Hybrid Cloud and DevOps Technologies for the zSystems Platform

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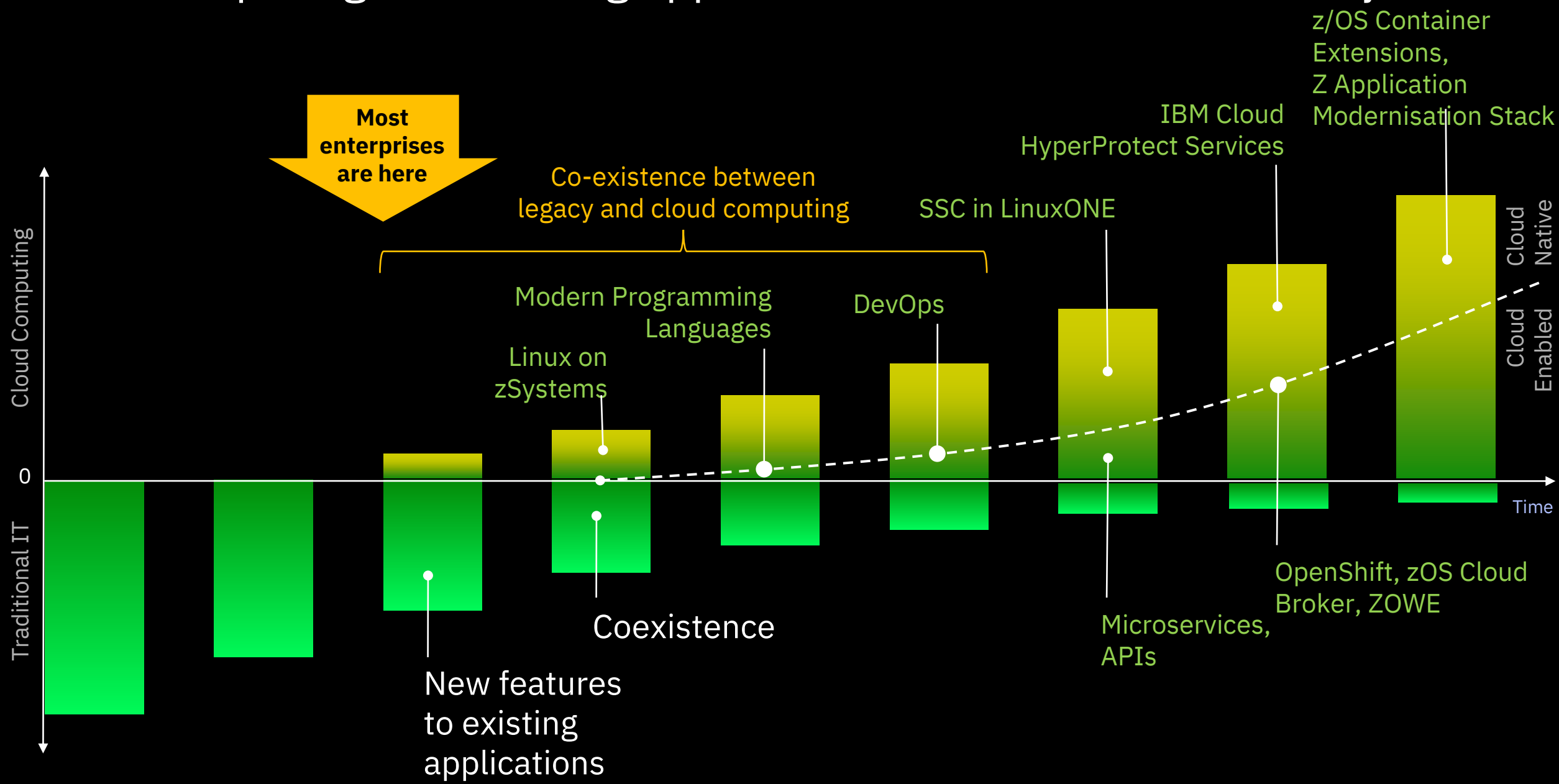
IBM

Public cloud?

