

Accelerating application development and delivery with enterprise runtimes



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Two challenges at once...

Rapid adoption of cloud-native today must tackle two challenges at once

Speed of Delivery



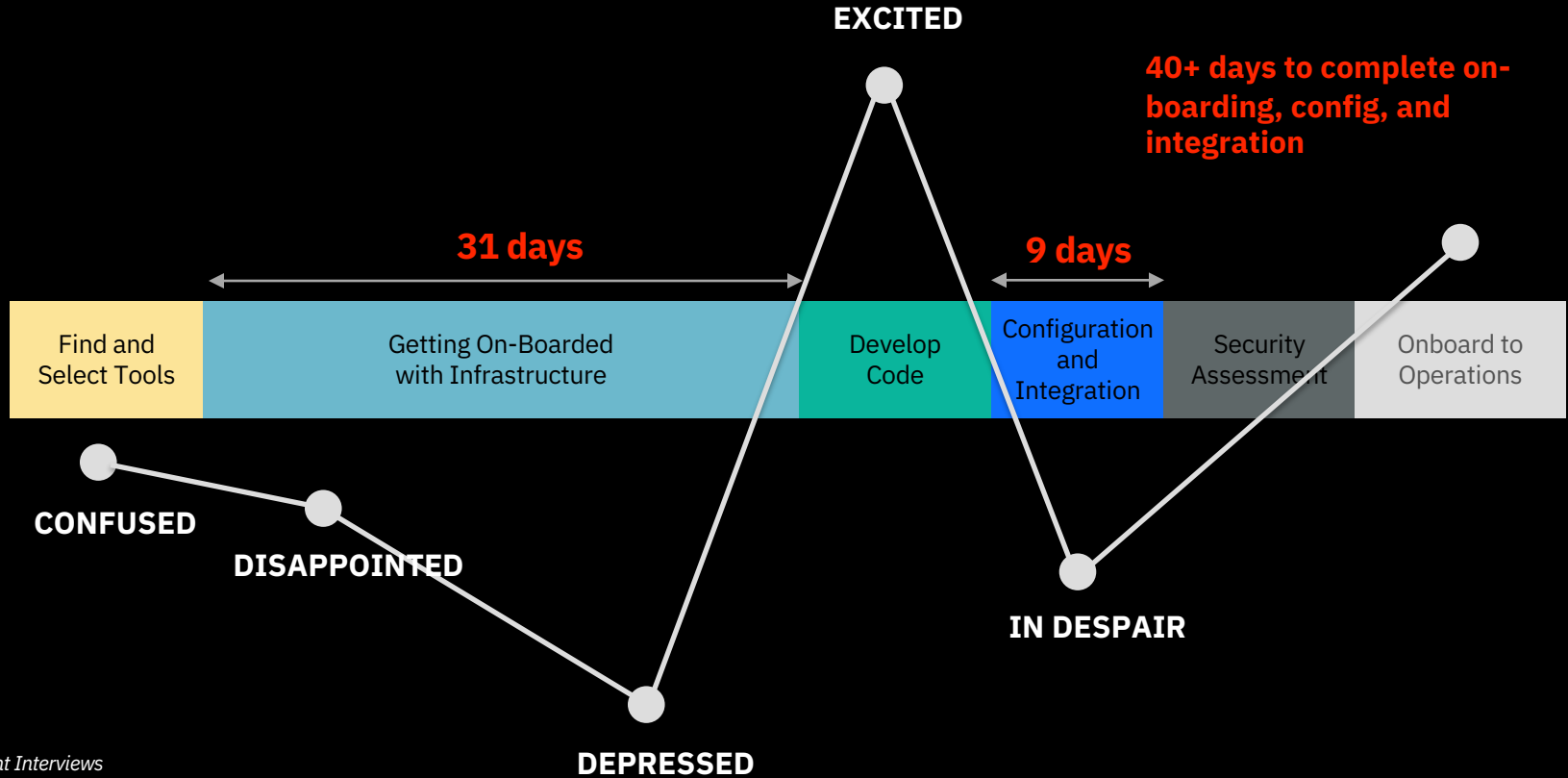
Enterprises need to increase frequency of delivery, reduce lead time for change, and minimize production failure

