

Case Study

Intel® Xeon® Quad-Core
processors

KT Steps into the Future Predictive Enterprise with Intel

KT chooses to replace 80 percent of its Internet computing center systems with Intel® Xeon® Quad-Core processors

KT (formerly Korea Telecom) is South Korea's premier telecommunication service provider. Established in 1981 as a public company, KT was privatized in 2002 and provides a significant proportion of South Korea's wired and wireless telephone and Internet services.

In May 2006, after successfully transforming its Internet data center (IDC) to an Internet computing center (ICC), KT announced that it planned to replace 40 percent of existing servers at the ICC. The company immediately looked towards Intel® quad-core processors to meet its need.



Challenge

- Provide adequate performance headroom for the company's Internet computing service (ICS).
- Supplying an energy efficient server.
- Secure a smaller footprint with more power per square foot.

Solution

- Replace 40 percent of Internet computing center servers with rack-based Intel® Xeon® Quad-Core processor-based systems, with a view to replacing 70 to 80 percent by end 2007.
 - Work closely with Intel engineers to maximize efficiency of deployment by receiving technical support and sharing information with Intel.
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"Companies can truly realize the benefit of higher performance and lower costs by using Intel® Xeon® Quad-Core processor-based systems."

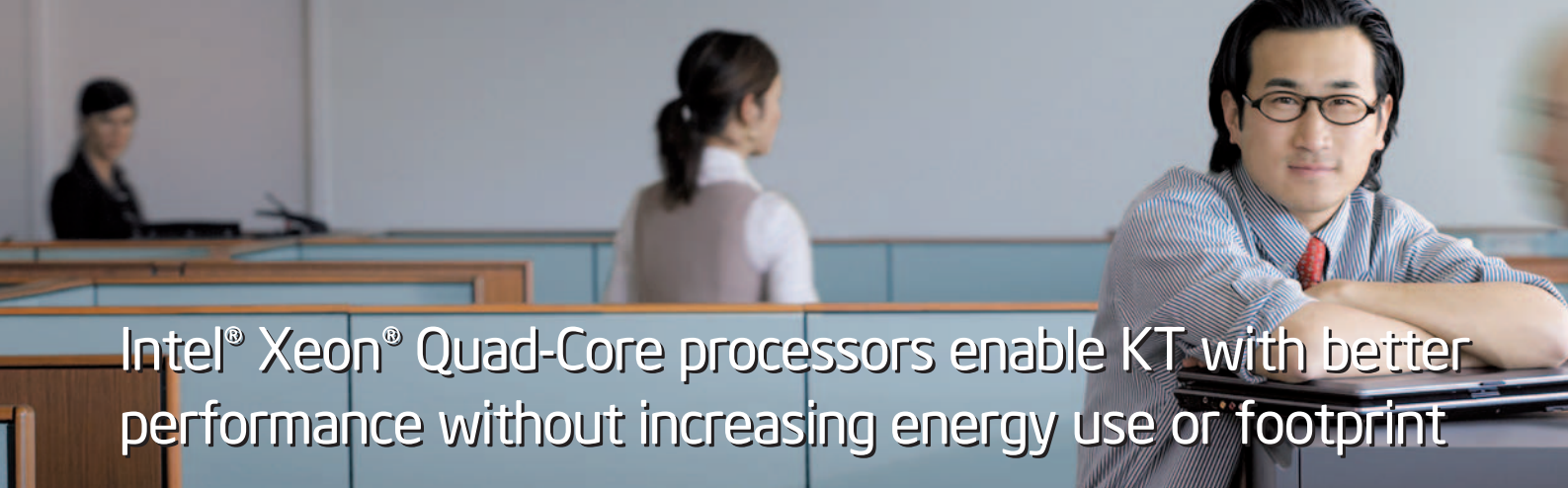
Kyung Seok Park
Vice President of
Business Operations
KT Internet Computing
Center

Assessing the Situation

Kyung Seok Park, vice president of Business Operations at KT ICC, said that the main reason for moving to Intel Xeon quad-core processor-based servers was to provide adequate performance headroom for the company's Internet computing service (ICS). The KT ICS is the first utility computing service in Korea offering software-based virtual environments that utilize servers, storage, network devices and Internet backbones whenever needed.

Beyond catering to performance needs, supplying an energy efficient server was also a critical deciding factor. "In the past, throughput per second was the key requirement. However, we recognized the importance of performance and energy efficiency as we implemented the ICS," says Park.

Finally, securing a smaller footprint with more power per square foot was also an important factor, particularly in Korea's tight real estate market.



Intel® Xeon® Quad-Core processors enable KT with better performance without increasing energy use or footprint

Delivering the Solution

KT looked towards adopting Intel® quad-core processor-based servers because of their excellent cost/performance benefits, providing superior performance without dramatically increasing energy costs or server footprint.

