



Delivering at the Speed of Business

Today, companies need to manage huge amounts of data to develop insights and actionable, valuable information—and to enable business decision makers to operate with solid information and better foresight. At the same time, they need to process this growing volume of data faster than ever in order to stay ahead of the competition and a constantly changing business environment. In an increasingly real-time business world, the speed and quality of information are both key.

These trends are putting a strain on traditional IT infrastructures, as companies look for better ways to provide enterprise applications and analytics to the business and pursue initiatives such as big data and data center consolidation. It is becoming clear that incremental modifications are not enough to keep up. IT groups need innovative approaches that will enable them to reshape the infrastructure to provide the performance and scalability needed to keep up with the ever-evolving demands of the business.

A Leap Forward in Servers

The Fujitsu M10 server line is designed to be at the heart of that type of infrastructure. Drawing on Fujitsu's heritage of supercomputing—and its deep partnership with Oracle® that is focused on SPARC® and mission-critical business computing—this server line offers the

biggest technology advancement for SPARC servers in more than a decade.

The Fujitsu M10 servers are built on the advanced SPARC64® X processor and now the new SPARC64 X+ processor. These processors include "Software-on-Chip" technology created through the close collaboration of Fujitsu and Oracle. Software-on-Chip moves some routines from software programs to the circuitry of the chip, increasing the speed of those routines. The current Fujitsu M10 hardware and Oracle Solaris 11 software work together with this feature, and with Oracle Database 12c plus patch, companies may see an increase in performance of up to 25%, due to Software-on-Chip.

The Fujitsu M10 also uses an in-memory processing concept, which means that data is accessed within memory in just nano-seconds, rather than the

milliseconds needed for traditional access to storage and disks. Here again, hardware and software can work closely together for a significant increase in performance.

The Fujitsu M10 includes other innovative technologies that help drive high performance. For example, Fujitsu's advanced High Speed Interconnect transmission technology is used to connect CPUs, resulting in a very fast 14.5 Gbps transmission rate. In addition, a unique Liquid Loop Cooling mechanism can cool hot spots effectively, allowing components such as the CPU and memory to be located more closely to one another. This close placement and resulting compute density has helped the Fujitsu M10 achieve one-fifth lower memory latency, compared to previous servers.

The Payoff in Performance

Together, these various Fujitsu technologies add up to dramatic increases in performance. In the first six months following its release, the Fujitsu M10 set 14 world records in industry standard benchmark tests, including CPU-specific tests, such as SPEC® CPU, and application-level tests, such as Java™ and SAP®.

A look at a few of these benchmarks illustrates the level of performance improvement offered by these servers: For example, in the SPECint®_rate2006 benchmark, which looks at CPU performance and throughput, the Fujitsu M10 server provided twice the performance of the previous record-holding server. And in the STREAM Triad benchmark, which looks at memory access and throughput, it was five times faster than the previous record holder.

"The SPECjbb®2013 benchmark is designed to measure Java

application performance including response performance, which is essential for real-time processing. Fujitsu M10 with a 16-CPU configuration achieved the world's highest performance on both critical-jOPS (Java Operations Per Second) and max-jOPS."

The server's ability to deliver high performance has been demonstrated outside the lab in real world usage, as well. For example, a telecom company that used the Fujitsu M10 in a server consolidation effort achieved a 3X improvement in performance. And a printing company that migrated from a UNIX® platform to the Fujitsu server saw a 2X improvement in response time and a 3X improvement in batch processing time. [See sidebar, "Power for Global Expansion."]

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Providing an Agile IT Foundation

Business does not hold still, and that means that IT needs to constantly adjust and adapt to requirements that can change quickly—and often, unpredictably. Typically, this means expanding the infrastructure in step with business growth, and doing so cost-effectively.

The Fujitsu M10 addresses this need with its innovative core



activation feature. The SPARC64 X and the SPARC64 X+ CPU have 16 cores. When a company purchases a lower-end Fujitsu M10-1 with one CPU, all 16 physical CPU cores are already included in the box. They can be activated and paid for on an as-needed basis, making it easy to quickly scale from 2 to 16 cores in increments of two, without having to add any hardware. This core activation concept applies across the Fujitsu M10 product line, up to the largest 64-CPU modular models. In short, core activation may allow companies to license only what they need at the core level, and keep computing power in step with changing demands—an approach that is highly cost-effective.

// The Fujitsu M10 allows companies to keep computing power in step with changing demands.

Working hand-in-hand with core activation, the Fujitsu M10 provides building block capabilities that enable simple, modular scalability. For example, if a company reaches the capacity limits with all 64 CPU cores of a Fujitsu M10-4S activated, it can quickly add a second 2- or 4-socket box to the first without interrupting the system, and then grow that new box through the core activation process, as needed. This can be continued up to a maximum configuration of 16 boxes with 1,024 active cores and 32 terabytes of memory.

With these features, the Fujitsu M10 servers provide tremendous flexibility and expandability. This enables the IT organization to not only optimize its investment when it first implements the system, but to keep optimizing it over time. It essentially provides a “pay as you go” model—and helps avoid the all-too-common problem of having to “overbuy” and ending up with

equipment that is using power but not contributing to the bottom line.

In addition to high performance and flexibility, the Fujitsu M10 server design builds on Fujitsu’s history of providing mainframe-class reliability, availability and serviceability technology. Its architecture includes many features that help ensure that business operations are not interrupted and unscheduled downtime is not required to deal with failing hardware or software components. For example, redundant interconnect paths help minimize the risk of errors and data corruption. Predictive self-healing capabilities enable the operating system to work with the server hardware to predict component failures and minimize the impact of issues before they affect the system’s operation.

