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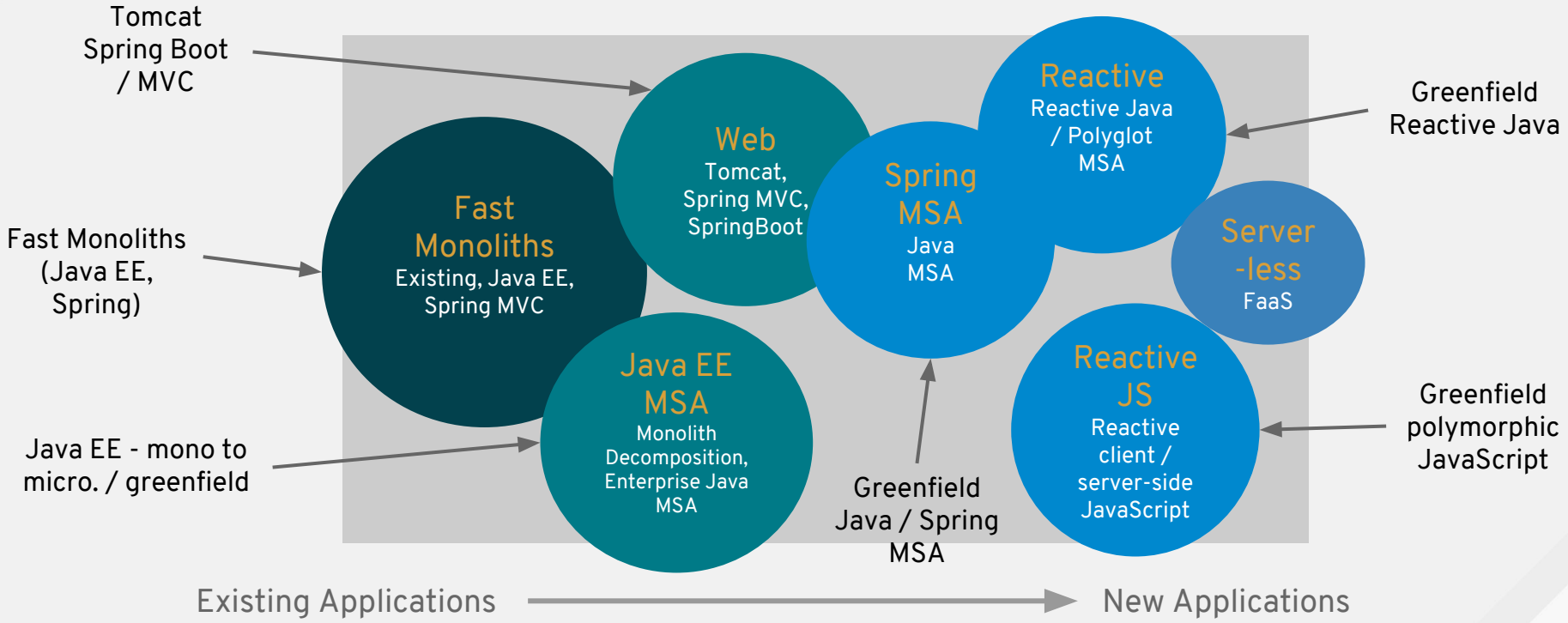
Microsoft Azure

MONOLITHS TO MICROSERVICES: APP TRANSFORMATION

Hands-on Technical Workshop

MOVING EXISTING APPS TO THE CLOUD

THE SPECTRUM OF ENTERPRISE APPS



MIGRATION AND MODERNIZATION APPROACHES

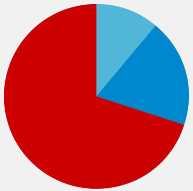
MODERNIZING EXISTING APPS

- Reuse existing functionality and data as much as possible
- Move existing workloads to a modern deployment platform
- Apply new processes, products, and technology to existing apps

DEVELOPING NEW APPLICATIONS

- API-centric polyglot microservices architecture
- Autonomous development teams
- Agile development, continuous deployment, DevOps culture
- Containerized & orchestrated cloud deployments

APPLICATION MODERNIZATION



Existing Apps

How much work required to rewrite?

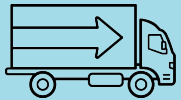
Review
Analyze
Prioritize

- Lift & Shift — Smaller or frozen apps are candidates here
- Connect & Extend — Highly scaled and high rate of change apps are candidates
- Rip & Re-write — Highly scaled and high rate of change apps are candidates
- Repurchase — Not a target
- Retire — Not a target
- Retain as is — Not a target

PATTERNS IN MODERNIZING WORKLOADS

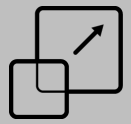
LIFT & SHIFT

- **Containerize** existing workloads
- Deploy them on a **PaaS**
- Keep external integrations and data on legacy
- Legacy applications have to be well written and suited



CONNECT & EXTEND

- **Legacy remains intact**
- New layer - new capabilities
- Deploy on **PaaS**
- **New integration points** between legacy and new layers **(Need for Agile Integration)**



RIP & RE-WRITE

- **Legacy is totally replaced**
- New interfaces and data
- Use **PaaS** to run
- Some data and features can be re-wrapped, but mostly are retired.

