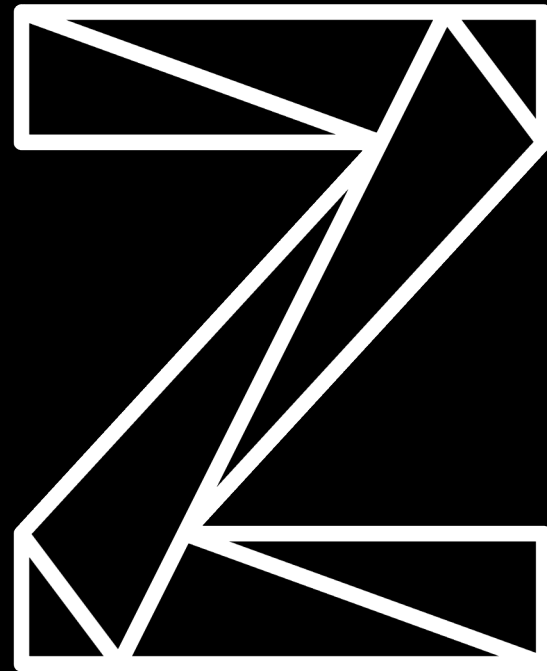


IMS and DevOps

Haley Fung
hfung@us.ibm.com

IBM Offering Manager –
IMS API, Java, DevOps and Ansible for Z



Please note

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice and at IBM's sole discretion.

Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision.

The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code or functionality. Information about potential future products may not be incorporated into any contract.

The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

Agenda

- IMS and DevOps
- Pipeline and Automation
- Demos
- Getting started
- Questions?

DevOps and IMS

Why we care?



Enterprise-wide initiative to transform existing application deployment processes on IBM Z to a modern and fully automated end-to-end CI/CD application deployment pipeline



Heavy mainframe skills and tools
Siload application deployment process on Z
Lack of integrated Infrastructure provisioning and configuration process

Pain points



Deb
New Z
Application Developer

Developing and Deploying application for Z

Susan finds it difficult and not self-sufficient for deploying and provisioning her Z application as it often requires a steep learning curve, using manual processes or depends on other people's help.



Sanjay
System Administrator

Provisioning mainframe resources and environment on demand

Sanjay is challenged to address Susan and other application developers request to configure and provision Z application environments in a timely manner.



Pete
Build Engineer

Building an automated pipeline for mainframe application delivery

Pete is not able to build an automatic CI/CD pipeline for Z application delivery and testing using widely adopted DevOps tools of his choice

Modern Pipeline and Automation – Why is it important?

Standardization



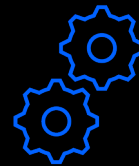
Leverage common
and Open source
tools for automating
z/OS assets

