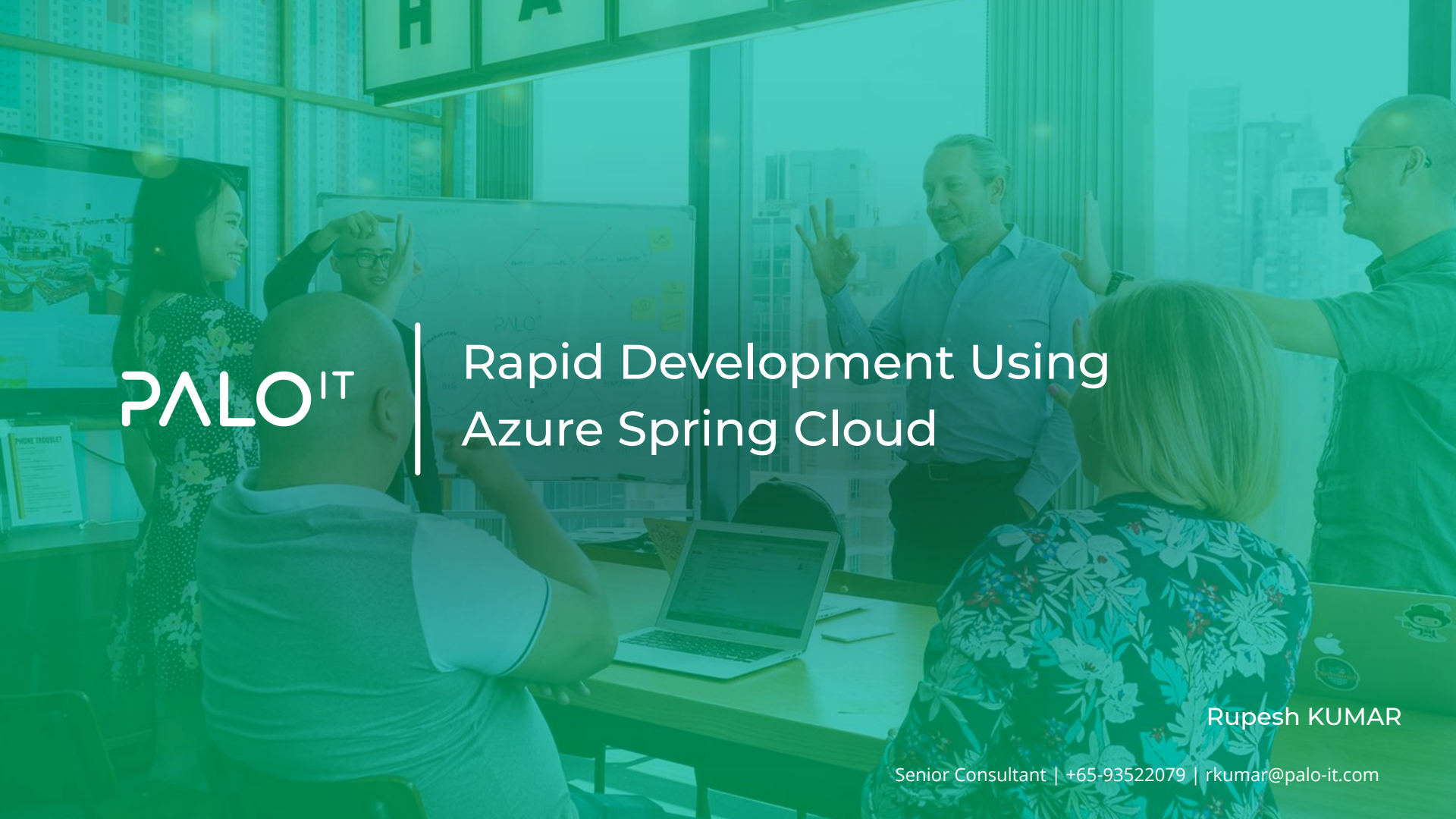

PALO IT

Rapid Development Using Azure Spring Cloud

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INTRODUCTION

Rupesh KUMAR

- 8+ year of IT experience
- Java geek *(spring , spring-boot)*
- Cloud specialist *(AWS, private-VMware, Azure)*
- DevOps engineer
- Certified Scrum Master
- Certified Agile profession
- Cyber Security enthusiastic

INTRODUCTION

PALO IT is an international consultancy specialised in **human-centered design**, **Agile software development** and in the **AI-driven transformation** of large, forward-thinking companies.

