



Highlights

- A high-performance, energy efficient, reliable and secure infrastructure and application solution in a compact 2U package. With POWER7+™ workload-optimizing technologies, the IBM® PowerLinux™ Solutions 7R1 delivers fast transactions.
 - Optimized for emerging and traditional scale-out Linux workloads
 - Economical foundation for optimized solutions
 - Deploy more secure, highly available solutions and services faster
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IBM PowerLinux 7R1 server

High-performance, energy-efficient server for Linux

The way the world works is changing. Consumers want instant answers and ubiquitous access from smart devices. They are having billions of conversations on global social networks. Businesses selling goods and services to these consumers are utilizing newly available information and instantaneous communication capabilities to more effectively market. Born-on-the-web companies are delivering massive amounts of information to millions of users. These smart companies have one thing in common—they are exploiting Linux and emerging solutions on scale-out systems to deliver the right services at the right time to the right clients.

Today, organizations of all sizes can participate in the data-centric revolution, even while struggling with rising costs and limited IT resources. The IBM PowerLinux 7R1 server is designed specifically as an economical foundation for emerging and traditional scale-out workloads. IBM PowerLinux workload optimized solutions, each tuned to a specific task, are affordable for businesses of all sizes. With solutions ranging from Virtualized Open Source Infrastructure services to IBM Watson™-inspired big data analytics, companies which previously relied on x86-based servers can now enjoy the advantages the Power Architecture® has brought to large enterprises:

- More throughput per server with industry-leading performance and more efficient virtualization
- Superior reliability and security
- End-to-end system optimization



A simpler PowerLinux-based IT environment with fewer servers to manage helps reduce infrastructure costs and frees IT staff to focus on bringing innovative products and services to market faster. Replacing aging x86 based Windows servers with PowerLinux systems and open source applications can further reduce costs by eliminating high proprietary software license fees and upgrade charges.

The IBM PowerLinux server and IBM PowerVM® for IBM PowerLinux are optimized for Linux, providing more efficient horizontal scaling at price points comparable to traditional Linux servers. The IBM PowerLinux 7R1 server delivers the outstanding performance and workload-optimizing capabilities of the POWER7+® processor in a Linux only, dense, 2U rack form factor that is ideal for running multiple application and infrastructure workloads in a virtualized environment. The one-socket, high-performance, energy-efficient server supports up to eight POWER7+ cores and a choice of Linux operating systems.

Built on the leadership performance of the POWER7+ processor, the IBM PowerLinux 7R1 server is a one-socket server that supports up to eight POWER7+ cores in a dense, rack-optimized form factor. As a high-performance infrastructure or application server, the IBM PowerLinux 7R1 server contains innovative workload-optimizing technologies that improve performance based on client computing needs. In addition, it includes **Intelligent Energy** features that help increase performance and optimize energy efficiency, resulting in one



IBM PowerLinux 7R1 rack-mount server

of the most cost-efficient solutions for workload deployments. Furthermore, for added versatility, IBM PowerLinux 7R1 offers two power options: 100V or 240 VAC.

Power is virtualization without limits

Take advantage of the PowerLinux server's scalability and capacity by leveraging our industrial-strength PowerVM technology to fully utilize the system. PowerVM allows any individual LPAR to access the maximum amount of memory and CPU cores that are available in the server. PowerVM offers this capability to dynamically adjust system resources to partitions based on workload demands, enabling a dynamic infrastructure that dramatically reduces server sprawl via massive consolidation of applications and servers. In addition, optional components in PowerVM Editions are designed to provide advanced virtualization technologies, resulting in efficiencies in resource utilization and cost savings.

Power is the performance that delivers business advantage

The leadership performance of the POWER7+ processor makes it possible for applications to run faster with fewer processors, resulting in lower per-socket software licensing costs. In addition, a single system can now run more applications and reduce the number of required servers—lowering infrastructure costs. The latest model of the IBM PowerLinux 7R1 server adds increased memory capacity, higher performance POWER7+ processors, and high bandwidth Generation 2 PCI-Express slots to provide even greater performance capabilities. And with the 4-core, 6-core and 8-core processors, it offers the capability to grow with your business through additional I/O and storage capacities via expansion units.

Power is effortlessly balancing workload performance

POWER7+ **Intelligent Threads** technology enables workload optimization by automatically switching between one, two and four execution threads per processor core in order to optimize application throughput. In addition, **Active Memory™** Sharing technology enables the sharing of a pool of physical memory among virtual machines on a single server, helping to increase memory utilization and drive down system costs. These workload-optimizing capabilities can improve application performance and ROI from the server.

Power is dynamic energy optimization

IBM Systems Director Active Energy Manager™ exploits **EnergyScale™** technology, enabling **Intelligent Energy** management features, which can dramatically and dynamically

conserve power and further improve energy efficiency. These Intelligent Energy features enable the POWER7+ processor to operate at a higher frequency if environmental conditions permit, for increased performance and performance per watt; or alternatively operate at a reduced frequency if user settings permit, for significant energy savings.

Power is availability you can count on

The IBM PowerLinux 7R1 is designed with capabilities to deliver leading-edge application availability and allow more work to be processed with less operational disruption. RAS capabilities include recovery from intermittent errors or failover to redundant components, detection and reporting of failures and impending failures, and self-healing hardware that automatically initiates actions to effect error correction, repair or component replacement. In addition, the Processor Instruction Retry feature provides for the continuous monitoring of processor status with the capability to restart a processor if certain errors are detected. If required, workloads are redirected to alternate processors, all without disruption to application execution. And, with the Live Partition Mobility feature of PowerVM for PowerLinux, running workloads can be moved between servers to eliminate planned downtime.

