

Application Modernisation with Transformation Advisor

Meetup Sydney: Application Modernisation - tools and techniques



Sitthichai Rernglertricha
Leonardo Vidal
Carlos Mejia Johnson

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Agenda

Containers – Overview and Benefits

Transformation Advisor

Example Results

Example Migration

What is so good about containers anyway?

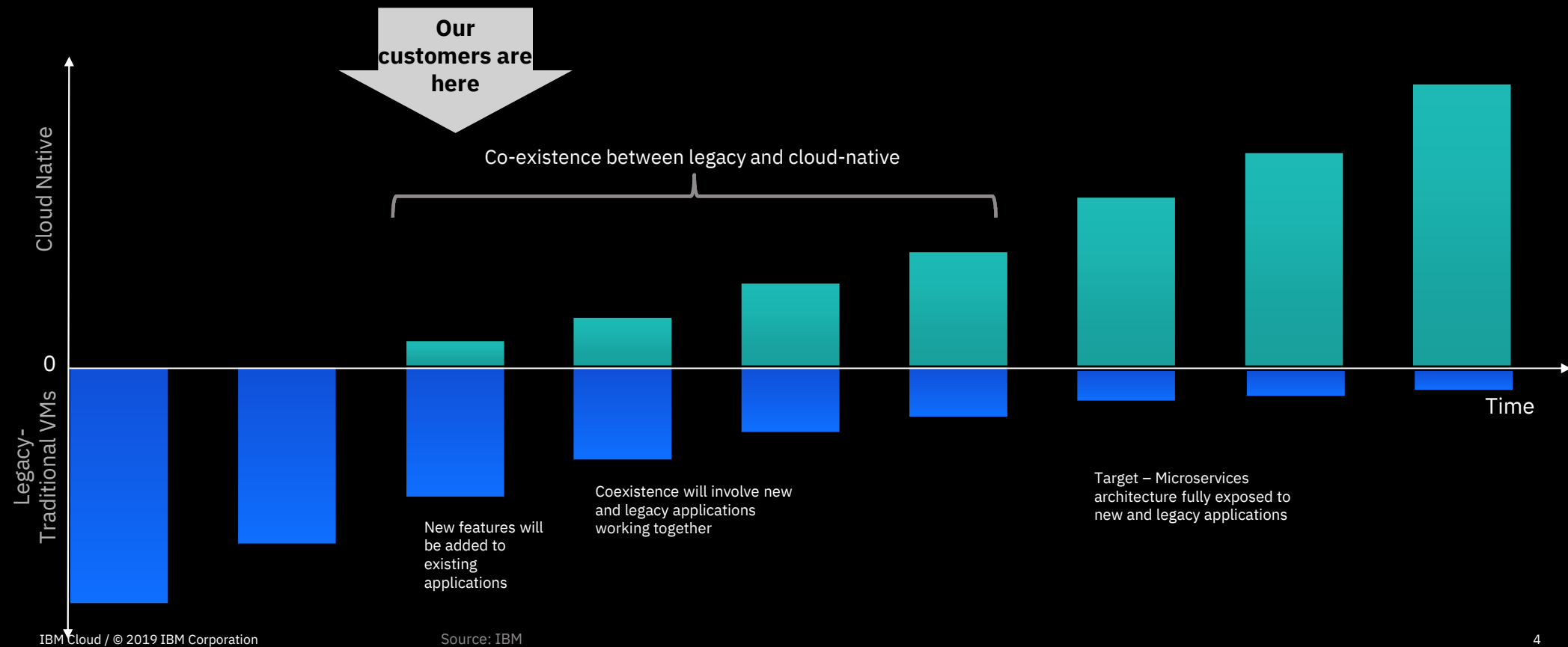
Traditional Virtualisation provides hardware abstraction, allowing multiple instances of Operating System on a single hardware.

Compared to virtual machines, Container-based-virtualisation provide lightweight solutions by abstracting Operating System, where multiple workloads share the kernel host operating system.

