

# Wazi Analyze – Programm Code Analyse

—  
Nico Einsidler  
Technical Specialist zSystems

A large, 3D-rendered white IBM logo is centered on the slide. The letters are thick and blocky, casting soft shadows on the light gray background, giving it a three-dimensional appearance.

“Änderungen an der Agenda können  
vorkommen, sind aber nicht zu  
erwarten.”

## Agenda

*95. GSE z/OS zExpertenForum*

# IBM Cloud Delivers a New Era of Modernization with IBM Z

[Cloud](#)[DevOps](#)

14 February 2022 4 min read

By: Alan Peacock, General Manager, IBM Cloud Delivery & Operations

[Site feedback](#)

## IBM Cloud will extend the IBM Z portfolio to z/OS Dev & Test and Linux on Z.

The future is often unpredictable, with both unexpected challenges and possibilities. To grow and build profitability, organizations have to be flexible to embrace change. This is the case for all businesses — from global enterprises redefining their business models to start-ups creating new markets. To address these opportunities, especially in highly regulated industries, businesses must become more agile and flexible while also providing the security, privacy and resiliency to address compliance demands and deliver a 24/7 secured digital service.

IBM intends to help you re-envision IT for the era of hybrid cloud. Together with [IBM Cloud](#) and [IBM Z](#), enterprises will be able to leverage the best of both worlds, allowing them to build, test,

extend and protect without compromise.

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IBM Cloud Technologies

Let's talk

# Wazi Analyze & Wazi as a Service

—

Nico Einsidler

Technical Specialist zSystems

A large, 3D-rendered white IBM logo is centered on the slide. The letters are thick and blocky, with a slight shadow cast to the right, giving it a three-dimensional appearance against the light gray background.

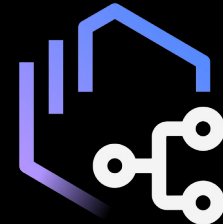
# IBM Wazi Developer



Wazi Code



Wazi Sandbox



Wazi Analyze

# IBM Wazi Analyze

Analyze and visualize existing code bases with ease through the browser. IBM Wazi Analyze is shipped as containerized software.

Supports all major languages on the mainframe  
COBOL, PL/I, Assembler, Java IMS & JCL.



# Demo

# Wazi as a Service





# IBM Cloud 101



## Sicherheit

- Confidential Computing
- KYOK (Keep Your Own Key) / FIPS 140-2 HSM
- Technical Assurance
- Compliance Controls für regulierte Workloads

## Weltweit

6 Kontinente, 19 Länder, 60 Data Centers, MZR & SZR, Einbindung eigener Data Center als Landing Zone

## FS-Auslegung

Integrierte Compliance Dienste und Verfahren auf Basis eines standardisierten Kontrollrahmen für Finanzinstitute zusammen entwickelt mit global führenden Finanzinstituten

## Hybrid

- VMware
- Power
- zSystems
- SAP

## Cloud-native development and test for z/OS applications

Accelerate DevOps practices with flexible, consumption-based pricing



### Speed to Market

Accelerate development and testing with on-demand access to z/OS system

#### **Eliminate wait times**

involved in exclusive access to environments

#### **Improved developer**

**productivity** resulting in accelerated release cycle



### Improved Software Quality

Shift left and start testing as early as your code phase with access to isolated development environment

Create your development environment with **automated deployment** of custom application

Hybrid application development with **standard CI/CD pipeline**



### Flexible pricing

Infrastructure as a Service enabling access to z/OS system and pay for what you use

