ORACLE

Oracle SPARC Server for Enterprise Computing

Dr. Heiner Bauch
Senior Account Architect
19. April 2013

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.

Agenda

- **Oracle SPARC Hardware Strategy**
- SPARC T5 and M5-32 Systems
- Innovative Roadmap and Product Portfolio

Oracle SPARC Hardware Strategy

Hardware and Software
ORACLE
Engineered to Work Together

	**INTEGRATED SOFTWARE HARDWARE STACK**	Only Oracle provides a true integrated stack with management visibility throughout the software and hardware layers
	**PERFORMANCE**	Leadership in all Enterprise Business Applications
	**BUILT FOR CLOUD COMPUTING**	Simplified Administration, Designed-in Virtualization, Scalable Data Management, Advanced Protection
	**INNOVATION**	Long-term Roadmap. Software in Silicon.

SPARC Solaris Investment at Oracle

SPARC: Scalable Processor Architecture. Solaris: #1 UNIX

- **Investment in Systems Hardware is Increasing**
  - 2000+ engineers for SPARC products
  - 1500+ engineers for Oracle Solaris
- **Delivery to 5 Year Roadmap is on or ahead of schedule**
  - T5 is the Third Generation of SPARC delivered since Oracle/SUN Merger
  - Six Solaris releases included Solaris 11: The First Cloud OS
- **Complete "Red Stack" Integration**
  - Comprehensive hardware and software testing
  - SPARC Engineered Systems
  - Solaris 11.1 unique support for Oracle DB and Java
  - Software-in-Silicon/Application Accelerators

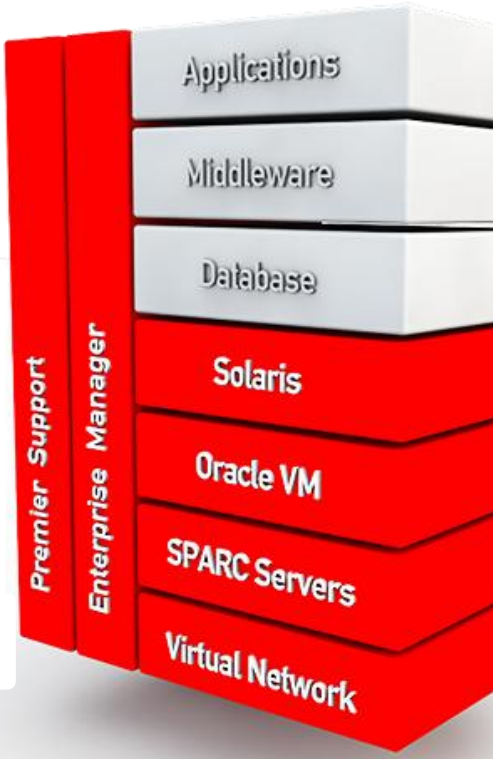
The Unique Oracle Advantage

Engineered to Work Together to Create Unprecedented Value

SPARC SOLARIS SERVER

VIRTUALIZATION	SYSTEM MANAGEMENT	CLOUD READY	FULL STACK SUPPORT
simple, scalable optimized no cost	*productivity centralized control deep integration*	*performance automation security no cost*	*single point full stack coverage uptime, upgrades*

Accelerate Business Processes | Reduce Operational & Capital Expenses



ORACLE

Agenda

- Oracle SPARC Hardware Strategy
- **SPARC T5 and M5-32 Systems**
- Innovative Roadmap and Product Portfolio

