What is the greatest barrier to realizing a superior end-to-end customer experience built on hybrid IT?
To access the data insights needed to drive a superior customer experience, hybrid IT architectures must be configured to be inclusive of mainframe systems of record. CA solutions facilitate an integrated and agile mainframe platform by allowing customers to apply a common set of cross-enterprise tools that unify DevOps practices and seamlessly onboard the next-generation mainframe workforce.
Executive Summary

Challenge
As businesses continue their search for data insights that deliver a superior customer experience, leaders in IT must architect a hybrid-IT back end that enables the enterprise to quickly turn those data insights into consumable digital experiences. With 70 percent of corporate data residing on the mainframe, IT leaders must address two critical barriers for the platform: a shortage of talent and misaligned IT practices.

Opportunity
CA Technologies enables IT organizations to extend DevOps practices and onboard the next generation of mainframe users with CA Brightside. Powered by Zowe, the first open source project based on IBM z/OS®, CA Brightside is the first cross-enterprise DevOps solution designed for teams to control, script and develop for the mainframe like any other cloud platform.

Benefits
CA Technologies supports its customers in achieving a mature level of DevOps adoption. By leveraging CA Brightside as a bridge to a modern mainframe environment, customers can empower their enterprise teams to realize greater autonomy and collaboration.
SECTION – 1

Mainframe Is a Critical Platform in the Hybrid-IT World

Customer experience is king, and in the application economy, customers expect real-time, personalized touchpoints that are delivered where they are most needed. In the effort to enable a superior customer experience that drives business growth, CIOs are increasingly identifying business intelligence and analytics as a focal area that is differentiating the business and attracting new spending. New research from the Boston Consulting Group provides a stark example of the success being achieved in the sectors of retail, healthcare and financial services—the top 15 percent of leaders in delivering personalized consumer experiences have the potential to realize an $800 billion revenue shift.¹

Driven by the emergence of business intelligence and analytics is the pressure to achieve even greater levels of business agility. As lines of business continue their search for data insights that culminate in superior customer experiences, leaders in IT must architect a hybrid-IT back end that enables the enterprise to quickly turn those data insights into consumable digital experiences. With 70 percent of corporate data residing on the mainframe,² IT organizations can no longer afford to have a siloed mainframe organization. To create a hybrid-IT world inclusive of mainframe, IT leaders must first address two critical barriers impeding the enterprise:

- **Shortage of talent.** Many organizations are undergoing a massive generational shift in their mainframe workforce. With only 7 percent of current mainframe developers under the age of 30,³ IT leaders must quickly implement a succession plan that empowers the next-generation workforce.

- **Misaligned practices.** With mainframe groups having been siloed from the rest of the enterprise, many have been slow to evolve their practices to meet current standards. Without transparent, agile and more iterative practices in place, even small mainframe code changes take as long as four to six weeks to develop, test and deploy into production.

Extend DevOps principles to mainframe

DevOps is proven to break down organizational silos and deliver greater business agility that accelerates time to market and reduces MTTR. IT leaders who effectively include mainframe in a hybrid-IT world achieve success by extending DevOps practices to seamlessly integrate this system of record into an end-to-end application development, test and delivery strategy.

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**FIGURE 1.**
Facilitate adoption with a common set of cross-enterprise tools

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**Develop Swiftly**
Developer tools deliver insight on legacy code and facilitate collaboration across silos

**Test Early and Often**
Testing is automated to increase quality and reduce cycle times

**Deploy Reliably**
Code is continuously integrated and deployed in a release pipeline for more frequent releases

**Operate Swiftly**
Ops activity shifts left to deliver performance feedback earlier in the development cycle
SECTION – 2

Realize an Integrated and Agile Mainframe Platform

With the ever-increasing deployment of hybrid architectures and a dynamic workforce that spans millennials to baby boomers, IT leaders face a stiff challenge in enabling an integrated and agile user experience that is common across all platforms in the enterprise. CA Technologies is committed to streamlining the development process for applications leveraging mainframe by delivering a more intuitive and productive user experience and better-integrated capabilities for z/OS.

Close the platform gap without the risk of vendor lock-in

CA Technologies is proud to be a founding member of Zowe, the first open source project based on z/OS that aims to bridge the divide between modern applications and the mainframe by providing easier interoperability and scalability among products and solutions from multiple vendors. Zowe’s mission is to create an extensible open source framework supported by an ecosystem of independent software vendors (ISVs), system integrators, clients and end users. Through Zowe, IT leaders can close the platform gap to enable speed, quality of service and consistent SLA management on the mainframe without the risk of vendor lock-in.

“The mainframe continues to be a critical platform offering new possibilities for next-generation applications. Zowe provides simplified and familiar infrastructure services for the mainframe, benefiting both experienced and newer developers, and will help our customers accelerate time to market as they deploy their mission-critical digital transformation strategies.”

Greg Lotko, General Manager, Mainframe, CA Technologies

Open Mainframe Project Announces the Launch of Zowe – an Open Source Framework that Strengthens Integration with Modern Enterprise Applications

Make mainframe like any other cloud platform

CA Technologies enables IT organizations to extend DevOps practices and onboard the next generation of mainframe users with CA Brightside, the first cross-enterprise DevOps solution designed for teams to control, script and develop for the mainframe like any other cloud platform. Powered by Zowe, CA Brightside includes built-in plugins to best-in-class CA mainframe products and enables enterprise teams to further customize their mainframe user experience through contributions from the Zowe open source community.

