

# Itanium®-based servers

Mainframe-class solutions at mainstream prices

## Product Overview

Intel® Itanium® Processors  
Mission-Critical Computing



Today's IT organizations face tough demands from senior executives: scale and adapt core business applications faster to deliver more value to the business and manage them more efficiently to reduce total costs. Intel® Itanium®-based servers are helping thousands of organizations do exactly that. They rival mainframe and high-end RISC systems for scalability and availability, yet are based on an affordable, industry-standard architecture that provides unprecedented choice, flexibility and value.

Many of the world's most successful businesses – including more than 75 of Fortune 100 companies – are already using Itanium-based servers to replace aging mainframe and high-end RISC systems, and to establish a more scalable, adaptable and affordable foundation for enterprise database, data warehouse, ERP, BI and CRM applications. Systems are available today that:

- **Support up to 7-nines availability** (99.99999 percent).
- **Scale from 2 to 512 processors**, with up to 128 terabytes of memory.
- **Deliver world-record performance** for some of today's most demanding workloads.

## Virtualize and consolidate your data center

With the high-end scalability and availability of Itanium-based servers – and their multi-OS support – you can consolidate more and heavier workloads on fewer systems to improve utilization and drive down data center costs.

- **Consolidate multiple instances of HP-UX\*, Microsoft Windows\* and Linux\***, all on the same server.
- **Take advantage of physical and logical partitioning**, virtualization, and sophisticated workload management capabilities to address your specific data center challenges.
- **Realize up to 33 percent lower TCO** versus consolidating on Intel® Xeon® processor-based servers.<sup>1</sup>

## Establish a better foundation for growth

Itanium-based servers give you more choices in hardware, software and vendors than RISC and mainframe architectures, so you have more options for scaling and adapting your infrastructure. They are supported by:

- **More than 12,000 applications** from more than 2,000 ISVs, including Microsoft, BEA, IBM, Ansys, Gaussian, Symantec/Veritas, Oracle, SAP, SAS, and many others.
- **A broad array of integrators**, solution providers and developers around the world.
- **Dozens of leading server vendors**, which prevents vendor lock-in and provides you with a broad array of configurations targeting diverse needs.

## Protect your business

Intel® Itanium® microarchitecture was designed with high availability and security as core requirements, so today's Itanium-based servers are capable of supporting the world's most mission-critical environments.

- **Advanced RAS features rival those** of proprietary mainframe architectures.
- **Unique security capabilities, such as firmware authentication and memory compartments**, can be used to dramatically improve system and application security.
- **Fast data encryption** enables strong security at all levels, without the excessive overhead that can drive down performance in other architectures.

## Drive down your costs

Total costs tend to be considerably lower for Itanium-based solutions than for comparable RISC and mainframe solutions, and those benefits typically extend across the entire implementation, including hardware, software, and services.

- **Competitive pricing** among Itanium-based server and software vendors helps to keep prices low, while providing a broad range of options.
- **Cost-effective data center solutions** are enabled by powerful and manageable Itanium-based systems with small footprints and excellent energy efficiency.
- **Companies such as [Air Products](#), [Profesión + Auge](#), [Royal London Group](#), [Sabre Airlines Passenger Solutions](#), [Sompo Japan Insurance](#)**, and many others have achieved major cost savings through migration to Itanium-based servers.

## Itanium®-based servers are delivering world-class performance on some of today's most demanding, data-intensive benchmarks

Workload	Benchmark	Result <sup>a,b,c</sup>	Status
Online Transaction Processing (OLTP)	TPC-C Benchmark <sup>a</sup> C* (tpmC)	4,092,779	World Record
Data Warehouse	TPC-H Benchmark* @ 30,000GB	150,960.5 QphH @ 46.69\$/QphH	World Record
Enterprise Resource Planning (ERP)	Two-tier SAP SD <sup>b</sup> Benchmark* (Users)	30,000	World Record
Java J2EE* Applications	SPECjAppServer <sup>b</sup> 2004* JOPS	10,519	World Record
JavaServer*	SPECjbb <sup>b</sup> 2005* (BOPS)	5,180,451	World Record
Floating-Point	SPECfpb_rate_base2006* (Score)	3,507	World Record
Integer	SPECintb_rate2006* (Score)	3,350	World Record

<sup>a</sup>Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit [www.intel.com/performance/resources/limits.htm](http://www.intel.com/performance/resources/limits.htm) or call (U.S.) 1-800-628-8686 or 1-916-356-3104.

