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Security, Performance, and Energy Efficiency Converge: Oracle Identity Management on the Intel® Xeon® Processor 5500 Series

Modern data centers thrive on scalable performance and energy efficiency. Success requires high-quality server hardware and well-tuned enterprise applications that meet or exceed business goals within strict budgetary requirements.



The solutions that manage user identities across network resources provide vital services to every IT infrastructure. These systems must be robust and responsive enough to operate transparently. Transparency requires identity-management software that is highly optimized for the server platform system it runs on.

To determine the best reference platform to support Oracle Identity Management, Intel and Oracle engaged in collaborative engineering work that identified the Intel® Xeon® processor 5500 series as a leading candidate. This software solution is highly optimized for the new platform, which delivers record-breaking performance and energy efficiency with the industry's first dynamically adaptable microarchitecture.

The Intel Xeon processor 5500 series delivers up to a 9x performance gain per server over single-core servers, enabling 9:1 server consolidation, up to 90 percent lower operating costs, and an estimated eight-month return on investment.¹

To successfully achieve their business objectives without compromising data security, companies need strong authentication practices and centralized identity management.

Oracle Identity Management solutions on platforms powered by the Intel Xeon processor 5500 series take advantage of next-generation Intel® Virtualization Technology,² as well as provide unmatched reliability, efficiency, and high performance while minimizing server power consumption.

A ONCE-IN-A-DECADE ACHIEVEMENT

Intel Senior Vice President Pat Gelsinger announced to assembled journalists and analysts that the Intel® Xeon® processor 5500 series is the biggest advance since the Pentium® Pro processor in 1995. As Gelsinger put it on launch day, "It's not going to be next year's product, it's not last year's product, this is the big one. Maybe 10 years from now we'll be back . . . but nothing now is bigger."

Platform Intelligence for High-Performance Identity Management

The Intel Xeon processor 5500 series incorporates a number of features and capabilities that together pave the way for unprecedented solution value with Oracle Identity Management:

- **Intelligent performance** gives Oracle software the ability to work with the hardware platform to deliver higher throughput on demand with real-time adjustments to processor frequency using Intel® Turbo Boost Technology. For enhanced throughput on highly threaded workloads, the platform also engages Intel® Hyper-Threading Technology† when needed.
- **Automated energy efficiency** is enabled by Intel® Intelligent Power Technology, which uses automated low power states to dynamically tune power consumption to the lowest level available while still meeting performance requirements. Because the platform utilizes integrated power gates, that tuning can be done on a per-core basis, for unprecedented low overall power usage.
- **Flexible virtualization** provides very high server-consolidation ratios, as well as the ability to extend virtualization pools to include multiple generations of server platforms,³ decreasing operating costs as well as protecting existing hardware investments.

Platform intelligence ushers in a truly new generation of enterprise computing. The day after its launch, Intel announced that servers based on the Intel Xeon processor 5500 series had already broken more than 20 world performance benchmark records; the following are just a few of the record-breaking two-socket results:⁴

- **General Purpose Computing. SPECint*_rate_base2006:** 240 (a 71 percent gain over the Intel® Xeon® processor 5400 series)
- **Database. TPC*-C:** 631,766 tpmC (transaction rate metric) at USD 1.08/tpmC (a 130 percent gain over the Intel Xeon processor 5400 series)
- **Application Server. SPECjAppServer*2004:** 3,975.13 SPECjAppServer2004 JOPS (a 93 percent gain over the Intel Xeon processor 5400 series)
- **Enterprise Resource Planning. Oracle Applications (OASB):** Order-to-cash batch 55,866 lines/hour; payroll batch 81,522 checks/hour

Servers based on the Intel Xeon processor are an excellent choice for running Oracle Identity Management, based on a variety of factors.

“An identity management architecture is essentially controlling access to all of your enterprise applications and resources, acting as the gatekeeper,” said Mark Veatch, director of targeted partner strategy at Oracle. “It has to be responsive. It has to be reliable. And, most importantly, it has to be scalable to support your organization’s evolving needs.”