Single CI/CD Pipeline



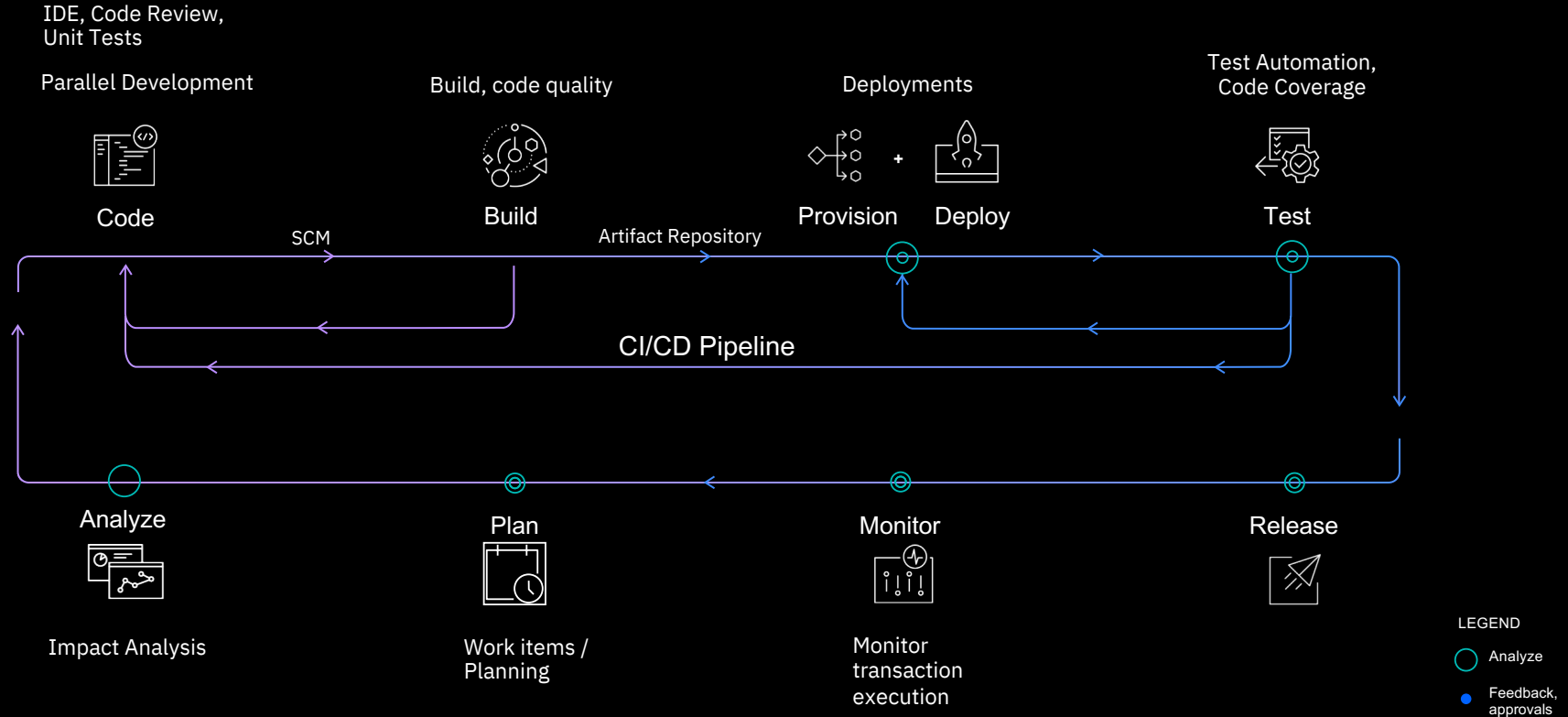
Bring z/OS into your
existing CI/CD pipeline
across systems

