ANALYST CONNECTION

Sponsored by: Broadcom

A key consideration for interoperability is it can provide significant financial savings to the business compared with the alternatives of either leaving enterprise systems, such as the mainframe, closed or attempting to lift and shift the application or its underlying data. The approach must be to run app workloads on the most suitable platforms.

Using Open Frameworks to Modernize Your Hybrid Cloud Environment

December 2023

Questions posed by: Broadcom

Answers by: Jim Mercer, Research Vice President, DevOps and DevSecOps

Q. How do you see the future state of IT architecture unfolding over the next five years?

A. The need for continuous modernization is a big driver for architectural change. Siloed applications and platforms are a thing of the past, and every application needs to coexist with other applications and services across platforms. The modern enterprise requires increased access to core business applications and data for broader use for AI, analytics, and new customer experience applications. There is a greater need for seamless integrations, enabling workloads to be placed on the right platform to meet business and technical requirements.

Strong security architecture is important. This includes understanding the risk exposure of third-party and open source components as well as undertaking a threat modeling evaluation of the application to document knowable security threats and make rational decisions about addressing them.

Hybrid cloud has evolved into the de facto architecture for large enterprises, but it is not a one-size-fits-all solution. It requires careful planning and management to ensure the optimal balance between private cloud and public cloud resources. Organizations must consider operational cost, security and compliance, scalability, and linkage to existing business systems.

For most enterprises, the mainframe is critical and here to stay. However, it needs to be fashioned as an open system continuing down the modernization path and connecting to the cloud to reach its full potential.

At the end of the day, IT architecture must be future ready and flexible enough to respond to changing requirements dictated by planned initiatives such as digital transformation or unplanned events such as new competitors, economic disruptions, or geopolitical events.

Q. A hybrid of anything has many implications from a design and operational perspective. What are the key things to consider?

A. New digital initiatives often impose significant demands on applications and data because timely access to data fuels new business processes and customer experiences. For example, many mobile banking transactions go through distributed systems and rely upon data from mainframe systems of record. In IDC's April 2022 *DevSecOps Adoption, Techniques, and Tools Survey*, respondents identified compliance as the top technology challenge. So organizations must consider the back-end systems holding the data, data transformation, and compliance, among other things.

Application workload and data security must be paramount, and today, all platforms, including the mainframe, increasingly use open source. So consider the existing and new software bill of materials (SBOM). Without an up-to-dated SBOM, knowing which open source components are vulnerable to attack may be challenging.

Consider the day 2 operational concerns of managing a hybrid application environment. There are known unknowns and unknown unknowns at play, and an organization must handle them all. Make the most of existing infrastructure and resources by maximizing them and getting the most from proven technology investments. Minimize repetitive toil through automation by designing self-healing applications and consider how AI/ML can improve operational efficiency and resilience.

Bear in mind that too often, we overlook the business requirements and get lost in chasing new technologies, but it is the needs of the business that must influence architecture, workload placement, and other operational factors.

Q. What would be the most important design point to ensure long-term success in a hybrid cloud, especially in organizations with mainframe computers?

A. It is critical to ensure architecture and strategy focus on providing long-term success. Evaluate and segment the mainframe workloads, taking optimal placement into account. Many organizations have recently focused on modernizing in place rather than lifting and shifting. The modern mainframe can leverage integration middleware to connect with various cloud resources. However, it is necessary to consider data synchronization, replication, and security to ensure consistency and implement robust data security practices.

We see the mainframe used in a hybrid cloud for a variety of use cases, such as:

- Data analytics
- Microservices
- Infrastructure event management
- Multifactor authentication

Strong vendor relationships are also crucial to ensure they can support the organization's hybrid design and provide expertise when needed.

Key considerations for interoperability are the business benefit and agility. Can they provide significant financial savings to the business compared with the alternatives of leaving enterprise systems, such as the mainframe, closed or attempting to lift and shift the application or its underlying data? The approach must be to run app workloads on the most suitable platforms.

Q. How do various tools, such as open source and APIs, affect an enterprise's interoperability strategy for mainframes?

A. Just as an application is no longer an island, organizations must leverage innovation across the community to compete. Modern applications are being developed in a composite manner using open source for things such as integration middleware and database connectivity. Well-known mainframe open source communities include the Open Mainframe Project, with over 20 current projects and working groups, and Zowe, which offers modern interfaces to interact with z/OS.

APIs are critical for mainframe interoperability, exposing mainframe services and data while masking the underlying complexities for application developers. Unlike traditional batch data extracts, APIs allow greater efficiency by enabling real-time transactional environments across platforms. However, an organization's APIs must be designed and governed to minimize operational overhead that could impact the performance and security of back-end mainframe systems.

Interoperability can also be achieved using modern event-streaming message bus systems such as the Kafka Mainframe Connector to IBM MQ to enable mainframe applications to publish and subscribe to messages on the same message bus used with other distributed systems running in the cloud.

To get maximum value from mainframe investments operating in modern hybrid computing environments, CIOs and CTOs must adopt an "open" strategy. The approach will likely need to employ critical interoperability components such as open source, APIs, message queues, and data integration solutions.

Q. What should enterprises look for as they build out their open-first strategy?

A. Start by ensuring that any open-first strategy aligns with the organization's broader business objectives. Understand the use cases and start with those that provide the most significant impact with the least effort. Building an open-first strategy for most enterprises should include the mainframe and its role moving forward.

Other design principles to consider include:

- Taking an API-centric approach by prioritizing the development of APIs that expose mainframe services and data
- Enforcing security and compliance diligence, especially when handling sensitive data

- Leveraging interoperability standards and best practices to ensure compatibility between the mainframe and other systems
- Focusing on architecture simplification to increase resiliency and reduce maintenance cost and effort
- Providing resources and common tools across platforms to empower developers to use well-known tools when they work with different platforms

An open-first strategy should enable the organization to decouple or abstract its applications from specific platforms to ensure they can easily evolve and stay current.

About the Analyst

Jim Mercer, *Research Vice President, DevOps and DevSecOps*

Jim Mercer is a research vice president within IDC's DevOps and DevSecOps Solutions research practices. In this role, he is responsible for researching, writing, and advising clients on the fast-evolving DevOps and DevSecOps markets. Mr. Mercer's core research includes topics such as rapid enterprise application development, modern microservice-based packaging, GitOps, application security, software supply chain security, and automated deployment and life-cycle/management strategies as applied to a DevOps practice. In addition, he examines how the move to DevOps methodologies impacts enterprise use of open source and preferences for using on-premises computing and development platforms versus public cloud services.

MESSAGE FROM THE SPONSOR

Modernization is an initiative to drive business value by extracting the most value from all technologies. Using an Open-First approach, organizations can accelerate their mainframe modernization initiatives.

Open-First increases technology interoperability through the support of open standards, such as Zowe, and delivers higher levels of automation using tools like Ansible. This approach also means making mainframe services more easily consumed externally, whether through APIs, SDKs, CLIs or IDE interfaces like VSCode and Eclipse.

At Broadcom, we're investing significantly in interoperability — not proprietary integrations. We encourage the industry to define "open" similarly and to participate and contribute to the open-source community to foster widespread adoption of conformant tools. In the end, everyone benefits: the contributors, the collaborators, and the end-users.

Learn more about Broadcom Mainframe Software's Open-First Approach here.

IDC Custom Solutions

IDC Research, Inc.
140 Kendrick Street
Building B
Needham, MA 02494
T 508.872.8200
F 508.935.4015
Twitter @IDC
idc-insights-community.com
www.idc.com