



Taking Spring Apps for a Spin on Microsoft Azure Cloud

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Microsoft



Java Cloud Native on Azure – Landscape

Azure Services



Multi-Cloud Platforms



JVMs, Frameworks, Runtimes



Tools



DevOps



IaaS – Linux Distributions



Cloud Automation



Kubernetes & Containers

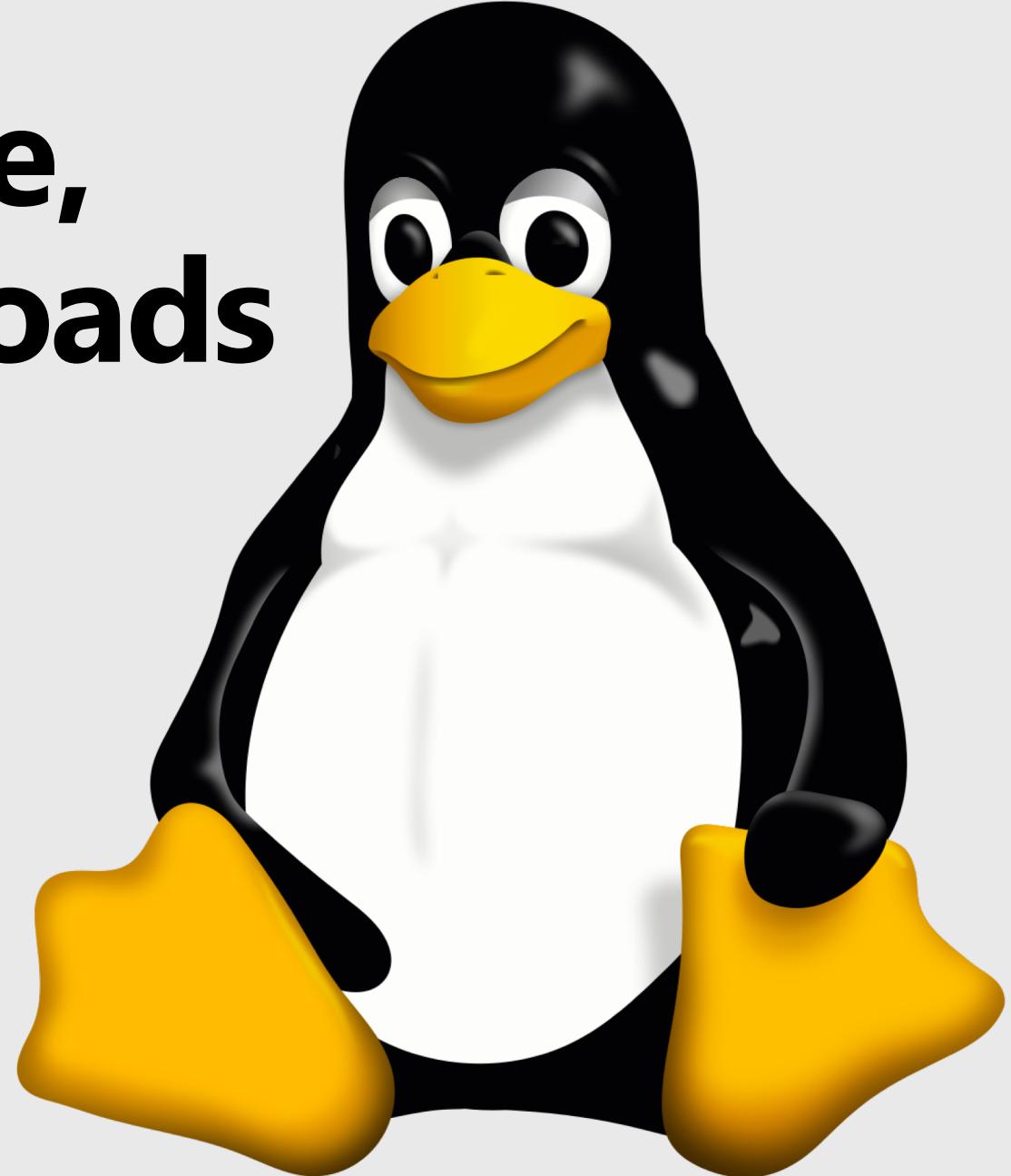


OSS Foundations



Microsoft SDKs for Java
Over 50+ services covered

**On Microsoft Azure,
over 50% of workloads
are Linux-based.**



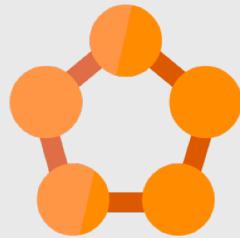
1st Class Support for Java on Azure Services

Native and idiomatic support for Java applications.