Cloud computing and existing apps will co-exist for the next 20+ years



IBM Hybrid Cloud Strategy

IBM services

System integrator partners

IBM software
IBM Cloud Paks

Software and SaaS partners

Red Hat hybrid cloud platform

Red Hat OpenShift

Red Hat Enterprise Linux

IBM Cloud

Public Clouds
AWS • Azure • Others

IBM Systems
Z • LinuxONE • Power • Storage

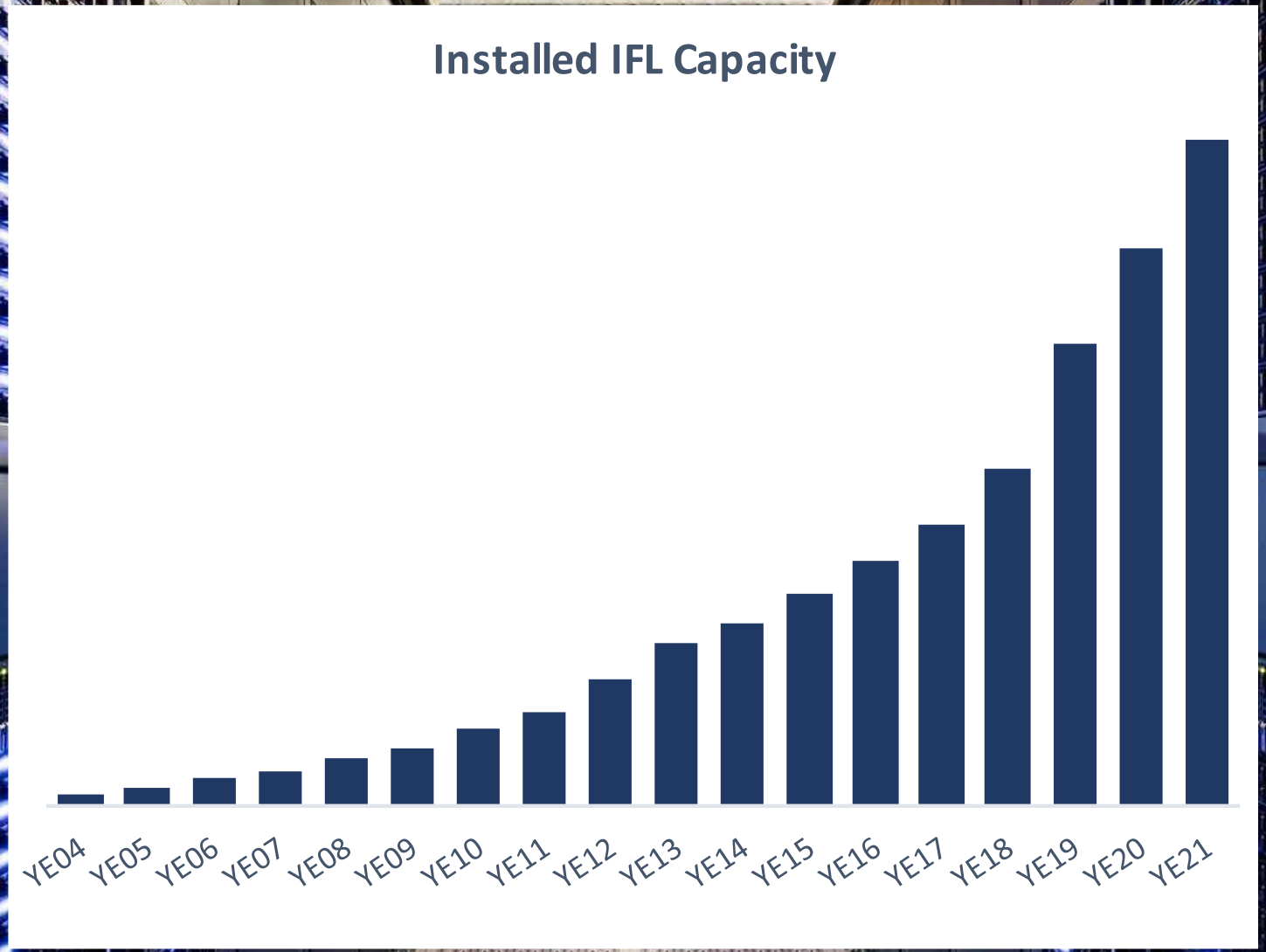
Enterprise Infrastructure

Edge

Workloads on Linux (IFLs on zSystems or LinuxONE)?

Linux on IBM Z momentum

- Continuous investment and expansion of our open-source software ecosystem
- Rapidly increasing adoption of Linux, with 2Q22 being the best quarter ever and over half of all IBM Z accounts running Linux
- Almost doubled in growth in installed IFL MIPS Capacity since start of z15 / LinuxONE III program (3Q19)



Familiarity with container technology?

