

OpenVMS Strategy

2A01

April, 2003
DECUS-München



Mark Gorham
Vice President
OpenVMS Systems
Hewlett-Packard Corporation

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

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OpenVMS Core Strengths




OpenVMS

Mission Critical Leadership


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




Finance




Government



Healthcare




Telecomm



Manufacturing


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hp business market strategy



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



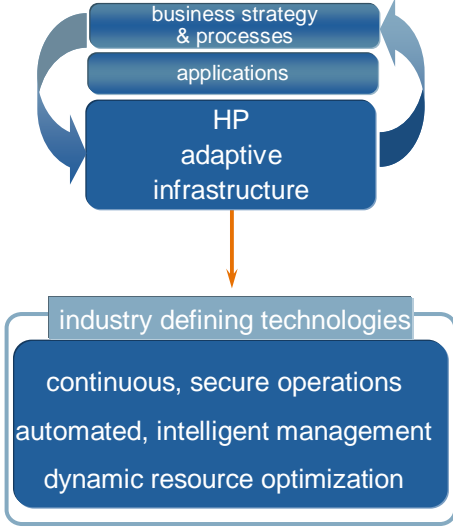
best return on information technology ("best RoIT")

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HP adaptive infrastructure for business agility

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



The diagram illustrates a top-down flow. At the top, three stacked boxes represent 'business strategy & processes', 'applications', and 'HP adaptive infrastructure'. Curved arrows on the sides indicate a cyclical relationship between these top-level elements. An orange arrow points down from the 'HP adaptive infrastructure' box to a larger box below. This lower box is titled 'industry defining technologies' and contains three sub-points: 'continuous, secure operations', 'automated, intelligent management', and 'dynamic resource optimization'.

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Adaptive Infrastructure delivers customer value

Demands on IT:	BCS areas of focus:
<ul style="list-style-type: none"> • More capacity with less money • Always available 	<ul style="list-style-type: none"> • Continuous and secure operation
<ul style="list-style-type: none"> • Avoid over/under capacity • Robust and secure environment 	<ul style="list-style-type: none"> • Dynamic resource optimization
<ul style="list-style-type: none"> • Fewer people managing more equipment • Flexibility 	<ul style="list-style-type: none"> • Automated and intelligent management
<ul style="list-style-type: none"> • Deriving more value from assets • Integrating new technologies 	<ul style="list-style-type: none"> • Foundation for the future

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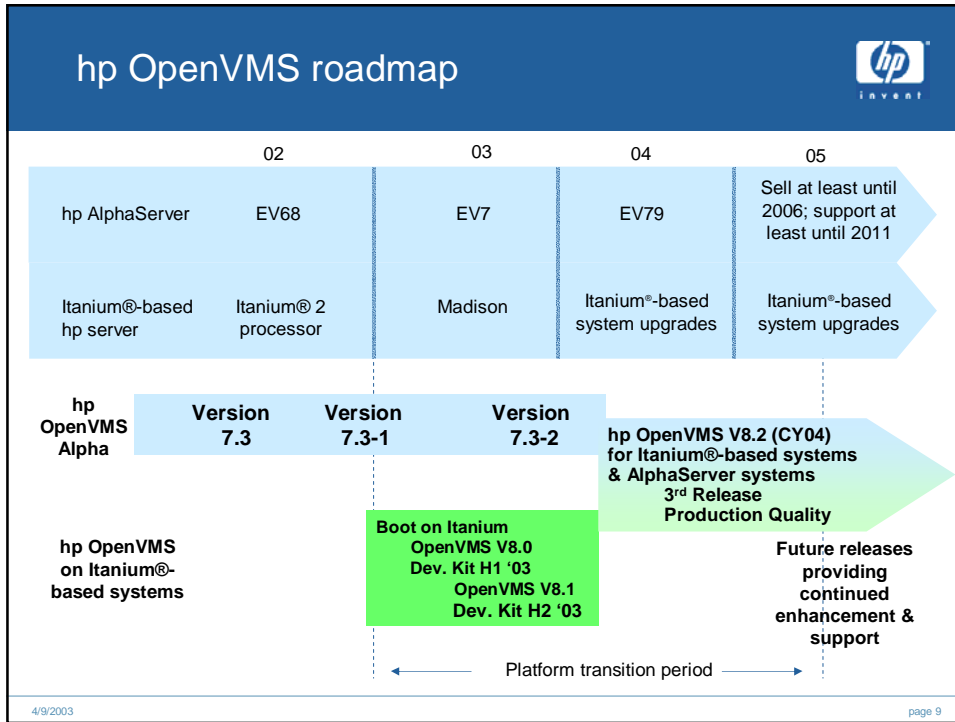
The adaptive infrastructure and our offering

