



# Rock-solid heartbeat for your data center

BS2000/OSD  
Mainframe technology in  
dynamic IT infrastructures



shaping tomorrow with you

# IT values for maximum investment protection

## Innovation and integration

In the server pool of modern data centers high-end servers such as BS2000/OSD Business Servers are an important component when it comes to handling large quantities of data, economically supporting numerous end users and at the same time ensuring permanent availability.

BS2000/OSD (Open Systems Dimension) Business Servers meet the most exacting demands and challenges of modern dynamic data centers.

- Different operating systems can be effectively operated in parallel.
- Integration of proven and new applications in heterogeneous IT landscapes ensures optimal connections to heterogeneous and open IT infrastructures.

Using compatible IT concepts and solutions, application innovations and excellent Green IT technologies Fujitsu as a competent partner offers companies IT values for maximum investment protection in dynamic infrastructures.

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high-  
flexible re  
efficient

# Meet IT challenges

## Dynamic infrastructures

The rapid pace of developments and fast-moving markets pose major challenges for all of us.

The flexible adaptability of business processes is a fundamental factor for the success and competitiveness of companies - for which dynamic IT infrastructures provide a decisive basis. Based on this premise the role of today's data centers is changing. The classic data center is increasingly evolving into an IT service center that operates as a business partner closely intermeshed with the development, optimization and on-demand provision of business processes.

Fujitsu provides initiatives for data center transformation and further development under the conceptual roof of „Reshaping IT“. For decades now BS2000/OSD mainframes have proved themselves to be highly efficient mentors of modernization processes. They can be easily integrated into changed or new IT infrastructures and provide for them open standard interfaces, standardized system technology and flexible, open system software. Thanks to their unparalleled fail-safety and excellent scalability they also have sophisticated concepts and solutions with virtualization, automation and integration technologies.

Support is provided for this almost seamless integration by among other things solution components, such as Net-Storage, virtual machines (VM2000), appropriate middleware (openSEAS-Suite) and openNetworking. The further opening-up of business servers with skills such as parallel operation of applications under BS2000/OSD, Linux and Windows emphasizes the supplementary features. This means for our current customers that they enjoy maximum design opportunities on their way towards service-oriented IT operations, yet at the same time maximum protection of their investments.



- Cost control and efficiency
- Hardware consolidation
- Standardized infrastructure
- High levels of IT availability
- Optimal utilization of first-level support
- Seamless integration of different platforms, applications and processes
- Maintenance and development of the correct know-how
- and much more

performance  
reliably scalable automated  
virtualized  
high availability

# Integration, continuity and stability

## Mainframe technology in the modern data center

Today's IT landscape is rapidly changing and presents large corporations with special challenges for their data processing. Data centers have to meet increasingly higher demands with unchanged budgets.

### Mainframes provide the solution

Mainframes are outstandingly suited as central high-performance systems to precisely meet these demands. They provide hardware resources as required efficiently and tailored to suit users, while simultaneously ensuring maximum flexibility and integration ability within the IT landscape.

The Fujitsu BS2000/OSD mainframe operating system has stood for reliability and innovative power for more than 35 years. It is above all successfully used in the business-critical application environments of our customers. The BS2000/OSD business servers form the proven platform, which as an extremely economical, highly scalable and high-performance server series that is unaffected by process conditions ideally combines innovation and continuity with each other.

### Automation

Low-priced administration, efficient resource utilization and 24-hour operation are only possible if all essential operational processes can be automated. To meet these requirements BS2000/OSD provides a comprehensive offer of functions – from automated operating and automated, cross-operating-system job handling right through to automatic failover.

Workload management for real and virtual servers is automatically controlled and defined service qualities are met for different applications.

### High availability

The particularly reliable hardware and software plus numerous functions in the BS2000/OSD can increase availability to 99.999%. This peak value for applications is achieved with the failover cluster HIPLEX (Highly Integrated System Complex) and is defined as the operating, load and availability cluster of several servers.