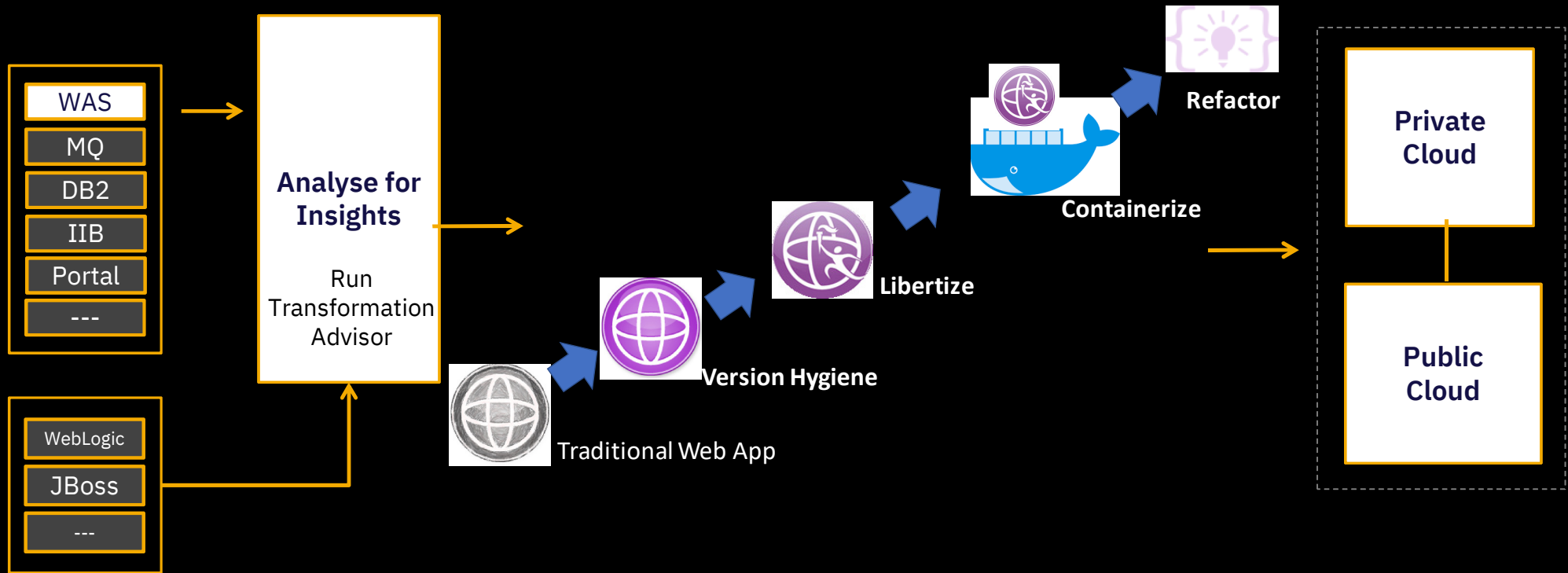
Benefits of Containers:

1. Agility and Productivity
2. Fine-grained resiliency
3. Scalability and Infrastructure optimisation
4. Operational Consistency
5. Component Portability

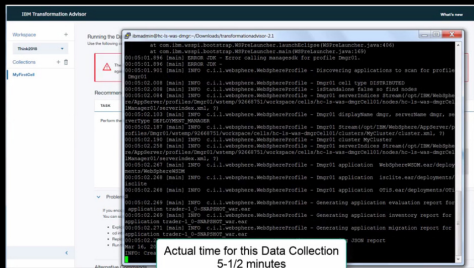
Cloud native & legacy apps will co-exist for the next 10+ years



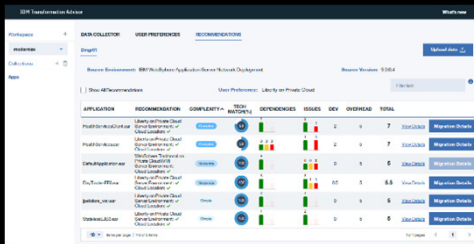
Modernise Apps – Overall process



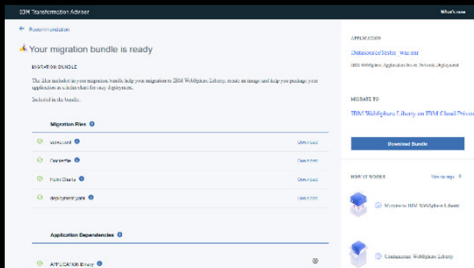
How it works.