Areas of focus:	VMS Solutions From HP And Our Partners:
Continuous & secure operations	<ul style="list-style-type: none">• OpenVMS Clustering• Security Excellence• Mission Critical Quality• Superior Services• Solutions with Partners
Automated & intelligent management	<ul style="list-style-type: none">• Clustering• Manageability
Dynamic resource optimization	<ul style="list-style-type: none">• Mixed Architecture Clustering• Partitioning continuum• ENSA Extended
Foundation for the future	<ul style="list-style-type: none">• Itanium architecture• J2EE and .NET infrastructure• Customer 1st program

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OpenVMS Engineering Today

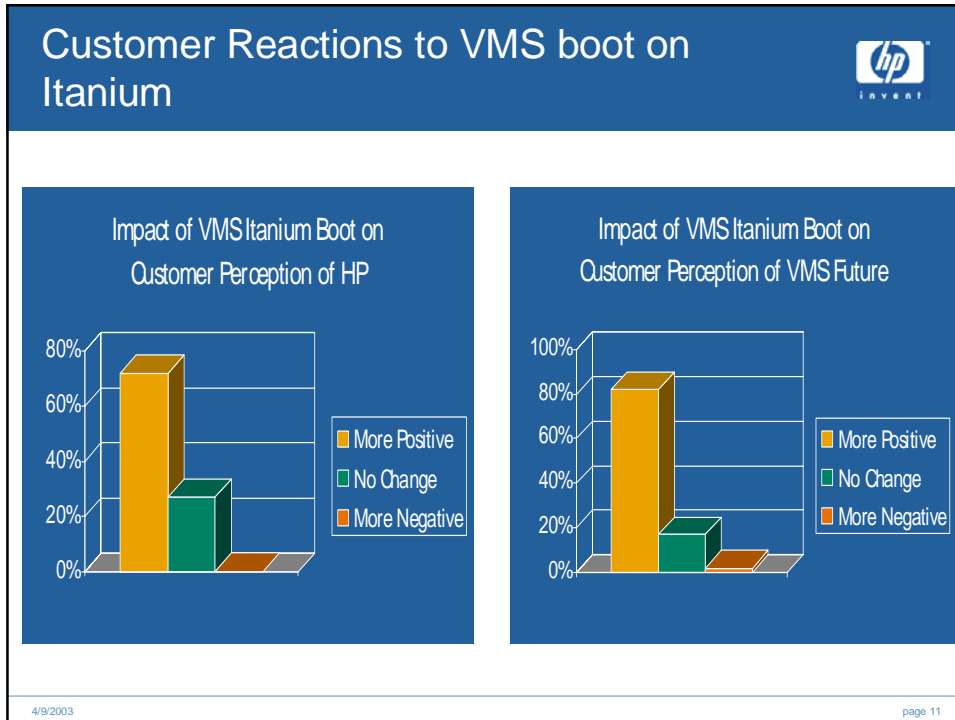





OpenVMS on Itanium at Cebit 2003

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

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The adaptive infrastructure and our offering



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Foundation for the future	<ul style="list-style-type: none"> Itanium architecture J2EE and .NET infrastructure Customer 1st program