Azure Functions

- Java SE 8
- Java SDK
- Plugins for Maven, Eclipse, and IntelliJ
- VS Code Extension (manage; local/remote debug)



Azure Service Fabric Mesh

- Java API
- Java SDK
- Maven Dependencies and Plugins
- Eclipse Plugins and VS Code Extensions



Azure App Service

- Java SE 8
- Tomcat 8.5, 9.0
- Maven Plugin
- Eclipse & IntelliJ Plugins
- VS Code Extension (Manage)



Azure Cosmos DB

- Java SDK for synchronous connections
- Java SDK for asynchronous (reactive) style
- Support for MongoDB/Cassandra APIs
- Open Source SDKs



Azure Application Insights

- Java SDK for user-defined instrumentation
- Java Agents for auto instrumentation
- Eclipse Plugin
- Open Source SDKs



Azure SDKs for Java

- Management APIs (CRUD Azure services)
- REST-to-Java APIs (idiomatic low-level REST)
- Fluent APIs (idiomatic service features)
- **Over 50+ services covered**
- Open Source SDKs

1st Class Java Tooling Support – Development and CI/CD

Extensions by Microsoft, Partners, and 3rd-parties to enable and enhance Java tooling support



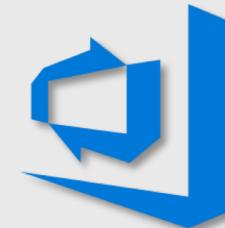
Visual Studio Code – Extensions

By Microsoft

- Debugger for Java
- Remote Function Debug
- Java Extension Pack
- Apache Maven
- Test Runner (JUnit)
- Spring Initializr
- Azure Terraform

By Partners

- *Red Hat*: Java Language Support
- *Pivotal*: Spring, CloudFoundry, Bosh



Azure DevOps Extensions

By Microsoft

- Jenkins Integration
- GitHub Integration
- Apache Tomcat
- Ansible

By Partners and 3rd party

- *CloudBees*: Jenkins Platform
- *JFrog*: Artifactory

Extensions by Microsoft, Pivotal, and Red Hat



Debugger for Java vscjava.vscode

Microsoft | ⚡ 3,813,106 | ★★★★★

A lightweight Java debugger for Visual Studio Co



Language Support for Java

Red Hat | ⚡ 7,738,407 | ★★★★★

Java Linting, Intellisense, formatting, refactoring



Spring Initializr Java Support

Microsoft | ⚡ 57,150 | ★★★★★

A lightweight extension based on Spring Initializr t



Spring Boot Tools pivotal.vscode

Pivotal | ⚡ 126,993 | ★★★★★

Provides validation and content assist for Sprir



Maven for Java vscjava.vscode-mav

Microsoft | ⚡ 2,829,432 | ★★★★★

Manage maven projects, execute goals, generate



Java Test Runner vscjava.vscode

Microsoft | ⚡ 2,702,505 | ★★★★★

Run and debug JUnit test cases.

17,267,593

Spring Starters for Azure



Dependencies

Add Spring Boot Starters and dependencies to your application

Search for dependencies

Azure Support

Azure Support

Auto-configuration for Azure Services (service bus, storage, active directory, cosmos DB, key vault and more)

Azure Active Directory

Spring Security integration with Azure Active Directory for authentication

Azure Key Vault

Spring value annotation integration with Azure Key Vault Secrets

Azure Storage

Azure Storage service integration

Spring Initializers: on Azure and VS Code

The screenshot shows the Microsoft Azure Spring Cloud Azure Playground interface. At the top, there's a navigation bar with the Microsoft Azure logo, the title "Spring Cloud Azure Playground", and links for "Report Issue" and "Sign In". Below the navigation bar, there are buttons for "Push to Github", "Generate Project", and "Build & Run". A green diagonal banner on the right says "Fork Spring Cloud Azure". The main area is titled "Generate your Spring Cloud application" and shows a three-step process:

- Step 1**: Configure project meta data. It includes a checked checkbox for "Spring Cloud Config Server" with the description: "Central place to manage external properties for applications across all environments".
- Step 2**: Select infrastructure modules. It includes a checked checkbox for "Spring Cloud Gateway" with the description: "API Gateway to route for APIs".
- Step 3**: Configure microservice with Azure modules. It includes an unchecked checkbox for "Spring Cloud Hystrix Dashboard" with the description: "Circuit breaker dashboard with spring-cloud-netflix Hystrix".

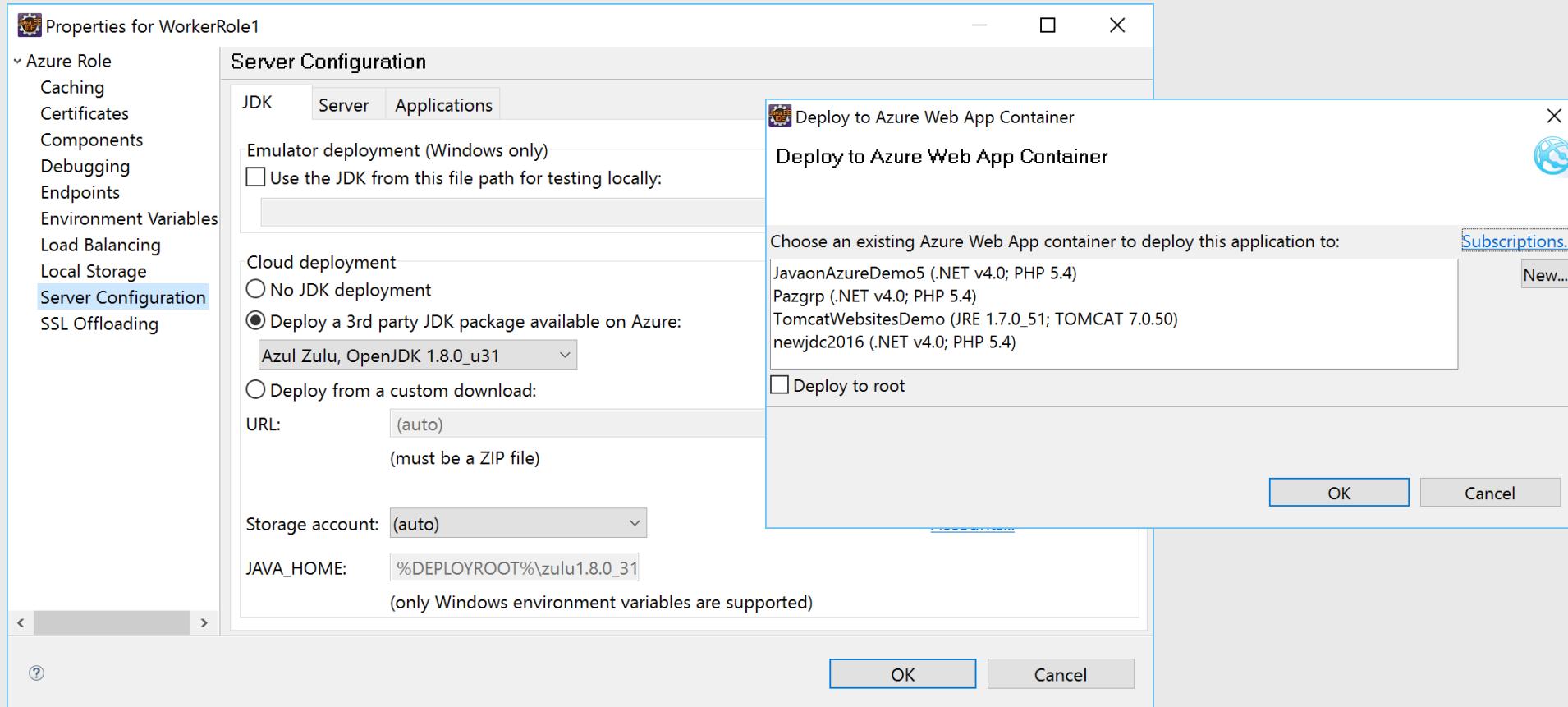
At the bottom right of the main area, there are buttons for "Previous", "Push to Github" (which is highlighted in blue), and "Download".