Identity Management for Compliance and Security

The challenges of identity management are well known to IT administrators, data center operators, and data security professionals. Help desks must cope with restoring lost passwords, provisioning new staff members, disabling the accounts of former employees, meeting regulatory requirements such as Sarbanes-Oxley, and protecting against the rise in Internet fraud. All of these factors drive home the value of handling identity management tasks through a centralized framework that includes highly automated procedures, extensive reporting, and self-service functionality. These design objectives were paramount during the development of Oracle Identity Management.

Oracle Identity Management effectively handles a wide range of organizational challenges involving security, compliance, and IT administration. The solution adapts well to the varying needs of enterprises coping with the end-to-end life cycles of user identities, both inside and outside the firewall. Individual components in the product suite address strong authentication, single sign-on, federation, entitlements management, user provisioning, role management, Web services management, and directory services.

Collaboration began with pre-release silicon provided by Intel early in the development cycle. As a result, the software solution is highly optimized for the Intel Xeon processor 5500 series. Deploying Oracle Identity Management on Intel Xeon processor 5500 series-based servers in the enterprise provides a winning combination:

- **A comprehensive, end-to-end solution.** Offering a full-featured solution to meet security, compliance, and IT cost-savings goals, Oracle solutions scale to demanding enterprise requirements and are backed by Oracle experience and expertise.

- **A unique, hot-pluggable solution for heterogeneous environments.** Built on open standards, Oracle solutions interoperate with all major systems to ensure enterprise-wide security and a high return on investment.
- **A proven solution for sustainable compliance.** Oracle Identity Management automates key processes to streamline audit cycles and dramatically lower compliance costs.

“One of the key things that we’re doing,” said Veatch, “is making Oracle Identity Management a function that is available across the entire data center. There are many components to the suite that customers can use either combined or individually. Some of these are either already embedded in Oracle products that the customer may be using or they can be seamlessly integrated with applications from Oracle or third parties, as required.”

“Our goal is to ensure that organizations fully leverage their existing IT investment,” Veatch continued. “So, Oracle Identity Management solutions offer interoperability with IT systems out-of-the-box and provide easy-to-use connector technology to enable rapid integrations with legacy systems.”

Part of the effectiveness of the identity management suite is the platform-level approach taken by Oracle.

“Identity management is a business—not an IT—initiative. Back in the 1990s, identity management was all about technology tools to manage user provisioning and security,” as Jon Ottsik, writing for CNET, said. “Now it’s about mapping employees and outsiders to business processes, managing user roles, and meeting regulatory compliance mandates.”⁵

While regulatory legislation adopted in geographies worldwide makes it essential that enterprises positively identify, monitor, and report on user activities across systems, products for centralizing and managing identities also have considerable benefits and payback to IT departments focused on maintaining enterprise security. Developed for enterprise environments, Oracle Identity Management provides end-to-end life cycle control over user accounts and access privileges, greatly simplifying the IT tasks required for both compliance and corporate security needs.

Energy Efficiency Drives Down Operating Costs

As power costs continue to spiral upward, the immediacy of calls to control energy usage in data centers grows. Likewise, companies looking for ways to advance their environmental initiatives find saving on energy consumption to be a key means of meeting their green goals. Both Intel and Oracle have responded to this trend with substantial engineering efforts that have borne excellent results.

“In general, power costs per watt are going to increase while the world moves to cleaner power sources because these sources are generally more expensive, at least until we get better at producing them,” said Lorie Wigle, general manager of Intel’s Eco-Technology Program, in an interview with *Business Management* magazine.⁶ “Thus, any company would be wise to find ways to increase their energy efficiency to help hold down energy costs and ensure supply.”

