

# Datasheet

## Fujitsu SPARC M12-2

### Unix Server

The Fujitsu SPARC M12-2 server is a high-performance, highly-reliable midrange server based on the latest SPARC64™ XII processor, delivering high availability for mission-critical enterprise workloads and cloud computing



#### Product Overview

The Fujitsu SPARC M12-2 server is a high-performance midrange server based on the latest SPARC64 XII (“twelve”) 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 the previous-generation SPARC64 core. 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.

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 SPARC64 XII processor features improved throughput performance with eight threads per core and significantly faster memory access through the use of DDR4 memory. Moreover, the Fujitsu SPARC M12-2 server delivers dramatic in-memory database performance increases by implementing key software processing functions in the processor itself, a suite of features 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’s minimum configuration includes one processor. With core-level CPU activation, a minimum of just two processor cores must be activated initially. Core resources can be gradually expanded, as needed, in increments of a single core using activation keys. Cores are activated dynamically while the system remains operational.



# Features and benefits

Main features	Benefits
<ul style="list-style-type: none"> <li>■ Up to two 12-core 3.9 GHz SPARC64 XII processors for a total of 24 cores and 192 powerful threads</li> <li>■ Flexible main memory configurations: from 64 GB to 2 TB, and supporting mixed DIMM capacities</li> <li>■ 4U form factor</li> <li>■ Mainframe-class reliability, availability, and serviceability (RAS) capabilities</li> <li>■ Core-based CPU activation</li> <li>■ Software-on-Chip instructions implementing key software functions directly in SPARC64 XII processors</li> <li>■ New Vapor and Liquid Loop Cooling (VLLC) technology for innovative and compact system design</li> <li>■ Layered virtualization including Oracle VM Server for SPARC and Oracle Solaris Zones technologies</li> <li>■ Supports Oracle Solaris 11 and Oracle Solaris 10, also Solaris 9 and 8 with Oracle Solaris Legacy Containers</li> <li>■ Oracle Solaris Binary Application Guarantee</li> </ul>	<ul style="list-style-type: none"> <li>■ Do more with less: more powerful cores, higher productivity, fewer software licenses</li> <li>■ Superior performance for ERP, BIDW, SCM, CRM, Big Data, and Analytics workloads</li> <li>■ Compact footprint with high performance and reliability ideal for data center integration and virtualization</li> <li>■ Robust RAS features to support the most demanding 24/7 mission-critical applications</li> <li>■ Ability to pay for only the resources that are needed, minimizing initial investment and avoiding expensive upgrades</li> <li>■ Fast and economical system capacity growth in increments as small as a single processor core with no downtime</li> <li>■ Drastic performance gains for a wide range of applications such as encryption, decimal arithmetic operations, and database accelerators built into each CPU core</li> <li>■ Twice the cooling performance of Liquid Looping Cooling (LLC) technology used in Fujitsu M10 servers</li> <li>■ Dramatic reduction in space and completely self-contained, requiring no maintenance</li> <li>■ Higher levels of system utilization and cost reduction with flexible resource configurations</li> <li>■ Massive server consolidation without the need to acquire additional software</li> <li>■ Investment protection for application software as well as system management and administration expertise, avoiding costly and complex migrations</li> <li>■ Preservation of software investments with guaranteed compatibility, allowing existing SPARC Solaris applications to run unmodified</li> </ul>

# Topics

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## World-Class Enterprise Performance with Extreme Core Technology

Fujitsu SPARC M12 servers featuring the 12-core SPARC64 XII processor provide superior performance for mission-critical enterprise workloads and cloud computing. Employing proven Fujitsu supercomputer technology for highly parallel computing and an innovative cooling technology to achieve low latency access time between memory and CPU, the Fujitsu SPARC M12 servers can process large amounts of data in a short period of time. These technologies provide superior performance for enterprise workloads such as online transaction processing (OLTP), enterprise resource planning (ERP), business intelligence and data warehousing (BI), supply chain management (SCM), and customer relationship management (CRM), as well as new environments in cloud computing or data processing.

## Pay as You Grow Dynamic Scalability

The modern enterprise needs a flexible platform that provides superior performance and availability for the current applications environment, and the ability to scale for future growth and technological needs. The Fujitsu SPARC M12-2 server features unique dynamic scaling to grow as the business grows. With the CPU Activation feature, customers can activate CPU resources on a CPU core basis starting from a single CPU socket and 2 cores, and growing up to 2 CPU sockets and a total of 24 cores; pay for only the processor cores that are needed. CPU Activation enables rapid and cost-effective adding of resources.

## 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.

## Innovative Software on Chip Technology

Fujitsu SPARC M12-2 servers feature Software on Chip (SWoC) technology, which implements common software code sequences directly in the processor hardware, offering significant enhancements for key database functions. Two Software on Chip technologies, SIMD (Single Instruction Multiple Data) and decimal floating point ALUs (Arithmetic Logical Units), directly accelerate Oracle Database in-memory processing with specific hardware instructions. SWoC encryption acceleration is also implemented, providing high-speed encryption processing (encryption/decryption) using the Oracle Solaris encryption library. Also, the load placed on the CPU when the database is encrypted is reduced and a secure work environment can be configured.

