

Sun Expands Data Center Product Set With Multi-Technology Offering

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Management Summary

Willie Sutton was one of the most notorious and outrageous criminals of the 20th century. Noted for robbing over 100 banks between the late 1920's and his final arrest in 1952, Willie also escaped from three prisons during his criminal career. When asked why he kept robbing banks, he is reported to have replied: "Because that is where the money is!" Similarly, if you are a vendor in the Information Technology (IT) industry looking to sell high-performance transactional computers, you would look to the enterprise data center, because, as Scott McNealy of Sun Microsystems has noted, **that is where the transactions are.**

The data center consists of either: (1) standalone computing systems in a scale up architecture or (2) clusters of systems, mono- or multi-processor, in a scale-out environment. These clusters require high availability in order to avoid any business interruptions, with failover software integrated into the servers to ensure a high level of resilience at the server level. The systems must be designed to minimize any planned or unplanned outages. Reliability is an essential part of the contract that any vendor must deliver to the mission-critical data center. Moreover, the servers have to have scalable performance to fit whatever size data center is required, whether that means a deskside tower under a table in the IT Director's office or multiple racks with multiprocessor drawers in the glass house. **The data center must be capable of supporting a mission-critical environment consisting of high volume transactions in a throughput-intensive computing architecture, or high performance computing in a computational intensive application.**

The hard part is being able to predict the right computing power for any given situation. As any good quarterback knows, you need to deliver the ball to where the receiver is going to be. Likewise, the IT Director needs to develop a data center environment that will handle tomorrow's workload. He needs to install a platform today that will be price/performant from the start, but also upgradable to handle the demands of additional users as future demands require.

Sun Microsystems has accepted this challenge with the introduction of six new servers into their *UltraSPARC* product line. In addition, they have added two new entries into their x86 product family, one of which is the first *Opteron* server from their recent partnership with AMD. To learn more about Sun's data center solution, please read on.

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Data Center Environment

With the continuing movement toward server consolidation and Storage Area Networking (SANs), we have seen a revival in data center activity. While mainframes are still the first choice of many large corporations for running very large, mission-critical applications, **the flexibility and affordability of open systems platforms has now altered the design and functionality of most data centers.**

IT departments need to focus on at least two unique environments in the data center. The first deals with high-volume applications such as On-Line Transaction Processing (OLTP). Known as *throughput computing*, this involves the execution of repetitive data inquiries requiring an instant response. The second environment deals with High Performance Computing (HPC), with applications invoking a high level of computational commands. The data center may not be the birthplace of throughput computing, but it is clearly the graveyard for those servers that cannot meet the minimum requirements of a mission-critical workplace. See Exhibit 1 for a description of key business needs.

Sun has a history, dating back 20 years, of providing dependable open systems

computing for the data center. Their open systems (i.e., *UNIX*) innovations include multiple static domains, hardware redundancy, dynamic systems domains, and automated dynamic reconfiguration. Moreover, they continue to stress reliability and availability as key features of their server family today with redundant components, hot swap capability and dynamic system upgrades. Although *Linux* and *Windows NT* are gaining followers in the data center, *UNIX*, and its variants, such as *Solaris*, remains the most popular and, possibly, the most-highly developed operating system for this environment.

Sun Enterprise Server Family

Sun has announced six new models in its *Sun Fire* Enterprise line of servers, five with the *UltraSPARC IV* microprocessor, scaling from 12 to 72 processors, and one as an upgrade to its *UltraSPARC IIIi* family. All of them employ the mission-critical business needs already focused upon. Along with these new servers, Sun has announced a new version of the *Solaris* Operating System, version 10, which will ship in the second half of 2004 and provide *SPARC*, *x86*, and *Opteron* users with greater control, flexibility, and diagnostics.

UltraSparc Servers

These new systems tightly integrate on-chip capabilities with the operating system to enable customers to mix and match UltraSPARC III and UltraSPARC IV processors, almost doubling their data center performance at a fraction of the cost.

