

Tech Outlook



Harnessing the POWER for Big Data

IBM's POWER8-based Power Systems deliver 'scale-up' benefits in a 'scale-out' architecture.

For years, the term “information technology” has tended to emphasize the technology component over the data being processed, accessed and stored. That is no longer the case. We have entered the era of “Big Data,” as organizations seek business insight from the massive amount of informa-

tion collected and stored by today's systems and applications. Once an esoteric concept embraced by a handful of large enterprises, Big Data has become a mainstream trend among organizations of all sizes.

According to a Techaisle study of midmarket companies, Big Data ranked No. 8 among their Top 10 IT Priorities for 2014. For small to midsize businesses (SMBs), Big Data ranked No. 9. Business intelligence and analytics ranked even higher, at No. 5 and No. 3, respectively.

These organizations are looking to next-generation business analytics tools to examine historical data and detect patterns that will improve decisions. Companies that can understand

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TECH OUTLOOK

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Big data is THE NEW NATURAL RESOURCE and it's growing...fast



Are you tapping into the new currency of data?
Are you generating real-time insight from analytics?



80%
of CEOs depend on data for insight to make decisions



3.6x
Businesses using analytics are likely to outperform their peers¹

IBM DB2 with BLU Acceleration on IBM Power Systems provides the game changing innovation you need to become a leader in analytics

Super FAST

Screen transactions faster and more frequently for better fraud prevention

50x Faster insight with next generation in-memory computing²

Enhance performance with **Power Systems**, built with the first processor designed for big data

Super SIMPLE

Shorter time to business value with less maintenance and upkeep

2 step process to **LOAD AND GO**



Create table
Load data
DONE.



Indexes,
Aggregates,
Tuning

Super EFFICIENT

Dramatically lower costs with exceptional price-performance advantages



46x
Better price-performance for analytics reporting³



10x
Client reported storage space savings⁴

Choose DB2 with BLU Acceleration on Power Systems so you can dramatically speed and simplify the delivery of business insight.



BLU Acceleration is a game changer for in-memory computing; super fast, simple, and efficient.

POWER

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their customers, business partners, supply chains and operations more precisely can cut costs, speed time-to-market and increase revenue.

“As organizations look to tap the value of Big Data, they often need to rethink the server architectures in their data center,” said Matt Merriman, VP of Professional Services, ProSys. “Choosing the right server technology is critical to the success of any Big Data initiative.”

Commodity server hardware in a “scale-out” architecture works well for line-of-business applications in the typical environment. However, Big Data workloads require performance as well as scale to handle massive amounts of data.

“Big Data changes the conversation regarding ‘scale-up’ versus ‘scale-out’ architectures,” Merriman said. “Organizations need servers like IBM’s new POWER8-based Power Systems that can scale both vertically and horizontally to support Big Data analytics.”

Power at Scale

Organizations have traditionally used a scale-up architecture to support computationally intensive applications, leveraging robust servers with more processors and memory to meet computing demands. The downsides of such an environment include the upfront cost of the servers, potential vendor lock-in and limited upgradability.

A scale-out architecture uses a larger number of servers with less processing power and memory, which is generally cheaper and can scale virtually indefinitely. However, such servers often lack the power to support Big Data analytics.

IBM has bridged this divide with its next-generation Power Systems servers. Designed for the Big Data era, the new servers provide the horsepower for compute-intensive analytics processes in a scale-out architecture. They feature 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.

The POWER8-based systems together with IBM’s Big Data and analytics software portfolio enable organizations to put data to work in real time. In addition, IBM has introduced new technologies — including IBM Solution for BLU Acceleration, IBM Solution for Analytics and IBM Solution for Hadoop — that are optimized for the new Power Systems to deliver quick insights on both structured and unstructured data.

“According to IBM test results, the IBM Power Systems are capable of analyzing data at least 50 times faster than comparably configured x86-based systems — 82 times faster for IBM Power Systems running BLU Acceleration,” said Merriman. “Certain companies have reported analytics queries running more than 1,000 times faster, reducing run times from several hours to just seconds.”