Containers 101

Containers are lightweight software components that bundle the application, its dependencies, and its configuration in a single image, running in isolated user environments on a traditional operating system on a traditional server or in a virtualized environment.

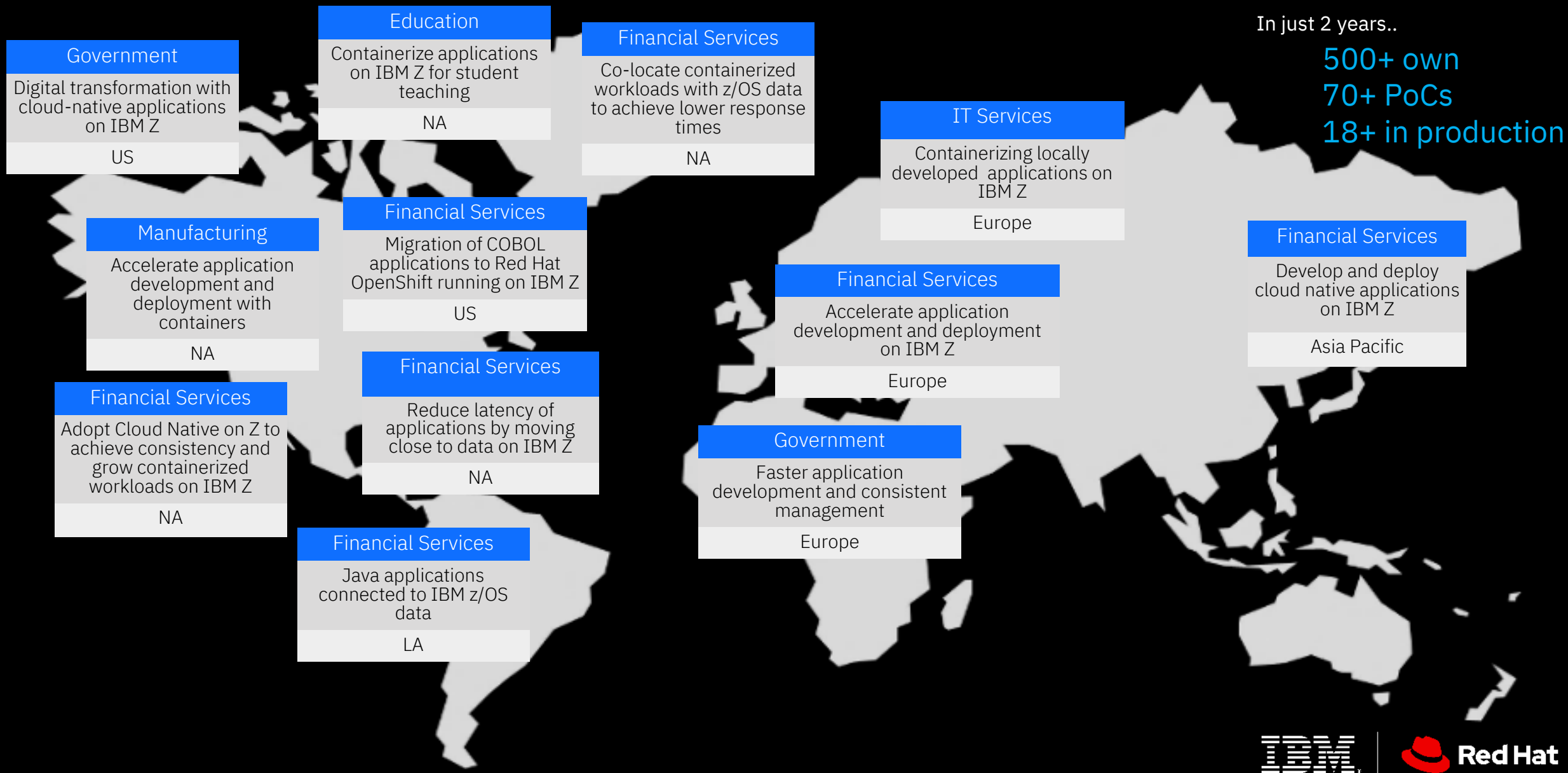
- Portability between different platforms and clouds—it's truly write once, run anywhere.
- Efficiency through using far fewer resources than VMs and delivering higher utilization of compute resources—see "Containers vs. VMs: What's the difference?" for a full comparison.
- Agility that allows developers to integrate with their existing DevOps environment.
- Higher speed in the delivery of enhancements. Containerizing monolithic applications using microservices helps development teams create functionality with its own life cycle and scaling policies.
- Improved security by isolating applications from the host system and from each other.
- Faster app start-up and easier scaling.
- Flexibility to work on virtualized infrastructures or on bare metal servers
- Easier management since install, upgrade, and rollback processes are built into the Kubernetes platform.

