Unleashing the

Intel® Itanium® Processor

9500 Series

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Relative performance is calculated by assigning a baseline value of 1.0 to one benchmark result, and then dividing the actual benchmark result for the baseline platform into each of the specific benchmark results of each of the other platforms, and assigning them a relative performance number that correlates with the performance improvements reported.

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Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. For more information including details on which processors support HT Technology, see http://www.intel.com/technology/ht.

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Notice revision #20110804

Breakthrough Mission-Critical Capabilities with the

*Intel® Itanium® Processor 9500 Series*

- Leap in Enterprise Performance
- Strong Itanium Ecosystem
- Solid Path to the Future
Billions of connected devices require a **highly flexible infrastructure**.

Global connections and expectation of “always-on” requires **24x7 availability**.

Data management and analytics for Big Data requires **highly scalable infrastructure**.
High Availability, Scale & Flexibility Drive Future Mission Critical

**Today**
- Infrastructure Silos Trapped in Legacy IT
- Legacy RISC
- x86
- Legacy Mainframe

**Mid Term**
- Cloud Infrastructure (private or as-a-service) for Core Enterprise
- Robust Cloud for All Workloads

**Long Term**
- Dedicated Infrastructure for Mission Critical

Exponential data growth requires scalable architecture
Family of Mission Critical Processors

- Intel® Itanium® processor 9500 series
  - Mission Critical UNIX and Mainframe OSes

- Intel® Xeon® processor E7 family
  - Scalable Windows and Linux

Mission Critical portfolio for comprehensive coverage of needs
Itanium’s Next Step:
Intel® Itanium® 9500 series
Most Sophisticated Intel Processor To Date

Advancements over Itanium 9300

- New microarchitecture design
- 2x the cores\(^1\), 2x instruction throughput\(^2\)
- Up to 2.53Ghz frequency
- Up to 8% lower TDP\(^3\), 80% reduced idle power\(^4\)

More Performance, Reliability, Scalability, Power Savings

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\(^1\) 4 cores to 8 cores (Itanium 9300 series vs. Itanium 9500 series)
\(^2\) Maximum 6-wide vs. 12-wide instruction issue (Itanium 9300 series vs. Itanium 9500 series)
\(^3\) 185W TDP vs. 170W TDP (Itanium 9300 series vs. Itanium 9500 series)
\(^4\) Source: Intel internal measurements comparing individual core idle dynamic power (Itanium 9500 series vs. Itanium 9300 series)
Delivering Leap in Performance

- **Up to 2.4X Performance Scaling**
- **Up to 40% Faster Frequency**
- **33% Greater Bandwidth**

Results have been simulated and are provided for informational purposes only. Results were derived using simulations run on an architecture simulator or model. Any difference in system hardware or software design or configuration may affect actual performance. Intel product plans in this presentation do not constitute Intel plan of record product roadmaps. Please contact your Intel representative to obtain Intel's current plan of record product roadmaps.

1. 1.73GHz (Itanium 9300 series) to 2.53GHz (Itanium 9500 series)
2. 4.8GT/s (Itanium 9300 series) to 6.4GT/s (Itanium 9500 series)
Scaling Up Enterprise Performance

Itanium 9500 Enhances Parallelism Everywhere
Extending World-Class RAS

Leading the way with Itanium RAS features

Intel® Instruction Replay Technology
End-to-End error detection
Intel® Cache Safe Technology
Complete MCA with FW first error handling
Delivering Customer Value with Itanium 9500

- Leading Edge Capabilities
- IT Data Center Stability
- Long Commitment
A Robust
Itanium Ecosystem
You Can Count On
ISV Partners Delivering Mission Critical Solutions

“… offer a new level of performance and RAS capabilities for our joint customers…”
Craig Rubendall, Senior Director of R&D, SAS

“… we are also able to drive higher user counts and greater capacity…”
Robert Nagle, VP, InterSystems

“… add strength and performance for our joint retail and consumer goods customers…”
David Landau, VP, Product Management, Manhattan Associates

“… substantially reducing Total Cost of Ownership…”
Hans Kamman, Director, Development and Release Management, Infor

“… will provide our joint customers even better performance and TCO.”
Franz Faerber, Senior VP, SAP

“… better performance and TCO, market competitiveness and a compelling roadmap for the future.”
Simon Henman, Technology Manager, Technical Approval, Temenos

Example Sw ISVs*

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INSPUR K1 System will support the Itanium 9500

INSPUR K1 32 way system is ready for the new Itanium

- NUMA architecture which can support 32 new Itanium CPUs
  - 32 X 8 Cores will allow 256 cores in one system
  - QPI upgrades to 6.4 GT will allow higher global bandwidth for interconnection

- 4 TB memory
  - With new memory buffer K1 double the memory size
  - Memory interface upgrade from 4.8GT to 6.4Gt