Governance



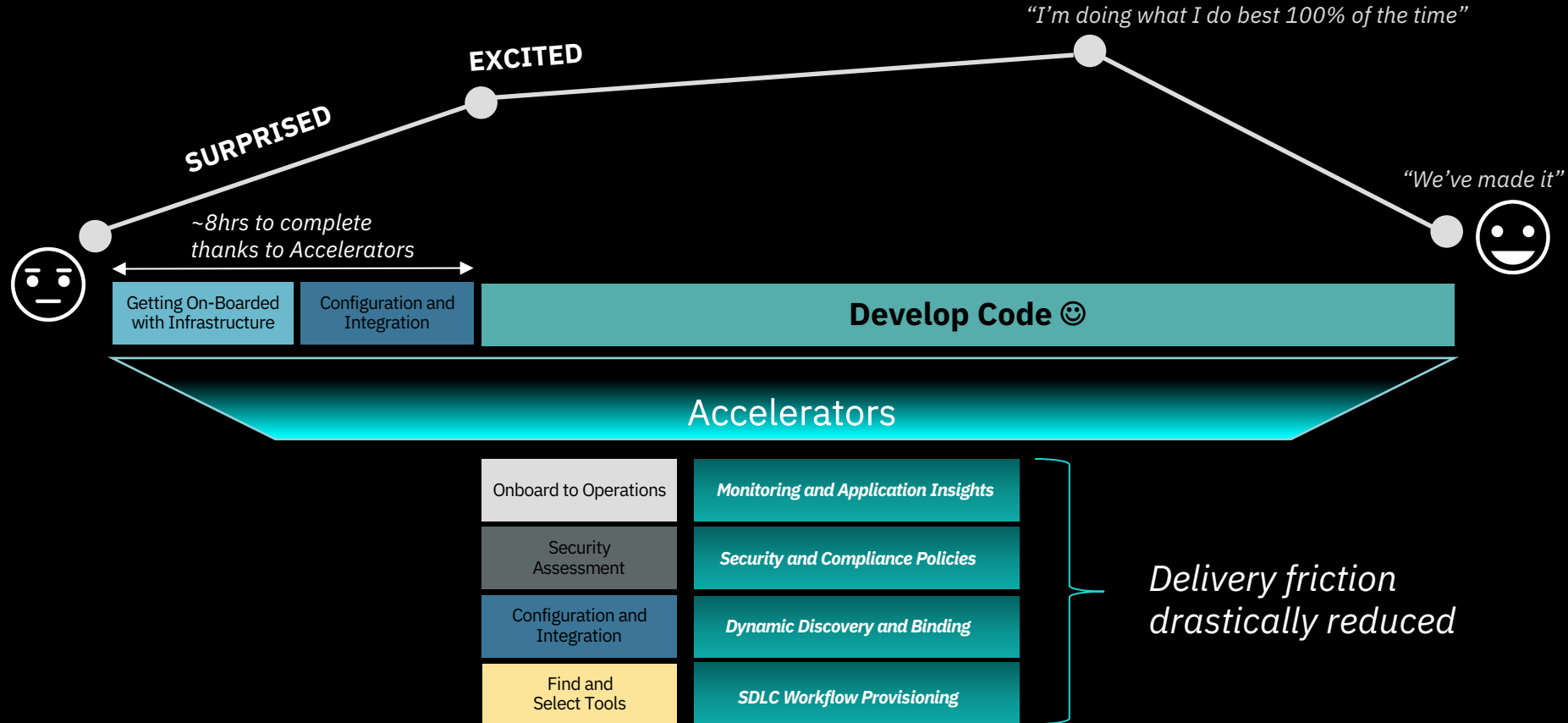
Enterprises need compliance processes to be less costly, time consuming, and complex

Example of Developer friction during delivery today



Vision for Solution Delivery with Accelerators

40+ days to 8 hours



Accelerators for Cloud-Native and Event-Driven Solutions

Technology Preview in CP4Apps v4.2

Accelerating Cloud-native **solutions** faster from idea to production

Unleash
Unlock
Optimize

Agile multidisciplinary teams



Architect



Developer



Operations



Compliance



Bus. Owner

Accelerators

**Approach business
problems differently**

**Teams productive in
hours not weeks**

**Faster time to value,
integrated end-to-end**

**Lower cost to
operate total solution**

Cloud-native (REST microservices)

Event-driven (Reactive microservices)

