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Open-Source Software Thrives With Power Systems Infrastructure



Open source is now a linchpin of IT strategy when it comes to modernization, hybrid cloud and more—but it didn't gain this universality instantly. The story traces back to the beginning of the century, with IBM's heavy investment in Linux development, but pervasive open-source usage to the degree we're seeing now is a much more recent development.

With its built-in reliability, security, stability and availability, the IBM Power Systems platform is ideal for hosting critical enterprise workloads across hybrid cloud infrastructures. These strengths, paired with open-source integration, can help organizations keep data ready for modern innovations.

Many Power Systems clients already rely on open-source software to modernize applications, develop and grow hybrid cloud environments, host unstructured, non-relational data and more. Those new to the open-source game should start small and take advantage of commercially supported open-source solutions.

Creating effective modernization and hybrid cloud strategies is not simple, but it's possible through a combination of open-source software and Power Systems infrastructure.

Keelia Estrada Moeller, Senior Editor

The Business Value of Open-Source Software

IDC's AI Gillen on the rise of open-source software, why it's valuable from a Power Systems perspective and how it contributes to modernization and hybrid cloud strategies

BY NEIL TARDY

Open source is now thoroughly part of the IT mainstream. According to the **Red Hat 2020 enterprise user report**, 95% of almost 1,000 enterprise IT leaders viewed open source as “strategically important to their organization’s overall enterprise infrastructure software strategy.”

Note that the collective of respondents did not constitute a Red Hat echo chamber. Not all respondents were Red Hat customers and for some, their use of enterprise

open-source software and/or Linux was minimal. And **no one was told that Red Hat sponsored the survey.**

Of course open source didn't gain this degree of ubiquity overnight. While this story can be traced to the beginning of this century, when IBM began investing heavily in the development of Linux, the increased and varying usage of open source that's taking place in enterprise environments is a much more recent occurrence.

The Rise of Open Source

IBM Power Systems clients now rely on open-source tools and solutions to modernize applications, develop and grow hybrid cloud environments, host unstructured, non-relational data, and much more.

“We have seen open source accelerate tremendously, just over the past three years,” says IDC’s AI Gillen, group vice president, software development and open source. “But one of the things I think is most interesting is that open source has changed its role.”

Gillen explains that initially, development in the open-source community took on a “followship” approach by replicating existing technologies (e.g., early open-source databases borrowed from the designs of proprietary mainstays like Db2 or Oracle).

“Basically the community was trying to replicate something that already existed,” says Gillen. “Today that model has completely flipped. Essentially everything being built in open source today is original, and it’s open source from day one.”

The development of these solutions comes at a good time for Power Systems clients, many of which seek to modernize. “People often jump to the conclusion that the benefit of open source is the low or no cost of the



software, but that's not the primary benefit," says Gillen. "Customers tell us it's more about the fact that they are able to build modern applications and take advantage of some of the emerging technologies."

Open Source, IBM i and AIX

In recent years, while the open-source community was providing an array of solutions, IBM was making it easier for Power Systems clients to acquire what they needed. To better serve IBM i installations, in 2018 the company overhauled and simplified its delivery mechanisms by switching to a Jenkins-based continuous integration, continuous delivery and **continuous deployment (CI/CD) system**. That paved the way for greater choice—nearly 300 IBM i-capable open-source packages were made available at the time, and of course that number continues to climb. On the AIX side, where a similar delivery process was already in place, IBM has continued to update and add packages to its AIX Toolbox while improving compatibility between AIX open-source download sites. In addition, building blocks have been provided for AIX patching, while VIOS update use cases for cloud automation tools like Ansible, Chef and Puppet have been made available. Finally, clients can use Python learning machine packages to **write AI applications**.

Open Source: Offering Advice, Addressing Misconceptions

Gillen says that organizations that are new to or ramping up their use of open source should keep it simple. That's an often-overlooked advantage of commercially supported open-source solutions. "I strongly encourage starting with commercially supported options because they take a lot of the complexity off the table," he says.

In the broader picture, Gillen sees commercially supported open source as a potential cost-saver, because IT staff don't need to spend time supporting it.

"There are places where community-supported software makes sense, the developer space in particular," he explains. "And yes, there's cost associated with commercial support, but typically the subscription costs are lower than the licensing costs of commercial proprietary products. So you have savings there. Plus you don't have to worry about whether all of the components have the right licensing or are verified as malware free. Those are the kind of costs that can add up very, very quickly."

