

Delivers great value and performance with proven IBM POWER technology



## IBM BladeCenter JS21



For success in demanding IT environments, organizations require innovative servers delivering good performance and value. For high performance computing (HPC) cluster applications such as grid, life and earth sciences research, seismic processing and other data-intensive or floating-point compute-intensive applications, it takes more than just the claim of innovation to deliver real value.

Enter the IBM BladeCenter JS21. IBM continues to deliver new ever-evolving, affordable, feature-rich technologies capable of answering the on demand requirements of tomorrow's businesses today. The BladeCenter JS21 represents a convergence of leadership and value, combining support of AIX 5L™, IBM's industrial-strength UNIX, Linux, Advanced POWER Virtualization and AltiVec™ SIMD acceleration into a single, highly reliable, high-performance blade server.

---

### Highlights

---

- **Premier blade solution for 64-bit UNIX®, HPC Linux® clusters and server consolidation**
- **Now available as a 2.3 GHz 4-core SMP for value oriented clients**
- **Compatible with IBM BladeCenter®, BladeCenter H and BladeCenter T chassis for deployment flexibility**
- **Can take advantage of IBM Advanced POWER™ Virtualization**

Visit

---

**ibm.com** to locate an IBM reseller or for more information.

Since today's datacenter environment is tougher than ever, clients are looking to reduce IT costs, complexity, space requirements, power consumption and heat output, while increasing flexibility, utilization and manageability. The new 2.3 GHz JS21 blade option delivers what cost-conscious clients demand. With the flexibility to grow and the choice of three BladeCenter chassis to match diverse environments and performance requirements, the JS21 blade is the perfect choice to succeed in today's demanding business environments.

### ***Optimized for value, built for performance***

Part of the IBM BladeCenter family of products—easy-to-use, integrated platforms with a high degree of deployment flexibility, scalability and manageability—the BladeCenter JS21 is the premier blade for 64-bit UNIX applications. Combining AIX 5L and Linux support with the high-speed BladeCenter H chassis, the JS21 delivers leadership SIMD acceleration for data-intensive or floating-point-intensive scientific applications. Often found in life and earth sciences, these applications also include HPC workloads such as seismic processing that truly take advantage of the integrated AltiVec co-processor to improve parallelism and accelerate data processing.

For retail and Web serving environments with applications like IBM WebSphere® on AIX 5L, the JS21 ends the debate of price vs. performance when migrating from rack-based to blade servers or consolidating older UNIX or Linux servers into a centralized BladeCenter infrastructure.

With every major subsystem refreshed to the latest industry-standard functionality, the JS21 leverages the low-power, high-performance single- or dual-core-capable 64-bit IBM PowerPC® 970MP processor, along with more enterprise-ready Serial Attached SCSI (SAS) hard drives and integrated PCI-Express support for low-latency and high-throughput I/O connectivity. A broad range of processor options is available, including a model with two single-core 2.7 GHz processors or models with either two dual-core 2.3 GHz or 2.5 GHz processors.

The JS21 can also be connected to external storage with the installation of optional SAN daughter cards.

Doubling the memory supported on the previous generation JS20, the JS21 supports up to 16GB of DDR2-based memory in four DIMM slots. In addition to standard support for ECC and



IBM Chipkill™ technology for improved fault protection, you also have the choice of 400 MHz or 533 MHz memory for outstanding performance options. Delivering up to three times the performance of the JS20, the JS21 is enhanced for today's IT environment and is ready for future applications.

### ***Breakthrough performance Faster I/O***

The JS21 is the first blade server that leverages the high-performance IBM BladeCenter H chassis. When installed in this chassis, the JS21 achieves its maximum frequency, and when combined with the integrated PCI-Express connector, it helps to deliver outstanding performance for HPC workloads. The BladeCenter H accommodates up to 14 blades and provides a 10 Gbps backplane fabric, redundant hot-plug power and cooling, concurrent media access and light path diagnostics. A new Advanced

Management Module provides greater functionality and better performance when accessing the blade solution remotely. Delivering faster I/O performance than previously available with the IBM BladeCenter JS20, the JS21 is designed to support BladeCenter H capabilities for full performance of future applications such as 4X InfiniBand fabrics, 4Gb Ethernet Fibre Channel and 10 Gbps Ethernet.

