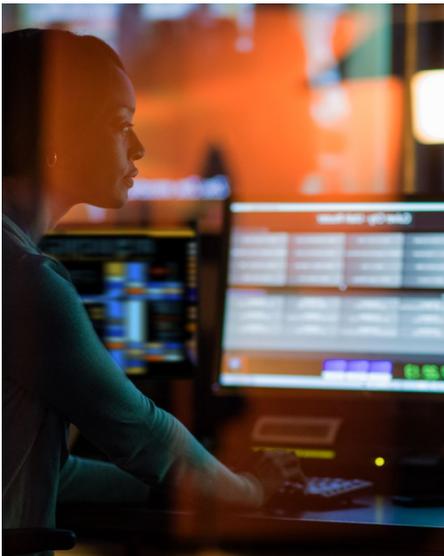(intel®)

Intel® Itanium® Processor 9700 Series Mission Critical Computing

The new Intel® Itanium® Processor 9700 Series

The new Intel® Itanium® processor 9700 series builds on prior generations of Intel Itanium processors, with scalable performance, reliability, and power efficiency. With up to 8 high performance cores, up to 54 MB total cache, the Intel Itanium processor 9700 series brings enterprise performance along with enhanced mainframe-class reliability, availability, serviceability (RAS) features to provide both powerful processing and an always-on mission-critical experience. Intel Itanium processor 9700 series is socket compatible with the Intel Itanium processor 9500 series, providing business continuity and investment protection to customers, thereby lowering their total cost of ownership.

Strong Foundation for Mission-Critical Computing

The Intel Itanium processor family delivers highly scalable performance for UNIX* and mainframe environments, plus world-class availability for mission-critical applications. Together with field proven hardened operating system environments such as HP-UX*, OpenVMS*, Inspur* K-UX*, Bull* GCOS* etc., servers based on the Intel Itanium processor family are ideal for today's most demanding work-loads, including database applications, data warehousing, large-scale ERP, and business analytics.

Mainframe-Class Resiliency Capabilities to Help Protect Your Most Valuable Data

Servers built on Intel Itanium processor 9700 series provide automatic detection and recovery from many types of otherwise uncorrectable errors. In addition, Intel Itanium processors are architected with error prevention in mind. Many errors are prevented in the first place through the wide adoption of hardened circuits. Along with a vast array of RAS features, Intel Itanium processors deliver the process resiliency, data integrity, and world class system uptime that major enterprises depend on. A highlight of some key capabilities:

- **Instruction Replay:** A capability to enable errant instructions to be re-issued and thereby automatically recover from severe errors to help prevent system crashes and data corruptions.

- **End-to-end error detection:** Intel Itanium processor 9700 series provides extensive end-to-end error detection for both data and instruction along with enhanced data correction capabilities.

- **Intel® Cache Safe Technology:** Intel Itanium processor predictive error handling feature detects and prevents likely cache line errors. Potentially faulty cache lines are mapped out from future use to improve data integrity.

- **Complete MCA with firmware first error handling:** Intel Itanium processors support MCA-Recovery, MCA handling of errors in execution path, and in I/O. Furthermore, Intel Itanium processor's firmware first error handling feature enables additional error recovery options and provides a consistent error handling experience across multiple mission-critical applications.

Optimized Performance for Your Most Data-Intensive Applications

Intel Itanium processor 9700 series provides massive scalability for efficient data warehousing and processing. With up to 8 cores and 16 threads, up to 54 MB total cache including up to 32 MB of last-level cache, and support for up to 2 TB of low voltage DIMMs (in 4 socket configuration), the Intel Itanium processor 9700 series is purpose built for the most demanding ERP, SCM, CRM, and other high availability workloads.

- **Intel® Hyper-Threading Technology, enhanced with dual-domain multi-threading support:** The Intel Itanium processor 9700 series architecture enables independent front and backend pipeline execution to improve multi-thread efficiency and performance for both new and existing applications.

- **Advanced Explicitly Parallel Instruction Computing (EPIC) architecture:** Intel Itanium processor 9700 series takes instruction parallelism to the next level by maximizing execution throughput. Instruction retirement is a maximum 12 instructions per cycle per core.

- **Full compatibility with legacy applications:** Intel Itanium processor 9700 series offers an easy path for speeding up existing applications for users who value IT stability. No costly recompilation or application re-qualification is required to take advantage of the new Intel Itanium processor architecture.

Intelligent Power Efficiency Features Maximize Your Utilization and Reduce Costs

Intel Itanium processor 9700 series helps IT organizations meet today's power and thermal challenges by reducing not just overall power, but also cutting dynamic and leakage power substantially. The result is the most power efficient Intel Itanium processor developed.

