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IBM

Future-Ready Core Banking:

A secured, high-performance, scalable approach for banking transformation with

Temenos, IBM® LinuxONE, and Tech Mahindra

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Executive Summary

Banks are under growing pressure to modernize legacy systems without compromising on security, scalability, or compliance. Temenos, IBM, and Tech Mahindra jointly deliver a hybrid cloud-ready, containerized solution for core banking and payments, leveraging IBM LinuxONE, Red Hat OpenShift, and Temenos applications to provide high availability, cost efficiency, and regulatory resilience.

Key Takeaways

- Core banking modernization is a multi-year journey that requires striking a balance between innovation and operational risk, compliance, and continuity.
- Hybrid cloud strategies enable banks to transform gradually without disruptive system overhauls.
- Containerization, observability, and CI/CD practices are critical enablers for modern financial infrastructure.
- Enterprise-grade platforms that offer built-in security, availability, and performance are crucial for mission-critical workloads, such as core banking and payments.
- A two-stage approach—technical upgrade followed by functional modernization—can reduce risk and align with internal capability maturity.
- High Availability (HA) and Disaster Recovery (DR) architectures must be evaluated not just for uptime, but also for cost, latency tolerance, and regulatory alignment.

Introduction

Banks worldwide face growing customer expectations, increasingly stringent regulations, and rapid digital disruption. Legacy systems—rigid, expensive, and hard to scale—are no longer viable in a world that demands speed and agility. To thrive, banks must adopt secure, scalable platforms that enable rapid innovation and operational efficiency. At the same time, sustainability is emerging as a critical requirement, calling for greener, energy-efficient infrastructure.

Temenos, IBM, and Tech Mahindra offer a future-ready, containerized solution built on Temenos Transact, Temenos Payment Hub, IBM LinuxONE, and Red Hat OpenShift. This joint solution allows seamless modernization of core banking and payments systems without compromising service continuity.

Temenos on IBM LinuxONE offers robust security, high resilience, and a lower total cost of ownership. Tech Mahindra brings 25 years of experience, 800+ Temenos consultants, 4000+ Certifications and a proven execution model to ensure smooth deployment. These strengths give banks the confidence to transition to modern architecture.

This whitepaper explores key transformation drivers, implementation challenges, and a phased modernization journey, along with HA/DR and operational best practices.

Business Drivers and Challenges

There are several common business drivers for banking organizations to embark on a cloud-ready core modernization journey, as depicted below.

