

## ORACLE SPARC SUPERCLUSTER T4-4

### HIGH PERFORMANCE AND GENERAL PURPOSE

#### KEY FEATURES

- Combines the computing power of the new SPARC T4 processor, the performance and scalability of Oracle Solaris, the optimized database performance of Oracle Exadata Storage Servers and the accelerated middleware processing of the Oracle Exalogic Elastic Cloud
- Up to 16 SPARC T4 8-core processors and 4 TB of memory in a single rack
- Supports Oracle Solaris 11 and 10
- Optimized for Oracle Database 11g and Exalogic Elastic Cloud with unique hardware acceleration
- Shared Storage: Includes InfiniBand-attached ZFS storage cluster for high performance, fully redundant disk storage
- InfiniBand I/O fabric provides extremely scalable, reliable and high performance connectivity between all components
- Fully built-in virtualization using Oracle VM Server for SPARC and Oracle Solaris Zones
- Fully integrated and fully redundant compute, storage and networking components for high availability
- Built in, hardware encryption to provide enhanced data security and privacy integrated with Oracle Database 11gR2

#### RELATED PRODUCTS

- SPARC T4-4 server
- Oracle Exadata Storage Server X2-2
- Oracle Exadata Storage Expansion Rack X2-2
- Sun ZFS Storage 7320 Appliance
- Sun Datacenter InfiniBand Switch 36
- Oracle Database 11g
- Oracle Real Application Clusters
- Oracle Exalogic Elastic Cloud
- Oracle Enterprise Manager Ops Center
- Oracle Solaris

*The Oracle SPARC SuperCluster T4-4 is the world's fastest general purpose engineered system that delivers high performance, availability, scalability and security across a wide range of enterprise applications, including database, middleware, Oracle and custom applications. The SPARC SuperCluster T4-4 solution is a completely optimized package of servers, storage and software that integrates high performance technologies including Oracle Exadata Storage Servers and Oracle Exalogic Elastic Cloud while utilizing the newest SPARC T4-4 servers, Oracle ZFS Storage Appliance, InfiniBand I/O fabric, and Oracle Solaris 11.*



Oracle SPARC SuperCluster T4-4

### High Performance for Demanding and Consolidated Workloads

The Oracle SPARC SuperCluster T4-4 is a high performance, multi-purpose engineered system that has been designed, tested and integrated to run a wide array of enterprise applications. It is well suited for multi-tier enterprise applications with web, database and application components. This versatility along with powerful, bundled virtualization capabilities makes it an ideal platform on which to consolidate large numbers of applications, databases, and middleware workloads or to deploy complex, multi-user development, test and deployment environments. Applications certified on Oracle Solaris 8, Oracle Solaris 9, Oracle Solaris 10 and Oracle Solaris 11 can run without modification simultaneously in a SPARC SuperCluster. Oracle Exadata Storage Servers and Oracle Exalogic Elastic Cloud contribute unique technology for driving unequalled database and Java application server performance advantages. Oracle Solaris 11 provides a highly available, secure and scalable operating

- Oracle Solaris Cluster
- Oracle Optimized Solutions

#### RELATED SERVICES

- Advanced Customer Services

system: it includes built-in, low overhead server, storage and network virtualization capabilities and allows for best-in-class application performance.

#### Enterprise Optimized

The SPARC SuperCluster T4-4 has redundancy built in to support the demands of mission critical applications. Each SPARC SuperCluster has redundant InfiniBand connectivity, redundant Power Distribution Units (PDU), and the servers all have hot-swappable power supplies for high availability. It utilizes redundant components and I/O paths to achieve high availability as well as high performance. Optional Oracle Clusterware drastically improves database availability while optional Oracle Solaris Cluster provides industry leading application up time. Oracle Real Application Cluster (RAC) protects against database server failure and Automatic Storage Management (ASM) provides disk mirroring to protect against disk failures. Redundant components ensure the database can tolerate server and disk drive failure. In addition, data is mirrored across storage servers to protect against loss of data, or inhibit data accessibility.

Oracle Enterprise Manager Ops Center manages the entire hardware and virtualization environment on SPARC SuperCluster. Using Enterprise Manager Ops Center, administrators can perform proactive monitoring and detailed configuration analysis on SPARC SuperCluster.