aka.ms/spring-init-azure

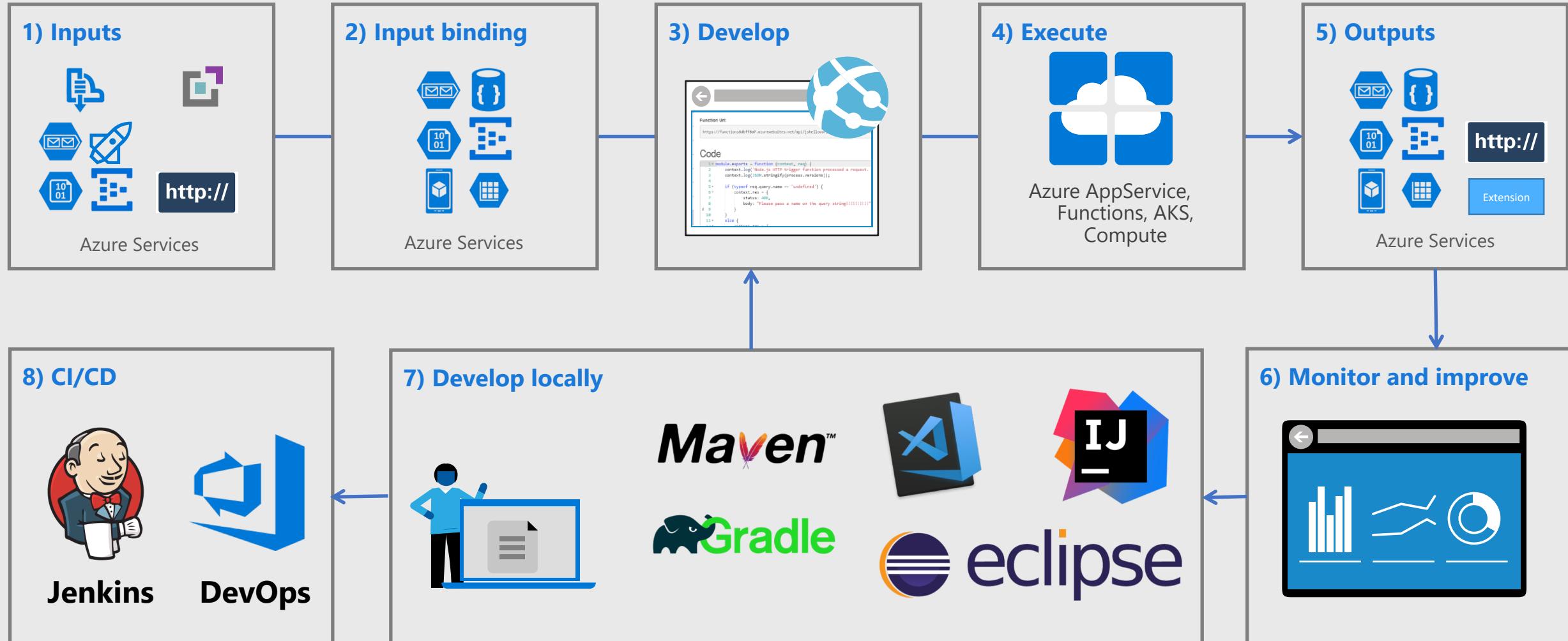


Azure Toolkits for Eclipse & IntelliJ

App Services and Containers

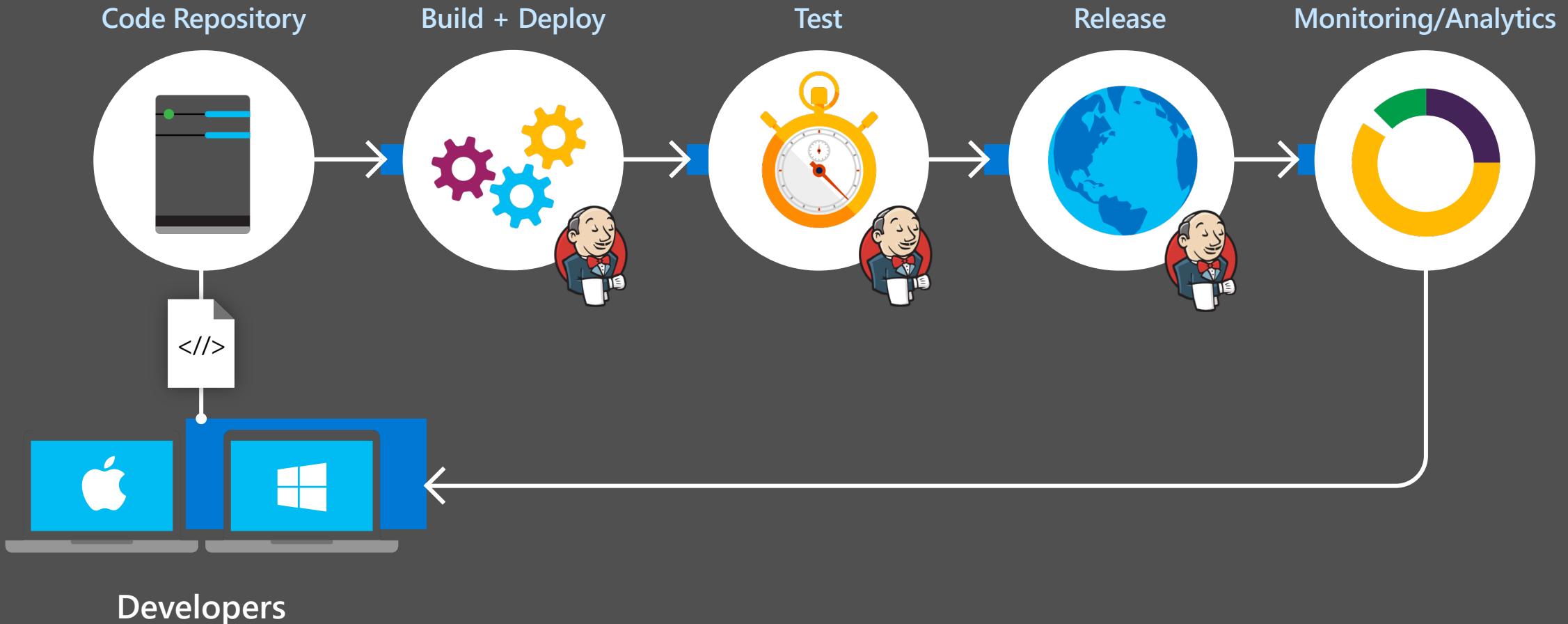


The Java Development Lifecycle on Azure



Azure DevOps Services and Jenkins Integration

Complete Java DevOps solution



Open Service Broker for Azure

Easily connect apps to Azure services

Azure Database for MySQL

Azure Database for PostgreSQL

Azure SQL Database

Azure Cosmos DB

Azure Event Hubs

Azure Key Vault

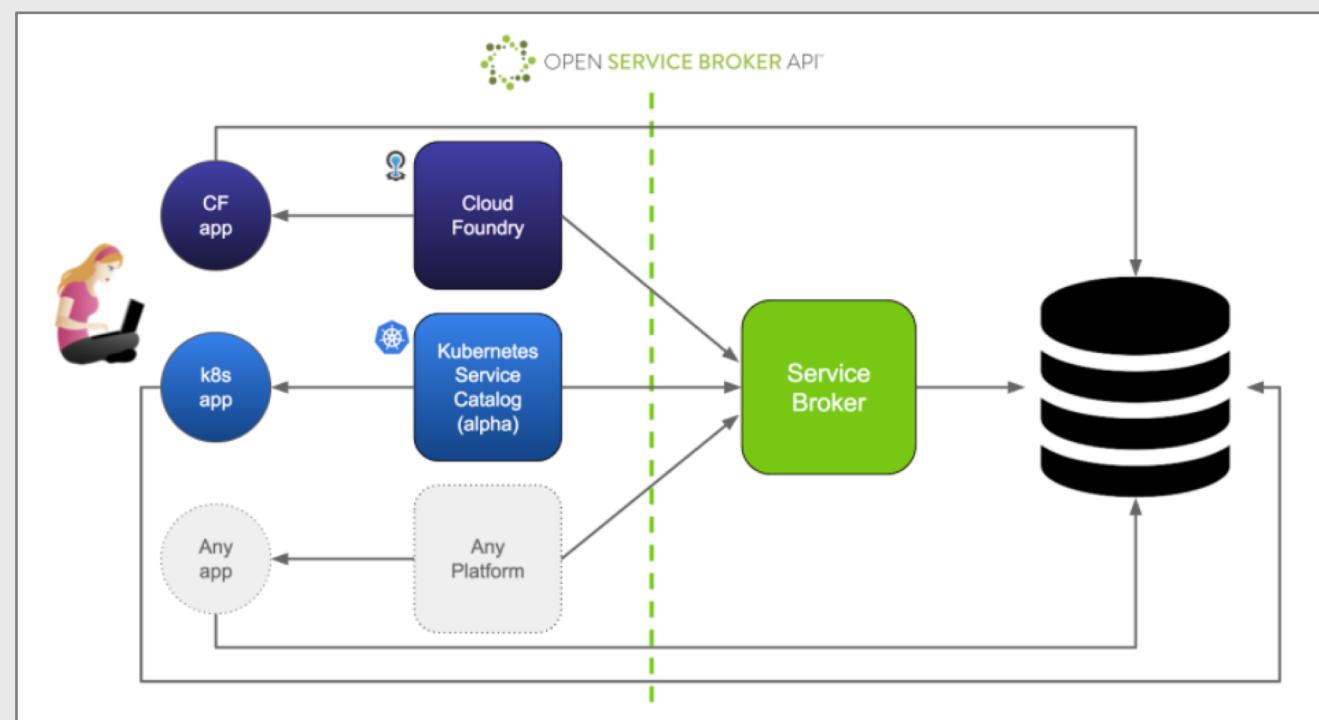
Azure Redis Cache

Azure Search

Azure Service Bus

Azure Storage

Azure Text Analytics



Automate Deployments with Azure DevOps