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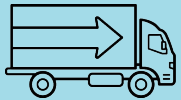

FOCUS FOR THIS SECTION

CONNECT & EXTEND

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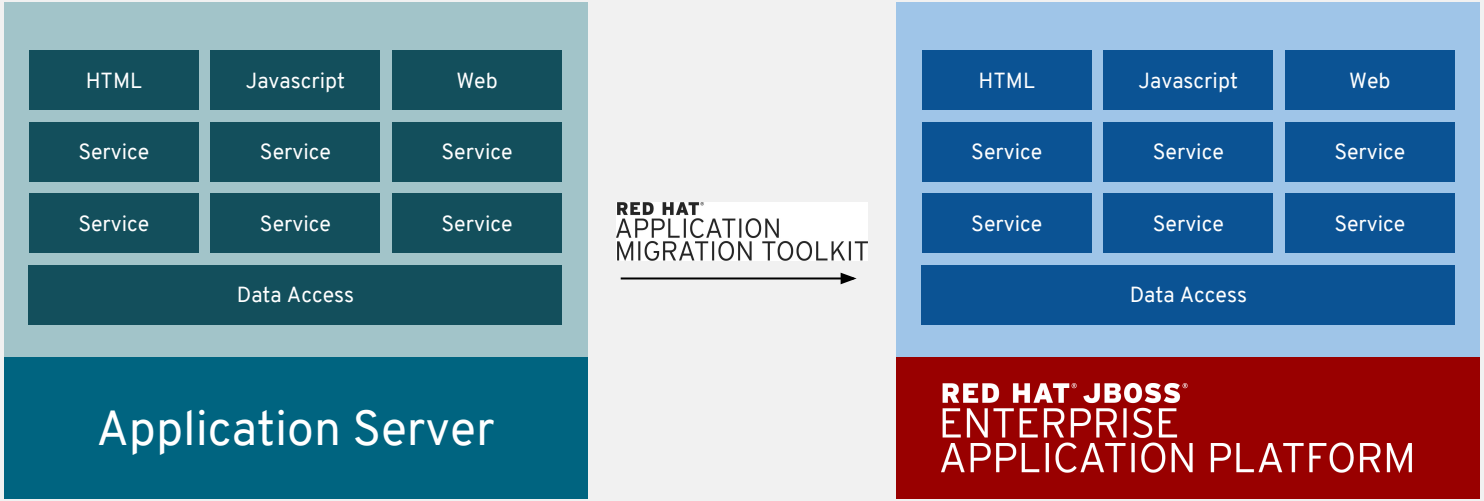
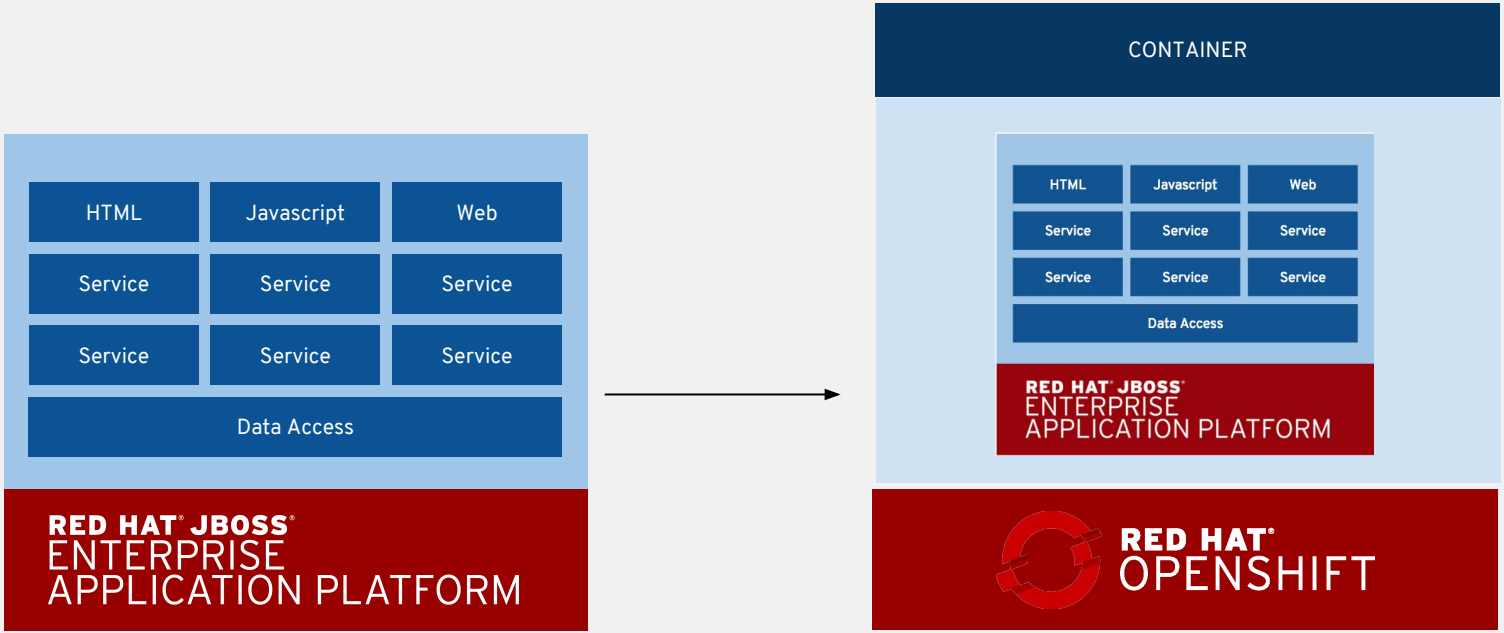
LIFT-AND-SHIFT MONOLITH TO CLOUD