Oracle SPARC Server Family Portfolio

Foundation for Mission Critical Computing

Enterprise Servers

Designed for best-in-class performance, reliability, availability & security

SPARC SuperCluster

SPARC M5-32

New SPARC T5-8

NEW SPARC T5-4

NEW SPARC T5-2

NEW SPARC T5-1B

T4-1B

T4-2

T4-4

T4-1

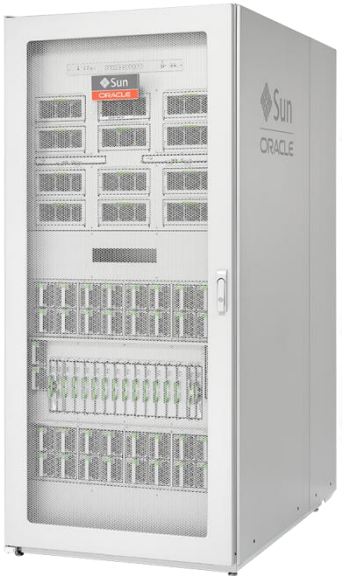
New | SPARC T5 Servers

Next Generation T-series Systems

- T5 Improves the price/performance leadership established by T4
  - 2.4x Throughput improvement
  - 20% Clock frequency increase
  - 4x Increase in overall scalability
- Expands the range of SPARC T-series servers
  - Ranging from 8-core (T4) to 16-core (T5) servers
  - Increase socket scalability to 8-sockets (32 ➠ 128 cores)
- Longer lifecycle for SPARC T4 Servers
  - SPARC T4-1, T4-1B, T4-2, T4-4

SPARC M5 | Building on Extensive SPARC Heritage

- Throughput 6x M9000-32
- Single thread 1.5x over M9000-32
- Expandability to 32 processors and 32 TB of RAM
- 1,536 threads, 1,440 GB/s memory bandwidth
- 1,024 Gb/s I/O bandwidth
- Extensive RAS and high availability design
- Oracle Solaris 11
- Same Oracle ILOM management as T-Series
- Extensive no-cost virtualization
- Solaris/SPARC Binary Compatibility Guarantee

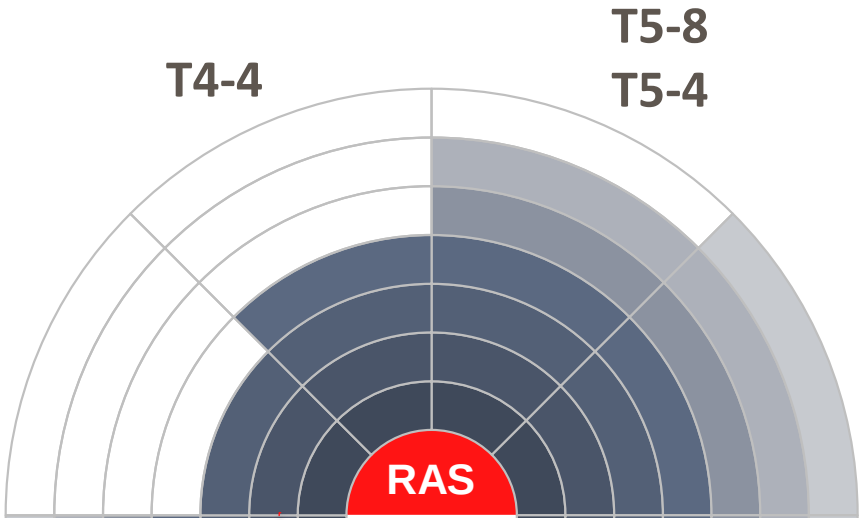


Most Trusted Server. Highest Scalability.

