Unleashing the
Intel® Itanium® Processor 9500 Series

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VP, GM Server Development

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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 here

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Notice revision #20110804

http://software.intel.com/en-us/articles/optimization-notice/

Breakthrough Mission-Critical Capabilities with the *Intel® Itanium® Processor 9500 Series*

Leap in Enterprise Performance

Strong Itanium Ecosystem

Solid Path to the Future

Converging Trends Require the Best Mission Critical Infrastructure

Billions of connected devices require a **highly flexible infrastructure**

Global connections and expectation of "always-on" requires **24x7 availability**

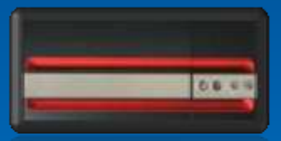
Data management and analytics for Big Data requires **highly scalable infrastructure**

High Availability, Scale & Flexibility Drive Future Mission Critical

Today

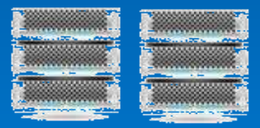
Infrastructure Silos
Trapped in Legacy IT

Legacy RISC



Legacy Mainframe

x86



Mid Term

Cloud Infrastructure
(private or as-a-service)
for Core Enterprise

Dedicated
Infrastructure for
Mission Critical

Long Term

Robust Cloud for
All Workloads

Exponential data growth requires scalable architecture

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Family of Mission Critical Processors

Intel® Itanium® processor 9500 series

Mission Critical UNIX and Mainframe OSes

Intel® Xeon® processor E7 family

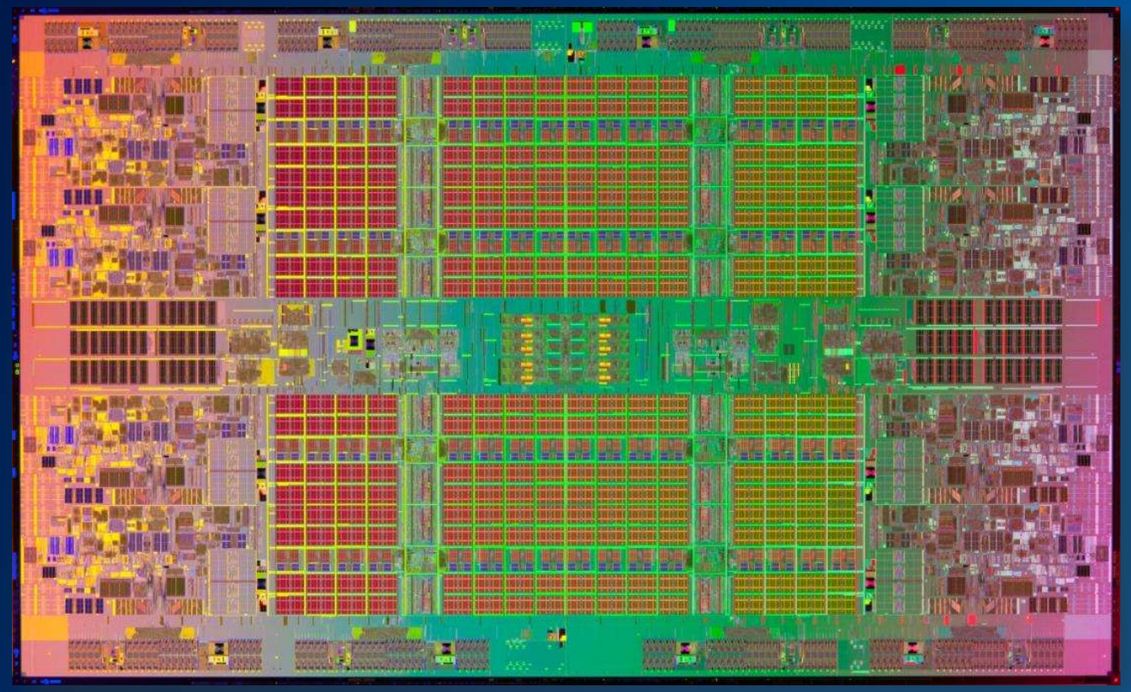
Scalable Windows and Linux

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

[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)

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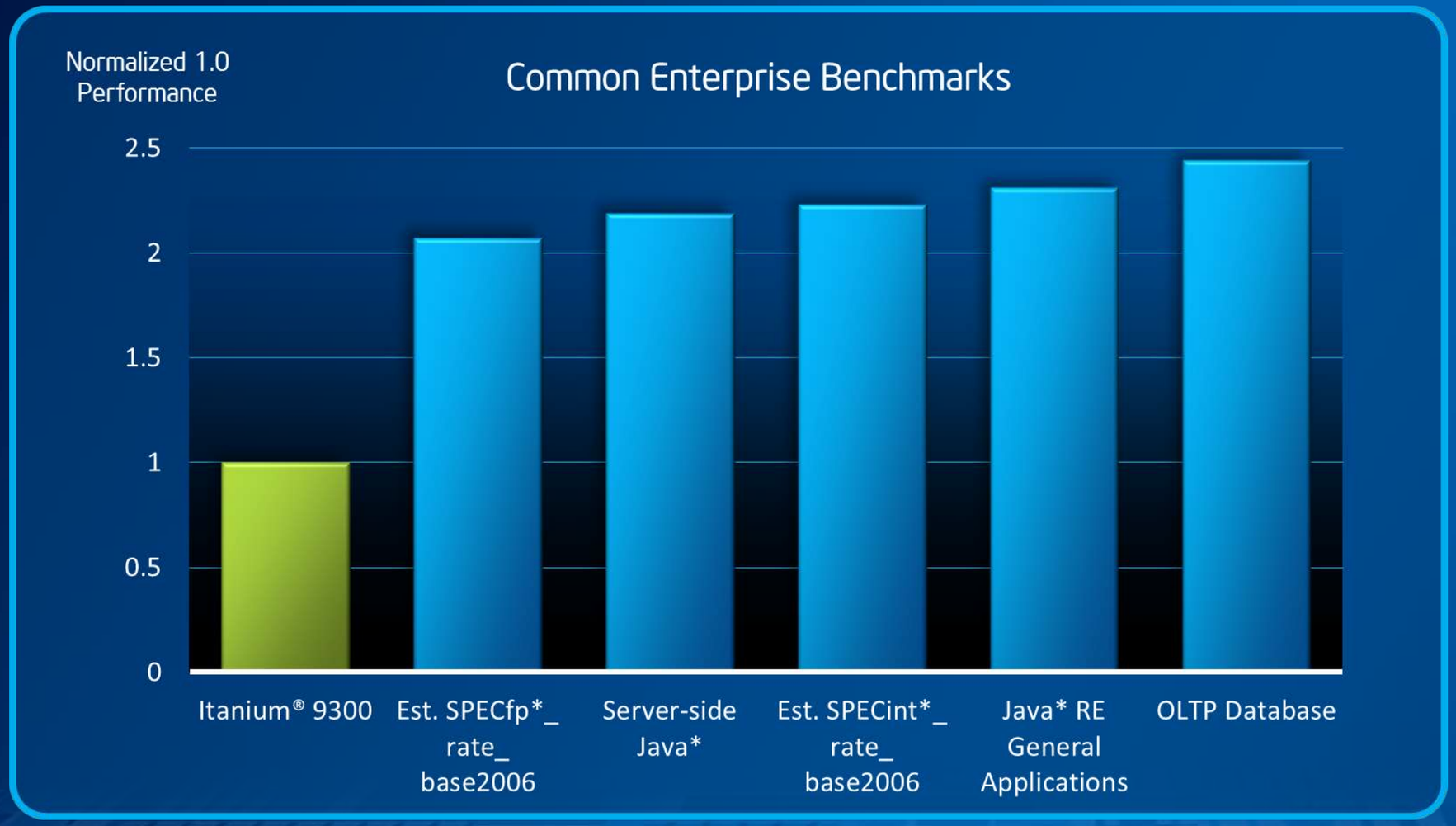
Delivering Leap in Performance