LIFT-AND-SHIFT MONOLITH TO CLOUD



Majestic Monolith

https://m.signalvnoise.com/the-majestic-monolith-29166d022228

MAJESTIC (FAST-MOVING) MONOLITH

- Large organizations have a tremendous amount of resources **invested in existing** monolith applications
- Looking for a **sane way** to capture the benefits of containers and orchestration **without having to complete rewrite**
- **OpenShift** provides the platform for their existing investment with the benefit of a **path forward** for microservice based apps in the future

Why migrate to JBoss EAP?

Runtime [1][2] (framework)	Boot time server only	Boot time including app deployment	Memory usage without load	Memory usage under load	Measured[3] throughput
JBoss EAP (Java EE)	2 - 3 sec	**3 sec**	40 MB	**200 - 400 MB**	**23K req/sec**
JBoss EAP (Spring)	2 - 3 sec	7 sec	40 MB	500 - 700 MB	9K req/sec
JBoss WS/Tomcat (Spring)	**0 - 1 sec**	8 sec	40 MB	0.5 - 1.5 GB	8K req/sec
Fat JAR (Spring Boot)	N/A	**3 sec**	**30 MB**	0.5 - 2.0 GB	11K req/sec

Don’t believe it? Try it out yourself http://bit.ly/modern-java-runtimes

[1] The microservice is a simple REST application.
[2] All runtimes are using their default settings
[3] The performance test was conducted with ApacheBench using 500K request with 50 users and keep-alive enabled.

