

Being Cloud Native with IBM Cloud



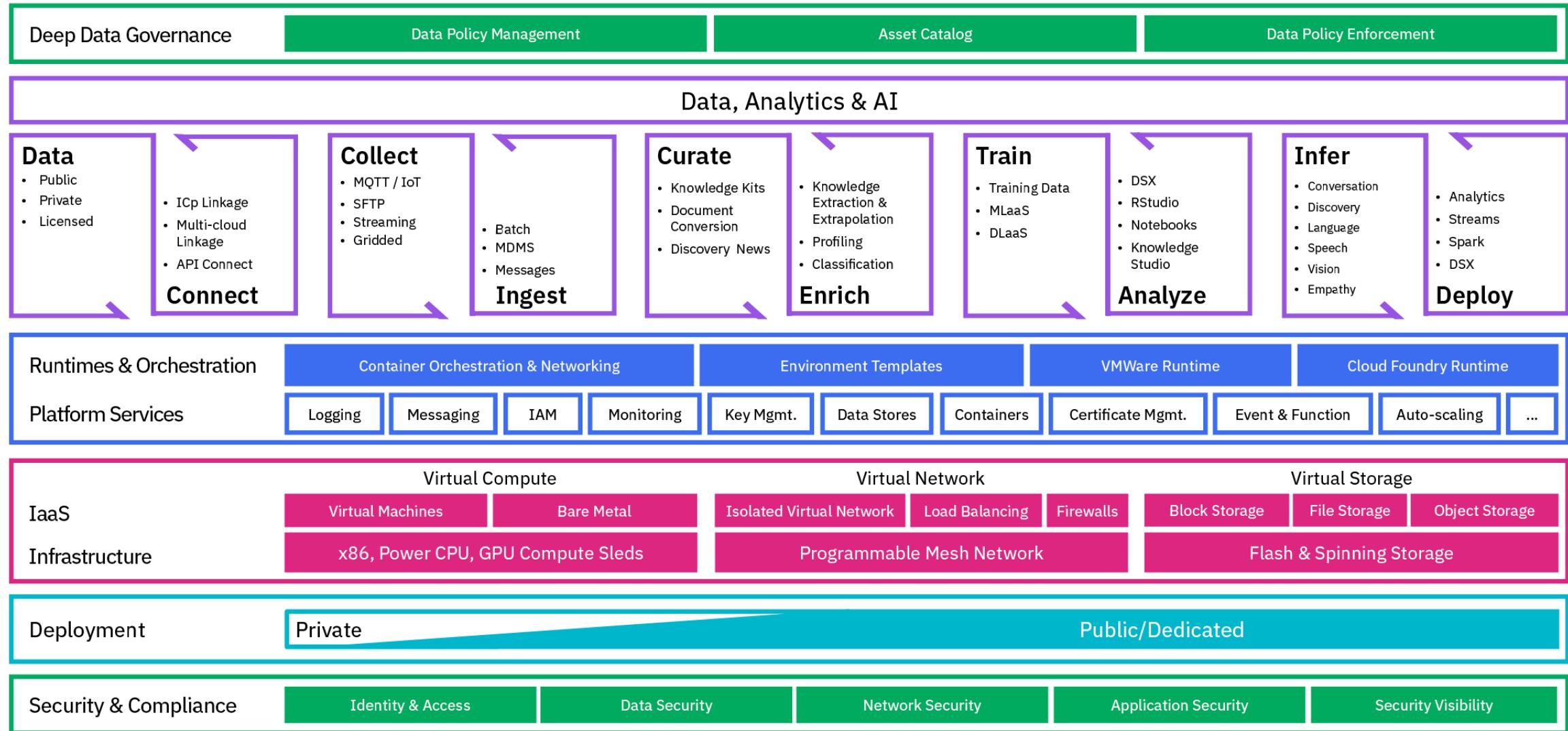
Vidyasagar Machupalli,
Tech Product Manager & Dev Advocate
IBM Cloud

<http://vmac.xyz> | @VidyasagarMSC



IBM Cloud

IBM Cloud



Full spectrum of compute options for any workload, across global infrastructure



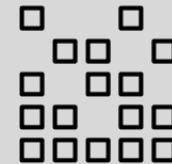
Bare Metal

Maximum performance
and control



Virtual Server

Leverage existing
languages and tools



Containers

Maximum portability



Platform as a Service

Extensive runtime options

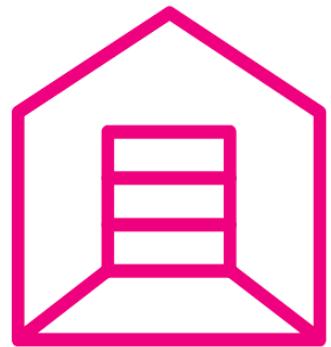


Serverless

Maximum speed
with serverless apps

IBM

A hybrid model is an interim step that helps clients realize partial benefits of a public cloud