Temenos Banking Solutions on RHOCP on IBM LinuxONE – 9 Key Benefits

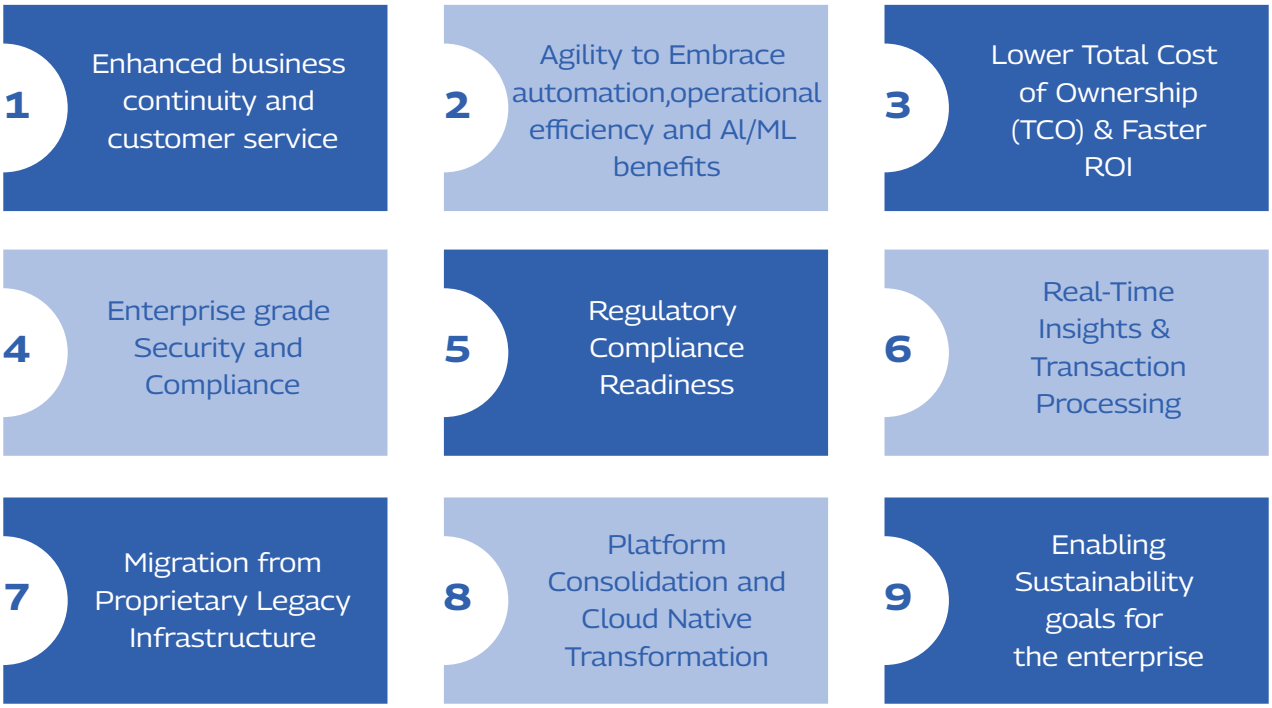
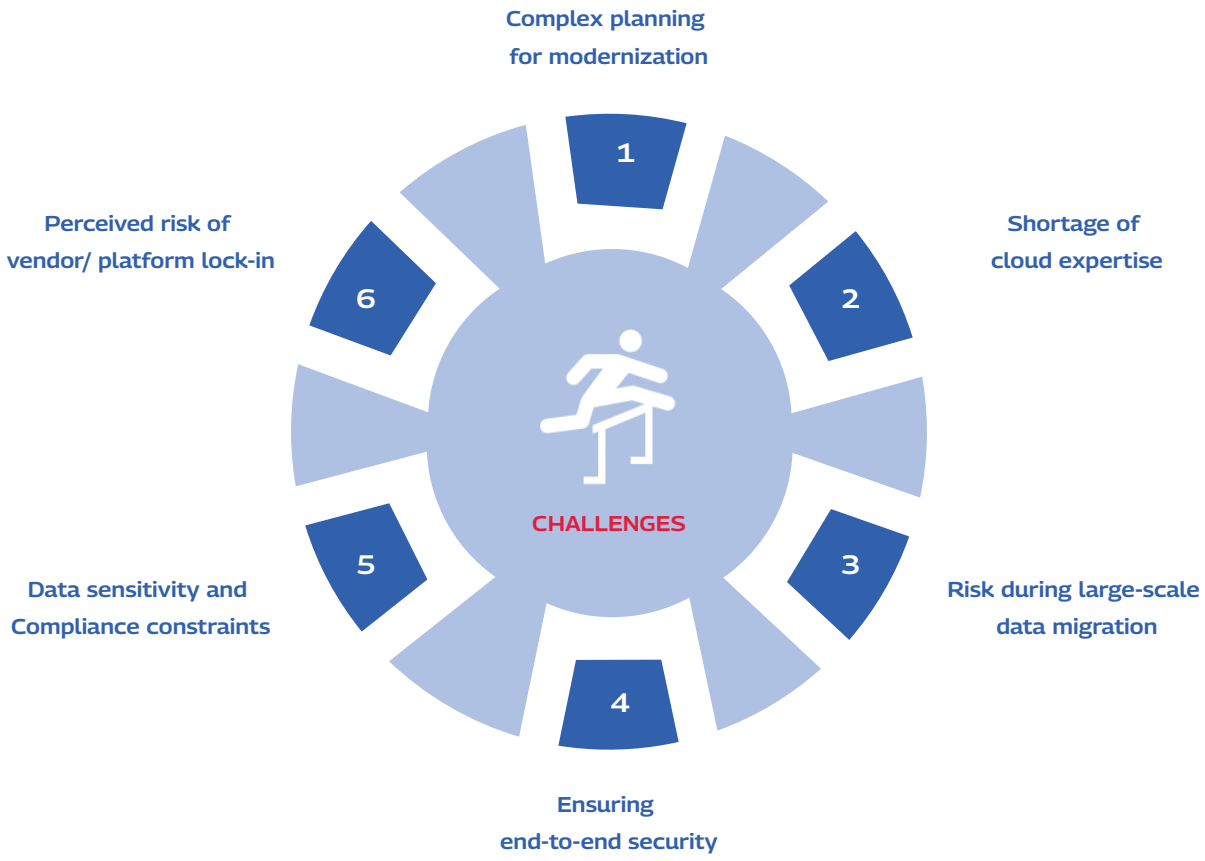


Figure 1: Business Drivers for Hybrid Cloud Enablement of Banking

Banking organizations are prioritizing secure, resilient, and efficient modernization to meet regulatory, operational, and customer demands. IBM LinuxONE is designed to provide enterprise-grade security, high availability, and seamless scalability for mission-critical workloads, such as core banking and payments. The key challenges driving banks toward modernization are outlined here.