Containerization Explained: *https://www.youtube.com/watch?v=0qotVMX-J5s*

Have workloads that :

- Are Latency Sensitive?
- Require high levels of security and strict regulatory compliance?
- Require a consistent devOps experience across all your environments?
- Cannot go down for more than a few seconds per year?
- Need to elastically scale during peak?

Worldwide Momentum for Application Modernization of Linux on zSystems Workloads



Government
Digital transformation with cloud-native applications on IBM Z
US

Education
Containerize applications on IBM Z for student teaching
NA

Financial Services
Co-locate containerized workloads with z/OS data to achieve lower response times
NA

Financial Services
Migration of COBOL applications to Red Hat OpenShift running on IBM Z
US

Manufacturing
Accelerate application development and deployment with containers
NA

Financial Services
Reduce latency of applications by moving close to data on IBM Z
NA

Financial Services
Adopt Cloud Native on Z to achieve consistency and grow containerized workloads on IBM Z
NA

Financial Services
Java applications connected to IBM z/OS data
LA

IT Services
Containerizing locally developed applications on IBM Z
Europe

Financial Services
Accelerate application development and deployment on IBM Z
Europe

Government
Faster application development and consistent management
Europe

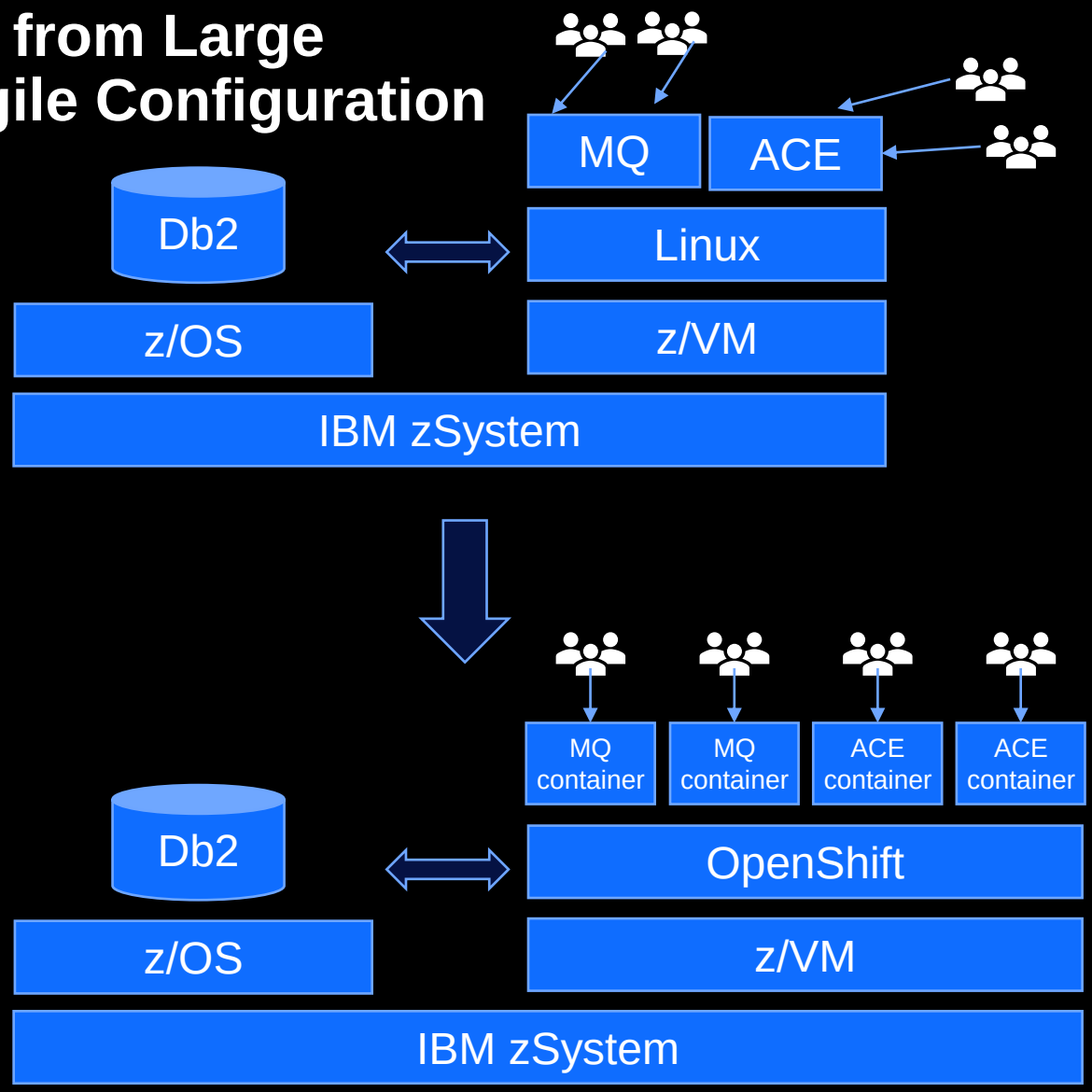
Financial Services
Develop and deploy cloud native applications on IBM Z
Asia Pacific

