Research Report

IBM Z: Making Dev work with Ops

Executive Summary

Clabby Analytics recently attended an IBM analyst briefing on the role of Z Middleware in digital transformation. We went specifically to learn about IBM's DevOps environment for the IBM Z (mainframe). IBM executives provided us with an overview of the IBM Z DevOps strategy, its development tools, its operations management environment and overall digital transformation strategy.

After a full day briefing we walked away with these key findings:

1. IBM is strongly focused on helping its customers transform their information systems into cooperative, integrated processing environments that can easily mix and match existing environments and applications with new technologies and environments.
2. In DevOps, IBM is focusing on the use of technologies that make Z more accessible to developers in general. IBM Z offers a wealth of open APIs, support for multiple languages, numerous development tools, support for open source development environments and more – a comprehensive set of tools, utilities, APIs and languages that support an open DevOps environment on Z. In short, IBM's approach to DevOps is to be open/integrated with the world of Open Source tools and leading 3rd party vendors (e.g. Splunk, others);
3. In operations management, the company remains focused on: 1) monitoring of application and system behavior; 2) visibility into systems/application behavior (discovery and analysis); and, 3) predictive analysis (the ability to identify problems before they occur and address them). The key message that IBM wanted to deliver regarding operations management was that IBM has a complete suite of operations management products and is a one-stop-shop for enterprise operations management needs (this includes distributed computing environments, mainframe environments, hybrid clouds, networks and more); and,
4. IBM strongly encourages its customers to build automated testing suites. By taking the time to automate testing, IBM customers can accelerate the deployment of new digital transformation applications – improving application quality while also improving speed of application delivery.

The way IBM presented its products and strategies was threefold. The company discussed: 1) the IBM Z Digital Transformation Model; 2) what the development tools marketplace needs and wants; and 3) what the operations management side-of-the-business requires. We have organized our thoughts and analysis along these lines.

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The IBM Digital Transformation Model (zDTM)

The briefing started with a discussion of "digital transformation." Digital transformation is the process of evaluating what customers value most and creating operating models and aligning information systems to best serve customer goals while sometimes creating distinct competitive differentiation.

Digital transformation can involve blending foundational technologies (systems, storage, networks, open source software, APIs, etc.) with evolving technologies (mobile, Internet-of-Things, social, Big Data analytics, hybrid clouds, security solutions, cognitive computing and more.) IBM believes that digital transformation is a necessity in today's highly competitive business environments – and believes that integrating Z is very important in order to serve customers in the banking, finance, government, healthcare, automotive and retailing industries– all businesses that rely heavily on IBM Z. "If you don't transform – and if you don't include Z – you lose" was the basic message.

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IBM uses a framework to describe its approach to System Z digital transformation. That model calls for: 1) *exposing* application program interfaces (APIs) in order to make it easier for applications to integrate across and beyond the enterprise as well as share data; 2) *evolving* infrastructure and applications to rapidly respond to new business requests, to turn cost centers into profit centers, and to bring together systems, application and data to manage new "HYBRID" applications; and, 3) *optimizing* systems and applications to predict/respond to incidents – and, most importantly, to prevent service interruptions.

Each of these activities **(Expose/Evolve/Optimize/Run and Maintain)** carries with it a list of actions that need to be taken to aid digital transformation.

- **Expose** – APIs need to be defined and put in place for business critical assets; developers will need tools that facilitate the building of an open and modern development environment; tools need to be put in place to discover and create APIs that don't interfere with or change important assets; APIs need to be monitored; and, finally, all of this development work (Dev work) needs to be linked to intelligent IT operations (discussed in the following "Optimize" action).
- **Evolve** – API governance must be put in place to maximize reuse and to ensure security; a pipeline (a chain of events) needs to be put in place to automate application delivery and deployment; an early test methodology needs to be embraced; and performance from front end devices all the way to the backend need to be available. As for programming languages, a single language is not the answer, and best fit languages should be used for application development and digital transformation.
- **Optimize** – Involves the transformation of monolithic applications into granular services (or microservices); making decisions with cognitive assistance; the use of advanced analytics to optimize development; and the use of tools to predict and automatically respond to service interruptions.
- **Run and Maintain** – Involves having a current view of resources, and leveraging the latest compilers and subsystems to reduce costs and maximize performance.