The Intel Xeon processor 5500 series breaks new ground in the energy-efficient operation of the data center with Intel Intelligent Power Technology. This new set of features lets the platform automatically power down individual processing cores when they are not needed, saving dramatically on platform-level energy consumption. Overall energy efficiency as measured using SPECpower_ssj2008* is more than a 1.6x increase over previous Intel Xeon processors and nearly 1.8x that of competing platforms.⁷

Oracle Identity Management Suite’s optimization for the Intel Xeon processor-based platform helps the overall solution run with extremely high efficiency. Because the hardware and software components of the stack are engineered to work together, the synergies within the platform are greater than the sum of their parts. Enterprises that deploy Oracle Identity Management on the Intel Xeon processor 5500 series stand to make a quantum leap forward in performance and energy efficiency that will provide next-generation results within today’s tight budgets.

Summary

Identity management and access control are fundamental concerns for IT administrators and data center operators. As demonstrated by independent industry evaluations, Oracle Identity Management is a recognized leader in terms of capabilities and execution. A platform of choice for the identity management suite of solutions, the Intel Xeon processor 5500 platform delivers performance and the benefits of platform intelligence to server operations. Together, Intel and Oracle have defined a hardware and software framework collaboratively designed to meet the compliance, security, and efficiency requirements of enterprise customers worldwide.

Take the Next Step

Learn more about Oracle Identity Management solutions: www.oracle.com/identity

See what the software industry is saying about the Intel® Xeon® processor 5500 series:
www.intel.com/business/software/testimonials/xeon5500.htm



[†] Intel® Hyper-Threading Technology (Intel® HT Technology) requires a computer system with a processor supporting Intel HT Technology and an Intel HT Technology enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/info/hyperthreading/ for more information including details on which processors support Intel HT Technology.

[‡] Source: Eight-month ROI claim estimated based on comparison between 2S single-core Intel® Xeon® processor 3.80 GHz with 2M L2 Cache and 2S Intel Xeon processor X5570-based servers. Calculation includes analysis based on performance, power, cooling, electricity rates, operating system annual license costs, and estimated server costs. This assumes 8kW racks, USD 0.10 per kWh, cooling costs are 2x the server power consumption costs, operating system license cost of USD 900/year per server, per-server cost of USD 6900 based on estimated list prices, and estimated server utilization rates. All dollar figures are approximate. Performance and power comparisons are based on measured SPECjbb2005* benchmark results (Intel Corporation, Feb. 2009). Platform power was measured during the steady state window of the benchmark run and at idle. Performance gain compared to baseline was 9x, while the platform power was 0.8x.

- Baseline platform: Intel® server platform with two 64-bit Intel Xeon processor 3.80 GHz with 2M L2 Cache, 800 FSB, 8x1 GB DDR2-400 memory, 1 hard drive, 1 power supply, Microsoft Windows Server® 2003 Ent. SP1, BEA JRockit® build P27.4.0-windows-x86_64 run with 2 Java® Virtual Machine (JVM) instances.
- New platform: Intel server platform with two quad-core Intel Xeon processors X5570, 2.93 GHz, 8 MB L3 cache, 6.4QPI, 12 GB memory (6x2 GB DDR3-1333), 1 hard drive, 1 power supply, Microsoft Windows Server 2008 Ent. SP1, BEA JRockit build P27.4.0-windows-x86_64 run with 2 JVM instances.

[§] Intel® Virtualization Technology requires a computer system with a processor, chipset, BIOS, virtual machine monitor (VMM) and applications enabled for virtualization technology. Functionality, performance, or other virtualization technology benefits will vary depending on hardware and software configurations. Virtualization technology-enabled BIOS and VMM applications are currently in development.

^{||} Backward compatibility for live virtual machine (VM) migration also exists with current dual-core Intel® Core™ microarchitecture products (Intel® Xeon® processor 5100 series and Intel® Xeon® processor 3000 series) and forward compatibility with future dual and multi-core processors. Contact your preferred VM migration vendor for support requirements.

[¶] See www.intel.com/performance/server/xeon/summary.htm.

[‡] Source: news.cnet.com/8301-1009_3-9999574-83.html.

[¶] Source: www.busmanagement.com/currentissue/article.asp?art=272441&issue=271.

^{||} See "Energy efficiency using SPECpower_ssj2008*" at www.intel.com/performance/server/xeon/eep.htm.

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