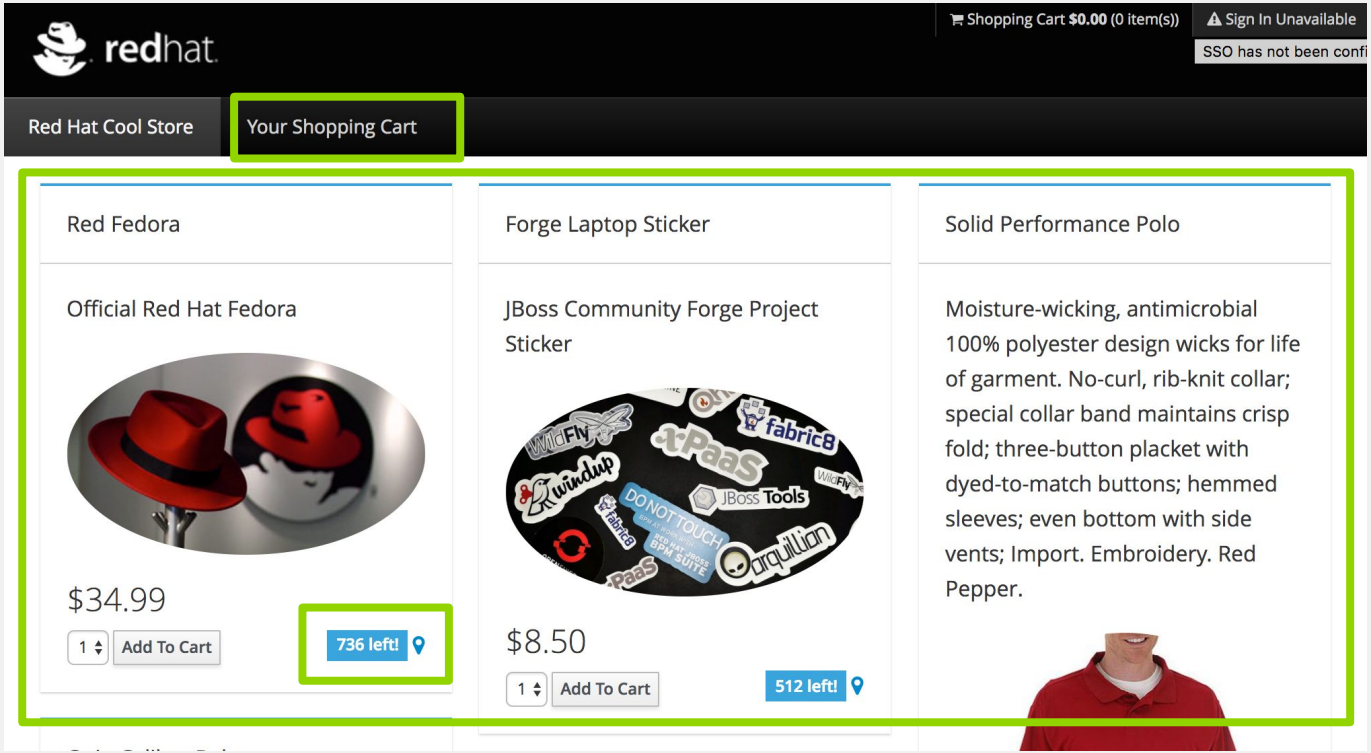
LAB: MOVING EXISTING APPS TO THE CLOUD

GOAL FOR LAB

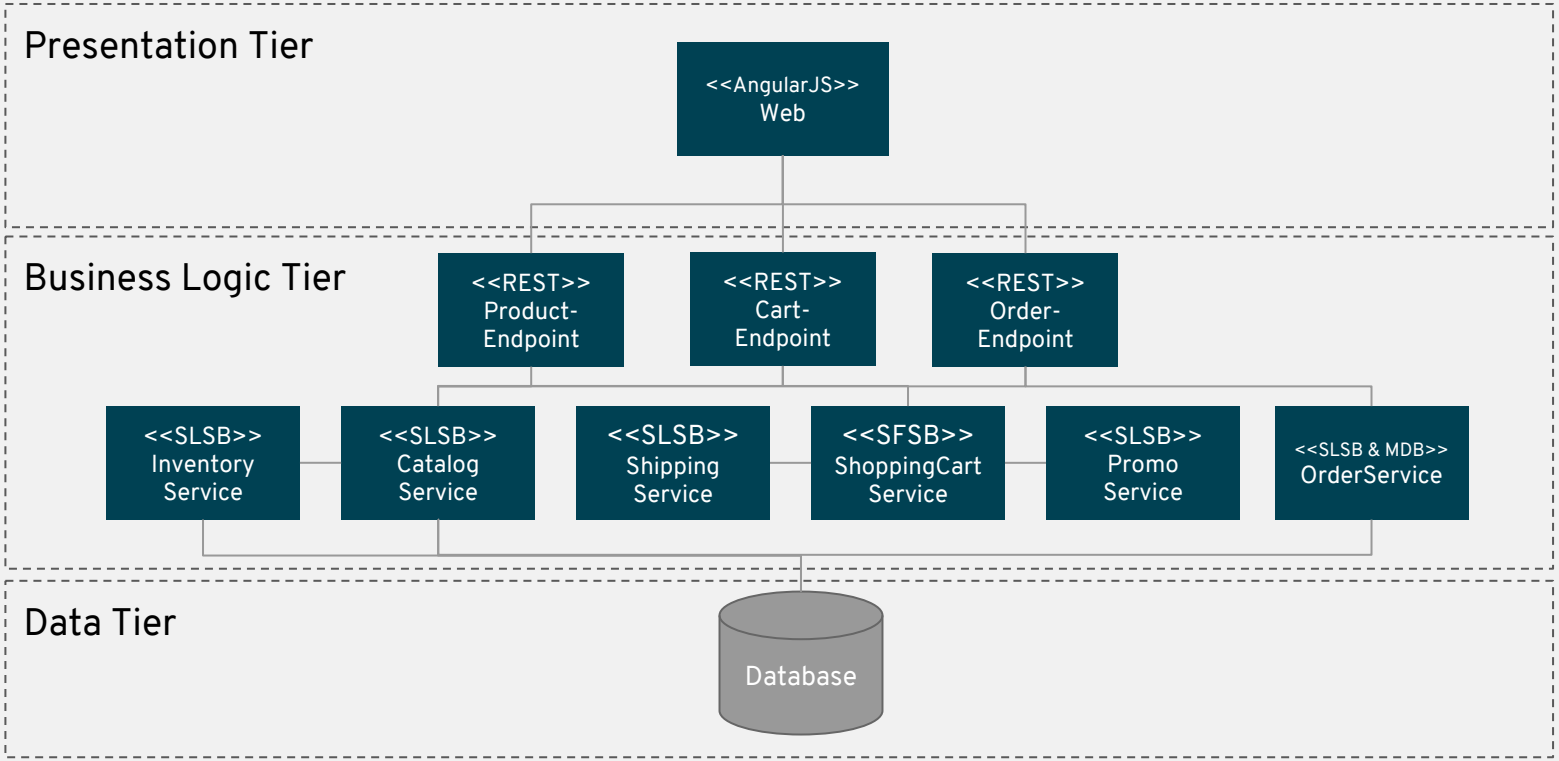
In this lab you will learn:

- How to use lab environment for today
- How to migrate an existing legacy Java EE application (CoolStore) from Weblogic to **JBoss EAP** using **Red Hat Application Migration Toolkit**
- How to deploy the result to **OpenShift container platform** to create a *Fast Moving Monolith*
- Different alternatives to building and deploying an application