Runtimes



OpenShift Container Platform



AWS

Microsoft
Azure

Google
Cloud



Edge

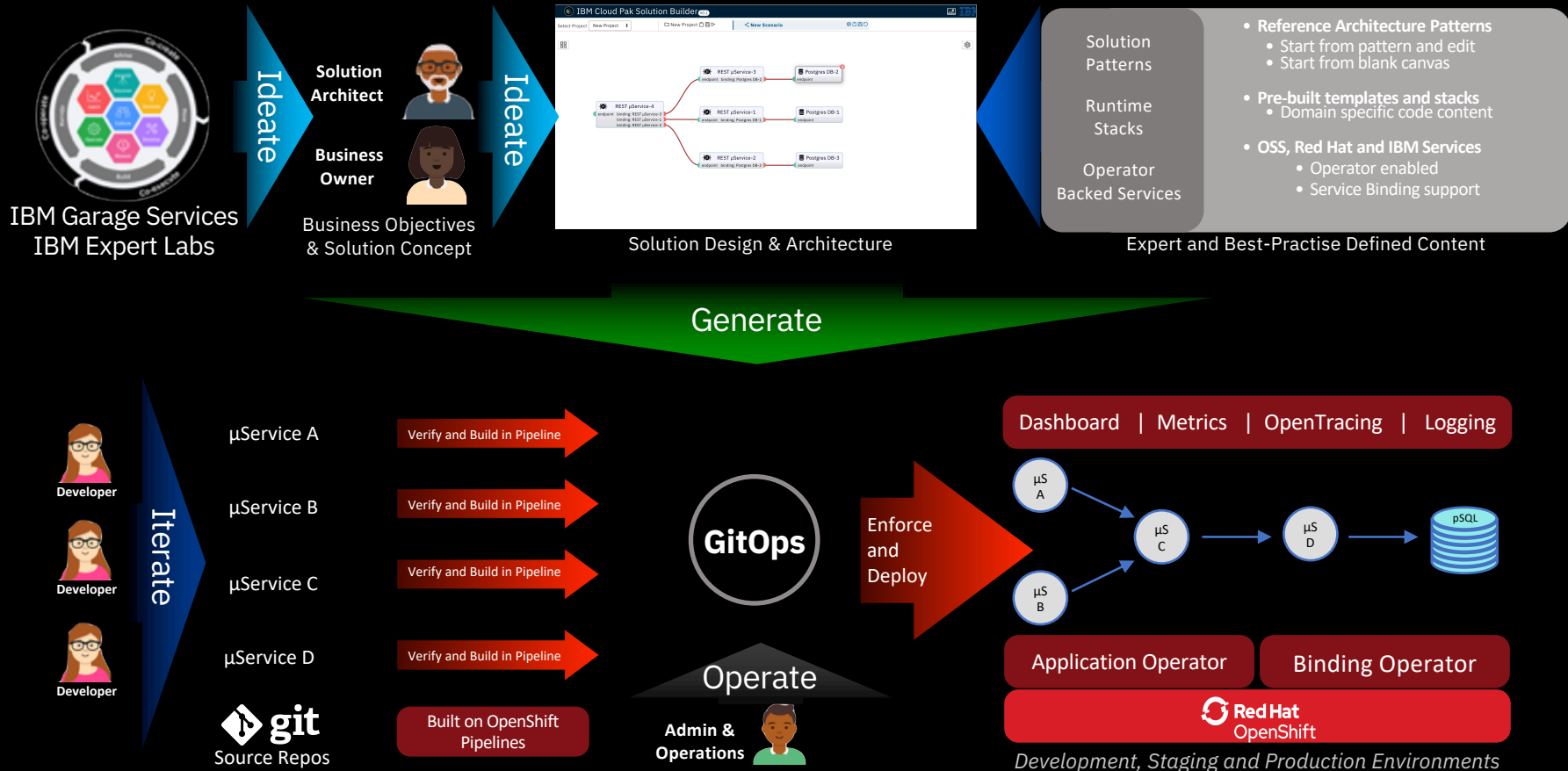


Private



Systems

Design Led Acceleration Workflow



Demo

GitOps with Kustomize

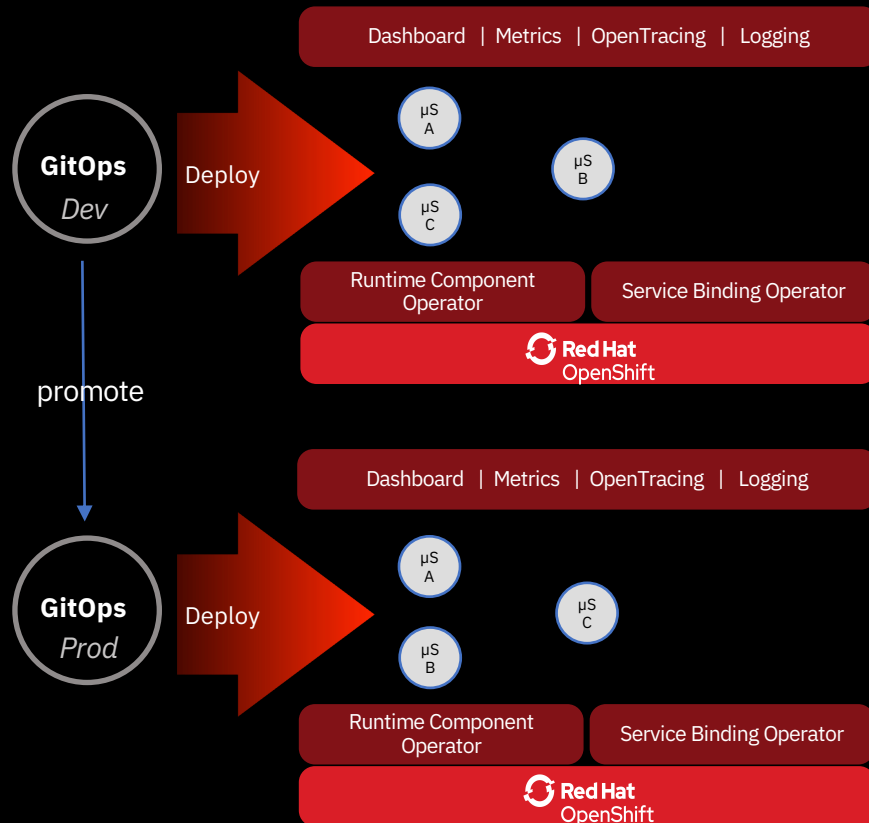
Kubernetes Native Configuration Control and Management

Benefits to adopting GitOps

- A single source of truth for deployments.
- Separation of concerns between development and operations.
- The ability to configure at a solution level and a per-environment level.
- Change control for deployments.
- The ability to easily roll back or to quickly and reliably reproduce your cluster.
- Controlled promotion of changes through development, staging, and production environments.

Kustomize

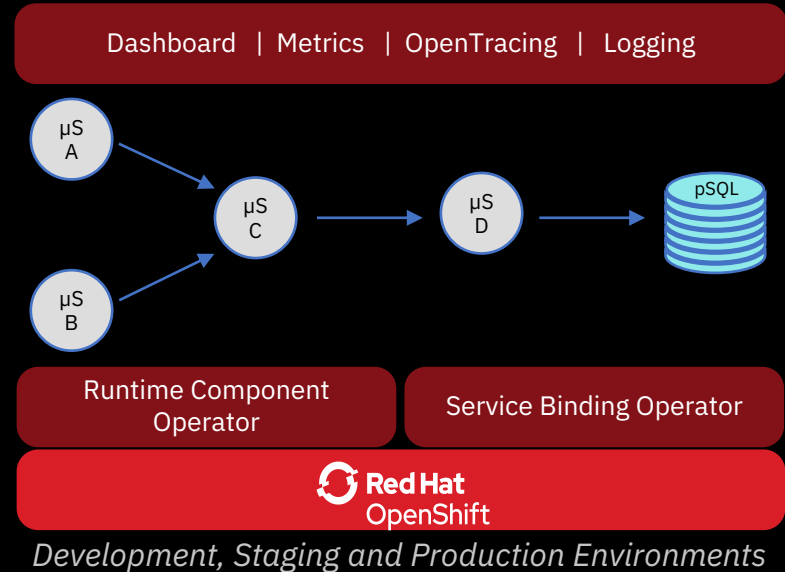
- Operational configuration, such as number of instances, can be tailored to each environment through use of overlays



