Sun Customer Welcome Event
Advancing The Oracle Stack: Sun Hardware

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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.

In addition, the following is intended to provide information for Oracle and Sun as we continue to combine the operations worldwide. Each country will complete its integration in accordance with local laws and requirements. In the EU and other non-EU countries with similar requirements, the combinations of local Oracle and Sun entities as well as other relevant changes during the transition phase will be conducted in accordance with and subject to the information and consultation requirements of applicable local laws, EU Directives and their implementation in the individual members states. Sun customers and partners should continue to engage with their Sun contacts for assistance for Sun products and their Oracle contacts for Oracle products.
Oracle + Sun
Complete, Open, Integrated Systems

- Engineered to work together
- Tested together
- Certified together
- Packaged together
- Deployed together
- Upgraded together
- Managed together
- Supported together
Market Leadership
Innovation at its Best

• In overall UNIX shipments
• In overall volume UNIX revenue and units
• Operating system for Oracle deployment
• Application portfolio
• UNIX SAN disk storage market
• Leading integrated and automated Flash technology
Take Hardware to the Next Level
Building on Decades of Systems Innovation

• Best integrated systems: engineering across server, storage, networking, Solaris, database, middleware and applications

• Next generation, high performing and scalable systems
  – Better reliability, availability, serviceability
  – Unmatched security

• Application performance leadership
  – Detailed and proven infrastructure solutions for any scale

• Superior customer investment protection
  – SPARC, Solaris, archive and more
Servers
Sun Servers
Protecting Your Sun System Investments

- Accelerating SPARC innovation in a comprehensive family of SPARC systems
  - Next generation, high performance, reliable enterprise compute platforms

- Focusing development on x86 enterprise-class integrated clusters
  - Redundant, high performance, integrated clusters for distributed enterprise applications

- Delivering products engineered from applications to disk
SPARC Enterprise Servers
Over 20 Years of Mission Critical Computing

- Optimized application performance
- Reliability, availability, serviceability, and security
- Consolidation and virtualization
- Highly scalable
M-Series: Investment Protection
Delivers Longevity, Security and Scalability

• Industry leading reliability, availability and serviceability
• Extreme single threaded performance
• 3rd in-box upgrade and counting
• Seamless scalability: 1 to 64 CPUs
• Highest level of consolidation
• Breakthrough virtualization
Oracle + Sun Innovations
SPARC/Solaris + Flash and Oracle Database

Delivers Oracle Database Acceleration

- 2x OLTP throughput
- 2x faster transactional response times
- Up to 6x less power and up to 8x less floor space
### Oracle’s Sun SPARC Enterprise M-Series Benchmarks

**World Record Performance**

<table>
<thead>
<tr>
<th>Model</th>
<th>Performance Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun SPARC Enterprise M9000 (2.52 GHz)</td>
<td>Supports 39,100 SD users using SAP ERP 6.0 on the two-tier SAP Standard Sales and Distribution (SD) Benchmark. Beats IBM p595 with DB2 by 10%.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M9000 (2.88 GHz)</td>
<td>Best non-cluster Oracle Database 11g Decision Support result on TPC-H benchmark with performance of 188,229.9 QphH@3000GB. Beats POWER6-based IBM p595 with Sybase IQ by 20% and HP Integrity Superdome with Microsoft SQL Server by over 3x.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M4000 (2.53 GHz)</td>
<td>Processed 250,000 employee payroll checks on Oracle PeopleSoft Enterprise Payroll 9.0. Oracle Database 11g accelerated by the Sun Storage F5100 Flash Array delivered 10x latency reduction.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M9000 (2.52 GHz)</td>
<td>Best single JVM SPECjbb2005 result with 1,757,035 bops. Demonstrated outstanding scalability and optimized performance on real-world server-side Java applications. No single JVM results by POWER6-based IBM p595.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M9000 (2.52 GHz)</td>
<td>Delivers top SPECompL2001 result of 1,456,653 on this industry-standard test based on 11 High Performance computing applications. No results by POWER6-based IBM p595.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M9000 (2.88 GHz)</td>
<td>Posts the new single-system UNIX world record SPECint_rate_base2006 result of 2,400. Utilizes Oracle Solaris 10 OS and Oracle Solaris Studio 12 compiler software. Beats best published IBM POWER7-based result by 4.5%.</td>
</tr>
<tr>
<td>Sun SPARC Enterprise M4000 (2.53 GHz)</td>
<td>Best database hardware for Oracle PeopleSoft Enterprise Campus solutions. Oracle Solaris with Oracle Database 11g boosted by Sun Flash Accelerator F20 card delivered up to 40% improvement on batch jobs compared to Itanium-based HP rx6600 solution.</td>
</tr>
</tbody>
</table>
T-Series: Redefining Data Center Economics
Breakthrough Performance and Eco-Efficiency

• World class performance
• Built-in, on-chip wire-speed security
• Unmatched power efficiency and density
• Breakthrough virtualization
• High reliability, availability and serviceability
Oracle + Sun Innovations
Secure SPARC/Oracle Solaris + Oracle WebLogic