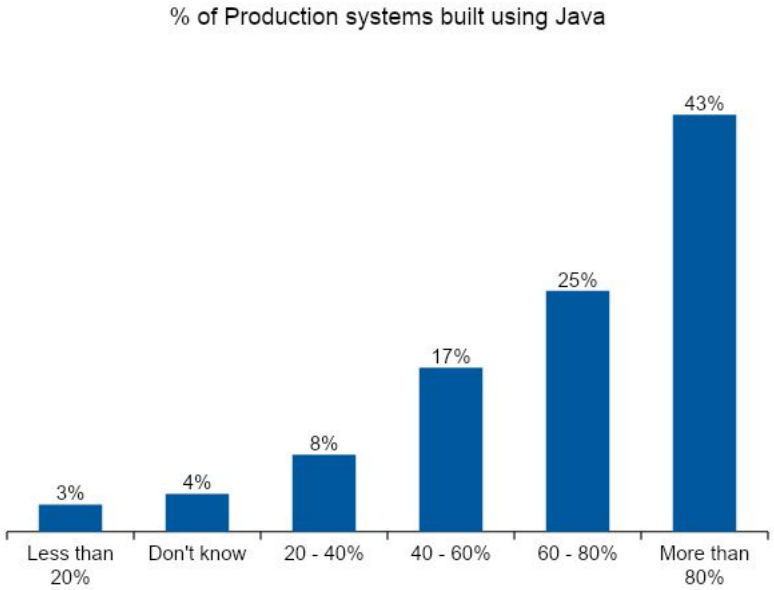
Agenda

- Target audience: *Java dev. / microservices arch., someone have idea about microservices*
- Spring Cloud Introduction
- Pain points
- Azure Spring Cloud Introduction
- Steps to setup Spring cloud in Azure environment
- Benefits of managed Azure Spring Cloud
- Faster way to prod ready with Azure Spring Cloud
- Demo

Organizations Continue to Build Systems in Java

By 2018, ~70% of organizations built at least 60% of their production systems using backend Java.

***15 million Spring Boot projects** created in the past year.*

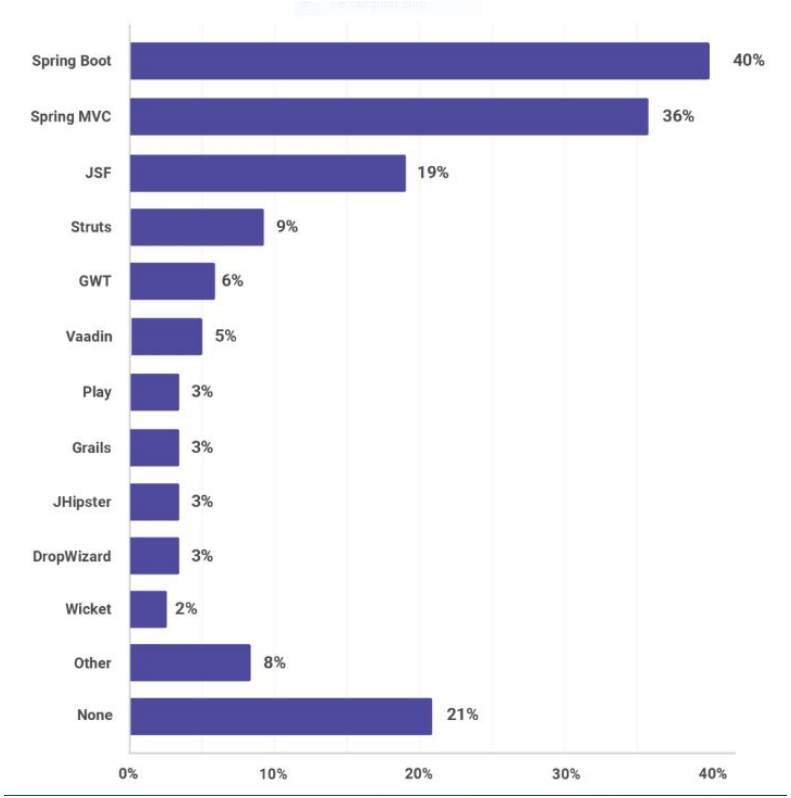


Sources: BSR_1018J, Cloud Market Insights (Nov 2018),
Jakarta EE, "Jakarta EE Developer Survey 2018" (2018)
SpringOne Platform, Keynote (2019)

Spring Frameworks

40 %

Largest share of Java application development frameworks



https://snyk.io/blog/jvm-ecosystem-report-2018-platform-application/

What is Spring Boot ?