In addition to top availability levels, the HIPLEX concept ensures almost unlimited scalability, optimal utilization of system resources and simple administration of all BS2000/OSD servers.

### Virtualization

Virtualization is prerequisite to more flexibility in business operations. This key technology is defined as the separation of data and services from the hardware resources. It enables far-reaching consolidations, adapts resource utilization to the changing requirements of business processes and significantly increases the server workload.

The virtual machine system VM2000 enables parallel operation of different, totally segregated system environments on one server. Numerous subsystems can be exchanged during live operation and run different versions of a subsystem simultaneously in one system. Databases can be hooked up or detached online, the operating resources of a real server can be allocated online to several virtual BS2000/OSD systems (guest systems).

I/O-intensive processing

Individual applications

OLTP processing

Database operations

Internet services

Java applications

Standard applications

Advantages through mainframes  
in the modern data center

Virtualization  
Storage Management  
Operating system  
Database system  
Integration Job Management  
Print

### Innovation

Adaptability is the art of harmonizing two elements: on the one hand, changing existing software as little as possible so as not to endanger functionality and quality - and at the same time to protect your investment. On the other hand, all the changes or new requirements made of this software should be fulfilled quickly and efficiently, because market dynamics, the change in business processes and rapid further development of information technology leave no other choice.

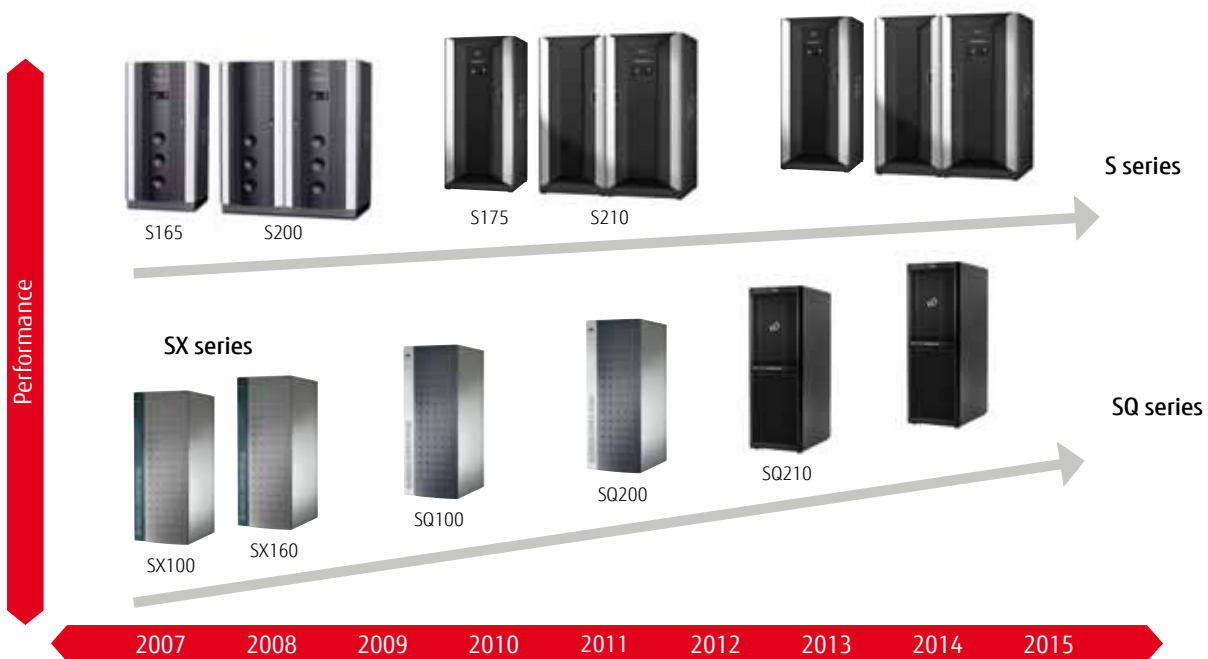
The middleware product suite openSEAS addresses the relevant topics on the CIO agenda - from simple and efficient application consolidation and innovation, integration of legacy applications right through to the development of web services and company portals.