Private

Management and deployment options

On Premises and Hosted



Hybrid

Hybrid model tooling

Choice and Control



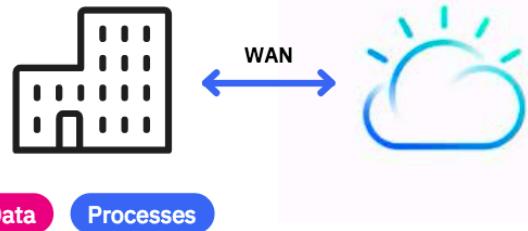
Public

Public and open-by-design

Infrastructure on Demand

IBM Cloud deployment options

Private



When to use

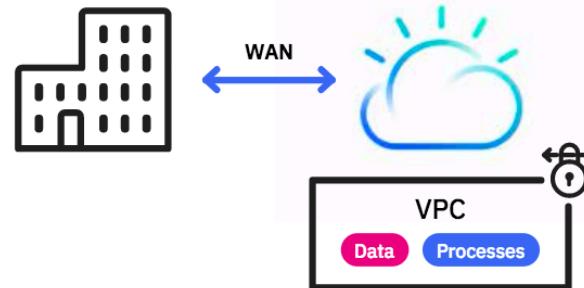
Organization has requirement to utilize on-premises infrastructure (security policy, investment equity, limited WAN bandwidth, etc)

30-40 IBM Cloud services

Optimal Workloads

- Containerize existing IBM Middleware apps
- Containerize high bandwidth HPC apps

Dedicated



When to use

Organization has isolation requirement for security and/or performance reasons

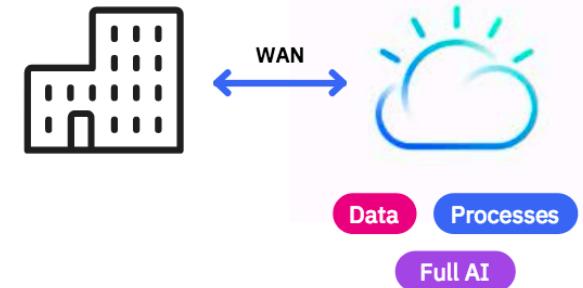
Organization seeks the security and compliance benefits of public cloud

100+ IBM Cloud services

Optimal Workloads

- New Cloud-Native Development
- Fast Growing Datasets
- Migration from aging hardware
- Bursty workloads
- Need for ML/DL AI Services

Public



When to use

Organization embraces encrypted multi-tenant data and shared processing models

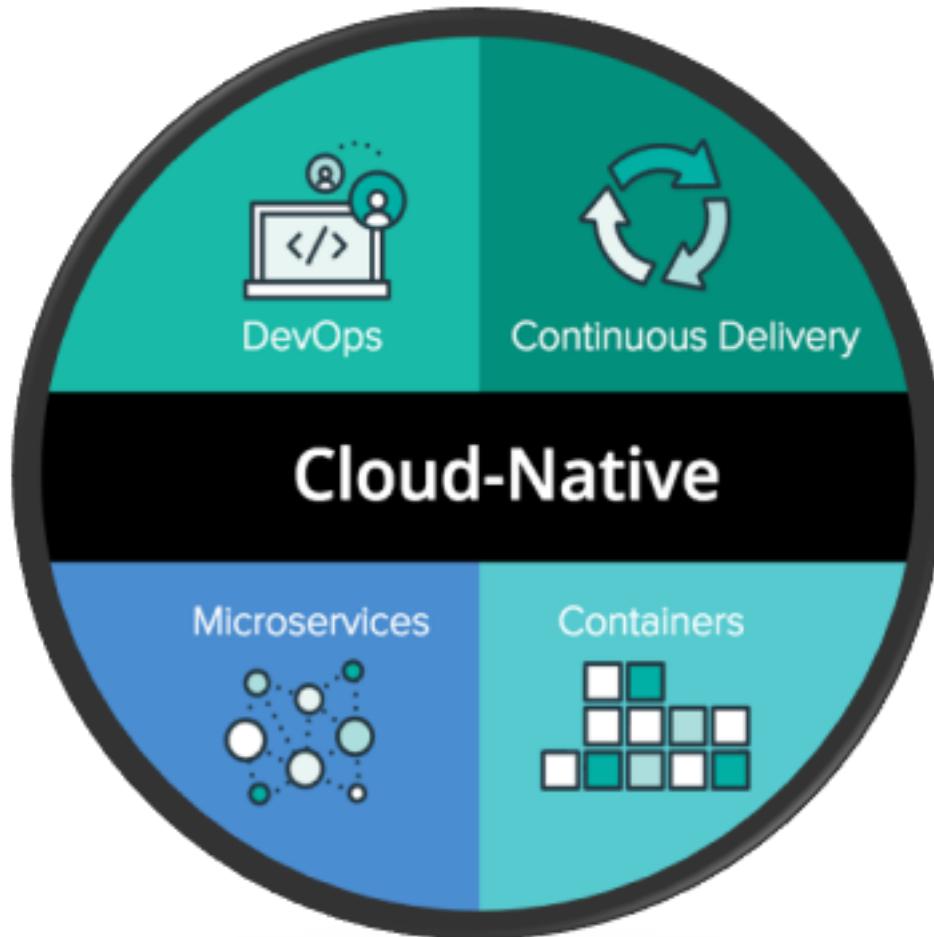


So, What is Cloud Native?