Delivers SSL Acceleration:
• 2x performance over non accelerated
• 25% better throughput
• Zero cost security
• Full Hypervisor functionality
| World Record | T5440 | World record Sun T5440 Oracle Business Intelligence Enterprise Edition (BIEE) and Sun’s ZFS. 50k concurrent users using Solaris 10, Solaris Containers, ZFS, and Oracle 11g database |
| World Record | T5240 | World record Zeus ZX TM traffic manager HTTP throughput of 13.4 Gbit/sec and price/performance of 5.5K $/Gb/sec. 34% fast and 2.6x better $/perf than f5 BIG-IP VIPRÓN, 1 blade. 91% faster and 2.7x better $/perf than f5 BIG-IP 8800. 2.2x faster and 3.3x better $/perf than Citrix 12000 |
| World Record | T5440 | World record 7.6 Million TPC-C. Easily beats IBM Power6. 7x better response time, 10x better compute density, 5x better power/performance, 19% better $/performance, 25% faster. |
| World Record | T5440 | World record Siebel CRM standard Platform Sizing and Performance Program (PSPP) |
World Record OLTP Result

System p595
IBM’s 68 Storage Racks

7.7M tpmC, $2.36/tpmC
World Record, Easily Beats IBM

• 7X better response time
• 10X better compute density
• 5X better power/performance
• 19% better $/performance
• 25% faster
The Future for SPARC Server Customers

- Continue to invest in innovative SPARC technology
  - Lead the industry in RAS and security
  - Accelerate application performance
  - Lead the industry in scalability
  - Provide the best investment protection
- Increase investment in OS and system management
  - Enhance Solaris OS, system management, and virtualization
  - Develop software that simplifies management of IT stacks
- Deliver an integrated solution for the entire server stack
  - Develop technology that optimizes application, middleware, management tools, and hardware
x86 Enterprise Systems

- Maximum compute power and unparalleled I/O
  - 140+ world records
- Energy and space efficient
  - Only 4U 8-socket system
  - Industry’s smallest 4-socket x86 system
- Choice
  - Solaris or Linux operating system
  - Rack or blade form factor
Sun Fire x86 Server Portfolio

Sun Fire X4400 & 4600 Series
Optimized for demanding business applications and consolidation

Sun Fire X4100 Series
Ultimate IT infrastructure workhorse

Sun Fire X4200 Series
Optimized for business applications

Sun Fire X2200 Series
Ideal cloud & HPC engine
Expect More from Sun x86 Systems

• Lowest solution TCO
  – Space savings
  – Power and cooling efficiencies

• Simplicity
  – Automation of administrative tasks
  – Integration with the Oracle stack
  – Fewer servers, network, and cabling management points

• Business optimized
  – Best application performance
  – Sun Flash application acceleration technology
  – Enterprise-class reliability
Sun Blade Modular Systems
Industry’s Most Flexible and Capable Systems

- 15-20% greater power efficiency than any other vendor
- Superior scalability: 2x memory, 2x I/O
- Supports multiple operating systems and chip architectures
- Grow as your business requires: up to 960 cores per chassis
Integrated Blade Infrastructure

- Sun SPARC Blades
- Sun x86 Blades
- Sun Network Express Modules
- Sun Blade Storage
- Integrated Lights Out Management
The Netra Difference
Rock Solid, Carrier-Grade

- Broadest carrier-grade family
  - Rugged NEBS L3 certified
  - Choice of blades and rackmount platforms
  - Telecom management/alarms
- Proven 5x9s+ reliability
- Choice of OS
  - Solaris, leading CG OS
- Extended product lifecycle
Sun Infrastructure Software
Platform Choice and Flexibility

- Best SMP scalability
- Highest throughput per watt

Oracle VM Virtualization
SPARC

Oracle Enterprise Manager

Oracle VM Virtualization

Linux or Solaris

x86

- Best multi-OS virtualization
- Choice of Solaris or Linux
25+ Years of Storage Leadership
Trusted Provider of Storage Solutions

• Technology innovation has made Sun a market leader
  – #1 UNIX SAN disk storage market
  – Tape Automation
  – Leading the integrated and automated use of Flash technology

• Continuing to deliver a comprehensive storage portfolio
  – Delivering a complete family of SAN, NAS, and DAS storage products
  – Pioneering functionality in Open Storage appliances
  – Focusing on providing high-quality integrated systems

• Leading through strong investment in storage software
  – Simplifying enterprise storage management
  – Automating multi-tiered storage for optimum performance
## Storage Portfolio

**A Comprehensive Product Portfolio**

### Archive Storage
- LTO
- T9840
- T10000
- SL24/48
- VTL
- SL500
- SL3000
- VSM
- SL8500

### Array Storage
- S2500
- S6180
- S6580
- S6780

### Unified Storage
- S7110
- S7210
- S7310
- S7410

### Flash Storage
- Flash & SSD
- F20
- F5100

**Enterprise Software:** Management, Analytics, Data Replication/Copy, Deduplication, Hybrid Storage Pools, ZFS, Lustre, SAM/QFS

