

# IBM Power Systems

*Entry scale-out systems that put data to work*



## Highlights

- Built with innovation that puts data to work
- Bring insights to the point of impact faster through a data-centric design
- Delivers better economics and quicker returns for scale-out infrastructure
- Minimizes risk with secure delivery of data and services
- Delivers open innovation, revolutionizing the way IT is developed and delivered

## Built with innovation that puts data to work

It's no secret that dynamic technology changes are rapidly remaking how organizations do business. Technology is advancing so rapidly, in fact, that communities of collaboration are forming just to harness it all. The growing torrent of data from both within and outside your organization, from mobile employees and from customers and prospects, presents an unprecedented opportunity to gain valuable insights and apply these insights at the best point of impact to improve your business results.

Making the transition to advanced capabilities requires an integrated infrastructure that supports your key IT initiatives. Our investments to bring optimized solutions in the areas of advanced analytics, cloud, and mobile access are designed to simplify and accelerate your journey to address today's market opportunities.

The latest generation of IBM® Power Systems™, with POWER8™ technology, is the first family of systems built with innovations that transform the power of big data and analytics, mobile, and cloud into competitive advantages in ways never before possible. Our scale-out systems provide powerful, scalable, and economical means to put data to work for you.

## Designed for the demands of big data and analytics

Businesses are amassing a wealth of data and Power Systems can store it, secure it and, most importantly, extract actionable insight from it in a timeframe that matters. Power Systems are designed for big data. From predictive analytics and data warehouses to unstructured big data processing and cognitive Watson solutions, Power servers are optimized for the compute intensive performance demands of database and analytics applications, and can flexibly scale to support the demands of rapidly growing data.

Power Systems' first generation of S class servers are built on POWER8 technology, and push the physical and virtual boundaries of data center technology with innovation designed to drive faster and more efficient data-centric applications required for today's smarter enterprise. Building on a heritage of strong resiliency, availability and security, Power Systems' open, data-centric design combines computing power, big memory, memory bandwidth, and broad pathways to process and move data through applications in ways that are easier to consume and manage.

## Better economics for scale-out data and cloud infrastructures

Businesses are expecting a lot from the cloud and Power Systems has the performance capabilities to help organizations reap the benefits of improved economics with fewer scale-out servers. With higher utilization than x86 servers, Power Systems offers superior cloud economics. Through its PowerVM® and PowerKVM™ virtualization software and choice of leading cloud applications, IBM Power Systems virtualization provides intelligent, dynamic resource allocation for rapid response to workload demands.

IBM Power Systems 1 and 2 socket servers provide the ideal foundation for scale-out data and cloud environments, with the economic advantages and security you need to confidently move more data-centric applications to the cloud. With over twice the bandwidth as prior generation servers and a 65 percent system utilization guarantee, these systems allow open infrastructures to scale out intelligently with less hardware, power, and cooling requirements.

#### **Deliver new capabilities for mobile applications**

Core business systems such as enterprise resource planning (ERP) and customer relationship management are crucial elements in responding to market needs. They manage and deliver the data that businesses—and their customers—demand. But increasingly, these Systems of Record are connected to employees and consumers through mobile and social Systems of Engagement designed to improve the user experience and drive competitive advantage. In this increasingly complex environment, mobile applications are now mission-critical and cannot run as isolated applications with their own set of data, and demand higher levels of service and improved performance.

Power Systems offers the open technologies required by mobile applications plus the computational speed, data bandwidth, low latency, and resiliency required to provide immediate, reliable responses to mobile users when they need it most. They gain the best of both worlds—combining the advantages of shared IT infrastructure for core systems and extending engagement systems securely and reliably through mobile applications.

#### **Delivering open innovation revolutionizing the way IT is developed and delivered**

POWER® architecture is the heart of the OpenPOWER™ Foundation, a growing community built around an open technology platform to foster new opportunities and deliver a broader set of applications and new technologies quickly.

Leveraging open standards, Power Systems provides developers with tools tuned for a platform that boosts productivity and performance by removing constraints imposed by commodity architecture. With an architecture that supports open standards such as Linux, OpenStack, KVM, and others—and with community innovation driven through Power Systems Linux Centers, Watson & Power development clouds, and the OpenPOWER Foundation—Power Systems will enable future integrated hardware solutions that dramatically accelerate compute and data-intensive tasks.