1. **Run Data Collector** against existing system and application environment to gather information about how the Java applications are deployed



2. **Provides recommendations** and insights by utilising binary scanners and migration config tools



3. For WebSphere 7 and above - **Generates customized deployment artifacts** for faster migrations to containers.

IBM Cloud Transformation Advisor

Quickly evaluate on-premises Java EE apps for deployment to the cloud

Provides recommendations and automation for App Modernisation

Analysis Report

Potential issues, severity & possible solutions

Technology Report

Details on IBM platform support for technologies used in the app

Inventory Report

High-level inventory of application content and structure

Deployed on Docker + Kubernetes environments.



Introspects WebSphere, WebLogic and JBoss deployments



IBM Transformation Advisor

What's new

Welcome to Transformation Advisor

We know that migrating your existing WebSphere applications to the cloud can take you into unfamiliar terrain. Transformation Advisor will help you take your first steps toward getting your traditional WebSphere applications onto IBM Cloud Private.



Tired of this top section? Hide it

Let's get started.

Choose a workspace. ⓘ

Add a new workspace



Transformation Advisor: Re-platform to Liberty

Deep analysis moving to WebSphere Liberty from these application servers

WebSphere traditional

Application

- Java EE differences (6, 7, 8)
- Deprecated Java EE technologies not available
- WebSphere traditional APIs not available
- Third-party APIs not available
- Behavior changes between WebSphere traditional and Liberty
- Bindings and extension differences
- MBean differences

Configuration

- Liberty server.xml, Dockerfile, Helm Charts, yaml and Jenkins file

Java SE – applies to all app servers

Application

- IBM/Oracle Java differences (Java 5, 6, 7 to Java 8)
- Behavior differences
 - Interface changes
 - New exceptions

WebLogic

Application

- WebLogic APIs
- WebLogic deployment descriptors
- WebLogic JDBC properties
- WebLogic JPA differences
- WebLogic login modules
- WebLogic MBeans
- WebLogic servlet differences
- WebLogic-specific JNDI property values
- T3 protocol
- WebLogic-specific SSL protocols
- WebLogic startup and shutdown classes
- WebLogic transaction differences
- BEA Beehive
- EJB implementation differences
- JSP file considerations
- Framework considerations
- Logging differences

Configuration

- Liberty server.xml, Dockerfile, Helm Charts, yaml and Jenkins file

JBoss

Application

- JBoss APIs
- JBoss deployment descriptors
- JBoss JNDI property values
- JBoss login modules
- JBoss manifest class path
- JBoss MBeans
- JBoss naming lookup strings
- JBoss startup/shutdown logic
- JSP file considerations
- Framework considerations

Configuration

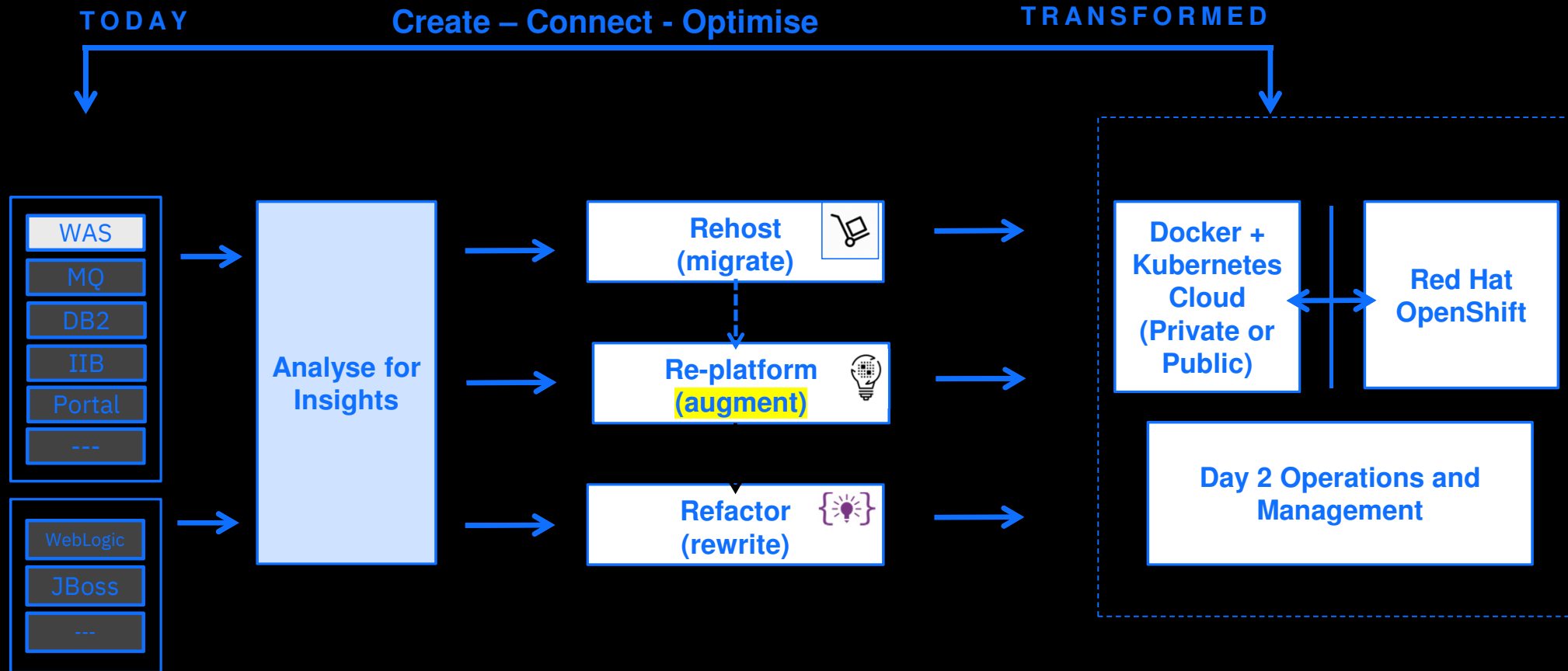
- Liberty server.xml, Dockerfile, Helm Charts, yaml, and Jenkins file

