FUJITSU

Case Study
Fujitsu Limited (Japan)

Implementing SPARC M10 for large-scale database consolidation
Using the latest technology to reduce the number of servers by 85%, and operation/
management costs by 80%

Database consolidation to support mission-critical tasks is an important step in optimizing an entire company. For this reason Fujitsu Limited chose to consolidate their large-scale Oracle database systems. For the core of the consolidation project, SPARC M10-4S was selected for its high performance and reliability, as well as its high data aggregation rate achieved through Oracle VM for SPARC. Furthermore its unique CPU core activation delivers excellent scalability and portability through the Building Block system, and provides a number of safety measures. In October 2013 the new system became operational in conjunction with a new common platform, improving overall system availability while reducing total costs. Fujitsu can now also expand their customer services using the know-how gained through this project.

*Fujitsu M10 is sold as SPARC M10 by Fujitsu in Japan.

Overview

"This server has outstanding potential. With a remarkable level of expandability to 64 CPUs and 1,024 cores and the latest processor SPARC64 X, SPARC M10 boasts the world's best performance in numerous categories. Fujitsu M10 was also selected for its highly-reliable mainframe technology, inherited through Fujitsu's long history of server development, capable of stabilizing our operations."

Challenges

- Consolidation of the Oracle database for mission-critical systems
- Improve availability by developing a disaster recovery system
- Gain integration know-how and experience for large-scale Oracle databases

Solutions

- With high performance and high reliability, the Oracle VM Server for SPARC uses virtualization consolidation to cut the number of existing Oracle Solaris servers by almost 85% and reduce operation and management costs by 80%.
- With the highly reliable SPARC M10 and Oracle Active Data Guard, database mirrors can be positioned at bases in remote locations for a high rate of availability.
- Fujitsu's integration of the large-scale Oracle database is now a reference model that provides extensive know-how and field experience that can help customers with system construction.

Industry	Information and Communication Technology		
Hardware	UNIX Server SPARC M10-1, M10-4S	FUJITSU Storage ETERNUS DX440 S2	
Software	Oracle Database 11g	Oracle Active Data Guard	Oracle Real Application Clusters
	FUJITSU Software Systemwalker	FUJITSU Software Interstage Application Server	

Installation Background

Integration of a large-scale database, a step towards total optimization

In today's environment management struggle with a variety of issues; reducing growing operation costs, rapidly changing business environments, and how to provide effective disaster management. To solve these issues fully optimizing a large group of partially optimized systems and sharing them company-wide as an ICT infrastructure is essential. As such Fujitsu is working towards total optimization. In addition Fujitsu is also able to focus on gaining know-how through these internal projects that can be used to successfully guide customers through their own system implementation processes.

"Fujitsu's in-house complete optimization project started in 2009, when a number of servers were consolidated into a virtual platform. By providing common services to each of the Fujitsu Group departments via an optimized ICT platform, we hoped to improve overall management efficiency and business speed," says Shunichi Nakaya, Director of Fujitsu Limited's IT Strategy Unit, System Planning Division,

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and Infrastructure Planning Department. The IT Strategy Unit is responsible for all in-house ICT activities, including the development, implementation, and operation of Fujitsu's mission-critical in-house systems and networks.

The integration of databases to support business activities was an important part of Fujitsu's optimization process. The first step began with the integration of their relational database management system "FUJITSU Software Symfoware Server," as it accounted for most of the in-house databases. Following this Fujitsu started the integration of the high-ratio Oracle Database.

Key Installation Points
Exceeding strict requirements for consolidation, expandability, reliability, and portability

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Through database integration, the aim was to cut management costs and improve availability throughout Fujitsu via a common platform. In addition, strengthening the ability for disaster management was also a main focus. Fujitsu intends for this common platform to provision a stable, quick and high-quality service.

Takeharu Mouri, Manager of Fujitsu Limited's IT Strategy Unit, System Planning Division, and Infrastructure Planning Department, described the key considerations during the selection of the integration platform: "For diverse system consolidation, we focused a great deal on high performance and virtualization technology, in order to build a highly utilized system, while portability and flexible expandability were important to advance the integration in stages. High reliability was particularly essential for creating a database that runs on mission-critical systems such as sales management, personnel, and purchasing."

SPARC M10 was the only server that met all requirements for consolidation, expandability, reliability, and portability. "This server has outstanding potential. With a remarkable level of expandability to 64 CPUs and 1,024 cores and the latest processor SPARC64 X, SPARC M10 boasts the world's best performance in numerous categories. SPARC M10 was also selected for its highly-reliable mainframe technology, inherited through Fujitsu's long history of server development, capable of stabilizing our operations" Mr. Mouri declared.