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Cloud native computing uses an open source software stack to be:

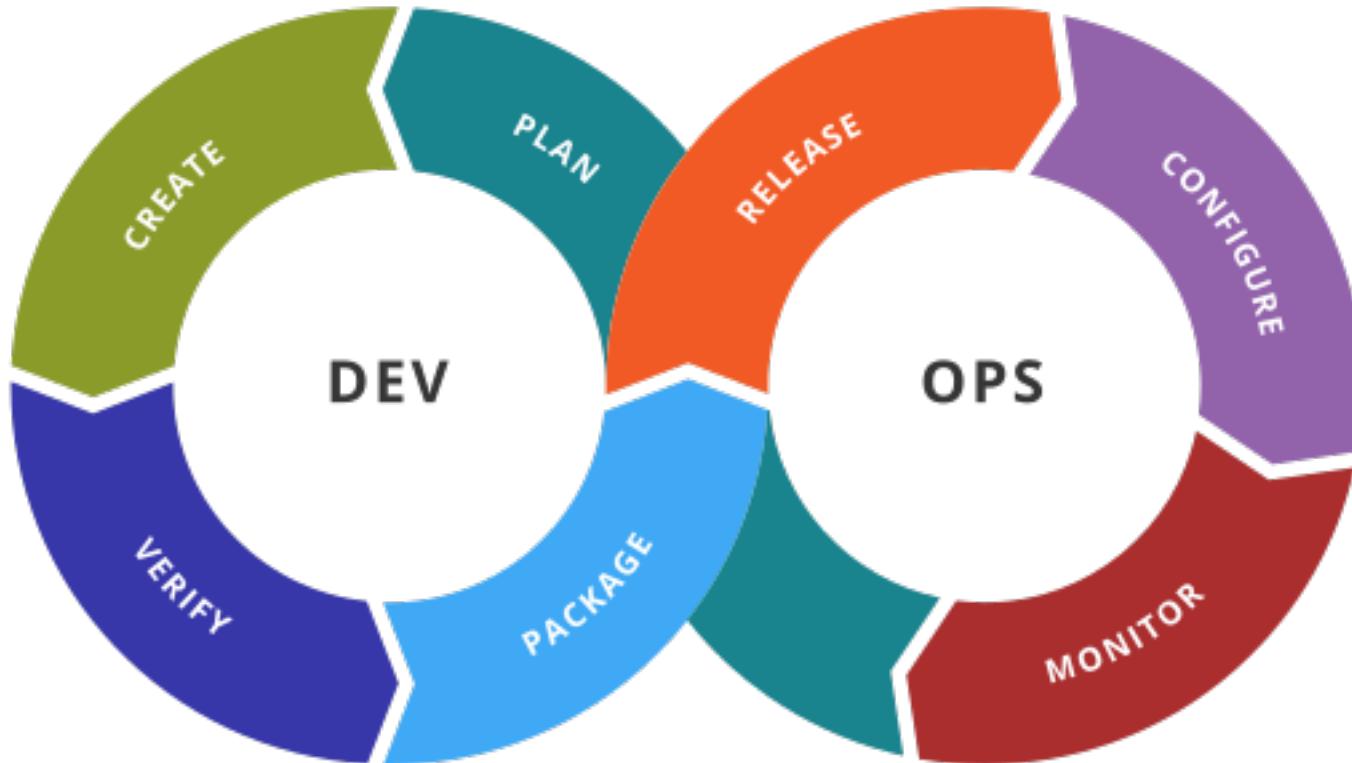
1. **Containerized.** Each part (applications, processes, etc) is packaged in its own container. This facilitates reproducibility, transparency, and resource isolation.
2. **Dynamically orchestrated.** Containers are actively scheduled and managed to optimize resource utilization.
3. **Microservices** oriented. Applications are segmented into microservices. This significantly increases the overall agility and maintainability of applications.