#### See Results Quickly

SPARC SuperCluster T4-4 is pre-configured with the newest SPARC T4 servers, Oracle Exadata Storage Servers, Sun ZFS Storage 7320 Appliance, InfiniBand technology and Oracle Solaris and is delivered with fully tested integrations and best practices. Oracle Advanced Customer Support Services eliminates guess work and misconfiguration with on-site installation and bring up services. Integrated patching and testing ensures error-free installation and operation. Simple and fast to implement, SPARC SuperCluster is ready to help you consolidate many of your enterprise applications on to a unified high performance platform.

#### Seamless Integration and Support

Integrated hardware and software technology, and related hardware and installation support services, are provided in a unified fashion by Oracle solving customers' business and technical challenges. By combining its industry-standard high performance servers and storage with the intelligence built into its best-in-class software, SPARC SuperCluster T4-4 delivers the industry's highest levels of performance, scalability and reliability – all backed by Oracle Support. Only Oracle offers single point of accountability and complete, integrated support for the entire Oracle stack—apps to disk—including 24/7 hardware service, expert technical support, proactive tools, and software updates.

| SPARC SuperCluster Specifications   | Half Rack  | Full Rack  |
|---|--|--|
| <b>SPARC T4-4 Compute Node</b>  | <b>2</b>   | <b>4</b>   |
| Each SPARC T4-4 compute node configured with: <ul style="list-style-type: none"> <li>• 4 x eight-core SPARC T4 Processors (3.0GHz)</li> <li>• 1 TB Memory</li> <li>• 6 x 600 GB 10,000 RPM SAS Disks</li> <li>• 2 x 300 GB solid state disks</li> <li>• 4 x dual-port InfiniBand QDR</li> <li>• 4 x dual-port 10 Gb Ethernet</li> </ul> |  |  |
| <b>Exadata Storage Server X2-2</b>  | <b>3</b>   | <b>6</b>   |
| Each Exadata Storage Server is configured with: <ul style="list-style-type: none"> <li>• Either 12 x 600 GB 15,000 RPM High Performance SAS disks or 12 x 3TB 7,500 RPM High Capacity SAS disks</li> <li>• 12 CPU cores for SQL processing</li> <li>• 384 GB Exadata Smart Flash Cache</li> </ul>                                       |  |  |
| <b>SPARC SuperCluster T4-4 with High Performance SAS Disks</b>  | 21 TB of raw data disk capacity<br>Up to 9.5 TB of uncompressed usable | 43 TB of raw data disk capacity<br>Up to 19 TB of uncompressed usable capacity |