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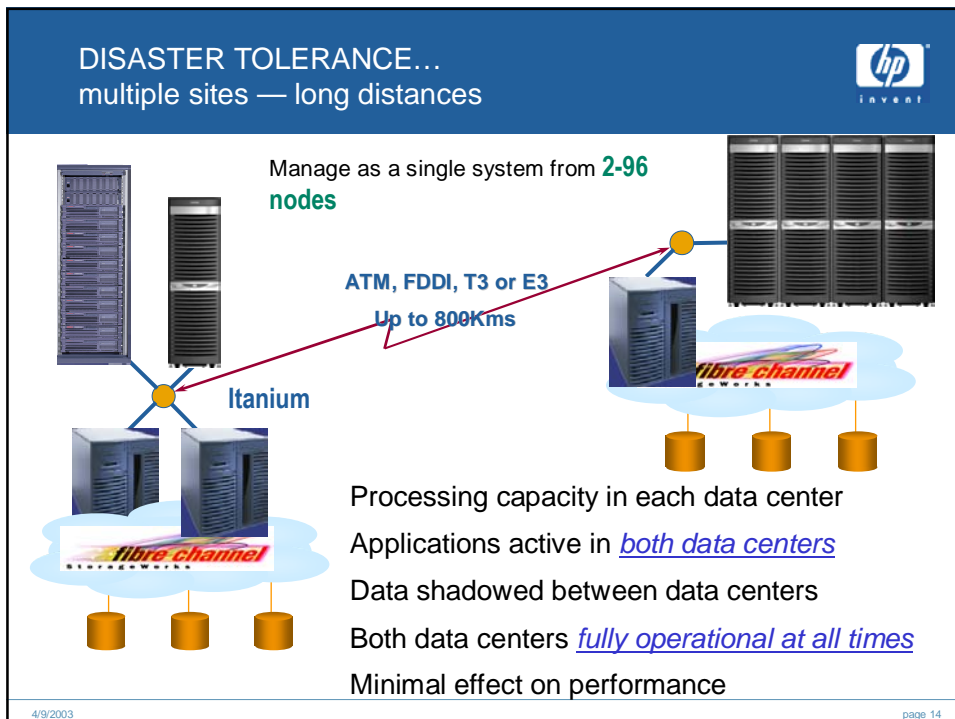
Current Cluster Comparisons



	VMS	AIX	Solaris
Cluster Style	Campus-Continental	Geographic	Campus
DT Focus	Excellent	Very good	Fair
Max Nodes	96	8	2
Intersite distance Limit	800 KM	None (IO Performance Trade off)	45 KM
Remote Serial Console Mgmt	Yes	No	No

Illuminata August 2002 UNIX Cluster paper

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hp OpenVMS *“Security by design”*

<i>From the Start</i>	<i>Now</i>	<i>Future</i>
<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • Supporting new Industry Standards <ul style="list-style-type: none"> • OpenSSL • Kerberos • CDSA • Ready for new evaluations and standards <ul style="list-style-type: none"> • DII COE • ITSEC • HIPAA 	<ul style="list-style-type: none"> • Enterprise wide security external authentication for: <ul style="list-style-type: none"> • LDAP • Kerberos • User defined • eBusiness security

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

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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

6/02

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:** Sema Group
- **SMS:** CMG
- **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








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OpenVMS Databases







- Oracle 9iRAC
 - Preconfigured Systems
- Oracle Rdb
- Oracle 10i
- HP Oracle Web Shelf
- Cache


- Ingres

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OpenVMS and Oracle 9iRAC Fraport




Selection Criteria

- **Availability**
 - Cluster
 - no SPOF
- **Performance**
 - single machine must be able to handle complete system load
 - transition time < 3 minutes
- **Scalability**
 - CPU, main memory and storage
- **Simple Migration Path**
 - if possible no changes to application code


Figures for year 2000

- ~ 50 million passengers
- ~ 460,000 aircraft movements
- ~ 1.6 million tons airfreight




Software Environment

- OpenVMS
- Oracle 9i RAC
- MQ-Series
- MetaObject
- Java RTE
- Visual Basic-, Java- and C-applications



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The adaptive infrastructure and our offering




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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

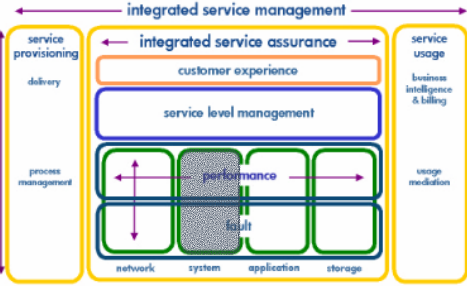
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HP OPENVIEW