The PowerLinux 7R1 implements Light Path diagnostics, which provide an obvious and intuitive means to positively identify failing components. This allows system engineers and administrators to easily and quickly diagnose hardware problems. Hardware failures that may have taken hours to locate and diagnose can now be detected in minutes, avoiding or significantly reducing costly downtime.

Feature	Benefits
Leadership POWER7+ performance	<ul style="list-style-type: none"> • Access data faster and improve response time • Do more work with fewer servers and benefit from infrastructure cost savings from a reduction in the number of servers and software licenses
IBM Systems Director Active Energy Manager™ with EnergyScale Technology	<ul style="list-style-type: none"> • Dramatically and dynamically improve energy efficiency and lower energy costs with innovative energy management capabilities • Enables businesses to continue operations when energy is limited
IBM PowerVM for IBM PowerLinux	<ul style="list-style-type: none"> • Easily add workloads as your business grows • Utilize the full capability of the system to reduce infrastructure costs by consolidating workloads onto the Linux operating system • Provides ability to efficiently handle unexpected workload peaks by sharing resources
Active Memory Sharing	<ul style="list-style-type: none"> • Do more with less memory by dynamically allocating memory to virtualized workloads as required vs. inefficient fixed allocations
RAS Features	<ul style="list-style-type: none"> • Keep applications up and running so you can focus on growing your business
Light Path Diagnostics	<ul style="list-style-type: none"> • Easily and quickly diagnose hardware problems, reducing service time
Industry standard Linux from Red Hat and SUSE Operating System support	<ul style="list-style-type: none"> • Access thousands of applications available from the Linux and open source community, ISVs and IBM Software • Take advantage of widely available skills and collaboration across the Linux community • Choice of Linux operating system from Red Hat and SUSE

IBM PowerLinux 7R1 at a glance

Configuration options	Models 8246-L1D, 8246-L1T
POWER7+ processor modules— one per system	4-core 3.6 GHz or 6-core 4.2 GHz or 8-core 4.2 GHz
Sockets	1
Level 2 (L2) cache	256 KB per core
Level 3 (L3) cache	10 MB per core
Memory	32 GB to 256 GB of RDIMM DDR3 Active Memory Sharing
Solid State Drives (SSD)	Up to 6 SFF drives or
Disk drives	Up to 6 SFF SAS drives
Disk capacity	Up to 5.4 TB
Media bays	Slimline for DVD-RAM Half height for tape drive* or removable disk
PCI Adapter slots	Five PCI Express 8x Gen2 low profile

IBM PowerLinux 7R1 at a glance

Standard I/O adapters

Standard Ethernet	Four Ethernet 10/100/1000 Mbps ports
Integrated SAS controller	One controller for SAS DASD/SSD with RAID 10 and DVD-RAM Optional protected 175 MB cache with RAID 5, 6
Other integrated ports	Three USB, two HMC, two system ports
GX slots	One GX++ (not available with 4-core processor)

Expansion features (optional)

High-performance PCI adapters	8 Gigabit Fibre Channel 2-port 16 Gbps Fibre Channel 2-port 10GbE RoCE Dual port 10 Gigabit Ethernet Dual port 10 Gigabit Fibre Channel over Ethernet Dual port QDR Infiniband 6Gbps SAS RAID controller
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PowerVM technologies

POWER Hypervisor™	Supports multiple virtual machines (partitions) on a single system; Dynamic partitioning; Virtual LAN (memory-to-memory interpartition communication)
PowerVM for PowerLinux	Micro-Partitioning® with up to 20 virtual machines per processor; Multiple Shared Processor Pools; virtualized disk and optical devices (VIOS); Integrated Virtualization Manager (IVM); Shared Dedicated Capacity; Live Partition Mobility (LPM) and Active Memory Sharing (AMS)
RAS features	ECC memory with Chipkill Processor Instruction Retry Alternate Processor Recovery Service processor with fault monitoring Hot-plug disk bays Hot-plug and redundant power supplies and cooling fans Dynamic component Deallocation
Operating systems†	The following commercial Linux Operating System releases are supported: Red Hat Enterprise Linux Version 6.4 for POWER, or later SUSE Linux Enterprise Server 11 SP2 or later
High availability	IBM Tivoli System Automation for Multiplatform (ibm.com/software/tivoli/products/sys-auto-multi) SUSE Linux Enterprise High Availability Extension (http://www.suse.com/products/highavailability)
Power requirements	100 V to 240 V ac, single phase
System dimensions	Rack Drawer: 3.4"H × 17.6"W × 28.6"D (86 mm × 447 mm × 728 mm); weight 65 lbs (29.5 kg)‡
Warranty (limited)	3 year Limited Warranty, on site for selected components; CRU (customer replaceable unit) for all other units (varies by country), Next Business Day 9x5 (excluding holidays), warranty service upgrades and maintenance are available.

For more information

To learn more about the IBM PowerLinux 7R1 server and workload optimized solutions, please contact your IBM marketing representative or IBM Business Partner, and visit the following website: ibm.com/power/powerlinux

Visit: ibm.com/developerworks/group/tpl to join the PowerLinux community for the latest news and technical information.

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All performance information was determined in a controlled environment. Actual results may vary. Performance information is provided "as is" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of a system they are considering buying.

When referring to storage capacity, total TB equals total GB divided by 1,000; accessible capacity may be less.

* Tape support results in 3 SFF bays, 1 tape bay and 1 DVD

† See facts and features document for detailed OS level support

‡ Weight will vary when disks, adapters and peripherals are added



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Produced in the United States
February 2013

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