Infrastructure as Code

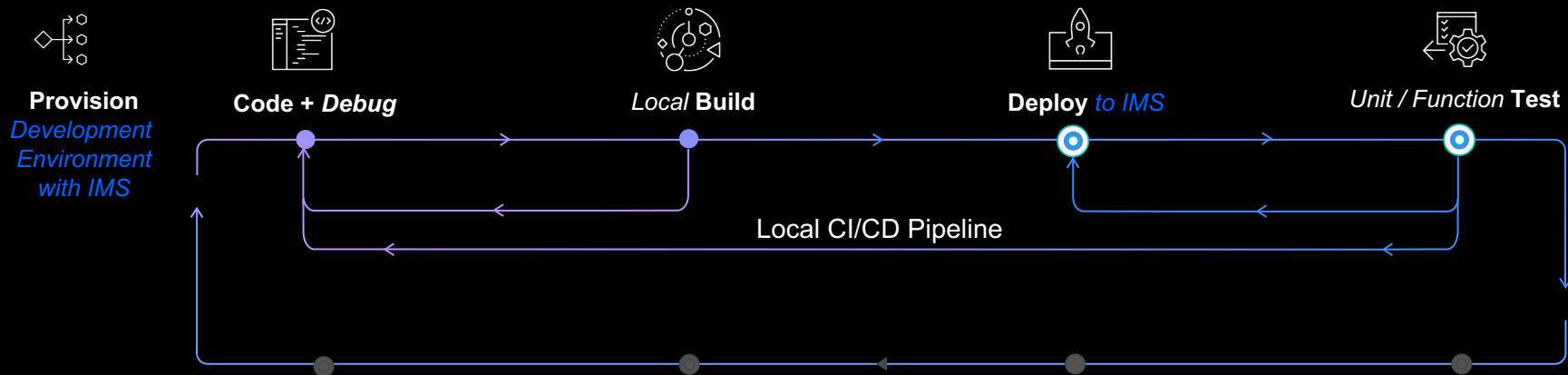


Infrastructure and
application changes all
flow through the pipeline

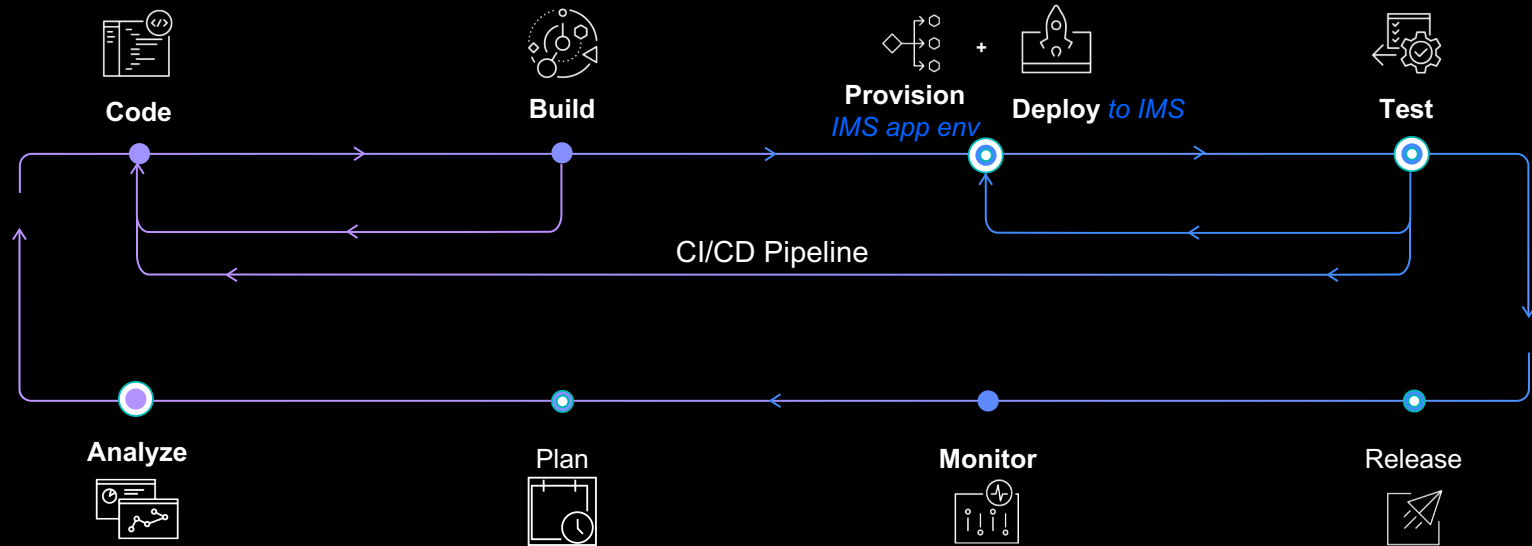
What makes up the pipeline



Pipeline for Developer



Pipeline for Continuous Deployment



LEGEND

- Analyze
- Feedback, approvals

Note: Starting from the upper left, products and significant capabilities appear once, the first time they are used in the pipeline. Products and capabilities are used at multiple points.

