



Adopting secure, supported open source software for the mainframe: advantages and where you'll need help



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Overview

Adopting secure, supported open source software for the mainframe: advantages and where you'll need help

Open source software began as a revolutionary idea that system administrators and developers should have access to free — or “open” — source code to create and use quality software. That idea has since grown into an imperfect but proliferate ecosystem of collaborative communities that have developed some of the most important operating systems, platforms, tools, and languages available, addressing today’s most pressing business and customer needs.

Organic collaboration, innovation, and adaptability are fundamental to open source. This is how open source generates so many benefits for developers, teams, and organizations:

- Higher quality at lower costs
- Fluid adaptability and extensibility so developers can meet local needs quickly

- Faster onboarding and gentler learning curves
- Modernized infrastructure and application development
- Consistent agility, speed, and responsiveness to the volatility of markets
- Frictionless access to numerous technologies and the ability to implement at your organization’s desired pace

Dismantling IT silos and implementing continuous software updates and testing have fueled open source growth and proven its value. Today, open source is reaching historically rigid computing platforms like the mainframe, **which is used by 92 of the world’s top 100 banks, the world’s leading 10 insurers, and 70% of Fortune 500 companies.** As mainframe shops have embraced DevOps and modernization to address new challenges, more have begun to consider and adopt open source tools and languages. But it hasn’t always been this way.

Mainframe modernization challenges without open source

Historically, open source communities have ignored the mainframe — and the mainframe community has ignored open source, due to maintenance and security concerns and other barriers to entry. The mainframe community has long upheld a culture and tendency to exist within a silo that prides itself on proficiency with esoteric languages, tools, and processes that contrast with many of the fundamental ideas behind open source. What's more, many of the languages and processes in mainframe development simply aren't compatible with open source tools and languages, at least not at first glance.

This is why the mainframe faces three existential threats: an exodus of legacy programmers leading to a widening skill gap; accelerating competition and shifting needs of customers; and rising costs of business. Rather than embracing open source software as their cloud and open system counterparts had done, mainframe shops looked to other means of modernizing and embracing DevOps, primarily through Linux on Z and closed source DevOps tools.

IBM's Linux on Z, intended to pave the way for open source on the mainframe, didn't hook zSystems® mainframe customers as expected. Most continued to depend on their existing z/OS® operating systems, and therefore, their existing closed source software.

In later years, as DevOps came to prominence, organizations began implementing proprietary closed source DevOps tools for mainframe development. This helped, but using closed source DevOps tools also carries many noteworthy disadvantages:

01

Proprietary DevOps tools are not free.

02

Maintaining two sets of different tools — one for mainframe, one for everything else — is costly.

03

Maintaining two different teams — one for mainframe, one for everything else — is costly.

04

Legacy programmers who understand legacy mainframe DevOps tools are increasingly unattainable.

05

Legacy tools are not adapted to agile processes, essential for the rapid delivery of features and fixes.

Despite the benefits that Linux on Z and proprietary DevOps tools have delivered for mainframe shops that desperately needed to modernize and accelerate, open source offers many more benefits and can now easily be leveraged in mainframe development.

Advantages of open source on z/OS

Rocket Software cracked the nut by porting open source to z/OS with automatic and transparent code page conversion. Now well-established open source DevOps languages and tools do, in fact, run on z/OS. You can leverage your multi-platform DevOps tool chain to build apps that run on and off the mainframe regardless of ASCII/EBCDIC character encoding requirements, and eliminate expensive silos.



Close your mainframe skills gap

The availability of established open source languages and tools on z/OS removes the need for developers to learn and adapt to unfamiliar legacy interfaces. Giving next-gen programmers languages and tools they are already familiar with empowers them to develop and manage mainframe applications with minimal learning curves.

Open source availability also eases the challenge most zSystems enterprises face with attracting next-gen talent. Removing the requirement to learn outdated tools that are irrelevant outside of a zSystems silo changes the next-gen developer's outlook on building a career on the mainframe. With open source, the mainframe becomes "just another platform" in a hybrid IT or hybrid cloud strategy. This enables developers to build transferable skills and experience across modern and emerging processes and technologies like DevOps, machine learning, and artificial intelligence, which are not exclusive to an IT platform but are part of a collaborative and innovative ecosystem that supports the customization of solutions for solving business and customer challenges.



