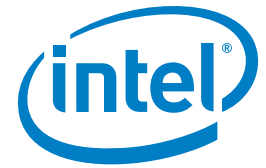


SOLUTION PROFILE

Intel® Xeon® Processor E7 Family

XL Games



Increasing the Capacity for Fun with Massive Online Resources

XL Games is consolidating functions onto fewer servers while delivering a richer, more immersive player experience with the Intel® Xeon® processor E7 family.



Solution provided by:



In its bid to expand the horizons of massively multiplayer online role-playing games (MMORPGs), XL Games is developing its new title, *ArcheAge**, for both stunning gameplay and innovative use of system resources. In place of the standard approach of deploying separate two-processor systems for the game server and AI server, XL Games plans to deploy both functions on the same four-processor system.

CHALLENGE:

Provide an immersive MMORPG user experience and also reduce the complexity of the hosting environment, protect against service outages, and enhance security.

SOLUTION:

XL Games has targeted four-way servers based on the Intel® Xeon® processor E7 family as the target deployment platform for its upcoming title, *ArcheAge*. The company continues intensive work on optimizing the game's animation update logic to improve utilization of the hardware resources, allowing the game to offer its players larger numbers of intricate non-player characters (NPCs) and more complex AI.

CUSTOMER BENEFIT:

Consolidating the game server and AI server onto a single system reduces communication overhead, helping realize better game responsiveness and a more immersive environment. XL Games expects the platform's reliability, availability, and serviceability (RAS) features to help ensure smooth consolidation.

Making a Great Thing Better: Optimization for the Intel® Xeon® Processor E7 Family

The strategic online gaming industry is as competitive for the companies that provide games as it is for the individuals that play them. Constant innovation is the basic expectation for makers of game software, in a bid to deliver higher-quality gameplay and maximize how well the software takes advantage of system resources to control capital and operating expenses.

XL Games is developing for the Intel Xeon processor E7 family to take advantage of its large-scale system resources, with an eye toward supporting larger numbers of concurrent users and NPCs per server. Having fewer servers reduces management complexity, with a favorable impact on ROI, and more NPCs creates richer gameplay. Testing on ArcheAge with an in-house stress tool revealed an increase in frames per second of approximately 1.21x¹ on the Intel Xeon processor E7 family, relative to a predecessor platform.

To help meet those goals as well as add security and reliability, the company looks to the capabilities of the Intel Xeon processor E7 family, which include the following:

- **Increased core count and enhanced memory subsystem.** The very high throughput afforded by these servers enables rich game content and realistic AI for large numbers of concurrent users, which equates to an excellent user experience while maintaining favorable ROI.
- **Assisted security.** The company is exploring the implementation of Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI), which accelerate encrypt/decrypt operations, helping to avoid the performance impact often associated with these functions.
- **RAS.** As a true mission-critical platform, the Intel Xeon processor E7 family sets the stage for excellent uptime, avoiding connection losses that can have a significant negative effect on online game publishers' revenue.
- **Optimization opportunities.** The team has implemented Intel® Streaming SIMD Extensions 4 (Intel® SSE4) instructions and performed hotspot analysis using the Intel® VTune™ Performance Analyzer, helping get the most out of the available execution resources.

Putting the new Intel Xeon processor platform to use in the service of better gameplay, XL Games hopes to push the envelope in the direction of more fun.

Engines of Change: The Intel® Xeon® Processor E7 Family

The Intel Xeon processor E7 family extends the limits of scalable performance, reliability, security, and energy efficiency for enterprise servers:

- **Scalable Performance.** Up to 10 cores (20 threads), support for 32-GB DDR3 DIMMs (2 TB per four-socket system),² and 30 MB of last-level cache.
- **Reliability and Security.** Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI), Intel® Trusted Execution Technology, Double Device Data Correction (DDDC), and Partial Memory Mirroring.
- **Energy Efficiency.** More performance within the same power envelope as predecessors, Intel® Intelligent Power Technology,³ and low-voltage DIMM support.⁴

Learn more about XL Games: www.xlgames.com

Learn more about the Intel® Xeon® processor E7 family: www.intel.com/xeon

¹ Testing performed by Intel and XL Games. Configurations:

* Intel® Xeon® processor E7 family running at 2.4 GHz, 64 GB DDR3-1067 RAM, Microsoft Windows Server® 2008 SP1 (x64), Intel® Hyper-Threading Technology disabled, Intel® Turbo Boost Technology enabled, NUMA enabled

* Intel® Xeon® processor 7500 series running at 2.23 GHz, 64 GB DDR3-1067 RAM, Microsoft Windows Server 2008 SP1 (x64), Intel Hyper-Threading Technology disabled, Intel Turbo Boost Technology enabled, NUMA enabled

² Up to 64 slots per standard four-socket system x 32 GB/DIMM = 2 TB.

³ Uses similar core and package C6 power states enabled on Intel® Xeon® processor 5500 and 5600 series. Requires OS support.

⁴ Savings dependent on workload and configuration. Example: At 100-percent SPECpower® load it can save ~0.8W for 4-GB DIMM DRx8 based on early Intel internal estimates.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Intel® compilers, associated libraries, and associated development tools may include or utilize options that optimize for instruction sets that are available in both Intel® and non-Intel microprocessors (for example SIMD instruction sets) but do not optimize equally for non-Intel microprocessors. In addition, certain compiler options for Intel compilers, including some that are not specific to Intel® microarchitecture, are reserved for Intel microprocessors. For a detailed description of Intel compiler options, including the instruction sets and specific microprocessors they implicate, please refer to the "Intel® Compiler User and Reference Guides" under "Compiler Options." Many library routines that are part of Intel® compiler products are more highly optimized for Intel microprocessors than for other microprocessors. While the compilers and libraries in Intel compiler products offer optimizations for both Intel and Intel-compatible microprocessors, depending on the options you select, your code, and other factors, you likely will get extra performance on Intel microprocessors.

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While Intel believes our compilers and libraries are excellent choices to assist in obtaining the best performance on Intel and non-Intel microprocessors, Intel recommends that you evaluate other compilers and libraries to determine which best meet your requirements. We hope to win your business by striving to offer the best performance of any compiler or library; please let us know if you find we do not. Notice revision #20101101

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