ORACLE

High Availability

Maximizing on Mission Critical Reliability, Availability, Serviceability



Redundant / Hot-swap Fans, Power, Disks
ECC
Predictive Self-Healing

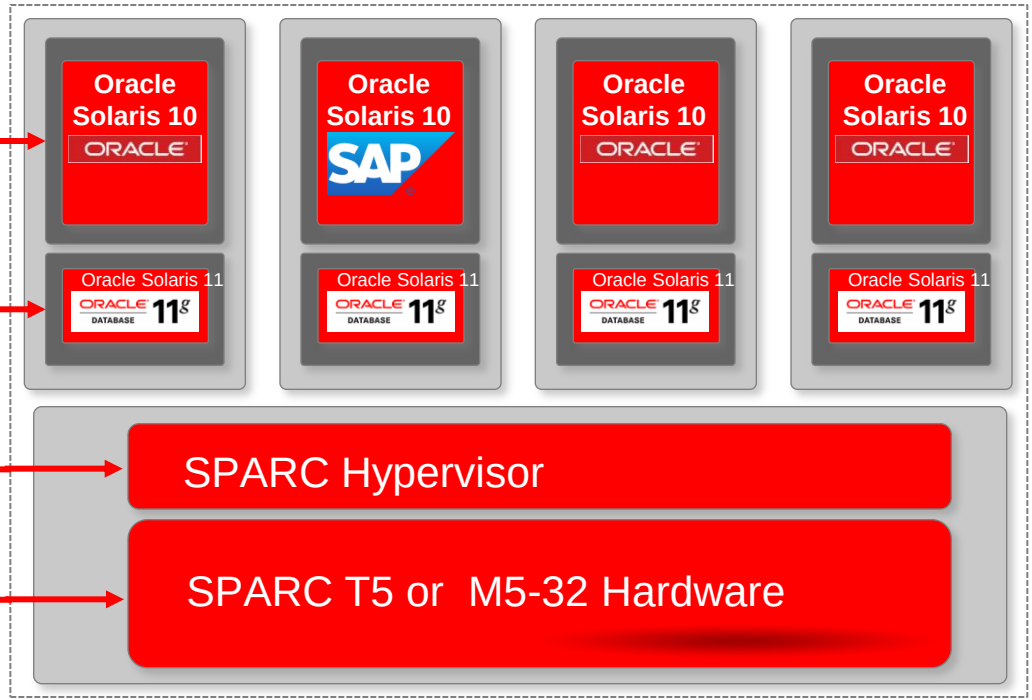
Hardware Partitions
Hot Plug Components
Redundant Interconnect
Hot Plug PCI

Oracle VM Server for SPARC

Now on all SPARC servers including SPARC M5-32 and SPARC T4/T5

Optimized for SPARC & Oracle Solaris

Isolated OS and applications in each logical (or virtual) domain



Firmware-based hypervisor

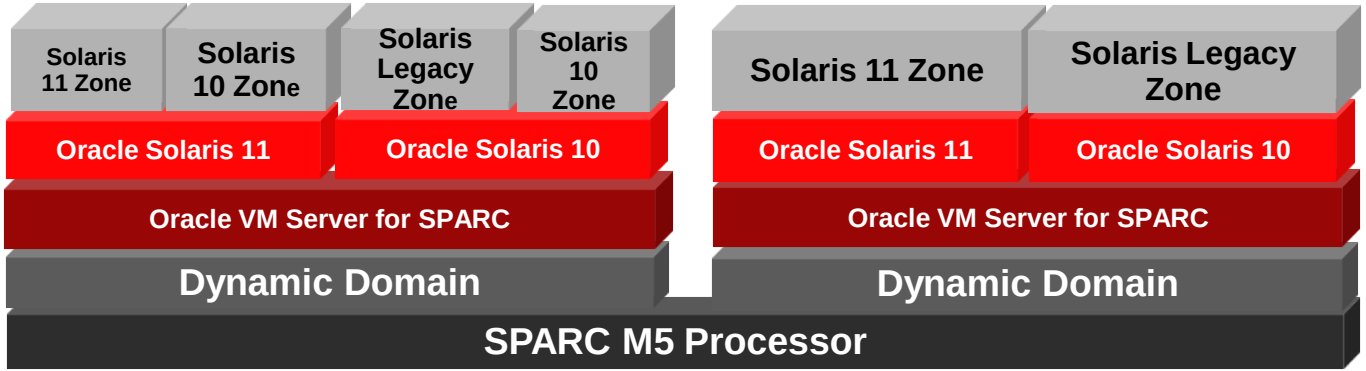
Each logical domain runs in dedicated CPU thread(s)