Up to **2.4X** *Performance Scaling*[1]

Up to **40 %** *Faster Frequency*[2]

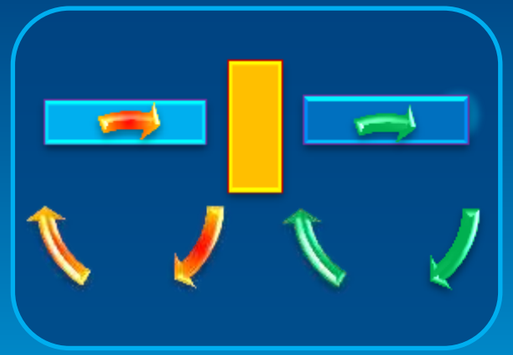
33 % *Greater Bandwidth*[3]

[1] 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.

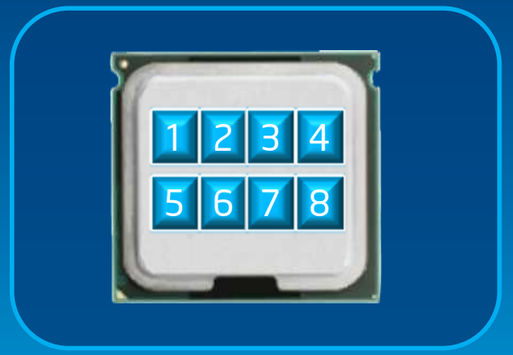
[2] 1.73GHz (Itanium 9300 series) to 2.53GHz (Itanium 9500 series)

[3] 4.8GT/s (Itanium 9300 series) to 6.4GT/s (Itanium 9500 series)

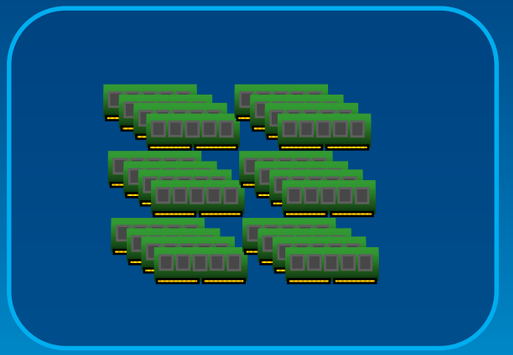
Scaling Up Enterprise Performance



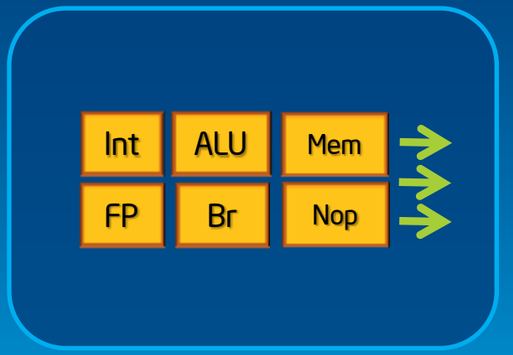
Thread-level Parallelism



Core-level Parallelism



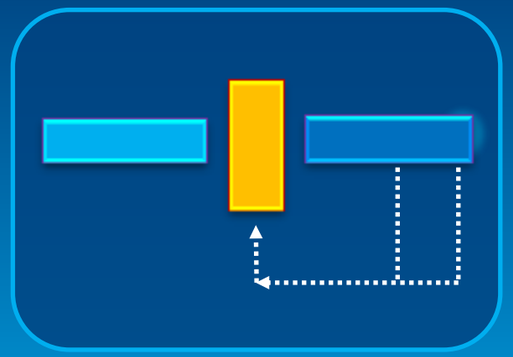
Memory Parallelism



Instruction Parallelism

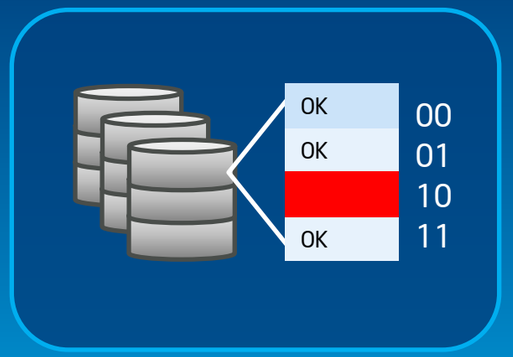
Itanium 9500 Enhances Parallelism Everywhere