Eclipse, VS Code, Eclipse Che (BYOI)
IBM Developer for z/OS Enterprise Edition (IDzEE)
IBM Wazi Workspaces (Code)

GitHub GitLab

Dependency Base Build (IDzEE)
ZUnit (IDzEE)
IBM Wazi Virtual Test Platform
AppScan

JUnit 5 Gradle
Maven sonarqube

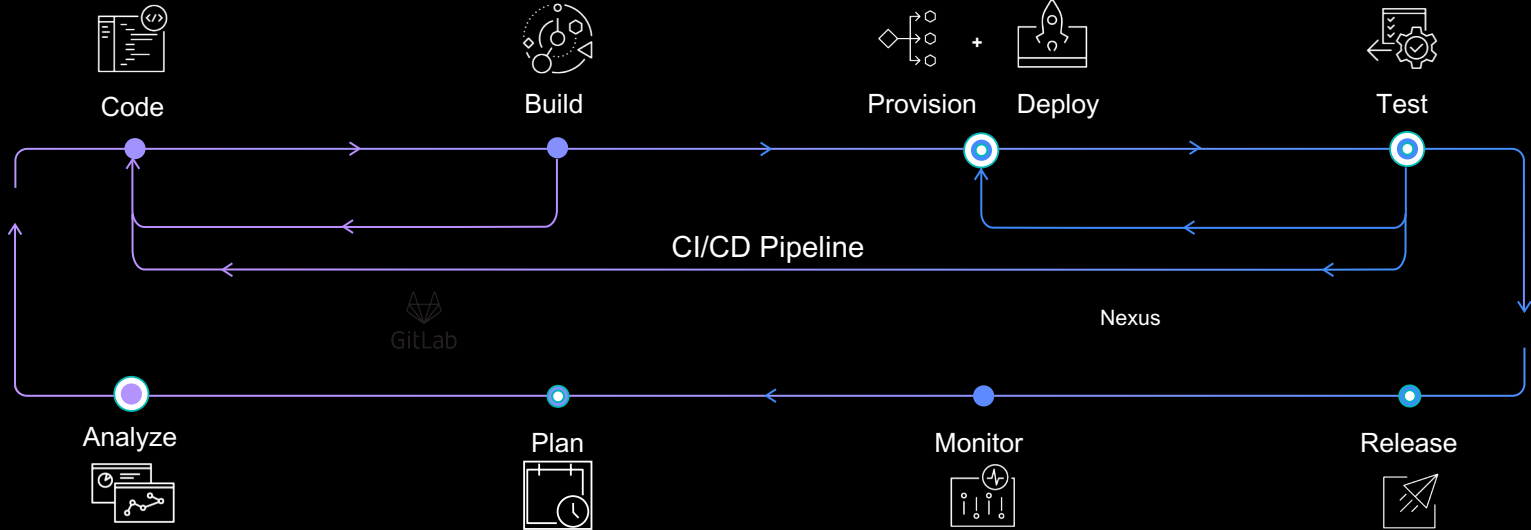
IBM Z Development and Test Environment (ZD&T)
IBM Wazi Workspaces (Sandbox)

