Modernizing Faster Payments with IBM Z and LinuxONE: M^Dynamics in Action

As the financial industry surges toward mission-critical operations with **ultra-high availability**, 24/7 banking, and accelerated payment speeds, institutions must modernize their infrastructure while upholding the performance, resilience, and security vital for mission-critical systems. IBM provides two robust and complementary fault-tolerant platforms to meet these demands: IBM Z, the enterprise foundation for core banking, and IBM LinuxONE, designed for scalable, cloud-native workloads.

MVI Technologies has adopted a dual-track strategy, validating its flagship **modern Java-based M^Dynamics Framework on both IBM Z and IBM LinuxONE platforms**. General platform readiness and integration are established on both platform with an addition of support for IBM DB2 database on IBM Z. All performance benchmarks have been executed on IBM LinuxONE but similar results are projected onto IBM Z. This post showcases how these dual approaches empower financial institutions at various stages of their modernization journey.

IBM Z: Mainframe Validation for Core Modernization

IBM Z continues to be the trusted core banking platform across major financial institutions. **M^Dynamics**, comprising the **Payment Hub**, **Payment Switch**/ **Payment Gateway, and Stand-In Authorization** has been successfully **validated on IBM Z running z/OS 3.1**, using:

- **IBM Db2 13 for z/OS**
- **IBM MQ 9.3**
- **IBM Semeru Runtime Certified Edition for z/OS (Java 17/21)**
- **IBM Crypto Express HSMs**

The validation involved over **400 test cases** across critical use cases in **retail and corporate banking**, including:

- Faster Payments – Credit Transfer (Retail & Corporate)
- PayNow (Fund Transfer via mobile phone or ID)
- Direct Debit
- Handling of rejections and timeouts
- Duplicate transaction handling

These tests confirm that M^Dynamics is functionally ready for deployment on IBM Z.

IBM LinuxONE: Performance and Efficiency Validated

IBM LinuxONE offers a Linux-based mainframe alternative with the same enterprise-grade reliability, security, and uptime as IBM Z, tailored for modern workloads and hybrid cloud deployments.

M^Dynamics underwent full performance benchmarking on LinuxONE, achieving:

- **>1500 transactions per second (TPS)** sustained using ISO8583
- **Average response time:** 0.1 second
- **Peak TPS:** 1686 TPS
- **Minimal infrastructure footprint:**
  - 2 x Application VMs (8-cores, 16GB RAM each)
  - 1 x Database VM (8-cores, 32GB RAM)

This setup demonstrated exceptional efficiency in processing faster payment workloads. LinuxONE's design enables:

- **Energy-efficient computing** with reduced hardware footprint
- **Quantum-safe security** via IBM Crypto Express
- **99.999999% availability (8x9s uptime)**[1]
- Optimized support for containerized workloads and hybrid cloud integration

These results are factual and verifiable as tested on the LinuxONE environment. IBM Z and IBM LinuxONE systems share the same underlying hardware architecture. As a result, the performance of a Java application is expected to be comparable across both platforms, assuming equivalent configurations and workload characteristics.

Why Two Platforms? A Strategic Modernization Choice

MVI's approach supports both of IBM's modernization strategies:

- **IBM Z** enables modernization of existing mainframe workloads, allowing institutions to retain their current investments while adopting open standards such as API, Java, and message-based payment services.
- **IBM LinuxONE** is optimized for Linux workloads and offers a highly secure, performance-optimized alternative for organizations without existing mainframe investments, making mainframe-class infrastructure more accessible for greenfield deployments.

This strategy aligns with IBM's vision of transforming both legacy and non-mainframe environments, enabling modernization at scale without forcing a one-size-fits-all model.

Unified Framework, Tailored Deployment

Regardless of platform, M^Dynamics provides a consistent set of capabilities:

- Payment orchestration
- ISO 20022 transformation
- Real-time transaction management
- Seamless integration with core banking and regulatory systems

On IBM Z, banks benefit from deep integration with existing mainframe operations. On LinuxONE, clients enjoy a cost-efficient, scalable, cloud-native experience with mainframe security and uptime guarantees.

By validating M^Dynamics on both platforms, MVI Technologies ensures flexibility for institutions to modernize at their own pace.

About MVI Technologies

MVI Technologies, a Singapore-based payment solutions provider, has successfully delivered ultra-high availability, scalable, and robust payment systems, including the Payment Hub, Payment Switch, and Payment Gateway. Extending beyond traditional High Availability (HA) and Disaster Recovery, MVI's Stand-In Authorization system guarantees exceptional service continuity during outages.

About IBM Z and LinuxONE

IBM Z is IBM's iconic mainframe built for enterprise-grade resilience, uptime, and security. It has served as the foundation of core banking for decades. The latest release of the flagship operating system for IBM Z, z/OS 3.2, is designed to drive innovation through AI, boost operational efficiency, and fortify cybersecurity in the era of hybrid cloud computing. This latest release is a significant milestone in the evolution of the mainframe, enabling businesses to seamlessly integrate AI capabilities with their core applications, unlocking the full potential of their most critical data and uncovering new opportunities for growth. IBM LinuxONE builds on this legacy with a focus on Linux workloads and open-source flexibility, energy

efficiency, and hybrid cloud readiness—bringing mainframe power to cloud-native strategies.

Sources

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- Internal Validation Report: M^Dynamics Validation on IBM Z v1.1 (2025)
- IBM z/OS 3.2: Launch Announcement
- IBM Official Docs: z/OS 3.1 Overview
- IBM LinuxONE Overview: https://www.ibm.com/linuxone