Extending World-Class RAS

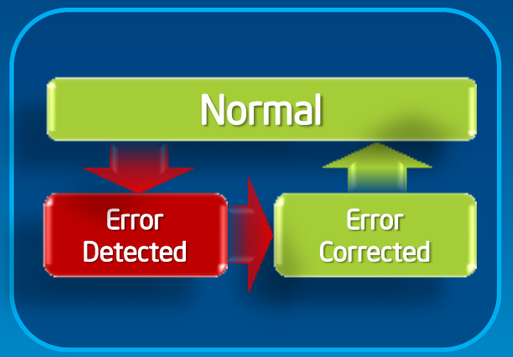


Intel® Instruction Replay Technology

End-to-End error detection



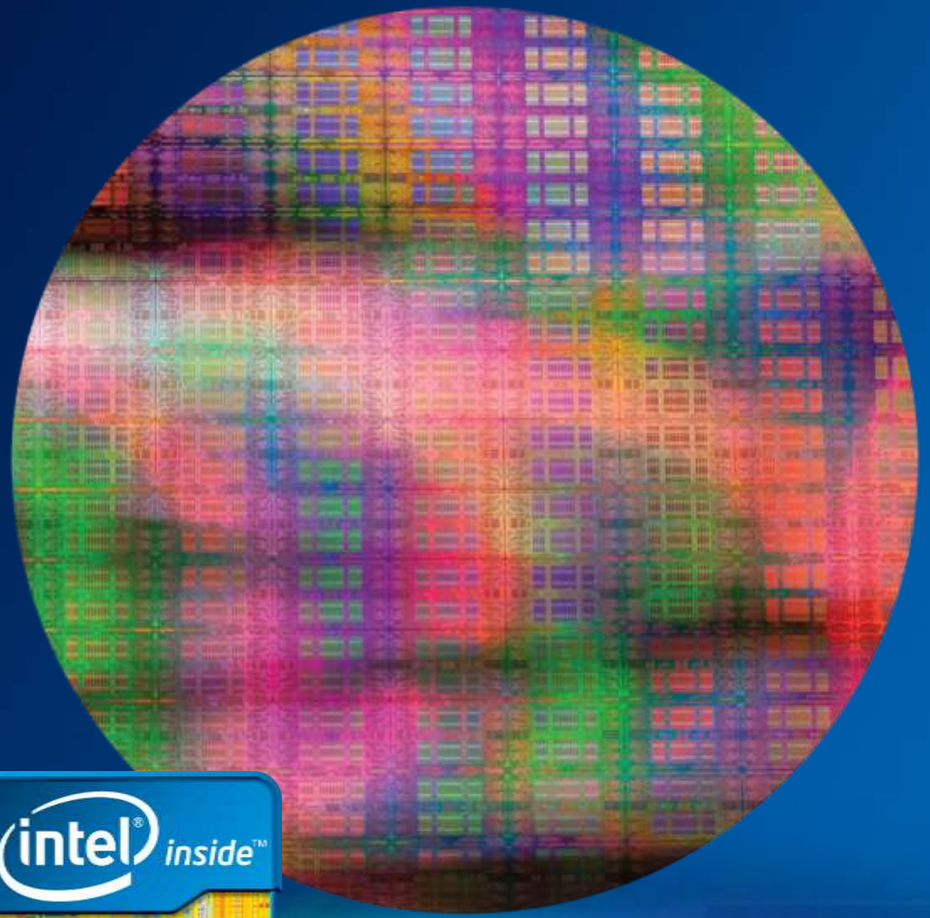
Intel® Cache Safe Technology



Complete MCA with FW first error handling

Leading the way with Itanium RAS features

Delivering Customer Value with Itanium 9500



- Leading Edge Capabilities
- IT Data Center Stability
- Long Commitment


A Robust
Itanium Ecosystem
You Can Count On
intel

ISV Partners Delivering Mission Critical Solutions

Example SW ISVs*

"… 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…"

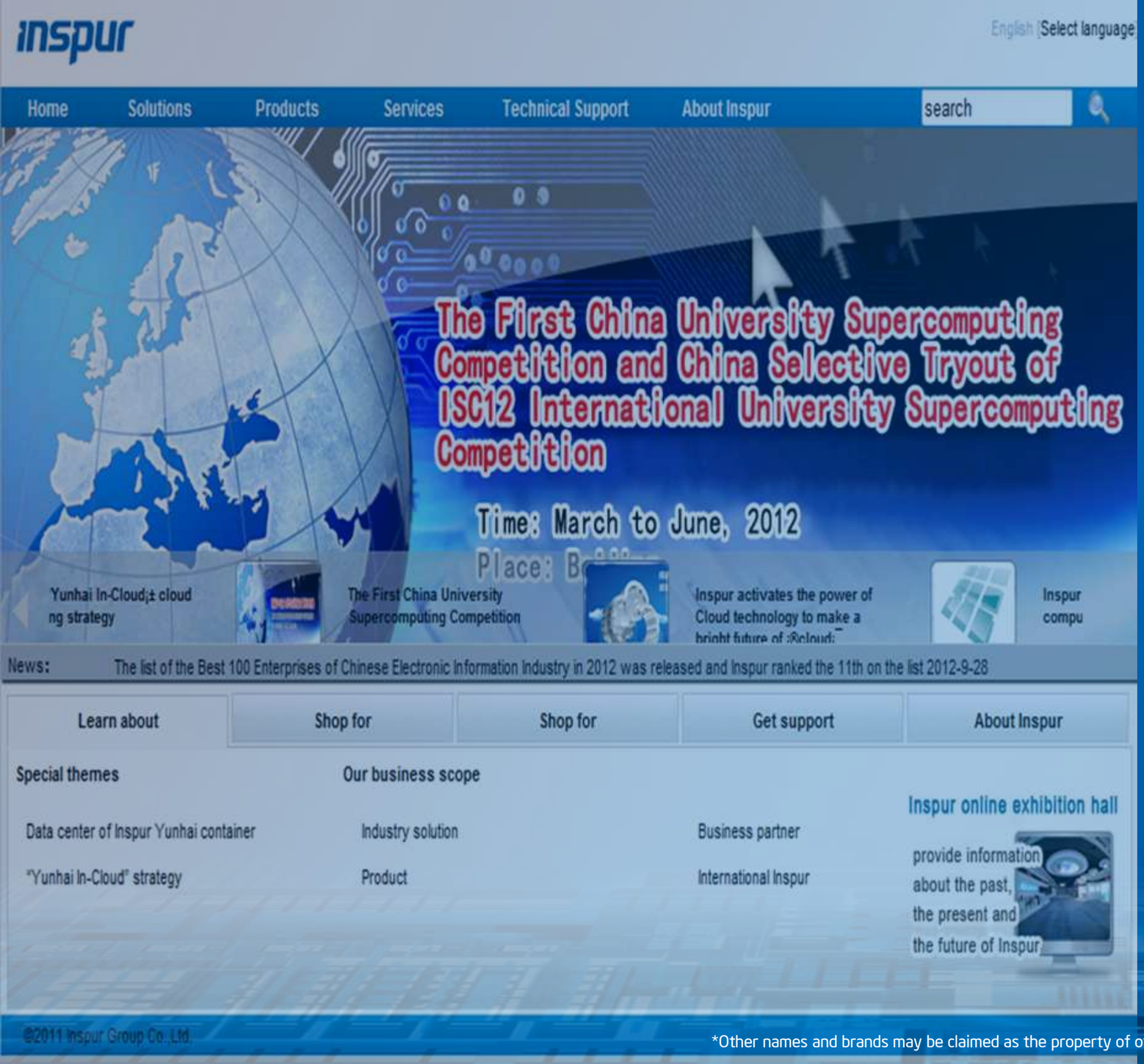
Hans Kamman, Director, Development and Release Management, Infor