### Management

Considered for their entire IT lifecycle, the economic efficiency of IT systems is essentially based on the costs for IT administration and operation. The intelligent system management of BS2000/OSD guarantees that the applications are run economically. It ensures optimal utilization of the system resources and provides the fundamental services, such as backup, archiving, print and automation functions on a network-wide and interoperable basis.

### Performance and scalability

The excellent multiprocessor features and the associated enormous system scalability - currently from 12 to 5,000 RPF - guarantee almost unlimited growth into the high-end range without having to change systems.



### More than 100 mainframe BS2000/OSD software products

Fujitsu covers all the relevant topics of modern data centers with more than 100 mainframe BS2000/OSD software products.

SNMP Management  
System Management  
Security  
Communication & Internet  
Utility Performance Management Availability  
Management  
Programming Systems

# Reshaping IT

## Modern mainframe architecture

### Business requirements

- Simple client connection, mobility
- High-availability network
- Standards
- Security functions
- High availability
- High performance and scalability
- Integration of existing data and applications
- Integration of new applications



### openNetworking for BS2000/OSD

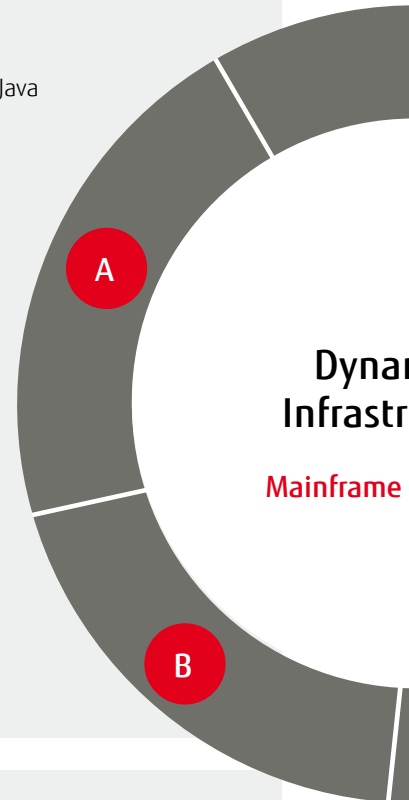
- Web infrastructure, web server
- Redundant TCP/IP network
- Standard protocols, Internet server
- Virtual private network topologies, high-performance encryption
- High availability up to 99.999 %
- Operation of between 10,000 and 100,000 users and connections
- openSEAS suite, Web Server Apache, Java

### Integration of data and integration into heterogeneous multivendor networks

Integration of data and integration into heterogeneous multivendor networks BS2000/OSD Business Servers with their openNetworking concept can be seamlessly integrated into heterogeneous network structures and offer end users access to data and applications in worldwide communications.

24-hour Internet operation and the handling of business processes via the network must function safely and reliably. Based on this premise Fujitsu developed the overall concept of openNetworking, with which BS2000/OSD supports all the relevant protocols and interfaces for Internet technologies, but also takes grown infrastructures into account and consequently uses and protects existing investments.

openNetworking satisfies all the requirements that are made of powerful business servers: Support of standards for the best connection in heterogeneous multivendor networks or support for mobile terminals, functions for the availability, fail-safety or integration of existing data. Versatile Internet services for integration and use in the Internet, Extranet and Intranet environment are also used.

