

Datasheet

Fujitsu BS2000/OSD VM2000 version 10.0 software

Virtual Machine System

A virtual infrastructure like VM2000 reduces IT costs by increasing efficiency, flexibility and response capability. It provides IT resource allocation on-the-fly in response to new business requirements and service requests. Extremely high levels of server utilization are a byproduct.

VM2000 supports the concurrent operation of several BS2000/OSD systems on a single server. The server operating resources of a real server can be allocated to up to 15 virtual BS2000/OSD systems (guest systems). The guest systems are totally segregated from one another, i.e. problems in one guest system (up to total crash) have no impact on the rest.

The guest systems running under VM2000 have the same functionality as in native mode in terms of command set, networking capability, and testing and debugging tools. A central VM accounting function is available for global accounting of the guest systems.

The advantage of using VM2000 as compared with the use of multiple servers is the possibility of consolidation with the aim of providing more efficient use of hardware resources, human resources and infrastructure.

VM2000 V10.0 is the VM2000 version that supports the S series and SQ series BS2000/OSD Business Servers collectively.



Features and benefits

Main features	Benefits
<ul style="list-style-type: none">■ Concurrent operation of up to 15 BS2000/OSD systems (guest systems) on one server	<ul style="list-style-type: none">■ Enables consolidation with the aim of providing more efficient use of hardware resources, human resources and infrastructure
<ul style="list-style-type: none">■ Totally segregated system environments	<ul style="list-style-type: none">■ Production, development, testing or sensitive applications can be insulated from one another
<ul style="list-style-type: none">■ Work load balancing between the systems	<ul style="list-style-type: none">■ Computing power not required from one system can be used by another system
<ul style="list-style-type: none">■ Server CPU capacity quota can be allocated to the guest systems	<ul style="list-style-type: none">■ The computing capacity assignment to the systems can be ensured corresponding to the business priority

Topics

Functional description

In order to optimize the handling of diverse IT tasks, there is a growing requirement for the BS2000/OSD operating system to support different system environments concurrently. VM2000 supports concurrent operation of different system environments on one server, each totally insulated from the others. This allows the deployment options outlined below.

Concurrent operation of several production systems

Sometimes it is not possible to run all production applications of an enterprise on the same system because different system environments are required. It can be necessary to separate sensitive applications (e.g. payroll accounting) from other production applications. The applications have to be run in different systems. VM2000 enables setting up this scenario on one physical server.

Concurrent production, development and testing

Test systems always harbour an inherent risk of generating errors. For this reason it is not practice to perform tests in parallel with live operation on production systems. VM2000 allows this. Test and production systems can run on the same installation because system errors in one system have no impact on the other concurrently active systems. With VM2000, the individual production applications can be tested in a second guest system until all errors have been eliminated. Only then are the applications deployed in the production system.

Differentiated systems for e.g. service providers

Data centers that provide different customers with computing services (for production or backup) must have a number of computers available to support the different system environments necessary for this. VM2000 gives data center operators the option of installing a single high-performance computer, thus saving on floor space as well as on administrative overhead. VM2000 offers a powerful service level management that enables to guarantee a fixed server CPU quota to every customer.

Balancing of load peaks, use for backup concepts

VM2000 also includes a function enabling the main memory of a VM and the guest system to be increased or reduced in size dynamically, allowing further optimization of deployment scenarios. With this feature, there is greater scope for balancing out load peaks on guest systems; temporary virtual machines can be set up "on the fly"; and backup guest systems can be provided with minimal use of resources – all without the need to terminate live guest systems.

Running Linux and Windows guest systems on SQ servers

As well as the parallel operation of multiple BS2000 guest systems supported by VM2000, it is also possible on the SQ Series Business Servers to run Linux and Windows as additional guest systems (up to 64 systems in total).

The administration of Linux and Windows guest systems is possible with the administration interface of the SQ servers, the SQ Manager and with a corresponding X2000 command line interface. The GUI of the SQ Manager also indicates BS2000 guest systems and enables for BS2000 guest systems the functions "Start guest system", "End guest system" and "Abort guest system". However, the administration of the BS2000 guest systems is as before via the VM2000 commands. The VM2000 administrator also receives information about existing resources in Linux and Windows guest systems (CPU, main memory).

Program description

Hypervisor

The Hypervisor controls the execution of the guest systems in the VMs. Especially it realizes the virtualization of the global resources CPU and main memory and activates the ready-to-run guest systems on the real CPUs (scheduling).

The Hypervisor runs on S servers in a separate, specially privileged functional status, which permits firmware settings that isolate VM resources.

On SQ servers the HW abstraction layer X2000 acts as a carrier system on the basis of Linux and Xen.

Still retaining the VM2000 user interfaces with a Xen-based architecture, VM2000 was implemented on SQ servers. The Xen Hypervisor assumes this role on SQ servers. Some of the Hypervisor tasks are performed by X2000 or the Xen administration.

Monitor

The monitor realizes the interfaces from VM2000 to other system components and to the outside world. The administration of the VM2000 system is done within the monitor system. Two roles with different privileges exist: The administration of the overall VM2000 system and the administration of a single VM. In this respect, standardized BS2000 user interfaces are provided.