**Pay for what you use** on hourly basis

Additional discount based on period and usage



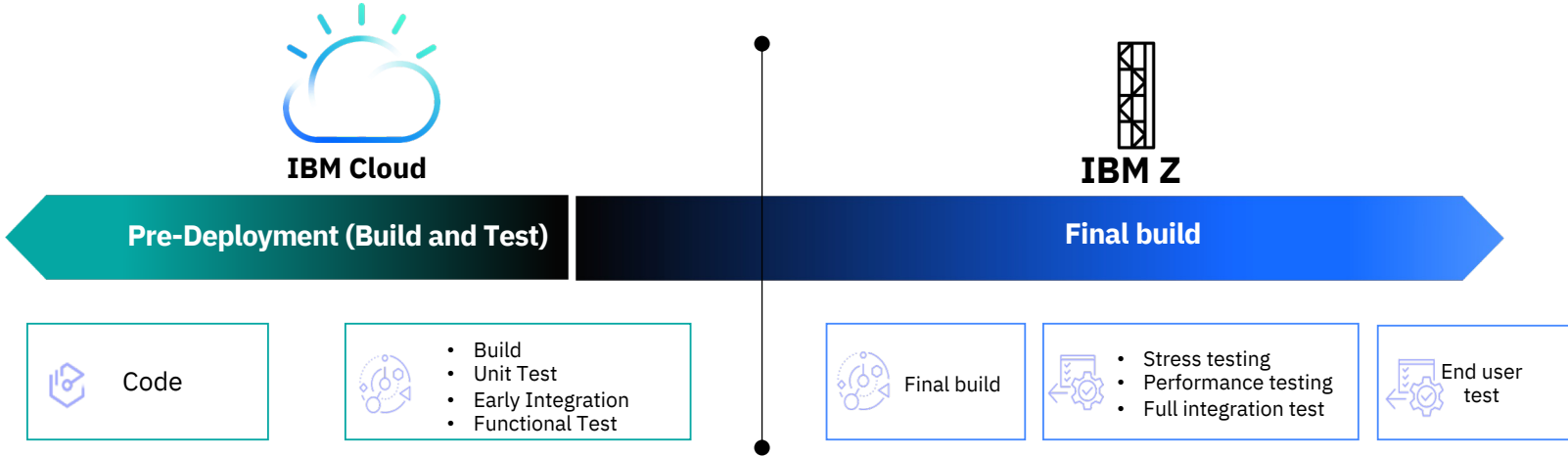
### Innovate with Freedom

Innovate at scale with Wazi z/OS Dev and Test system with pre-installed software's

**Deploy a stock image** with preinstalled software's onto z/OS Virtual server

Innovate at scale and **deploy with confidence**

# Wazi aaS – z/OS dev and test



**6 Mins\***

Deploy and Start a z/OS system  
in less than 6 Mins

**8-15x\***

the performance  
compared to x86 (ZD&T)

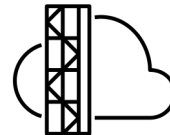
**Encrypt**

with keys stored in Key  
Protect or HPCS during VPC VSI  
creation

\* Disclaimers available at the end of the presentation.

# IBM Wazi aaS

## Cloud-native development and test for z/OS on IBM Cloud



Testing type	ZD&T (x86)	Wazi aaS	Dev Test LPAR
Unit	✓	✓	✓
Early Integration	✓	✓	✓
Regression	✓	✓	✓
Infra testing	✓	(✓)	✓
User Acceptance			✓
Performance			✓
Pre-prod			✓
Performance			
General Workload	●	●	●
Java workload	●	●	●

### Personal z/OS Dev and Test system in your Virtual Private Cloud (VPC)

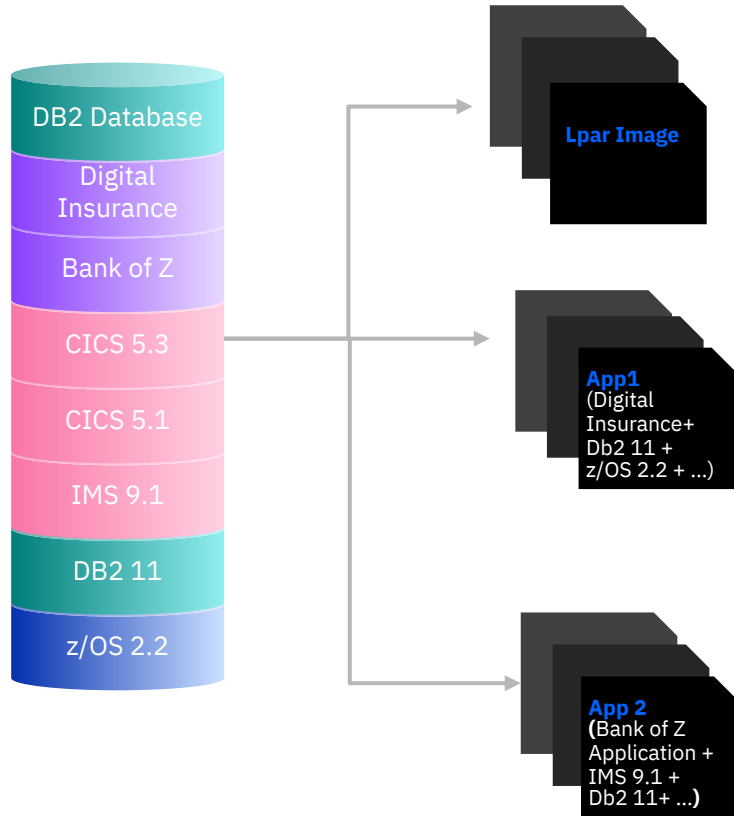
- Dedicated and isolated environment reducing conflicts
- Stock image with pre-installed and customized software\*
- Infrastructure as a Service with flexible consumption model