### **New levels of virtualization**

While virtualization is nothing new to the BladeCenter family, as a true IBM Power Architecture™ blade server, the JS21 has optional support for Advanced POWER Virtualization (APV) built into the microprocessor. The BladeCenter JS21 is designed to make it more affordable to consolidate multiple independent applications on a single blade using the same proven virtualization technologies offered on IBM System p™ servers. By enabling the APV capabilities as well as the optional Virtual I/O Server (VIOS), the JS21 delivers a key solution for consolidation of Linux and AIX 5L applications. Offering an easy-to-use, Web-based interface for managing virtualization within a single blade, the Integrated Virtualization Manager (IVM) component of VIOS allows clients to set up and



manage logical partitions (LPARs). It also enables Virtual I/O and Virtual Ethernet so that storage and communications adapters can be shared among all the LPARs running on the JS21 blade. Ultimately, IBM Micro-Partitioning™ technology allows each processor core to be subdivided into as many as 10 “virtual servers”—greater than the maximum of eight simultaneous virtual machines per processor supported by VMware ESX Server on an x86 server—and at a low license price.

### **Outstanding efficiency**

Already have BladeCenter in your environment? The JS21 is backward compatible with BladeCenter and forward compatible into the BladeCenter H high-performance chassis. For consolidating UNIX and Linux applications into a single BladeCenter infrastructure,

the JS21 also operates concurrently in the same chassis with other BladeCenter HS blades based on Intel® Xeon® processors and LS blades designed with AMD Opteron™ processors, offering easier management and exceptional efficiency in mission-critical, heterogeneous environments. And as before, hot-swap capability allows you to add or even to remove blades from the BladeCenter without disrupting the operation of other blades in the same chassis.

### **Systems management tools**

For enhanced datacenter planning and maintenance, increased reliability and improved performance, the JS21 supports the advanced power management capabilities of IBM PowerExecutive™, (an extension of IBM Director). Eliminating the need for an external watt-meter, the PowerExecutive plug-in details the

exact power consumption of BladeCenter blade servers, even when the blade is powered off. In addition, thanks to its integrated systems management processor, power measurement on the JS21 is completely out-of-band, allowing the software on the blades to measure and report even without a dedicated network connection.

Additional integrated systems management tools like IBM Predictive Failure Analysis® and light path diagnostics are designed to simplify administration to help lower costs and improve control of the datacenter—without having to buy extra tools (or hire additional staff) to manage or monitor the system. Remote management capabilities let IT networking tasks be automated, helping save added time and money.

#### **Power and cooling benefits**

Because the IBM BladeCenter infrastructure uses energy-efficient components and shared infrastructure

architecture, you can realize lower power consumption when compared to many alternative designs. Calibrated Vectored Cooling capabilities delivered on every blade server enable the JS21 to deliver higher density without sacrificing reliability or performance. The balance of optimized airflow, innovative blade form-factor design and power-efficient PowerPC processors provide thermal management without the need for additional fans. Low power consumption and heat output allow the packing of more servers into tight power and cooling envelopes.

#### **Support the IT environment with the power of the BladeCenter ecosystem**

Supporting BladeCenter, BladeCenter H and BladeCenter T chassis, the JS21 builds upon the value proposition of IBM's leadership BladeCenter strategy for deployment flexibility. The BladeCenter legacy of open,

cross-compatible design means that all BladeCenter chassis support all blades, switches and ecosystem components—helping provide investment protection and reducing IT obsolescence.

In summary, the BladeCenter JS21 offers a broad range of processor options with excellent performance, value and flexibility for configuring Linux and UNIX systems running memory-intensive scientific applications, HPC workloads, and even Web serving with applications such as WebSphere. With an integrated AltiVec SIMD co-processor, the JS21 delivers leadership SIMD performance for double-precision floating-point and data-intensive scientific applications in life and earth sciences. And with optional virtualization, the JS21 provides an enhanced solution for consolidating older IBM AIX® and Linux servers onto a low-cost, high-performing, more rack-dense blade solution in combination with any chassis of the BladeCenter family.