SPARC M5-32 Virtualization Infrastructure

No-cost Virtualization

ORACLE 11g DATABASE ORACLE 11g FUSION MIDDLEWARE

ORACLE E-BUSINESS SUITE ORACLE 12c ENTERPRISE MANAGER ORACLE PEOPLESOFT ENTERPRISE ORACLE SIEBEL



- Preserve existing investment
  - Move older Oracle Solaris environments forward
  - P2V and V2V tools make it easy
- Applications since 1997 guaranteed to work
  - Plus source code compatibility for developers

Oracle Enterprise Manager Ops Center

Complete Management for Oracle Hardware, OS & Virtualization

- Data Center Discovery
- Virtualization Management
  - Oracle VM Server for x86/SPARC, Oracle Solaris Zones, Oracle Solaris Containers
- Configuration Management
  - Patch OS, Update Firmware, Configuration Compliance
- Operating System Analytics
- Maintenance
  - Health Checks, Remote Management, Phone Home

Agenda

- Oracle SPARC Hardware Strategy
- SPARC T5 and M5-32 Systems
- **Innovative Roadmap and Product Portfolio**

SPARC Trajectory

Simplifying. Accelerating.

SPARC T3
Cool Threads

SPARC M-Series
5th generation
Single-threaded
enhancement

SPARC T4
Built for Java & Database
Dynamic Threading
Integrated Encryption Engines
Integrated Virtualization
On-chip PCIe Gen 2 Interfaces

SPARC T5 and M5
Common Core
Common management tool
Common Virtualization tool
Common IO
Common Memory
Built-in encryption
On-chip PCIe Gen 3 Interfaces

2010 2011 2012 2013 2014

ORACLE

Oracle SPARC Processor Roadmap

ORACLE SOLARIS

DELIVERED

T4
+1x Throughput
+5x Thread Strength

M5-Series
+6x Throughput
+1.5x Thread Strength

T5-Series
+2.5x Throughput
+1.2x Thread Strength

In the Lab
M-Series
+2x Throughput
>1x Thread Strength

M-Series
+2x Throughput
+1.5x Thread Strength

T-Series
+2x Throughput
+1.5x Thread Strength

Oracle Application Accelerators

Database Query
Compression
Encryption
Cluster Interconnect
Application Data Protection

2011	2012	2013	2014	2015	2016
Solaris 11 Solaris 10 U10	Solaris 11 U1 Solaris 10 U11	Solaris 11 U2 Solaris 10	Solaris 11 U3 Solaris 10	Solaris 11 U4 Solaris 10	

ORACLE

The Future for Oracle SPARC Customers

Oracle Plans to…

- **Increase application performance 2x every 2 years**
- **Continue to invest in innovative SPARC technology**
  - Lead the industry in RAS, scalability and security
  - Accelerate application performance
  - Provide the best investment protection
- **Increase investment in OS and system management**
  - Enhance Oracle Solaris OS, system management, and virtualization
  - Develop software that simplifies management of IT stacks
- **Deliver an integrated solution for the entire server stack**
  - Optimize application, middleware, management tools, and hardware

SPARC T4 Servers




	SPARC T4-1B	SPARC T4-1	SPARC T4-2	SPARC T4-4
Processor	SPARC T4 2.85GHz	SPARC T4 2.85GHz	SPARC T4 2.85GHz	SPARC T4 3.0GHz
Max Processor Chips	1	1	2	4
Max Cores/Threads	8, 64	8, 64	16, 128	32, 256
DIMM Slots	16	16	32	64
Max Memory	256 GB	256 GB	512 GB	2 TB
Drive Bays	2	8	6	8
I/O Slots	2 x PCIe 2.0 EM, 2 NEM, 1 REM, 1 FEM slots	6 LP x 8 PCIe 2.0, 4 x 1 GbE ports, 2 x 10 GBE XAUI ports	10 x PCIe 2.0, 4 x 1 GbE ports, 4 x 10 GbE XAUI ports	16 x PCIe 2.0 EM, 4 x 1 GbE ports, 8 x 10 GbE XAUI ports
Form Factor/RU	Blade	Rack 2U	Rack 3U	Rack 5 U