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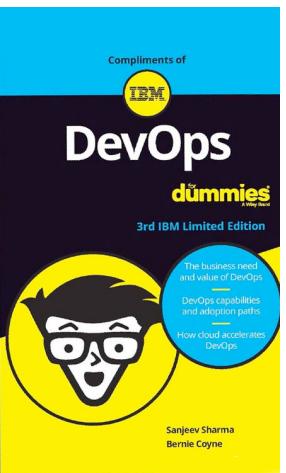
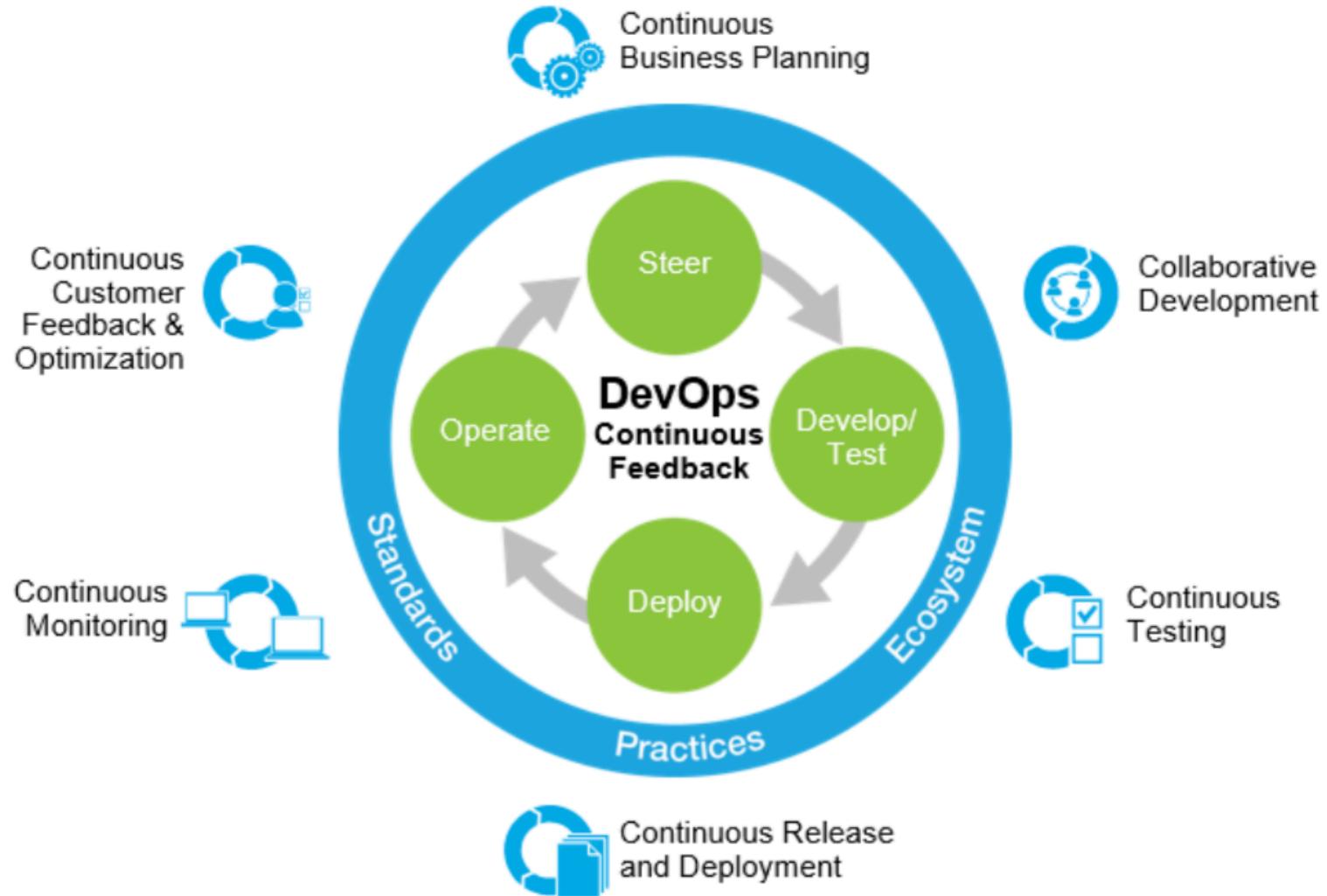
DevOps & Continuous Delivery

IBM

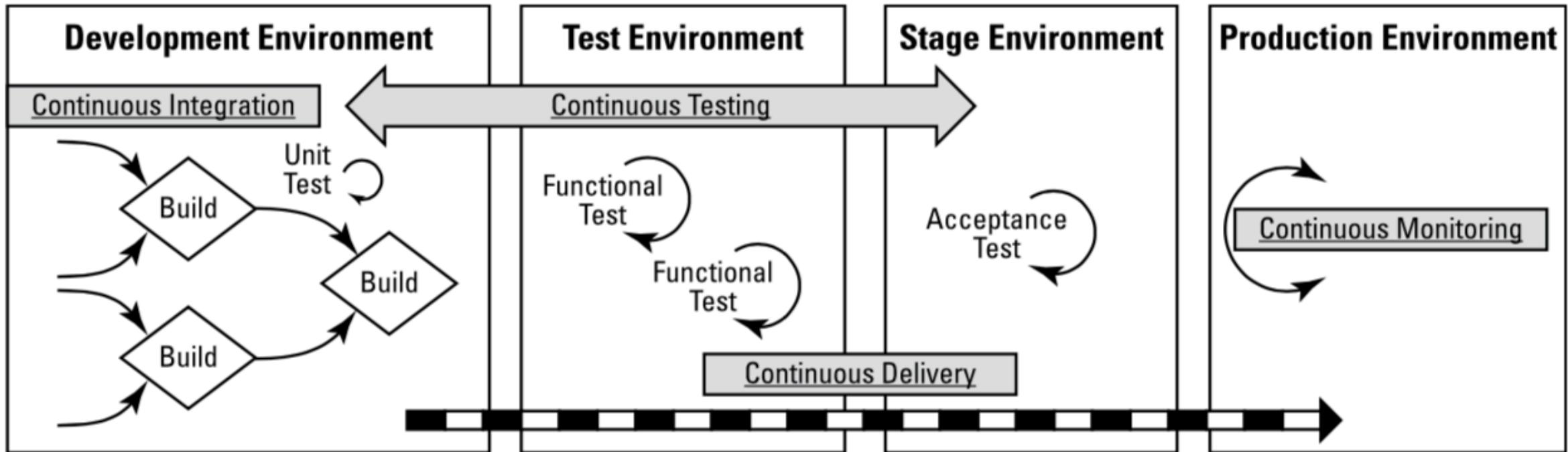


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DevOps reference architecture