IBM has numerous product offerings that address each of the above mentioned digital transformation actions (found here)

Also noteworthy: IBM provides a "try it before you buy it" way of testing/trialing software capabilities. IBM zTrial provides a selection of 30-minute-long scenarios that allows prospects to trial products at zero cost and with no installation required (found here).

IBM Z Development Tools Discussion

From a Z tools perspective, IBM started its discussion by emphasizing that no one tool is perfect for all application deployments. One of their first slides indicated that Java is the #1 programming language in the world; that JavaScript is the #1 scripting language; and that Swift is the fastest growing language. Each language, they emphasized, was created for specific purposes – and there is room for many languages (COBOL, node js, Swift, Java and more) under the IBM Z umbrella.

Once IBM established that it is strategically committed to supporting interaction with modern language types, the company hammered home how its IBM Z architecture has been specifically optimized for Java. Functions like pause-less garbage collection, enhanced cryptographics, single instruction multiple data and hundreds of new instructions – all running on hardware that offers a 5.2 GHz clock speed, tons of L4 cache, improved SMT-2 performance and special processors for speeding Java processing – all contribute to making IBM Z the fastest Java processor on the market.

IBM followed its discussion of programming languages integration with a discussion of microservices – a way to refactor monolithic applications into granular application services. Or, put another way, a way to parse big mainframe applications into smaller application component services that can be used by newer, modern applications as a means to facilitate digital transformation. This microservice approach provides a means to speed application integration as well as a means to reuse application components.

IBM's final point regarding the development side of digital transformation was this: To make digital transformation go smoothly, it is necessary to blend development with operations. The company strongly emphasized this point when it discussed its operational tools and methodologies (next section).

The IBM Operations Strategies and Offerings

IBM believes that operations management is a key part of every stage of the Digital Transformation Model, not a "to-do" once you have developed. Accordingly, IBM offers numerous operations management tools that can show developers, administrators, and managers how applications are behaving (performance and troubleshooting); how to tune applications; and how to predict and overcome failures. IBM offers a wealth of tools and utilities to aid in applications and systems management (operations management).

A closer look at activities in operations management shows that management activities consist of three elements: 1) the monitoring of application and system behavior; 2) visibility into systems/application behavior (discovery and analysis); and, 3) predictive analysis (the ability to identify problems before they occur and address them).

The key message that IBM wanted to deliver regarding operations management was that IBM has a complete suite of operations management products and is a one-stop-shop for enterprise operations management needs (this includes distributed computing environments, mainframe environments, hybrid clouds, networks and more). For instance, IBM's OMEGAMON for JVM provides deep insights into Java programs and API behaviors; and IBM's Z APM Connect provides insights into application behavior using APM (application program management) dashboards that can isolate issues, identify mainframe components involved in application processing, and reduce false positives in application behavior (this product also works with third party APM offerings such as Splunk and Elastic). Other offerings include IBM Operations Analytics for z Systems; Tivoli Decision Support; and IBM Common Data Provider for z/OS).

Summary Observations

The key message that IBM sought to deliver in its DevOps briefing was this:

IBM is strongly focused on helping its customers digitally transform their businesses – and offers a wealth of tools and utilities to assist in this transformation. Pertaining to IBM Z, these tools include open APIs, support for multiple languages, numerous development tools and support for open source development environments -- as well as a wide range of operations tools that monitor applications and system behavior; provide visibility into systems/application behavior, and that can perform predictive analysis – AND IT ALL RUNS ON IBM Z!

To assist in making IBM Z an integral part of any digital transformation, IBM indicated that the process involves opening APIs to mission critical assets; it involves the creation of a development/deployment pipeline; and it involves application transformation to granular services and putting in place an advanced analytics management environment that can identify failures quickly, that can predict failures and that can speed recovery response time.

One message that really resonated with us was IBM's emphasis on a "chain of events for DevOps" where applications are developed, tested and moved into production in an orderly and cohesive fashion. IBM strongly encourages its customers to embrace an integrated and intelligent approach to DevOps where both the development and operations functions work hand in hand to build and manage digital transformation applications.

The message that we liked most during the day-long presentation was this: **IBM Z is just another member of a hybrid cloud** – *just like any other device such as mobile devices, distributed systems and so on*. IBM offers products and has made IBM Z open. **IBM Z is no longer a "special case" integration effort**. With its rich suite of development tools and utilities and its very rich operations management environment, Z can be readily integrated into any enterprise hybrid cloud strategy.

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