<sup>b</sup>World Record Performance Source/Vs. Competition: [www.ideasinternational.com/benchmark/ben010.aspx](http://www.ideasinternational.com/benchmark/ben010.aspx), [www.tpc.org](http://www.tpc.org), and [www.sap.com/benchmark](http://www.sap.com/benchmark) as of 30 Oct 07.

<sup>c</sup>The benchmark results shown are world records or #1 for the specified OS as of March 20, 07.

**The RAS features of leading Itanium®-based servers rival those of traditional mainframes, enabling the highest levels of availability to be achieved using flexible, industry-standard servers**

RAS Capability <sup>a</sup>	Itanium®-based Systems	Mainframe
Enhanced Machine Check Architecture	√	√
Cache Reliability	√ (Intel® Cache Safe Technology)	√
Processor Lockstep Support	√ (Socket Level and Core Level)	√
Hard Partitioning	√	√
Cache ECC or Parity Coverage	√	√
System Bus ECC	√	√
I/O Error Recovery	√	√
Memory Single Device Data Correction	√	√
Memory Scrubbing	√	√
Processor and Memory Hot Swap	√	√
Component <sup>b</sup> Redundancy/Hot Swap	√	√

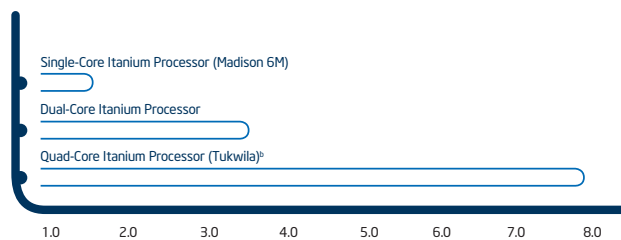
<sup>a</sup>Listed feature is supported by one or more systems vendors.  
<sup>b</sup>I/O cards, fans, power supplies, etc.

**Get increasing value in the years ahead**

Itanium-based servers represent the fastest growing high-end server architecture in the world today. The ISV community is investing heavily, and founding members of the Itanium Solutions Alliance have committed to a \$10 billion investment in Itanium-based solutions through 2010. To further accelerate these advances, Intel has three processor generations in development today, each of which will deliver major gains in performance, energy-efficiency and functionality.

- **The Quad-Core Intel® Itanium® processor** (code-name Tukwila) is currently targeted for release toward the end of 2008 and can be expected to double performance versus today's Dual-Core Intel Itanium processor.
- **A many-core Intel Itanium processor** (code-name Poulson) will deliver an ultra-parallel architecture built on Intel® 32 nanometer process technology for another quantum leap in performance and flexibility.
- **And Beyond.** Yet another Intel Itanium processor (code-name Kittson) is already in definition.

**Ongoing Performance Ramping for Intel® Itanium® Processors  
 45 Online Transaction Processing (OLTP)<sup>a</sup>**



Source: Intel Corporation, 2007

**Intel® Itanium® processors have delivered rapid performance gains for several generations, and those gains can be expected to continue for many years to come.**

Thousands of companies are already taking advantage of Itanium-based servers to drive down costs for their mission-critical applications, and to provide a more scalable and adaptable foundation for the future. These powerful, standards-based systems offer you breakthrough value today – and a reliable path to increasing value in the years ahead.

## Learn More Today

Visit the following web sites for more information about how you can use Itanium-based servers to free yourself from the high costs and limitations of proprietary RISC and mainframe architectures.

- Itanium Solutions Guide: [www.itaniumsolutions.com](http://www.itaniumsolutions.com)
- Intel Web site: [www.intel.com/products/processor/itanium/index.htm](http://www.intel.com/products/processor/itanium/index.htm)
- Itanium-based server vendors: [www.itaniumsolutionsalliance.org/itanium/by\\_vendor](http://www.itaniumsolutionsalliance.org/itanium/by_vendor)

<sup>1</sup> Based on a report by Alinean, which is available at [http://h71028.www7.hp.com/ERC/downloads/SQL\\_Server\\_on\\_HP\\_Integrity.pdf](http://h71028.www7.hp.com/ERC/downloads/SQL_Server_on_HP_Integrity.pdf)

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