ORACLE

Fujitsu M10-4S Server Powered by the SPARC64™ X and X+ Processors – Frequently Asked Questions

Overview

The Fujitsu M10-4S server is a flexible and scalable system that delivers high performance and high availability for mission-critical enterprise applications. It can be deployed as a stand alone rack mount server or be combined with other Fujitsu M10-4S servers to create any size server from 2 to 64 processors. It is ideal for consolidation of traditional enterprise-class workloads and for newer infrastructures such as cloud computing or Big Data. Users can start small, with just one Fujitsu M10-4S server and grow over time as the business requirements change.

The Fujitsu M10-4S is a 4-processor modular system that can be flexibly expanded by adding other Fujitsu M10-4S Building Blocks using Fujitsu's unique innovative interconnect technology with scalability up to 16 Building Blocks. The Fujitsu M10-4S uses the latest 16-core, 3.0GHz SPARC64 X ('ten') processor or the 16-core 3.7 GHz SPARC64 X+ ("ten plus") processor. Fujitsu brings innovative Software on Chip (SWoC) supercomputing technologies to enterprise computing to deliver dramatic performance advantages by implementing key software functions directly in the SPARC 64 X/X+ processors.

The Fujitsu M10-4S server includes three built-in no-cost virtualization technologies, Physical Partitioning (PPARs), Oracle VM Server for SPARC, and Oracle Solaris Zones. Complete virtualization facilities and improved system utilization together with mainframe-class reliability, availability and serviceability (RAS) features make the Fujitsu M10-4S ideal for mission-critical applications.

Customer Benefits

Increased Performance

Processor and system design improvements and innovations such as 16-cores per processor, 24MB of Level 2 cache, PCIe Gen3 I/O, DDR3-1600 memory, Software on Chip, System on Chip, and Liquid Loop Cooling dramatically improve performance with enterprise workloads.

Dynamic Scaling

The Fujitsu M10-4S server can grow efficiently and economically from a minimum of 4 cores to a maximum of 1024 cores in stages by purchasing core-based CPU Activation licenses. Fujitsu's high-speed interconnect technology with high bandwidth and low-latency between Building Blocks enables scalability up to the maximum 16-unit, 64-socket configuration. The 16-unit configuration accommodates up to 64 TB of memory.

The Fujitsu M10-4S combines CPU Activation, Building Blocks and three no-cost virtualization technologies to create a flexible infrastructure that scales dynamically to easily meet any customer workload requirements whether it is one critical business application or many consolidated applications. System resources such as CPU/memory/PCI slot, etc. can be expanded economically with no system downtime. For example, a minimum configuration can be deployed for development and verification stages and then can easily be expanded and optimized to achieve the configuration required for production.

Improved Reliability

Many mainframe-class reliability, availability and serviceability (RAS) features come standard in the Fujitsu M10-4S server, including automatic recovery with instruction retry, up to 64 TB of system memory with error-correcting code (ECC) protection and extended ECC support, guaranteed data path integrity, and configurable memory mirroring. The disks, power supply, I/O cards, and fans are redundant and hot-swappable. Building Blocks are hot-swappable and can be configured redundantly to eliminate single points of failure.

Unmatched Investment Protection

Oracle Solaris 8 and 9 environments can run on the Fujitsu M10-4S server with Oracle Solaris Legacy Containers. Oracle provides the Solaris Binary Application Guarantee which means the Fujitsu M10-1 supports legacy SPARC/Oracle Solaris applications. Customers can easily migrate from physical servers to Oracle Solaris Zones using the Oracle P2V tools. This maximizes ROI and minimizes investment risks.

Frequently Asked Questions

What is the Fujitsu M10-4S server?
The Fujitsu M10-4S server is a two or four-socket server powered by the latest SPARC64 X /SPARC64 X+ processors in a 4 rack unit (4U) form factor. The Fujitsu M10-4S server supports up to 64 DDR3 memory DIMM slots, eight PCI-Express Gen3 slots, and up to eight 2.5-inch hard disks. The Fujitsu M10-4S server is a Building Block that can be connected with other Building Blocks up to a maximum of 16 to create single SMP servers of up to 64 sockets (1024 cores). The Fujitsu M10-4S server, which scales from 2 processors up to 64 processors, combines Building Block architecture with mainframe-class RAS and the Oracle Solaris operating system.