"… 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



inspur 浪潮

Hu Leijun

Chief Technology Officer

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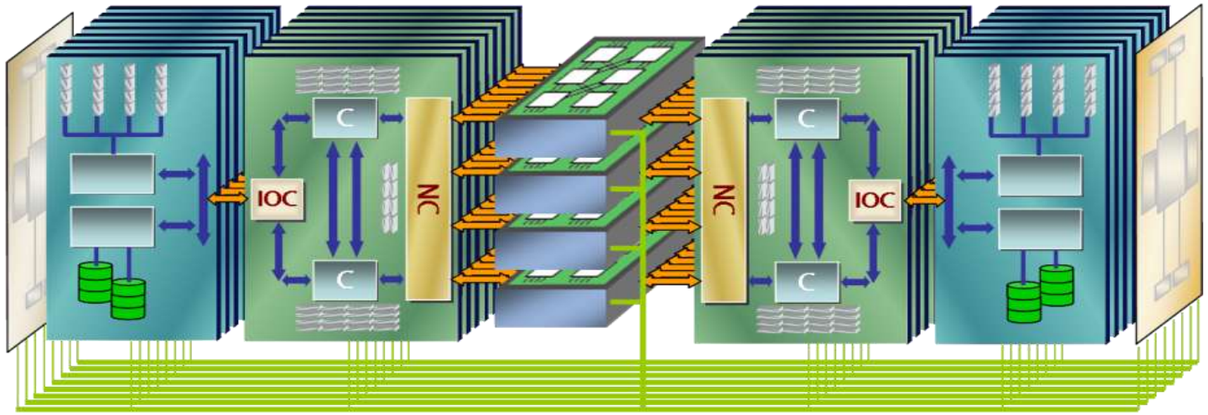
INSPUR K1 System will support the Itanium 9500

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



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novascale gcos

Itanium powers Bull mainframes

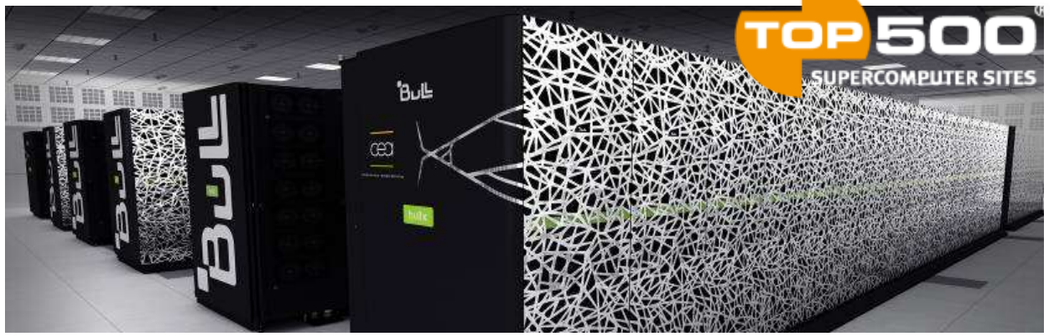
Mike Clinton

R&D Director

BULL

Architect of an Open World™

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):