### Wazi Image Builder

- Create custom images from your On-Premises LPAR
- Automation to deploy in IBM Cloud

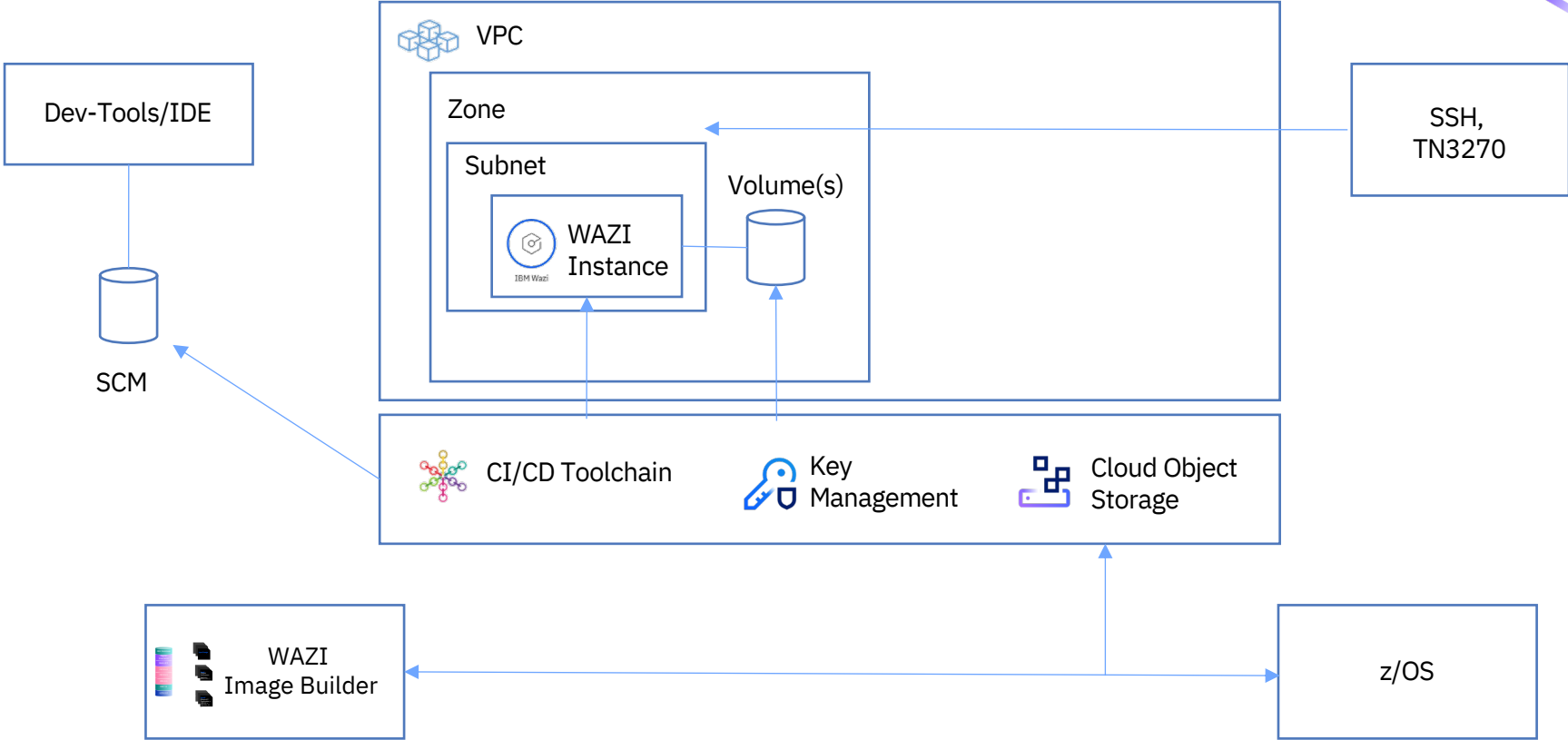
\*more Infos about z/oS Stock Images: <https://www.ibm.com/docs/en/wazi-aas/1.0.0?topic=vpc-configurations-in-zos-stock-images>

# Wazi Image Builder



- Create custom images from your on-premises LPAR by using Wazi Image Builder
- A web UI with role-based access
- REST APIs to streamline the creation process

# Hybride Architektur mit Wazi aaS



# Demo

# Cloud-native development and test for z/OS applications



### Early development and test

Leverage IBM Cloud with On-demand access to z/OS system and ability to deploy custom image created from your own LPAR. Get started with development and testing in minutes.