In just 2 years..

500+ own
70+ PoCs
18+ in production

IBM | Red Hat

European Bank - Modernization/Colocation from Large Monolithic Integration Broker To A More Agile Configuration



Challenge

Customer needs to improve agility and minimize risk of large monolithic integration broker and MQ components that support critical business applications. Customer also wants to increase reliability and scalability with zSystems and containerized micro services.

Solution Benefits

The customer decided to implement Red Hat OpenShift on zSystems and IBM Cloud Pak for Integration to take advantage of the platform's scalability, reliability and lower TCO.

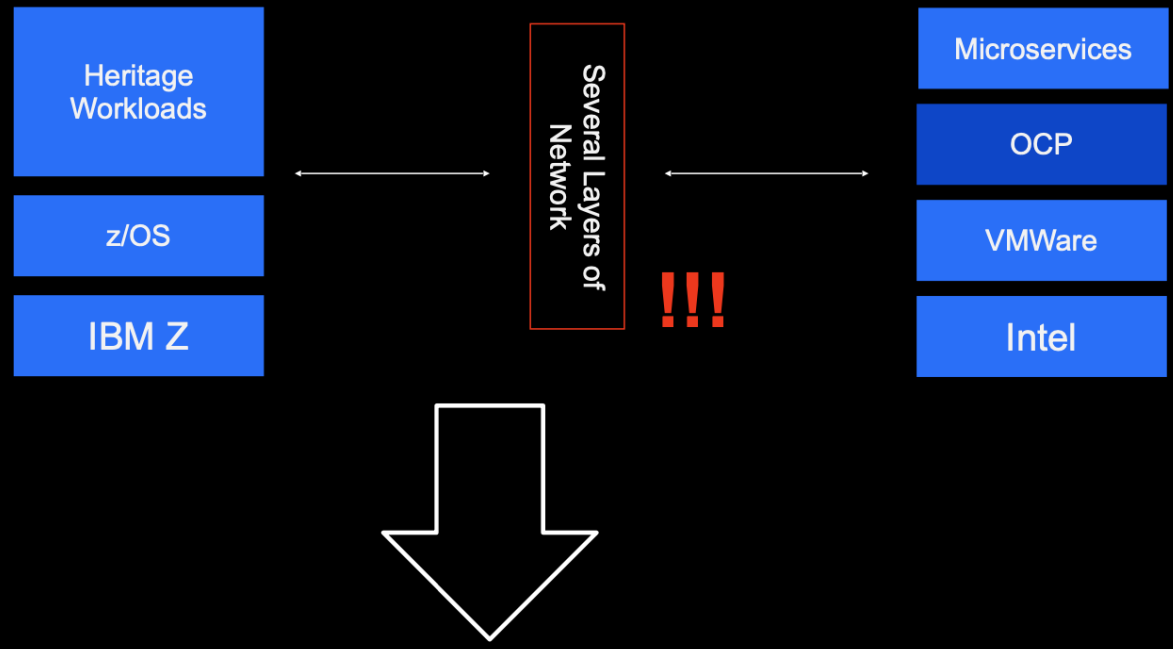
The bank is taking advantage of the containerized IBM App Connect Enterprise server as well as containerized MQ instances to allow for a more agile development and production rollout of various microservices instead of changing the current large monolithic implementation. Using OpenShift along with pipeline technologies enables the bank to be more responsive to business needs.