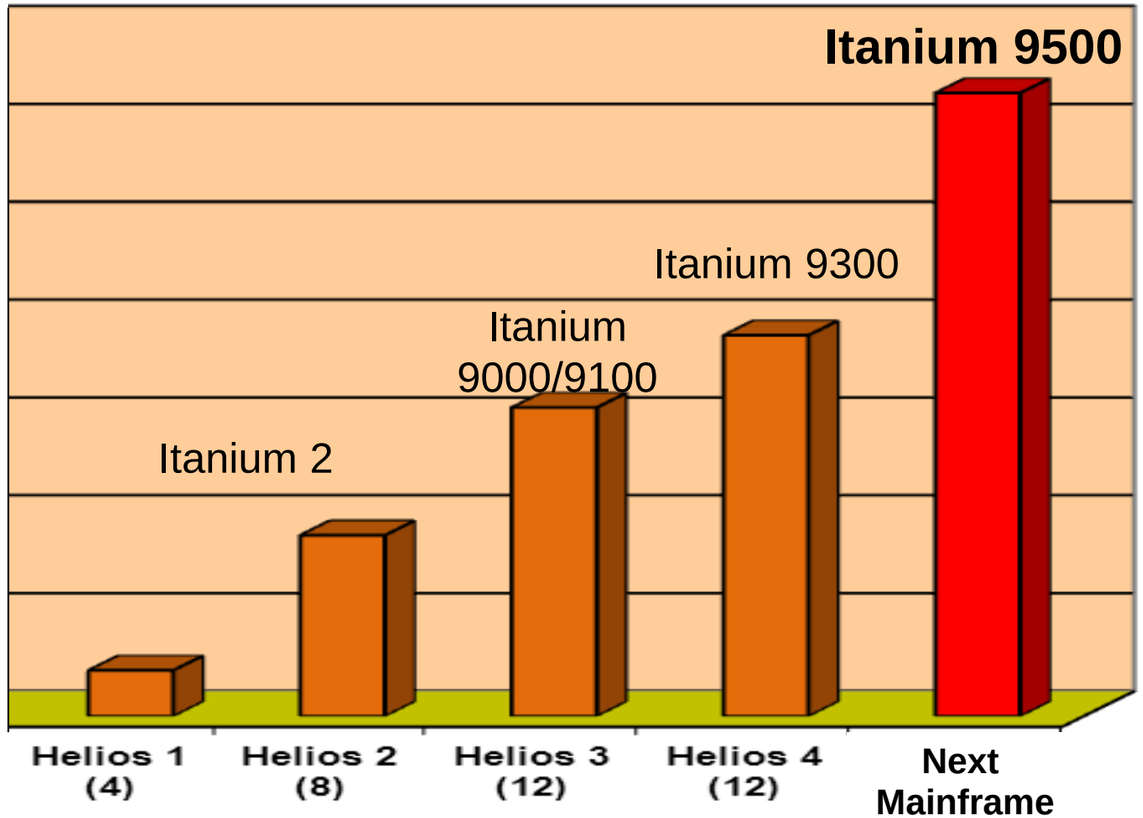
mainframes, servers for strategic applications

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

Bull Mainframe Relative Performance



EARLY 2000s -- PRESENT

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.

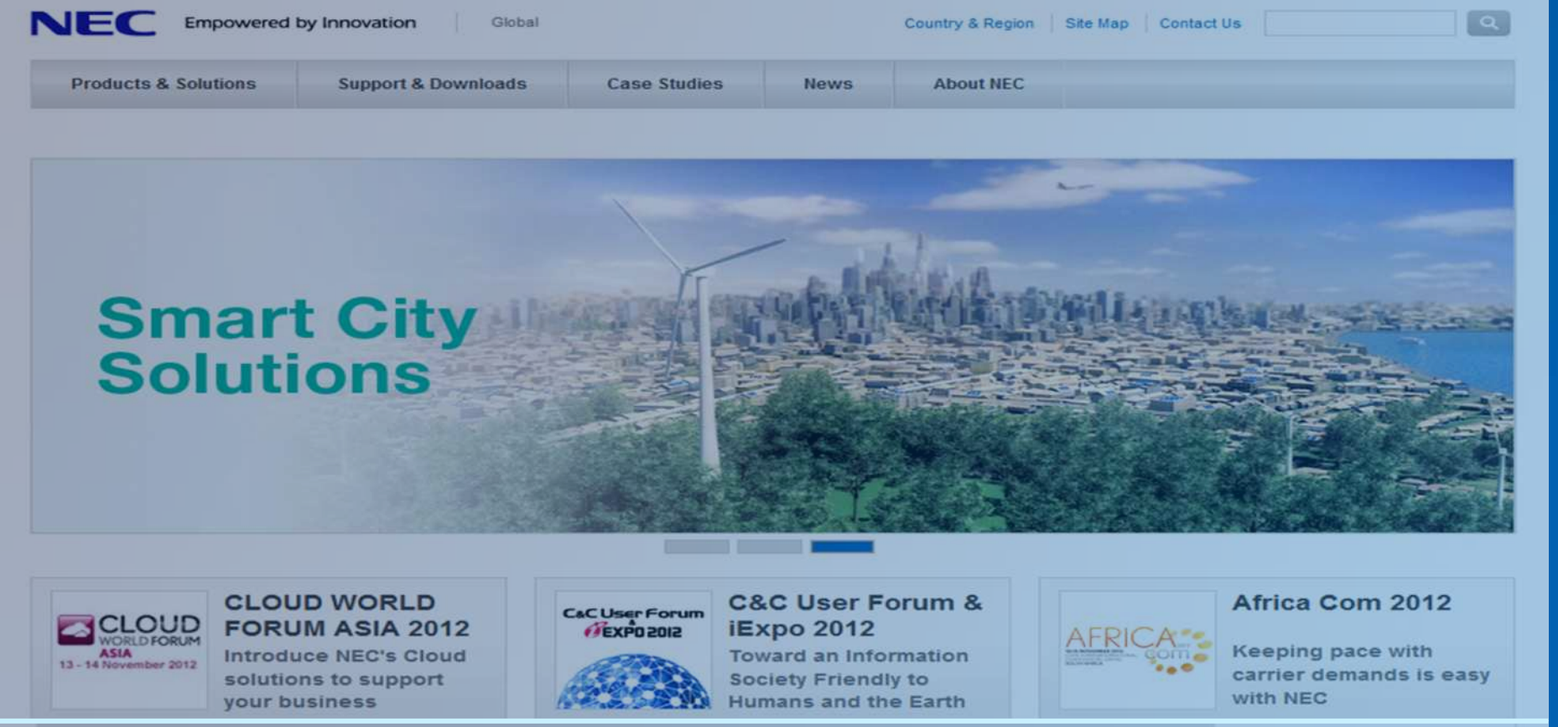
"… Itanium 9500, which meets China mission critical segments' customer requirement well."