Spring Boot is an open source Java-based framework used to create a micro Service. It is developed by Pivotal Team and is used to build stand-alone and production ready spring applications.

Languages used: Java

Developer: Pivotal Team

Spring-based Microservices Development

Spring Boot

BUILD ANYTHING

Spring Cloud

COORDINATE ANYTHING

Spring Boot is designed to get you up and running as quickly as possible, with minimal upfront configuration of Spring

Spring Cloud provides a set of tools that makes communication between microservices easier

Advantages & Challenges of Microservices

Advantages

- Comprehending a smaller codebase is easy.
- You can independently scale up highly used services.
- Each team can focus on one (or a few) microservice(s).
- Technology updates/rewrites become simpler.

Challenges

- need more skilled developers to handle distributed application complexities.
- Managing microservices-based applications without the proper DevOps culture is next to impossible.
- A local developer environment setup might become complex to test cross-service communications

Spring Cloud tools

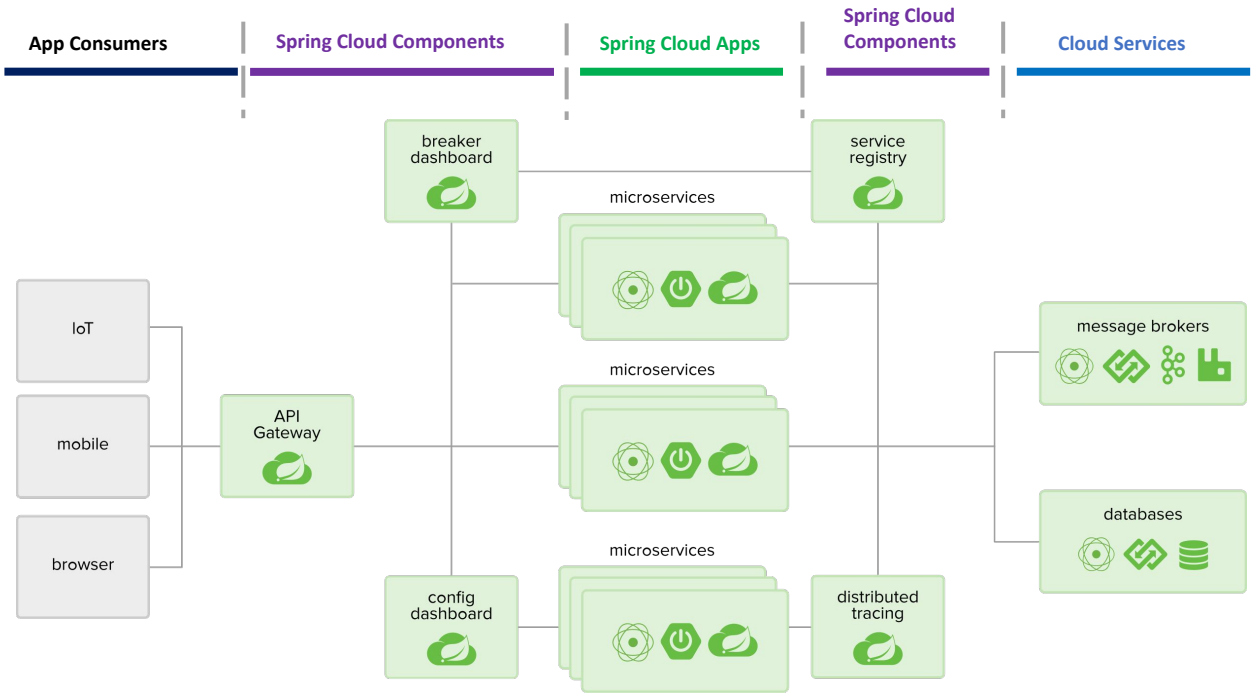
- **Config Server:** Used to externalize the configuration
- **Service Discovery:** As there could be many services and we need the ability to scale up or down dynamically
- **Circuit Breaker:** prevent failures cascade to other services
- **API Gateway:**
- **Spring Cloud Data Streams:** Data Streams provides higher-level abstractions frameworks more easily.
- **Routing and Messaging:**
- **Distributed Tracing:** microservices ability to debug issues
- **Spring Cloud Contract:** mechanism for teams to agree upon API endpoint contracts so that each team can develop their APIs independently