Service Binding

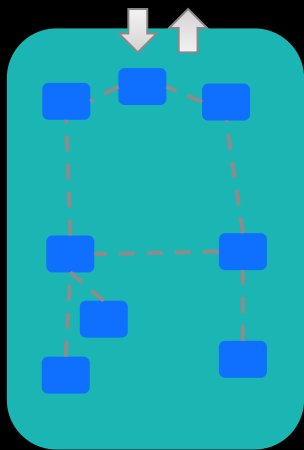
Service Discovery and Dynamic Configuration

- Enables dynamic discovery and configuration between microservices
- Enables dynamic discovery and configuration with services
- Removes hard coded configuration from microservices
- Makes microservices portable between environments

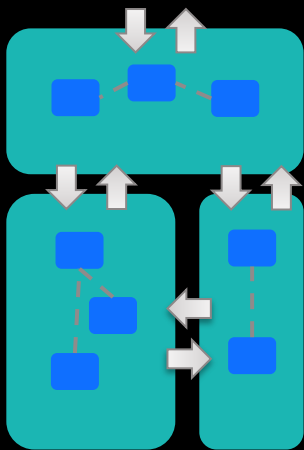


Modernization of existing workloads

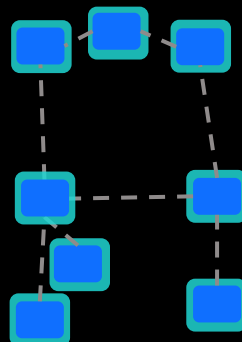
A Spectrum of Architecture Styles



Monolith

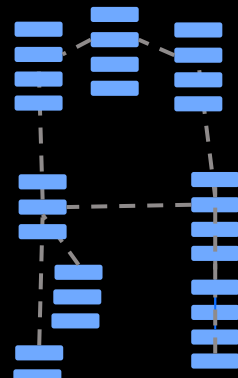


“Macroservices”



Mesh

Microservices



Functions Infra

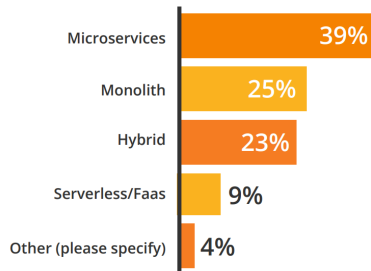
Functions

Industry commentary

Software Architecture and Design InfoQ Trends Report—April 2020

- As microservices are becoming more common, there is more resistance to starting with a microservices architecture. More companies are looking at the fundamentals of correctly built distributed systems or creating modern

What architectural approach do you plan to use for implementing your Java systems in the cloud?



The popularity of microservices may be waning, with the usage of the microservices architecture for implementing Java systems in the cloud declining since last year (39% in 2020 vs 43% in 2019).



Martin Fowler

FaaS vs. Microservices

There's no-one-size-fits-all strategy to adopting microservices. You need a pragmatic lens through which to judge and apply microservices + FaaS to your technology stack.



Kelsey Hightower @kelseyhightower · Dec 11, 2017

2020 prediction: Monolithic applications will be back in style after people discover the drawbacks of distributed monolithic applications.



Simon Brown @simonbrown · Feb 12, 2018

Modular monoliths: the basic idea is that you apply microservices design thinking to a monolith; i.e. a monolith is a collection of "components" rather than



Jamie Coleman @Jamie_Lee_C · Jun 29

Good morning Twitter. I hear the winds are changing so I wanted to know: What is your favorite architecture style that you like working with?



