

IBM Tackles Big Data Challenges with Open Server Innovation Model

IBM



ARMONK, NY — IBM has debuted new [Power Systems](#) [1] servers that allow data centers to manage staggering data requirements with unprecedented speed, all built on an open server platform. In a move that sharply contrasts other chip and server manufacturers' proprietary business models, IBM through the [OpenPOWER Foundation](#) [2], released detailed technical specifications for its POWER8 processor¹, inviting collaborators and competitors alike to innovate on the processor and server platform, providing a catalyst for new innovation.

Built on IBM's POWER8 technology and designed for an era of [Big Data](#) [3], the new scale-out IBM Power Systems servers culminate a \$2.4 billion investment, three-plus years of development and exploit the innovation of hundreds of IBM patents — underscoring IBM's singular commitment to providing higher-value, open technologies to clients. The systems are built from the ground up to harness Big Data with the new IBM POWER8 processor, a sliver of silicon that measures just one square inch, which is embedded with more than 4 billion microscopic transistors and more than 11 miles of high-speed copper wiring.

"This is the first truly disruptive advancement in high-end server technology in decades, with radical technology changes and the full support of an open server ecosystem that will seamlessly lead our clients into this world of massive data volumes and complexity," said Tom Rosamilia, Senior Vice President, IBM Systems and Technology Group. "There no longer is a one-size-fits-all approach to scale out a data center. With our membership in the OpenPOWER Foundation, IBM's POWER8 processor will become a catalyst for emerging applications and an open innovation platform."

IBM's POWER architecture is the cornerstone of innovation for the OpenPOWER Foundation, creating a computing platform available to all. The Foundation — representing 25 global technology providers and growing — was founded by IBM, Google, NVIDIA, Mellanox and Tyan. The group announced on April 24, 2014, an innovation roadmap detailing planned contributions from several of its members, with IBM's Power Systems as the first servers to exploit OpenPOWER technology.

POWER8 Systems: Delivering Open Innovation to Put Data to Work

The IBM Power Systems are designed for a new era of Big Data, helping technology leaders who are faced with managing new types of social and mobile computing and the explosion of data generated each day.

FIS, a provider of payment processing and banking solutions that manages critical financial data for thousands of companies around the world, has expressed excitement about the new POWER8 systems, especially when combined with IBM FlashSystem storage arrays.

"FIS is excited about the anticipated capabilities and performance of the combination of IBM POWER8 and IBM FlashSystem storage arrays," said MaryEllen Adam, FIS, Senior Vice President of Large Financial Institutions Product Management. "We expect higher utilization and performance capabilities along with the flexible computing resources needed to meet our client's application processing and business delivery requirements. POWER8's secure-key cryptographic accelerator and cryptographic coprocessor functions combined with FlashSystems' enterprise ready extreme performance and application latency reductions capability provides an infrastructure that is critical to the success of today's core banking application environments."

To help address this data deluge, IBM is also announcing three new Power Systems solutions optimized for the unique requirements of Big Data and analytics solutions. Leveraging the POWER8-based systems together with the company's Big Data and analytics software portfolio, the solutions enable organizations to put data to work in real time. The new technologies, IBM Solution for BLU Acceleration, IBM Solution for Analytics and IBM Solution for Hadoop, are optimized for IBM's new Power Systems to deliver quick insights on both structured and unstructured data. For example, the new IBM Solution for Analytics provides speed of insight for today's data driven analytical, computational and cognitive workloads through integration with Cognos, SPSS and DB2 with BLU Acceleration.

According to IBM test results, the IBM Power Systems are capable of analyzing data 50 times faster than the latest x86-based systems.² Certain companies have reported analytics queries running more than 1,000 times faster, reducing run times from several hours to just seconds.

Linux Developments: Collaboration with Canonical, PowerKVM

Recognizing Linux as a driving force for innovation, IBM last year [committed \\$1 billion](#) [4] (USD) in new Linux and other open source technologies for IBM's Power Systems servers. Major investments include new products, a growing network of five [Power Systems Linux Centers](#) [5] around the world and the [Power Development Platform](#) [6], a no-charge development cloud for developers to test and port x86-based applications to the Power platform.

Building upon that commitment, IBM unveiled two Linux developments that fortify rapid cloud innovation on POWER8 systems:

- availability of Ubuntu Server 14.04 LTS, Ubuntu OpenStack and Juju service orchestration tools, on POWER8 systems; and
- introduction of [PowerKVM](#) [7], a Power Systems-compatible version of the popular Linux-based virtualization platform KVM, on all POWER8 systems that run Linux exclusively.

