



Server Consolidation Case Study

Quad-Core Intel® Xeon® Processor

Application Server



FUJIFILM Computer System Co. Ltd.

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Established: July 1998
Capital: 490 million yen
Business activities: IT services



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Company to Integrate Servers Using Virtualization, Utilizing the Performance of Quad Core Chips Based on 45nm Process Technology

FUJIFILM Computer System Co. Ltd., acting as the information systems department of the FUJIFILM group which is known for world-class skills in the fields of imaging and IT, is responsible for system development and for establishing the IT strategy for the overall group. To help realize the group's business strategy of improving competitiveness and restructuring its business activities in response to the rapid shift towards digital technology, FUJIFILM Computer System plans to introduce a virtualization solution for running business applications. The basis of the solution involves running VMware* on servers with Quad-Core Intel® Xeon® Processor 5400 series based on 45nm process technology. The company aims to reduce system operating costs significantly by making effective use of resources and improving energy efficiency.

Business Challenges

- Reduce server operation cost
- Reduce number of servers and administration workload
- Improve processor utilization, more efficient use of investment
- Reduce power consumption for CO₂ emission reduction and save space in server room

Solution

- Quad-Core Intel® Xeon® Processor 5400 series-based servers
 - VMware* Infrastructure 3
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Virtualization for Resource Utilization

The FUJIFILM group is engaged in ongoing business restructuring and has made a rapid recovery in profitability, with both sales and revenue expected to reach record levels in 2007. The company plans to strengthen its business fundamentals even further towards 2009, the 75th anniversary of its establishment. To support the realization of this group strategy, FUJIFILM Computer System has an ongoing program of information gathering and testing of new technologies, and proposes solutions through the proactive use of revolutionary information technology.

Because FUJIFILM Computer System had for years installed servers separately to meet each business requirement and optimized these systems independently, the number of physical servers has grown steadily. On the other hand, the actual processor utilization on these servers is typically only about 30% and memory use is also inefficient. Consequently, operating costs and power consumption became a serious issue, and this approach also seemed to have "hit the wall" in providing IT infrastructure that can continue to function into the future.

In response, the company decided to consolidate servers by using virtualization. The software platform chosen for this project was VMware*, selected for reasons that include the stability of its technology, its extensive technical support, accumulated experience with system migration, and low overheads. Talking about their aims and the timing of this introduction of virtualization, Hideki Shibata, manager of the IT Infrastructure Section, System Operations Department commented that "Adopting virtualization in our core business IT infrastructure is a proactive IT strategy that will make our business stronger. Considering the maturity of the technology, I believe there is great value to be an early adopter. One example is that we hope to be able to avoid unnecessary software upgrades required when hardware maintenance periods expire. As we are already using virtualization in some of our development environments for business application servers, the technology is not completely new to us and we were confident that expanding the technology to core business environment would clearly improve our business operations."

Emphasis on the Energy Efficiency and Performance of the Second Generation Quad-Core Intel® Xeon® Processors Based on 45nm Process Technology

Because of their features that include standardization on a common architecture, a high level of integration, and heat dissipation measures, the hardware selection process was based around the use of blade servers, and it was decided to adopt the blade servers using Quad-Core Intel® Xeon® Processor 5400 series which are based on 45nm process technology. Discussing the factors that clinched the selection of these latest processors, Mr Shibata explained that "Despite the performance being much better than the first-generation quad-core Intel® Xeon® Processor 5300 series, the peak power consumption has been kept approximately the same and the idle power has been greatly reduced. Accordingly, we can expect significant benefits from consolidation and CO₂ emission reduction".

Naturally, there is a high level of mutual affinity between Intel multi-core processors and VMware®, and an important factor in this is the ability of functions that utilize the processor's resource information to allocate resources efficiently. Actual benchmarking results from VMmark* show that quad-core processors have superior performance to dual-core processors in a virtualization environment, and similarly that platforms that use the second-generation quad-core products out-perform those of the first-generation. Other advantages of the second-generation Intel® Xeon® Processor 5400 series include the ability to perform live migration of virtual machines between existing and future hardware resource pools as required, compatibility with virtualization environments in which different processor generations coexist. The feature is called Intel® VT FlexMigration technology, and it dramatically improves flexibility when using virtualization.

This virtualization project based on VMware® and the latest Quad-Core Intel® Xeon® based-servers is to be realized over the next two years with the staged integration of 150 servers, both existing and new. Under the concept that "Integrate all servers that can be consolidated", applications such as production management, sales management, financial and accounting, and human resources and administration that directly impact on the operation of the business are to be integrated so that, in the future, the company's entire IT infrastructure including storage will run under the virtualization environment.

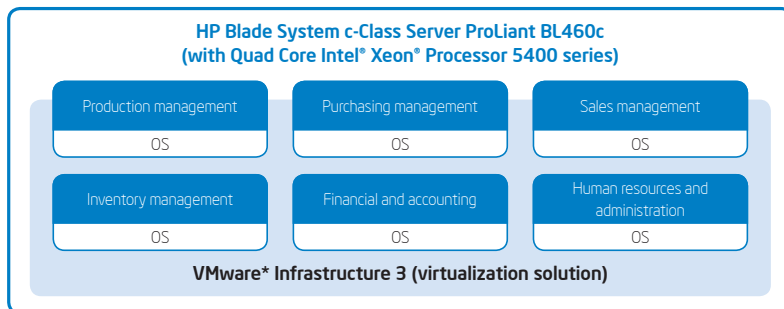
Achieving a Secure Return on Investment by Reducing Operating Costs

Although the expected benefits of adopting virtualization include improving utilization of processor resources to around 70% to 80% with significantly reduced power consumption, the major objective is to reduce operating costs. "Considered in terms of the TCO rather than the initial cost, we believe that adopting the latest hardware technologies with a virtualization solution will contribute to a better ROI for the FUJIFILM Group."

Based on a cost analysis, if all of the more than 150 servers are integrated, the company can expect a payback on their investment in two years. The company expects that virtualization technology by combining VMware® with Intel multi-core processor technology in the future will bring significant benefits, not only through ongoing improvements in ROI, but also to FUJIFILM group's Corporate Social Responsibility (CSR) from "Green IT" perspective.

Selection Reasons

- Use of 45nm process technology allows high-density installations with an excellent ratio of performance to power consumption.
- Optimum server platforms using proven virtualization technology (VMware®)
- High degree of affinity between virtualization and quad-core processors has already been demonstrated using VMmark*.
- Technology that allows easy adaptation for future advanced hardware in established virtualization environment for investment protection.



Solution Provider



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