## New High-Efficiency Cooling Technology

The new Fujitsu hybrid cooling technology, Vapor and Liquid Loop Cooling (VLLC), in Fujitsu SPARC M12-2 servers is an innovative high-efficiency vapor and liquid cooling technology that maximizes performance, minimizes space, and reduces noise. VLLC achieves twice the cooling performance of Liquid Loop Cooling (LLC) used in Fujitsu M10 servers. VLLC also dramatically improves the internal layout of the server, allowing CPUs and memory to be packed closer together; reducing memory latency. VLLC is completely self-contained and requires no maintenance. This efficient cooling system can lead to significant cost savings for businesses.

## Oracle Solaris: The World's Most Advanced Enterprise Operating System

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

# Specifications

## Processor

CPU	SPARC64 XII: 12-core processor, 8 Simultaneous Multithreading threads per core, Two instruction pipelines per core, SPARC V9 architecture, Error Checking and Correction (ECC) protection
Level 1 cache per core	64 K data cache and 64 K instruction cache
Level 2 cache per core	512 KB
Level 3 cache per CPU socket	32 MB
Clock speed	3.9 GHz
Software on Chip features	<ul style="list-style-type: none"> <li>• SIMD Single Instruction Multiple Data Vector Processing</li> <li>• Extended Floating-Point Registers</li> <li>• Decimal Floating-Point Processing. IEEE 754 standard and Oracle Number</li> <li>• Cryptographic Processing. Supported encryption modes are AES, DES, 3DES, DH, DSA, ECC, RSA and SHA</li> </ul>

## System

CPU	Up to 2 CPUs
Main memory	Up to 2 TB with 64 GB DIMM
I/O	<ul style="list-style-type: none"> <li>• 11 PCI Express 3.0 short, low-profile slots (eight lanes)</li> <li>• Up to 91 PCI Express slots with optional PCI Expansion Units</li> <li>• 4-port 10GbE, 1 SAS-2 port, 2-port USB</li> </ul>
Memory bandwidth (per chip)	153 GB/sec
Service processor	One per unit

## Storage

Local storage	Up to eight 600 GB or 1.2TB internal 2.5-in. SAS HDDs or 400 GB or 800 GB eMLC SAS SSDs (can be mixed)
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## Software

Operating system	<p>Control Domain:</p> <ul style="list-style-type: none"> <li>• Oracle Solaris 11.3 + SRU 11.3.17.5.0 or later</li> <li>• Oracle Solaris 11.2 + SRU11.2.15.5.1</li> <li>• Oracle Solaris 11.1 + SRU11.1.21.4.1</li> <li>• Oracle Solaris 10 1/13*</li> </ul> <p>Guest Domains:</p> <ul style="list-style-type: none"> <li>• Oracle Solaris 11.1 or later</li> <li>• Oracle Solaris 10 1/13*</li> <li>• Oracle Solaris 10 8/11*</li> <li>• Oracle Solaris 10 9/10*</li> </ul> <p>* Plus required patches</p> <p>Oracle Solaris 9 or 8 branded zones run within an Oracle Solaris 10 domain. Please see the <i>Fujitsu SPARC M12 Systems Product Notes</i> manual for SRU/patch requirements.</p>
Software included	<ul style="list-style-type: none"> <li>• Oracle Solaris 11.3 or later, which includes Oracle VM Server for SPARC</li> <li>• Oracle Solaris ZFS (default file system)</li> </ul>
Management software	<ul style="list-style-type: none"> <li>• XSCF monitoring/control facility</li> <li>• XSCF software, which manages hardware configuration and health, domain configuration and status, error monitoring, and notifications.</li> </ul>
System monitoring	<p>Oracle Enterprise Manager Ops Center 12c Release 3 Update 2 or later</p> <p>Oracle Enterprise Manager Cloud Control 13c Release 1 or later</p>

## Software

<b>Virtualization</b>	Built-in, no-cost Oracle VM Server for SPARC provides the flexibility and power of 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.
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## Reliability, Availability, and Serviceability

<b>Key features</b>	<ul style="list-style-type: none"> <li>• End-to-end ECC protection</li> <li>• Guaranteed data path integrity</li> <li>• Automatic recovery with instruction retry</li> <li>• Dynamic L1, L2 and L3 cache way degradation</li> <li>• ECC and Extended ECC protection for memory, memory mirroring, periodic memory patrol, and predictive self-healing</li> <li>• Hardware redundancy in memory (when mirroring), HDD, SSD(Software RAID), PCI cards (Multipath configuration), power system, PSU, fan, and vapor and liquid cooling pumps</li> <li>• Hot-pluggable HDD/SSD, PSU, PCIe cards, and fans</li> <li>• Live operating system upgrades</li> <li>• Firmware updates during system operation</li> </ul>
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## Environment

