Azure Spring Cloud

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Principal PM Architect --- Java on Azure

September 2020
On Kubernetes

You do not have to learn or manage Kubernetes
Spring – trusted and growing

75% of respondents expect Spring Boot usage to grow over the next 2 years

82% of respondents say Spring Boot is growing because of new project starts

<table>
<thead>
<tr>
<th>Nov 2018</th>
<th>Nov 2019</th>
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</thead>
<tbody>
<tr>
<td>52.5 Million+ Spring Boot</td>
<td>95 Million+ Spring Boot</td>
</tr>
<tr>
<td>downloads per month</td>
<td>downloads per month</td>
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</tbody>
</table>

52% of developers surveyed use Spring boot as their only or primary development platform

Source – The State of Spring 2020
“The Spring and Spring/Boot frameworks (57%) dominate today when it comes to building microservices” – Jakarta EE Developer Survey
Microsoft + VMware
The world’s leading brands run on Azure
Spring on Azure

cloud.spring.io/spring-cloud-azure/

**Spring Cloud**
- App Configuration
- Event Hubs
- Service Bus
- Storage
- Redis
- Functions

**Spring Data**
- SQL Database
- MySQL
- PostgreSQL
- Maria DB
- Cosmos DB
- SQL
- MongoDB
- Cassandra
- Gremlin

**Spring Security**
- Active Directory (AAD)
- AAD B2C

**Spring Resource**
- Storage

**Spring Messaging**
- Service Bus

**Spring Cache**
- Redis Cache

**Micrometer**
- Monitor (includes Log Analytics)
Spring-based Microservices

**Spring Boot**
Build anything

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

**Spring Cloud**
Coordinate anything

provides a set of tools that makes communication between microservices easier
Spring-based Microservices
Common Impediments

High effort required to manage cloud infrastructure for Spring boot applications

Application lifecycle is difficult to manage

Painful to troubleshoot application issues
Azure Spring Cloud
Azure Spring Cloud

A fully managed service for Spring Boot microservices

More choices and full integration into Azure’s ecosystem and services

- Fully managed infrastructure
- Built-in app lifecycle management
- Ease of monitoring

Enterprise ready
Azure Spring Cloud

Jointly developed, operated, and supported

Managed service

Zero code changes

Out-of-the-box monitoring and tracing
On Kubernetes

You do not have to learn or manage Kubernetes
Fully Managed Infrastructure – Azure Spring Cloud

- Built-in native Spring Cloud components
  - Config Server
  - Service Registry
  - Distributed Tracing
  - Circuit Breaker (upcoming)
- Blue/Green for zero downtime
- Auto Horizontal Scale based on metrics or schedule
- VNET (private network) to secure your app and traffic

Azure Spring Cloud

- Azure Monitor
  - Metrics
  - Logs
  - Tracing

Azure Active Directory
- Managed Identities
- Service Principals

User Environment
- App 1
- App 2
- App N
- Config Source

Service Runtime
- Config Server
- Service Registry
- Lifecycle Mgmt.
- App Resiliency
- Log Stream
- Data Encryption
- Custom Domain
- Self-Diagnostics

Azure Kubernetes Service
- Azure Spring Cloud agents
- VMware Tanzu Build Service
- GitHub
- Jenkins

Azure Database for MySQL
- Azure Cosmos DB
- Azure Cache for Redis
- User Git Repository

Azure DevOps
- CI/CD
- Metrics
- Tracing
- Managed Identities
- Service Principals

Azure Monitor
- Azure Active Directory
- Identity

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Simplify your cloud development for Spring applications

Responsibilities

<table>
<thead>
<tr>
<th>DIY with Spring Boot</th>
<th>Azure Spring Cloud Service</th>
</tr>
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<tbody>
<tr>
<td>Application iteration, debugging</td>
<td></td>
</tr>
<tr>
<td>CI/CD</td>
<td></td>
</tr>
<tr>
<td>Build and manage Clusters</td>
<td></td>
</tr>
<tr>
<td>Host Spring Cloud Middleware</td>
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<tr>
<td>Monitoring and logging</td>
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<tr>
<td>Scaling</td>
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<tr>
<td>Patching</td>
<td></td>
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<tr>
<td>Support</td>
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Customer | VMware | Microsoft |
Demo – Azure Spring Cloud
Demo

**Deploy Spring Cloud** apps to Azure without worrying about:

- Infrastructure and scaling
- Learning or managing K8s
- Spring Cloud middleware – config, registry, tracing and gateway, or
- Monitoring
Setup Diagnostics
Which app instance is misbehaving or slow?
Which App Instance is misbehaving | slow?
Monitor Performance
Monitor Performance
Monitor Failures
Manage secrets – zero-trust model

### Environment variables

Environment variables are encrypted at rest and transmitted over an encrypted channel. The app must be restarted after setting new environment variables.

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>MYSQL_SERVER_FULL_NAME</td>
<td>&lt;Hidden for security&gt;</td>
</tr>
<tr>
<td>MYSQL_DATABASE_NAME</td>
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<tr>
<td>MYSQL_SERVER_ADMIN_LOGIN_NAME</td>
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<tr>
<td>MYSQL_SERVER_ADMIN_PASSWORD</td>
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<tr>
<td>APPLICATIONINSIGHTS_CONNECTION_STRING</td>
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<tr>
<td>APPLICATIONINSIGHTS_ROLE_NAME</td>
<td>&lt;Hidden for security&gt;</td>
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<tr>
<td>NEW_RELIC_LICENSE_KEY</td>
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</tr>
<tr>
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Integrate with Azure Firewall & App Gateway to allow | deny traffic to FQDNs

Threat intel, NAT, network and application traffic filtering rules allow inbound | outbound access

Traffic is denied by default

Internet

User configuration
L3-L7 Connectivity Policies
Microsoft Threat Intelligence
Known Malicious IPs and FQDNs

Customer’s network
Demo code repo

https://github.com/Azure-Samples/spring-petclinic-microservices
Azure Spring Cloud – Recap
Azure Spring Cloud - Benefits

- **Simplify infrastructure management**
  - Run your Spring Boot apps
  - Scalable global infrastructure
  - Reduce downtime and deployment risk

- **Built-in application 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 app dependencies using Azure Monitor
  - Aggregate metrics

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## Spring Azure

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### Additional Services

- **Spring Messaging**
- **Spring Cache**
- **Micrometer**

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- **SQL Database**

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- **Micrometer**

- **Monitor (includes Log Analytics)**
Get specialized assistance building Java apps or migrating them to Azure Spring Cloud

We can

a) **Guide** your design and plan – thru architecture design session / workshop

b) Help build representative **proof of concepts** or **pilot**
   • By customer and engineers in Java on Azure team

**Nominate yourself ...**
Get specialized assistance building Java apps or migrating them to Azure Spring Cloud

Tell us about your scenarios and requirements

Fill out this 2-minute questionnaire

http://aka.ms/pilot-my-spring-cloud-apps
Build your cloud-native solutions today!

Get started --

- Deploy Spring apps to Azure Spring Cloud using quickstart
- Learn using a self-paced workshop on GitHub
- Deploy an existing app to Azure Spring Cloud
- Learn more about implementing solutions on Azure Spring Cloud
- Migrate your Spring Boot, Spring Cloud and Tomcat apps to Azure Spring Cloud
- Wire Spring apps to interact with Azure services