Another misconception about open source comes in the area of security. Now, to be sure, breaches caused by **open-source vulnerabilities** are an increasing concern. Our online world requires hyper vigilance to all aspects of

IT security. However, the structure of open source—its openness, if you will—isn't inherently faulty.

“Security is always a concern, but I disagree with the suggestion that open source is insecure because it's open. In fact in a lot of respects, it's the other way around,” Gillen says. “Because it's open and lots of people are looking at these software products, there's a pretty good probability that if somebody injects malware into a project, it will be noticed. That's the point of the community. Peer review takes place all the time.”

“Where the risk really starts to occur is where dependencies are pulled in by a particular project again and again,” he adds. “So at the end of the day, you're pulling in different libraries and different components from all over the place. If you don't have good visibility into all those individual things that are being drawn in, that's where your risk comes from.”

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—AL GILLEN, GROUP VICE PRESIDENT, SOFTWARE DEVELOPMENT AND OPEN SOURCE IDC

The Future of Open Source

20 years ago, the value of open source wasn’t completely apparent. The Linux penguins were cute, but what business value did it provide? Today, Power Systems users understand that open source is the future. Its openness is providing the way forward.

For instance, according to the **2021 IBM i Marketplace survey** conducted by IT management software solution provider HelpSystems, 51% of respondents are concerned with application modernization. With IBM i programming skills ever-scarce, open-source developers are filling that gap.

The annual survey, for the first time, offers insight into the growth of open source on the platform. Use of

development languages such as Python and Node.js is approaching 15%. A few are dabbling with Ruby and Perl. And of course Java and PHP are even more widely in use.

All this means is that Power Systems installations have options. They **don’t need IBM i or AIX-specific skills to modernize**, or “cloudify.” When looking to hire programmers, they don’t need to mention a platform at all. (And perhaps they shouldn’t.)

“You can bring in developers that don’t know IBM i or AIX; it doesn’t matter,” says Gillen. “What matters is that they know how to build applications, and the system takes care of running those applications. I won’t say that modern development skills are readily available, but those skills are a lot easier to find than platform-specific skills.”

Why Certificate Rotation Matters to Your Kubernetes and OpenShift Clusters' Security

BY DAVID BISSON

A portable, open-source platform, **Kubernetes** helps administrators manage their containerized workloads and services using declarative configuration and automation. The idea behind Kubernetes is to administer all of an organization's deployed containers to ensure that there is no downtime. Kubernetes facilitates this work by using load balancing to distribute the container network traffic, to change the actual state of the deployed containers to a user-defined desired state at a controlled rate and to kill containers that don't respond to a health check set forth by the administrator.

Even so, most organizations aren't using Kubernetes to its full potential. **Volterra** released a 2020 report in which it found that 56% of its respondents were using the platform. But a closer look revealed that just 10% of those survey participants were running a majority of apps in the platform.

While some are choosing to hold back on their engagement with the platform, other organizations are choosing to partner with vendor-managed Kubernetes platforms to help them address those challenges. **Red Hat OpenShift** is one such platform. OpenShift manages clusters that use control planes for maintaining a cluster's overall state and worker nodes for running containers. This enables OpenShift to positively contribute to the security of organizations' Kubernetes deployments.

The fact that both Kubernetes and OpenShift rely on clusters is important to organizations' digital security. Organizations therefore need to make it a point of rotating their OpenShift and Kubernetes certificates.

[Read the full article](#)

Developing a Multicloud Strategy With Power Systems Infrastructure, NoSQL and Open Source

NoSQL: High growth open-source databases and software—
in a hybrid cloud environment

BY ALEX WILLIAMS

It's not just a need for the latest in mobile and branchless banking operations that's driving the demand for private cloud services. A **2019 survey** found that 94% of almost 800 technical professional companies (across a broad cross-section) used cloud computing to some degree or the other; while 84% were multicloud. This data suggests that optimally storing hybrid cloud data is a critical issue, whatever the sphere. Global IT enterprises today are heavily investing in a combination of public/private cloud and on-premises infrastructure. The race is on, but to where exactly?