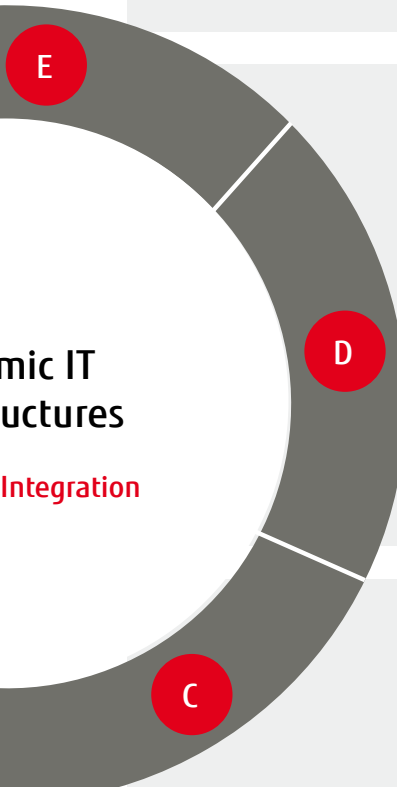


### Integration with storage systems and Net-Storage

BS2000/OSD also develops maximum flexibility when connecting disk storage systems in the customers' Storage Area Network (SAN). Extended storage integration addresses for example the integration of midrange and enterprise disk storage systems of the Fujitsu ETERNUS DX systems, with clone & snap functions based on the storage host component SHC-OSD.

SHC-OSD controls the replication functions from the BS2000/OSD. Local and remote data mirroring is also possible, as is the complete integration of the snap functionality of disk systems into the automatic storage administration of BS2000/OSD.

In addition, Net-Storage offers the option of also storing BS2000 files that are not critical to performance in cost-effective NAS storage systems. The BS2000 files can be created directly on Net-Storage, and existing BS2000 files copied to Net-Storage. The commands concerned are extended accordingly. File processing is done on the Net-Storage system directly via the normal pubset / DMS user interfaces.



### Cross-platform concepts and solutions

Almost without exception companies operate business-critical core applications on a worldwide basis, usually on the most varied system platforms. These BCC applications, which were for many years also run on mainframes, have as a result of high investment been functionally perfected and continuously refined. On the basis of standardized services these are now flexible enough to be able to react to changes.

BS2000/OSD provides comprehensive support for service-oriented approaches (SOA) in IT operations and in this way proves itself to be an extremely scalable platform with maximum stability and the best cost structures. The support of standards such as SMTP, HTTP, HTTPS, FTP, XML, Java, .Net, J2EE, JCA, SSL or LDAP ensures that interoperability is not a problem.



### Integration with other server platforms

- Support of recognized Internet protocol standards and services
- FTP protocols and TELNET to establish connections
- Open interfaces for trouble-free integration into heterogeneous infrastructures
- Parallel operation of other systems (Linux, Windows, VMware) on one SQ server
- Standardized comprehensive administration of servers, peripherals and networks
- Fibre Channel standard for modern and fast host-storage connections
- Integration in Enterprise Storage Area Network (SAN)



### Application integration with openSEAS suite

Fujitsu uses its state-of-the-art middleware offering „openSEAS“ to precisely address the topics that are currently the most important in IT departments. From consolidation, integration, and individual software right through to the provision of web services for the installation of company portals.

Enterprise Application Integration (EAI) and Business Process Management (BPM) are leading topics that move companies. Business-critical applications can be integrated into web portals as well as internal and external business processes using innovative web services technology. Fujitsu has powerful tools to offer for the integration of existing applications into new scenarios.

**Enhanced high availability with the openUTM cluster:** The high availability of applications as well as the possibility to automatically distribute the upcoming load are of the highest priority and an essential attribute of dynamic infrastructures. openUTM applications can also be used without interruption by using the UTM cluster functionality.



### Using openSEAS for dynamic infrastructures

Oracle Fusion Middleware

- openSEAS WebTransactions – flexible integration of existing host applications
- openSEAS BeanConnect for standardized connection of existing systems with application server applications
- Web Services for openUTM
- BizXML2Cobol – implementation of business processes with recourse to services in existing applications
- Business Transformation: comprehensive openSEAS and Oracle service offering

# Flexible – efficient – reliable

## High-end performance with BS2000/OSD mainframes

In today's data centers Enterprise systems work on the assumption of maximum data and application availability as well as outstanding economic efficiency as indispensable attributes. It must be possible to design and monitor a system in such a way that individual defects do not bring the system to a standstill. BS2000/OSD Business Servers are outstandingly successful in meeting these prerequisites.

