25-year anniversary. HP is moving all its server lines to Intel's Itanium chip, meaning that OpenVMS must make the switch or be left behind with HP's Alpha processor, the last generation of which is planned for 2004.

"We're celebrating here," said Mark Gorham, vice president of OpenVMS at HP, who said the success was the culmination of 19 months of work at the



Volume 10, Number 6 *Not authorized by, affiliated with, or endorsed by Hewlett Packard Company* February 5, 2003

Shannon Knows HPC

HP's OpenVMS: One OS, Now THREE

Customer Success with Alpha EV7 Systems



"We are absolutely impressed by the performance that the new AlphaServer GS1280 with OpenVMS delivers for our (Wall Street Systems) banking application. Timely end of day roll up is a challenge for many financial operations. The GS1280 dramatically accelerates this process and cut the time required in half. That's important!"

Karin Spevak
Manager, IT
Financial Markets Information Service
WAVE Solutions Information Technology GmbH.,
a Bank Austria Creditanstalt company



"As a long-time customer, we are very excited about the new AlphaServer technology and the future we have with HP," said Gary Carter, director of ITS production for Dollar Rent-A-Car Systems, the industry leader in leisure rentals. "We put great demands on our AlphaServer systems. They handle some 10 to 20 million transactions or queries a day on our Oracle databases. The new AlphaServer systems will give us the increased performance and scalability needed to continue to grow our business and better serve our customers as we develop new applications and deliver new functionality."

Gary Carter
Director of ITS production
Dollar Rent A Car Systems, Inc



"We are very impressed with the new AlphaServer system because it provides a secure, resilient and powerful path forward that protects and builds on our application investments. The advances in redundancy, memory bandwidth and I/O capabilities delivered by the new distributed mesh architecture, will allow us to meet our growing user requirements by consolidating very large and powerful SMP configurations in an easy to manage, single system."

Gerd Koebshell
Head of Xetra/Eurex Operations
Deutsche Boerse Systems



"We are very impressed with the powerful new AlphaServer systems. The advances in redundancy, memory bandwidth, and I/O capabilities delivered by these new systems, will give our clients even faster access to the information they need to make better business decisions, while allowing us to reduce our cost and system complexity by consolidating our operations on a very powerful, easy to manage, configuration that is fully compatible with our existing applications investment."

Stacey Gelman
Chief Product Officer
Factiva a Reuters, Dow Jones Company

OpenVMS Marketing – H1 2003



upgrade to next generation hp AlphaServer systems and enjoy:

- Top operating system choices: OpenVMS, HP Tru64 UNIX®, and Linux
- Higher availability and improved system utilization
- Improved performance (4 to 10 times better performance than earlier AlphaServer B400 systems)
- Simplified management with lower support cost
- Increased flexibility and smaller footprint

"These new AlphaServer systems deliver what we require for the largest non-defense supercomputer we have here at PSC. Not only do they deliver more usable bandwidth than anything else, the modularity of the system architecture in conjunction with its manageability makes this an outstanding platform for this decade. We continue to be delighted by the decision we made to use AlphaServer technology."

Dr. Michael Irvine, Scientific Director
Pittsburgh Supercomputing Center

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OpenVMS in the adaptive enterprise

Leadership

Titanium Systems



Leadership Storage



MSA1000



EVA 110

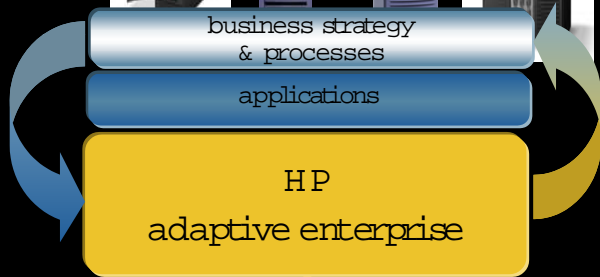
Leadership Printers



Mixed-architecture Clustering



Leadership Management and Resource Virtualization
Develop & Integrate with standards



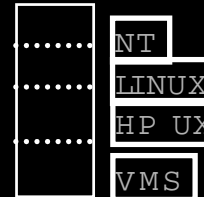
System Partitioning



Netbeans



Storage Management
Storage Virtualization



XML
WSDL

UDDI

industry defining technologies

- continuous, secure operations
- automated, intelligent management
- dynamic resource optimization

Extend OpenVMS Mission Critical Leadership

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OpenVMS in a Nutshell

- Major customers
 - Japan Telecom, Deutsche Borse, Ikea, Verizon Wireless, USAF, Mayo Foundation, Intel, BONY, DirecTV, Veterans Association
- Core Markets
 - **Finance**: Capital Markets, Retail Banking, Wholesale Banking,
 - **Telecommunications**: Mobile Billing, SMS, Prepaid, HLR, Cable & Satellite TV
 - **Healthcare**: Clinical, MIS, Decision Support, Scheduling
 - **Public Sector**: Defense Systems, Emergency Services, Gaming
 - **Manufacturing**: Semi-Conductors, Pharmaceutical, Utilities, MRP
- Differentiating product attributes
 - Availability: Disaster Tolerance
 - Clustering: Scalable to 96 nodes, upto 500 miles apart
 - Security: System and Cluster
 - Best TCO in class
 - Strong Integration technology
- Mission Critical Customers
 - Extremely large and loyal customer base
 - Appreciate “high touch” engagement model
 - OpenVMS proven in its Core Markets
- Market Profile
 - #1 rated in Healthcare
 - 90% of manufacturing of the world’s CPU chips
 - 50%+ of mobile phones billed in the world
 - Over 50% of the world’s SMS transactions
 - 66% of the world’s funds transfers
 - 5 of the world’s top 10 Stock Exchanges
 - Over 80% of the world’s automated Lottery systems

