



IBM Cloud Private Practical Workshop

Application Modernization



Cloud accelerates business transformation

- Innovate with the latest technology from any source
- Access more types of data, analytics & AI, anywhere
- Improve return on existing investments



Yet less than 20% of enterprise workloads have moved to date. Why?

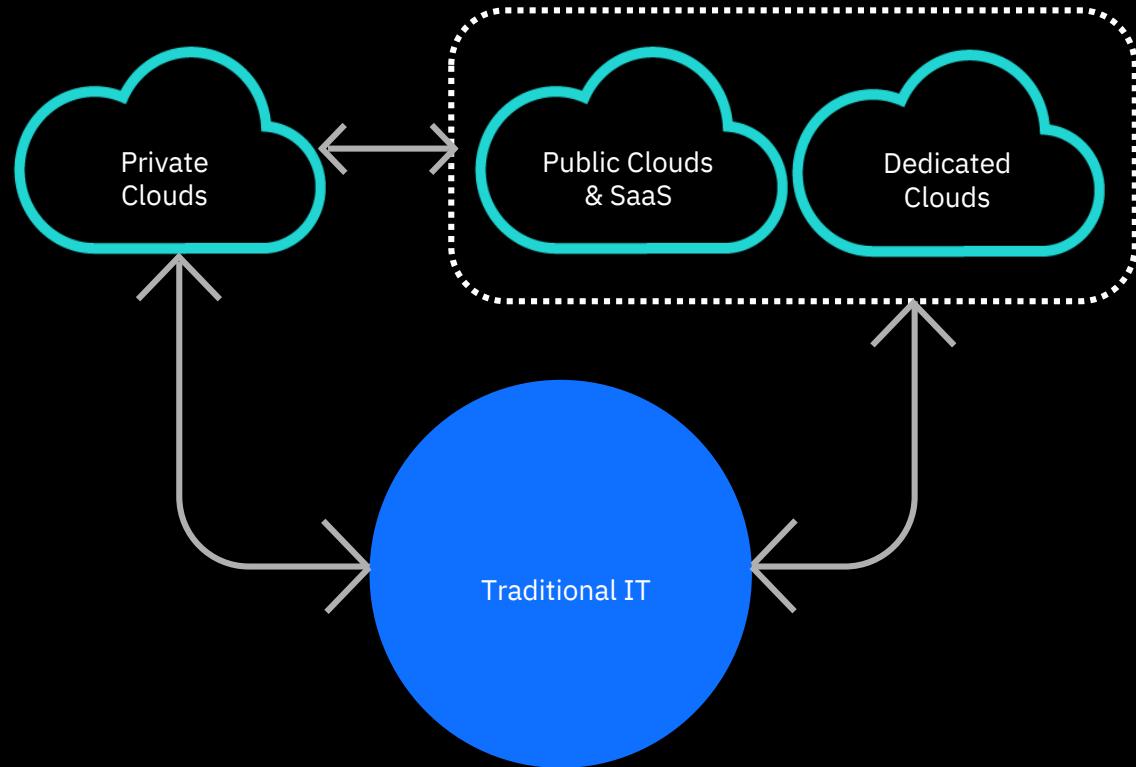
Source: McKinsey research

What's preventing rapid modernization of the remaining 80%?

