ORACLE

Fujitsu SPARC M12-2 Server

The Fujitsu SPARC M12-2 server is a high-performance midrange server based on the latest SPARC64 XII processor, offering high availability for mission-critical enterprise workloads and cloud computing. Its SPARC64 XII processor core is up to two times faster compared to previous-generation SPARC64 cores. Innovative Software on Chip capabilities deliver dramatic performance increases by implementing key software functions directly in the processor. The Fujitsu SPARC M12-2 system has up to two processors and an expandable I/O subsystem. In addition, customers can enjoy the benefits of Capacity on Demand with core-level activation, as well as a suite of built-in virtualization technologies included at no cost.

Key Benefits

- High performance for ERP, BIDW, OLTP, CRM, big data, and analytics workloads
- High availability to support demanding 24/7 mission-critical applications
- Fast and economical system capacity growth in small increments with no downtime
- Dramatic acceleration of Oracle Database In-Memory performance with new SPARC64 XII processor's Software on Chip capabilities
- Higher levels of system utilization and cost reduction through flexible resource configurations.

PRODUCT OVERVIEW

The Fujitsu SPARC M12-2 server offers high reliability and outstanding processor core performance. It is available in single- and dual-processor configurations that can scale to 24 cores and 192 threads. It is an ideal server for traditional enterprise-class workloads such as online transaction processing (OLTP), business intelligence and data warehousing (BIDW), enterprise resource planning (ERP), and customer relationship management (CRM), as well as new environments in cloud computing or big data processing.

The Fujitsu SPARC M12 servers incorporate the SPARC64 XII ("twelve") processor that features improved throughput performance with eight threads per core, and significantly faster memory access through the use of DDR4 memory. Moreover, the Fujitsu SPARC M12 server delivers dramatic in-memory database performance increases by implementing key software processing functions onto the processor itself, a functionality called Software on Chip. These Software on Chip features

include single instruction, multiple data (SIMD) and decimal floating point arithmetic logical units (ALUs).

Additional Software on Chip technology is implemented to accelerate cryptographic processing using the Oracle Solaris encryption library. This reduces the overhead of encryption and decryption dramatically.

The Fujitsu SPARC M12-2 server entry configuration includes one processor. A minimum of two processor cores must be activated in a system. System resources can be gradually expanded, as needed, at increments of a single core by activations keys. The cores are activated dynamically while system remains operational.

High Availability for Mission-Critical Applications

The Fujitsu SPARC M12-2 server delivers high availability to support demanding mission-critical applications. It comes with mainframe-class reliability, availability, and serviceability (RAS) features including automatic recovery with instruction retry, extended error-correcting code (ECC) protection, guaranteed data path integrity, configurable memory mirroring, and many more RAS capabilities. Furthermore, major system components are redundant and hot swappable for increased availability and serviceability.

Oracle Solaris: the World's Most Advanced Enterprise Operating System

Only Oracle offers the Oracle Solaris binary application guarantee, with guaranteed binary and source-code compatibility for legacy applications. The Fujitsu SPARC M12-2 server supports Oracle Solaris 11 and 10, which offer the powerful Oracle Solaris ZFS file systems, and unmatched capabilities such as dynamic tracing (DTrace feature of Oracle Solaris), cryptographic infrastructure, user and process rights management, and the Oracle Solaris IP Filter feature. In addition, Oracle Solaris 9 and 8 are supported using Oracle Solaris Legacy Containers.

Advanced Virtualization and Consolidation

SPARC-based servers are the industry's best consolidation and virtualization platforms. The Fujitsu SPARC M12-2 server supports as many as 16 physical partitions, and Oracle VM Server for SPARC software enables as many as 256 logical domains to be deployed in each physical partition. Physical partitions or logical domains can be further virtualized with Oracle Solaris Zones, a feature of Oracle Solaris, which supports thousands of virtual machines, enabling massive server consolidation and virtualization.