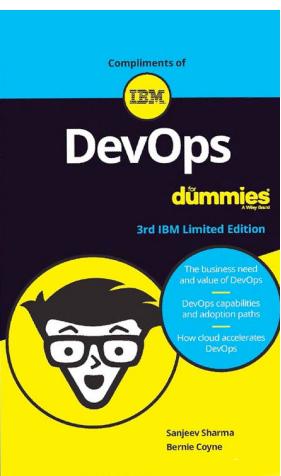


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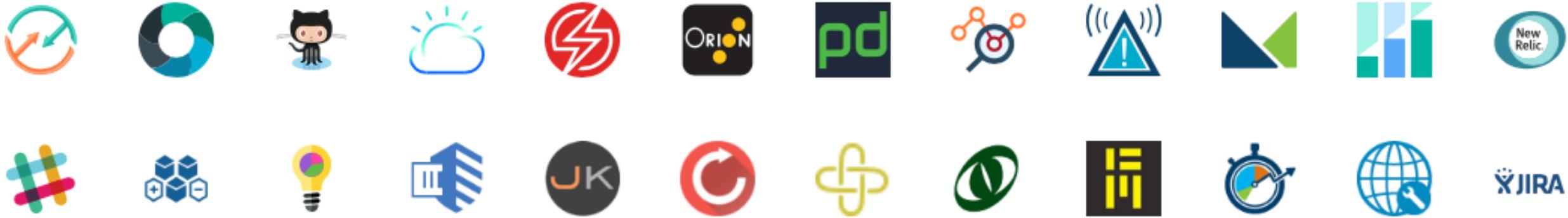


'Shift Left' – Operational Concerns

The shift-left concept moves operations earlier in the development life cycle.



Create an integrated DevOps toolchain



<https://console.bluemix.net/devops/getting-started>

IBM

Demo

Check

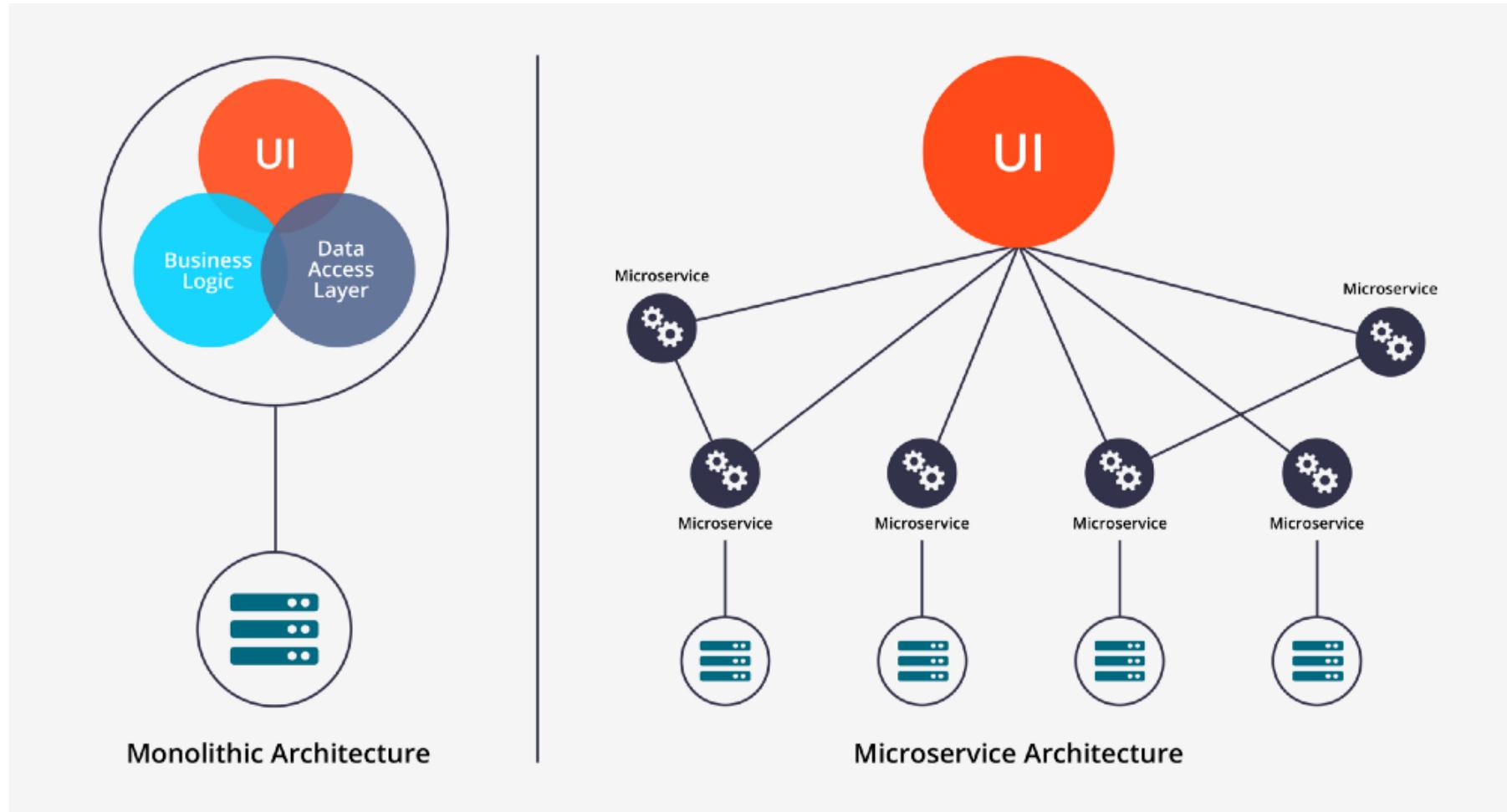
<https://github.com/IBM-Cloud/insurance-toolchain>