Common Challenges

High effort required to manage cloud infrastructure for Spring boot applications.

Application lifecycle is **difficult to manage**.

Painful to troubleshoot application issues




DIY


WHAT'S BEST?
DO IT YOURSELF VS HIRE A PRO
Vs

PEST CONTROL

DIY vs. Professional

Attempting DIY pest control may seem like a cheaper, better option, but that's not always the case. The professionals know what they're doing, and you deserve to spend more time doing what you love.

What You think:	Why Call the Pros:
Professional pest control is too expensive.	DIY products add up, and solutions may only be temporary. You could spend more money in the long run.
I can get rid of pests in no time.	You may remedy the problem for a short time, but the pests will likely return. Devote your time toward other projects instead.
As long as I'm covered, I won't suffer any health effects.	Pest control products can harm you, your home and those around you. Don't take a risk you're not comfortable with.
I can research and identify pests myself.	There are different methods used to get rid of different pests. Pesticides may not be the answer, and the pros know best.


Microsoft Azure

Introducing Spring Cloud as a Service

Azure Spring Cloud

Public Preview

Fully managed

High agility

Jointly built

Why Java and Spring on Azure

Global infrastructure.
Powered by 54 worldwide regions, available in 140 countries.

Powerful managed services.
Differentiating services for compute, database, messaging, security, machine learning, IoT, and more.

Hybrid value proposition.
Connect on-premises systems to cloud with Active Directory, integration solutions, and more.

Integrated developer tooling.
Use popular IDEs, frameworks, and CI/CD tools to interact with Microsoft Azure.