Modernization Challenges



These challenges result in multi-year modernization projects without achieving the full benefits of core transformation. This increases the risk for banks migrating to a new core banking system.

Figure 2: Business Drivers for Hybrid Cloud Enablement of Banking

Banks recognize that modernizing their core banking systems enhances operational efficiency, reduces IT costs, strengthens security, and prioritizes regulatory standards while accelerating innovation. However, concerns around scalability, security, and migration complexities often slow down transformation efforts.

Together, Temenos, IBM, and Tech Mahindra bring deep expertise and proven methodologies to overcome these challenges, enabling an efficient migration of Temenos Transact and Temenos Payment Hub platforms to IBM LinuxONE. This collaboration is designed for a secure, high-performance, and future-ready banking infrastructure that is optimized for scalability and long-term success.

A Forward-Looking Approach to Core Banking and Payment Transformation

Core banking modernization is a continuous journey, not a one-time shift. Many banks begin this journey by adopting a cloud-ready, container-based architecture using Red Hat OpenShift. IBM LinuxONE enhances this transformation by offering a highly secure, scalable, and energy-efficient platform purpose-built for mission-critical workloads, such as Temenos Transact and Temenos Payment Hub.

Temenos Transact, one of the world's most widely used digital core banking solutions, supports a broad range of banking services across retail, corporate, treasury, wealth, and payments. Its cloud-compatible design, when deployed on Red Hat OpenShift and IBM LinuxONE, provides banks with the flexibility to modernize at their own pace while unlocking enhanced performance and resiliency.

IBM LinuxONE's built-in advantages—such as on-chip AI acceleration with the IBM Telum II processor, Hyper Protect Confidential Containers, and quantum-safe cryptography—help address key modernization challenges, including security, data sensitivity, and sustainability. Its ability to scale while maintaining high availability helps banks run both existing and modernized applications without compromise.

Red Hat OpenShift on IBM LinuxONE is designed to simplify modernization with enterprise-grade, open-source infrastructure. Banks can benefit from advanced DevSecOps practices, application portability, and modular deployment options that integrate seamlessly with existing systems and evolve to meet future needs.

Tech Mahindra brings deep expertise in Temenos, Red Hat OpenShift, and deploying solutions on the IBM LinuxONE platform. As a recognized systems integrator for next-generation banking, Tech Mahindra has delivered nearly 100 upgrade programs across Temenos banking solutions. Their proven approach to migrating Temenos applications—both from on-premise and self-hosted hybrid cloud environments—has been successfully validated in joint labs with IBM and Red Hat.

Together, Temenos, IBM, and Tech Mahindra empower banks to modernize their core banking systems with agility, security, and long-term efficiency on a hybrid cloud foundation enabled by IBM LinuxONE.

Progressive modernization approaches to core banking

A hybrid approach — distributing workloads across on-premises, public, and private clouds — enables banks to progressively renovate and take advantage of cloud benefits, thereby accelerating and scaling digital transformation.

There are three main approaches for modernizing core banking services: extend, renew, and reinvent. Many banks deploy a combination of these approaches during their modernization journey.

Extend

The "extend" approach adds new interface layers to existing core banking services, making them easily accessible to other cloud- and microservices-based applications through APIs. The architecture of the existing service remains essentially unchanged, allowing you to protect your existing investments while applying innovations and methodologies to your data.

Renew

The "renew" approach incrementally replaces existing core banking services with new, software-based versions from independent software vendors (ISVs). The new version of the service is deployed on cloud-based infrastructure and may also use a microservices architecture. Over time, these new services will gradually replace your traditional core systems.

Reinvent

The "reinvent" approach incrementally replaces existing core banking services with cloud-native, microservices-based versions running in an agile service mesh. Over time, cloud-native services will completely replace traditional core banking systems, enabling you to fully leverage the flexibility, control, and efficiency of containers, Kubernetes orchestration, and microservices.

Answering the need for a progressive cloud transformation, IBM partners with Temenos to help banks modernize with a hybrid cloud approach. This solution is designed to deliver a unified and flexible foundation that supports all three modernization strategies, whether adopted independently or in combination.