Works | Right | Now

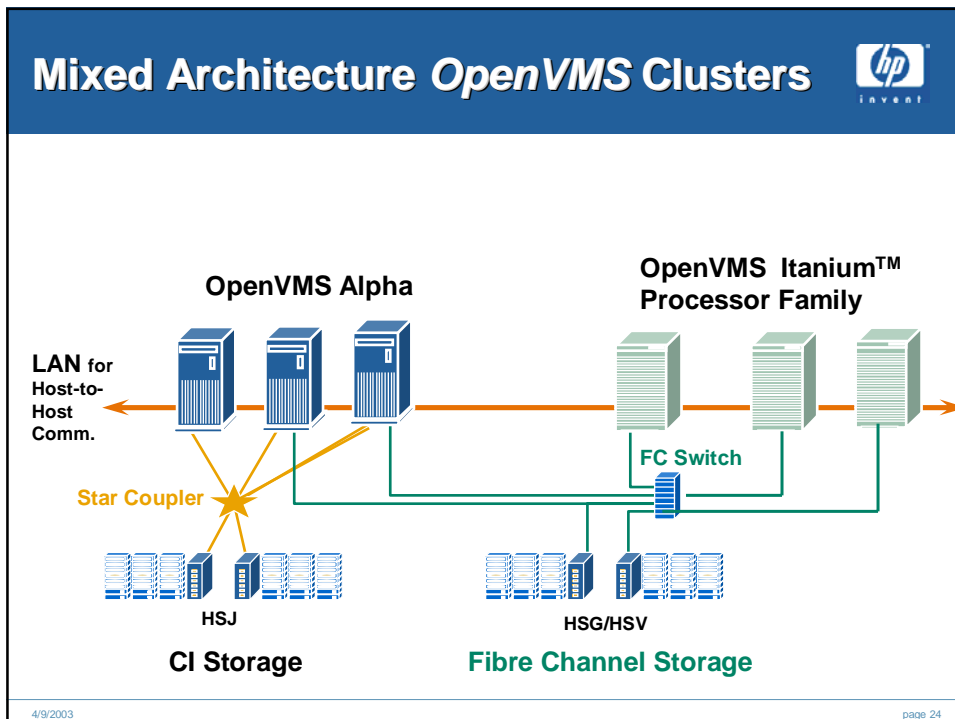
- Agent support for OpenVMS
- Partnerships with many ISVs for component solutions
 - CA
 - BMC
 - Synthesis
 - Heroix
 - PointSecure
 - Itheon
 - TDI
 - ISE
 - Fortel
 - Orsyp
 - Raxco
 - Legato
 - Many more