731 votes · Final results

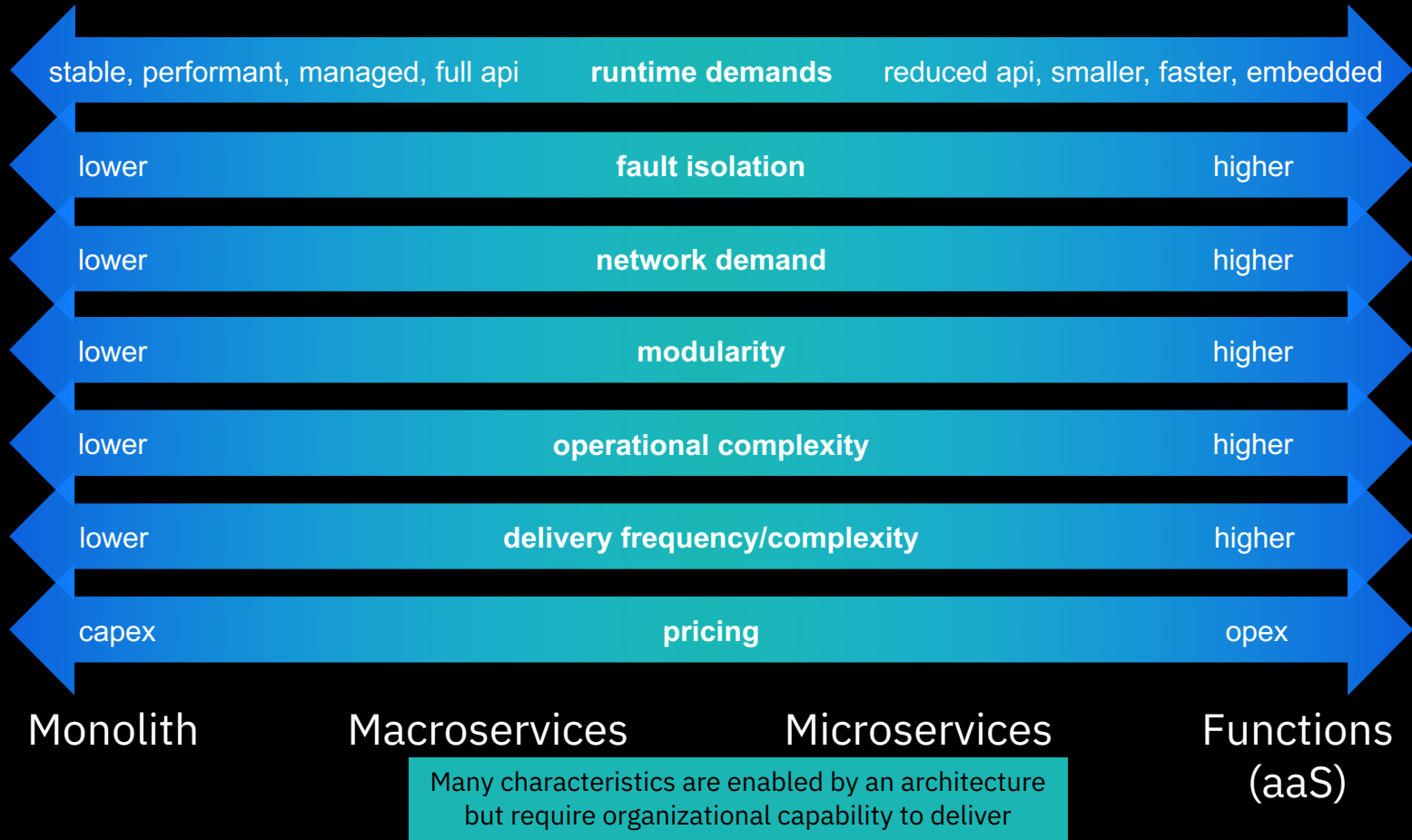
25 32 37

100s of problem children to 1 superstar

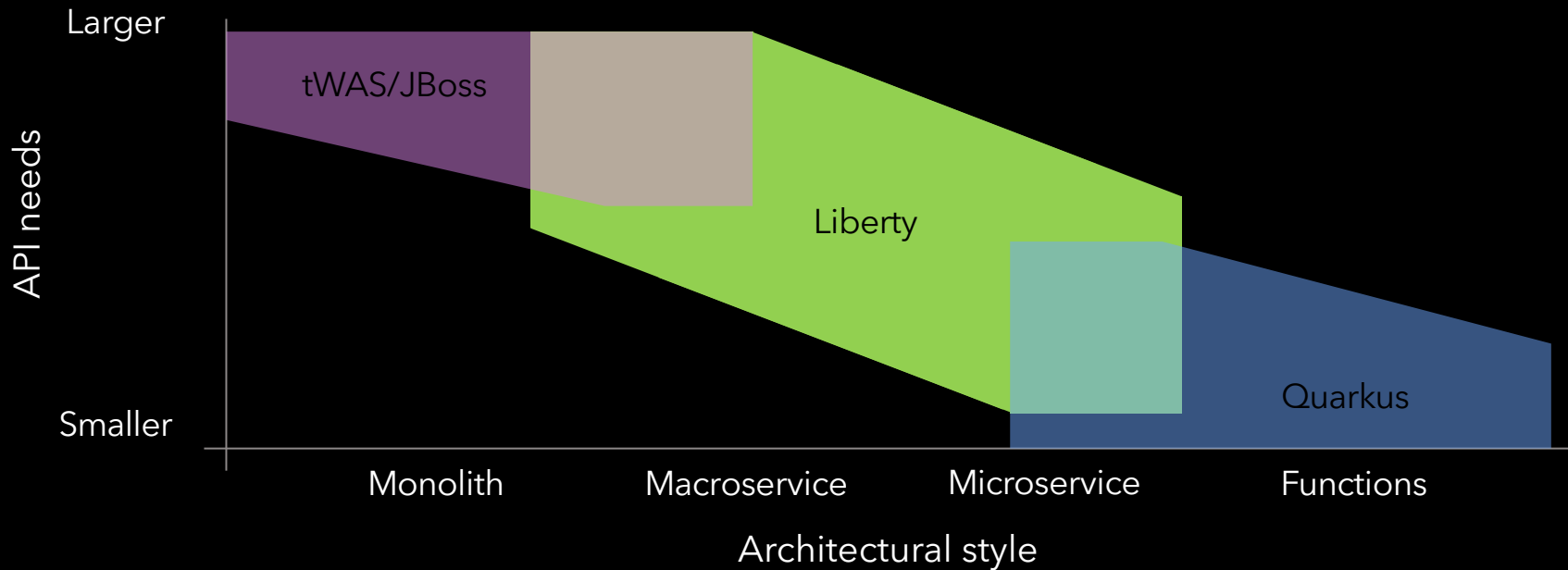


Alexandra Noonan on July 10th 2018

Architecture characteristics



API needs for the continuum of architectural styles



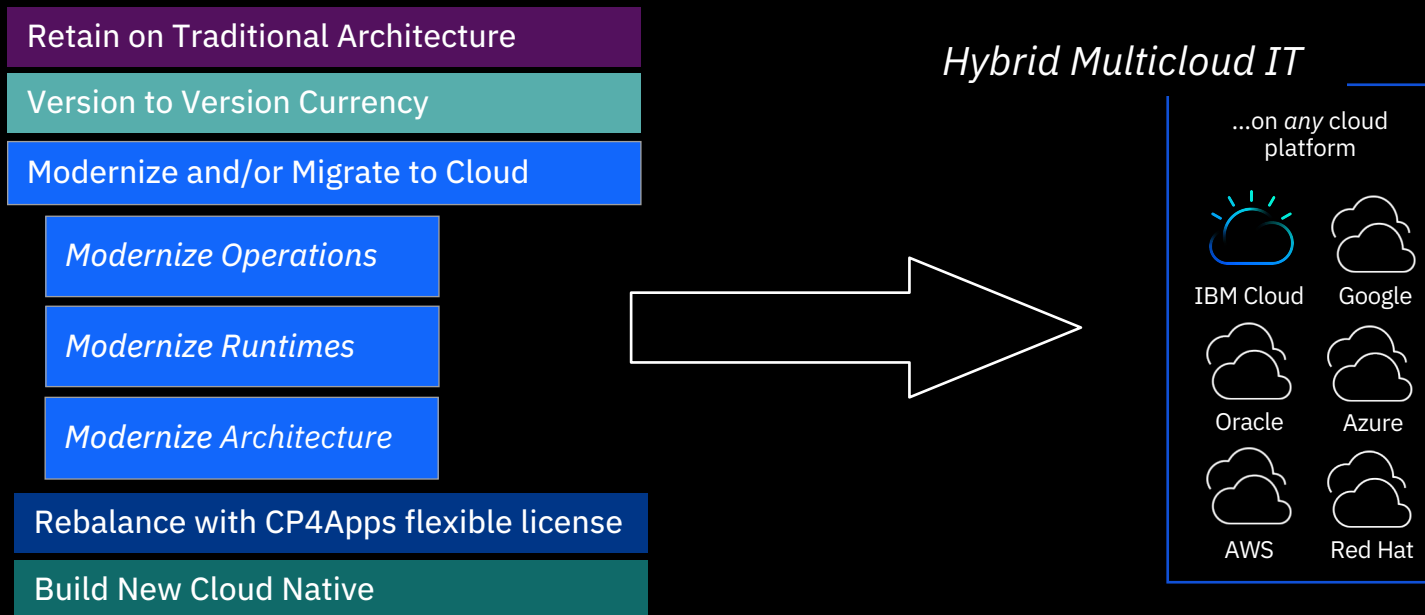
Unlock: Modernize and leverage existing investments

Unleash

Unlock

Optimize

How do you choose the optimum approaches for your organization's needs?



CP4Apps Modernization Value Comparison

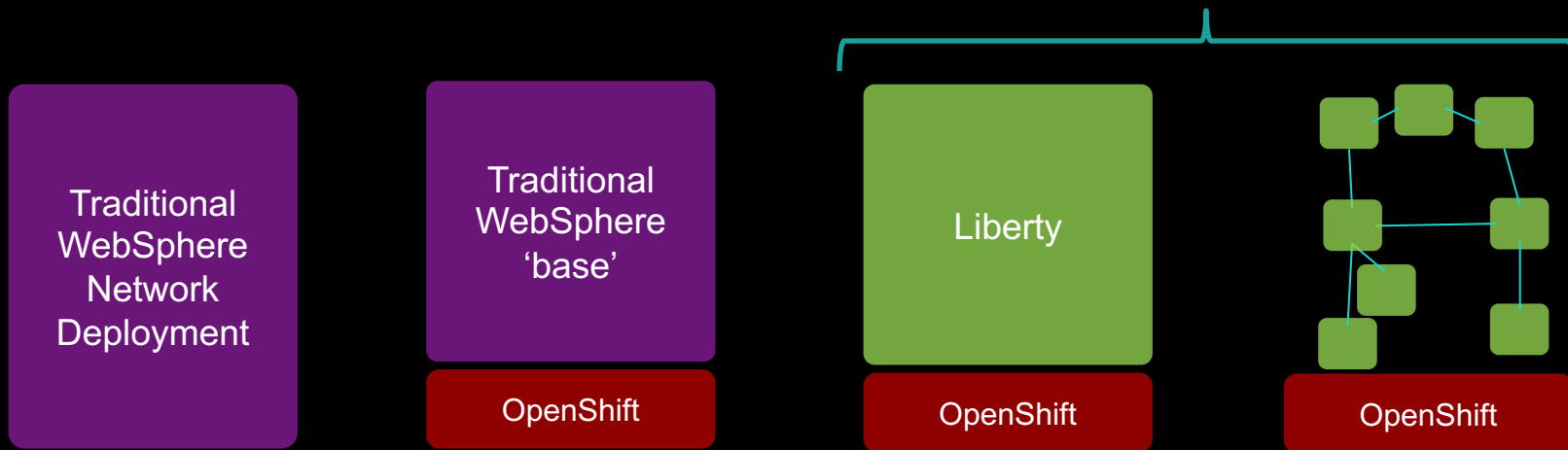
	Modernize Operations	Modernize Runtimes	Modernize Architecture
Value			Cloud Native
			Agile Delivery
		Cost Savings	
		Technical Debt Reduction	
	Flexible Deployment		
CP4Apps Recommended End State	Application	Application	Microservices
	tWAS	Liberty	Liberty
	Containers	Containers	Containers
	OpenShift	OpenShift	OpenShift
Mod Tools	Transformation Advisor		Mono2Micro (beta)

New

Existing

Ideal for modernization

Containers, Java EE, monoliths & microservices, ...



Monolith

Modernize
Operations

Modernize
Runtime

Modernize
Architecture

6 Reason why Liberty is totally awesome for Microservices

1

Just enough runtime



80% disk and 56% memory saving

A runtime **tailored** to the **needs** of your applications

Cost = (Disk + Memory) **x** Instances

For microservices & functions
this can be large

Package	Size on Disk	Memory
Java EE 8 / Jakarta EE 8 + MicroProfile 3.3	121MB	165MB
MicroProfile 3.3	59MB	113MB
Servlet 4.0	24MB	72MB