Temenos Transact and Temenos Payment Hub on IBM LinuxONE with Red Hat OpenShift

IBM LinuxONE, combined with Red Hat OpenShift, provides a highly secured, scalable, and efficient hybrid cloud infrastructure for modernizing Temenos Transact core banking and Temenos Payment Hub workloads. Red Hat OpenShift delivers a consistent, enterprise-grade Kubernetes-based container orchestration platform for deploying applications across both on-premise and hybrid cloud environments. When deployed on IBM LinuxONE, banks can benefit from superior performance[1], energy efficiency, and built-in security features, including Hyper Protect Confidential Containers and quantum-safe cryptography.

With Red Hat OpenShift on IBM LinuxONE, banks can accelerate application development and deployment without needing to re-architect their core systems. This enables IT and development teams to rapidly deliver new features and digital services, thereby improving agility and driving a competitive advantage. The platform supports continuous integration and delivery (CI/CD) practices, built to enable high-frequency releases while maintaining reliability and security.

IBM LinuxONE also enables real-time monitoring of system resource consumption, which can contribute to sustainability goals through energy-efficient processing and optimized infrastructure usage. Red Hat's integration of sustainability metrics (e.g., power monitoring in the OpenShift Observability stack) may align with banks' growing ESG commitments.

The following is a reference architecture for deploying Temenos Transact and Temenos Payment Hub on IBM LinuxONE using Red Hat OpenShift Container Platform.

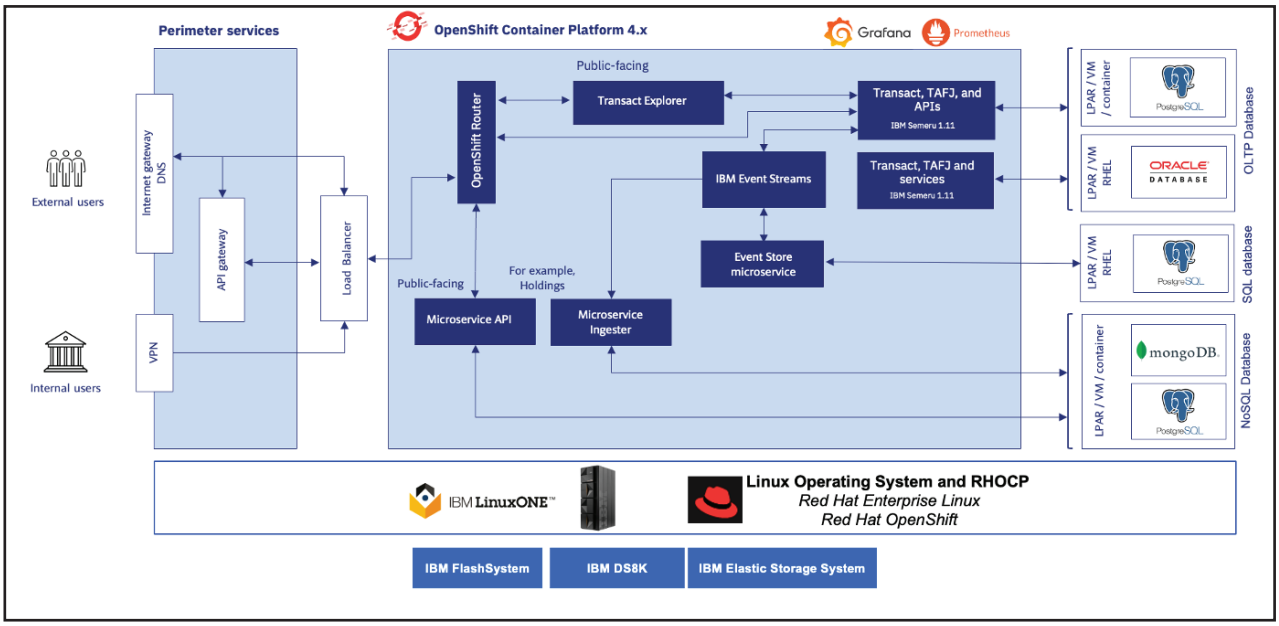


Figure 3: Reference architecture to deploy Temenos Transact and Temenos Payment Hub on IBM LinuxONE

Temenos Transact R25 and Temenos Payment Hub technology stacks on IBM Z & LinuxONE

Stack 16 is certified by Temenos for deploying Temenos Transact R25 and Temenos Payment Hub, using RHOCP on IBM LinuxONE, as given below.