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



NEC

HITACHI

Inspire the Next

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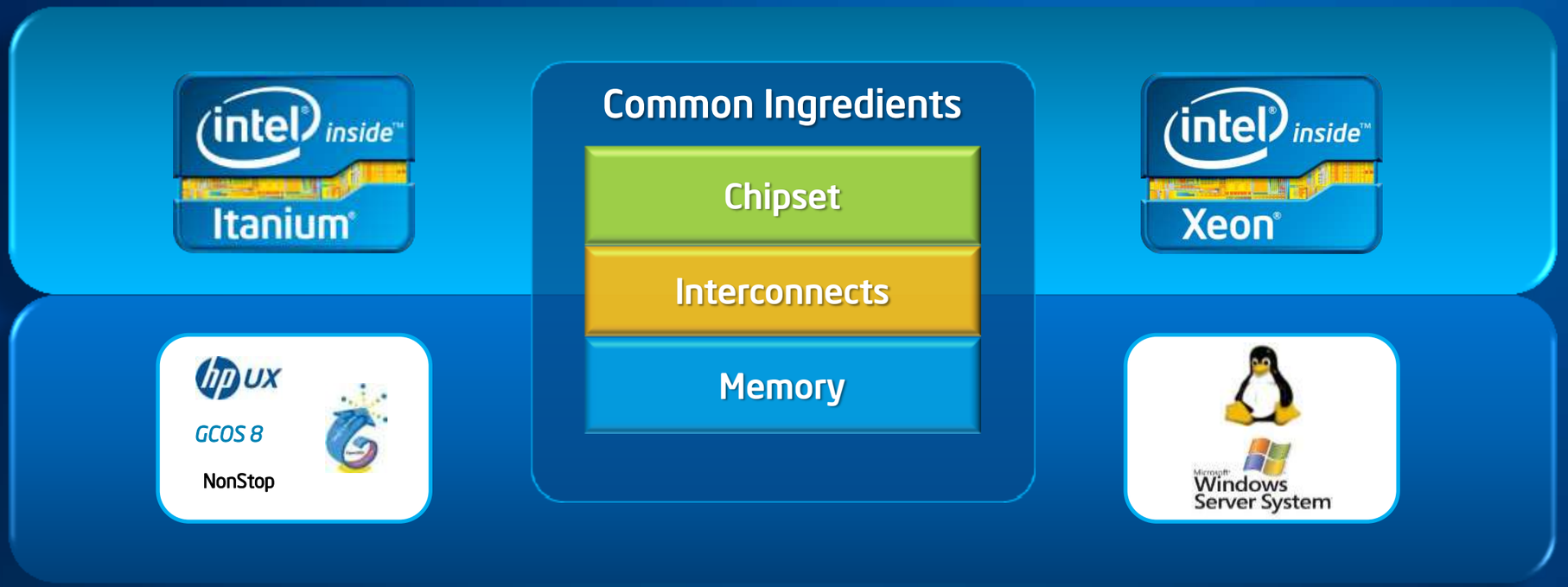
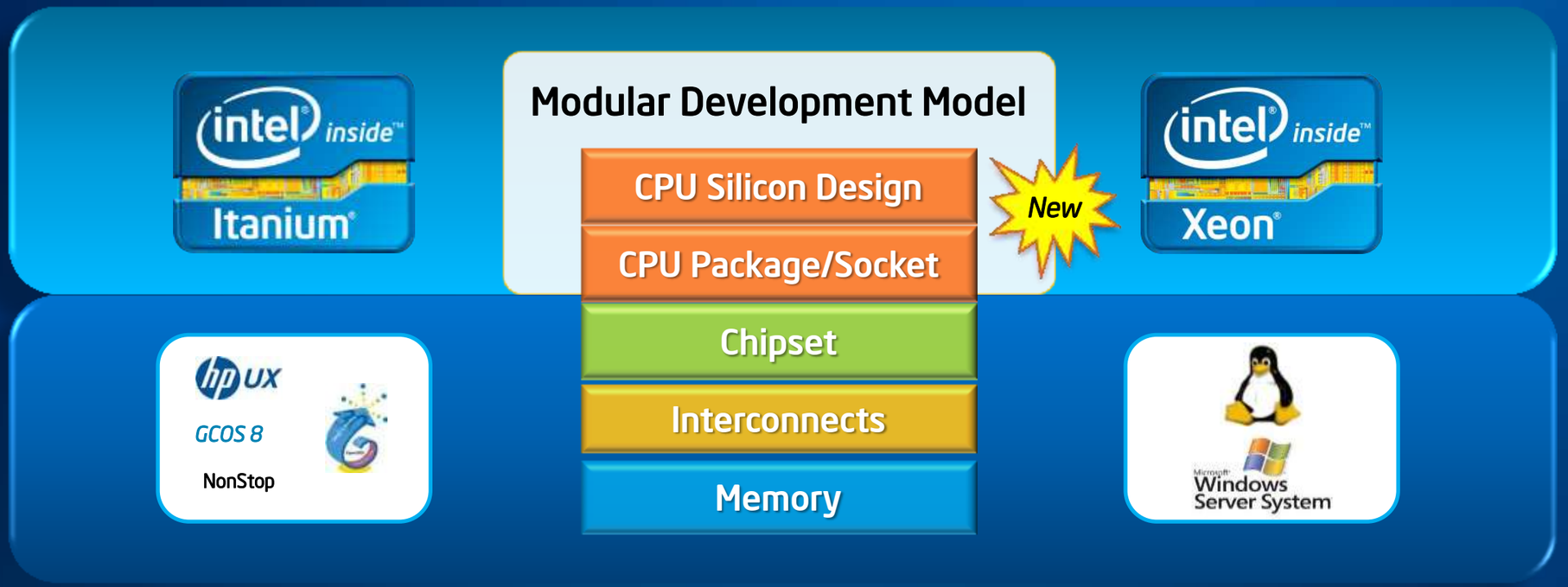
A Sustainable Path Forward