2

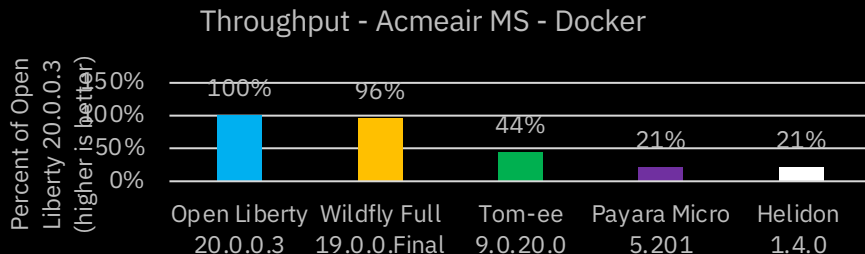
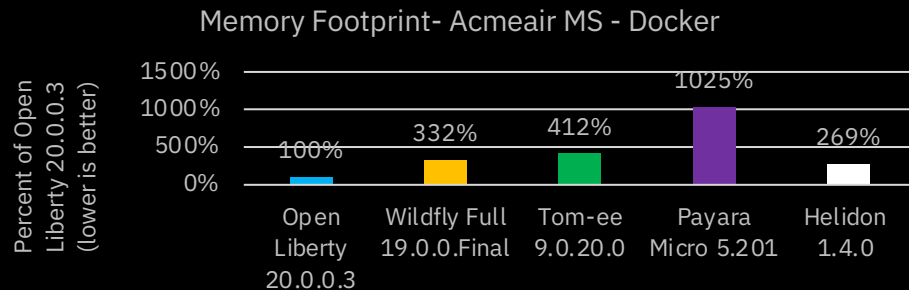
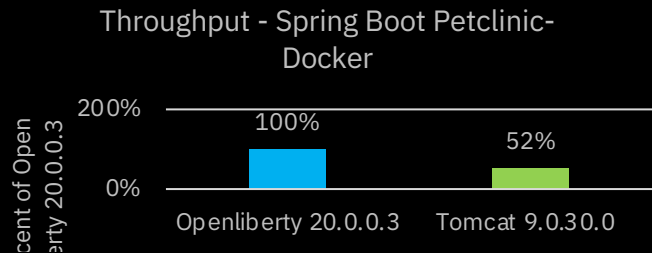
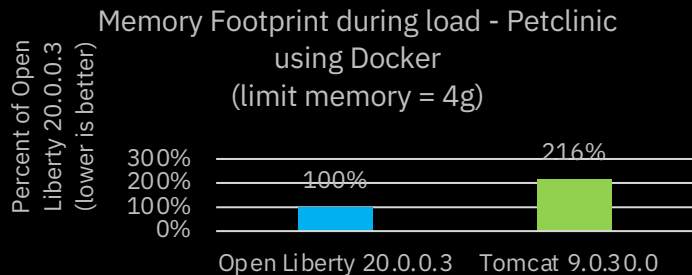
Low operating cost



4x increased density over Tomcat & Spring Boot

A runtime with **industry-leading memory and throughput**

Modernization led to optimized resource usage by 75% and reduced infrastructure footprint by 50% - A major US healthcare provider



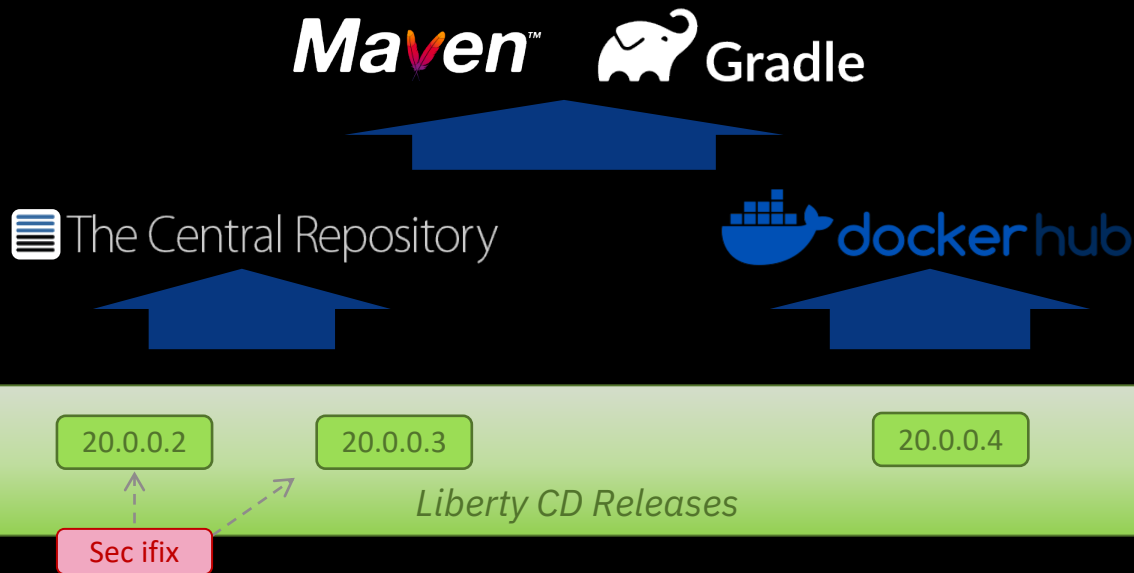
3

Continuous delivery



Zero-effort security fixing & zero technical debt

Effortless currency and security that scales for your 100s or 1000s of microservices