The screenshot shows the Azure DevOps interface for creating a new pipeline. The left sidebar is titled "Internal" and includes links for Overview, Boards, Repos, Pipelines (which is selected), Builds, Releases*, Library, Task groups, and Deployment groups. The main area is titled "New pipeline" and says "Build your code in a few easy steps". It shows the following steps:

- ✓ Location: Azure Repos
- ✓ Repository: Demos
- ③ Template
- ④ Save and run

A modal window titled "Add tasks" is open, showing a list of available templates:

- Starter pipeline**: Start with a minimal pipeline.
- Android**: Build your Android project with Gradle.
- Ant**: Build your Java projects and run tests with Ant.
- Docker image**: Build a Docker image to deploy.
- Cloud Foundry CLI**: Run a command using the Cloud Foundry command line interface.
- Cloud Foundry**: Push your applications to Cloud Foundry.
- Gradle**: Build your Java project and run tests with Gradle using a Gradle wrapper script.
- Maven**: Build your Java project and run tests with Apache Maven.

At the bottom, there are three sections: "Open source projects" (10 Free), "Microsoft-hosted CI/CD" (1 Free), and "Self-hosted CI/CD" (1 Free). Each section has a brief description below it.

Build on Linux, macOS, and Windows

Open source projects	Microsoft-hosted CI/CD	Self-hosted CI/CD
10 Free Parallel jobs with unlimited minutes per month	1 Free Parallel job with up to 1,800 minutes per month	1 Free Parallel job with unlimited minutes per month

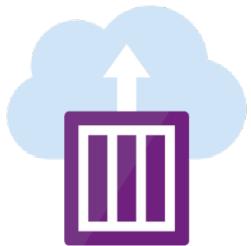
Where do Java applications run on Azure?