The following functions are implemented in the monitor:

- Command server for the VM2000 commands
- Message output
- VM2000 accounting
- Management and operation of virtual consoles (\$VMCONS application)
- Management of the administration dialogs
- VM2000 hardware error logging

VM1 – VMn

The individual VMs encapsulate the virtualized hardware environment for the guest systems. A separate administration environment can be established for each VM.

Guest systems

The BS2000 systems running in the VMs are known as guest systems. Guest systems essentially use the hardware resources assigned to their VM (CPU/main memory) directly, i.e. without the Hypervisor as intermediary. The real peripheral devices are not visible for the monitor system and the other BS2000 guest systems. BS2000 guest systems only know the BS2000 devices that are allocated to them. The operation of a single system is controlled from independent KVP consoles. The function set of the guest systems in VM2000 operation is identical to that of the BS2000 systems in native mode. A connection can be set up to any guest system from the LAN network. At least one HNC 9185x interface adapter is required in order to connect a guest system to the LAN network. On SQ servers, the VMs share the integrated LAN controllers. In addition, firmware-based inter-VM communication (VMnet) is implemented.

New functions in VM2000 V10.0

Consolidation of HSI lines

After version V9.0 (S/SX) and V9.5 (SQ only) VM2000 V10.0 is a joint version, which again supports all the current HSI lines (S/SQ). SX servers are no longer supported.

Support of ETERNUS DX disk systems

Eternus DX disk systems are supported to the same extent as EMC Symmetrix disk systems by VM2000 (PAV, Snap & Clones).

Save & Restore of the VM2000 configuration

The backup of an existing VM2000 configuration is intended to enable the VM2000 administrator to recover the VM2000 configuration after the restart of the overall VM2000 system, i.e. ending all guest systems and restarting the monitor system, without having to write a suitable

procedure file with VM2000 commands or adapt an existing procedure file. The backup can also be used to restore the VM2000 configuration on a backup server, on which - apart from the monitor system - no further BS2000 guest systems run.

CPU pools also for SQ servers (incl. adaptation of the multiprocessor capacity of the VMs)

The restriction that in addition to the static CPU pools no further dynamic CPU pools can be configured on SQ servers is lifted. In order to administer the CPU pools the commands CREATE-, DELETE- and SHOW-VM-CPU-POOL as well as ASSIGN-VM-TO-CPU-POOL and SWITCH-VM-CPU are available to the VM2000 administrator. In the last two commands the current multiprocessor capacity of the affected VM(s) is - as on S servers - checked and automatically modified.

32 virtual CPUs per VM for SQ servers

The maximum multiprocessor capacity of a VM on an SQ server has been increased from 16 to 32.

VM2000-specific deliverables for SQ servers in a HA cluster

The high-availability & LiveMigration functionality for SQ server units is mainly implemented through MARS, X2000 and HA-Addon software. Nevertheless, deliverables are also required in VM2000, which make it possible to use VM2000 in such a HA cluster (e.g. a global view of all VMs in a cluster due to the required global uniqueness of VM names and necessary VM2000-specific tests).

Technical details

Technical Requirements Hardware	<ul style="list-style-type: none"> ■ BS2000/OSD business servers of the S series that are supported by BS2000/OSD-BC V8.0 and V9.0. ■ BS2000/OSD business servers of the SQ series that are supported by the BS2000 packages OSD/XC V4.0, V4.1 and V9.0. On SQ servers VM2000 V10.0 presumes the X2000 carrier system as of V5.3. ■ BS2000/OSD business servers of the SX series are not supported.
Technical Requirements Software	<ul style="list-style-type: none"> ■ S server: <ul style="list-style-type: none"> Monitor system: BS2000/OSD-BC V8.0 or V9.0 Guest systems: BS2000/OSD-BC V6.0 up to V9.0 ■ SQ server: <ul style="list-style-type: none"> Monitor system: OSD/XC V4.0 , V4.1 or V9.0 Guest systems: OSD/XC V4.0 , V4.1 or V9.0 ■ OMNIS (as an option): <ul style="list-style-type: none"> OMNIS is needed for guest systems operating via virtual consoles or VM administration via VMCONS. ■ Max. number of guest systems supported: <ul style="list-style-type: none"> On SQ servers: up to 15 (dependent on model)
Operating mode	Interactive (dialog) and batch mode
Implementation language	Assembler, SPL
User interface	Commands in English, message texts in German/English
Installation	By the customer according to the user guide
Documentation	User guide
Training	See course offer at: http://docs.ts.fujitsu.com/dl.aspx?id=6aefef0e-97b3-46c1-95c9-6bf42ac6b8fb (german)
Demands on the user	Knowledge of BS2000/OSD
Conditions	This software product is supplied to the customer subject to the relevant conditions against a single payment or installments.
Ordering and delivery	This software product may be obtained from your local Fujitsu Technology Solutions GmbH regional office.

More information

Fujitsu platform solutions

In addition to Fujitsu BS2000/OSD, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure as a Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

Computing products

www.fujitsu.com/global/services/computing/

- PRIMERGY: Industrial standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system
- BS2000/OSD mainframes

Software

www.fujitsu.com/software/

- Interstage: Application infrastructure software
- Systemwalker: System management software

More information

Learn more about Fujitsu BS2000/OSD VM2000 V10.0, please contact your Fujitsu sales representative, or visit our website. <http://ts.fujitsu.com/bs2000>

Fujitsu green policy innovation

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: <http://www.fujitsu.com/global/about/environment/>



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2011-11-09 EM EN