<https://www.ibm.com/developerworks/learn/devops/index.html>

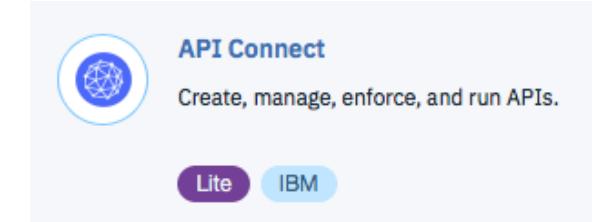
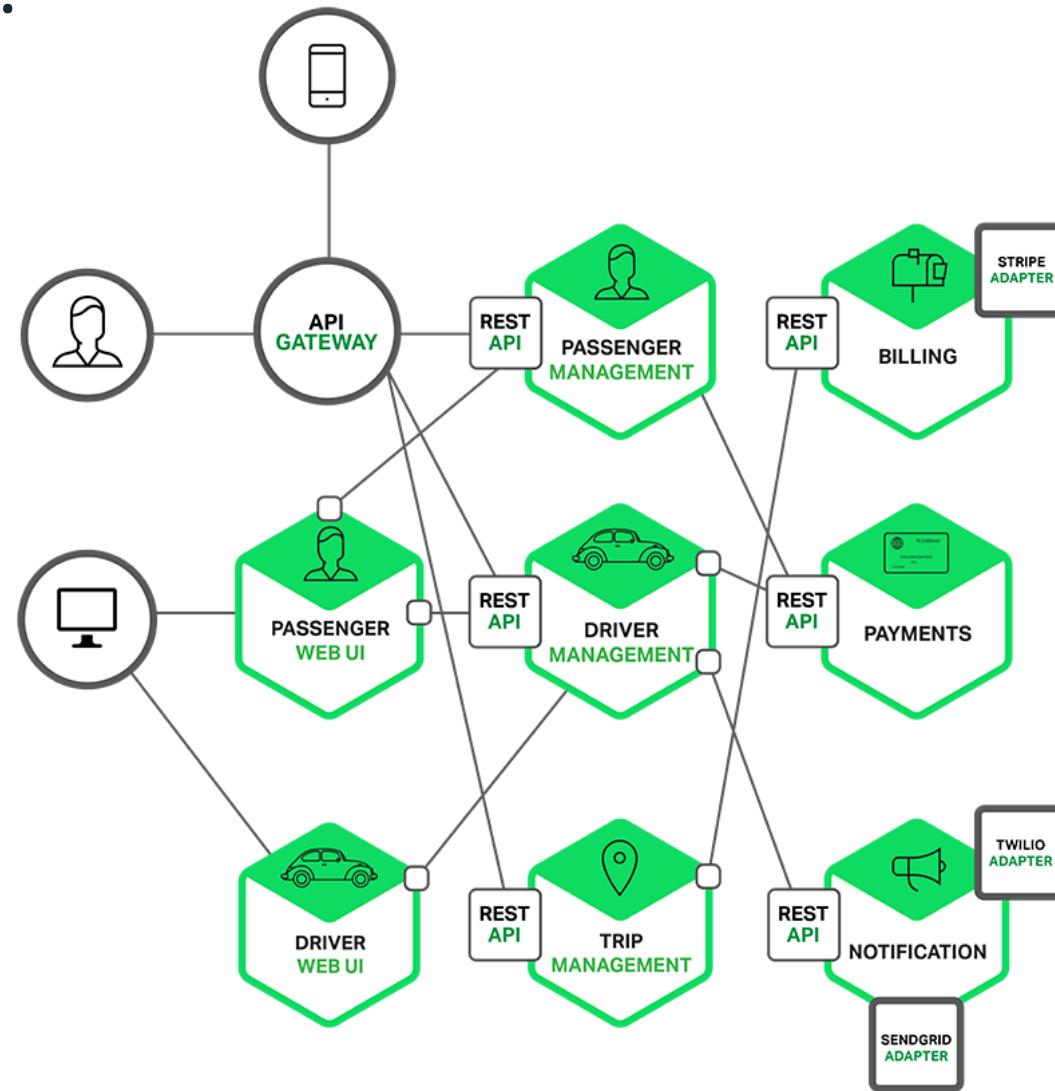