With built-in stability, reliability, security and availability, the IBM Power Systems platform is ideal for hosting critical enterprise workloads across hybrid cloud infrastructures. NoSQL databases provide a naturally high-scalability flexible open-source data source Power architecture operating with the cloud. And, the Power Systems platform offers NoSQL developers essential capabilities like availability, adaptability and security, boosting business application operations via hybrid **multicloud** environments. This combination, paired with close open-source integration, can help you keep your enterprise data ready for modern innovations.

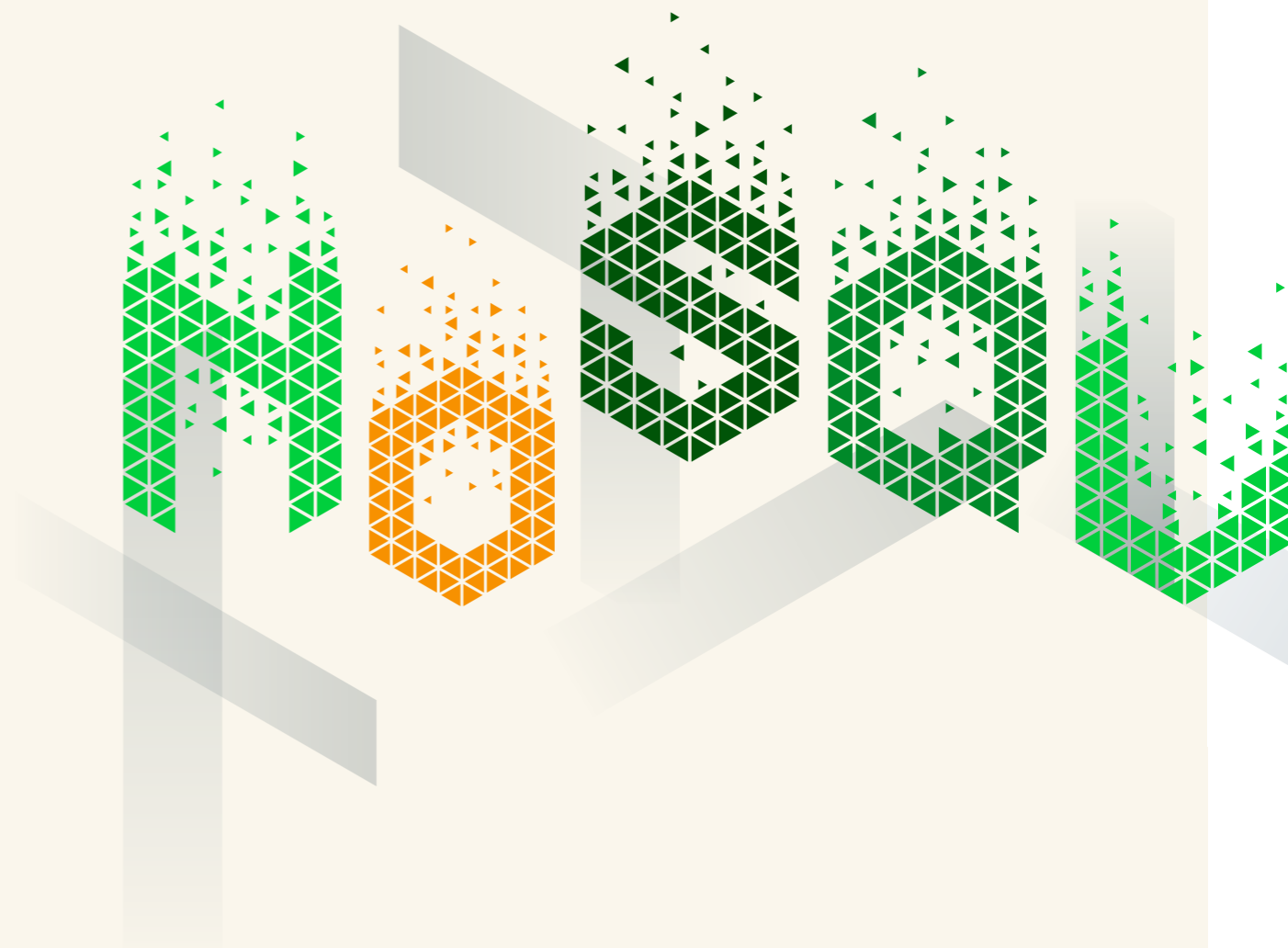
NoSQL, Open Source and the IBM Power Systems Platform

Two years ago, **IBM posted** about its approach to SQL versus NoSQL, echoing experts in this area who are aware of their increasing interchangeability. Whether described as middleware or GUIs, these varied interfaces are bridging (not quite closing, as the extra effort is still required) the gap between the two. Power Systems infrastructure itself allows for intermediary SQL technologies such as **PostgreSQL**, which offers scale-out/JSON-like features.