Unique workload needs – compliance, security, location - requires more choice

Multiple clouds & vendors – hard to connect / manage across clouds and IT

Lack of necessary skills – how do you prioritize and deliver modernization



Cloud

90,000 experts
100,000 migrations
38 global studios

Security

60 Billion security events managed per day

Data

20,000 data scientists, developers, and consultants

Industry

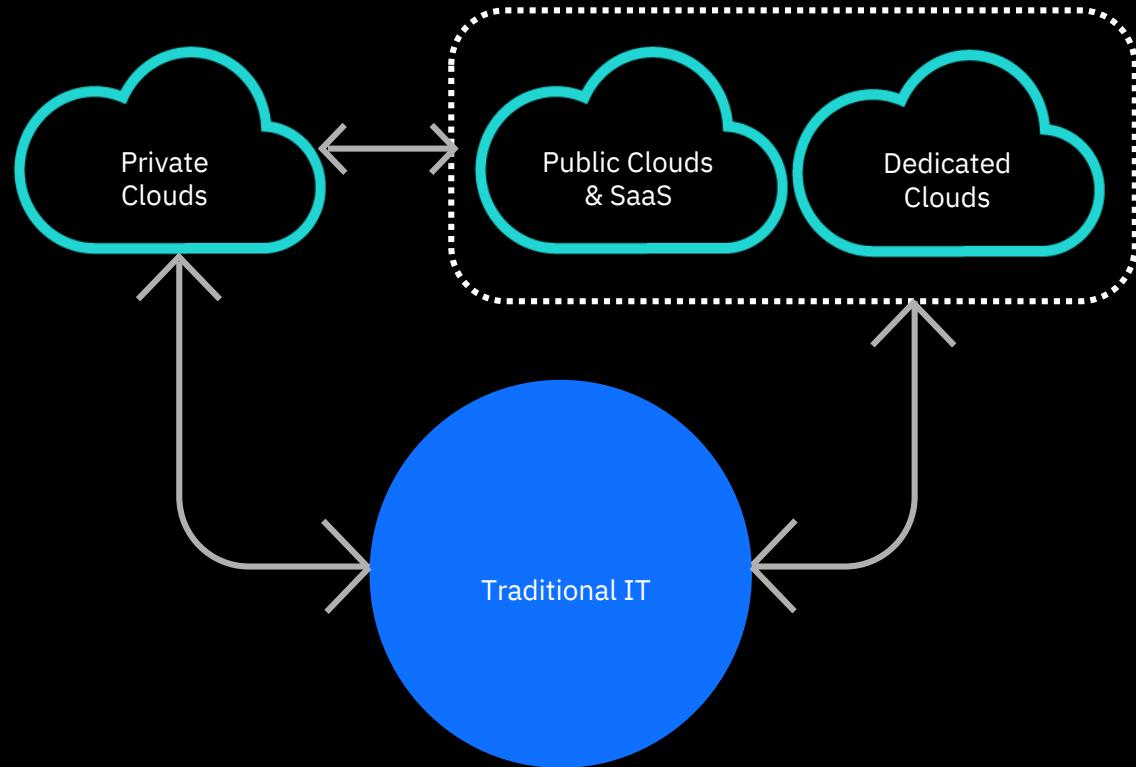
Depth in 20 industries
\$6 billion in R&D;
Patent Leader 25 yrs

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The 6R's in Cloud Migrations

Retain

Not Moving
Continuing to operate in the current environment

Retire

Decommissioning
Getting rid of applications / resources no longer needed

Rehost

Lift & Shift
Fast, predictable, repeatable, and economical.
Minimal changes to operate in the cloud

Replatform

Changing the platform only
Some changes to applications may be needed

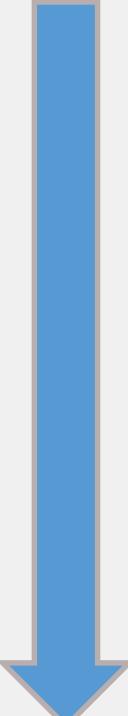
Refactor

Architecting as cloud native applications
Major or Minor changes to application design & code

Repurchase

Replacing with better alternatives
Choosing SaaS or Cloud friendly licensing

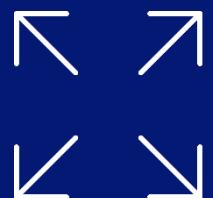
Comparing Cloud Migration Strategies



Migration Complexity	Time	Cost to Migrate	Cost to Operate	Agility
Low				
Retain	+	+	++++	
Retire	++	+		
Rehost	++	++	+++	++
Replatform	+++	+++	++	+++
Repurchase	+++	+++	++	+++
Refactor	++++	++++	+	++++
High				

Application modernization accelerates *Digital Transformation*

Flexibility



Agility



Adaptive
Automation



Digital
Transformation

Application modernization

- ✓ Improves developer productivity
- ✓ Increases operational efficiency
- ✓ Reduces cost to build new capabilities
- ✓ Expands capacity delivered in a short time



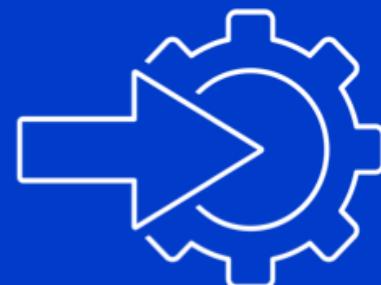
Choosing what apps to move to cloud

Assess and Plan

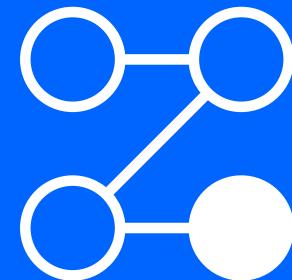
What applications
do I have on
premise?



Will they be easy
or problematic to
move?



Which ones should
I move first?



What resources
and time will I
need to invest?

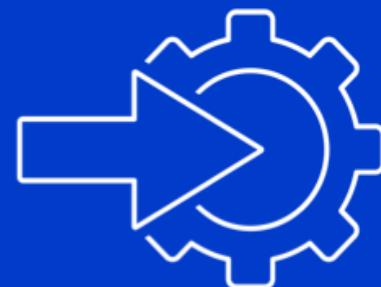


IBM Cloud Advisory Services

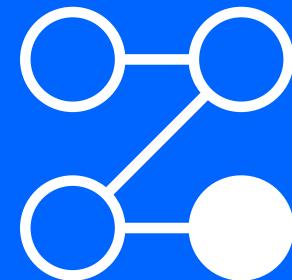
Gather information
on existing apps &
supportive
environment