BS2000/OSD is a highly available, scalable, high-performance basis for business-critical applications that is totally compatible across numerous versions. With its open interfaces the BS2000/OSD-BC mainframe operating system offers exceptionally flexible and future-proof integration into modern application architectures and reliably meets the IT values of dynamic data centers.

### BS2000/OSD Business Servers

- In the server pool of service-oriented IT infrastructures, BS2000/OSD Business Servers are the most economic component to handle large quantities of data and support numerous end users.
- Thanks to the integration of state-of-the-art technologies BS2000/OSD Business servers are also suited as an ideal platform for the design of new business processes.

#### The excellent features of mainframes include

- Best TCO values with a high number of end users
- High availability during normal IT operations and in case of a disaster
- Large data quantities and scalability over an extreme performance bandwidth without any technological leaps

### Flexible

Dynamic resource management allows numerous applications to run in parallel on the same BS2000/OSD business server system. Virtual machine technology supports various guest systems with varying loads on a server.

### Efficient

Virtualization and automation are the decisive leverage forces for service-oriented IT operation and the economic guarantee of defined service quality. Other system platforms are far from reaching what has long been standard practice with BS2000/OSD: CPU utilization levels of almost 100% even for longer periods – and in a simply, unbeatably efficient way and with maximum stability thanks to the high degree of automation.

### Reliable

When it comes to maximum availability, BS2000/OSD Business Servers are unstopably strong. The key reasons for this are the extreme stability of the BS2000/OSD hardware and software, the minimization of errors due to ease of use, a high degree of automation as well as simple failover handling. In addition to the reduction in unplanned downtimes, the avoidance of planned service interruptions is increasingly gaining in significance, thus enabling support for business processes on a 24-hour basis.

**A BS2000/OSD mainframe is more than a server:**

**It is a comprehensive and autonomously operating IT infrastructure for your applications. BS2000/OSD Business Servers set new standards by combining maximum performance and at the same time outstanding economic efficiency in the best possible way. The integration of mainframe technology gives dynamic data centers their rock-solid heartbeat.**

BS2000/OSD  
BS2000/OSD  
BS2000/OSD



# Rock-solid heartbeat for your data center

## BS2000/OSD Business Servers



### SQ Business Servers

Powerful and versatile mainframes of the SQ server series based on high-end Intel technology are available at the lower and middle end of the BS2000/OSD performance range. For new application options the SQ server series is - due to the parallel operability of the BS2000/OSD, Windows and Linux world - ideally suited for cross-platform server consolidations. Support is provided for defined scenarios for high availability (homogeneous 1:1 configurations) and Live Migration. The SQ series thus offers a broad-based performance spectrum and also opens up an economically interesting use of mainframe technology to small and medium-sized companies.

- Latest high-end Intel MP technology
- Parallel operability of BS2000/OSD, Linux and Windows applications
- Unparalleled high-availability functionalities
- Best-in-class data center integration and consolidation

### S Business Servers

The S175 and S210 business servers are positioned as powerful high-end systems of the BS2000/OSD family. They are equipped with state-of-the-art hardware technology and at the upper end of the performance range offer far-reaching perspectives as regards transaction performance, I/O bandwidth and connectivity of the most powerful peripheral systems on the market. Differences between the models exist in terms of processor performance, configurability and scalability. Generously equipped basic models offer upgrade options that ensure adaptation of the installed business servers to growing performance requirements at low cost and without any long operational interruption.

- Processor chip with Quad-Core technology
- High CPU and system performance up to 5,000 RPF
- High global storage performance & system capacity
- Support for double the number of peripherals
- Capacity on demand for temporary processor activation

### Outstanding features of the BS2000/OSD Business Servers

- Low TCO through sophisticated automation technology
- Efficient resource utilization
- Workload of almost 100 %
- Low energy costs per system/user
- High environmental compatibility
- Low-priced model introduction
- High system flexibility
- Guaranteed high service levels

# Powerful pioneer for reshaping initiatives

## BS2000/OSD Business Servers as integral components

Fujitsu offers concepts and solutions, with which companies can optimally design dynamic IT infrastructure and at the same time remain in control of their key processes. This covers all information technology topics:

In today's dynamic IT infrastructure environments mainframes are still classed as mainstays, which as integrative elements of modern data centers provide competent, stable and effective support.