Microservices & Containers



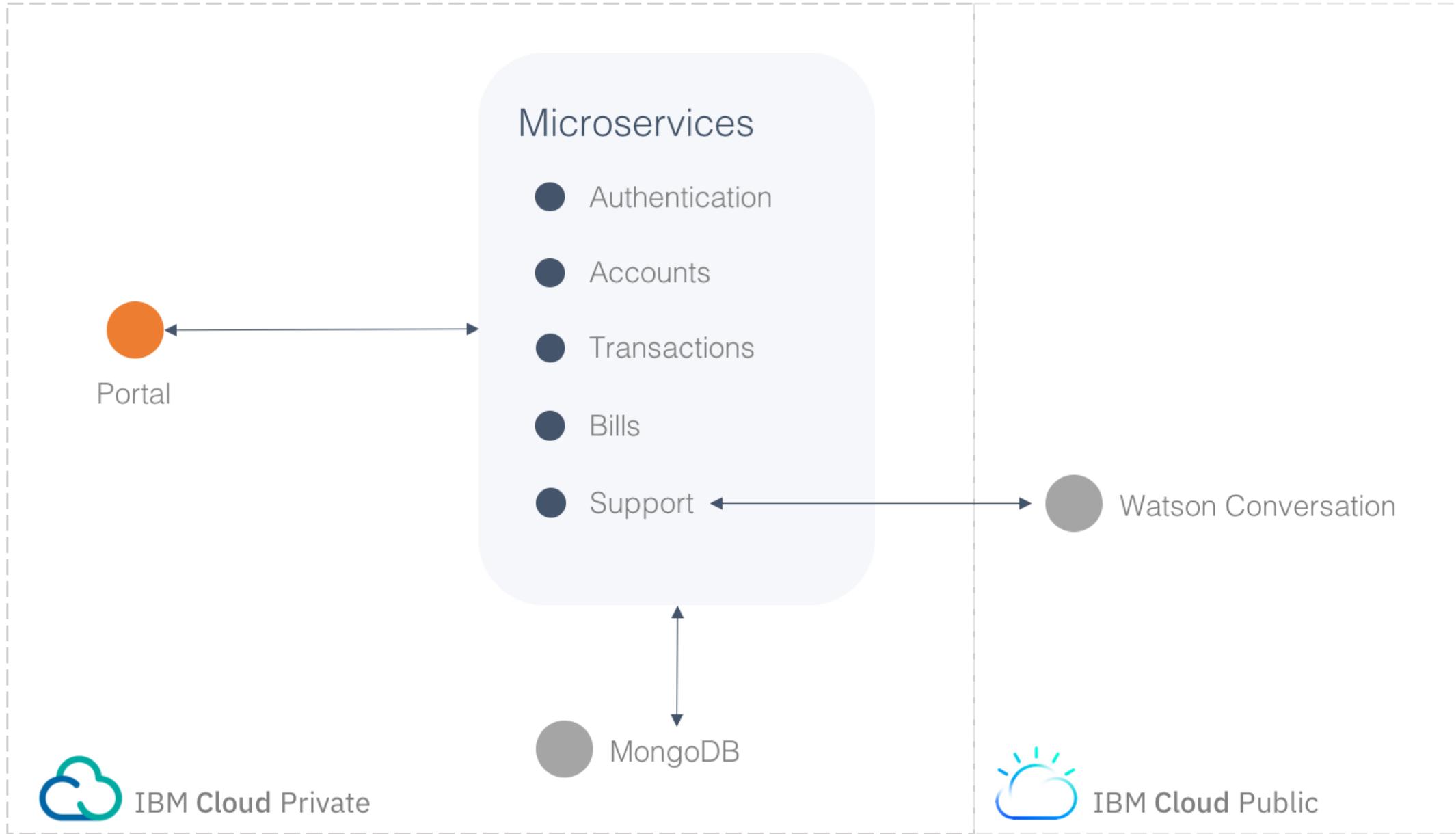


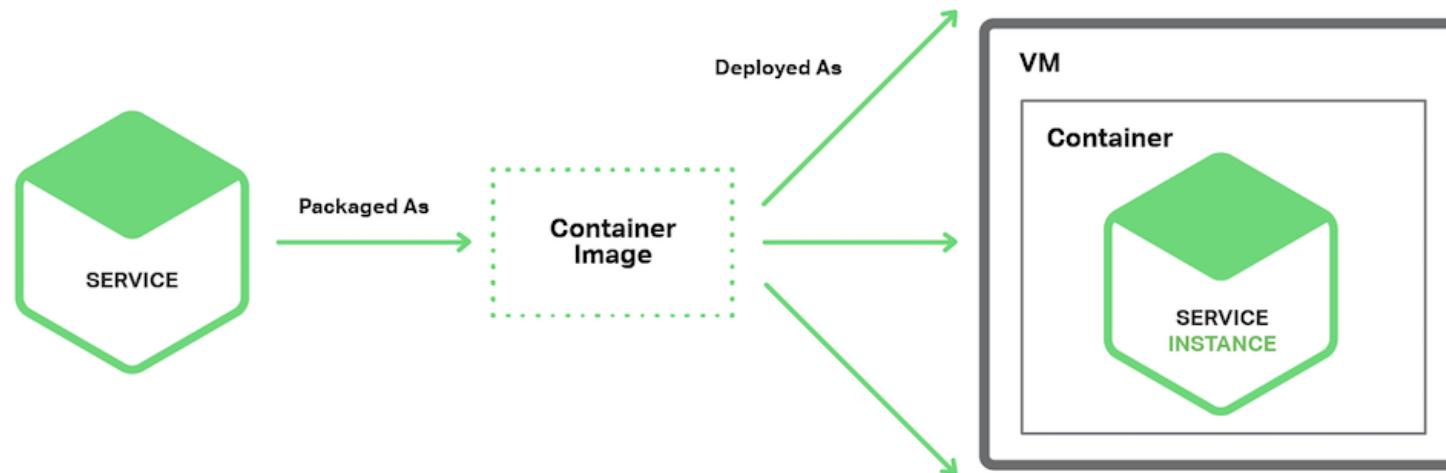
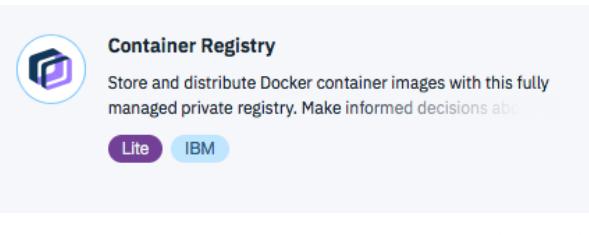
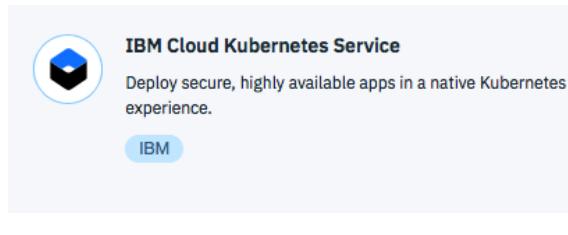
APIs are the key...