Bank in North America - Modernization/Colocation with IBM Z

Challenge

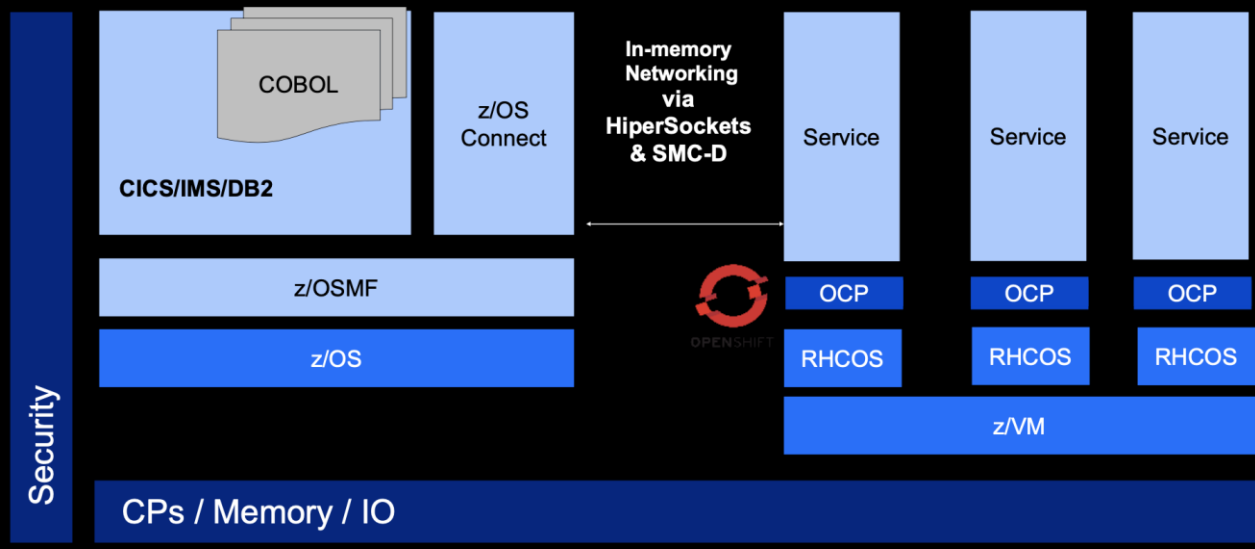
A North American Bank needed to increase their competitive business offerings by extending and modernizing integration with legacy assets while maintaining enterprise SLAs and keeping risk and cost low.

Containerized services running in Linux on zSystems co-located on the same hardware with z/OS data & services assets gave the client the low latency, high volume transaction processing required to offer a better reliable and secured service to its customers across the world.