### Infrastructure testing

Overcome the issues of broken processes, insufficient security, etc. preventing you from being able to test your software upgrades at speed. Expedite testing with z/OS VSI and Wazi Image Builder



### Education

Lower the barrier to entry for your z/OS programmers with easy access to z/OS system



### Innovation

With Wazi aaS, z/OS Dev and test environments, make innovation business as usual. Experimentation with other languages and inclusion of cloud services is easy and inexpensive.



**IBM**

# Software within a Sandbox

## ADCD

- z/OS 2.4 December 2020 Edition
- CICS 5.5
- CICS 5.6
- DB 11
- DB 12
- IMS 14.1
- IMS 15.1
- IBM Z Monitoring Suite v1.1.1
- Tivoli Workload Scheduler 9.5.0
- WebSphere Application Server ND for z/OS 9.0
- IBM BATCHPIPES FOR OS/390 2.1.0
- IBM z Distribution ZOWE 1.10.0

## Extended ADCD

- IBM® Python SDK 3.9 (HLO - PYZ380)
- Software packages that are updated.
- IBM Dependency Based Build is updated to 1.1.0 (HLQ - BGZ110)
- IBM Debugger is updated to 15 (HLQ - EQAFOO)
- z/OS Explorer is updated to 3.2.0.14 (HLO - FEK320)
- z/OS Explorer Extensions Version 15 (HLQ - FELFOO)
- z/OS Explorer API Version 1.0.3 (HLO - HUH100)
- IBM Z® Open Automation Utilities Version 1.1.0 (HLQ - BGY110)
- Rocket Git 2.14.4 (HLQ - RL2110)
- Rocket Bash 4.3.46 (HLQ - RL2110)
- Rocket Perl 5.24 (HLO - RL2110)



## Early development and test

- Leverage IBM Cloud with on-demand access to z/OS systems
- Ability to deploy custom image created from your own LPAR
- Get started with development and testing in minutes without any dependency on operations



Developer



### Step 1

Accesses the IBM Cloud portal as instructed by the operations or use the APIs customized for the application to quickly create a virtual server instance



### Step 2

She chooses an image to access in the cloud either standard or customized by her sysadmin



### Step 3

She begins to edit, debug and tests her application using the IDE of her choice



### Step 4

She continuously integrates those changes through the automated pipeline



### Step 5

She brings down her VSI or deletes it until the next time she needs to use it



DBB

Gitlab\*

UrbanCode™



## Education

- Leverage IBM Cloud with On-demand access to z/OS systems
- Lower the barrier to entry for your z/OS programmers with easy access to z/OS system
- Attract and retain new talent



Developer

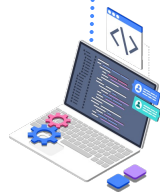


System Admin,  
DevOps Engineer



### Step 1

Each developer/sysadmin has access to environments on the cloud



### Step 2

Developer chooses the test image to give them a fault free environment to learn and practice application development

### Step 3

Sysadmin educates themselves on infrastructure management



### Step 4

VSI is brought down or destroyed for next use as needed.



## Infrastructure testing

- Overcome the issues of broken processes, insufficient security, etc. preventing you from being able to test your software upgrades at speed
- Expedite testing with z/OS VSI and Wazi Image Builder



System Admin,  
DevOps Engineer



Toby the  
Tester



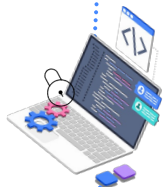
### Step 1

He creates a VSI in IBM Cloud by using Wazi Image builder to build an image or by using an existing image



### Step 2

He upgrades middleware/security rules tests upgrades, and communicates image readiness for use by development