- **Intel® Turbo Boost Technology featuring sustained boost:** Intel Itanium processor 9700 series employs advanced power monitoring and control to deliver a processor boost frequency at all times, to optimize performance on all workloads. The result is higher thermal envelope utilization for enhanced performance.

- **Memory dynamic clock enable support:** Intel Itanium processor 9700 series supports enhanced DIMM clock gating to reduce system power consumption.

Powerful Platform for Virtualization and Consolidation

Servers based on Intel Itanium processor 9700 series provide an ideal platform for data center consolidation. They are built to handle massive workloads and support multiple consolidation strategies, including:

- **Hard (Physical) Partitioning:** Intel Itanium processor 9700 series supports system partitioning with full electrical isolation and dynamic allocation of resources among running partitions. This enables complete workload isolation for mission-critical applications, while providing the flexibility to scale resources as needed to deliver consistent and reliable performance. It also enables hardware maintenance without bringing down the system.

- **OS partitions for high consolidation efficiency:** OS partitions enable multiple applications to operate under a single OS, while each appears to have a dedicated OS. This capability is provided by special manageability firmware and is therefore independent of the OS.

- **Virtual partitions for the most granular and dynamic control of resources:** The Intel Itanium processor 9700 series includes enhanced Intel® Virtualization Technology. This third-generation virtualization extension provides additional hardware assists for virtualization to provide further performance and capacity improvements in each partition, to increase reliability and resiliency of virtualized environments, and to provide better and more flexible sharing of server and data center resources.

INTEL® ITANIUM® PROCESSOR 9700 SERIES PRODUCT SKUs					
PROCESSOR NUMBER	**OPTIMIZED FOR**	**CORES/THREADS**	**LAST LEVEL CACHE (L3)**	**POWER**	**CPU FREQUENCY**
Intel® Itanium® Processor 9760	Performance	8/16	32 MB	170 W	2.66 GHz
Intel® Itanium® Processor 9750	Performance per core	4/8	32 MB	170 W	2.53 GHz
Intel® Itanium® Processor 9740	Price performance	8/16	24 MB	170 W	2.13 GHz
Intel® Itanium® Processor 9720	Value	4/8	20 MB	130 W	1.73 GHz

Table 1: Intel Itanium processor 9700 series offers a variety of SKUs for system and application optimization. All SKUs come with full RAS, performance, power efficiency, and virtualization feature support.

INTEL® ITANIUM® PROCESSOR 9700 SERIES FEATURE OVERVIEW

FEATURES	BENEFITS
Up to 8 cores and 16 threads per socket with Intel® Hyper-Threading Technology, enhanced with dual-domain multithreading	• Performance and scalability for the most data-demanding, mission-critical applications. • Compute performance and system utilization improvements. • Enables powerful processing for mission-critical UNIX-based operating environments.
Intel® Itanium® Processor 9700 Series Microarchitecture (Kittson)	• Parallelism at all levels with advanced EPIC architecture, including the ability to retire up to 12 instructions per cycle per core, improving performance on multiple applications/user environments and data-demanding workloads, while enabling denser data center deployments.
Large addressable memory to 1024 Terabytes	• Holds vast datasets in main memory for fast processing in large SMP configurations. • Supports massively scalable deployments and high availability workloads.
Up to 54 MB total cache; 32 MB last-level cache	• Promotes fast access to data and improved throughput for memory-intensive applications.
Intel® Itanium® Microarchitecture New-Instructions	• Boosts performance and lower processor overhead with instructions to speed up common tasks.
Instruction Replay	• Improves on Intel Itanium processor world class RAS capabilities for higher availability and data integrity.
Complete Machine Check Architecture, with firmware first error handling	• Delivers intelligent handling of multiple classes of rare errors to minimize service interruption and increases system level resiliency.
Intel® Cache Safe Technology	• Enables predictive error handling to safeguard against persistent cache errors.
End-to-end error detection	• Provides world-class data integrity to help protect your most valuable data.
Intel® Virtualization Technology	• Enables 3rd generation virtualization extensions for better workload isolation, reduced latency, and less overhead when consolidating application in virtualized environments.
Directory-based Cache Coherency	• Improves cache efficiency and lowers inter-system communication overhead for better scalability in large SMP configurations.
Intel® Turbo Boost Technology, featuring sustained boost	• Delivers power to areas where it is needed most to achieve high performance for all workloads, with efficient thermal envelope utilization.
Demand Based Switching	• Dynamically optimizes voltage and frequency to reduce energy consumption during typical CPU utilization to reduce energy costs.

For more information on Intel® Itanium® processor family, visit www.intel.com/Itanium

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