Serverless Functions



Web Apps Service



Serverless Containers



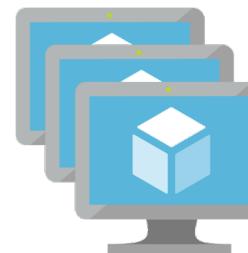
Kubernetes Service



Pivotal
Cloud Foundry®



Virtual Machines



VM Scale Sets

Deploy Spring to Azure using Maven Plugins



Azure Functions

```
<plugin>
  <groupId>com.microsoft.azure</groupId>
  <artifactId>azure-functions-maven-plugin</artifactId>
  <configuration>
    <resourceGroup>myResourceGroup</resourceGroup>
    <appName>myfuncapp</appName>
    <appSettings>
      <property>
        <name>FUNCTIONS_EXTENSION_VERSION</name>
        <value>beta</value>
      </property>
    </appSettings>
  </configuration>
</plugin>
```



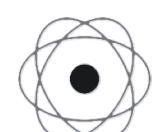
Spring Cloud Function



Azure App Service Web Apps

```
<plugin>
  <groupId>com.microsoft.azure</groupId>
  <artifactId>azure-webapp-maven-plugin</artifactId>
  <configuration>
    <!-- Web App information -->
    <resourceGroup>myResourceGroup</resourceGroup>
    <appName>petclinicapp</appName>
    <pricingTier>S3</pricingTier>

    <!-- Java Runtime Stack for Web App on Linux-->
    <linuxRuntime>tomcat 9.0-jre8</linuxRuntime>
  </configuration>
</plugin>
```



Spring Boot Reactive

\$ mvn package azure-functions:deploy

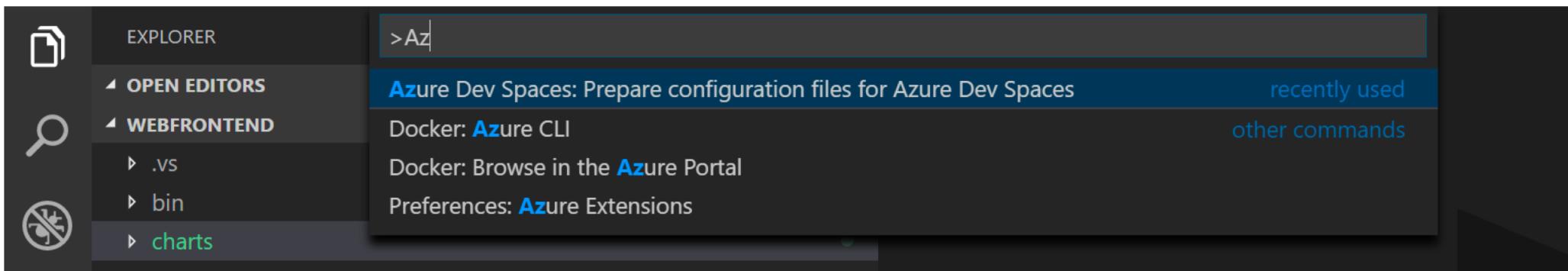
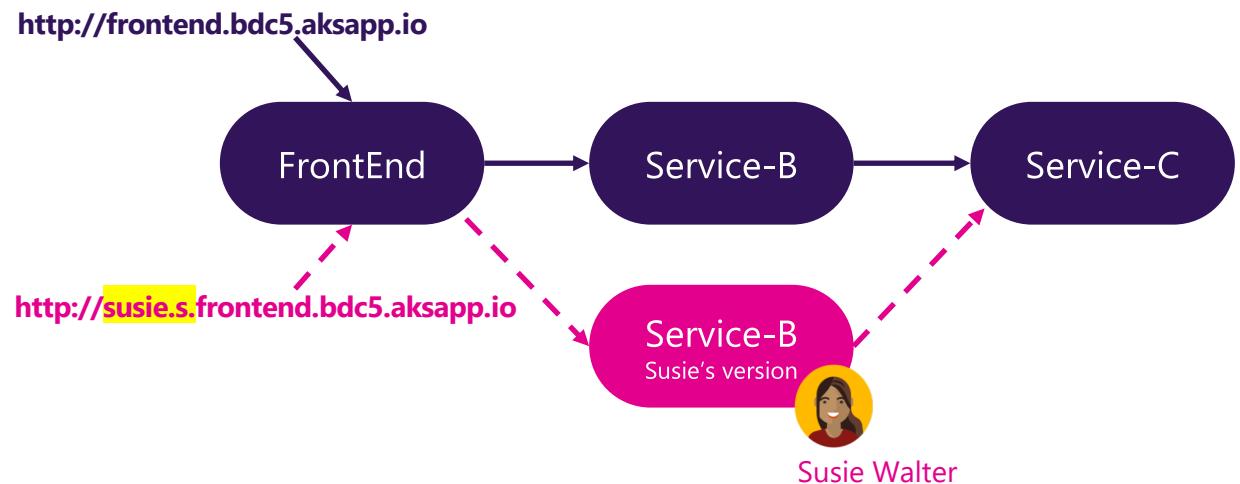
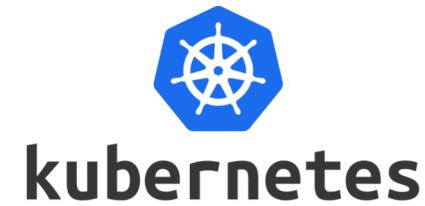
\$ mvn package azure-webapp:deploy