#### **Delivering rapid ROI while transforming how critical business services are delivered**

Whether you're a current Power Systems customer or exploring the potential of what IBM Power Systems can bring to your IT service delivery, the innovations delivered in this new class of Power System servers are designed to protect existing IT investments and expand opportunities with deep integration of emerging workloads into current processes, enabling companies to deliver better business services to end users. Designed to share resources without performance conflict, new emerging applications can be rapidly deployed to bring immediate ROI to your business.

#### **Delivered with a superior client experience**

Businesses that rely on IBM Power Systems servers don't just value leading technology and applications. They value the exceptional client experience that IBM provides throughout the business solution lifecycle that helps them drive rapid and lasting business value.

Clients can gain valuable insights and advice from fit-for-purpose infrastructure workshops to help them with architectural design choices. They also can take advantage of simple, pre-configured and pre-loaded offerings to get a fast start with deploying a private cloud or an analytics solution. The proven methodologies of the IBM Migration Factory, help clients accelerate moving a critical database or application from x86 commodity servers and competitive UNIX systems. The expertise of IBM Upgrade Factory enables clients to help take advantage of new technologies faster and improve systems resiliency. IBM Power servers even ‘call home’ if they detect an issue, so a potential problem may be fixed before it occurs.

IBM Power Systems Workload Center of Competency helps clients with a wide range of projects, including optimizing applications to run on Power Systems. The Center provides access to experts on application design, benchmarking and proof of concept studies, performance analysis and availability studies.

Clients can also tap into the deep security expertise of our IBM Global Technology Services and IBM Lab Services teams for a broad range of infrastructure design, implementation, management, and optimization projects. They also have the peace of mind that comes from working with the global network of experienced IBM Business Partners.

### **Integrated and easy-to-deploy**

A totally integrated approach to the design, development, and testing of each and every IBM Power Systems server ensures that they are simple to deploy and highly reliable as a foundation for business solutions. IBM Power Systems offers thousands of popular industry applications from ISVs running on a choice of

Linux, AIX®, and IBM i operating systems. IBM has a full range of affordable Power Systems servers, each of which delivers leadership performance and scalability in its class.

### **Specialized solutions for Linux infrastructure**

Power Systems for Linux running Ubuntu, SUSE, or Red Hat Linux are priced to compete with x86, while offering superior performance and ROI for compute- and data-intensive applications. With both PowerVM and PowerKVM virtualization options available, IBM SmartCloud solutions for systems management, and broad compatibility with open datacenter environments like OpenStack, these systems offer the flexibility you need to quickly integrate innovative technology solutions, avoid vendor lock in, and accelerate business results.



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### **Built on POWER, designed for data**

POWER processor technology is a reduced instruction-set computing (RISC) architecture that spans applications from consumer electronics to supercomputers. POWER processors are at the forefront of both commercial and technical or high performance computing. So, in addition to excelling at commercial workloads like DB2 database and SAP applications,

POWER is also behind many of today's top supercomputers. With BlueGene, it helped fuel breakthroughs in the science of the human genome. It is on board the Mars rovers. With IBM Watson™, POWER helped outperform human beings on Jeopardy!, an American quiz-show. Today IBM Watson continues to advance the science of text-based analytics and natural language processing for industries such as healthcare, finance and customer service.

POWER processors are at the leading edge of next generation data center design, providing the foundation for designing systems for both traditional transaction processing and compute and data-intensive workloads like Web, analytics, mobile and social applications. To achieve maximum performance, POWER processor-based systems are designed with optimization technologies that enable the system to tune automatically to specific workloads. Our latest generation of systems built with POWER8 technology offers balanced data-centric design to support the most challenging & complex data-hungry applications 2X faster than the prior generation:

- More computing power to distribute workloads: 50 percent more cores, twice the number of threads per core, and smart acceleration enabled by our Coherent Accelerator Processor Interface (CAPI), an open interface allowing PCIe3 devices to participate in operations at memory speed without risk
- Massive workspace to process data quickly: Twice the memory and CAPI flash technology to achieve lower latency and a smaller footprint
- Broad pathways to move data in and out of systems with ease through expanded I/O

With the OpenPOWER Foundation, POWER architecture is behind the efforts of leading technology companies to develop the next-generation in data center innovation. Through collaborative and community-driven development, POWER is setting new standards and creating new opportunities for business innovation.

### Power Systems S class servers (scale-out, 1- and 2-socket)

IBM Power Systems S class servers are affordable, easy-to-deploy and energy efficient, and they are backed by a trusted network of IBM Business Partners and industry solution providers. These systems offer an ideal choice for businesses that need entry or scale-out deployment options for business critical applications, especially for those who are looking for a more efficient and lower cost IT environment than x86 commodity solutions can deliver.