Cloud – applies to all app servers

Application

- Connectivity considerations for remote data or services
- Considerations for an ephemeral runtime
- File system considerations in Docker

IBM TA is part of our Application Modernisation Framework



IBM Transformation Advisor – Interpreting results

Creates application inventory, estimates modernisation effort and provides insights and guidance ...

Simple:
No code changes

Moderate:
Some refactoring
needed

Complex:
May decide to run
in WAS in VMs before
re-engineering or run
in tWAS containers as
a temporary measure.

IBM Transformation Advisor

Workspace: Think2018

DATA COLLECTOR USER PREFERENCES RECOMMENDATIONS

Dmgr01

Source Environment: IBM WebSphere Application Server Network Deployment Source Version: 9.0.0.4

☐ Show All Recommendations User Preference: Liberty on Private Cloud

APPLICATION	RECOMMENDATION	COMPLEXITY	TECH MATCH(%)	DEPENDENCIES	ISSUES	DEV	OVERHEAD	TOTAL		
jbstore_war.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Simple	100	2	4	0	5	5	View Details	Migration Details
StatelessEJB3.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Simple	100	1	2	0	5	5	View Details	Migration Details
DetailApplication.ear	WebSphere Traditional on Private Cloud (VM) Server Environment: — Cloud Location: ✓	Moderate	100	4	0 0 0	0	5	5	View Details	Migration Details
DayTrader-EE6.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Moderate	100	3	3 1 1	0.5	5	5.5	View Details	Migration Details
HealthServicesClient.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Complex	80	1	2 1	2	5	7	View Details	Migration Details
HealthServices.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Complex	50	0 0 0	1 1	2	5	7	View Details	Migration Details

10 items per page | 1-6 of 6 items


1 of 1 pages

Please select a recommendation

Automate Simple Migrations

IBM Transformation Advisor

← Recommendations



MIGRATION BUNDLE

The files included in your migration bundle help you migrate to IBM WebSphere Liberty, create an image, and package your application as a helm chart for easy deployment.

Download bundle

Migration files

✓ libertyserver.xml

Download

✓ Dockerfile

Download

✓ Deployment.yaml

Download

✓ Helm chart

Download

Application dependencies

✓ application_binary1.ear

application_binary1.ear

✕

✓ application_binary2.ear

application_binary2.ear

✕

✓ application_binary3.ear

application_binary3.ear

✕

✓ application_binary4.ear

application_binary4.ear

✕

APPLICATION

jpetstore_war.ear

WebSphere Traditional

MIGRATE TO

IBM WebSphere Liberty

on IBM Cloud Private

Deploy

First time? Get started

HOW IT WORKS

View the steps

1


Migrate to IBM WebSphere Liberty

2

Containerize WebSphere Liberty

3

Deploy Liberty on to IBM Cloud Private



Sit back and relax. We are doing some things for you.