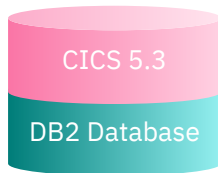
### Step 3

Upgrade is ready for install in on-premise system



### Step 2a

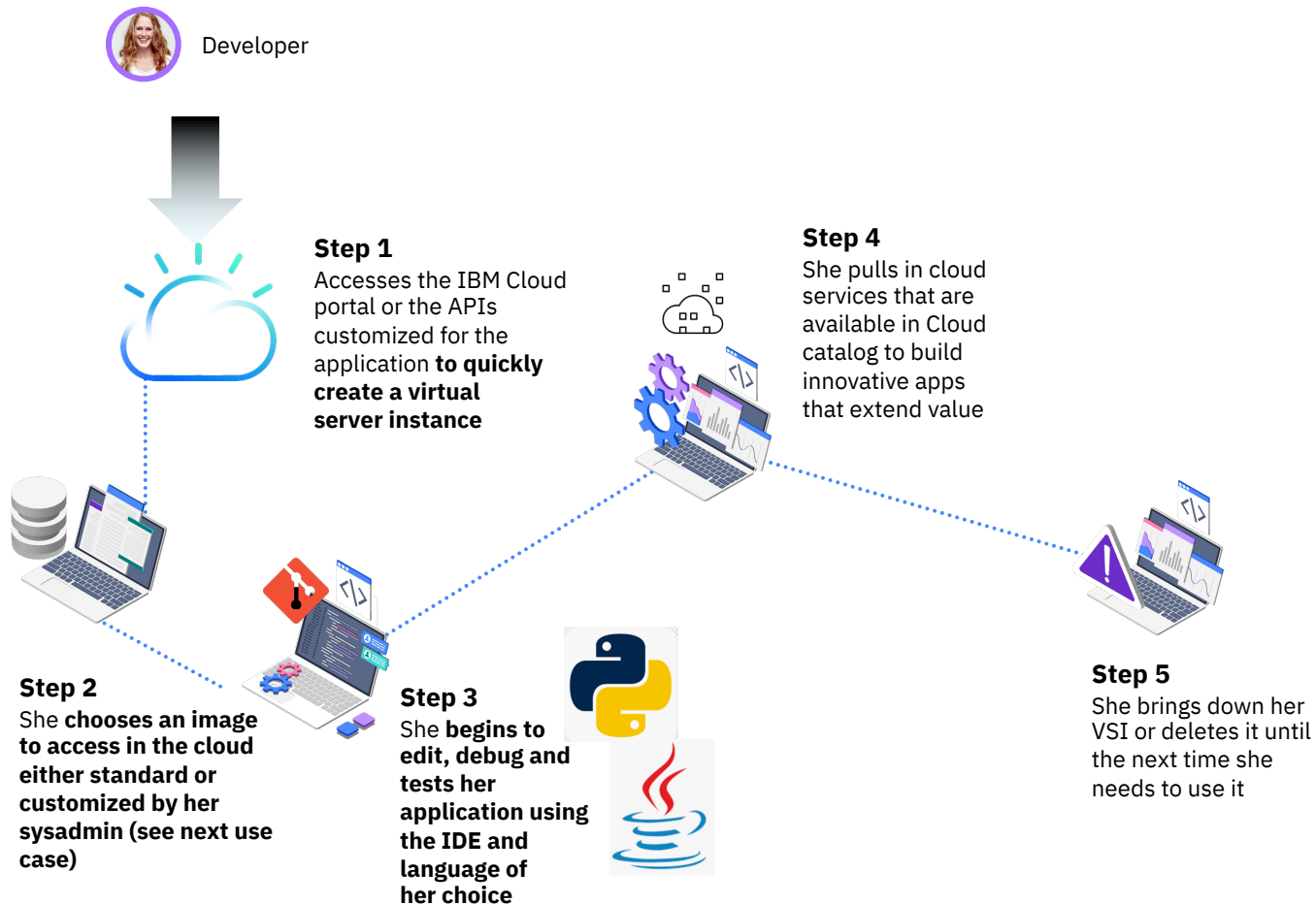
Application/test teams use images to stand-up test environments in their VSI and run automated regressions tests