Sun Fire E2900

Containing up to 12 chip-multithreaded UltraSPARC IV processors to deliver throughput computing to the Wintel server arena, the *E2900* provides dynamic reconfiguration, clustering, and linear scalability and, as with all models, is supported by Sun's services organization. Available in April, the *E2900* is priced under \$100K.

Sun Fire E4900

Containing from 4 to 12 UltraSPARC IV processors and specifically designed as a

Exhibit 1: Key Business Needs

- **Reliability** – Always-on service prevents business interruptions from occurring;
- **Availability** – Minimize planned and unplanned downtime through clustering and serviceability;
- **Investment Protection** – Binary compatibility with a library of over 8000 Solaris applications;
- **Security** – Defend against viruses and unauthorized accesses with built-in security; and
- **Services** – Leverage industry experience to architect, implement, and manage the data center.

departmental server for decision support data warehousing, the *E4900* is available in March, and starts at \$185K.

Sun Fire E6900

Containing from 4 to 24 UltraSPARC IV processors and designed to support data center tasks such as large databases, data mining, or server consolidation applications, the *E6900* is also available in March, starting at \$235K.

Sun Fire E20K

Able to support up to 36 UltraSPARC IV processors, the *E20K* is one of the flagship products for the Sun Fire family of binary compatible servers. This is an ideal product for the consolidation of multiple SPARC servers into a single scale-up platform. The *E20K* is also used for mainframe rehosting, high-end technical computing and data-intensive applications. Available in April, the *E20K* starts at \$640K.

Sun Fire E25K

Currently sitting at the top of the scalable family of UltraSPARC IV systems, with the capability to support up to 72 processors, is the *E25K*. This server can reduce the total cost of ownership of the data center that requires significant consolidation. The *E25K* also supports a variety of high-end applications from business financials and customer management environments to life science and technical applications. Also available in April, the *E25K* starts at \$825K.

Sun Volume Server Family

In addition to the enhancements made to the flagship product line of UltraSPARC servers, Sun has also introduced two new systems in its x86 line of volume servers along with an update to the Sun Fire V240. These are the *Sun Fire B200x Xeon Blade* and the *Sun Fire V20z*, the first *Opteron* server from Sun's recent strategic alliance with AMD.

Opteron V20z Server

The *V20z* is a mono- or dual-processor *Opteron* server designed to be able to

provide improved performance for 32 bit x86 applications and a smooth migration path for Linux and 64-bit Solaris applications by the end of 2004. The improved performance is a direct result of *Opteron's Hypertransport* technology that provides significantly more bandwidth than current technologies, and the wealth of registers in *Opteron*, enabling Solaris on *Opteron* to take advantage of a resource deficiency in Xeon. This *Opteron* server will run with both Solaris and Linux operating environments that excel in scale-out architecture. Available in April, the *V20z* starts at \$2,795.

Xeon B200x Blade Server

This new x86 blade product takes advantage of the processing power of the 2.0 GHz Xeon microprocessor and offers one of the best price-performance ratios in the industry in a 3U form factor. It is 34% more performant than competitive systems. Available now, the *Sun Fire B200x Blade Server* starts at \$3,790.