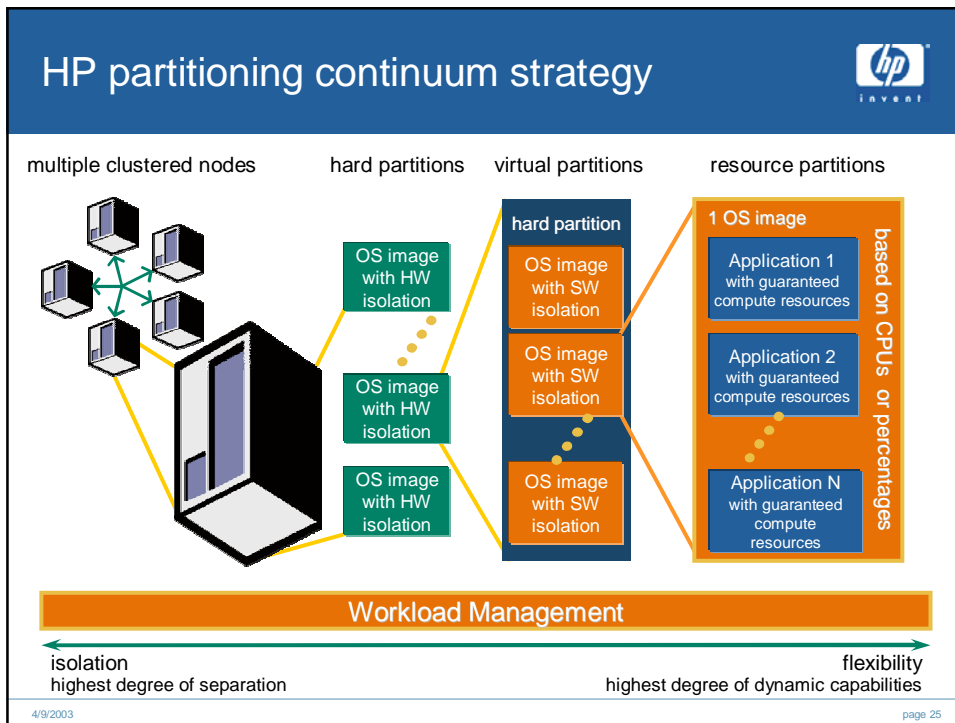


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hp Storage Products


The advertisement for HP Storage Products features the ENSA Extended logo and is divided into two main sections:

- software:**
 - storage area management:** device management, provisioning.
 - data management:** data protection, data recovery.
 - availability management:** data replication & migration, multi-pathing/ failover.
 - storage virtualization:** heterogeneous storage services, enterprise scale.
- network storage:**
 - E700**
 - VA7110**
 - VA7410**
 - MA/EMA**
 - EVA**
 - B3000**
 - NAS 8000**
 - MSA1000**
 - XP**

The HP logo and "invent" tagline are in the top right corner.

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Storage on OpenVMS
Full Support of ENSA




New Enterprise Storage Management products for OpenVMS

- MSA1000 Q2 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

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the new hp AlphaServer Series





2-4/8P
64GB
72 I/O Slots

8-64P
1/2TB/1TB
768 I/O slots


2P
16GB
22 I/O slots

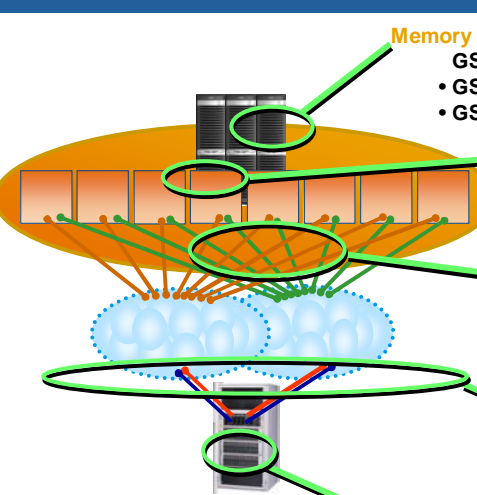
family-wide capabilities

- partitioning
- clustering
- dynamic multi-path I/O
- integrated server management
- “on demand” capabilities
- OpenVMS, Tru64 UNIX®, and Linux support
- RAID memory
- limitless I/O
- AGP graphics
- enterprise RAS

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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)

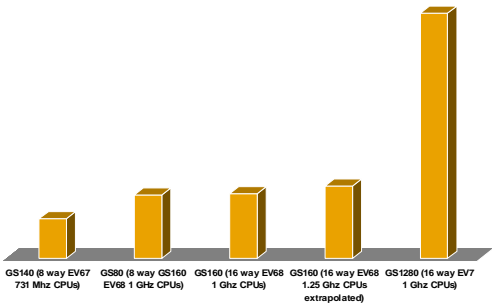
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GS1280 driving customer performance gains




- 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






GS140 (8 way EV67 731 Mhz CPUs) GS80 (8 way GS160 EV68 1 GHz CPUs) GS160 (16 way EV68 1 GHz CPUs) GS160 (16 way EV68 1.25 GHz CPUs extrapolated) GS1280 (16 way EV7 1 GHz CPUs)

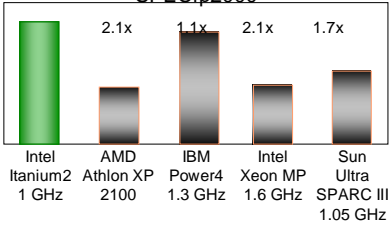


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Intel® Itanium® 2 chip performance