Determine
adoption
readiness



Provides and
actionable
roadmap



Make the best
decisions based
on best practices



Public Cloud

Backup & archive

Private Cloud

Workloads needing low latency to back ends

Existing database workloads

Applications with sensitive data

Maintain & Evolve

Applications with complex processes and transactions

Highly customized applications

Not yet virtualized applications

Choosing your cloud platform: matching the right workload to the right cloud

Enterprise transformation required for cloud adoption
DevOps | Governance | Integration
Security | Architecture | Culture

Web applications/ e-commerce

Digital experience solutions

Customer service

Enterprise social solutions

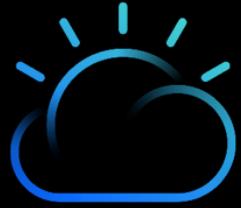
Third-party applications

Mobile applications

Non-core business processes

Development and test workloads

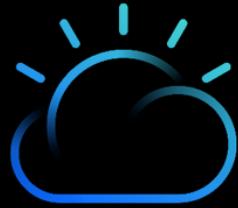
Finding Where Your Workloads Thrive



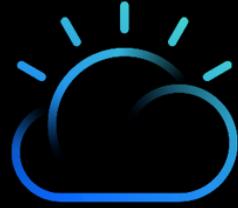
Public



Dedicated



Bare Metal



Private



On-Prem



Common workloads

e.g. Systems of Engagement: Web, Mobile, IoT, AI, Video

e.g. Security sensitive, regulated, federal

e.g. Lift & shift: VMware, SAP, WAS; high perf. computing

e.g. Systems of record, security sensitive, regulated

e.g. Complex monolithic, mainframe, legacy

Hybrid
is the path

Cloud
is the destination

Modernize
and Extend

Migrate

Cloud Native



IBM capabilities for application modernization



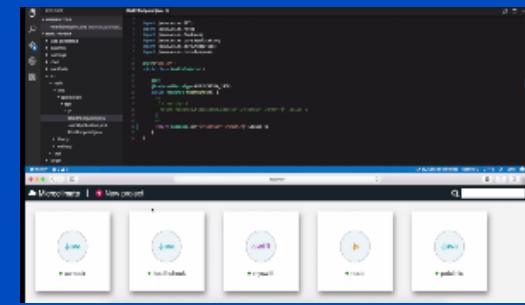
Assess & Plan

Cloud Transformation
Advisor



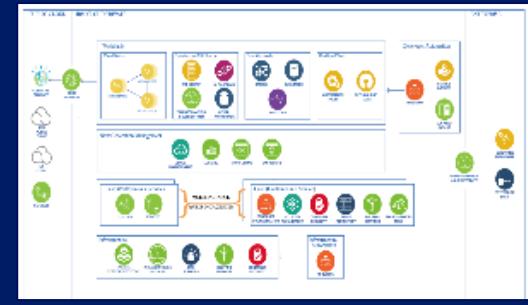
Enterprise-grade services catalog

IBM certified software
for Kubernetes



DevOps

Microclimate,
UrbanCode and Testing



Best Practices

Garage Method &
Services

IBM Cloud Product Insights Transformation Advisor

quickly evaluate on-premises Java EE & MQ apps for deployment to the cloud

Provides recommendations and artifacts for Application Modernization

Analysis Report

Potential issues, severity & possible solutions

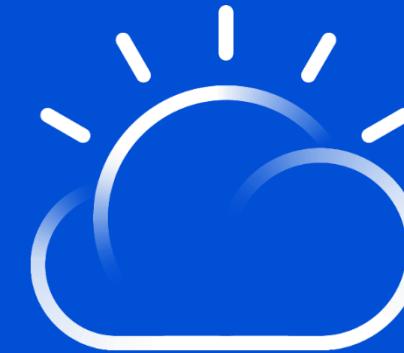
Technology Report

Details on IBM platform support for technologies used in the app

Inventory Report

High-level inventory of application content and structure

Included and deployed on IBM Cloud Private



Introspects WebSphere deployments



IBM Transformation Advisor

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

Show All Recommendations User Preference: Liberty on Private Cloud

Filter text ?

APPLICATION	RECOMMENDATION	COMPLEXITY	TECH MATCH(%)	DEPENDENCIES	ISSUES	DEV	OVERHEAD	TOTAL	View Details	Migration Details
sampleMDB.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Simple	100	2	0 0 0	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
StatefulEJB3.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Simple	100	2	2	0	5	5	View Details	Migration Details
pbw-ear.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Simple	100	3	0 0 0	0	5	5	View Details	Migration Details
DayTrader-EE6.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Moderate	100	3	1 1 0	0.5	5	5.5	View Details	Migration Details
itcamdemo.ear	WebSphere Traditional on Private Cloud (VM) Server Environment: -- Cloud Location: ✓	Moderate	100	9	4	0	5	5	View Details	Migration Details
DefaultApplication.ear	WebSphere Traditional on Private Cloud (VM) Server Environment: -- Cloud Location: ✓	Moderate	100	4	0 0 0	0	5	5	View Details	Migration Details
NewDatabaseEARProject.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Complex	50	2	1	2	5	7	View Details	Migration Details
POS-EAR.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Complex	66	3	1	2	5	7	View Details	Migration Details
LegacyEARProject.ear	Liberty on Private Cloud Server Environment: ✓ Cloud Location: ✓	Complex	50	2	1	2	5	7	View Details	Migration Details