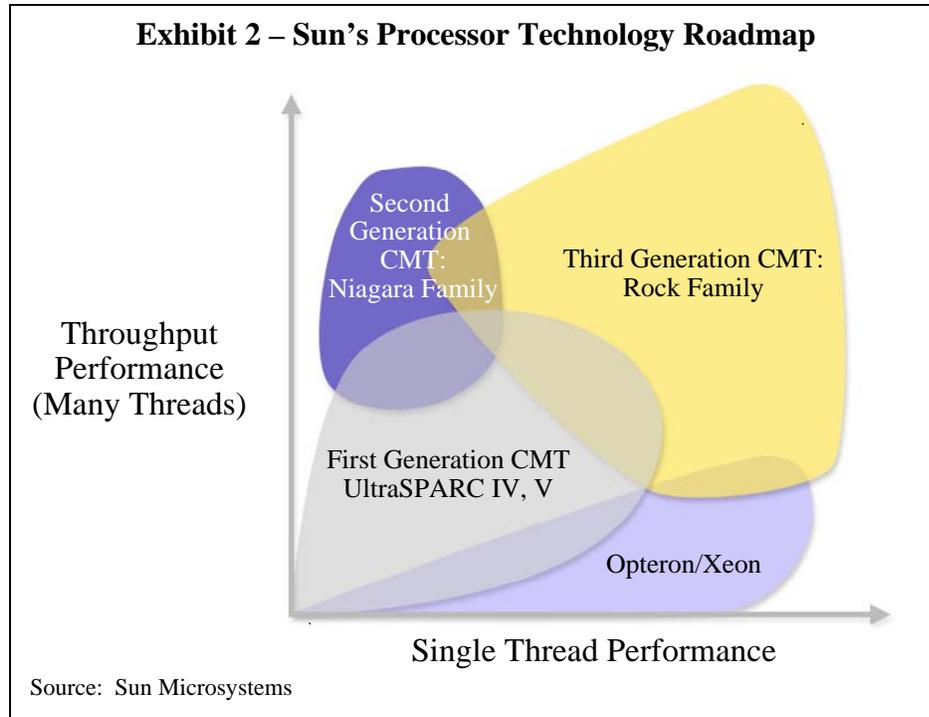
Sun Fire V240

This is an enhancement to the original *V240*. The server now ships with one or two 1.28GHz UltraSPARC IIIi processors, improving performance by 33%.

Sun Outlook

The introduction of an *Opteron* server is significant because it denotes the initial commitment by Sun to support the 32-bit x86 marketplace with AMD *Opteron*. However, it is not nearly as significant as the recently announced acquisition of Kealia. Established to develop advanced server technology, Kealia has been working on a full line of multi-processor *Opteron* servers that will enable Sun to hit the ground running in support of this technology.

The most significant aspect of this acquisition, however, is not the "what", but the "who". Along with the advanced *Opteron* technology, Sun has re-acquired Andy Bechtolsheim, co-founder and president of Kealia. Mr. Bechtolsheim returns to the company that he co-founded and, as employee #1, represented as vice president



of technology from 1984 to 1995. This will enable Sun to not only return to its roots as an idea company, but it will also enable Sun to take these two diverse product lines and develop a complementary strategy to go “back to the future”.

Sun has stated a commitment to maintain two development teams: one for SPARC servers, and one for Opteron systems. Mr. Bechtolsteim’s presence can only improve the coherency between the two product families. **This could result in one of those rare cases where the sum is greater than the parts.**

The new SPARC initiatives as shown in Exhibit 2 lay out a clear roadmap into 2005 and beyond with UltraSPARC V, the 2nd generation *Niagara* microprocessor, and the 3rd generation *Rock*. Combined with AMD’s family of 1xx, 2xx, and 8xx Opteron processors to support mono- through 8-way processing, and AMD’s roadmap to the future, this reinforced commitment to SPARC provides a promising outlook for Sun. The fact that the data center will be able to have application compatibility across family lines with a common Solaris operating system supported on both technologies only reinforces a positive outlook

for the future.

Conclusion

Sun has mapped out a strategy that will enable them to be in front of the rising demand for transactional computing power in the data center. The turmoil in the IT industry appears to be behind them. The storm clouds are subsiding and there are clear skies with loads of transactions to respond to ahead.

The forecast for everything from a cash-less society to RFID transactions to downloading the latest rap through wireless connections would indicate that the data center must be prepared to dynamically upgrade its response capabilities. If you believe that the network is the computer, then this includes communications and storage as well as processing capability.

With this announcement, Sun appears to have successfully positioned itself to capture data center growth no matter what the environment: SPARC or Opteron (x86), Solaris, or Linux.



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