Azure Spring Cloud – Benefits

Simplified Infrasture management

Run your Spring Boot apps

Scalable global infrastructure

Reduce downtime and deployment risk

Built-in app lifecycle management

Spring Cloud components

Deploy source code or build artifacts

Automatically wire your app with Spring Cloud infrastructure

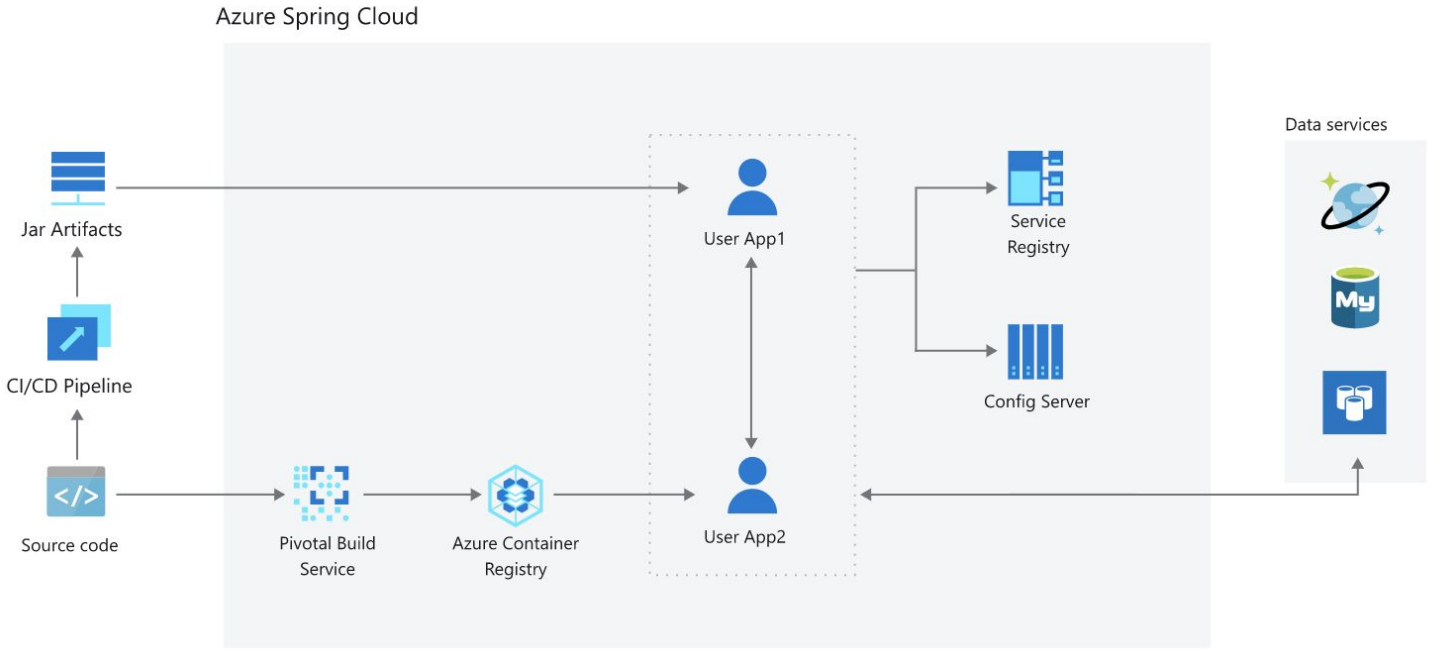
Easily monitor your apps

Easily identify performance bottlenecks

Gain insight into dependencies with Azure Monitor

Aggregate metrics

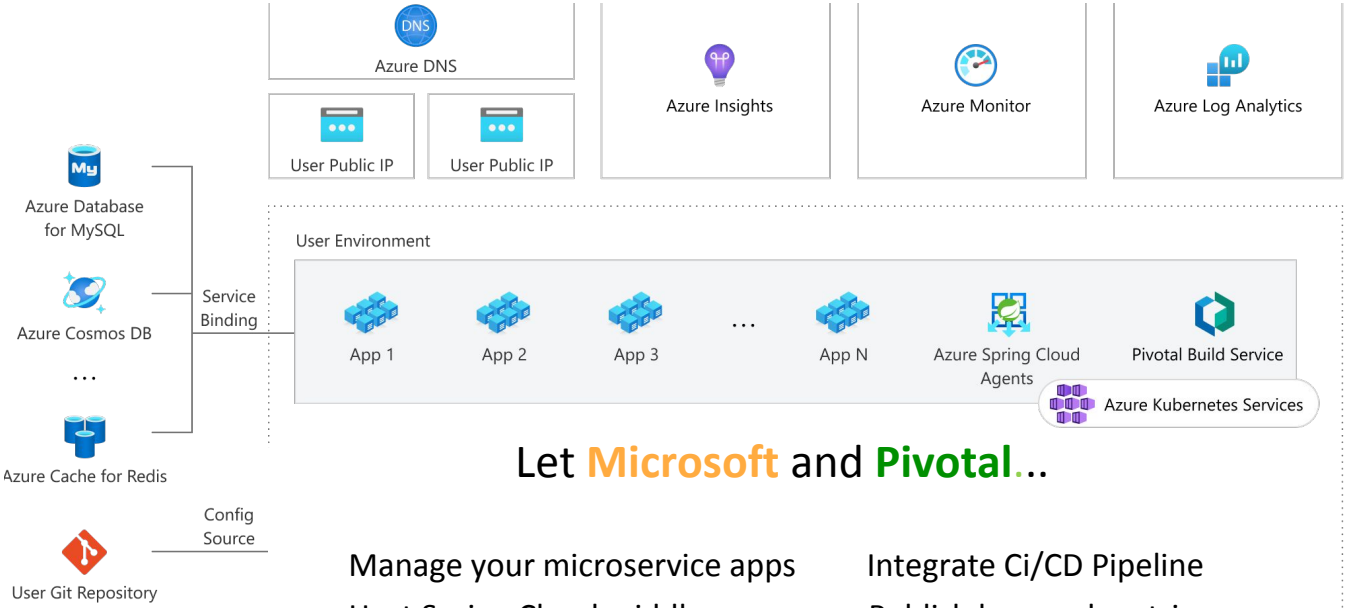
Accelerate Development With Azure Spring Cloud



Simplified Cloud Infrastructure for Spring Boot Apps

Responsibilities	DIY	Azure Spring Cloud
Application iteration, debugging		
CI/CD		
Build and manage Clusters		
Host Spring Cloud Components		
Monitoring and logging		
Patching		
Scaling		
Support		

Customer Pivotal Microsoft



Let Microsoft and Pivotal...