<b>AC power</b>	200 V to 240 V $\pm$ 10% (50/60 Hz)
<b>Power consumption</b>	Maximum 2,906 W
<b>Operating temperature</b>	<ul style="list-style-type: none"> <li>• 5° to 35° C (41° to 95° F) at an altitude of 0 m to 500 m</li> <li>• 5° to 33° C (41° to 91° F) at an altitude of 501 m to 1,000m</li> <li>• 5° to 31° C (41° to 88° F) at an altitude of 1,001 m to 1,500 m</li> <li>• 5° to 29° C (41° to 84° F) at an altitude of 1,501 m to 3,000 m</li> </ul>
<b>Non-operating temperature</b>	-25° C to 60° C (-13° F to 140° F) (packed) 0 to 50° C (32° F to 122° F) (non-packed)
<b>Altitude</b>	Up to 3,000 m (9,843 ft.)
<b>Acoustic Noise</b>	<ul style="list-style-type: none"> <li>• 8.2 B (1 CPU) / 8.5 B (2 CPUs)</li> <li>• 64 dB (1 CPU) / 68 dB (2 CPUs)</li> </ul>
<b>Cooling</b>	10,460 kJ/h

## Dimensions and Weight

<b>Height</b>	17.5 cm (6.9 in.)
<b>Width</b>	44.0 cm (17.3 in.)
<b>Depth</b>	80.0 cm (31.5 in.)
<b>Weight</b>	60 kg (132.3 lb.)

## Regulations

<b>Safety</b>	<ul style="list-style-type: none"> <li>• EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013</li> <li>• IEC 60950-1:2005, 2nd Edition + A1:2009 + A2:2013 (Evaluated to all CB countries)</li> <li>• ANSI/UL 60950-1-2014</li> <li>• CAN/CSA C22.2 No. 60950-1-07 + A1:2011 + A2:2014</li> <li>• CNS 14336-1(2010)</li> <li>• GOST IEC 60950-1-2014</li> <li>• IS 13252 (Part 1):2010 + A1:2013 + A2:2015</li> </ul>
<b>RFI / EMC</b>	<ul style="list-style-type: none"> <li>• EN55032:2015 Class A</li> <li>• EN61000-3-2:2014</li> <li>• EN61000-3-3:2013</li> <li>• FCC Part-15 Subpart B: 2016 Class A</li> <li>• ICES-003 Issue 6: 2016 Class A</li> <li>• VCCI V-3/2015.04 Class A</li> </ul>

**Regulations**

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- JIS C61000-3-2: 2011
  - CNS13438:2006 Class A
  - AS/NZS CISPR 32:2013 Class A
  - STB EN 55022-2012
  - GOST 30805.22-2013
  - GOST 30804.3.2-2013
  - GOST 30804.3.3-2013
  - KN32 Class A
  - TCVN 7189:2009
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**Immunity**

- EN55024:2010
  - GOST CISPR 24-2013
  - KN35
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# More information

## Fujitsu products, solutions & services

### Products

[www.fujitsu.com/global/products/](http://www.fujitsu.com/global/products/)

In addition to the Fujitsu SPARC M12 Server, Fujitsu offers a full portfolio of other computing products.

### Computing products

- Storage systems: ETERNUS
- Server: PRIMERGY, PRIMEQUEST, Fujitsu SPARC M12, BS2000/OSD Mainframe
- Client Computing Devices: LIFEBOOK, STYLISTIC, ESPRIMO, FUTRO, CELSIUS
- Peripherals: Fujitsu Displays, Accessories
- Software
- Network

Product Support Services with different service levels agreements are recommended to safeguard each product and ensure smooth IT operation.

### Solutions

<http://www.fujitsu.com/global/solutions>

The Fujitsu solutions combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships. Fujitsu's Solutions include parts of one or more activity groups (e.g., planning, implementation, support, management, and training services) and are designed to solve a specific business need.

**Infrastructure Solutions** are customer offerings created by bringing Fujitsu's best products, services and technologies together with those from partners to deliver benefit to our customers' businesses.

**Industry Solutions** are tailored to meet the needs of specific verticals.

**Business and Technology Solutions** provide a variety of technologies developed to tackle specific business issues such as security and sustainability, across many verticals.

### Services

[www.fujitsu.com/global/services/](http://www.fujitsu.com/global/services/)

Several customizable Fujitsu Service offerings ensure that IT makes a real difference and delivers true business value. We do this by leveraging our extensive experience in managing large, complex, transformational IT programs to help clients in planning, delivering and operating IT services in a challenging and changing business environment.

**Application Services** support the development, integration, testing, deployment and on-going management of both custom developed and packaged applications. The services focus on delivering business and productivity improvements for organizations.

**Business Services** respond to the challenge of planning, delivering and operating IT in a complex and changing IT environment.

**Managed Infrastructure Services** enable customers to deliver the optimal IT environment to meet their needs – achieving high levels of IT service quality and performance for data center and end user environments.

## Fujitsu green policy innovation

[Environment - Fujitsu Global](#)

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at:



## More information

Learn more about Fujitsu, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website. <http://www.fujitsu.com/sparc>

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