CPU core activation, a fee-based system for the CPU cores to be used, was another key advantage for Fujitsu to carry out the integration in stages. Norihito Iwaki of Fujitsu Limited's IT Strategies Unit, System Planning Division, and Infrastructure Planning Department, had been very impressed with this aspect of SPARC M10: "It has 16

cores per CPU, but one significant advantage it offers is the ability to activate cores only when they are needed. It's ideal because we can still accommodate future expansion without having to purchase a huge system in the beginning, this will save on unnecessary hardware resources and software licenses."

System Overview
Using Oracle Active Data Guard to achieve high availability

Fujitsu's new system consists of SPARC M10-1 and SPARC M10-4S as an integrated database platform, while Oracle Real Application Clusters (Oracle RAC) is leveraged to improve business continuity via a clustered structure. Using Oracle Active Data Guard as a database for disaster management, and by placing database mirrors at bases in remote locations, Fujitsu can achieve high system availability.

For virtualization technology, Fujitsu used Oracle Solaris Legacy Containers, as well as Oracle VM Server for SPARC, which can create virtual hardware environments (domains) at the server's firmware level and enable an independent OS to run in each domain. These options help create a high rate of consolidation, and applications that are difficult to upgrade during the integration of assets in differing implementation periods can be ported flexibly. "Oracle Database 11g is used across the board, improving serviceability and making operations management more efficient. However, this step-by-step process of system integration inevitably results in people wanting to use assets from Oracle Solaris 10, Oracle Database 9i, and 8i since applications cannot be ported right away. Because of this, the Oracle VM Server for SPARC's ability to handle such situations flexibly is extremely useful." Mr. Iwaki stated.

In addition, the SPARC M10-4S adopts a Building Block architecture, so that chassis can be linked together and used as a single server. This type of system allows Fujitsu to move forward efficiently with the integration plan.

Benefits of Consolidation by SPARC M10
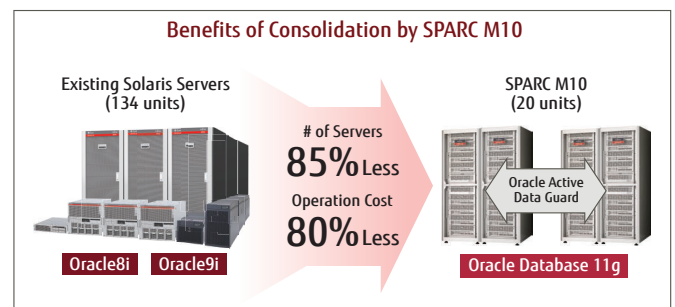
Future Prospects
Reduce batch processing and response times with new high-performance technologies

The new system began operating sequentially from October 2013 for testing, and full scale operation is planned for 2014, with project completion estimated to be some time in 2016. As a result of the SPARC M10 consolidation, the 134 existing Solaris servers will be consolidated into 20 SPARC M10s, reducing the number of servers by

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almost 85%(1/7). Due to this reduction of servers, operation management costs will also be reduced by 80%(1/5). Consolidating into a single SPARC M10 will help cut licensing and maintenance costs as well. SPARC M10's strong capability for consolidation combined with Oracle Active Data Guard allows us to create a highly reliable DR (Disaster Recovery) system.

Regarding the effect SPARC M10's high performance has had on the overall system, Mr. Mouri says, "Since batch processing time is reduced and memory access is accelerated by high-density implementation technologies such as System on Chip, we have experienced a significant improvement in response time for real time purchasing tasks."

With respect to future prospects, Mr. Nakaya adds, "We will begin full-scale migration soon, which we expect to go smoothly thanks to the high level of portability made possible through Oracle Solaris binary compatibilities. We will further improve integration platform security. For encryption, we expect to be able to perform processing without any lag due to the Software on Chip technology. And by performing this in-house, we can use the migration procedures manual and experience gained as a reference model for developing services to help our customers with similar projects."

Fujitsu intends to continue to develop in-house expertise in order to maximize the benefits of SPARC M10 technologies. This will contribute to the creation of ICT platforms that can support customer growth.

Corporate Profile
Fujitsu Limited

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President	Masami Yamamoto
Established	June 20, 1935
Employees	169,000 (March 2013)
Business details	Sales/manufacturing of communication systems, information processing systems, and electronic devices, as well as providing related services.
Website	http://www.fujitsu.com

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