ANSIBLE

urban {code}

IBM Optim Test Data Management
IBM Rational Test Workbench

galasa
<https://galasa.dev/>



IBM Application Discovery and Delivery Intelligence

splunk>

IBM Engineering Workflow Management

Jira
Confluence
VS Code

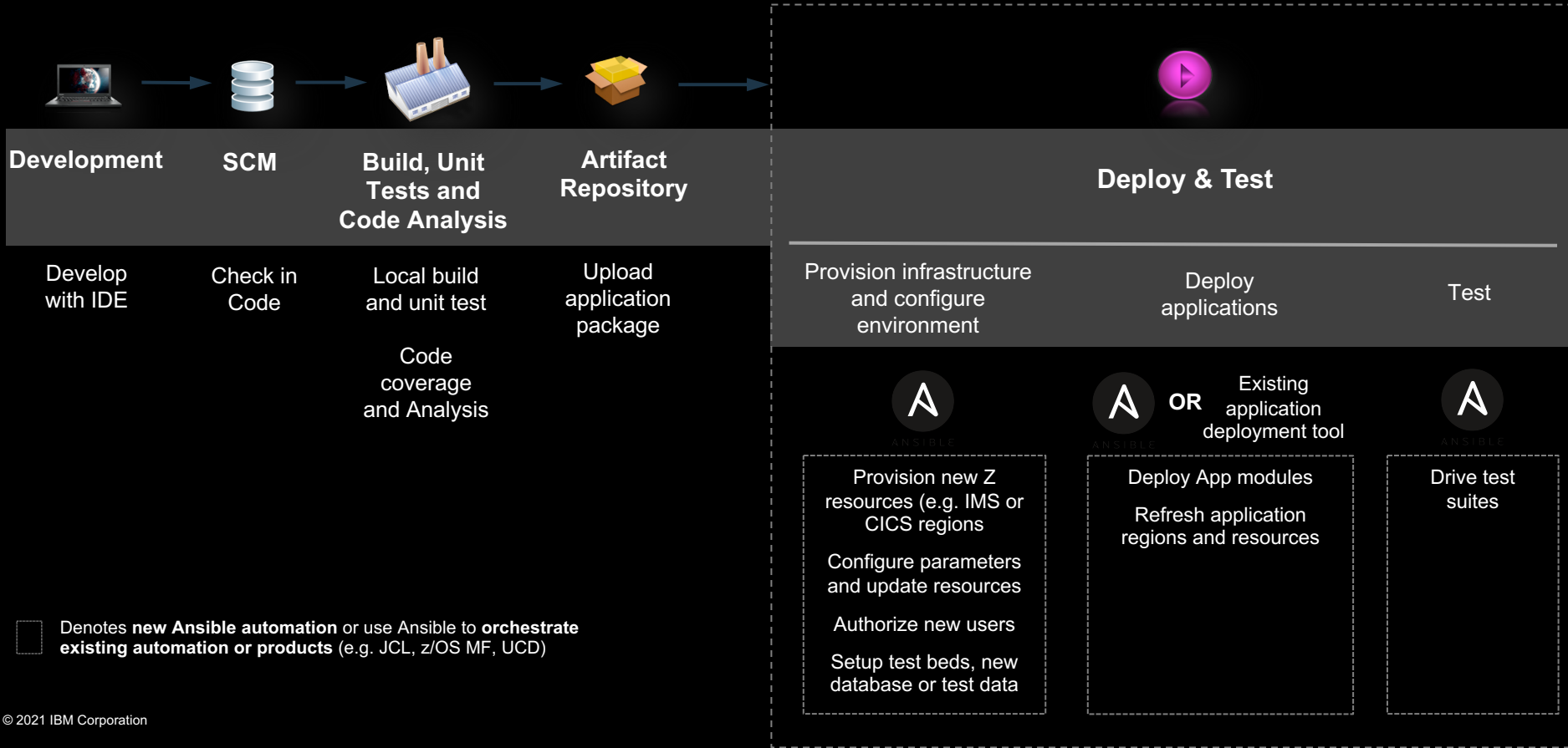
IBM Z APM Connect
OMEGAMON Operational Insights

APPDYNAMICS

urban {code}

cloudbees

Sample CI/CD pipeline with application provisioning and deployment



IDE and Pipeline Demo

Pain points addressed



Deb
New Z
Application Developer

Developing and Deploying application for Z

Susan is now able to self-provisioning an Z application environment in the cloud on demand. She can leverage her existing skills and knowledge and use any familiar IDE of her choice.



Sanjay
System Administrator

Provisioning mainframe resources and environment

Sanjay now only needs to setup the application environment once and the developers can provision the environment any time without impacting others. Sanjay can focus on other configuration and automation tasks to make his Z system more efficient.



Pete
Build Engineer

Building an automated pipeline for mainframe application delivery

Pete is now able to build an automatic CI/CD pipeline for Z application delivery and testing using widely adopted DevOps tools of his choice – Git, Jenkins, Ansible, etc...