Solution Benefits

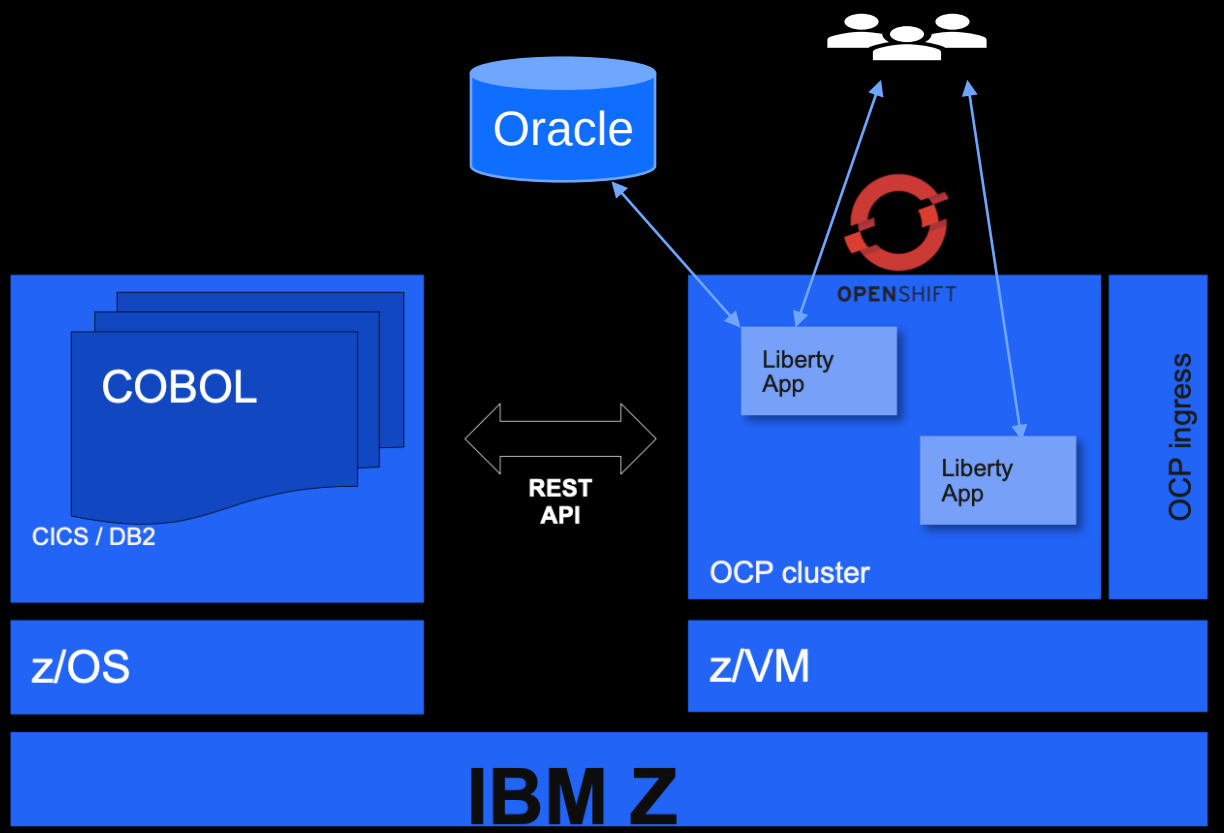
By by exploiting co-located containers with the SOR, the client offered a more competitive and efficient service to its customers by gaining a **7.3x lower transaction latency** compared to the equivalent distributed systems architecture. The bank is also able now to extend the container platform all the way to IBM zSystems giving its developers a platform agnostic development environment while at the same time giving them the ability to run containers where they best fit.



Latin America Client - Modernization/Colocation with IBM Z

Challenge

Customer driving digital transformation to a cloud and microservices world and needed reliability, security and performance, as well as an integrated and standard platform that allows software transformation and migration in an agile, flexible and easy way.