IBM's collaboration with Canonical, the commercial sponsor of Ubuntu with more than 20 million users worldwide, provides easy migration for applications to Linux for cloud deployments to deliver Big Data and mobile software applications and to boost the performance of existing applications across cloud platforms. IBM is offering the latest release of Ubuntu Server, Ubuntu OpenStack and Canonical's Juju cloud orchestration tools on the new Power Systems announced today and all future POWER8-based systems.

This complements the existing support by IBM for Red Hat and SUSE Linux operating system distributions on its complete lineup of Power Systems.

Power Systems Scale-Out Servers: Changing Data Center Economics

The first POWER8-based systems to debut are five Power Systems S-Class servers designed for large, scale-out computing environments. With industry-leading server quality and utilization levels, the new line-up redefines today's data center economics – by helping to reduce floor space, power and cooling costs. IBM has designed these systems to operate at industry-leading levels of efficiency, guaranteeing the system will perform as warranted while at a sustained 65% utilization -- a rate higher than common x86 utilization levels.³ With twice the data throughput compared to an x86-based server, the new Power Systems can help cut data center footprints in half.⁴

With availability beginning June 10, the new scale-out S Class servers include two systems that run Linux exclusively – the Power Systems S812L and S822L servers. The three additional offerings, the Power Systems S814, S822 and S824 servers, provide clients the choice of running multiple operating systems including Linux, AIX and IBM i. Available in 1 and 2 socket and 2U and 4U configurations, the starting price of the new servers is \$7973⁵ (\$200/month for 36 months).⁶

For more information, visit the Power Systems launch page at <http://www.ibm.com/systems/power/announcement.html> [8].

References

¹ See Technical Downloads section on the OpenPOWER Foundation website at <http://openpowerfoundation.org/technical/technical-downloads/> [9]

² Based on IBM internal tests as of April 7, 2014 comparing IBM DB2 with BLU Acceleration on Power with a comparably tuned competitor row store database server on x86 executing a materially identical 2.6TB BI workload in a controlled laboratory environment. Test measured 60 concurrent user report throughput executing identical Cognos report workloads. Competitor configuration: HP DL380p, 24 cores, 256GB RAM, Competitor row-store database, SuSE Linux 11SP3 (Database) and HP DL380p, 16 cores, 384GB RAM, Cognos 10.2.1.1, SuSE Linux 11SP3 (Cognos). IBM configuration: IBM S824, 24 cores, 256GB RAM, DB2 10.5, AIX 7.1 TL2 (Database) and IBM S822L, 16 of 20 cores activated, 384GB RAM, Cognos 10.2.1.1, SuSE Linux 11SP3 (Cognos). Results may not be typical and will vary based on actual workload, configuration, applications, queries and other variables in a production environment.

³ Applies for 90 days following date of installation to POWER8 systems announced today that are purchased by December 31, 2014 and running specified workloads on PowerVM. Subject to all other terms and conditions of the guarantee, including a minimum purchase requirement.

⁴ Source: Capacity based on IBM Sizing of typical system performance and 3rd party analysis of system utilization (Source - <http://www-03.ibm.com/systems/power/software/virtualization/assets/platformmatters.html> [10]) . This is an IBM sizing designed to replicate a typical IBM customer workload used in the marketplace. The results are calculated and not an actual customer environment. IBM's internal workload studies are not benchmark applications and as such, customer applications, differences in the stack deployed, and other systems variations or conditions may produce different results and may vary based on actual configuration, applications, specific queries and other variables in a production environment. Power S822L - 34 servers (2S, 24 cores each), 816 total cores, POWER8, 3.0GHz, PowerVM. Commodity x86 servers - 100 servers (2S, 24 cores each), 2400 total cores, Ivy Bridge E5-2697 v2, 2.7GHz, VMware vSphere Ent. 100 x86 servers needed for ~ equal virtualized throughput of 34 Power S822L.

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Links:

[1] <http://www-03.ibm.com/systems/power/>

[2] <http://openpowerfoundation.org/>

[3] <http://www.ibm.com/big-data/us/en/>

[4] <http://www-03.ibm.com/press/us/en/pressrelease/41926.wss>

[5] <http://www.ibm.com/systems/power/software/linux/centers/%E2%80%8E>

[6] <http://www.ibm.com/partnerworld/pdp/%E2%80%8E>

[7] <http://www-03.ibm.com/systems/virtualization/kvm/>

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[10] <http://www-03.ibm.com/systems/power/software/virtualization/assets/platformmatters.html>