Accelerate time to market

Modern open source DevOps tools and languages are key components of agile development practices, which are proven to deliver new products and features to customers in less time. Modern interfaces enhance developer productivity. Automation through DevOps and continuous integration/continuous delivery reduces manual effort throughout the software development life cycle. Other aspects of open source — ease of acquisition and downloading; continuous innovation and improvement; ease of customization — also contribute to accelerated time to market, further enhanced by the elimination of new-staff learning curves.

Save money

Cost savings is a major benefit of open source software's ability to eliminate silos. The most important cost benefit of silo elimination is lowered headcount costs: fewer people are necessary when you leverage the same tools and languages across platforms, and there is a reduced need to pay more for specific expertise. Secondary savings happen through the elimination of purchasing on-prem software. (Paying for open source services and support is less costly than typical on-prem software licenses and maintenance.)

What's more, the flexibility embedded within the application of these technologies helps dictate the limits of cost. Organizations can implement open source software at any pace, starting with a small utilization and expanding as desired. Additionally, the modernizing benefits of open source on the mainframe improve the bottom line by providing new opportunities for leveraging and profiting from vast stores of mainframe data.

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Challenges of open source on z/OS

Despite its benefits, open source is not without its challenges. Some of the more daunting concerns include the risks of security lapses through the widespread accessibility of collaborative and public programming, shortfalls in legal compliances, and working hours lost to time-consuming updates and bug fixes. And while many mainframe shops have shied away from implementing open source software, developers still download these free tools and languages without using appropriate channels for approval, opening their organizations to security and compliance risks.

Security concerns with open source on z/OS

The primary security concern with open source software is that it could contain vulnerabilities that bad actors might leverage to steal valuable business data or interrupt business services. Some view the concern as heightened with the fact that the source is open for all to see. Others view the concern as reduced because there are so many eyes on the code ensuring it is safe. Regardless, security needs to be addressed if you're adopting open source software for z/OS.

According to Sonatype's "8th Annual State of the Software Supply Chain" report:

"In 2022, the number of open source dependencies being downloaded and integrated into software grew by an estimated average of 33% across all the monitored ecosystems," including Java, JavaScript, Python and .NET. Inevitably, this growth creates new risk in organizations that are using open source more than ever.

As the report points out with 2022's Log4j vulnerability, open source dependencies can extend beyond what is obvious, which means "it's not enough to know where developers are using Log4j-core, organizations have to know all software that uses Log4j"—or any open source language or tool. The report continues, noting 88,000 known instances of malicious packages that have been captured in open source software, a 633% increase in attacks.

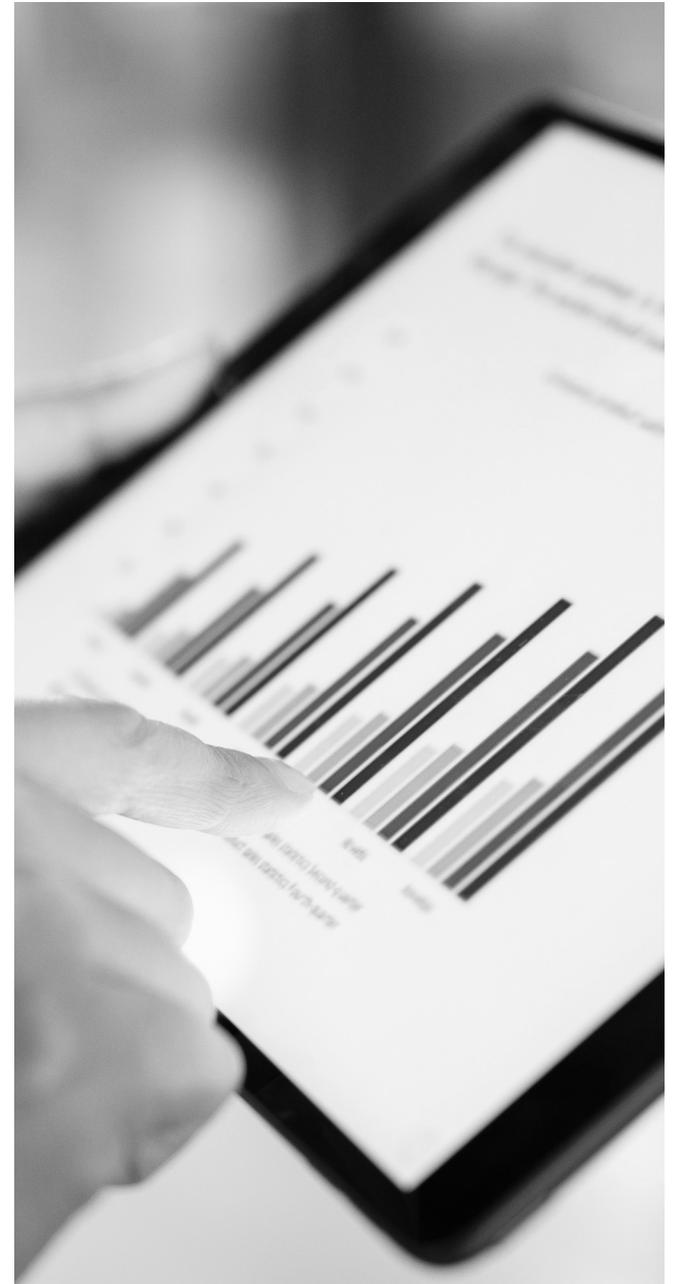
Compliance concerns with open source on z/OS