Azure Dev Spaces

Rapidly iterate and debug
containers in Kubernetes

Collaborate in a shared cluster

Test code end-to-end without
simulating dependencies





Free Java Production Support
on Microsoft Azure and Azure Stack.
For all LTS versions of Java.

OpenJDK™



(Microsoft + Java) ^ Spring

Spring on Azure

aka.ms/spring-on-azure

PCF on Azure

aka.ms/pcf-on-azure

VS Code for Java

aka.ms/code-for-java

K8S Dev Spaces

aka.ms/dev-spaces-java

Azure DevOps

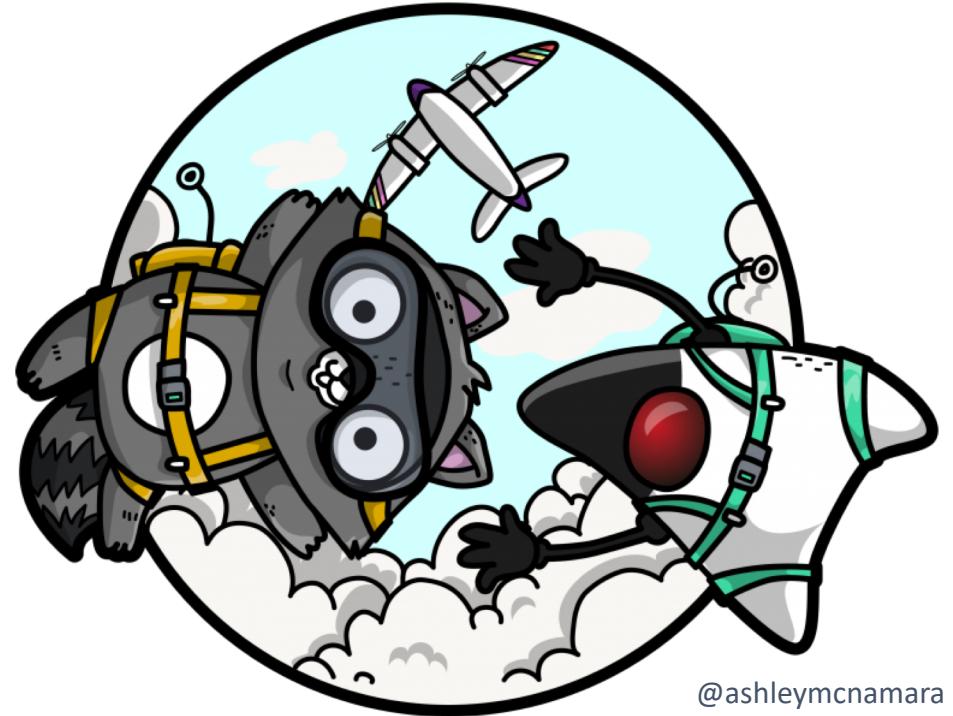
dev.azure.com

Azul OpenJDK on Azure

aka.ms/azul-jdk-azure

Microsoft Learn

microsoft.com/learn



@ashleymcnamara





Thank you!



Microsoft