Intel Common Platform Strategy



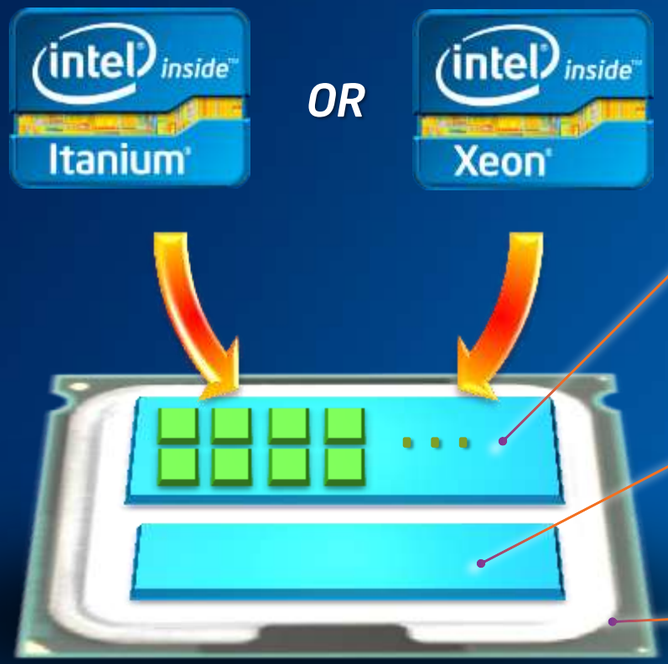
Xeon Volume Economics to Itanium;
Itanium RAS Capabilities to Xeon

Extending The Common Platform Strategy



Modular Development Model Drives New Levels Of Commonality

Intel Modular Development Model



- Unique Instruction Set Logic – "Cores"
- Shared Silicon Design - Memory, I/O, RAS
- Shared package and socket

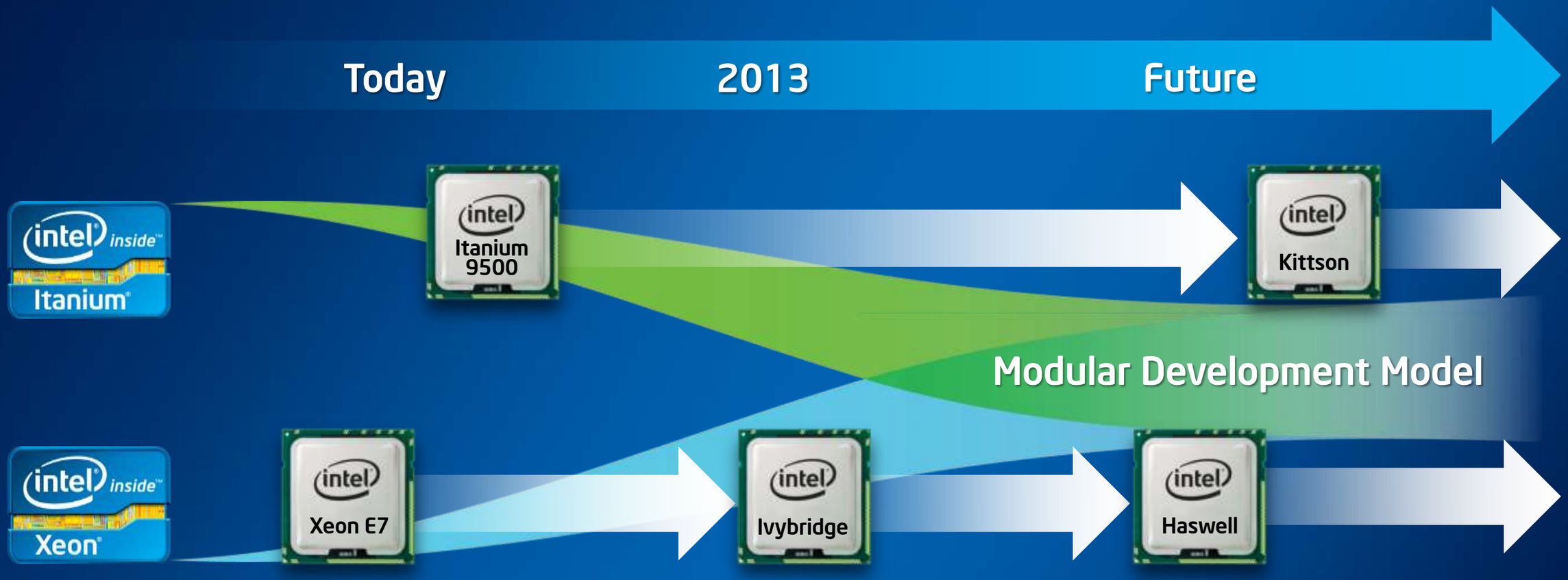
Creating an even more converged Intel Itanium & Xeon roadmap

Leading Capabilities and Economics with IA

Dedicated Investment Required	 Semiconductor Process	 Fab	 Motherboard	 Chipset	 Processor
UNIX Competitors	Yes/ Foundry	Yes/ Foundry	Yes	Yes	Yes
Itanium	No	No	No	No	Some