Tier B - Certified Stack 16 - OpenShift on IBM LinuxONE	RED HAT OPENSHIFT
Products	Transact TPH
Java and Application Server	IBM Semeru Runtime Open Edition11 WildFly 26.1.x
Message Broker (Optional)	RH AMQ Broker 7.x Apache ActiveMQ 5.18
Database	Oracle 19c PostgreSQL 16 MongoDB 7.x or 8.x
Operating System	OpenShift 4.x
Data Streaming Platform	Kafka

Tech Mahindra's Two-Stage Modernization Approach on IBM LinuxONE:

The figure below illustrates the approach for modernization using IBM LinuxONE, which includes on-premise deployment, technical upgrades, and/or functional upgrades or re-implementation of earlier Temenos versions.

Stage 1 - Technical Upgrade & Containerized Deployment: Migration of Temenos Transact or Temenos Payment Hub to a containerized environment on Red Hat OpenShift on IBM LinuxONE.

Stage 2 - Functional Upgrade: Implementation of advanced core banking features and optimization aligned with Temenos' latest capabilities.

Together, Temenos, IBM, and Tech Mahindra provide a proven foundation built for scalable, secure, and sustainable core banking transformation, powered by the enterprise strength of IBM LinuxONE.

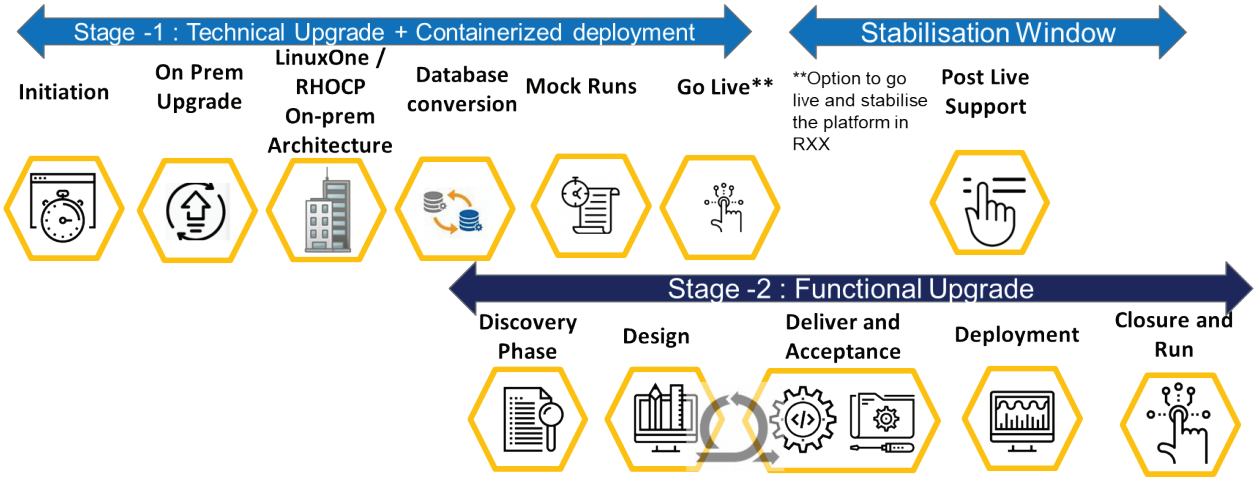


Figure 4: Two-stage solution approach for upgrade

The Breakdown

Stage 1:
Technical Upgrade + Containerized Deployment on IBM LinuxONE

- Follow the standard upgrade methodology to upgrade Temenos from Rxx to R25 (latest Temenos release). Also, if required, perform TAFC to TAFJ conversion on-premise.
- Customized code conversion analysis and conversion activity to be initiated in parallel
- Set up the Red Hat OpenShift (RHOCP) environment on IBM LinuxONE, including observability capabilities such as logging, monitoring, and alerting. Enable CI/CD pipelines for automated and consistent code deployment.
- After setting up the LinuxONE environment, migrate Temenos Transact R25 to the RHOCP - a containerized deployment.
- Finalize database conversion and data migration approach.
- Prepare the standard runbook for the upgrade and fine-tune it through mock runs and dress rehearsals for the upgrade and data migration.

- All integrations are validated and updated.
- Testing is performed to validate the functional and technical consistency of the platform.Required training will be provided to the bank's IT team to highlight the new technical features available as part of the R25.
- On completion of the mock upgrades and testing, the bank has the option to go live with the robust platform where Temenos products are upgraded to the latest release (R25).

This stable and secure core banking platform on IBM LinuxONE becomes the foundation for Stage 2: Functional Upgrade. This platform also enables private cloud deployments at later stages.

Stage 2: Functional Upgrade

The functional upgrade stage leverages all the new functional capabilities offered by the latest Temenos release. It provides new functionalities or reduces technical debt by replacing customized functions with out-of-the-box functionality where possible. The discovery (analysis) phase for the functional upgrade needs to be started in parallel with the technical upgrade stage (Stage 1) to carry out both functional and technical analysis. Standard design, development, and testing cycles are aligned with Temenos implementation methodology (TIM), the best practice for implementing Temenos products, which follows the functional upgrade phase.