10 items per page | 1-10 of 17 Items 1 of 2 pages

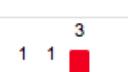
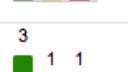
Classify Existing Apps Based on Migration Complexity

Migration Complexity

Simple:
No code
changes

Moderate:
Code changes;
moving to VMs

Complex:
Incompatible
technologies;
external
dependencies

Data collector		Recommendations									
Profile	Preferred migration	Source Environment				Source Version					
Dmgr01	Liberty on Private Cloud	IBM WebSphere Application Server Network Deployment				9.0.0.4					
<input type="text"/> Search items											
Application ▾											
>	StatelessEJB3.ear Liberty on Private Cloud	Simple	100%	1		0	5				
>	jpetstore_war.ear Liberty on Private Cloud	Simple	100%	2		0	5				
>	HealthServicesClient.ear Liberty on Private Cloud	Moderate	80%	1		2	7				
>	HealthServices.ear Liberty on Private Cloud	Moderate	50%	0		2	7				
>	DefaultApplication.ear Liberty on Private Cloud	Complex	88%	4		13	18				
>	DayTrader-EE6.ear Liberty on Private Cloud	Moderate	100%	3		1	6				
Items per page: 10 1-6 of 6 items											
1 of 1 pages		<	1	▼	>						

IBM Cloud Transformation Advisor for MQ

Simple:
DNS
reconfiguration
required

Complex:
Porting Binaries
required and/or
Complex Security
Reconfiguration
required

Moderate:
Cluster
reconfiguration
required

IBM Cloud Transformation Advisor

Recommendations

Source environment: IBM MQ | Installation: Install-01 | Preferred migration: MQ on Private Cloud

Search items

Queue Manager	Issues	Total effort in days	
Apples	Simple	None	1
Bananas	Simple	3	0.5
Grapes	Complex	1 1 3	8
Kiwis	Moderate	2 1 1	5.5
Starfruit	Moderate	2 1	3
Strawberries	Simple	2 1	3

Items per page: 10 | 1 - 6 of 6 items

Export | Upload options

What's new | Join us on Slack

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Starfruit	Moderate	2 1	3
Strawberries	Simple	2 1	3

IBM Transformation Advisor

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.



Let's get started.

Choose a workspace.

Add a new workspace



Most recently accessed. (3 total)

AppResorts

3 hours



Ilmarinen accelerates innovation with IBM Cloud Private

Business Needs

- Speed time to market
- Refactor monolithic applications that were hard to maintain and required a lot of resources

Benefits

- Faster time to market through improved DevOps practices in a secure, on-premises environment
- Greater efficiency and reduced costs through containerized approach

“Ilmarinen is excited about the capabilities in IBM Cloud Private as a flexible, compliant cloud-native platform that it can deploy and manage behind our firewall for creating new applications and modernizing traditional workloads,” said Jani Itkonen, Production Manager, Ilmarinen.

The logo for Ilmarinen, featuring a stylized graphic of four vertical bars of increasing height followed by the word "ILMARINEN" in a bold, sans-serif font.