Redefining 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 lineup redefines today’s data center economics by helping to reduce floor space, power and cooling costs.

“Two of the downsides of a scale-out architecture are an increased data center footprint and higher utilities costs,” Merriman said. “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 percent utilization. The new Power Systems also deliver twice the data throughput compared to an x86-based server, meaning that fewer systems are required for the job. As a result, these systems can help cut data center footprints in half.”

The new POWER8-based Power Systems also underscore IBM’s commitment to open source solutions. Recognizing Linux as a driving force for innovation, IBM last year committed \$1 billion in investments for new Linux and other open source technologies for its Power Systems servers. In addition, the POWER8 processor is available for license and open for development through the OpenPOWER Foundation.

“These new servers allow organizations to manage staggering data requirements with unprecedented speed and scalability, all built on an open server platform,” said Merriman. “With IBM’s POWER8-based Power Systems, organizations can tap the performance benefits of a scale-up architecture and the unlimited growth potential of a scale-out environment. It’s a powerful combination for organizations looking to take advantage of Big Data analytics.”

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In the Mail

Growing complexity is straining the framework, but on-premises email remains the standard for business communication.

Email is perhaps the original “killer app,” an application so effective and easy to use that it sparked the rise of the personal computer and the spread of the Internet. Today it is de facto standard for business communication, supplanting the phone and even personal meetings in most organizations.

“Email has become critical to businesses of all sizes,” said Suaad Sait, ex-

ecutive vice president of software maker SolarWinds. “Just try shutting it down for 10 minutes and observe the outcry. In fact, in the business hierarchy of need, only Internet connectivity trumps email, with everything else in tow.”

Email is such a part of the basic fabric of business communications that it has become easy to take for granted. However, relentless growth combined with disruptive technologies such as mobility and “Bring Your Own Every-

thing” (BYOx) are challenging administrators’ ability to keep this oft-neglected application up and running.

According to a recent study by the Radicati Group, there are approximately 4 billion active email accounts worldwide, with one-quarter of those identified as business accounts that generate 100 billion emails per day. Email Analytics reports that more of that email is now read on mobile devices than on desktop clients.

“Contrary to logic, as email matures it’s getting harder to manage,” said Sait. “The industry as a whole has not given email management the attention it deserves.”

Not So Easy

Because email has been around so long and is so easy to use, there is a tendency to think of it as an uncomplicated technology. In truth, it has always been a fairly complex service to deliver because it requires the integration of so many components — servers, storage, operating systems, the platform software itself, as well as other supporting elements such as directories, filters, security, backup, e-discovery and archiving solutions. According to one survey of IT professionals, a typical email architecture might involve roughly 19 platform servers, eight servers for archiving, six for antivirus and another six for mobile device management.

In a survey conducted in February and March, SolarWinds found that IT managers and directors believe the increasing adoption of BYOx and mobile technologies is making email management even more complex. Eighty-seven percent of respondents said the mass adoption of smartphones and tablets has increased the amount of email sent and received. Fifty-three percent say they now use three or more tools to manage the email environment.

This fractured management creates significant risk for organizations in light of the fact that email accounts have become increasingly important data sources. By some accounts, about 45 percent

of an enterprise's business-critical information is stored in its email system. Workers routinely rely on email as the repository for messages containing important information such as negotiation details, agreements and customer commitments. Mimecast found in a recent study that 86 percent of workers rely on email as a search tool to find documents or information from within their inbox or archive.

"The research shows that the way the average employee uses email at work has changed," said Peter Bauer, CEO and co-founder, Mimecast. "For many people, email is no longer just a messaging system. It has become the primary tool for storing, sharing and searching for information. This is why we are seeing information workers increasingly becoming 'inbox workers' — they rely on email for all aspects of their job and spend, on average, 50 percent of their working day using email."