Manage your microservice apps

Host Spring Cloud middleware

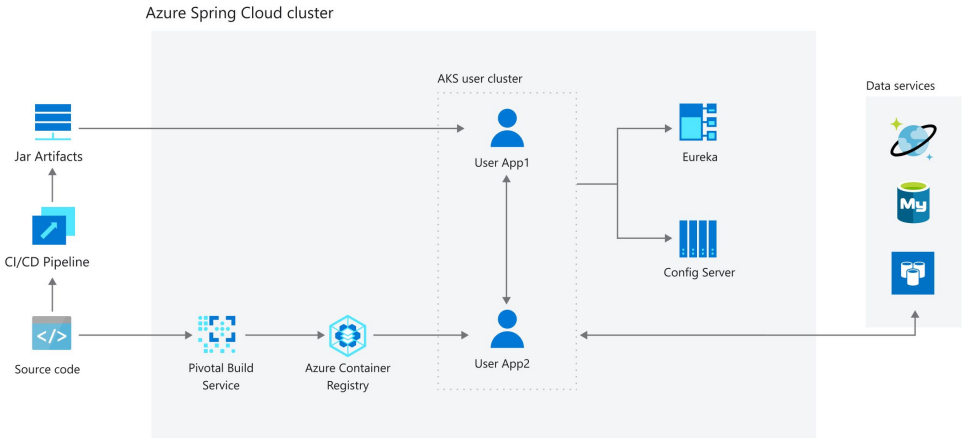
Integrate Ci/CD Pipeline

Publish logs and metrics

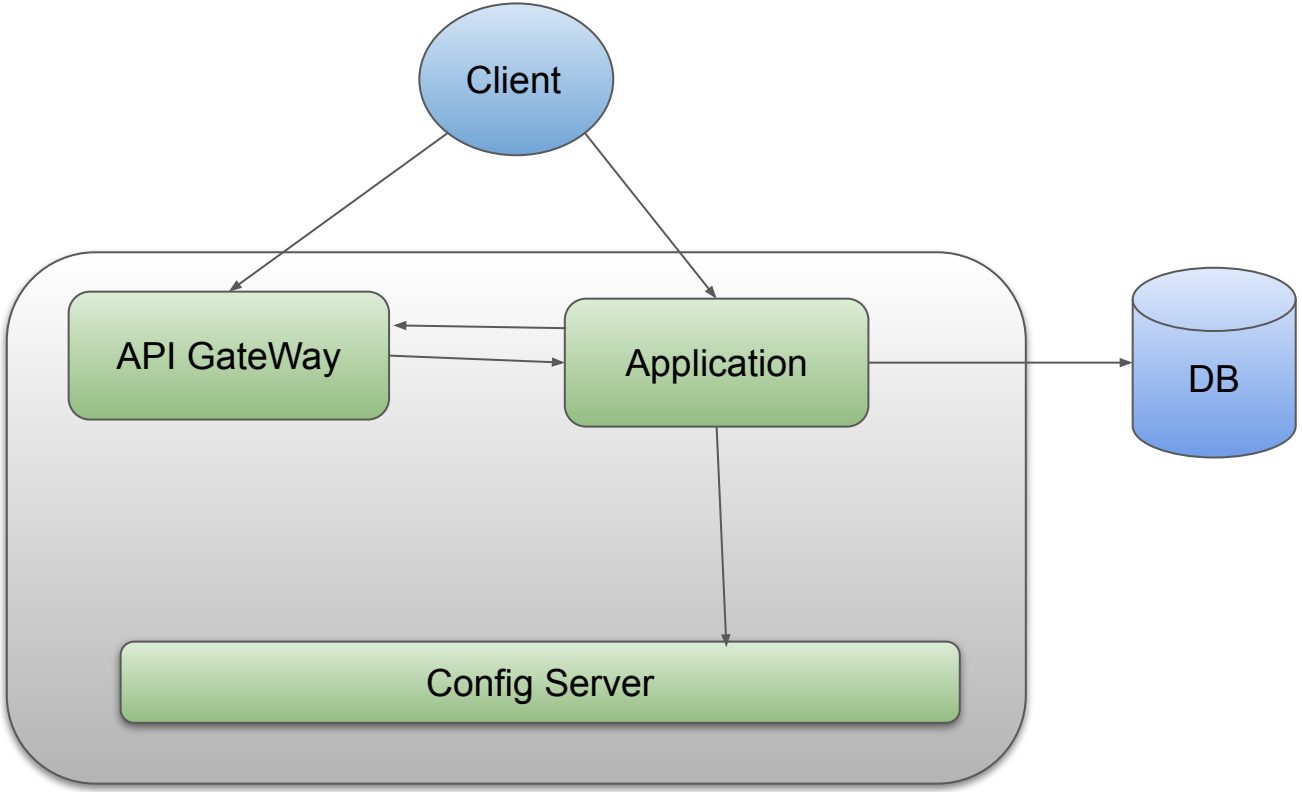
Azure Spring Cloud

Built-in application lifecycle management

- Simple app lifecycle management
- Easily deploy source code or build artifacts
- Automatically wire your app with Spring Cloud infrastructure
- Integrated CI/CD pipeline for deployment



Demo

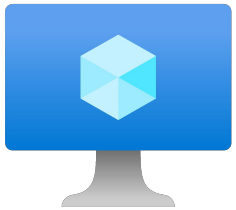


Spring Microservices – Azure Hosting Options

Azure Spring Cloud

PCF on IaaS

AKS



VMs

Credit: Microsoft

Feature Grid – Deploy + Secure + Scale + Monitor + SLA

Feature	Azure Spring Cloud	PCF on Azure IaaS	AKS	Virtual Machines
Spring Cloud Runtime				
Managed Spring Cloud Config Server	Azure	PCF	👉	👉
Mirror Service for Spring Cloud Config Server	Azure Premium Tier	PCF	👉	👉
Managed Spring Cloud Service Registry	Azure	PCF	👉	👉
Managed Spring Cloud Gateway	Azure Premium Tier	PCF	👉	👉
Spring Cloud Circuit Breaker Dashboard	Azure Premium Tier	👉	👉	👉
Service Essentials				
High availability for Apps and Spring Cloud Runtime – 99.9	Azure	👉	👉	👉