Fujitsu will keep delivering more with its Fujitsu M10 server line. This means continuing to expand Software-on-Chip capabilities and providing features that further increase reliability, availability and serviceability. It also means working with Oracle on innovative approaches to big data and other enterprise computing needs—and giving customers the technologies they need to be agile and responsive to successfully pursue today’s fast-moving business opportunities.

For More Information

To find out more about the Fujitsu M10 server, please see these related documents:

- [Accelerate and Consolidate the Data Center](#)
- [Consolidate with Fujitsu M10 Servers](#)
- [Accelerate Database Performance with Fujitsu M10 Servers](#)

Please visit our web site to [view](#) the full DNP case study.

Additional information about the Fujitsu M10 server line can be found at www.fujitsu.com/sparc.

SPEC (The Standard Performance Evaluation Corporation), SPECint and SPECjbb are registered trademarks of Standard Performance Evaluation Corporation (SPEC) in the US and other countries. Details and the latest information of this benchmark can be found at www.spec.org. Published as “SPARC M10.” Fujitsu M10 is sold as SPARC M10 by Fujitsu in Japan. Fujitsu M10 and SPARC M10 are identical products.

World-record SPECint_rate2006 result: Comparison based upon SPECint_rate2006 result except Supercomputers: 23,800 on a SPARC M10-4S server with 64 SPARC64 X (3.0 GHz) processors, Oracle Solaris 11.1, Oracle Solaris Studio 12.3, 1/13 Platform Specific Enhancement. Details and the latest information on this benchmark can be found at www.spec.org.

World-record STREAM result: Comparison based upon STREAM Triad result except Supercomputers: 4,002 GB/s on a SPARC M10-4S server with 64 SPARC64 X (3.0 GHz) processors. Details and the latest information on this benchmark can be found at www.cs.virginia.edu/stream/.

World-record SPECjbb2013 results: 16 CPU configuration: 308,936 max-jOPS and 168,127 critical-jOPS on a SPARC M10-4S server with 16 SPARC64 X (3.0 GHz) processors, Oracle Solaris 11.1 SRU 6.4, Java HotSpot 64-Bit Server VM, version 1.7.0_17. 4 CPU configuration: 83,909 max-jOPS and 50,562 critical-jOPS on a SPARC M10-4S server with 4 SPARC64 X (3.0 GHz) processors, Oracle Solaris 11.1 SRU 6.4, Java HotSpot 64-Bit Server VM, version 1.7.0_17. Details and the latest information on this benchmark can be found at www.spec.org.

Power for Global Expansion

Dai Nippon Printing Co., Ltd. (DNP) is one of the world's largest printing companies, but its business extends over a wide variety of fields, including Information Communication (e.g. publication printings and digital signage), Lifestyle and Industrial Supplies (e.g. packaging and lifestyle materials) and Electronics (e.g. display components and electronic devices). DNP has been actively expanding globally and now has 26 sales locations and 13 manufacturing plants around the world. The processing for DNP exports is done primarily through its central overseas business system. The previous system had been constructed based on HP-UX, but it had

stable service for information systems, from planning and design to construction, operation, and maintenance. When we investigated Fujitsu M10, the key points considered were not just its high performance, but its operational stability inherited from mainframe reliability, the fact that it embraces the future potential and long-term support of Oracle Solaris, and its compatibility with Oracle Database. Specifically when combined with Oracle Database 11g, Fujitsu



M10-1 is able to deliver one-stop-shop support for our business and significantly reduce maintenance costs."

For the new system configuration, Fujitsu M10-1 was used as the core database server. "Fujitsu M10 and Fujitsu made sure system construction could be completed in a short amount of time," says Mr. Shohei Yamashita, Third Work System Dept., Work System Headquarters, DNP Information



Tomoyasu Nagata



Kazuo Kurosawa



Shohei Yamashita

limitations in terms of expandability. For this reason, DNP elected to replace the system using Fujitsu M10 servers.

DNP needed a high performance system that could handle increases in the amount of overseas business job data and additional users, and evaluated multiple vendors. "We had been paying close attention to information about new, high-performance servers and [Fujitsu M10's] high-performance, based on supercomputer technology, was a step above conventional servers," says Tomoyasu Nagata, Section Head of the Overseas System Section at DNP. "We confirmed the figures backing Fujitsu M10 and it quickly became a very suitable candidate."

The final selection was done by DNP Information Systems Co., Ltd., which manages information systems for the DNP Group. Mr. Kazuo Kurosawa, Department Head at DNP Information Systems, stated, "Our role is to provide a

Systems. The database server works in conjunction with the application server and the backup server. Furthermore, Fujitsu's one-stop-shop support delivers a quicker resolution in the event of any issues.

After installation, the database's response performance doubled. Batch processing performance has tripled, thus greatly reducing overall processing time. Total operational costs have been cut by nearly 35%, with software maintenance costs kept down, and operational efficiency increased by installing a backup server.

Regarding future prospects, Mr. Nagata says, "We're planning to add more functionality leveraging CPU Core Activation, which will allow us to flexibly expand the system as needed. With this function, we can scale up when our business is ready while keeping initial costs down. We look forward to working with Fujitsu as they continue to support us through leading-edge solutions like Fujitsu M10 technology for big data processing."