IBM DevOps and Ansible offerings

Wazi Developer

- Solution perspective from Deb, the Z Application Developer
- Support her Code, Build, Debug, Deploy and Test tasks
- Flexibility for Deb in choosing a standard Integrated Development Environment (IDE) or an infrastructure (LPAR or Sandbox)



Deb
Application Developer

Code

Microsoft®
Visual Studio™
Code

Desktop IDE

Eclipse® Che
Red Hat
CodeReady
Workspaces

Kubernetes native IDE

Eclipse®
IDZ

Desktop IDE

Client side

Server side

Regular LPAR

z/OS Software Package

- GIT
- RSE, RSE API
- Debug for z/OS
- Dependency Based Build



Virtualized & containerized z/OS
on Red Hat Openshift

Extended ADCD

- GIT
- RSE, RSE API
- Debug for z/OS
- Dependency Based Build



Sandbox

IBM Z Virtual Test Platform

Shift left Application Integration testing as part of the DevOps lifecycle



Shift left application integration testing

Perform transaction level testing during build phase

Regression testing

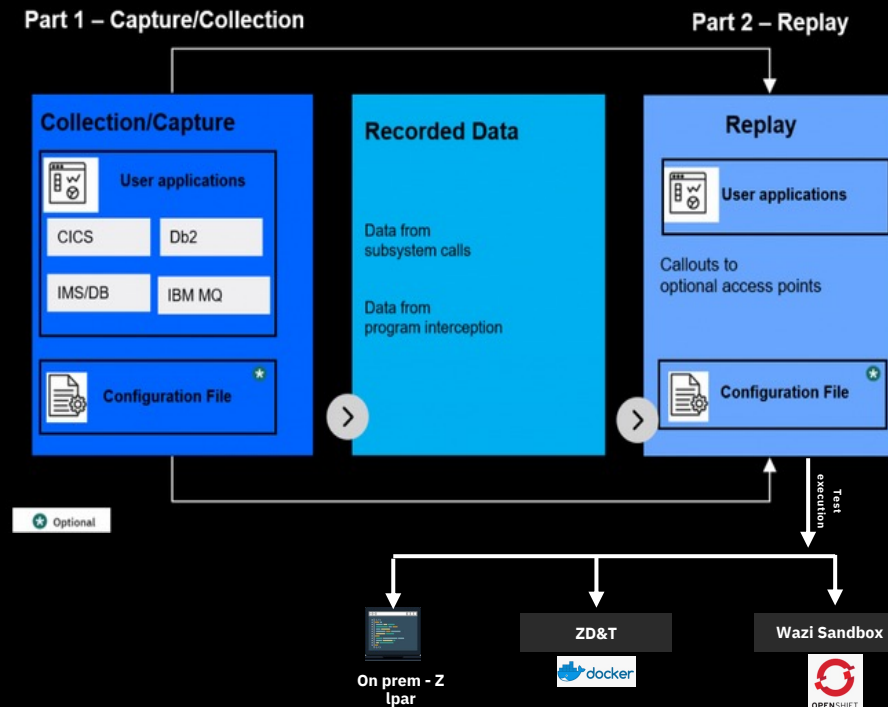
Use recorded tests for regression testing (e.g. after compiler upgrades, ABO Implementation or source code manager migrations)

Batch testing

Accelerate batch application testing in a completely virtualized environment

Execute without any runtime environment dependencies

Supports IMS today



Red Hat Ansible Certified Content for IBM Z



Red Hat
Ansible Automation
Platform

Red Hat Ansible Automation Platform is the enterprise framework for Ansible that enables a common approach to hybrid applications and infrastructure management

Flexibility



- Bring disparate IT into a coherent whole using a market leading open solution backed with enterprise support
- Interact directly with z/OS resources or integrate with existing platform tools

Consistency



- Integrate z/OS into an enterprise automation strategy in a consistent way
- Centralize management of your IT infrastructure

Simplicity



- The certified collections codify much of the z/OS specific knowledge and complexity
- Developer or system programmer can focus on their tasks and be more productive

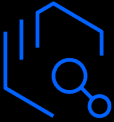
Red Hat Ansible Certified Content for IBM Z

- Set of collections that accelerate the use of Ansible with IBM Z
- Initial collection focuses on the basic building blocks of interacting with the z/OS system
- Collections will be added regularly covering additional use cases (ex. configuration, provisioning, application deployment) for z/OS and the broader IBM Z community

Over 10000+ downloads on Ansible Galaxy

Ansible managing to z/OS

Key Client Use Cases



Provisioning and Maintenance

Build and provision middleware
Roll out fix packs to thousand of servers
Self-service provisioning portals



CI/CD and Application Deployment

Integrate infrastructure provisioning and
Z application deployment into CI/CD
pipeline



Configuration management

Middleware configuration
Network and security configuration



Orchestration

Orchestrate and replace existing
siload in-house automation
Integrate existing automation into
overall workflow



Security Automation

SSL certification renewal process
Password resets, create new users



Probe the mainframe

Collect audit and security configuration
details, system status and health
checks

CI/CD pipeline – How can Ansible help?