DevOps tools &
techniques
accelerates
app modernization

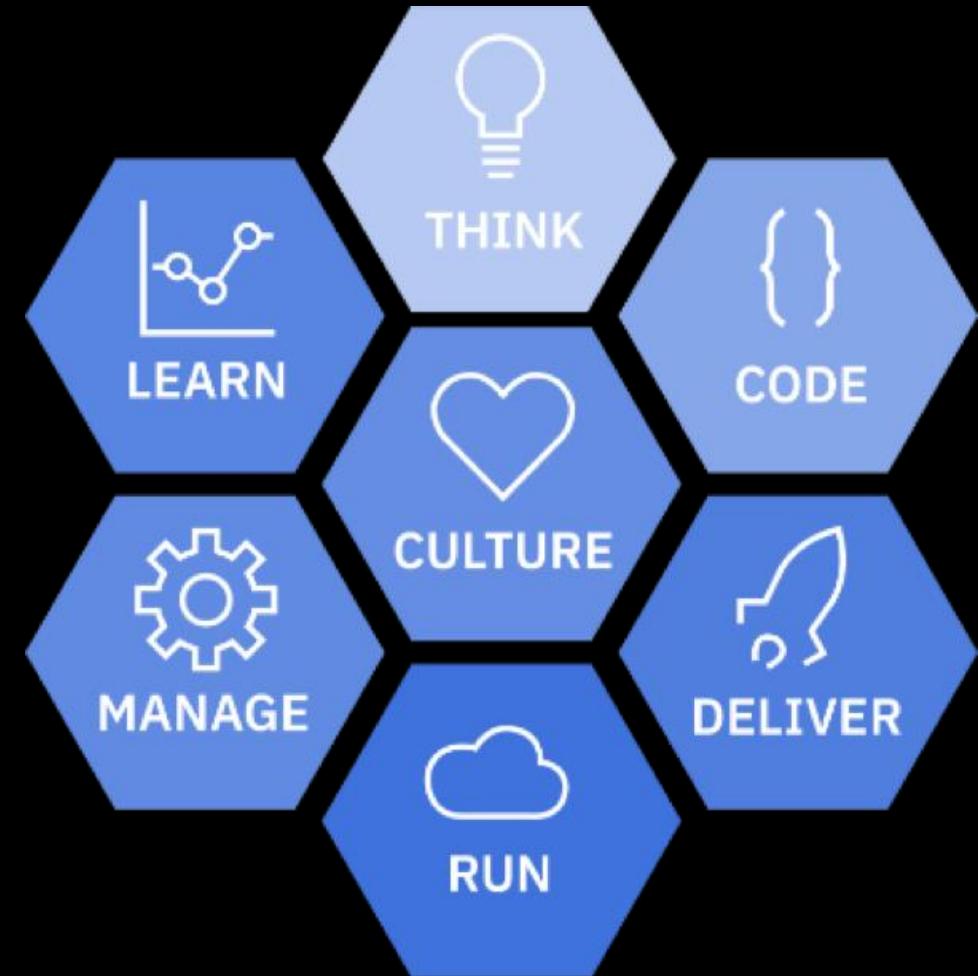
DevOps

Provision and Deploy anywhere - regardless of cloud vendor

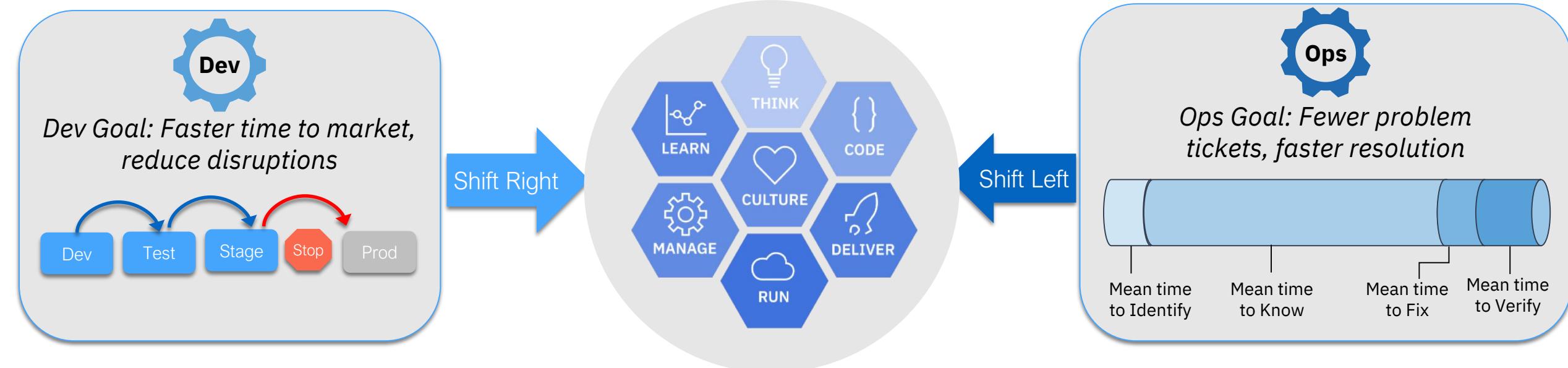
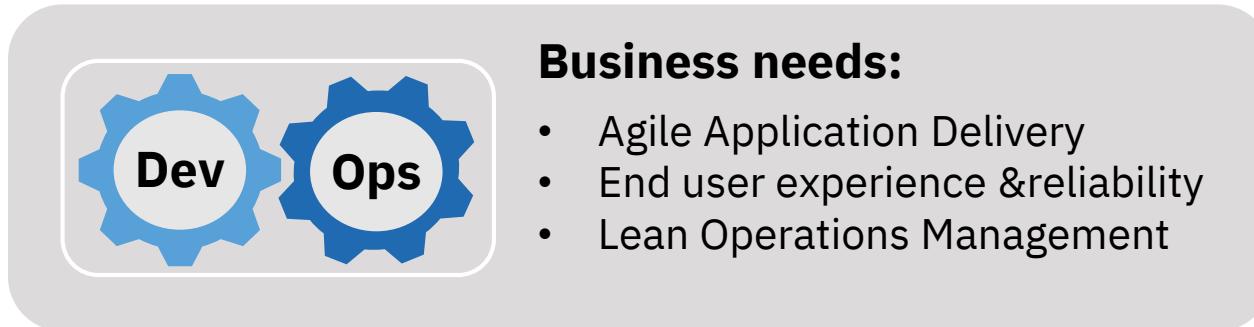
Rapidly compose and deliver new solutions and apps with APIs and microservices.

Continuously build, test and deploy high quality software.