**IBM Power S814:** Designed for highly secure and scalable architecture, providing a stable database and middleware platform for efficient deployment of business processing and mission critical applications with 1 processor socket with up to 8 POWER8 processor cores and up to 512 GB of memory.

**IBM Power S822:** Designed for consolidation of multiple applications and infrastructure workloads in a virtualized environment with 1 or 2 processor sockets with up to 20 POWER8 processor cores and up to 1 TB of memory.

**IBM Power S824:** For analytics applications and small to mid-size database that can run on the same server platform with 1 or 2 processor sockets with up to 24 POWER8 processor cores and up to 2 TB of memory.

IBM Power S812L: Affordable and optimized for Linux environments, a 2U rack form factor, 1-socket, high-performance, energy-efficient server with 12 POWER8 cores and up to 512 GB memory is ideal for running multiple application and infrastructure workloads in a virtualized environment.

IBM Power S822L: Affordable and optimized for Linux environments, a 2-socket (up to 24 POWER8 processor cores) server lowering the entry cost of big data analytics, open infrastructure solutions and traditional scale-out Linux workloads.

IBM Power S824L: Leverage OpenPOWER technology, designed specifically to support the unique requirements of dual NVIDIA GPU accelerators, this (2-socket up to 24 POWER8 processor cores) server offers the potential for dramatic accelerations of targeted technical computing, big data, and Java workloads.

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### Linux – Extending the value of POWER to industry-standard Linux

Red Hat (RHEL), SUSE (SLES), and Canonical (Ubuntu) Linux run natively on POWER processor-based systems, offering a scalable Linux alternative for open source applications. Reducing server sprawl through consolidation and virtualization is a key priority for many companies today and Linux provides a scalable, optimized, and cost competitive alternative to running Linux on commodity x86 servers.

Linux is the low cost deployment platform of choice for vital solutions like big data & analytics, cloud environments, mobile enablement platforms, and social media collaboration services. Power Systems for Linux like the Power S812L and S822L are optimized for Linux environments, and priced to compete with 1 and 2 socket x86 Linux solutions. In addition to enabling lower cost deployments of industry-standard Linux, these systems offer more efficient server virtualization versus x86 commodity server alternatives:

- Enterprise-ready PowerVM virtualization software, offered specifically for Linux on Power environments, provides time-tested safety, security, and scalability for business critical workloads.
  - Open virtualization with PowerKVM can be managed like any other KVM host, allowing users to simplify administration of heterogeneous data centers with a single virtualization offering.
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### AIX – The future of UNIX

According to IDC, the IBM Power Systems platform with AIX technology is the leader in worldwide UNIX server revenue share.<sup>1</sup> An open standards-based UNIX operating system,

IBM AIX software exploits decades of IBM technology innovation. According to ITIC's 2013 survey, the IBM AIX operating system delivered the highest reliability scores among different server operating system platforms, including Linux and other UNIX operating systems.<sup>1</sup>

AIX technology offers deep integration and optimization with PowerVM virtualization, PowerHA high availability software, PowerSC security and compliance software as well as optimization through IBM's broader middleware and software stack, including IBM DB2® software, IBM WebSphere® Application Server software and IBM Rational compilers and development tools.

The latest AIX 7.1 release features cluster-aware integration with PowerHA, as well the ability to run AIX 5.2 and AIX 5.3 Workload Partitions to facilitate application migration and reuse. The AIX operating system is available in three editions for a range of capability and flexibility for both mid-sized and large enterprises.

AIX 7 and the previous release, AIX 6, are binary compatible with previous versions of AIX including AIX 5L™. This means that applications that ran on earlier versions will continue to run on AIX 7 or 6—guaranteed.<sup>2</sup>



### **IBM i – A system designed for business**

IBM i offers an integrated, simple-to-manage platform for business applications with a proven reputation for exceptional resilience and low operational costs. Running applications based on IBM i has helped companies over many years to focus on innovation and on delivering new value to their business, and to lower the costs of managing their IT operations.

More than 150,000 midsize businesses rely on the simplicity, resiliency and cost-effectiveness of IBM i to run thousands of applications from ISVs serving virtually every industry. Its reputation for security, resiliency and ease of use derives from the integration of IBM i with its built-in DB2 database, web services, networking and storage management capabilities.