4

Zero migration

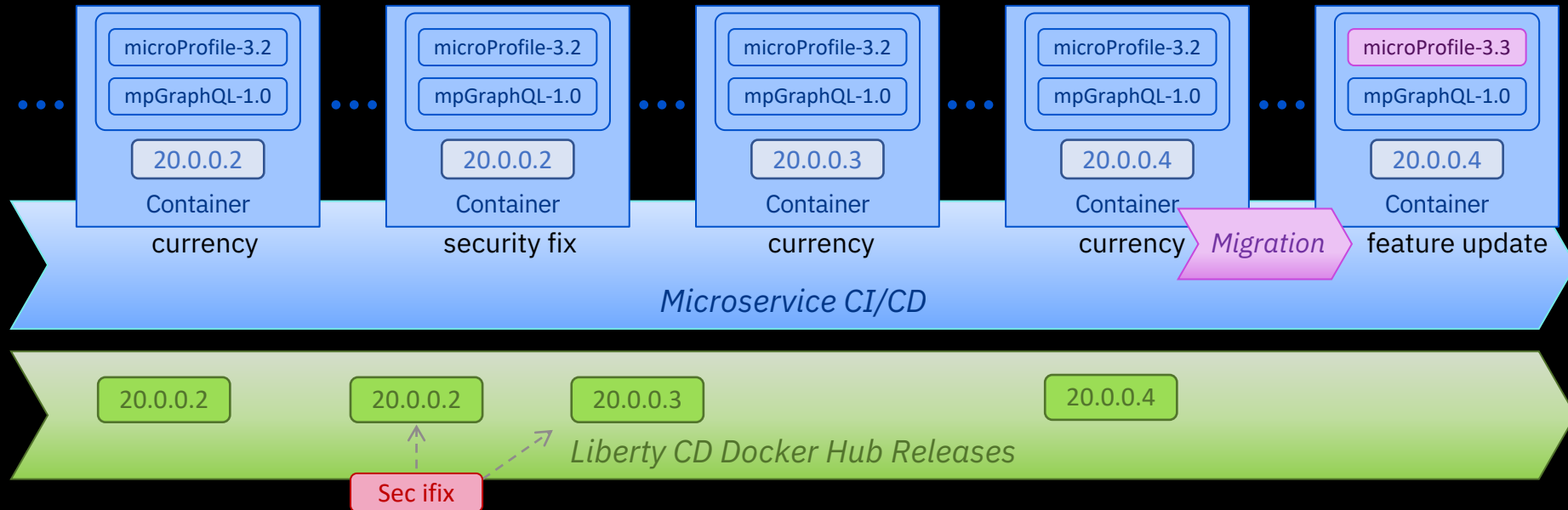


100% v2v & fixpack migration saving

Say “goodbye” to version-to-version migrations

V2v plus EE migration reduced from 18 months to 18 minutes

- Henrik Lundström, WAS Systems Administrator, Handelsbanken (Sweden)



5

Kubernetes optimized



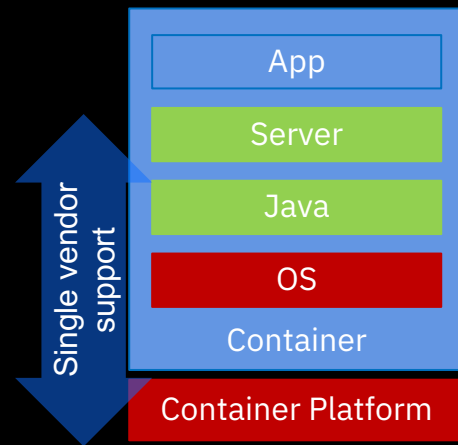
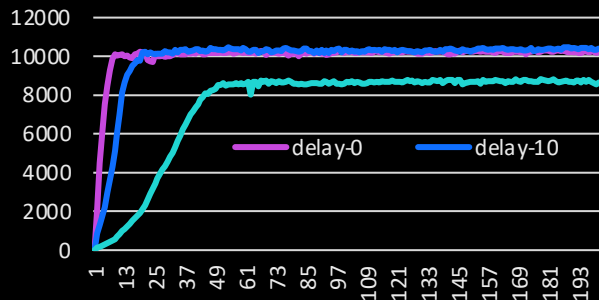
Self-tuned optimal perf, production-ready, kube-native

Out-of-the-box **performance**, **APIs**, **management** and top-to-bottom **support**

"You don't have to tune thread pools. Liberty does an outstanding job"

– Shawn Hisaw, WAS Technology Owner at a large health provider

Liberty threadpool autotuning for various transaction delays



6

Developer experience



Container & kube-native experience, rapid inner loop

Tools the [solve cloud-native developer challenges](#) in their [IDE of choice](#)

Maven™



The Central Repository



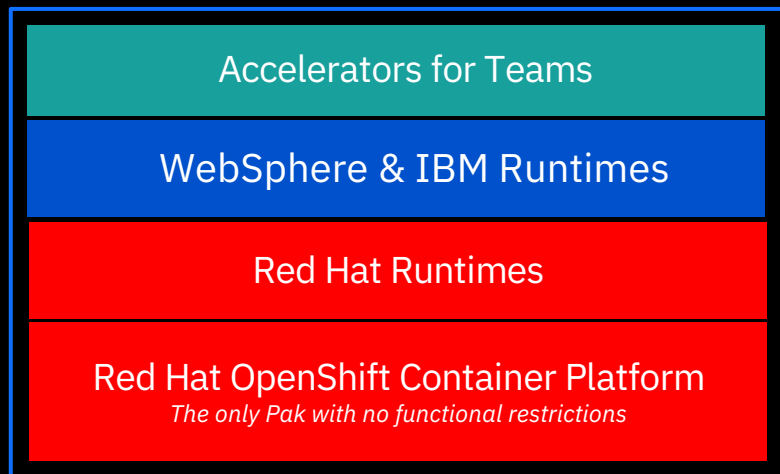
docker hub



 **microshed testing**

Summary: Cloud Pak for Applications

The ultimate flexibility across open source, platform, runtimes, and tools all in one place!



- **CHOICE:** Build new cloud-native apps on the broadest range of supported runtimes
- **FLEXIBILITY:** “Right-size” and modernize between the various WAS editions all with Liberty as an ideal modernization cloud-optimized runtime
- **CONTROL:** Empower teams to start quickly with increased productivity and enterprise governance
- **PORTABILITY:** OpenShift Container Platform for hybrid multi-cloud
- **EXCLUSIVES:**
 - *Perpetual and term licensing available*
 - *Supported Transformation Advisor*
 - *Accelerators for Teams*
 - *Availability on Power and Linux on Z*
 - *Common Services*



Thank you

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ibm.com/cloud/cloud-pak-for-applications