Park explained that though they initially considered deploying quad-core blade servers, they ultimately decided against it. He elaborates, "Despite the advantages of blade servers, we concluded that it would be premature to deploy them due to power efficiency and reliability issues."

Instead, KT looked towards deploying Intel quad-core processors on rack-based servers—at least until issues with energy efficiency and stability were resolved. This did not prevent the company from experiencing the full benefits of Intel quad-core processors though, as 40 percent of servers at the KT ICC were replaced in June 2006.

Park says, "By deploying the Intel® Xeon® Quad-Core processor-based systems, we achieved a size reduction of one third with 50 percent less power consumption compared to the previous systems."

Intel quad-core processor-based servers have also positively influenced company performance. Park notes that "with Intel® Xeon® Quad-Core based

systems, our performance level has improved far greater than that of other companies, even including higher throughput per resource consumption."

"Companies can truly realize the benefit of higher performance and lower costs by using Intel quad-core based systems," he notes.

Intel Xeon Quad-Core processors and technologies also allow KT to take its first steps toward becoming a Predictive Enterprise that uses technology to maximize return on investment (ROI) and business growth by developing business processes and infrastructure that are connected and adaptive. KT can potentially use predictive technology to analyze trends and preemptively sense problems before they occur. Then the company can use this information to become more agile and proactively inform its business decision-making.

Park also noted that the success of the KT deployment was also due to the dedication and close working relationship between Intel engineers and KT staff.

"We co-operated closely with Intel to maximize the efficiency of the deployment by receiving technical support from Intel as well as submitting pre- and post-deployment feedback to Intel," explains Park.

Furthermore, Intel introduced its long-term technical development plans and roadmaps to the company, sharing its data center operating strategy with KT through Internet Data Center discussion sessions held every month.

Eun Kyung Yun, executive vice president of Intel (Korea) says, "It is a huge challenge for an Internet Data Center to replace existing platforms with new Intel® Xeon® Quad-Core technology-based systems. Intel is committed to provide the platforms and system specifications that customers want."

With Intel's support, KT has become one of the first companies in Korea to launch a large-scale Intel quad-core processor deployment.

Spotlight: KT

- KT (formerly Korea Telecom) is South Korea's top integrated wired and wireless telecommunication service provider, supplying fixed and mobile telephone, Internet as well as IT/network services.
- Established in 1981 and privatized in 2002, KT has been Korea's leader in the information and communications industry for 25 years.
- The company's revenue for 2005 was 118,773 billion Won.
- It employs over 37,500 people (as of March 2007).



"We're the first in the industry to deploy enterprise-wide Intel® Xeon® Quad-Core systems that deliver outstanding performance and lower power consumption,"

says Park. "With this system upgrade, the KT ICC will be able to improve its competitiveness and build the foundation for offering new value to customers."

Key Technologies

- ESlim* (local original equipment manufacturer) rack-based servers running Intel® Xeon® Quad-Core processors.
- CTN 5310 Chipset
- FreeBSD Operating System
- Intel Technology Pillars:
 - Dynamic resource management provides patterns, technologies, and methods that sense the changing flows and demands for infrastructure or storage and can analyze them, as well as the facilities to redirect available processing capacity to maintain transactional performance and meet capacity demands.
 - Data-intensive computing provides the infrastructures and architecture patterns for the high- processing capability needed for the most demanding commercial systems. This includes specific processing infrastructure capabilities to address different types of application processing (e.g., data warehousing and data mining applications with different processing characteristics and profiles than messaging servers and message routers).
 - Energy-efficient management features include hardware features that provide unique information sensing and capture. Information can be stored and analyzed along with associated processing usage and workload consumption to inform active systems about the run time state of the infrastructure. These unique features can be harnessed to reduce the likelihood of firmware failures and improve the reliability of IT systems. These features can also produce savings by allowing unused systems to be switched off, transferring processing capacity to another service, or just

Integral Answers

- KT received technical support from Intel engineers, submitting pre- and post-deployment feedback to Intel.
- Intel also introduced its long-term technical development plans and roadmaps to the company, sharing its data center operating strategy with KT through Internet Data Center discussion sessions held every month.

Having replaced 40 percent of existing servers with Intel quad-core based servers, KT intends to increase the proportion to 70 to 80 percent by the end of 2007. Indeed, with Intel providing extensive support to the company, this target—and the full benefits of Intel quad-core processors—looks set to become a reality.

Find a business solution that is right for your company. Contact your Intel representative or visit the Intel Business/Enterprise Web site at www.intel.com/business or visit the industry solutions-specific sites at: www.intel.com/business/bss/industry

Return on Investment

- Intel® Xeon® Quad-Core processor-based servers helped improve company performance, including higher throughput per resource consumption.
- The quad-core processor-based systems also enabled KT achieve a server size reduction of one-third with 50 percent less power consumption compared to previous systems.
- Intel quad-core technology allows KT to potentially use predictive technology that analyses trends and preemptively 'sense' problems before they occur.



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