COOLSTORE APPLICATION



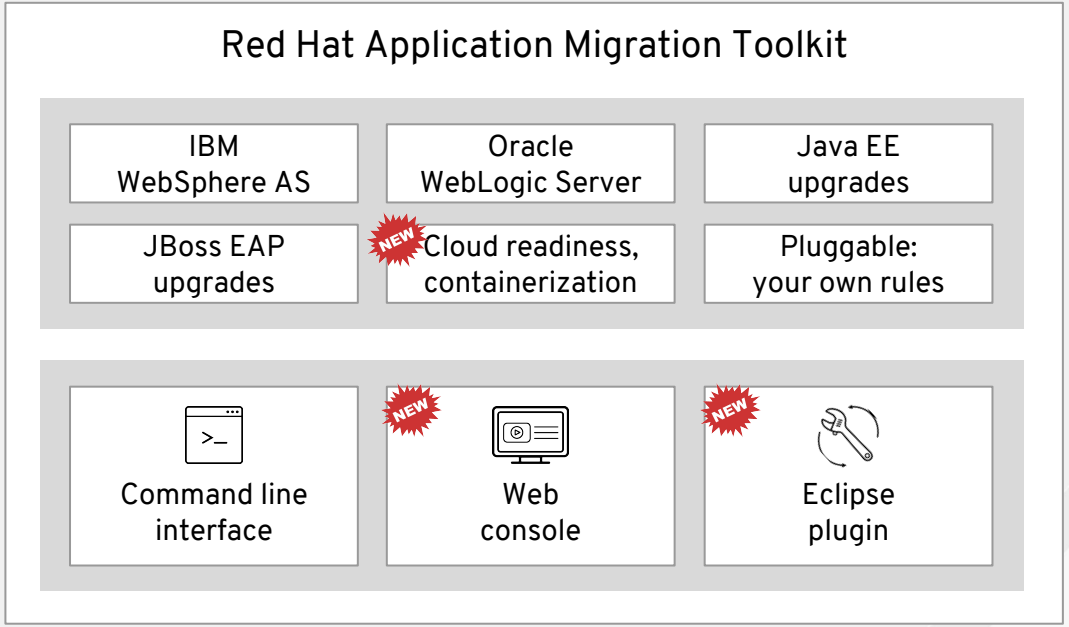
COOLSTORE APPLICATION



RED HAT® APPLICATION MIGRATION TOOLKIT

Catalyze large scale application modernizations and migrations

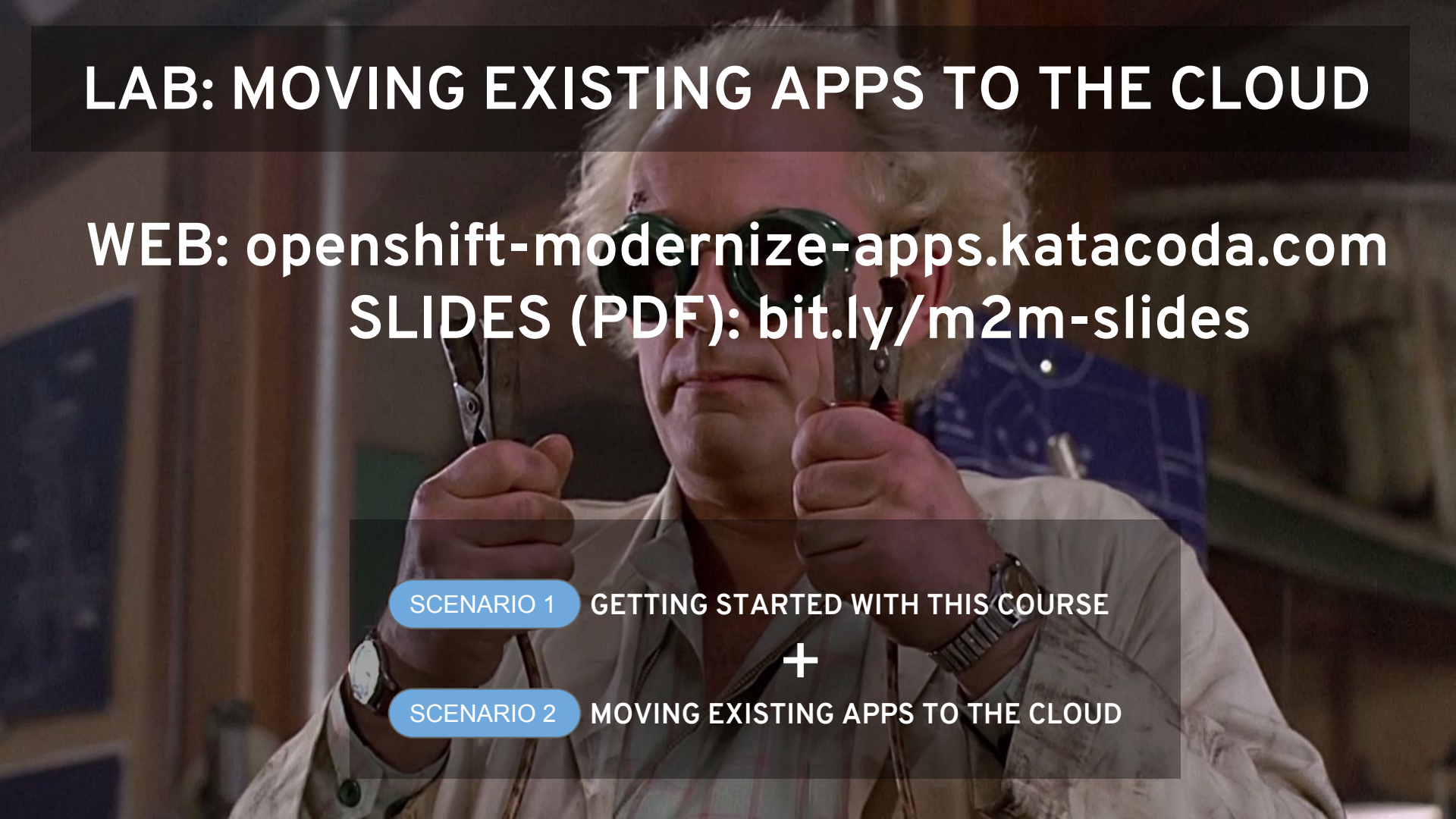
- Automate analysis
- Support effort estimation
- Accelerate code migration
- Free & Open Source