|  |   |   |
|--|---|---|
|  | capacity (mirrored)<br>Up to 5 GB/sec of uncompressed disk bandwidth<br>Up to 16 GB/sec of uncompressed Flash data bandwidth<br>Up to 11,000 Database Disk IOPS<br>Up to 500,000 Database Flash IOPS  | (mirrored)<br>Up to 10 GB/sec of uncompressed disk bandwidth<br>Up to 32 GB/sec of uncompressed Flash data bandwidth<br>Up to 23,000 Database Disk IOPS<br>Up to 1,000,000 Database Flash IOPS  |
| <b>SPARC SuperCluster T4-4 with High Capacity SAS Disks</b>  | 108 TB of raw data disk capacity<br>Up to 48 TB of uncompressed usable capacity (mirrored)<br>Up to 3 GB/sec of uncompressed disk bandwidth<br>Up to 14.5 GB/sec of uncompressed Flash data bandwidth<br>Up to 11,000 Database Disk IOPS<br>Up to 500,000 Database Flash IOPS   | 216 TB of raw data disk capacity<br>Up to 96 TB of uncompressed usable capacity (mirrored)<br>Up to 7 GB/sec of uncompressed disk bandwidth<br>Up to 29 GB/sec of uncompressed Flash data bandwidth<br>Up to 23,000 Database Disk IOPS<br>Up to 1,000,000 Database Flash IOPS |
| <b>Sun ZFS Storage 7320 Appliance</b>  | <b>1</b>  | <b>1</b>  |
| 7320 Dual Controller, each with: <ul style="list-style-type: none"> <li>• 2 x four-core 2.4GHz Intel® Xeon® Processors</li> <li>• 24 GB Memory</li> <li>• 1 x dual-port InfiniBand HCA</li> <li>• 2 x 500 GB SATA HDD</li> <li>• 4 x 512 GB read optimized SSD</li> </ul> 7320 Disk Shelf with the following: <ul style="list-style-type: none"> <li>• 20 x 2 TB using high capacity SAS-2 7200 RPM disks</li> <li>• 4 x 18 GB write-optimized SSDs</li> </ul>                                   |   |   |
| <b>Sun Datacenter InfiniBand Switch 36</b>   | <b>3</b>  | <b>3</b>  |
| The Sun Datacenter QDR InfiniBand Switch 36 provides 36 port QDR (40 Gb/sec) InfiniBand Switches.  |   |   |
| <b>Additional Hardware Components</b>  |   |   |
| Additional Hardware Components Included: <ul style="list-style-type: none"> <li>• Ethernet management switch</li> <li>• 42U rack packaging</li> <li>• 2 x Redundant Power Distributions Units (PDUs)</li> <li>• InfiniBand cables</li> <li>• 10G cables</li> </ul> Spares Included: <ul style="list-style-type: none"> <li>• 1 x 600 GB High Performance SAS disk or 1 x 3 TB High Capacity SAS disk</li> <li>• 1 x 2 TB SAS disk</li> <li>• 1 x 96 GB Exadata Smart Flash Cache card</li> </ul> |   |   |
| <b>Key Applications</b>  |   |   |
| <ul style="list-style-type: none"> <li>• Server and application consolidation</li> <li>• Mission-critical enterprise applications</li> <li>• Large databases and data warehouses</li> <li>• Complex multi-tier</li> </ul>  | <ul style="list-style-type: none"> <li>• Safely virtualize and consolidate applications to increase operating efficiency, reduce server count and conserve datacenter space and energy</li> <li>• Tuned to provide high performance, security and availability for large scale deployments of complex packaged and custom applications</li> <li>• Built-in database acceleration delivers unsurpassed performance, scalability, and data protection</li> <li>• Optimize both highly concurrent Java applications and web services and computationally intensive back end processing</li> <li>• Runs existing Oracle, ISV and customer applications including PeopleSoft HCM, WebCenter Content, Siebel CRM and Oracle E-Business Suite</li> </ul> |   |

|   |  |
|---|--|
| applications and development environments   |  |
| <b>Software</b>   |  |
| Operating system  | <ul style="list-style-type: none"> <li>• Oracle Solaris 11 for Oracle Database 11g, Oracle Elastic Cloud Software and general purpose applications</li> <li>• Oracle Solaris 10 8/11 for general purpose applications</li> </ul>   |
| <b>Virtualization</b>   |  |
| Built-in, no-cost Oracle VM Server for SPARC and Oracle Solaris Zones provide the flexibility to power virtual systems and thousands of zones |  |
| <b>SPARC SuperCluster Services and Support</b>  |  |
| Hardware Warranty   | 1 year with a 4 hour web/phone response during normal business hours (Mon-Fri 8AM-5PM), with 2 business day on-site response/Parts Exchange  |
| Oracle Support  | <ul style="list-style-type: none"> <li>• Oracle Premier Support for Systems</li> <li>• Oracle Premier Support for Operating Systems: <ul style="list-style-type: none"> <li>◦ 24x7 support with 2 hour on-site hardware service response (subject to proximity to service center)</li> </ul> </li> <li>• Oracle Customer Data and Device Retention</li> <li>• Oracle Auto Service Request (ASR)</li> </ul> |
| Oracle Start-Up Pack  | <ul style="list-style-type: none"> <li>• Oracle Start-Up Advisory Service</li> <li>• Oracle Installation Service</li> <li>• Oracle Configuration Service</li> <li>• Oracle Production Support Readiness Service</li> <li>• Oracle Quarterly Patch Deployment Service</li> </ul>  |
| Services from Oracle Advanced Customer Support Services   | <ul style="list-style-type: none"> <li>• Oracle Installation and Configuration</li> <li>• Oracle Configuration of Exalogic</li> <li>• Advanced Monitoring and Resolution</li> <li>• Advanced Support Assistance</li> <li>• Business Critical Assistance</li> <li>• Solution Support Center</li> <li>• Advanced Support Engineer</li> </ul>   |
| Services from Oracle Consulting   | <ul style="list-style-type: none"> <li>• Migration Factory</li> <li>• Consolidation Services</li> <li>• Architecture Services</li> </ul>   |