Cloud Reluctance

Some organizations have begun to explore cloud-based hosted email platforms in order to relieve some of the management burdens. However, most IT decision-makers remain reluctant to move the responsibility for email outside the organization. In the SolarWinds survey, 74 percent reported that they maintain on-premises email systems.

There are a number of advantages to maintaining in-house email, including the ability to support a large number of operating systems and virtualized environments, greater control over targeted email broadcasts, and the ability to reuse existing servers and storage to improve TCO.

Security and regulatory compliance remain the chief reasons for maintaining in-house email. On-premises email ensures complete control over the custody of data, which is not entirely possible with a cloud provider. Cloud-based solutions don't always include data loss prevention or encryption, which are critical for organizations with regulatory requirements.

Showing Some Backbone

Industry experts expect "next-generation" email systems will soon relieve IT staff of much of the management burden and give organizations even more compelling reasons to keep these critical systems in house. Some vendors are attacking complexity issues by adding intelligence to the email backbone, the middleware layer of an email infrastructure that handles message routing and policy management. An intelligent email backbone control point reduces complexity by managing authorizations, permissions, alerts and notifications for compliance, while also offloading much of the policy enforcement and message processing overhead from the email platform.

Some industry analysts expect on-premises solutions will eventually morph into overarching portals that allow employees to use social media, instant messaging and other communication channels from within the email client. This "frictionless" communication will better serve the "anywhere, any device" needs of the modern workforce.

Email has been a great business tool for many years because it is easy to use and it gets the job done. Even though new demands are straining the basic framework, most industry experts predict that next-generation advances will allow email to hold its title as the champion of business communications for some time to come.

Inbox Zero

It's been estimated that the typical office worker sends and receives more than 100 emails per day, has thousands of items in his or her inbox and spends roughly 25 percent of the workweek reading, deleting, sorting, searching and sending emails.

The "Inbox Zero" movement came about in response to this email overload.

Speaker, blogger and broadcaster Merlin Mann coined the term to describe a rigorous approach to personal email management aimed at keeping the inbox empty, or close to it, at all times. Some have taken this theme to the extreme by simply deleting everything in the inbox every day. That's really not quite the point.

According to Mann, the idea is to halt the practice of using the inbox as a "to-do" list in which emails represent tasks, actions or appointments that must be dealt with in the future. Instead, he says, take one of five actions with each email: delete, delegate, respond, defer or do.

Some of Mann's other tips for email management:

- Don't leave the email client open. Only check email periodically throughout the day.
- Immediately respond to any new messages that can be answered in two minutes or less.
- Those emails requiring more than two minutes should be moved into a separate "requires response" folder. Set aside time each day to respond to everything in this folder.
- Delete or archive as many new messages as possible.
- Forward anything that is best answered by someone else.
- Cancel mailing lists and other robot messages.
- Use templates for basic boilerplate responses.

Speeding Up Wi-Fi



The new 802.11ac Wi-Fi standard delivers up to Gigabit speeds, making wireless networks as fast as their wired counterparts.

A wireless network was once a “nice-to-have” technology that companies set up in the conference room for executives with laptops. No longer. Organizations of all sizes have come to rely upon their wireless LANs (WLANs) for day-to-day operations. More than a mere convenience, WLANs enable greater efficiency, productivity and customer service, all of which contribute to a bigger bottom line.

WLANs give employees anytime, anywhere access to the business applications and data they need from their favorite mobile devices. No longer tied to their desks to do their jobs, they become more accessible, available and collaborative.

But simply having a WLAN is not enough. Much of the value derived from the WLAN comes from access to bandwidth-intensive applications and collaboration tools such as videoconferencing. Many organizations are finding that their existing wireless networks lack the speed, coverage, capacity and reliability to meet today’s business demands. To

help satisfy the hunger for ever-faster WLANs, the Institute of Electrical and Electronics Engineers (IEEE) has ratified a new Wi-Fi standard — 802.11ac — that promises to deliver Gigabit speeds.