Deploy apps and workloads regardless of cloud models and vendors – public, dedicated, private, on/off premises



DevOps accelerates value for the Business



*Only IBM provides one solution for bridging **Dev** to **Ops***



- Embracing change in software delivery with DevOps
 - “Shift right” development
 - Accelerating delivery
 - Embracing multi-cloud
 - “Shift left” operations
 - DevOps insights

“Shift right” development & the changing developer experience

- Create and Deliver new applications and services quickly



Changing developer experience

Create, edit, build, test and deploy your applications via **Continuous Delivery pipelines** then run and manage them with **IBM Cloud**

3. Intelligent feedback



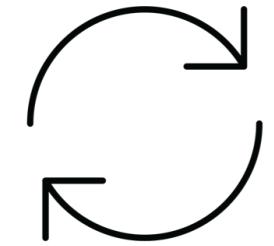
4. Diagnostic services



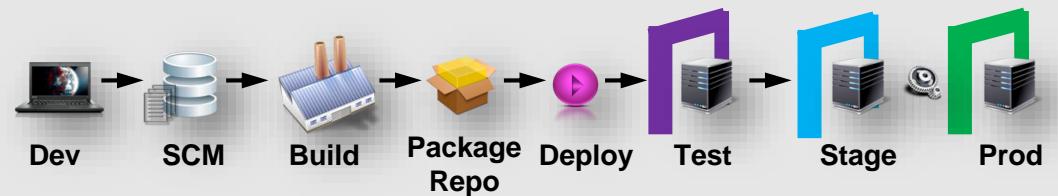
- 1. Containerized development



- 2. Rapid iteration



- 5. Integrated DevOps pipeline

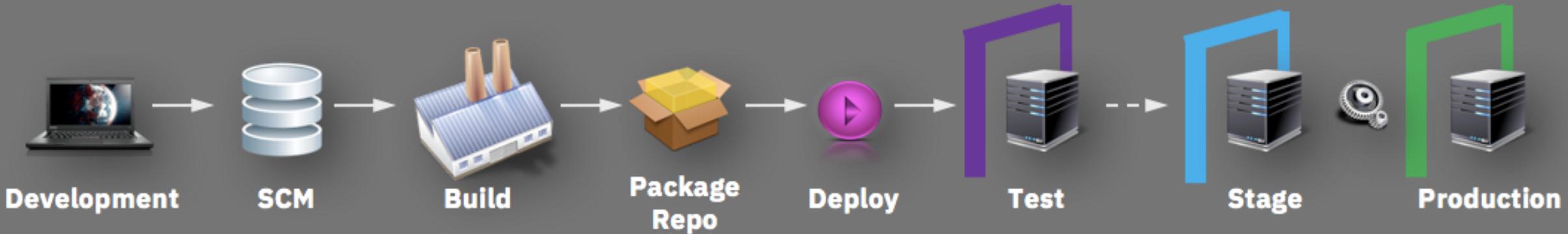


Accelerating delivery

- DevOps practices that enterprises need to successfully deliver services and products quickly to the market place



Accelerating delivery



Collaborative Development



Continuous Integration



Continuous Testing



Continuous Delivery



Embracing multi-cloud

- Create and Deploy enterprise applications on market leading platforms



Shift left operations

- Visibility, control and automation to manage apps and infrastructure anywhere



Shift left to adaptively sense & respond to dynamic environments

Reactive
Real-time analytics



Proactive
Predictive insights



Adaptive
Cognitively enhanced workflow





DevOps insights

- Improve agility, reliability, & security by using machine learning and analytics

Capture insights and measure DevOps maturity to transform faster

Developer Insights



Team Dynamics



Deployment Risk



Delivery Insights



How to get started ?

- [Learn about app mod @ Garage Architecture Center](#)
- [Field guide on IBM's POV on app mod](#)
- [Guided demo evaluating an on-prem app for cloud with Transformation Advisor](#)
- [See how a pension insurance company, Ilmarinen, modernized applications and accelerated change](#)
- [Learn and download Microclimate that provides end-to-end development experience](#)
- [Download IBM Cloud Private Community Edition](#)
- [Attend Think 2019 conference](#)

Thank You!

Backup

IBM Cloud Transformation Advisor MQ Beta

Simple:
DNS
reconfiguration
required

Complex:
Client
Authentication
reconfiguration

Moderate:
Cluster
reconfiguration
required,
Changing
custom logic
e.g. Exits

IBM Cloud Transformation Advisor

Recommendations

Source environment: IBM MQ Installation: Install-01 Preferred migration: MQ on Private Cloud

Search items

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Strawberries	Simple	3

Items per page: 10 | 1 - 6 of 6 items

Export Upload options

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Classify Existing Apps Based on Migration Complexity

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Search items											
Search items											
Application		Tech match	Dependencies	Issues	Est. dev cost in days	Total effort in days					
> StatelessEJB3.ear Liberty on Private Cloud		Simple	100%	1		0	5				
> jpetstore_war.ear Liberty on Private Cloud		Simple	100%	2		0	5				
> HealthServicesClient.ear Liberty on Private Cloud		Moderate	80%	1		2	7				
> HealthServices.ear Liberty on Private Cloud		Moderate	50%	0		2	7				
> DefaultApplication.ear Liberty on Private Cloud		Complex	88%	4		13	18				
> DayTrader-EE6.ear Liberty on Private Cloud		Moderate	100%	3		1	6				
Items per page: 10 1-6 of 6 items							1 of 1 pages < 1 >				

Automate Simple Migrations

IBM Transformation Advisor

← Recommendations

Your migration bundle is ready!