Key Features

- The SPARC64 XII processor core is up to 2.3 times faster than previous-generation SPARC64 X+ processor cores.
- The system supports up to 24 processor cores and 3 TB of memory.
- Software on Chip instructions on the SPARC64 XII processors accelerate key database functions.
- Per-core activation allows granular and agile response to changes in business requirements.
- Layered virtualization includes Oracle VM Server for SPARC and Oracle Solaris Zones technologies.
- Server management is done through the independent service processor's eXtended System Control Facility (XSCF).

FUJITSU SPARC M12-2 SERVER SPECIFICATIONS

ARCHITECTURE
Processor
• 12-core, 3.9 GHz SPARC64 XII processor • Dual-instruction pipeline per core • 96 threads per processor (8 threads per core) • 96 integer execution units per processor (8 per core) • 96 floating-point units per processor (8 per core) • 1 random number generator (1 per processor)
Cache per Processor
• Level 1: instruction: 64 KB; data: 64 KB per core

- Level 2: 512 KB per core
- Level 3: 32 MB per processor

System Configuration

- Fujitsu SPARC M12-2 servers are configured with one or two SPARC64 XII processors
- Up to 24 dual inline memory module (DIMM) slots per processor using 16, 32, or 64 GB DDR4 DIMMs
  - 3 TB maximum memory configuration with 64 GB DIMMs

System Architecture

- SPARC V9 architecture, ECC protected

INTERFACES

- Network: Four 10 GbE (100 Mb/sec/1 Gb/sec/10 Gb/sec), IEEE 802.3an (10GBASE-T) standards, auto-negotiation
- Disks and internal storage: Two SAS-2 controllers providing hardware RAID 0, 1, and 1E/10 (ZFS file system provides higher levels of RAID)
- Expansion bus: 11 low-profile PCIe 3.0 (11 x8) slots
- PCI Expansion Units: Up to 33 slots (with three PCI expansion units connected)
  - 1 CPU: Up to 51 slots (with four PCI expansion units connected)
  - 2 CPUs: Up to 91 slots (with eight PCI expansion units connected)
- Ports: two external USB (one front USB 2.0 and one rear USB 3.0)
- Administration interface: two 1000Base-T (RJ45) network ports, one RJ45 serial management port, two USB ports (for maintenance only)

MASS STORAGE AND MEDIA

Internal storage:

- Up to eight 2.5-inch SAS-2 drives
  - 600 GB or 1.2 TB hard disk drives (HDD)
  - 400 GB or 800 GB solid state drives (SSD)
- Fujitsu flash accelerator NVMe PCIe 3.0 cards
  - Fujitsu 3.2 TB Flash Accelerator, maximum of 11

External storage:

- Optional external DVD drive
- Oracle offers a complete line of best-in-class, innovative storage, hardware, and software solutions, along with renowned world-class service and support. For more information, please refer to **oracle.com/storage**

POWER SUPPLIES

- Four hot-swappable AC 1,800 W redundant (2 + 2) power supplies
- Voltage 200 to 240 VAC, frequency 50/60 Hz
- Maximum operating input current at 200 VAC: 15.2 A
- Maximum operating input power at 200 VAC: 2,974 W

KEY RAS FEATURES

- End-to-end ECC protection
- Guaranteed data path integrity
- Automatic recovery with instruction retry

- Dynamic L1, L2, and L3 cache way degradation
- ECC and extended ECC protection for memory, memory mirroring, periodic memory patrol, and Predictive Self Healing (a feature of Oracle Solaris)
- Hardware redundancy in memory (when mirroring), HDD/SSD, PCI cards (multipath configuration), power system, power supply unit (PSU), and fan
- Hot-pluggable HDD/SSD, PSU, PCI card, and fan
- Live operating system upgrades
- Firmware updates during system operation

SOFTWARE

Operating System

Oracle recommends the latest version of Oracle Solaris 11.4 for enhanced performance and functionality, including features enabled by Software on Chip technology