| <b>SPARC SuperCluster T4-4 Environmental Specifications</b> | <b>Full Rack</b>  | <b>Half Rack</b>   |
|---|---|--|
| <b>Dimensions:</b>  | <ul style="list-style-type: none"> <li>• Height: 78.66" - 1998 mm</li> <li>• Width: 23.62" – 600 mm</li> <li>• Depth: 47.24" – 1200 mm</li> </ul> |  |
|   | Weight: 1,900 lbs   | 1,310 lbs  |
| <b>Power:</b>   | Maximum: 15.0 kW (15.8 kVA)<br>Typical: 13.1 kW (13.8 kVA)  | 8.5 kW (8.9 kVA)<br>6.5 kW (6.9 kVA)                             |
| <b>Cooling:</b>   | Maximum: 53,966 BTU/hour (56,880 kJ/hour)<br>Typical: 47,087 BTU/hour (49,630 kJ/hour)  | 30,610 BTU/hour (32.2 kJ/hour)<br>23,543 BTU/hour (24.8 kJ/hour) |
| <b>Airflow:</b>   | Maximum: 2,498 CFM<br>Typical: 2,180 CFM  | 1,417 CFM<br>1,090 CFM   |
| <b>Operating Temperature/Humidity:</b>                      | 5 °C to 32 °C (41 °F to 89.6 °F), 10% to 90% relative humidity, non-condensing  |  |

|   |   |
|---|---|
| <b>Altitude Operation:</b>  | Up to 3,048 m, max. ambient temperature is de-rated by 1° C per 300 m above 900 m   |
| <b>Regulations: (1)</b>   | <ul style="list-style-type: none"> <li>• Safety: UL 60950-1 2nd Ed, EN60950-1:2006 2nd Ed, CB Scheme with all country differences</li> <li>• RFI/EMI: FCC CFR 47 Part 15 Subpart B Class A, EN 55022:2006+A1:2007 Class A, EN 61000-3-11:2000, EN 61000-3-12:2005, ETSI EN 300 386 V1.4.1 (2008)</li> <li>• Immunity: EN 55024:1998+A1:2001:+A2:2003</li> </ul> |
| <b>Certifications: (1)</b>  | <ul style="list-style-type: none"> <li>• Safety: UL/cUL, CE, BSMI, GOST R, S-Mark, CSA C22.2 No. 60950-1-07 2nd Ed, CCC</li> <li>• EMC: CE, FCC, VCCI, ICES, KCC, GOST R, BSMI Class A, AS/NZ 3548, CCC</li> </ul>  |
| <b>Other:</b>   | Complies with WEEE Directive (2002/96/EC) and RoHS Directive (2002/95/EC)   |
| 1 In some cases, as applicable, regulatory and certification compliance were obtained at the component level. |   |

### SPARC SuperCluster Upgrades

- Upgradability: Connect multiple SPARC SuperCluster racks via included InfiniBand fabric
- Up to 8 racks can be connected without requiring additional InfiniBand switches
- Add fibre channel cards to compute nodes to connect to existing SAN infrastructure
- Increase storage capacity by connecting to Exadata Storage Expansion Rack X2-2

### Oracle Software (Included)

- Oracle Solaris 11
- Solaris 10 8/11
- Oracle VM Server for SPARC
- Oracle Solaris Zones
- Oracle Enterprise Manager Ops Center

### Oracle Software (Sold Separately)

- Oracle DB 11g
- Oracle Exadata Storage Server Software
- Exalogic Elastic Cloud Software
- Oracle Solaris Cluster 4.0 (Oracle Solaris 11); Oracle Solaris Cluster 3.3 5/11 (Oracle Solaris 10)

### Contact Us

For more information about Oracle SPARC SuperCluster T4-4, visit [oracle.com](http://oracle.com) or call +1.800.ORACLE1 to speak to an Oracle representative.



Oracle is committed to developing practices and products that help protect the environment

Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

This document is provided for information purposes only and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark licensed through X/Open Company, Ltd. 0611

**Hardware and Software, Engineered to Work Together**