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	X
✓ application_binary2.ear	application_binary2.ear	X
✓ application_binary3.ear	application_binary3.ear	X
✓ application_binary4.ear	application_binary4.ear	X

APPLICATION
jpetsstore_war.ear
WebSphere Traditional

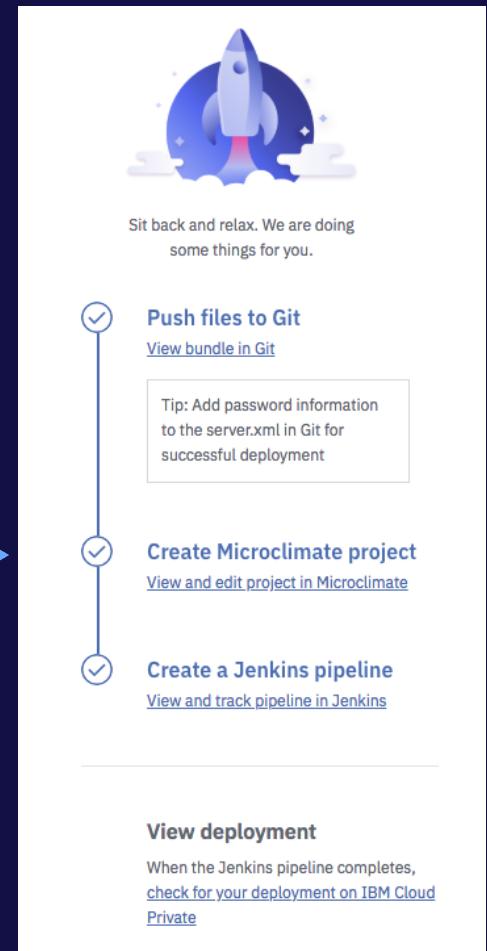
MIGRATE TO
IBM WebSphere Liberty
on IBM Cloud Private