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*ORACLE CONFIDENTIAL*
Sun Storage
Furthering Your Sun Storage Investments

• Investing in leadership innovations in Sun Storage 7000 Unified Storage System
  – Single platform for all storage applications
  – Seamless integration across server and applications environments
  – Breakthrough management simplicity, performance, and efficiency

• Focusing on StorageTek Archive
  – Seamless integration across storage appliance, data protection and archive portfolio with the Oracle stack

• Simplifying enterprise storage management

• Developing breakthrough Flash innovations
  – A comprehensive eco system of compute, storage, and software
Sun FlashFire Technology
Increase Application Performance and Reduce Costs

• Improve application response times by up to 65x
• Double server throughput and reduce space and power
• Boost performance without adding servers
• Reliability: Robust SSDs contain no moving parts
Storage Software for Data Management

• ZFS business file system
  – Industry’s highest data integrity for business systems
• Lustre high performance computing file system
  – World’s most popular HPC file system
• QFS high performance file sharing
  – Reduces storage management costs
• Storage Archive Manager (SAM) data management
  – Policy-based, tiered storage efficiencies
Oracle + Sun Innovations
ZFS Storage Appliance for Oracle VM

Delivers:

• 10x faster data response times vs. traditional storage
• 75% cost savings with 80% less power and 70% less space
• Rapid provisioning and cloning of Oracle VM Templates
• Simplified management, provisioning, and visibility of VMs, apps, and data

Learn More at www.sun.com/OVMstorage

From Hybrid Storage Pools (Flash + HDD) & included data services built-in replication, snapshot, backup, compression and anti-virus protection interface
Increased Investment in Storage

• Lower cost of ownership
  • Integrated data services stack

• Continued technology innovation
  • Unified Storage Appliances, Flash, ZFS, Lustre, QFS
  • Solaris data services and management software

• Continued support for heterogeneous environments
  • Continued development of traditional disk and tape technologies
  • Further develop application integration and support

• Better support and customer experience
  • Increased service and support capability
  • Increased serviceability and reduction in complexity
Complete, Open, Integrated Systems
Innovation at its Best

- **Continuity**
  - Sun product lines

- **Increased investment**
  - Software, servers & storage

- **Integrated stack**
  - Best of breed components
Substantiations

SPARC Enterprise M-Series Benchmarks slide

- Two-tier SAP Sales and Distribution (SD) standard SAP ERP 2004/2005 application benchmark as of 02/14/10: Sun SPARC Enterprise M9000 (64 processors, 256 cores, 512 threads) 64 x 2.52 GHz SPARC64 VII, 1024GB memory, 39,100 SD benchmark users, 1.93 sec. avg. response time, Cert#2008042, Oracle 10g, Solaris 10, SAP ECC Release 6.0. SAP, R/3, mySAP reg TM of SAP AG in Germany and other countries. More info www.sap.com/benchmark.

- TPC-H@3000GB Sun SPARC Enterprise M9000 188,229 QphH@3000GB, $23.99/QphH@3000GB, availability 4/10/10. IBM Power 595 156,537 QphH @3000GB, $20.60/QphH @3000GB, availability 11/24/09. HP Integrity Superdome 60,359 QphH @3000GB, $32.60/QphH @3000GB, availability 05/21/07. QphH, $/QphH are registered trademarks of Transaction Processing Performance Council (TPC). More info www.tpc.org.

- Oracle Peoplesoft Payroll 9.0 benchmark, Sun M4000 (4x2.53GHz SPARC64) 43.78 min with 16 streams. Compare to results posted on 01/23/2010 at www.oracle.com/apps_benchmark/html/white-papers-peoplesoft.html

- SPECjbb2005 Sun SPARC Enterprise M9000 Server (64 chips, 256 cores, 2.52 GHz) 1,757,035 SPECjbb2005 bops, 1,757,035 SPECjbb2005 bops/JVM. SPEC, SPECjbb reg tm of Standard Performance Evaluation Corporation. Results as of 04/14/10 on www.spec.org.

CMT Benchmarks slide


- TPC Benchmark C, tpmC, and TPC-C are trademarks of the Transaction Performance Processing Council (TPC). 12-node Sun SPARC Enterprise T5440 Cluster (1.6GHz UltraSPARC T2 Plus, 4 processor) with Oracle 11g Enterprise Edition with Real Application Clusters and Partitioning, 7,646,486.7 tpmC, $2.36/tpmC. Available 3/19/10. IBM Power 595 (5GHz Power6, 32 chips, 64 cores, 128 threads) with IBM DB2 9.5, 6,085,166 tpmC, $2.81/tpmC, available 12/10/08. HP Integrity Superdome(1.6GHz Itanium2, 64 processors, 128 cores, 256 threads) with Oracle 10g Enterprise Edition, 4,092,799 tpmC, $2.93/tpmC. Available 8/06/07. Source: http://www.tpc.org, results as of 02/14/10.

World Record OLTP Result

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