LAB: MOVING EXISTING APPS TO THE CLOUD

WEB: openshift-modernize-apps.katacoda.com

SLIDES (PDF): bit.ly/m2m-slides



SCENARIO 1 GETTING STARTED WITH THIS COURSE

+

SCENARIO 2 MOVING EXISTING APPS TO THE CLOUD

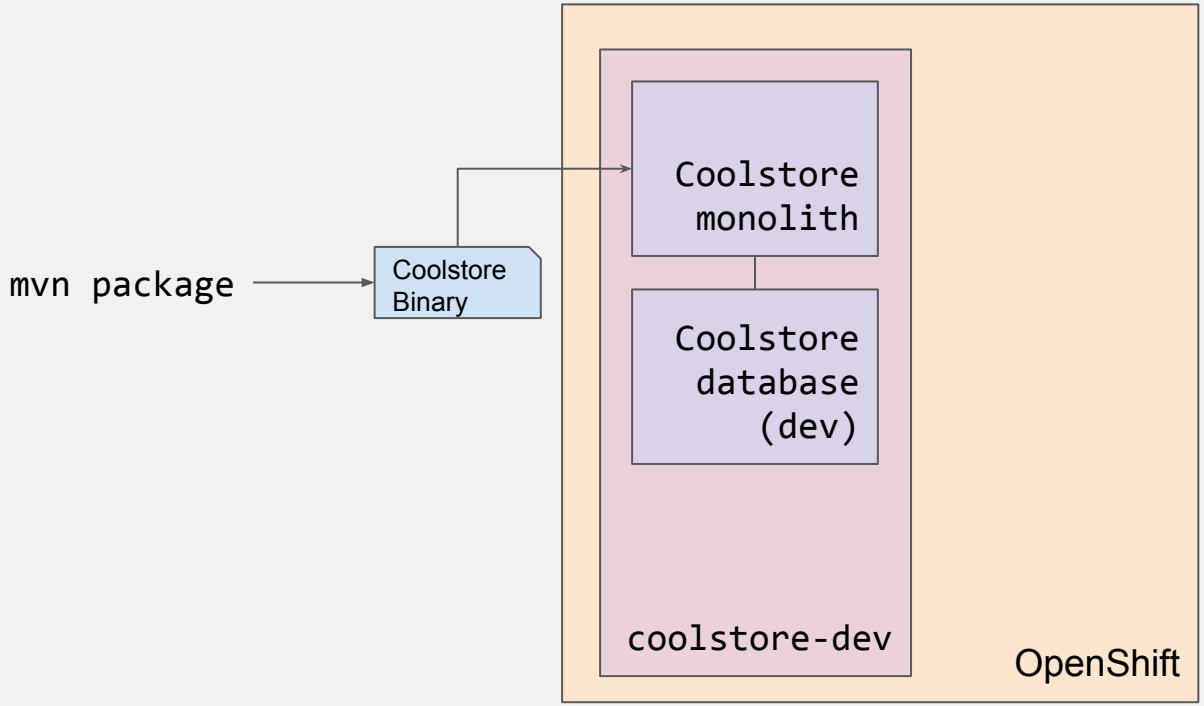
WRAP-UP AND DISCUSSION

RESULT OF LAB

In this lab you:

- Familiarized yourself with the Lab environment
- Migrated the CoolStore monolith from Weblogic to **JBoss EAP** using **Red Hat Application Migration Toolkit**
- Created a new development project on **OpenShift**
- Deployed the migrated app to OpenShift using a Template and a Binary Build
- In the next lab you will explore OpenShift deeper as a developer