<b>Standard configurations</b>	
<b>Form factor</b>	Single-wide blade server for BladeCenter, BladeCenter H or BladeCenter T chassis
<b>Processors</b>	64-bit IBM PowerPC 970MP with integrated AltiVec SIMD accelerator
<b>Number of processors</b>	2-socket single-core (2.7 GHz) or 2-socket dual-core (2.3 GHz or 2.5 GHz) <sup>1</sup>
<b>Level 2 (L2) cache</b>	1MB per core
<b>Memory (std/max)</b>	1GB (2-core) or 2GB (4-core); up to 16GB maximum per blade; 400 or 533 MHz ECC Chipkill DDR2 SDRAM; 4 DIMM slots
<b>Internal disk storage</b>	Up to two 2.5" Serial Attached SCSI (SAS) 10K RPM 36GB or 73GB non-hot-swap hard drives per blade, Maximum 146GB
<b>RAID support</b>	Integrated controller for RAID 0/10 mirroring
<b>Networking</b>	Integrated Broadcom 5780 17X PCI-Express controller with Dual Gigabit Ethernet, optional dual gigabit Ethernet daughter card
<b>I/O upgrade</b>	Integrated PCI-Express connector for high-speed daughter cards, Integrated connector for legacy daughter cards
<b>Optional connectivity</b>	4Gb Fibre Channel, 1 or 10 Gigabit Ethernet, 1X or 4X InfiniBand
<b>Advanced POWER Virtualization<sup>2</sup></b>	Virtual LAN, POWER Hypervisor, Micro-Partitioning, Shared processor pool, Virtual I/O Server, Integrated Virtualization Manager
<b>Systems management</b>	Integrated systems management processor, IBM Director, light path diagnostics, Predictive Failure Analysis, IBM PowerExecutive, Cluster Systems Management, Serial Over LAN, IPMI-compliant
<b>Operating systems</b>	AIX 5L V5.2 and above, SUSE Linux Enterprise Server (SLES) 9 for POWER and above, Red Hat Enterprise Linux (RHEL) AS 4 for POWER and above
<b>System dimensions</b>	Blade: 9.65 in (245.2 mm) H x 1.14 in (29 mm) W x 17.55 in (445.8 mm) D, Weight: 9.6 lbs (4.35 kg) Chassis (BladeCenter H): 15.75 in (400 mm) H x 17.5 in (444 mm) W x 28.0 in (711 mm) D, Weight: 350.0 lbs (159.0 kg)
<b>Warranty</b>	3-year, on-site, next-business-day limited warranty, upgradeable to 24-hour, same-business-day warranty

## For more information

To learn more about the IBM BladeCenter JS21, please contact your IBM representative or IBM Business Partner or visit the following Web site:

**ibm.com**/systems/bladecenter/js21



© Copyright IBM Corporation 2006

IBM Systems and Technology Group  
Route 100  
Somers, NY 10589

Produced in the United States of America  
October 2006  
All Rights Reserved

IBM reserves the right to change specifications or other product information without prior notice. This publication could include technical inaccuracies or typographical errors. References herein to IBM products and services do not imply that IBM intends to make them available in other countries. IBM PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OR CONDITION OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME JURISDICTIONS DO NOT ALLOW DISCLAIMER OF EXPRESS OR IMPLIED WARRANTIES IN CERTAIN TRANSACTIONS; THEREFORE THIS STATEMENT MAY NOT APPLY TO YOU.

All statements regarding IBM future directions and intent are subject to change or withdrawal without notice and represent goals and objectives only.

Visit **ibm.com/pc/safecomputing** periodically for the latest information on safe and effective computing.

IBM, the IBM logo, AIX, AIX 5L, BladeCenter, Chipkill, Micro-Partitioning, POWER, PowerExecutive, Power Architecture, PowerPC, Predictive Failure Analysis, System p and WebSphere are trademarks of IBM Corporation in the United States, other countries or both. For a list of additional IBM trademarks visit **ibm.com/legal/copytrade.shtml**.

AMD Opteron is a trademark of Advanced Micro Devices, Inc., in the United States, other countries or both.

Intel and Xeon are registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries or both.

UNIX is a registered trademark of The Open Group in the United States, other countries or both.

AltiVec is a trademark of Freescale Semiconductor, Inc.

Other company, product and service names may be trademarks or service marks of others.

<sup>1</sup> Processor clock speed when IBM BladeCenter JS21 2.5 GHz 4-core is installed in BladeCenter or BladeCenter T chassis is 2.3 GHz. Processor clock speed when IBM BladeCenter JS21 2.7 GHz 2-core is installed in BladeCenter or BladeCenter T chassis is 2.6 GHz. In all BladeCenter chassis, autonomic power and thermal controls may reduce the processor frequency in certain operating conditions.

<sup>2</sup> Not supported on AIX 5L V5.2