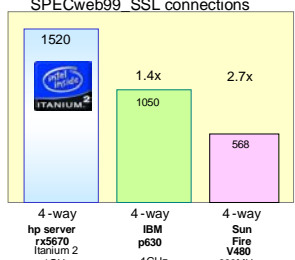


floating point performance
SPECfp2000



Intel Itanium2	AMD Athlon XP	IBM Power4	Intel Xeon MP	Sun Ultra SPARC III
1 GHz	2100	1.3 GHz	1.6 GHz	1.05 GHz
1.0x	2.1x	1.1x	2.1x	1.7x

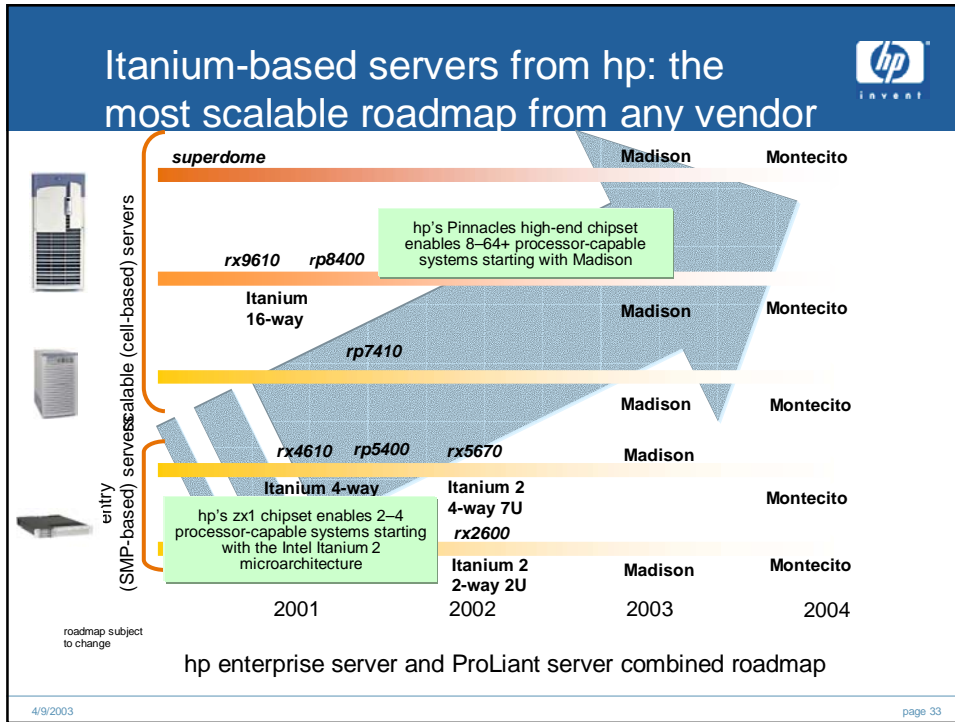
SPECweb99_SSL connections



4-way hp server rx5670 Itanium 2 1GHz	4-way IBM p630 1GHz	4-way Sun Fire V480 900MHz
1520	1050	568
1.0x	1.4x	2.7x

- best 2-way OLTP performance
 - any architecture or database
- best 4-way OLTP performance
 - any architecture or database by at least 1.4X
- beats all IA-32 8-way servers in OLTP
 - by at least 10%
- world's fastest floating-point engine
 - SPECfp2000
- fastest SPECweb_SSL performance on Linux
 - best of any architecture

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Web Integration Standards with OpenVMS

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New Web Integrations Standards for OpenVMS



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

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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

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Training future OpenVMS resources

- CSLG: 120 educational institutions
- VMS Free License Program: 131 educational institutions
- OpenVMS Boot Camp
- HP ETS, HP OpenWorld, HP Interex
- OpenVMS Advanced 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
 - Mind IQ
 - 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)

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“HP의 오픈(Open) VMS”는 인해 아이티(IT)업 프로그래머를 지원해 사용자에게 더욱 다양한 환경에서 강력한 컴퓨팅환경을 구현하도록 해줄 것입니다. 최근의 오픈 VMS 고객에게 최근 기술동향의 가장 코드를 개발 소자라고 하면 오픈 VMS 데이터센터 프로그래머에 감사하기 위해 영혼의 IT업 본사의 크립스 브라운 오픈 VMS 전략담당 책임자는 아이티(IT)업 환경을 지원해 사용자에 필요한 것은 이상적인 강력한 컴퓨팅환경을 제공할 것이라고 약속했다.