## Freedom to innovate

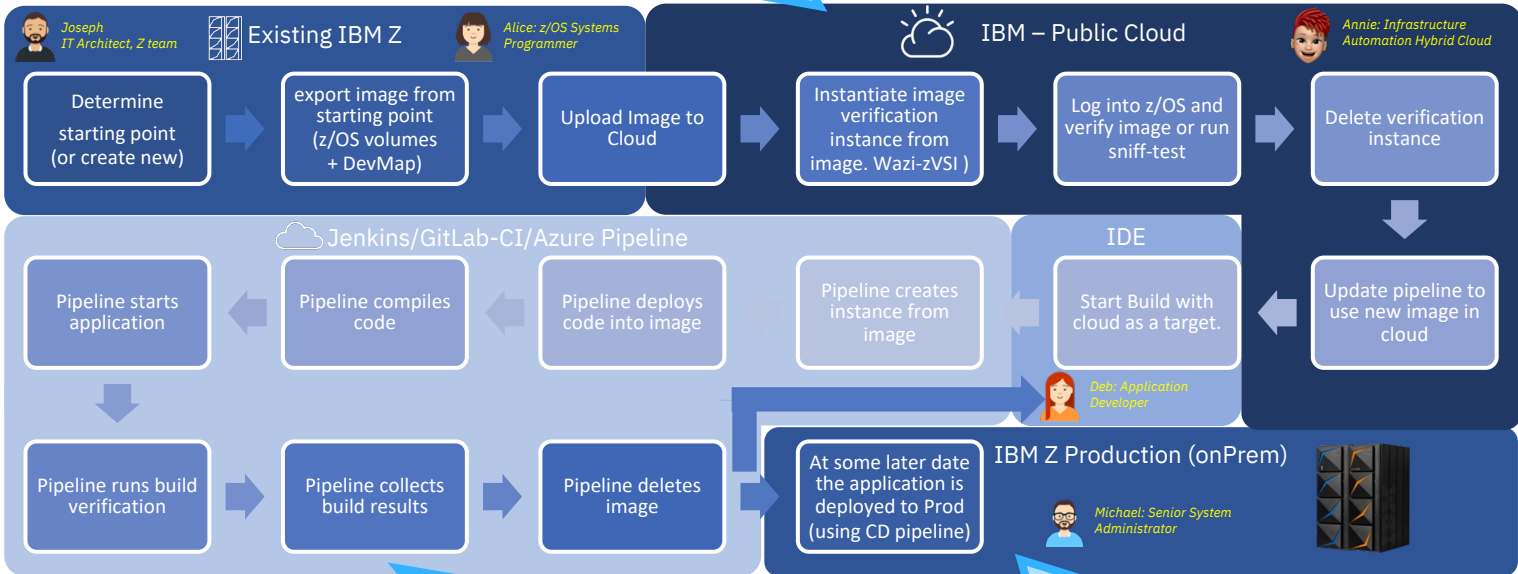
- With Wazi aaS, z/OS Dev and test environments, make innovation business as usual
- Experimentation with other languages and inclusion of cloud services is easy and inexpensive



# Bring Your Custom WAZIaaS Image to IBM Cloud

**1 Prepare Image (done once)**

**2 Confirm and integrate Hybrid Cloud**



# IBM Cloud in Zahlen

60

IBM Cloud-Rechenzentren in 19 Ländern, in 18 Verfügbarkeitszonen auf 6 Kontinenten/Regionen.

1<sup>st</sup>

Und einziger Cloud-Anbieter, der eine Verschlüsselung nach **FIPS 140-2 Level 4** anbietet, um technische Sicherheit zu bieten

1<sup>st</sup>

Cloud-Anbieter mit Zertifizierung für SAP auf einer Power Architektur sowie **ZaaS**

20,000

Verwaltete Kubernetes- und Openshift-Container-Cluster

1<sup>st</sup>

Und einziger Cloud Anbieter, der mit technischer Sicherheit Datensouveränität bieten kann und ein EU Support Modell anbietet, sodass Möglichkeiten zur Sozialdatenverarbeitung bestehen

1,400

VMware-Kunden und 4.000 VMware-Servicespezialisten mit den meisten integrierten Lösungen. Einziger Anbieter, der zertifiziertes SAP auf VMWare unterstützt

1<sup>st</sup>

Cloud-Anbieter, der echte Hybrid-Multi-Cloud-Lösung mit IBM Cloud Satellite anbietet

1<sup>st</sup>

Cloud-Anbieter mit einer Lösung für regulierte Workloads in der Finanzdienstleistungsbranche

1<sup>st</sup>

Einziger Cloud-Anbieter, der keine Gebühren für die Datenübertragung innerhalb des globalen Cloud-Backbones erhebt



# IBM Cloud – Die Cloud für kritische Workloads



## Kontinuierliche Compliance erreichen

Intelligente Überwachung und Durchsetzung von Sicherheits- und Compliance-Regeln für die einfachere regelkonforme Cloudnutzung



## Höchster Standard für Datensicherheit

Confidential Computing bietet technologiegestützte Datensicherung, sodass nur HUK-COBURG die eigenen Daten lesen kann