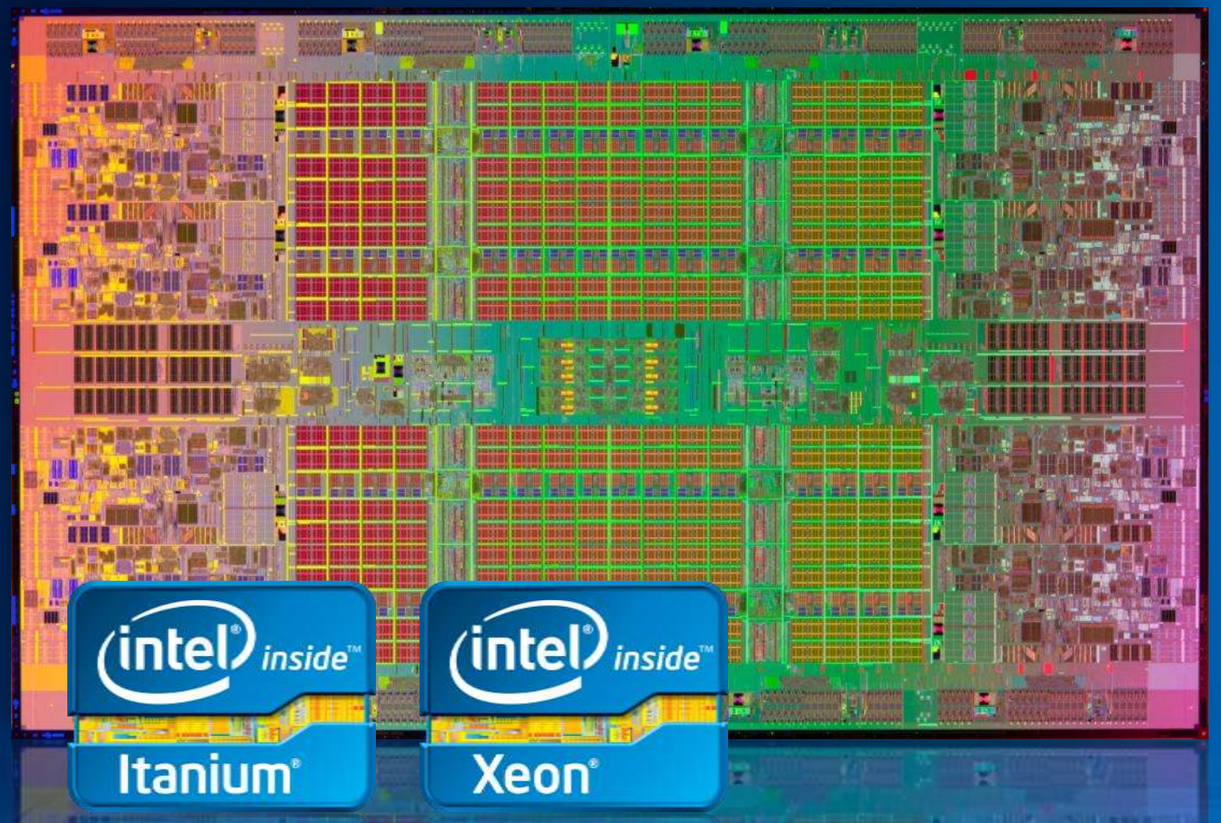
Intel Architecture is the best choice for today and most sustainable for the future

Solid Mission Critical Roadmap

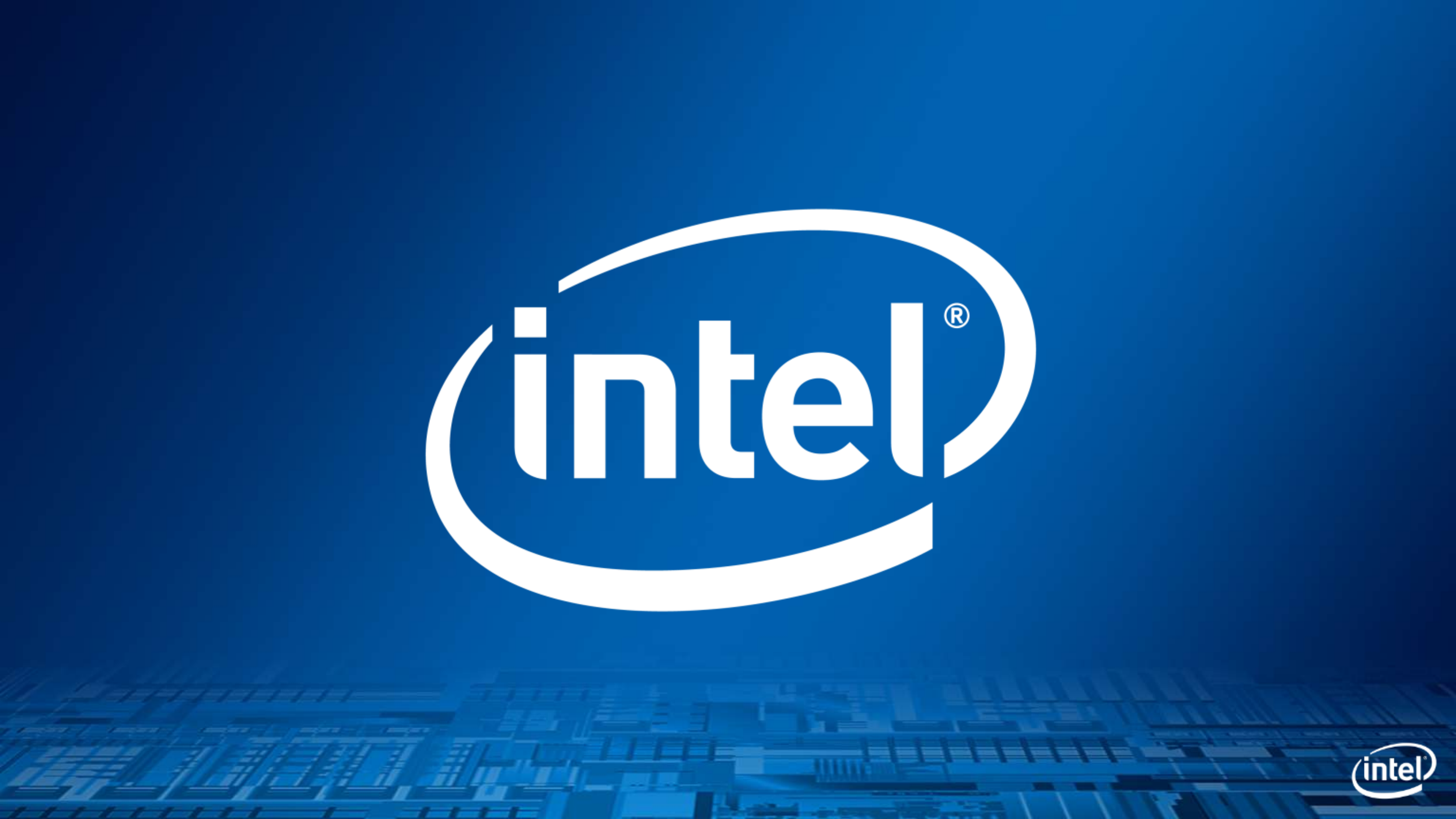


Sustainable roadmap for the long-term future

Intel Advantage in Mission Critical



- Boost Performance and IT stability with Itanium 9500
- Common Platform Strategy
- Roadmap Commitment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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.