FIGURE 2.
Empower your team to apply the same skillset across a hybrid IT architecture
Support an open ecosystem

CA Brightside empowers enterprise teams to use their tools of choice when interacting with mainframe applications, systems and data—simply issue mainframe commands through your command-line interface (CLI) or install your preferred plugins from the Zowe open-source community.

Optimize the DevOps lifecycle

By leveraging an open ecosystem of industry-standard and open source tooling, enterprise teams can more easily apply their experience with modern DevOps toolchains and frameworks to mainframe. With CA Brightside, developers can submit builds without having to learn platform-specific rules that traditionally governed how mainframe code changes were tested and deployed, removing barriers that inhibit agile delivery.
Build a frictionless experience

CA Brightside further advances a mainframe experience similar to private cloud solutions by enabling customers to realize the benefits of best-in-class mainframe products in a more consistent, cost-effective service model. Powered by Zowe, CA Brightside features an API mediation layer that enables a single point of access to multiple mainframe service APIs and offers enterprise cloud-like features such as high-availability, scalability, dynamic API discovery, consistent security and one-time sign-on. With an easy-to-use SDK, development teams can quickly build and configure REST APIs to enhance the viability of homegrown mainframe applications.

SECTION – 3

Empower Teams With Greater Autonomy and Collaboration

Digital enterprises that have deployed hybrid architectures achieve their peak innovation velocity when their workforce is empowered to act autonomously in a cross-enterprise environment that exhibits a mature adoption of DevOps principles. In fact, in the 19th edition of the IBM Global C-suite Study, the top-performing 27 percent of organizations studied were found to be 1.58 times more effective than their peers in empowering teams to decide the best course of action. Moreover, the same group on average scored 1.5 times better in realizing fluid work structures built on cross-functional teams.4

CA Brightside promotes greater autonomy and collaboration by addressing the critical mainframe use cases that are impeding enterprise teams.

Use Case #1: Building visual orchestration in a CI/CD pipeline for a mainframe application

Situation

Ravi, a DevOps engineer, supports an application team that wants to configure an automated pipeline to perform builds of the application and deploy it to a test environment.

Action

Ravi chooses Jenkins as the CI/CD orchestrator to automate the pipeline. Ravi is proficient with shell scripting, so he uses CA Brightside CLI commands in a few simple shell scripts to automate the build on CA Endevor® Software Change Manager and to deploy the CA Endevor SCM build artifacts to a live test CICS environment. He integrates the shell scripts easily into Jenkins with a click of a button and has a working pipeline.

Results

• The application team achieves greater efficiency because when they make changes to the code, Ravi’s pipeline automatically performs a build-and-deploy.

• Ravi is also more satisfied with his experience interacting with mainframe.
  – Ravi enjoys the flexibility to use his tool of choice for CI/CD orchestration.
  – Ravi can use his favorite scripting language to automate mainframe actions and so does not need to learn mainframe specific languages.

• Ravi automates the pipeline in the same way as he would with any other cloud platform, demonstrating that his skills are current and easily transferrable to other platforms.
Use Case #2: Static analysis of COBOL/PL1

Situation
Michelle, a new-to-mainframe developer, has been working on a code change for her CICS transaction programs. She wants to run the code through static analysis to ensure that she's following proper coding conventions.

Action
Michelle chooses to write a script that uses CA Brightside commands to pass code from the mainframe platform to the static analysis tool. Going forward, she can simply run the script every time she needs to perform static analysis on mainframe code.

Results
• Michelle is confident her code changes will always follow language conventions.
• Ravi, the DevOps engineer, can also enhance the robustness of his automated pipeline by including static analysis as a step that is automatically performed for every code change.

Use Case #3: System and integration testing for mainframe apps

Situation
Michelle, a new-to-mainframe developer, has been working on a mainframe application called Acme. Acme has lately been encountering errors in the production environment. Michelle generally performs rigorous unit testing of modules before she pushes her changes. With the recent errors, she believes this is not enough and wants to incorporate system and integration testing as part of the development process.

Action
Michelle chooses to implement system and integration tests using a Javascript-based modern testing framework called MochaJS, which can be leveraged on mainframe through CA Brightside APIs and CLIs.

Results
• Michelle is confident her code changes will pass testing at the system level before they are pushed to the next stage in the pipeline.
• Michelle’s choice in leveraging an open source testing framework that is used and maintained by over 10 million developers across the world means the company does not have to spend valuable budget maintaining these testing frameworks on their own.
SECTION – 4

The CA Technologies Advantage

CA Technologies (NASDAQ: CA) provides IT management solutions that help customers manage and secure complex IT environments to support agile business services. Organizations leverage CA Technologies software and SaaS solutions to accelerate innovation, transform infrastructure and secure data and identities, from the data center to the cloud. CA Technologies is committed to ensuring our customers achieve their desired outcomes and expected business value through the use of our technology. To learn more about our customer success programs, visit ca.com/customer-success. For more information about CA Technologies, go to ca.com.

For more information, please visit ca.com/brightside