Service Bindings for Azure data, cache, messaging and directory services	Azure	PCF	👉	👉
Auto scale in or out - apps	Azure Premium Tier	PCF	👉	👉
Auto patching - service, Spring Cloud runtime and Java Runtime Engine	Azure	PCF	👉	👉
Azure Container Registry	Azure	N/A	👉	N/A
.NET apps - Steeltoe	Azure (TBD)	PCF	👉	👉

Feature	Azure Spring Cloud	PCF on Azure IaaS	AKS	Virtual Machines
Monitoring				
Monitoring - logs, metrics and alerts	Azure	PCF	👉	👉
Integration with Application Insights - performance, failures, live metrics stream, application map and distributed tracing	Azure	👉	👉	👉
Self-diagnostics-as-a-service	Azure	👉	👉	👉
Networking				
Custom Domain	Azure	PCF	👉	👉
Integration with Traffic Manager, Application Gateway and Azure Front Door	Azure	👉	👉	👉
VNET for isolating apps from Internet	Azure	Azure	Azure	Azure
VNET for accessing on-premise resources	Azure	Azure	Azure	Azure
VNET for placing apps on corporate networks	Azure	Azure	Azure	Azure
Private link	Azure	Azure	Azure	Azure
SLA and Support				
SLA for apps on Spring Cloud	Azure	👉	👉	👉
Support for Spring Cloud (and Spring family)	Azure	PCF	👉	👉