Security concerns are also compliance concerns to the extent that corporate and governmental oversight rules increasingly mandate security vulnerability mitigation processes. Additionally, corporate compliance rules for open source software often stem from the legal department seeking to ensure that no third-party intellectual property has been installed or worse, incorporated into a company's products in violation of licenses.

Maintenance concerns with open source on z/OS

Maintenance concerns for open source software overlap with both security and compliance concerns. Is your organization running the latest versions of open source, containing the fixes to the latest published security vulnerabilities? Are your developers downloading updates from trusted sources? Does your organization have support contracts in place, guaranteeing that the open source community you are relying on today will not disappear tomorrow without warning?

These risks are often sticking points when considering open source software for the mainframe. Consequently, many organizations have abstained from leveraging open source on the mainframe to prevent any possible security, compliance, and maintenance risks involved with open source; however, this also prevents the many rewards that come from using open source to modernize mainframe application development. The terrain between accessing rapidly improving technologies and leveraging the mainframe's wealth of data is perilous enough to necessitate trusted vendor support.



Launch secure, supported open source solutions for z/OS with Rocket Software

Rocket Software understands open source for z/OS because we've been advancing, securing, and porting open source on IBM zSystems for more than ten years and know both its strengths and its shortcomings. Secure, supported open source software for z/OS can help your organization:

01 Reduce costs associated with mainframe development while scaling open source implementation at your preferred pace.

02 Modernize mainframe application development and infrastructure by applying the latest innovations in software.

03 Accelerate mainframe application development and delivery with agile DevOps tools and languages.

04 Increase IT flexibility with reusable programming blocks and by reducing the need to modify packaged software.

05 Enable next-gen developers to be productive on z/OS without having a mainframe background.

Rocket Software also provides developer-oriented solutions and quick responses to software updates and patches, and curates open source products to ensure their security and currency with the National Institute of Standards and Technology National Vulnerability Database.

To learn more about Rocket Open Source Solutions for z/OS, including Rocket® Support for Zowe and Rocket® Open AppDev for Z, and how Rocket's 30-plus years of mainframe experience can help your organization modernize without disruption, <https://www.rocketsoftware.com/products/rocket-open-source>

About Rocket Software

Rocket Software partners with the largest Fortune 1000 organizations to solve their most complex IT challenges across Applications, Data and Infrastructure. Rocket Software brings customers from where they are in their modernization journey to where they want to be by architecting innovative solutions that deliver next-generation experiences. Over 10 million global IT and business professionals trust Rocket Software to deliver solutions that improve responsiveness to change and optimize workloads. Rocket Software enables organizations to modernize in place with a hybrid cloud strategy to protect investment, decrease risk and reduce time to value. Rocket Software is a privately held U.S. corporation headquartered in the Boston area with centers of excellence strategically located throughout North America, Europe, Asia and Australia. Rocket Software is a portfolio company of Bain Capital Private Equity. Follow Rocket Software on [LinkedIn](#) and [Twitter](#).

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