HP 크리스 브라운 오픈VMS 전략담당 책임자

“오픈 VMS 지속적 업그레이드 아이티업등 다양한 환경지원”

HP는 최근 오픈 VMS 7.3이 선이 많은 분야에서 유용한 솔루션을 내놓았음을 나타내며, 더욱 선으로 주목받아 왔습니다. 더욱 구조를 갖고 있습니다. 선의 경우 HP는 새로운 OS에 대해 최신 기술은 HP-UX는 안정 아이티업 환경을 지원하는 방법

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 in 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

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

2004

HP OpenVMS for HP AlphaServer

HP OpenVMS for Itanium

2011

HP OpenVMS for HP AlphaServer

HP OpenVMS for Itanium

hundreds of ISVs just love new hp's OpenVMS

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 High-End IT.

hp OpenVMS - leadership in key markets:

- 90% of manufacturing of the world's CPU chips
- Over 80% of call phone billings in the world
- Over 65% of the world's short message service (SMS) subscriptions
- 50% out of the world's top stock exchanges
- 25% out of the world's top-derivative exchanges
- Over 80% of automated battery systems

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

Executive Director, Group IT Director, The Complex Warehouse Group LLC

www.openvms.compaq.com

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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**

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

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

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**

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OpenVMS Marketing – H1 2003

upgrade to the most powerful AlphaServer systems on the planet

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 8400 systems)
- Simplified management with lower support cost
- Increased flexibility and smaller footprint

These new AlphaServer systems deliver what you require for the largest mainframe supercomputer you have been at PSC. Not only do they deliver more usable bandwidth than anything else, the reliability 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 you made to use AlphaServer technology.

D. Michael Jones, Secretary Director
Pittsburgh Supercomputing Center

... TOTALLY COMPATIBLE.

You're invested in the relationship with your OpenVMS, and the latest Unicenter® OpenVMS solutions are totally compatible with it.

When you maintain and upgrade your OpenVMS systems from Alpha to Itanium, it will be compatible then, too.

- 100% upward compatible products for POLYCENTER
 - Protects existing data and configuration files
 - Protects customizations and training investment
- Compatible with your Unicenter-managed enterprise

CA's Unicenter: The best infrastructure management solutions for OpenVMS.

Have we mentioned that it's compatible?

CA is committed to protecting your investment in OpenVMS.

Visit ca.com/openvms to learn more about our family of solutions for OpenVMS, or call 1-888-864-2368, mention promo code 1090. Outside North America, please contact your local CA representative or visit ca.com/camp.htm.

Computer Associates®





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Customer Success with Alpha EV7 Systems

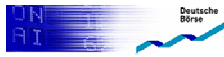
"We are absolutely impressed by the performance that the new AlphaServer GS1280 with OpenVMS delivers for our (Wall Street Systems) banking application. Timely end of day roll up is a challenge for many financial operations. The GS1280 dramatically accelerates this process and cut the time required in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

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


"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 Koebischall
Head of Xetra/Eurex Operations
Deutsche Boerse Systems




"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 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



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Front Page Enterprise E-Business Communication

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 [2000](#) 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

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Shannon Knows HPC


H P's OpenVMS: One OS, Now THREE Architectures with IPF Boot

OpenVMS in the adaptive infrastructure

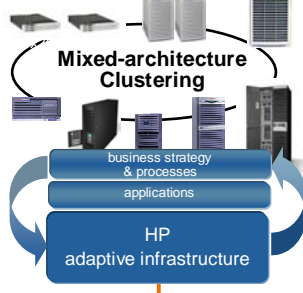


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“HP clearly understands that it's the whole solution including system, applications and ultimately business results that matter to us. More than half a year prior to the product announcement, they were working closely with our software supplier (Wall Street Systems) to ensure our complete solution worked perfectly.”

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