Considerations for HA and DR for Temenos Transact and Temenos Payment Hub on IBM LinuxONE with Red Hat OpenShift

High Availability (HA) and Disaster Recovery (DR) are critical design imperatives for running Temenos Transact and Temenos Payment Hub in production environments. IBM LinuxONE, combined with Red Hat OpenShift, provides a resilient, scalable, and secure infrastructure optimized for running mission-critical banking workloads, such as Temenos Transact. Four scenarios have been discussed; the choice of HA/DR strategy depends on client requirements.

1. Active - Warm Standby DR

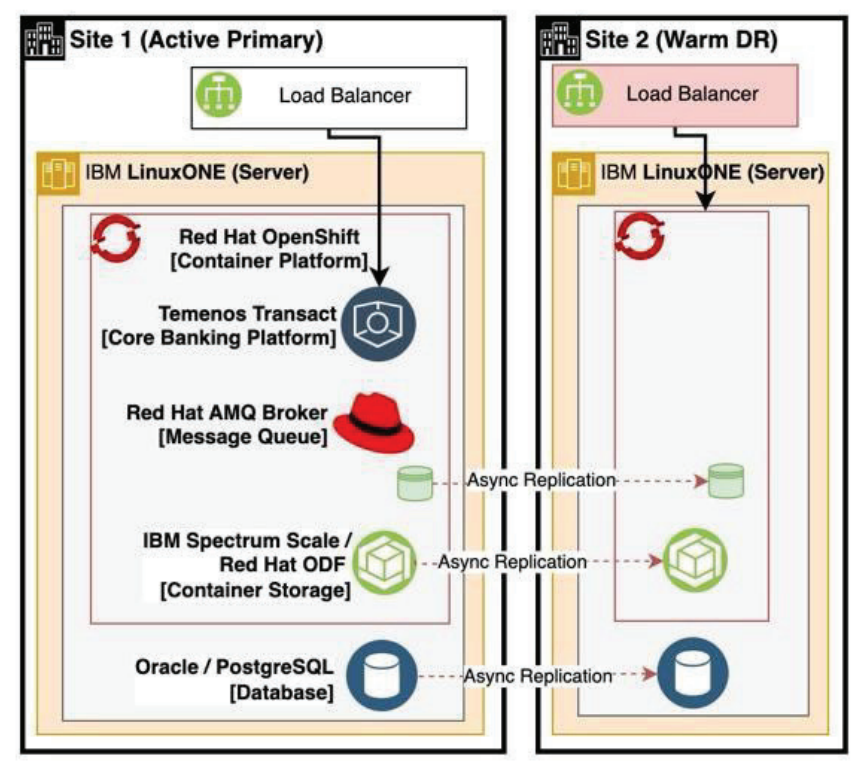
Active primary site with a single server, with asynchronous replication to DR site just for stateful application resources/infrastructure (i.e., database and container/persistent storage for message queue data). During a DR event some application resources will need to be re-created/recovered

Architectural considerations

Lowest cost, due to lower compute capacity (i.e., CBUs rather than active IFLs) and software licensing requirements in DR

Higher RTO as resources need to be re-created/recovered

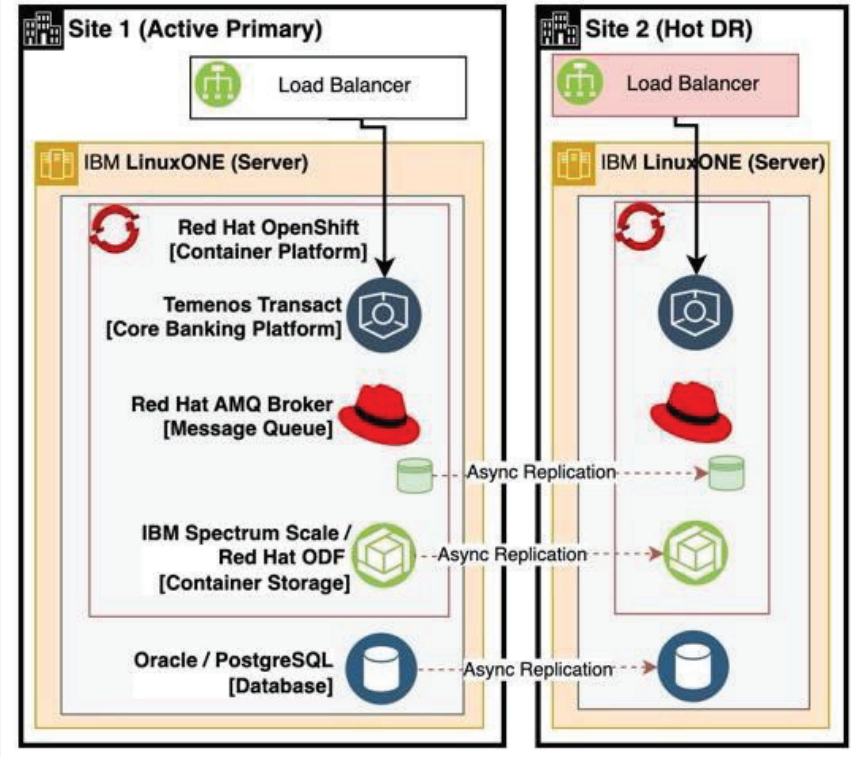
Single primary server, so needs to be accepted as **server SPOF and disruptive server maintenance may require DR** failover