- BS2000/OSD supports the further development and modernization of proven IT infrastructures. The mainframe environment with all its applications can be ideally integrated into a dynamic infrastructure environment in small steps – either by means of web-capable user interfaces, integration into portals and heterogeneous application landscapes or through the modeling of service-oriented architectures.
- BS2000/OSD Business Servers provide the optimal solution for every requirement. That also applies for cross-location high availability or the consolidation of heterogeneous server landscapes.

Continuous further development and the associated consequent integration of new technologies ensure that our customers benefit optimally from the innovative and integration strength and in so doing can rely on maximum investment protection.

### The IT world is becoming greener and greener

For many years Fujitsu has proved itself to be a „green“ pioneer. Environmentally friendly initiatives throughout production and products are geared to not allow harmful materials to enter the cycle at all, to reduce CO<sub>2</sub> emissions and by using energy-saving technologies improve our customers' energy balance. And in so doing, Fujitsu is also putting its own house in order: As part of the initiative started in 2010 „Green Policy 21 – Everything Green“ Fujitsu is also addressing the issue itself (reduction in its own worldwide CO<sub>2</sub> emissions by 15 million tons by the end of 2012).

Green IT – the Fujitsu label for products with green features that are far in excess of standard requirements



### Fujitsu Technology Solutions has joined the Energy Efficiency Export Initiative

The Federal Ministry of Economics and Technology (BMWi) has started an initiative, Energy Efficiency Export Initiative, which gives businesses the opportunity - once they are certified - to advertise with the certificate „Energy Efficiency – made in Germany“. Fujitsu Technology Solutions GmbH joined the initiative on June 30, 2009 and now also helps further enhance Germany's already outstanding reputation in the field of energy efficiency.



<http://efficiency-from-germany.info>

FACOM 100 – First mainframe of Fujitsu Japan

First delivery of the BS2000 operating system

First multiprocessor support

C30/C40 – First BS2000 mainframes on a CMOS basis

Virtual machine system VM2000

**Fujitsu mainframe milestones:**  
Success story of more than 50 years

1954

1975

1979

1988

1990

# Experience – competence – services

## Your competent partner for all issues

Fujitsu's expertise in the BS2000/OSD environment is based on decades of experience and long-term relationships with its customers. In addition to the quality of mainframe technology, the excellent services as well as employee competence in particular are the building blocks for this sound platform of trust. Holistic and qualified mainframe customer consulting lays the foundations for innovative solutions. The mainframe gives dynamic infrastructures a powerful heartbeat. Making full use of these strengths can in many cases be transformed into customer value added. The BS2000/OSD team ensures risk-free and efficient data center operations 24 hours a day, 365 days a year, adapted at any time to suit customer requirements.