RESULT OF LAB



BUSINESS OPPORTUNITY FOR APP MODERNIZATION

CONSULTING SERVICES

APPLICATION MODERNIZATION & MIGRATION (AMM)

1$ subscription = 5-10$ services

3-9 MONTHS PROJECT DURATION

100-2000 DAYS OF CONSULTING

VALUE FOR CUSTOMERS

WITH EAP

43% gains in DEV. PRODUCTIVITY
79% LESS EXPENSIVE
509% ROI over 3 years
10 months PAYBACK of investment

WITH OPENSHIFT

40% infrastructure SAVINGS
66% FASTER app delivery
8 months PAYBACK

Sources:
Consulting services data: Red Hat
IDC "The business value of JBoss EAP", 2015
IDC - "The business value of Red Hat OpenShift", 2016

THE UMBRELLA

One customer conversation opening many opportunities

APPLICATION MODERNIZATION & MIGRATION

MODERNIZATION

- BETTER SOFTWARE ARCHITECTURE
- AGILE INTEGRATION
- STREAMLINE APPLICATION LIFECYCLE
- CONTINUOUS INNOVATION

MIGRATION

- APPLICATION SERVERS
- INTEGRATION PLATFORMS
- BUSINESS DECISION MANAGEMENT
- APPLICATION INFRASTRUCTURE

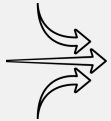
Customer value beyond cost - Digital transformation

RE-BALANCE MAINTENANCE AND INNOVATION

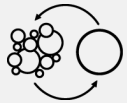
DECREASE COMPLEXITY, INCREASE EFFICIENCY

REDUCE / AVOID VENDOR LOCK-IN, INFLEXIBLE LICENSE MODELS

INCREASE SPEED & BECOME MORE PRODUCTIVE



REMOVE TECHNICAL DEBT & RISK



ADOPT AGILE METHODOLOGIES, DEVOPS

APPLICATION MODERNIZATION & MIGRATION

MODERNIZATION

BETTER SOFTWARE ARCHITECTURE
- Modularize
- Adopt standards
- Reuse instead of reinvent
- Clean technical debt

AGILE INTEGRATION
- Decouple, integrate, govern APIs, services, applications & clouds

STREAMLINE APPLICATION LIFECYCLE
- Accelerate ideas to production
- Automation & self-service
- Containerization
- CI / CD

CONTINUOUS INNOVATION
- Agile methodology
- DevOps principles
- Collaboration

MIGRATION

APPLICATION SERVERS
- IBM WebSphere, Oracle WebLogic, Glassfish, Community versions ...
- ... to EAP / JWS / JDG

INTEGRATION PLATFORMS
- **Functional** (TIBCO, WebMethods, JCAPS, Cordys ... to JBoss Fuse)
- **Data** (JDV)
- **Messaging** (AMQ)

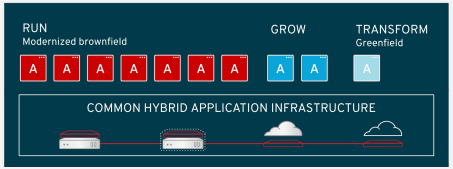
BUSINESS DECISION MANAGEMENT
- ILOG, TIBCO, ActiveMatrix, Pega, Bonita, Oracle & IBM Suites
- Red Hat JBoss BPMS & BRMS

APPLICATION INFRASTRUCTURE
- **OS** (Windows/AIX/Unix to RHEL)
- **Virtualization** (RHEV)
- **Containers** (OpenShift)

RED HAT APPLICATION MIGRATION & MODERNIZATION PROGRAM

Red Hat provides the most comprehensive technologies, tools and services to support you

TODAY and TOMORROW



COMBINE TRANSFORMATION

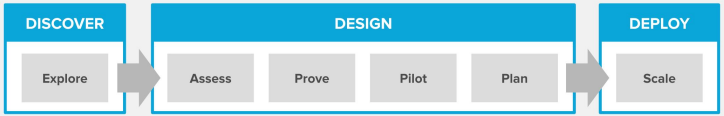
CORE MIGRATION EXISTING & NEW WORKLOADS	APPLICATION SERVERS	ESB & INTEGRATION PLATFORMS	BPM & DECISION MANAGEMENT	APPLICATION INFRASTRUCTURE
MODERNIZATION INITIATIVES ENABLING BUSINESS VELOCITY	BETTER SOFTWARE ARCHITECTURE	AGILE INTEGRATION	STREAMLINE APPLICATION LIFECYCLE	CONTINUOUS INNOVATION

Migration → Modernization

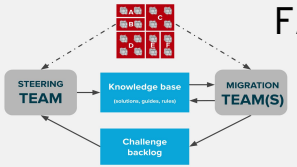
Making old apps new again ← Modern app development