Reduce skills gap

- Build **new automation** or **replace homegrown** automation with Ansible for Z to **reduce mainframe skills** (e.g. no more JCL) needed to maintain automation processes on Z
- **Leverage existing Ansible skills** in the Enterprise and **build upon existing automation**
- Cut down learning curve to **bring new system programmers** on board

Orchestrate and Integrate with existing automation

- Build **Ansible playbook to abstract** and call existing JCL(s) to ease integration into modern pipeline tools (like Jenkins, Ansible)
- **Orchestrate existing automation** (e.g. JCL, z/OS MF workflows, or other automation tools) to build a full end-to-end pipeline that can cross multiple systems

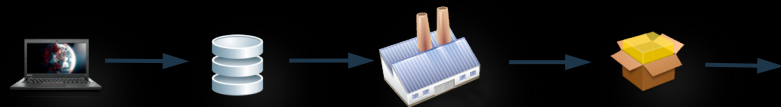
Provision and Configure infrastructure

- Build playbook to **automate configuration changes** or **provision application environments**
- Update a configuration parameter on a subsystem
- Create new CICS or IMS application regions
- Add or update IMS PSB or DB2 database schema
- Refresh middleware resources to pick up the application changes
- Provisioning a new environment with CICS/IMS/DB/zOS Connect as well as the application and data all available to execute test suites

Application deployment demo

- Ansible
- Ansible and UCD

CI/CD and Ansible with UrbanCode Deploy



Development

SCM

Build, Unit
Tests and
Code Analysis

Artifact
Repository

Develop
with IDE

Check in
Code

Local build
and unit test

Code
coverage
and Analysis

Upload
application
package

Deploy & Test

Provision
infrastructure and
configure environment

Deploy
applications

Test



ANSIBLE

Provision Z
resources

Configure
environment
update resources

Authorize new
users

Setup test beds,
new database or
test data



ANSIBLE

App Deploy With
[Ansible](#)

- You can leverage CI/CD playbooks from Ansible community to develop your own deployment process

OR

urban{code}
Deploy

App Deploy with
[UrbanCode Deploy](#)

- Out-of-the-box application deployment experience, including rollback
- 100s of ready-to-use plugins (integrations)
- Govern app pipelines: enforce approvals, quality gates and full audit.



ANSIBLE

Drive test
suites

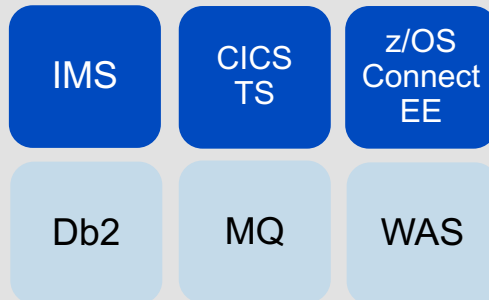
Ansible ecosystem across IBM Z portfolio

Build up an Ansible ecosystem for IBM Z products

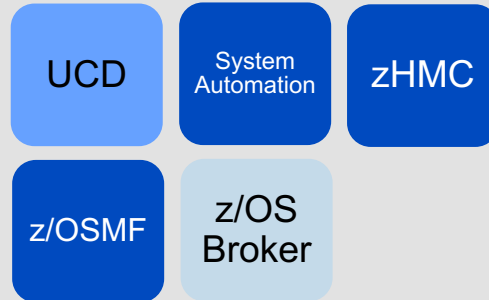
Deliver client needs through unified and powerful automation across products and platforms with Ansible

NOTE: Use-cases that can be achieved with Ansible and IBM Z are not limited to the provided integrations, automate today with APIs, commands, jobs, and more.