What are the changes in the SPARC64X /X+ Processors that leads to the dramatic improvements in the performance of the Fujitsu M10-4S server?
The SPARC64 X /X+ processor on the Fujitsu M10-4S has 16 dual-thread cores and 24MB of L2 cache compared to the 4 dual-thread cores and 11MB of L2 cache of the SPARC64 VII+. The SPARC64 X /X+ processor applies supercomputer technology to business applications, achieving dramatically higher performance. Software on Chip and System on Chip technologies include the following innovations:

Software on Chip
Software on Chip features are designed to accelerate specific workloads involving large scale data processing, decimal number execution, and cryptographic processing. Application developers can take advantage of these innovations through the familiar Oracle Solaris Studio Compilers and Oracle Solaris facilities. Software on Chip technology enables significant performance improvements by implementing functions previously performed by software into the CPU hardware in the following areas:

- Single Instruction Multiple Data (SIMD) instructions:
  SIMD instructions are supported in the SPARC64 X /X+ processor. Up to eight 8-bit data can be compared at the same time. This function will accelerate searching large amounts of data, compressing/decompressing data, in-memory database operations, etc.
- Decimal floating-point operation:
  The SPARC64 X /X+ processor has a decimal floating-point operation unit. This hardware processing unit can directly and quickly execute decimal floating-point operations that were previously executed by software. Oracle Number and the IEEE754-2008 standard operations are supported.
- Encryption arithmetic:
  The SPARC64 X /X+ processor includes an encryption processing unit which enables high-speed encryption/decryption processing without external adaptors or complex software. The SPARC64 X /X+ encryption unit supports AES, DES, 3DES, RSA and SHA. The SPARC64 X /X+ processor can improve data security with full database encryption.

System on Chip
The SPARC64 X/X+ processor integrates CPU, four memory controllers, two IO controllers, and a high-speed interconnect into a single chip for higher bandwidth and reduced latency which improves performance. In addition, a reduction in the number of components improves reliability and reduces the system size.

High-speed Interconnect
Fujitsu M10-4S employs an advanced high-speed interconnect technology for communications between the processors across the entire system scaling from 1 Building Block to 16 Building Blocks with 14.5Gbps bandwidth and extremely low latencies.

Liquid Loop Cooling
Liquid Loop Cooling in Fujitsu M10-4S servers is an innovative high-efficiency hybrid air and liquid cooling technology that maximizes performance, minimizes space, and reduces noise. The coolant circulates using small pumps on each board moving the heat to a small heat exchanger on each board which is air-cooled. Liquid Loop Cooling reduces the size of the heat sink and fan, leading to space-savings and reduction of noise. It also dramatically improves the internal design of the server, allowing CPUs and memory to be packed closer together reducing memory latencies. Effective control of CPU temperatures improves the reliability of the components and the entire system

Why should I use Fujitsu M10-4S server?
The Fujitsu M10-4S server is ideal for mission critical computing, scalability, and investment protection and is an ideal platform for single-threaded applications such as database, business analytics and business intelligence (BA/BI) applications, data mining, and batch processing.

What virtualization technologies are available for the Fujitsu M10-4S server?
The no-cost virtualization of the Fujitsu M10-4S server enables configuration flexibility to improve server utilization. Multiple and independent logical domains can be configured using Oracle VM Server for SPARC. Also, multiple Oracle Solaris Zones can be configured inside a logical domain. Resource allocation of CPU/memory between zones can be changed dynamically. The Fujitsu M10-4S server also supports Physical Partitioning. Physical Partitions are hardware partitions with complete resource, security, and fault and service isolation. Physical Partitions are dynamic and have a granularity of one Building Block and all of the CPUs and core licenses in that Building Block. Customers are able to build flexible configuration with these three virtualization solutions.

