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Git and Mainframe Development: Considerations for Enterprises

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Executive Summary

Git is the de facto standard for version control for contemporary software development.

The mainframe continues to be strategically important to organizations because of its large-scale transactional processing capabilities, reliability, security, scalability and durability.

The use of Git for mainframe development streamlines the integration of modern development and DevOps tools and accelerates developer velocity and agility.

Organizations that use mainframes need to adopt a hybrid approach to software configuration management by supplementing their use of traditional mainframe software configuration management tools with Git.

Mainframes are Central to Contemporary Application Development

68% of full-time developers deploy applications they develop to the mainframe.

Source: IDC, *PaasView and the Developer*, 2021

Introducing Git

Git is a distributed, open-source version control system that enables developers to:

- **Keep track** of the history of source code
- **Revert** to a previous version
- **Clone repositories and create branches and forks** that may be subsequently merged into a codebase
- **Work in parallel** with their peers

Git is overwhelmingly the dominant version control system amongst contemporary developers.

Source: IDC, *PaasView and the Developer*, 2021

Git is a distributed version control system because **developers have access to the complete codebase of a repository**—including its full version history—**and have the freedom to make changes offline and branch and merge whenever required.**

Benefits of Using Git for Mainframe Development

DEVELOPER VELOCITY AND AGILITY

Development is accelerated because developers can access source code and work in parallel with their colleagues.

COLLABORATION

Collaboration is enhanced because developers can access source code in conjunction files in conjunction with their peers, thereby enabling developers to work together on code development.

MODERNIZATION

Opportunities to integrate with modern development tools such as IDEs, continuous integration and continuous development (CI/CD) tooling, automated testing and security analysis of code tools are enhanced.

TALENT

The universe of developers that can work on the mainframe is expanded to include Gen Z and Gen Y developers.

Git Complements Traditional Mainframe Software Configuration Management (SCM) to Make Development Faster

Mainframe developers have access to the complete codebase via Git, which enables them to manage the changes offline and create branches and merge them whenever required.

This ability to work in parallel with other developers means that development is no longer monolithic, and that developers can work concurrently on a multitude of application features and functionalities.

Git absolves mainframe developers of the need to track what other developers and team members are working on, and thereby reduces manual work associated with development-related planning and resource allocation.

Git notifies developers of code conflicts that arise as a result of merges and provides tools to adjudicate merge-related conflicts.

COLLABORATION

Git Enhances Opportunities for Developers to Work Together

Git facilitates parallel development and democratizes access to mainframe development, thereby amplifying opportunities for development-related collaboration.

Experienced mainframe developers that use traditional software configuration and library managers can work alongside Gen Z and Gen Y developers that use modern development languages, IDEs and tools.

Git standardizes development processes for mainframe and non-mainframe development.

As a result, **contemporary developers can use a familiar and consistent set of development tools** for developing on the mainframe.

MODERNIZATION

Git Facilitates Use of Modern Development Tools for Mainframe

Git streamlines the use of modern development languages and frameworks for the mainframe.

Git enables developers to perform cross-platform development that leverages the mainframe with modern tools such as mobile and cloud-based tools and infrastructures.

Git provides an on-ramp to the implementation of an enterprise-wide DevOps strategy by providing an infrastructure that integrates with popular CI/CD tools.

Organizations can choose whether to pursue a Git-native modernization approach, or a strategy that combines the use of Git with traditional mainframe SCM tools.

TALENT

Git Expands Universe of Mainframe Developers

Retiring mainframe developers are in the process of handing over responsibility for mainframe development to a newer generation of developers who are trained on modern development tools such as Git, VS Code, GitHub Codespaces, and CI/CD tools.

Git empowers modern developers who have little to no experience with mainframe development to develop for the mainframe.

Git expands the ability of organizations to recruit and retain developers for mainframe-based development.

Challenges to Adopting Git for the Mainframe

1

Organizations need to master communicating the value of using of Git to veteran mainframe developers.

2

Because of the importance of source code management to application development, IDC recommends that **the adoption of Git proceed incrementally** to ensure that developers who are used to traditional mainframe SCM tools are properly trained on the use of Git for the mainframe.

3

Organizations need to develop plans for accommodating the coexistence of traditional SCM tools with Git, in conjunction with long-term plans for standardization on Git.

Risks of Adopting Git for Mainframe Development

1

Resistance from experienced mainframe developers has the potential to derail adoption of Git for mainframe development.

2

Excessively rapid implementation of Git for mainframe may lead to code quality issues. The newer generation of developers may lack experience with mainframe development.

3

Developers need to be cognizant of the possibility of security risks specific to applications developed and deployed on Git.

Advice for Overcoming Risks and Challenges

Avoid forcing career mainframe developers to adopt Git.

Develop targeted and personalized training for long-time mainframers about how to use Git.

Start small by creating opportunities for Git-native development on the mainframe that illustrate its value.

Demonstrate how the use of Git can improve the developer experience.

Summary of Essential Guidance

Develop a pragmatic modernization strategy to drive DevOps adoption.

Educate mainframe developers on the value and use of Git but do not force them to use it.

Consider using an intermediary platform that integrates Git code with code stored in mainframe SCM tools.

Adopt an incremental approach to the use of Git for the mainframe that progressively increases the share of development that leverages Git.

Case Study #1:

North American Heath Insurer Integrates Git with Traditional Mainframe Source Code Management Tools

A large health insurer examined options for using Git in conjunction with traditional mainframe source code management and release management tools. The company demonstrated the viability of a product that automates the integration of code stored in a traditional mainframe library manager with Git.

The company illustrated the efficacy of hybrid development that leverages Git and traditional mainframe source code management tools.

The bridging of code between traditional mainframe source code management tools and Git democratizes access to the mainframe by empowering developers who have little to no experience with mainframe development to start working on mainframe development immediately.

Case Study #2:

A European Bank Uses Git to Streamline Mainframe DevOps Implementation

A European bank used Git to implement DevOps for mainframe development, inclusive of CI/CD pipelines built using Jenkins.

The bank noted the following benefits:

Accelerated development because developers were able to work in parallel

Shortened feedback loops between business owners and developers due to the ability of developers to rapidly prototype solutions for feedback from the business

Increased automation empowered developers to spend more time coding

Enhanced collaboration between mainframe and non-mainframe developers

Faster time to market

Improved customer experience due to more frequent updates to software

About the Analyst

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Dr. Arnal Dayaratna is Research Vice President, Software Development at IDC. Arnal focuses on software developer demographics, trends in programming languages and other application development tools, and the intersection of these development environments and the many emerging technologies that are enabling and driving digital transformation. Arnal's research examines how the changing nature of software development relates to broader trends in the technology landscape.

More about Arnal Dayaratna

Message from the Sponsor

Broadcom provides the most comprehensive set of modernization tools for mainframe application development. With Endevor serving as the foundation for mainframe appdev for many, there is real value in Git adoption, especially in talent recruitment and onboarding.

To realize this value, we offer a ‘Git Adoption Kit’ consisting of Team Build for Git-native development as well as the award-winning Endevor Bridge for Git, which provides the Git experience without moving code to mitigate disruption.

These tools offer a risk-managed approach to modernization, enabling adopters to balance the value of Git tooling with the costs and risks associated with potentially disruptive change in a pragmatic way. The combination of Team Build and Bridge for Git, along with new Endevor-native features for parallel development, facilitates modernization across your mainframe portfolio.

Contact Broadcom to learn more.

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