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



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

Demo

Java EE Demo App
Mod Resorts

WebSphere ND

Bare Metal Server

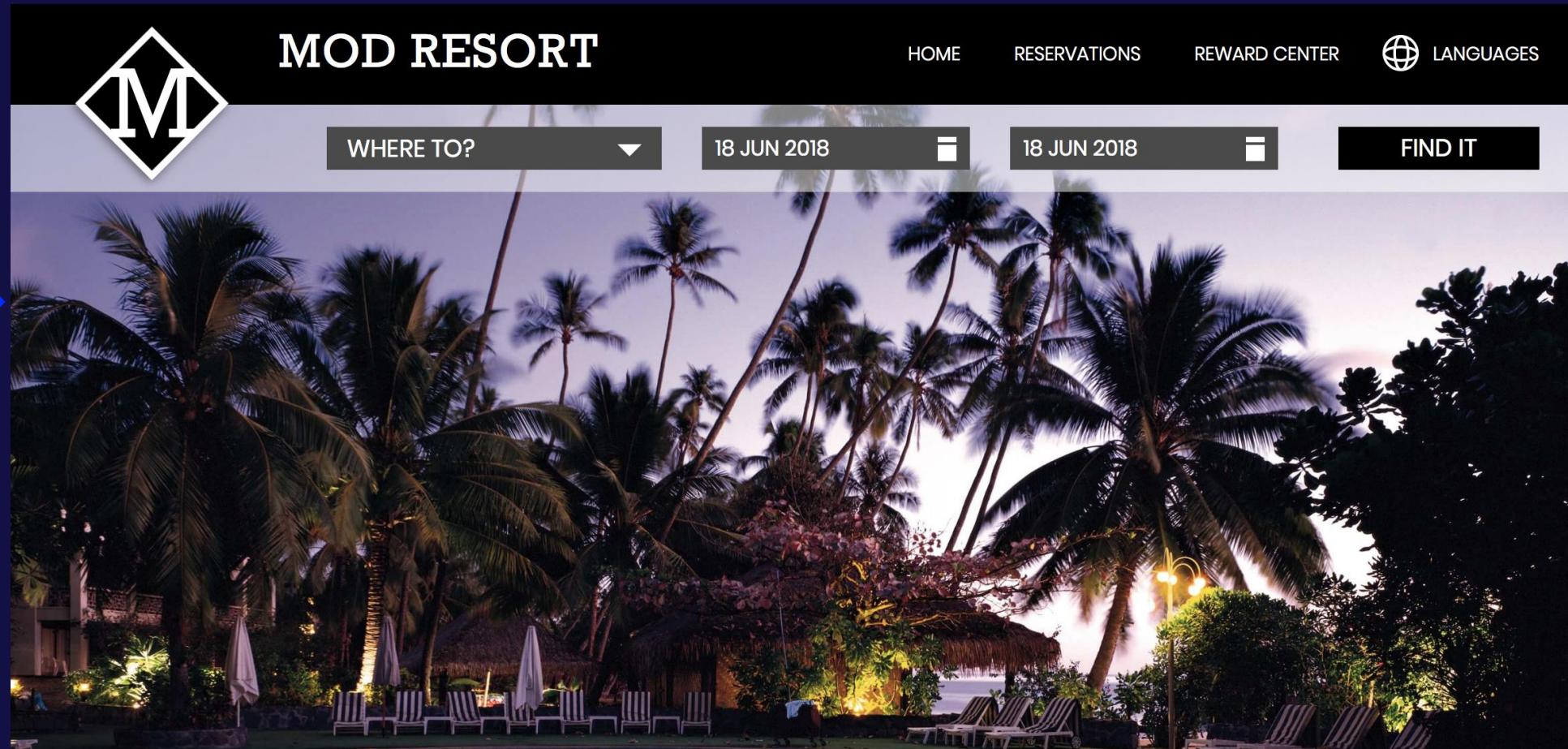


MOD RESORT

HOME RESERVATIONS REWARD CENTER LANGUAGES

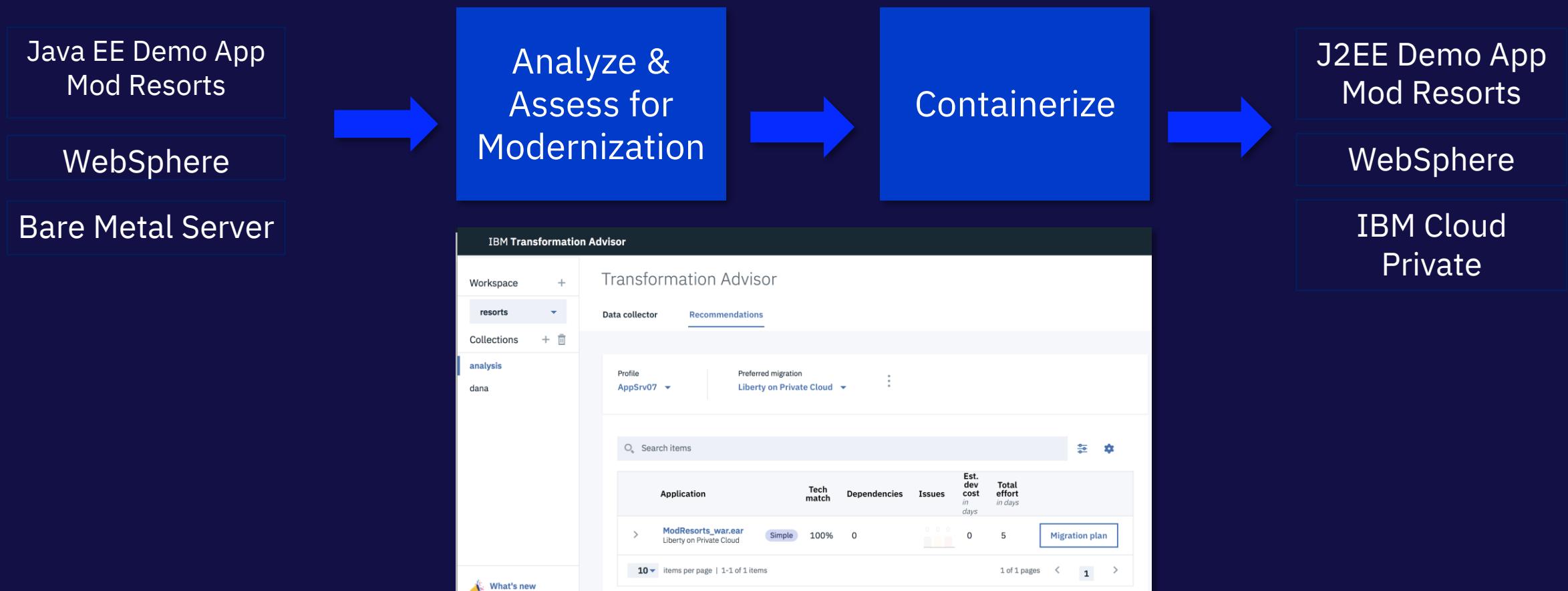
WHERE TO? 18 JUN 2018 FIND IT

18 JUN 2018



Demo

Step 1 – Containerize and deploy application to IBM Cloud



Demo

Step 2 – Digital transformation by extension

Java EE Demo App
Mod Resorts

WebSphere

IBM Cloud Private



Extend with
cognitive
solutions

Watson Compare & Comply



Streamline Contract Analysis

Improve the speed and consistency with which contracts are reviewed and risks are identified



Improve Employee Efficiency & Satisfaction

Reduce the time and effort to read and review contracts by classifying and comparing sentences



Compare Across Documents

Easily identify discrepancies and ensure consistency by visually comparing documents.



Prove Value Quickly

Deliver a foundational solution to prove value within 4 weeks.



J2EE Demo
App
Mod Resorts

WebSphere

Watson
Compare
and Comply

IBM Cloud Private