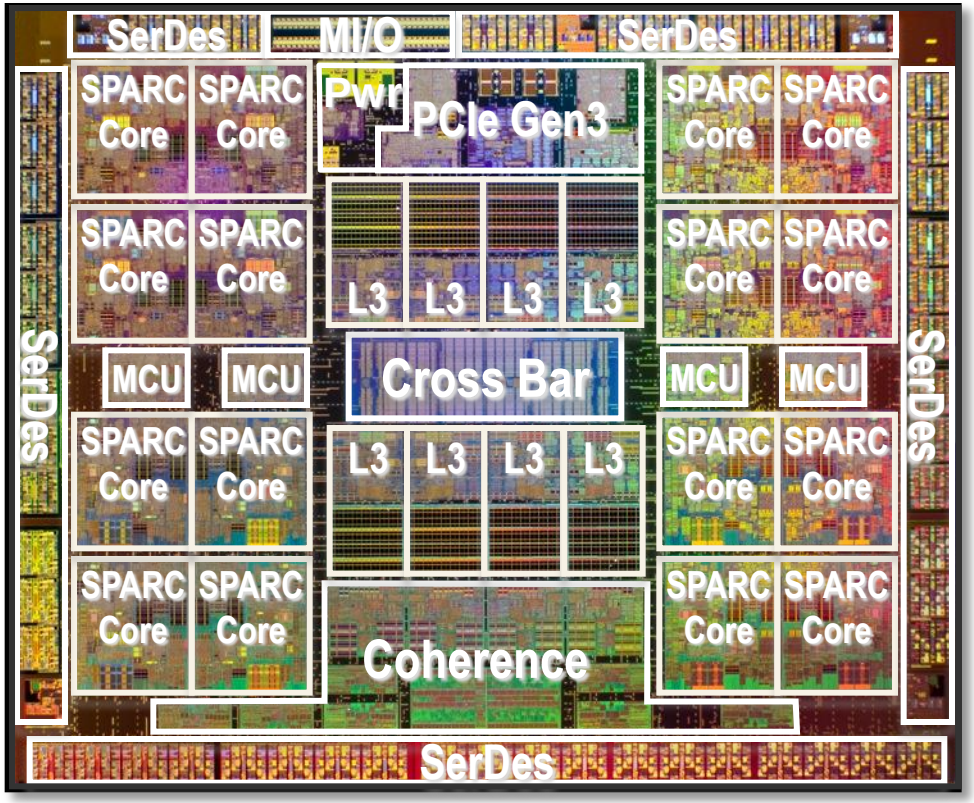
Key Differentiators of SPARC T4

- 5x single thread performance increase over SPARC T3 processor while retaining throughput performance of SPARC T3
- Expanded application workload fit to meet requirements for both multi thread and single thread applications

Oracle SPARC T5

T5

- 16 S3 cores @ 3.6GHz
- 8MB shared L3 Cache
- 8 DDR3 BL8 Schedulers providing 80 GB/s BW
- 8-way 1-hop glueless scalability
- Integrated 2x8 PCIe Gen 3
- Advanced Power Management with DVFS