As for a naturally high-scalability database offering: **NoSQL** is a broad category of data storage, also known as “Not Only SQL” because it can now be both high-integrity while retaining its reputation as a highly flexible data storage solution. With that in mind, this storage type is naturally well-suited for full integration into the Power Systems platform.

And of course, “open source” simply means that source codes created during each related product’s lifecycle are freely available for modification and redistribution by any developer, which is speeding this transformation. As for Power Systems infrastructure, NoSQL and open source—multiple analysis levels can be used to further understand their increasing symbiosis, including:

- 1. Energy restructures:** This is the widest perspective. The U.S. in particular is currently restructuring its electric power industry to better align and incentivize cost management with supply and demand forces, and to implement certain innovations so that markets better reflect real-world performance. Open-source software (OSS) helps model electricity markets (i.e., traders and regulatory agencies can operate in greater harmony in real time with increasingly realistic renderings of transmission grids).



2. Flexible shared data: Broadly speaking, NoSQL databases act as a naturally high-scalability flexible open-source data source for Power Systems infrastructure operating with the cloud. Data can be stored without rigid schemas, seamlessly adapting to new data storage demands: videos, audio, app features, etc. The need for scalable data storage is one reason **modern NoSQLs** have exploded since the early 2000s.

3. Continuous operational adaptations: Power Systems infrastructure offers NoSQL developers essential capabilities like availability, adaptability and security to massively boost business application operations via hybrid **multicloud** environments. Mission-critical workloads can be more efficiently managed in order to meet the demands of new services and applications. This also will increasingly



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include AI utilization to boost useful analytical insights, and enhanced transactional security via blockchain.

As long as you take proper precautions, as with any tool, open source doesn't equate to any additional **application security risks**. One advantage is a decreased chance of downtime as resources are distributed across many servers. Nevertheless, a misconception exists that cloud security is riskier and more accessible to hackers than on-site IT.

AI and Power Systems Infrastructure

A last word on AI (**increasingly used by Power Systems infrastructure**), which I've so far only briefly mentioned: a **Purdue University study** on big data technologies proposed the ideal setup for data science: unstructured, scalable, non-relational big data with super-efficient computations made inside an open source "high performance information technology infrastructure" (with distributed data-management in real-time). With everything we know about NoSQL, that sounds familiar.

NoSQL databases are evolving toward addressing storage performance requirements found in computational

engineering than the RDBMS model. In the study's own words, "recent trends in computational engineering strongly advocate a non-relational model of data storage."

Keeping up With Application Development Trends

Big data, mobile access, social apps and cloud computing have seen explosive growth, which impacts application development in the following ways:

- Less time for building
- More competition
- Accelerated development timeline


Unstructured data interactions (e.g., videos, audio, images) are the norm. Traditional databases can struggle to handle this; billions of rebellious streams made by millions of users are trickier to fit into SQL databases, though intermediaries like PostgreSQL are available. "Not Only SQL" tools like MongoDB manage to merge NoSQL innovativeness and scalability with the integrity of relational databases.

And, as the **electrical energy landscape** gets restructured, keystones are being set in order to allow a future wave of innovations that can tightly interlock exceptionally complicated strategic applications that merge operational capabilities across public/private clouds and traditional on-premises IT.

Ultimately, for now people are sticking with simple workloads. But while the focus is on tightly knitting performance outcomes with supply and demand, this is only readying the steps required for a leap that merges hybrid transmission streams.

Creating an Effective Multicloud Strategy

Creating an effective multicloud strategy is not simple by any means, but it's possible through a combination of NoSQL, open source and Power Systems infrastructure. NoSQL databases are highly scalable and flexible by default and they make open-source integration seamless. On the other hand, the high stability, security, reliability and availability of the Power Systems platform allow for hosting enterprise-level workloads. With an effective multicloud solution like this, your data, no matter the size, will be ready for modern restructuring.



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