The IBM i 7.2 release brings significant value to clients with more granular security options for critical business data, additional system management functionality as well as many other enhancements designed with performance and usability in mind. IBM i clients will be able to run IBM i 7.2 on POWER7/7+ and POWER8 systems, providing the key reliability, availability, scalability and performance characteristics to which they are accustomed.

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### **PowerHA – Resiliency without downtime**

Smarter computing by nature requires businesses to raise their services delivery levels, fueling 24x7 high availability demands for their applications and IT infrastructure. PowerHA SystemMirror for AIX and IBM i is a high availability clustering

solution for both data center and multisite resiliency. PowerHA is designed to protect business applications from outages of virtually any kind, helping ensure round-the-clock business operations.

The best high availability and disaster recovery plans involve an integrated approach to resiliency spanning across applications, operating systems, servers and storage. That's why PowerHA software offers deep integration and optimization between PowerHA SystemMirror software and AIX and IBM i. The PowerHA solution is optimized for IBM System Storage devices, such as the Storwize V7000 system for businesses.

### **PowerSC – Designed to protect virtualized data centers**

Security and compliance are intrinsic to today's business processes, development and daily operations and should be factored in to the initial design of any IT or critical infrastructure solution, not added after the fact. IBM offers solutions to protect data from threats and unauthorized access on Power Systems servers running AIX, IBM i and Linux workloads. Security is integrated and built into every layer of the hardware and software on Power systems not as an afterthought add-on. Data encryption capabilities to protect file systems, data and backup are integral to securing business information.









IBM solutions provide intuitive administration that helps you to define, enforce and audit your business security policy. IBM PowerSC software provides a security and compliance solution optimized for virtualized environments on Power Systems servers running PowerVM, AIX and Linux software. Enhance compliance management and demonstration of compliance through PowerSC industry profiles and policy-based security compliance reporting with real-time alerts for compliance violations. Compliance automation features include prebuilt system profiles that facilitate compliance with a variety of industry standards, such as the Payment Card Industry Data Security Standard. Additional PowerSC functionality includes compliance monitoring for network segregation, system trust status and system patch policy compliance and protection of audit logs.

### **IBM services and financing for your Smarter Computing projects**

From online self-evaluation tools and workshops to comprehensive assessments and complete migration services, IBM Business Partner and IBM Lab Services experts around the world can help you determine where to begin or how to make the most of your current Power Systems solutions.

Work with IBM Global Finance to explore the financing options most appropriate for your business. For more information on great rates, flexible payment plans and loans, and asset buyback and disposal, visit: [ibm.com/financing](https://ibm.com/financing)

**IBM Power Systems scale-out offerings**

						
	<b>Power S812L</b>	<b>Power S822L</b>	<b>Power S814</b>	<b>Power S822</b>	<b>Power S824</b>	<b>Power S824L</b>
System package	2U, 19-inches rack	2U, 19-inches rack	4U, 19-inches rack or tower	2U, 19-inches rack	4U, 19-inches rack	4U, 19-inches rack
POWER8 Processor Options GHz - # of cores	3.42 GHz - 10 3.02 GHz - 12	3.42 GHz - 20 3.02 GHz - 24	3.02 GHz - 4 3.02 GHz - 6 3.72 GHz - 8	3.89 GHz - 6, 12 3.42 GHz - 10, 20	3.89 GHz - 6, 12 4.15 GHz - 8, 16 3.52 GHz - 24	3.42 GHz - 20 3.02 GHz - 24
IBM i level	N/A	N/A	7.1, 7.2	N/A	7.1, 7.2	N/A
AIX level	N/A	N/A	6.1, 7.1			N/A
Linux support	SLES RHEL Ubuntu		SLES RHEL			Ubuntu
Virtualization support	PowerVM, PowerKVM		PowerVM			None
Machine type - model	8247-21L	8247-22L	8286-41A	8284-22A	8286-42A	8247-42L



## For more information

To learn more about IBM Power Systems Express Servers, please contact your IBM marketing representative or IBM Business Partner, or visit the following website: [ibm.com/power](http://ibm.com/power) or follow us on Twitter @IBMpowersystems

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<sup>1</sup> IDC Quarterly Server Tracker Q210 release, August 2010

<sup>2</sup> More information on the binary compatibility of AIX can be found at [ibm.com/systems/power/software/aix/compatibility/guarantee/index.html](http://ibm.com/systems/power/software/aix/compatibility/guarantee/index.html)



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