SPARC T5 Servers




	SPARC T5-1B	SPARC T5-2	SPARC T5-4	SPARC T5-8
Processor	SPARC T5 3.6 GHz	SPARC T5 3.6 GHz	SPARC T5 3.6 GHz	SPARC T5 3.6 GHz
Processor Chips	1	2	4	8
Max Cores/Threads	16, 128	32, 256	64, 512	128, 1024
DIMM Slots	16	32	64	128
Max Memory	256GB	512GB	2TB	4TB
Drive Bays	2	6	8	8
I/O Slots	2 x PCIe 2.0 EM, 1 FEM slot, 2 NEM slots	8 x PCIe 3.0 LP, 4 x 10GbE ports	16 x PCIe 3.0 LP, 4 x 10GbE ports	16 x PCIe 3.0 LP, 4 x 10GbE ports
Form Factor/RU	Blade	Rack 3U	Rack 5U	Rack 8U

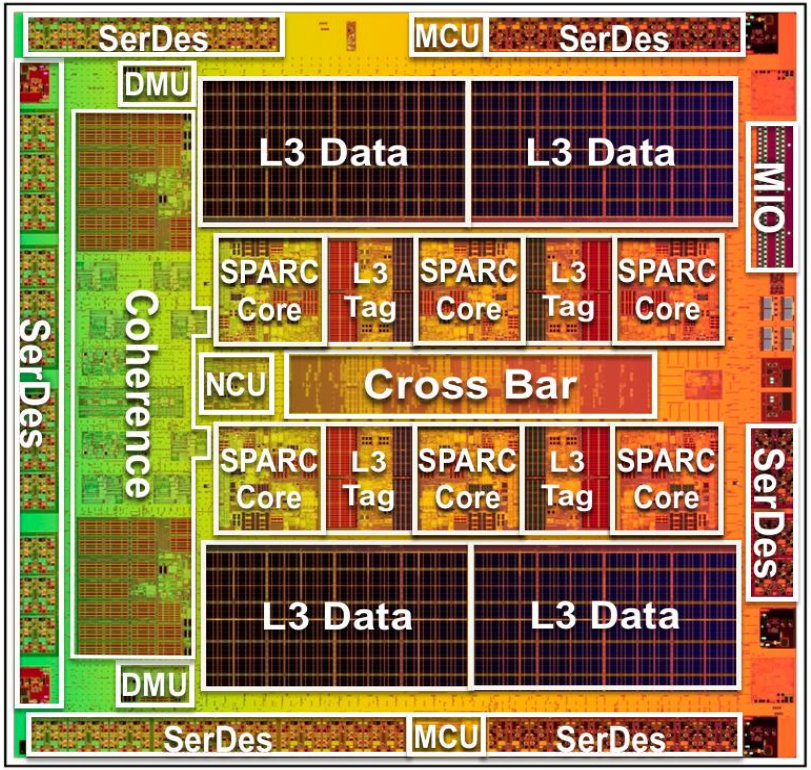
Key Differentiators:

2.3x throughput performance 1.2x single strand performance 2x the L3 cache 2x the scale

Oracle SPARC M5 Processor

SPARC M5 Processor

- 6 S3 cores @ 3.6GHz
- Large 48MB shared L3 Cache
- Scalability ports to 32 CPUs
- Integrated 2x8 PCIe Gen 3
- Integrated ISA-based Crypto acceleration
- Advanced Power Management with DVFS



SPARC M5-32 Servers

32-Socket High-End Datacenter Server

- Compute
  - Up to 32x SPARC M5 6 core 3.6GHz CPUs
  - Up to 1024x DDR3 DIMMs for max memory of up to 32TB
- I/O and storage
  - 32x 2.5” SAS-2 internal drives
  - 64x PCIe Gen2 low profile internal slots and up to 224 slots
- Scalability and investment protection
  - Upgradable with future M6 processor (mix M5 and M6 processors)
- Availability and management
  - Advanced RAS with redundant and hot swap of key components
  - Oracle VM Server for SPARC, Dynamic Domains, and Solaris Zones
  - Integrated Oracle ILOM system management

Hardware and Software

ORACLE

Engineered to Work Together


ORACLE®