✓

Push files to Git

[View bundle in Git](#)

Tip: Add password information to the server.xml in Git for successful deployment

✓

Create Microclimate project

[View and edit project in Microclimate](#)

✓

Create a Jenkins pipeline

[View and track pipeline in Jenkins](#)

View deployment

When the Jenkins pipeline completes, [check for your deployment on IBM Cloud Private](#)

Steps that occur behind the scenes to move the app over to containers

IBM Cloud / © 2018 IBM Corporation

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Containerisation – Efforts - Orders of Magnitude

Low

These applications should require little or no application code changes to run on Cloud Private (Kubernetes) in a WebSphere Liberty Runtime.

1-5 PDs per App

Medium

These applications require some application code changes and upgrading to newer technologies, but overall effort to run on Cloud Private (Kubernetes) in a WebSphere Liberty runtime is low-medium.

5-10 PDs per App

High

These applications require an IBM Cloud Garage-led workshop to determine how to address their significant use of old third-party and IBM-provided technologies that are not available on a WebSphere Liberty runtime.

~15+ PDs per App

What doesn't Transformation Advisor tell me?

- Stateful applications
- Shared Libraries/Classpath
- External Cache/DynaCache
- Extreme Scale
- Work Managers/Timers
- Java 2 Security
- HTTP Server Configuration/Static Content

IBM Transformation Advisor – putting it all together

Transformation Advisor created all the artifacts, we created a repo in github:

<https://github.com/cmejia2/my-appmod-resorts>

And then built and run the container:

```
# docker build --no-cache -t demotransadv:latest .
# docker images | grep demo
demotransadv          latest          af8ac6ef6574    About a minute ago  615MB

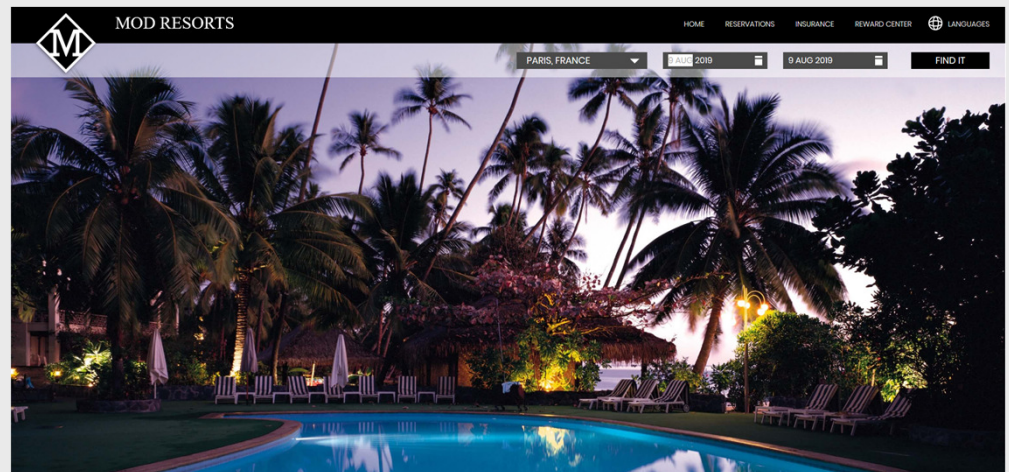
# docker run -d -p 9080:9080 demotransadv:latest
# docker ps | grep demo
fee9a78bd29b    demotransadv:latest    "/opt/ibm/helpers/ru..." 23 seconds ago    Up 22 seconds    0.0.0.0:9080->9080/tcp, 9443/tcp    vigilant_swanson
# docker exec -it fee9a78bd29b /bin/bash

$ hostname
fee9a78bd29b
$ ls -al opt/ibm/wlp/usr/servers/defaultServer/apps
-rw-rw-r-- 1 default root 8544389 Aug  9 01:42 modresorts.war
$ exit
```

<http://mycluster.icp:9080/resorts/>

Other deployment options:

- Helm Charts => Kubernetes
- Microclimate + Jenkins
- CodeWin + Red Hat OpenShift
- Traditional (tWAS) vs Liberty



Thank You !!!

Key Contacts:

Sitthichai Rernglertpricha
Leonardo Vidal
Carlos Mejia Johnson

srerngler@au1.ibm.com
leo.vidal@au1.ibm.com
cmejia@au1.ibm.com