- Control domain:
  - Oracle Solaris 11.3 + SRU11.3.17.5.0 or later
  - Oracle Solaris 11.2 + SRU11.2.15.5.1
  - Oracle Solaris 11.1 + SRU11.1.21.4.1
  - Oracle Solaris 10 1/13 plus required patches
- The following versions are supported within guest domains:
  - Oracle Solaris 11.1 or laterOracle Solaris 10 1/13*
  - Oracle Solaris 10 8/11*
  - Oracle Solaris 10 9/10*

    * Plus required patches

Applications certified for Oracle Solaris 9 or 8 only may run in an Oracle Solaris 9 or 8 branded zone running within an Oracle Solaris 10 domain.

Software Included

- Oracle Solaris 11.4 (latest version), which includes Oracle VM Server for SPARC
- Oracle Solaris ZFS (default file system)

Virtualization

Built-in, no-cost Oracle VM Server for SPARC provides the flexibility and power for running multiple logical domains in a single server. Multiple Oracle Solaris Zones may be run within a single Oracle VM Server for SPARC logical domain.

ENVIRONMENT

Operating temperature:

- 5° C to 35° C at 0 to 500 m (41° F to 95° F at 0 to 1,640 ft.)
- 5° C to 33° C at 501 to 1,000 m (41° F to 91° F at 1,641 to 3,280 ft.)
- 5° C to 31° C at 1,001 to 1,500 m (41° F to 88° F at 3,281 to 4,920ft.)
- 5° C to 29° C at 1,501 to 3,000 m (41° F to 84° F at 4,421 to 9,840 ft.)

Nonoperating temperature:

- -25° C to 60° C (-13° F to 140° F) (packed)
- 0 to 50° C (32° F to 122° F) (nonpacked)

Operating relative humidity: 20% to 80% relative humidity, noncondensing

Nonoperating relative humidity: 8 to 80% relative humidity, noncondensing

Operating altitude: 0 m to 3,000 m (0 feet to 9,840 feet)

Acoustic noise

DESCRIPTION	ONE CPU INSTALLED	TWO CPUS INSTALLED
Sound power level	7.8 B	8.2 B
Sound pressure level	62 dB	64 B

REGULATIONS (MEETS OR EXCEEDS THE FOLLOWING REQUIREMENTS)

Safety:

- UL/CSA 60950-1, UL/CSA 62368-1, EN 60950-1, EN 62368-1, IEC 60950-1 CB scheme with all country differences, IEC 62368-1 CB scheme with all country differences

EMC:

- FCC 47 CFR 15, ICES-003, EN 55032, KN32, VCCI V3, EN 61000-3-2, EN 61000-3-3, JIS C 61000-3-2
- Immunity: EN 55024, KN35

Certifications:

- North America Safety (NRTL), European Union (EU), International CB Scheme, BSMI (Taiwan), RCM (Australia), KCC (Korea), VCCI (Japan), EAC (Eurasian CU), BIS (India)

European Union directives:

- Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU as amended, Low Voltage Directive 2014/35/EU, EMC Directive 2014/30/EU, WEEE Directive 2012/19/EU, and Eco design Directive 2009/125/EC

All standards and certifications referenced are to the latest official version. For additional detail, please contact your sales representative.

Other country regulations/certifications may apply.

DIMENSIONS AND WEIGHT

- Height: 175 mm (6.9 inches); 4U
- Width: 440 mm (17.3 inches)
- Depth: 800 mm (31.5 inches)
- Weight: 60 kg (133 lb.)

WARRANTY

The Fujitsu SPARC M12-2 server comes with a one-year warranty. Visit oracle.com/us/support/policies/ for more information about Oracle's hardware warranty.

COMPLETE SUPPORT

With Oracle Premier Support, you will get the services you need to maximize the return on your investment in the Fujitsu SPARC M12-2 server. Complete system support includes 24/7 hardware service, expert technical support, proactive tools, and updates to Oracle Solaris, Oracle VM, and integrated software (such as firmware)—all for a single price. Learn more at oracle.com/support

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