2. Active - Hot Standby DR

Comparable to architecture #1, however with all resources having active standbys in the DR site (i.e., Temenos Transact application components, message brokers)

Architectural considerations, **Faster recovery** (lower RTO)
Higher cost for additional active compute capacity and software licensing
Single primary server, so needs to be accepted as **server SPOF and disruptive server maintenance may require DR** failover **Red Hat OpenShift Data Foundation will require additional multi-cluster management components (Red Hat ACM)** to provide this DR architecture, currently in technical preview



3. Multi-Server Active - Hot/Warm Standby DR

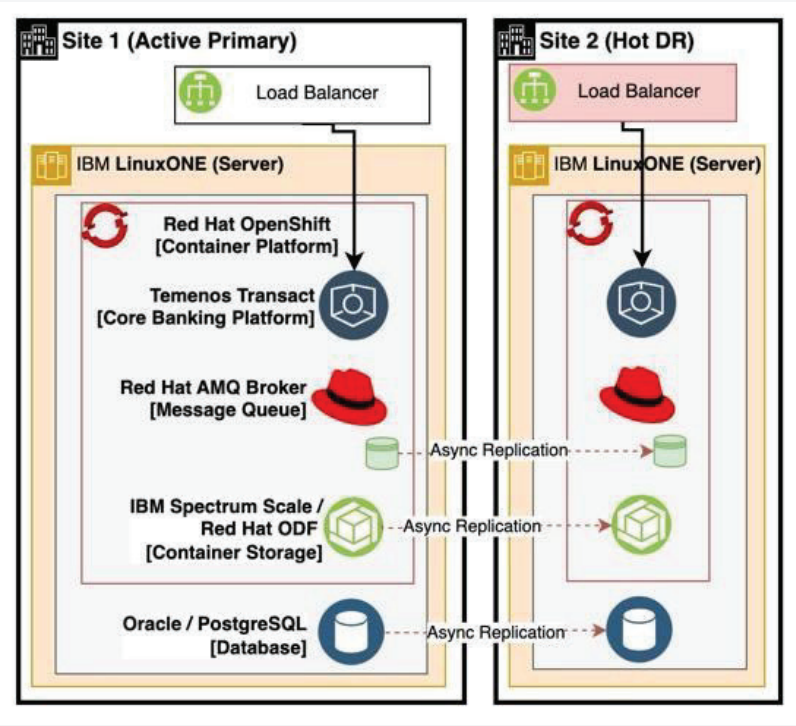
Builds on architecture #1 or #2, with the addition of an IBM® LinuxONE server to the primary site to remove server single point of failure (SPOF)

Architectural considerations,

Higher cost from additional IBM® LinuxONE server with failover capacity

Continuous availability during disruptive server maintenance on primary site with clustering and workload movement across servers

Potential unplanned application/platform downtime on single primary Red Hat OpenShift cluster due to quorum/majority on one server



4. Partial Active - Active

Independent active deployments of Temenos Transact (and infrastructure/platform) on each site with a shared database, which is only active on one site and replicated to standbys on the other site