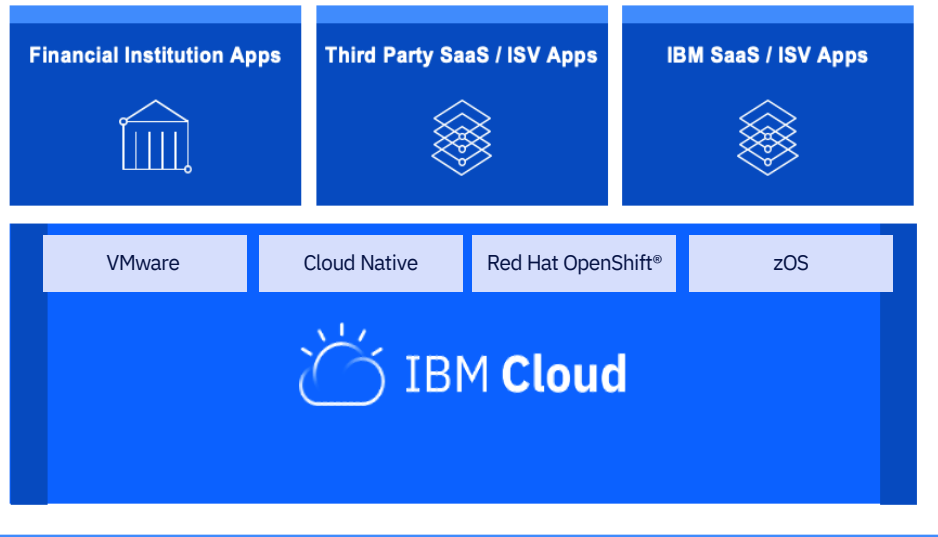


## Agilität in Entwicklung, Testing & Betrieb

Vereinfachung einer hybriden Architektur für HUK-COBURG für mehr Flexibilität, indem Workloads überall ausgeführt werden können



## IBM Cloud Framework for Financial Services



IBM Cloud for Financial Services™

# DevOps transformations on-premise



“More important in the longer term, we’re giving developers autonomy and control. They are now responsible for setting up their own development environments, and we can give them rights/roles over those environments that it would have been too risky—perhaps even impossible—to give them before on classic LPARs

- BNPP



“Developing modern DevOps tooling and practices is enabling a single high speed of development across the entire enterprise. ”

- IT Architect, State Farm



We estimate that IBM Developer for z/OS has increased our developers’ efficiency by up to 25%. We’ve dramatically accelerated our development and testing phases and we encounter significantly fewer bugs, as we modernize our continuous integration practice