BENEFITS

APPROACH



FACTORY



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SOME CUSTOMERS

Application Modernization customers

Read more at https://www.redhat.com/en/success-stories

JUMPSTART YOUR MODERNIZATION WITH RED HAT OPEN INNOVATIONS LABS

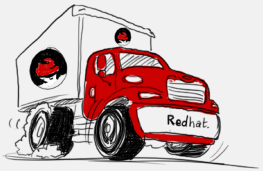
MODERNIZE TRADITIONAL APPS
- Extend applications
- Optimize applications
- Scale applications
- Expose to orchestration

INNOVATION ACCELERATED

DEVELOP CONTEMPORARY APPS
- Develop on PaaS environment
- Transform how you design and develop apps
- Adopt lean and agile principles
- Master DevOps practices

COLLABORATION

Space to work,
innovate, and discuss



RESIDENCY

An eight-week accelerated
teaming engagement

COMMUNITY INCUBATION

Communities
supporting innovation

INNOVATION LABS PROCESS

Discovery session

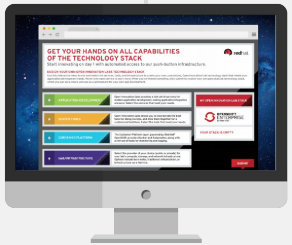
Agile, Lean, DevOps

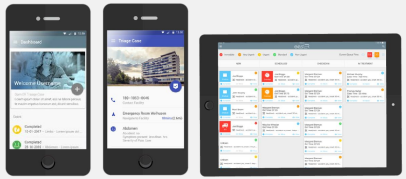
Backlog and roadmap

CONTINUOUS LEARNING

PUSH-BUTTON INFRASTRUCTURE

DEMO DAY





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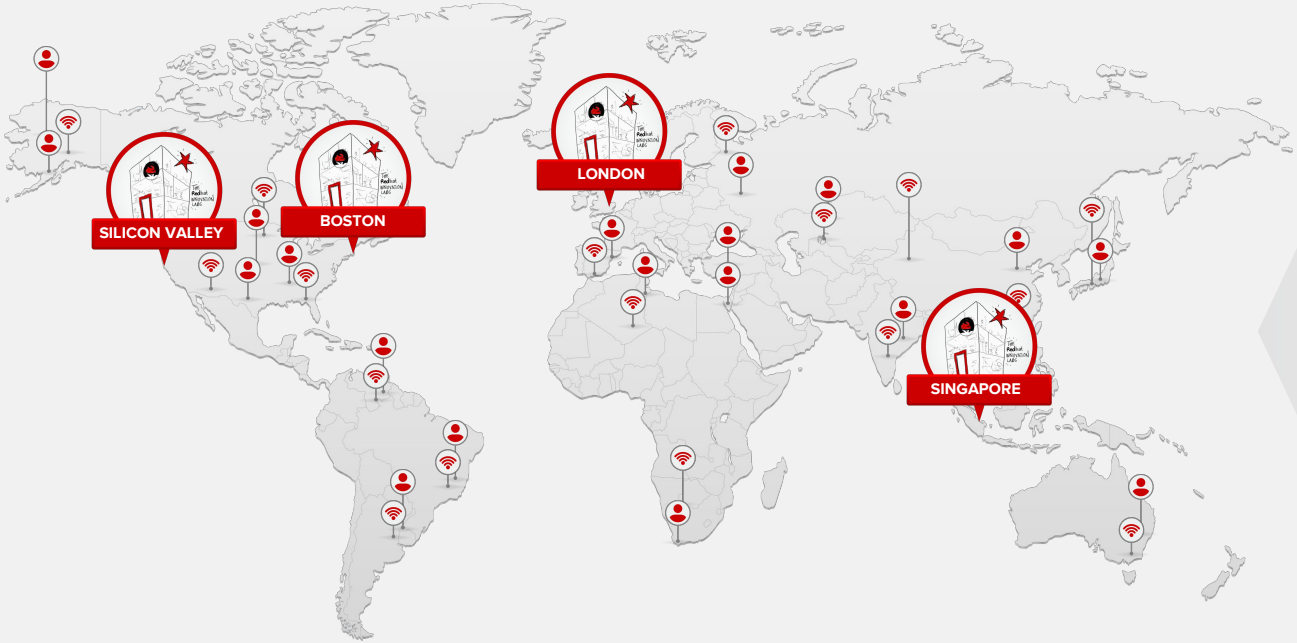
DRIVE A CULTURE OF INNOVATION

THROUGH A SPACE THAT FOSTERS COLLABORATION



INNOVATE ANYWHERE

- Purpose-driven
- Collaborate and make
- Network and share
- Flex and adapt
- Rejuvenate and connect

THANK YOU

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Facebook: facebook.com/redhatinc

Twitter: twitter.com/RedHatNews

Google+: plus.google.com/+RedHat

LinkedIn: linkedin.com/company/microsoft/

YouTube: youtube.com/user/MSCloudOS

Facebook: facebook.com/microsoftazure/

Twitter: twitter.com/azure

Azure Friday: channel9.msdn.com/Shows/Azure-Friday

Azure | Channel 9: channel9.msdn.com/Blogs/Azure