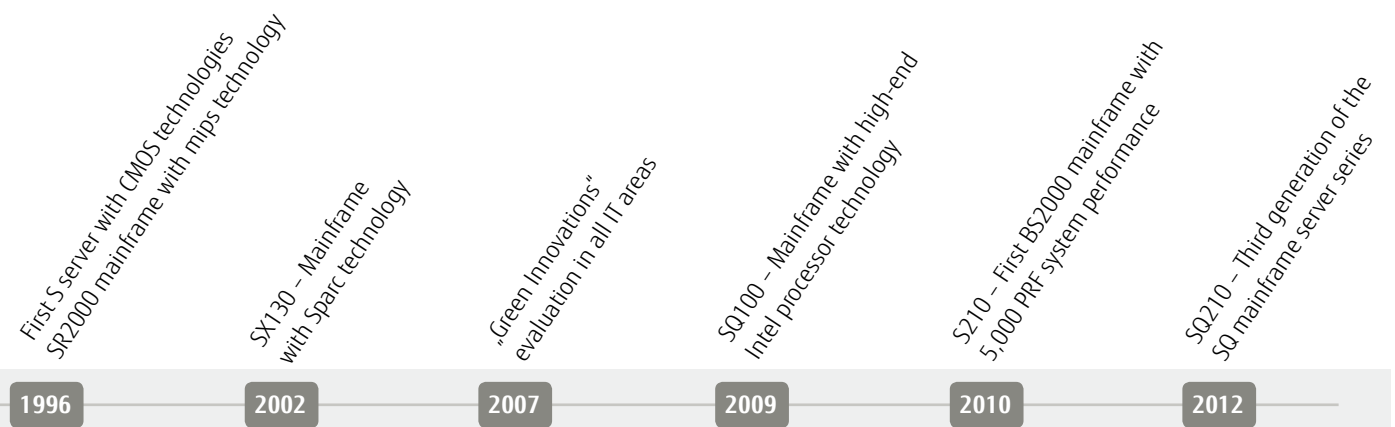
Based on this premise Fujitsu today operates as an experienced partner in the mainframe environment and advises companies on strategic and operative challenges – in dynamic infrastructures.

Dynamic Infrastructures			
<b>Managed Infrastructure</b>	<b>Managed Data Center BS2000</b> Remote and local services (system administration, consulting services) Financial Service (AIP, CoD)		
<b>Infrastructure as a Service</b>	<b>BS2000 Infrastructure as a Service</b> (productive, information and archive systems and disaster recovery)		
<b>Infrastructure Solutions</b>	<b>BS2000 Solutions</b> (DB Offload, SOA Integration, Consult, Design, Build Services, Training, etc.)		
<b>Infrastructure Products &amp; Services</b>	<table border="0" style="width: 100%;"> <tr> <td style="text-align: center;"> <b>BS2000 HW/SW/MW Portfolio</b>                      (S/SQ Business Servers, BS2000/OSD, BS2000/OSD-XC, openSEAS)                 </td> <td style="text-align: center;"> <b>Maintenance and Support Services</b>                      (remote/local, SLAs, etc.)                 </td> </tr> </table>	<b>BS2000 HW/SW/MW Portfolio</b> (S/SQ Business Servers, BS2000/OSD, BS2000/OSD-XC, openSEAS)	<b>Maintenance and Support Services</b> (remote/local, SLAs, etc.)
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### The value added of Fujitsu: Solutions and innovations for a business world full of dynamics

Dynamic times call for dynamic solutions – in the form of flexible and efficient infrastructures, easy-to-adapt business processes and intelligent methods of managing the constantly increasing torrents of data.

And the focus on limited natural resources should not be forgotten here – utilizing every watt of energy with the maximum degree of efficiency – determines in the meantime the thinking and actions of Fujitsu. We face up to these challenges of a business world full of dynamics with responsibility to the environment and customers, for whom we also remain a competent partner with this alignment for „the next IT generation“!



# www.fujitsu.com/fts/bs2000

## **A clear view of everything at the click of a button: BS2000/OSD Business Servers**

You want to learn more about new and useful facts concerning BS2000/OSD. Visit our web site and dive deeper into the variety of information and media that we have prepared for you for different topics:

<http://www.fujitsu.com/fts/products/computing/servers/bs2000/business/>

## **On the trail of optimization potential: BS2000/OSD Services**

Take a look at our current services for BS2000/OSD and move your mouse over a detailed description of our service portfolio – from Managed Data Centers, BS2000 as a Service right through to Maintenance and Support:

<http://www.fujitsu.com/fts/products/computing/servers/bs2000/services/>

## **From experts for experts: BS2000/OSD Training Courses**

Do you know our education and training offering for customers and partners? Learn about and decide in favor of qualified training courses from experts for experts. We are glad to also offer you in-house and individually tailored courses.

<https://training-public.ts.fujitsu.com/de/bs2000-osd.html>

<https://training-public.ts.fujitsu.com/catalog>

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