What is CPU Activation?
The CPU Activation feature of SPARC64 X/X+ processors, also known as “capacity on demand”, allows users to pay only for the processor cores that they need. The Fujitsu M10-4S server can be configured with as few as four processor cores (up to a maximum of 1024) and activation licenses can be purchased later as compute requirements grow. Processor licenses are purchased in pairs. CPU Activation optimizes the resources in a timely manner in accordance with workload requirements. New per core licenses can be activated using CPU Activation without stopping the system. Core activation licenses can be moved from one Fujitsu M10-4S server to other Fujitsu M10-4S servers. Furthermore, in the case of a CPU core failure unlicensed cores will automatically take the place of the failed core.

What is the memory, storage, and expansion options supported on the M10-4S server?
2 CPUs (32 cores) per 1 Building Block is the basic configuration for the Fujitsu M10-4S. It can be extended up to 4 CPUs (64 cores) per Building Block and up to 16 Building Blocks can be connected to create large, SMP servers of up to 64 CPUs (1024 cores) with a single Oracle Solaris image Each Building Block supports up to 4TB of memory (64 x 64GB DIMM) for a maximum of 64TB for 16 Building Blocks, eight PCI Express I/O slots, and up to eight 900GB or 600GB internal, 2.5in SAS HDDs and 400GB SSD. Data on the internal disk can be further protected using the built-in HW RAID support. I/O connectivity can scale up to 58 PCIe Gen3 slots per Building Block and up to 928 PCIe Gen3 slots per 16 Building Blocks by connecting external PCI Expansion Units. There are also slots for eight hard disk drives or solid-state drives in each Building Block for a total of 128 internal disk slots.

What are the system management options available for the Fujitsu M10-4S server?
The Fujitsu M10-4S server includes the eXtended System Control Facility (XSCF), which is driven by an integrated system service processor that also has power management and power capping capability to help reduce energy consumption and costs. Oracle Enterprise Manager Ops Center can be used to manage all aspects of hardware and virtualization configuration, maintenance and provisioning integrated with the complete Oracle stack. Oracle Enterprise Manager Ops Center is provided at no charge to customers that have Oracle support for their Fujitsu M10 servers.

What are the operating systems that have been certified to run on the Fujitsu M10-4S server?
The Fujitsu M10-4S server supports Oracle Solaris 11 and Oracle Solaris 10. Oracle Solaris 8 and 9 can run on the Fujitsu M10-4S server using Oracle Solaris Legacy Containers.

What software is pre-installed on the Fujitsu M10-4S server?
Oracle Solaris 11

What are the power and cooling requirements for the Fujitsu M10-4S server?
The online power calculator provides guidance for estimating the electrical and heat loads for typical operating conditions. Click here to access the requirements.
http://jp.fujitsu.com/platform/server/sparc/tool/power/m10-4s-e.html

What are the service and support options?
Oracle offers tailored mission critical services and support options. Comprehensive product installation, configuration, optimization and on-going monitoring and tailored support are available from Oracle Advanced Customer Services. Oracle service professionals deliver the technical product expertise, tools, best practices and project management knowledge to help ensure a smooth and highly optimized implementation.

Can I choose my system configuration?
The Fujitsu M10-4S server is ordered as “Assemble to Order-ATO” which allows for customer control of the configuration.

Where can I get more information?
The Fujitsu M10-4S server data sheet provides additional detailed information:
http://www.oracle.com/us/products/servers-storage/servers/sparc/fujitsu-m10/fujitsu-m10-4s/m10-4s-ds-1924206.pdf
or http://www.oracle.com/goto/fujitsu-m10-4s

Contact your Oracle Sales representative directly, call 1-800-Oracle1 or email acsdirect_us@oracle.com or visit oracle.com/acs for additional information about Oracle Advanced Customer Services.

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

Oracle Corporation

Worldwide Headquarters
500 Oracle Parkway
Redwood Shores, CA
94065
U.S.A.

Worldwide Inquiries
Phone
+1.650.506.7000
+1.800.ORACLE1

Fax
+1.650.506.7200

oracle.com