Feature	Azure Spring Cloud	PCF on Azure IaaS	AKS	Virtual Machines
Security				
Managed Identity	Azure	👉	👉	Azure
RBAC for granting access to Azure Spring Cloud Resources	Azure	👉	👉	Azure
Integration with Key Vault	Azure	👉	👉	👉
TLS for consumer to app communications (BYOC – Bring Your Own Certificates)	Azure Post-GA	PCF	👉	👉
TLS for app to Spring Cloud runtime	Azure	PCF	👉	👉
TLS for app to app communications (BYOC)	Azure Post-GA	PCF	👉	👉
TLS for app to external resource communications (BYOC)	Azure Post-GA	PCF	👉	👉
End-user AuthN and AuthZ using AAD and AAD B2C (via "gateway")	Azure Post-GA	PCF	👉	👉
Redacting secrets and PII from logs	Azure? Post-GA	PCF	👉	👉
Encryption at REST – Microsoft Key	Azure	PCF	Azure	Azure
Encryption at REST – BYOK	Azure	PCF	👉	👉
Azure Security Center and Policy Management integration	Azure for Apps & Services	Azure for VMs	Azure for containers	Azure for VMs
Azure security logging and auditing	Azure for Apps & Services	Azure for VMs	Azure for containers	Azure for VMs
Virtual network service tags	Azure	Azure	Azure	Azure

Credit: Microsoft

Feature Grid – Dev Experiences and Automation

Feature	Azure Spring Cloud	PCF on Azure IaaS	AKS	Virtual Machines
Tooling - Maven, IntelliJ, Eclipse and VS Code	Azure	PCF	3rd parties	3rd parties
Log stream for dev and troubleshooting	Azure	PCF	K8S	👉
Source | JAR to containers	Azure	PCF	👉	N/A
Configuring certificates for TLS (apps)	Azure Post-GA	PCF	👉	👉
Enabling APMs - New Relic, App Dynamics, Dynatrace and others	Azure Premium Tier	PCF	👉	👉
Scanning apps for vulnerabilities	Azure	👉	👉	👉
Building out Tomcat for WAR apps	Azure Post-GA	PCF	👉	👉
Inspect app dependencies, metadata & audit	Azure Post-GA	👉	👉	👉
DevOps automation using Pipelines	Azure	Azure	👉	👉
DevOps automation using GitHub Actions Workflows	Azure	👉	👉	👉
Deploy apps without disruption - blue-green	Azure	PCF	👉	👉

Credit: Microsoft

Ongoing Responsibilities

Ongoing Responsibilities	Azure Spring Cloud	PCF on Azure IaaS	AKS	Virtual Machines
Updating libraries *	👉	👉	👉	👉
Updating the Spring Cloud middleware components – Spring Cloud Config Server, Spring Cloud Service Registry, Spring Cloud Gateway, etc. *	Azure	PCF	👉	👉
Updating the Java Runtime Engine *	Azure	👉	👉	👉
Triggering Kubernetes Updates **	Azure	N/A	👉	N/A
Reconciling non-backward compatible Kubernetes API changes	Azure	N/A	👉	N/A
Updating container base image *	Azure	N/A	👉	N/A
Updating the operating system *	Azure	PCF	Azure	👉
Detecting and restarting failed instances	Azure	👉	Azure	👉
Implementing draining and rolling restart for updates	Azure	PCF	Azure	👉
Infrastructure management	Azure	👉	👉	👉
Monitoring and alerts	👉	👉	👉	👉

* Including vulnerability remediation
** Performed by Azure with a manual trigger

Credit: Microsoft

Recap

- Java with Spring is heavily used in the IT industry
- Microservices arch. is future proof, Spring Cloud is one of the leading frameworks
- It’s always best to hire professional than DIY, in the long term
- Azure Spring Cloud is ready for prod on day one
- Azure Spring Cloud minimises work for developers & infra setup
- Benefit of Global infra with Azure Spring Cloud
- You can do it with few clicks within a few minutes instead of spending months to plan and implement

Microsoft & PALO IT

At PALO IT, we help organizations transform their culture, design innovative products, develop and operate them.

In partnership with Microsoft, we can also offer free learning sessions, hands-on workshops, architecture reviews and readiness assessment. Reach out to us to discuss what is best suited to your needs!

Do you want to learn more?

SCAN ME

Or reach out to Michelle via:
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Thank you

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PALO IT

Feel free to reach out to me if needed!