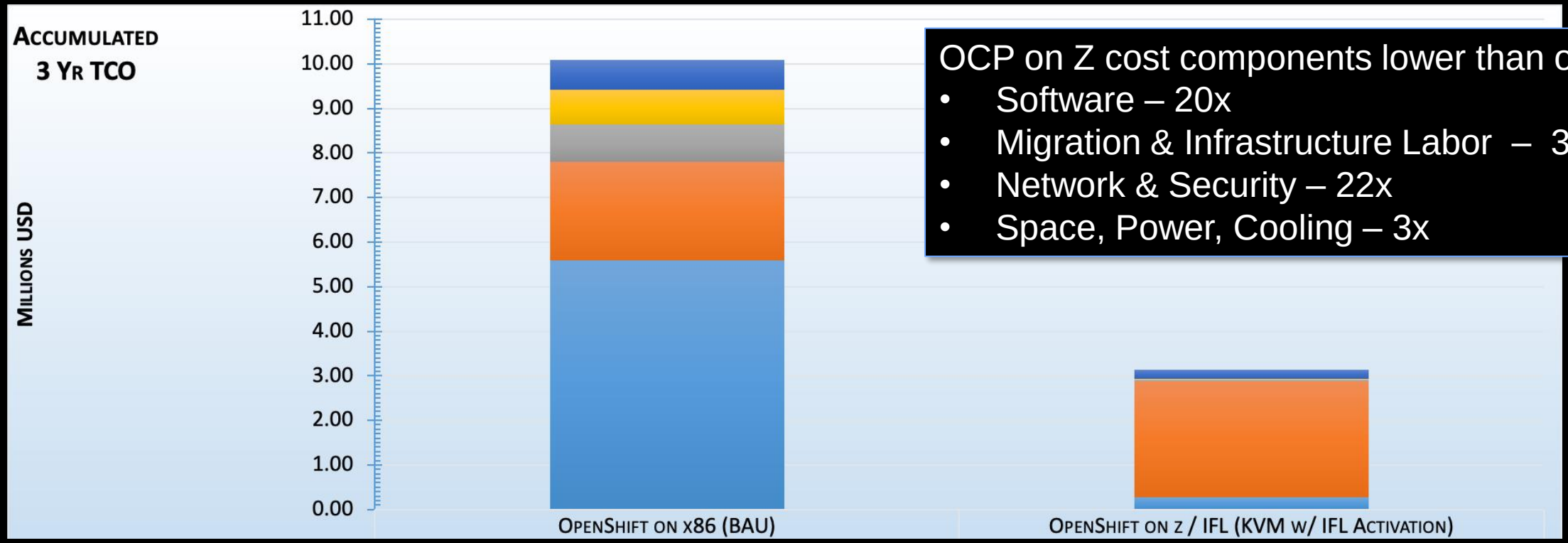


Solution Benefits

CI/CD Pipeline Integration With OpenShift on IBM Z
Application Portability

WebSphere (x86) to Liberty (s390x)
Better Scalability With OpenShift On IBM Z
From 1500 Queries/Min to 650,000 Queries/Min

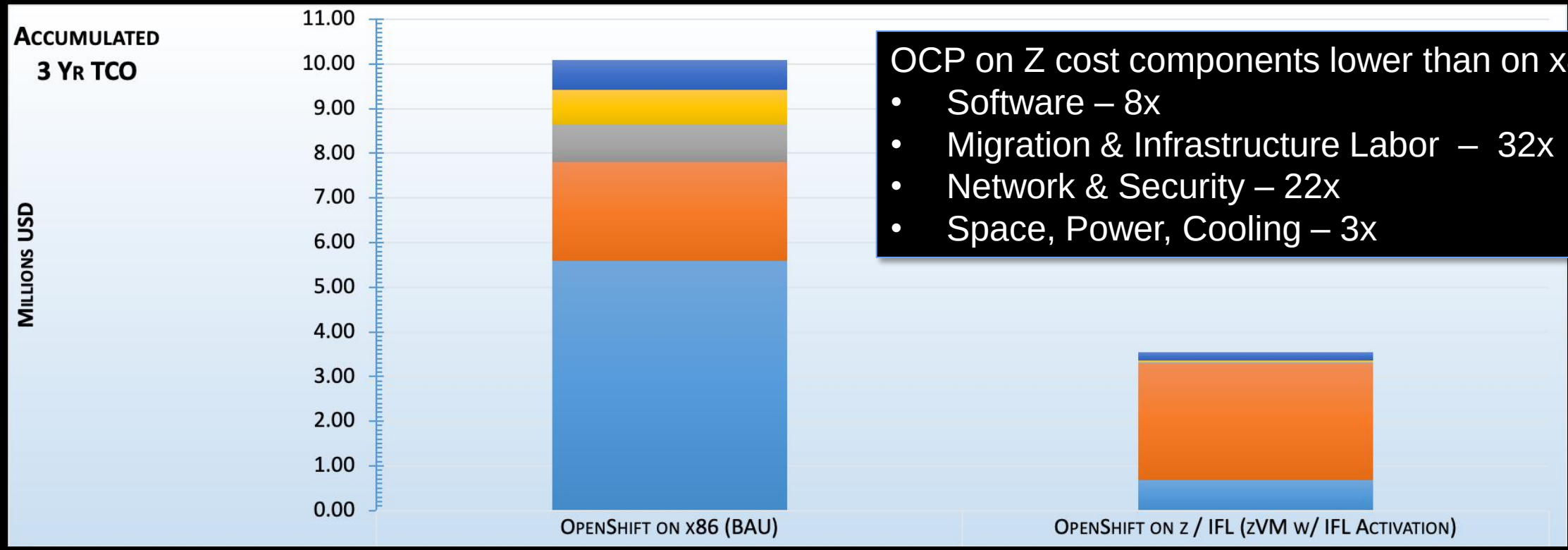
3-year TCO of OCP on Z KVM with IFL activation can be at least 68.9% lower than TCO of an equivalent x86 implementation



OCP on Z cost components lower than on x86:

- Software – 20x
- Migration & Infrastructure Labor – 32x
- Network & Security – 22x
- Space, Power, Cooling – 3x

3-year TCO of OCP on z/VM with IFL activation can be at least 64.8% lower than TCO of an equivalent x86 implementation



OCP on Z cost components lower than on x86:

- Software – 8x
- Migration & Infrastructure Labor – 32x
- Network & Security – 22x
- Space, Power, Cooling – 3x

Demo Time!