- 99.999% availability
  - New Itanium RAS allow the system be the most important mission critical high-end system for CHINA

- Pin to Pin compatible allow easy to scale up
  - Minimum R&D investment to upgrade
  - Long life time for system platform
Itanium powers Bull mainframes

Mike Clinton
R&D Director
Bull’s Innovative Product Line

**bullx** (Intel Xeon):
supercomputers, HPC cloud solutions

**bullion** (Intel Xeon):
Consolidation and virtualization of critical applications, cloud computing

**novascale gcos** (Intel Itanium and Xeon):
mainframes, servers for strategic applications
Why Bull Loves Itanium

- Itanium has been the basis for Bull’s mission critical novascale gcos* mainframe product line for 10 years
- Bull has customers around the world using Intel’s Itanium products
- Our novascale gcos product line is a strategic offer for Bull and for our customers
- The architectural changes in Itanium 9500 give our novascale gcos customers an enticing offer with excellent performance improvement (increased clock rate) and incredible multiprocessor multipliers (increased cores and shared L3 cache)
- Bull will announce a new novascale gcos platform based on Itanium 9500 in the coming days

* gcos is Bull’s mainframe operating system software
Multiple OEM Hardware Support

“… breakthrough performance, increased productivity and delivers on HP commitment to provide our customers with investment protection.”
Ric Lewis, VP and GM, Business Critical Systems, HP

“… Itanium 9500 provide major improvements in terms of capacity, integration, performance…”
Michel Guillemet, EVP, Bull

“… new architecture has the breakthrough performance and the highest reliability…”
Miki Hamano, GM, Hitachi Ltd.

“… Itanium 9500, which meets China mission critical segments’ customer requirement well.”
Hu Leijun, CTO, Inspur

“We are pleased to provide our customers with the new enterprise servers based on Itanium 9500…”
Kazuaki Iwamoto, VP, NEC Corp.

Providing 2S – 32S scalable solutions

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A Sustainable Path Forward
Intel Common Platform Strategy

Xeon Volume Economics to Itanium;
Itanium RAS Capabilities to Xeon

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Extending The Common Platform Strategy

Modular Development Model Drives New Levels Of Commonality

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Intel Modular Development Model

OR

Unique Instruction Set Logic - “Cores”

Shared Silicon Design - Memory, I/O, RAS

Shared package and socket

Creating an even more converged Intel Itanium & Xeon roadmap
Leading Capabilities and Economics with IA

<table>
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<th>Dedicated Investment Required</th>
<th>Semiconductor Process</th>
<th>Fab</th>
<th>Motherboard</th>
<th>Chipset</th>
<th>Processor</th>
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<tr>
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<td>No</td>
<td>Some</td>
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</table>

Itanium is not a dedicated investment option.

Intel Architecture is the best choice for today and most sustainable for the future.
Solid Mission Critical Roadmap

Today          2013          Future

Sustainable roadmap for the long-term future

Modular Development Model

- **Today**
  - Itanium 9500
  - Xeon E7

- **2013**
  - Itanium 9500
  - Ivybridge

- **Future**
  - Kittson
  - Haswell
Intel Advantage in Mission Critical

Boost Performance and IT stability with Itanium 9500

Common Platform Strategy

Roadmap Commitment
Performance Configuration Details

• 2.19x performance scaling on Server-side Java. Baseline configuration: Crater Lake system with four Itanium 9350 processors (1.73 Hz, 4C)/ 32GB memory @ 1067 DDR3. OS: RHEL 5.5. Intel internal workload for Server-side Java. New configuration: Crater Lake system with four Itanium 9560 processors (2.53 GHz, 8C)/ 32GB memory @ 1067 DDR3. OS: RHEL 5.5. Intel internal workload for Server-side Java.

• 2.31x performance scaling on Java* RE General Applications. Baseline configuration: Crater Lake system with four Itanium 9350 processors (1.73 Hz, 4C)/ 32GB memory @ 1067 DDR3. OS: RHEL 5.5. Intel internal workload for Java* RE General Applications. New configuration: Crater Lake system with four Itanium 9560 processors (2.53 GHz, 8C)/ 32GB memory @ 1067 DDR3. OS: RHEL 5.5. Intel internal workload for Java* RE General Applications.

• 2.44x performance scaling on OLTP Database. Baseline configuration: Crater Lake system with four Itanium 9350 processors (1.73 Hz, 4C)/ 1TB memory @ 1067 DDR3. OS: RHEL 5.5. Database: Oracle 10gr2. Intel internal workload for OLTP Database. New configuration: Crater Lake system with four Itanium 9560 processors (2.53 GHz, 8C)/ 1TB memory @ 1067 DDR3. OS: RHEL 5.5. Intel internal workload for OLTP Database.