Middleware integration



Z product integration



Core collection for Z

Key use cases:

- Middleware provisioning and configuration
- Resource creation and management
- CI/CD / application deployment
- Orchestrate z/OS jobs, configuration and operation tasks

Key use cases:

- Self-service provisioning portal
- Orchestrate existing Z automation
- Manage Ansible provisioned services with automated operations
- Enhance CI/CD with infrastructure provisioning

Ansible content available

Collection / Samples coming soon

Content for consideration in future

Red Hat Ansible Certified Content for IBM Z today

Certified content collections accelerate the use of Ansible with IBM Z and enable:

- **Improved efficiency** via the simplification and standardization of complex IT deployments and enterprise automation strategies
- **Visibility** of your z/OS automation – know what is being automated, when, and by whom
- **Simplicity** increases productivity with certified collections that codify system-specific knowledge and complexity

Join: [Ansible for IBM Z: IBM Z & LinuxONE Community](#)
Try: [IBM Z Trial for Ansible for Free](#)

14,000+



Downloads

IBM Ansible for Z
Collections
and Samples

30,000+

Page Views

Ansible for Z
webpage
25 Blogs and
technical tutorials

2800+

Attendees

Presentations
& Webinars

170+

IBM zTrial
usages

Events Participations

AnsibleFest



IBM Developer

ZDC

GMAC

Getting Started on IMS and Devops

for IMS Developers, Sysprogs, DBAs

- **Identify** the DevOps and Automation pain points in your IMS environment today
- **Start collaborating** with your DevOps team to understand how you can prepare for your IMS environment to support modern DevOps, Automation tools and pipeline
- **Try out** some of these products (e.g. Wazi developer, Ansible, IMS tools...) to see how they can help you to make your automation and IMS DevOps pipeline more efficient.

**Talk to IBM
and let us
help you!**

Questions?

Thank you

Notices and disclaimers

- © 2019 International Business Machines Corporation. No part of this document may be reproduced or transmitted in any form without written permission from IBM.
- **U.S. Government Users Restricted Rights — use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM.**
- Information in these presentations (including information relating to products that have not yet been announced by IBM) has been reviewed for accuracy as of the date of initial publication and could include unintentional technical or typographical errors. IBM shall have no responsibility to update this information. **This document is distributed “as is” without any warranty, either express or implied. In no event, shall IBM be liable for any damage arising from the use of this information, including but not limited to, loss of data, business interruption, loss of profit or loss of opportunity.** IBM products and services are warranted per the terms and conditions of the agreements under which they are provided.
- IBM products are manufactured from new parts or new and used parts.
In some cases, a product may not be new and may have been previously installed. Regardless, our warranty terms apply.”
- **Any statements regarding IBM's future direction, intent or product plans are subject to change or withdrawal without notice.**
- Performance data contained herein was generally obtained in a controlled, isolated environments. Customer examples are presented as illustrations of how those
- customers have used IBM products and the results they may have achieved. Actual performance, cost, savings or other results in other operating environments may vary.
- References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business.
- Workshops, sessions and associated materials may have been prepared by independent session speakers, and do not necessarily reflect the views of IBM. All materials and discussions are provided for informational purposes only, and are neither intended to, nor shall constitute legal or other guidance or advice to any individual participant or their specific situation.
- It is the customer's responsibility to insure its own compliance with legal requirements and to obtain advice of competent legal counsel as to the identification and interpretation of any relevant laws and regulatory requirements that may affect the customer's business and any actions the customer may need to take to comply with such laws. IBM does not provide legal advice or represent or warrant that its services or products will ensure that the customer follows any law.

Notices and disclaimers

continued

- Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products about this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products. IBM does not warrant the quality of any third-party products, or the ability of any such third-party products to interoperate with IBM's products. **IBM expressly disclaims all warranties, expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a purpose.**
- The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents, copyrights, trademarks or other intellectual property right.
- IBM, the IBM logo, ibm.com and [names of other referenced IBM products and services used in the presentation] are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at: www.ibm.com/legal/copytrade.shtml