802.11ac has the potential to provide data speeds of around 1Gbps — comparable to many wired networks. Actual performance is dependent upon a number of technological and environmental variables. But organizations will see dramatic performance improvements with 802.11ac compared to older Wi-Fi protocols.

The Nth Degree

In order to understand the technology behind 802.11ac, you have to look at its predecessor, 802.11n. It gave a real boost to WLAN performance, with theoretical raw data rates of 500Mbps or more.

While older 802.11g technology provides real WLAN throughput in the 20Mbps to 25Mbps range, 802.11n delivers at least 100Mbps by improving the efficiency of data

communication. It also uses more of the wireless spectrum, when available, to enhance performance. While 802.11g uses 22MHz-wide channels, 802.11n supports up to 40MHz-wide channels. In addition, it is designed to resist interference from neighboring Wi-Fi systems and 2.4GHz devices.

But the heart of 802.11n is a technology called MIMO — short for multiple input, multiple output — that employs multiple antennas and radios to transmit and receive data. This not only increases bandwidth but provides greater coverage, enabling very high-speed connections over distances of 150 feet or more. As a result, a state-of-the-art 802.11n WLAN can achieve speeds of 300Mbps using two spatial streams, and speeds of up to 600Mbps using three or four spatial streams.

The 802.11ac standard features these proven technologies along with a further increase in the radio channel. Just as 802.11n increased throughput by doubling channel width from 22MHz to 40MHz, 802.11ac provides even greater speeds thanks to wide 80MHz channels. In addition, 802.11ac uses the 5GHz band, easing congestion in the crowded 2.4GHz band used by most wireless devices.

Catching the Wave

802.11ac products are being introduced in two “waves.” Wave 1 products, which are available now, use the less-crowded 5GHz band and 20MHz, 40MHz and 80MHz channels. Although Wave 1 access points (APs) generally support three spatial streams, many tablets and smartphones are single-stream devices, resulting in a wide variety of data rates.

Wave 2 products support a new technology called multi-user MIMO (MU-MIMO) that maximizes the number of megabits transmitted per megahertz of spectrum. MU-MIMO improves upon the capabilities of the 802.11n technology by supporting up to four simultaneous user transmissions on each spatial stream. 802.11ac also doubles the number of spatial streams from four to eight. This allows for much higher user density.

With any WLAN technology, the real throughput is generally a fraction of the theoretical throughput. Thus, the Gigabit data rates of 802.11ac will likely exist only in ideal conditions. However, early adopters have seen consistent throughput in the 400Mbps to 800Mbps range for 802.11ac devices, better performance for 802.11n devices, and increased range and density.

The adoption strategy for 802.11ac depends upon your technology roadmap. If you’ve recently deployed 802.11n and haven’t noticed any bottlenecks, you might want to wait for Wave 2 equipment. But if you need better performance, have adopted 802.11ac devices or are still using older Wi-Fi protocols, Wave 1 equipment may make good sense. Either way, 802.11ac is a must-have technology for any organization that depends upon its WLAN.



The Next Step in Wireless

Cisco’s Aironet 3700

Series is the next generation of wireless access points, supporting the new 802.11ac Gigabit Wi-Fi standard. Designed for high-density network environments that utilize mission-critical, high-performance applications, the Aironet 3700 provides data rates of up to 1.3 Gbps, roughly triple that offered by today’s high-end 802.11n access points.



Contact ProSys to learn more.



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Put Your Data to Work.

Businesses are amassing a wealth of data and IBM Power Systems are built to store it, secure it and put it to work to deliver extract actionable insight.

Incorporating IBM's new POWER8 processor, the newest Power Systems are designed for big data. From operational business intelligence to predictive analytics, 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.

The POWER8 processor combines the computing power, memory bandwidth and I/O in ways that are easier to consume and manage. The chip, and the Power Systems servers that run on it, are also designed for better cloud economics for scale-out infrastructures, price-performance advantages and security.

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