- GarantiBBVA

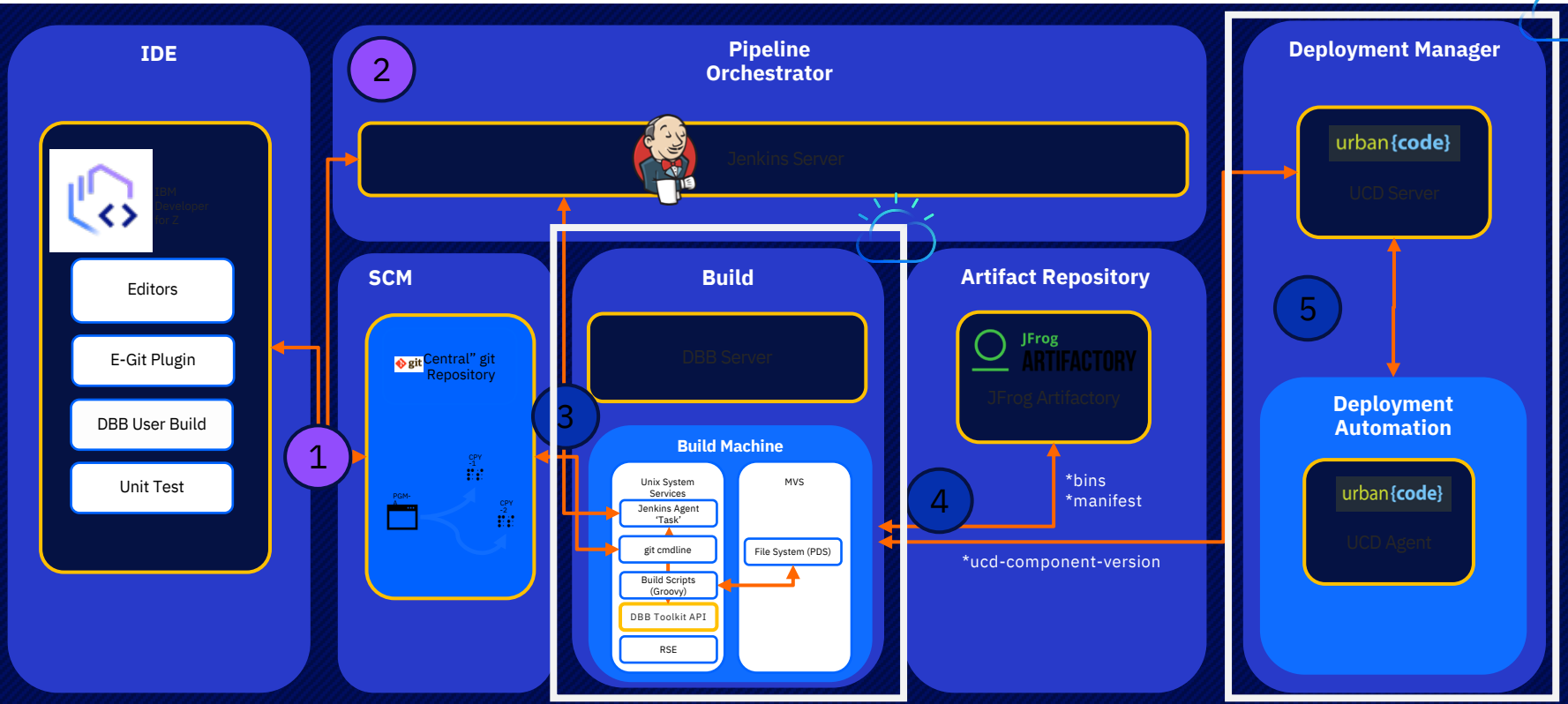


With help from IBM, we’re giving our developers the tools to work more productively than ever

- Swedbank

# Sample Pipeline Overview

- 1 Edit & check-in → 2 Pipeline → 3 Build & Test → 4 Packaging → 5 Deploy & Test



\* named products for Pipeline orchestrator, Git provider, Artifact repository and Deployment manager in this picture are used as a sample. Different solutions possible.

# Advanced Support

		Basic	Advanced	★ Premium
	<b>Pricing</b>	Included with IBM Cloud subscription & Pay-as-you-go accounts	Greater of: USD 200/mo -OR- 10% of Estimated Monthly IBM Cloud Usage	Greater of: USD 10,000/mo -OR- 10% of Estimated Monthly IBM Cloud Usage
Online Self-Service Support	<b>Online Self-help Resources</b>	24x7 access to online knowledge center and support forums	24x7 access to online knowledge center and support forums	24x7 access to online knowledge center and support forums
	<b>Service Health Status and Notifications</b>	Access to system status and configurable platform notification	Access to system status and configurable platform notification	Access to system status and configurable platform notification
Assisted Technical Support	<b>Support Channels &amp; Availability</b>	24x7 access to technical support teams via Cases / phone / chat	24x7 Support availability via Cases / phone / chat	24x7 Support availability via Cases / phone / chat
	<b>Case Severity / Initial Response Time (Service Level Objective)</b>	No SLO	Severity 1: < 1 hour Severity 2: < 2 hours Severity 3: < 4 hours Severity 4: < 8 hours	Severity 1: < 15 mins Severity 2: < 1 hour Severity 3: < 2 hours Severity 4: < 4 hours
	<b>User &amp; Case quota</b>	Unlimited users / Unlimited cases	Unlimited users / Unlimited cases	Unlimited users / Unlimited cases
	<b>Case Escalation Process &amp; Management</b>	Case escalation process available	Case escalation process available	Case escalation process available
Value Added Support	<b>Technical Account Manager (TAM)</b>	--	--	Assigned TAM
	<b>Access to Experts</b>	--	--	Access to experts facilitated by TAM
	<b>Business Reviews</b>	--	--	Quarterly business reviews and reporting led by TAM

# Claims and disclaimers

Claim 1: On average, creating an experimental IBM Cloud z/OS Virtual Server Instance (VSI) of a z/OS 2.4 stock image and a mz2o-2x16 Virtual Server Instance (VSI) profile takes 1 minute and it is ready for user login (SSH) in 5.5 minutes.

Disclaimer: Measurements were done across two different IBM Cloud production sites using an experimental version of z/OS 2.4 stock image and a mz2o-2x16 VSI profile. Measurements were performed with Ansible automation based on the [examples available here](#). Results may vary.

Claim 2: Applications compile faster on an experimental IBM Cloud z/OS Virtual Server Instance (VSI) than on IBM Z Development and Test (ZD&T) EE V13.3 running on the compared IBM Cloud x86 VSI: about 15x faster compilation of Java applications, about 12x faster compilation of C applications, about 8x faster batch compilations of COBOL/FORTRAN applications.

Disclaimer: Performance results based on IBM internal tests running application compiles on an experimental IBM Cloud z/OS V2R4 Virtual Server Instance (VSI) with profile mz2o-2x16 versus on IBM ZD&T EE V13.3 running in an IBM Cloud x86 VSI with profile mx2-2x16. IBM ZD&T was running on Ubuntu 20.4 on a x86 Production VSI with a Cascade Lake Intel Xeon Platinum CPU @ 2.4GHz. Both z/OS VSI and ZD&T were configured with 2 vCPUs, 16GB memory, and 1 TB Block storage with 10 IOPS/GB. The following applications were compiled: a Java application that processes SMF records, a C application that processes IBM Z hardware diagnostic data, a COBOL application that creates and updates records on a file, and a FORTRAN statistical application. Results may vary.

For more information visit the [Wazi as a Service page](#).

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