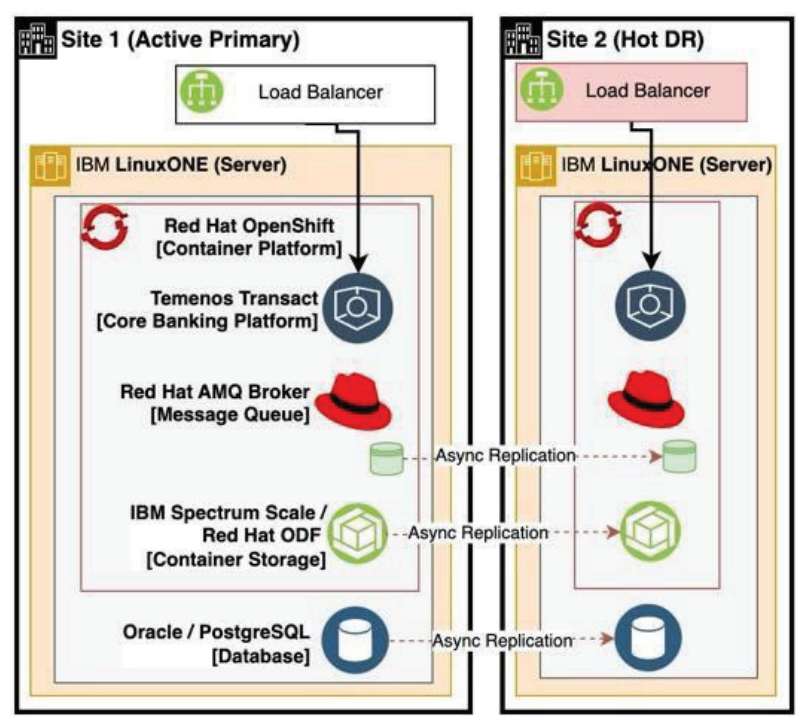
Architectural considerations,

Stretched database and Red Hat OpenShift cluster not recommended due to low tolerance of network latency

Temenos Transactional performance still highly dependent on cross-site network performance as there will be cross-site communication between Temenos Transact backends and database servers

Lowest RTO (not 0) only requiring database failover

High cost due to requiring mirror of components on each site



Key Capabilities with IBM LinuxONE and OpenShift Platform Plus:

- Full-stack resiliency: Resiliency features in IBM LinuxONE and OpenShift apply to both stateful and stateless applications.
- Automated Application Protection: Red Hat OpenShift Platform Plus includes integrated solutions for backup, restore, and disaster recovery tailored for containerized environments.
- Hybrid Cloud DR Enablement: With IBM LinuxONE's support for open hybrid cloud architectures, banks can design DR strategies that span on-prem and IBM cloud resources, giving them flexibility in DR site placement and cost optimization.
- Data and Application Integrity: The inherent security, encryption, and reliability features of IBM LinuxONE help enable all protected workloads—including Temenos Transact—to maintain integrity and compliance during HA/DR events.

Together, IBM LinuxONE and Red Hat OpenShift offer a resilient foundation for banks to run Temenos Transact and Temenos Payment Hub, engineered for the highest levels of uptime, data protection, and business continuity, helping to meet or exceed SLAs.

Joint Value

Tech Mahindra's broad experience in supporting various Temenos deployment topologies, combined with IBM's open hybrid cloud strategy, is designed to provide an improved customer experience, total cost optimization, and a model for scalable deployment of Temenos workloads on IBM LinuxONE.

Joint value delivered by considering factors such as cost of operations and timelines, site reliability engineering (SRE) is built to include:

- Rethinking TCO as total cost of optimization as against total cost of ownership alone.
- Automating operations and provisioning through IaC, IBM Cloud Infrastructure Centre, and operators

Timelines	Operations	SRE/Engineering
• Reduced timelines for provisioning through IaC automation • Operator lifecycle-based frameworks for deploying functional, stable environments	• Simplified deployment and minimal downtime • Ability to scale on-demand based on auto-scaled containers • Improved observability and resilience supported by an enterprise-grade service mesh	• Bringing down provisioning cycles by orders of magnitude • On-demand provisioning for multiple lifecycle environments • IBM Cloud Infrastructure Centre simplifies and automates the management

Conclusion

Over time, cloud-compatible and containerized deployments will become the standard for core banking modernization, enabling banks to leverage microservices, enhanced observability, and next-generation infrastructure capabilities.

The three-way collaboration between Tech Mahindra, Temenos, and IBM, powered by IBM LinuxONE, enables clients to transition to a modernized core banking platform with enhanced security, performance, and scalability. This integrated approach is built to offer banks the flexibility to deploy in hybrid environments, maintain strict compliance and data privacy, and accelerate innovation while optimizing the total cost of operations.

By combining Tech Mahindra's proven expertise in Temenos upgrades, Temenos banking capabilities, and IBM LinuxONE's trusted enterprise-grade platform, banks are empowered to reimagine their core with confidence, control, and clarity.

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