Source: NGINX

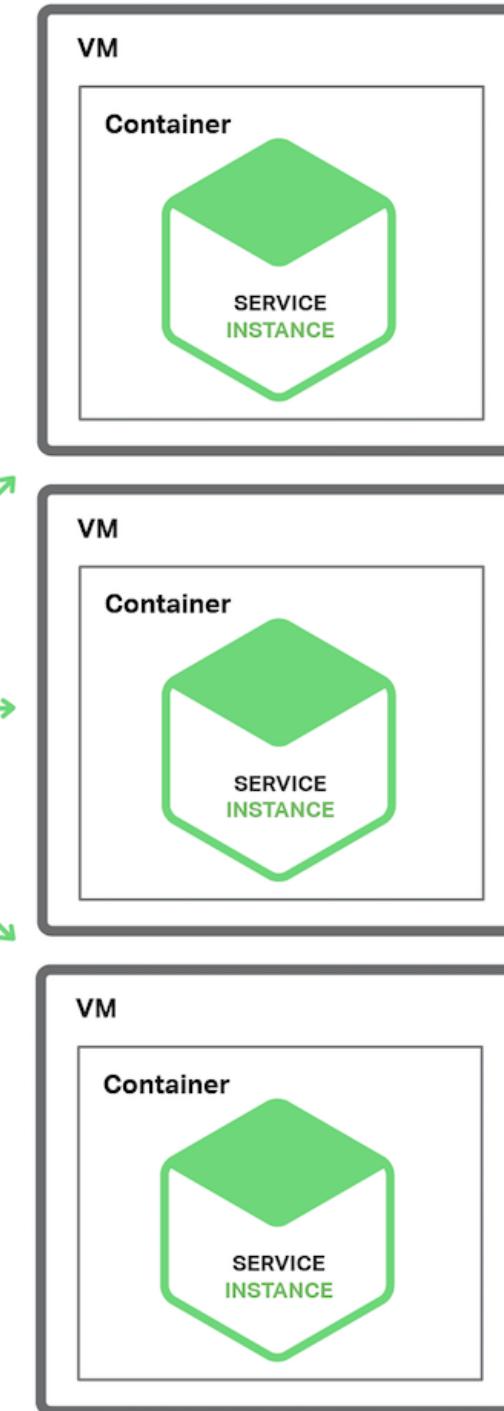
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<https://www.ibm.com/cloud/garage/tutorials/microservices-app-on-kubernetes/>

Source: NGINX

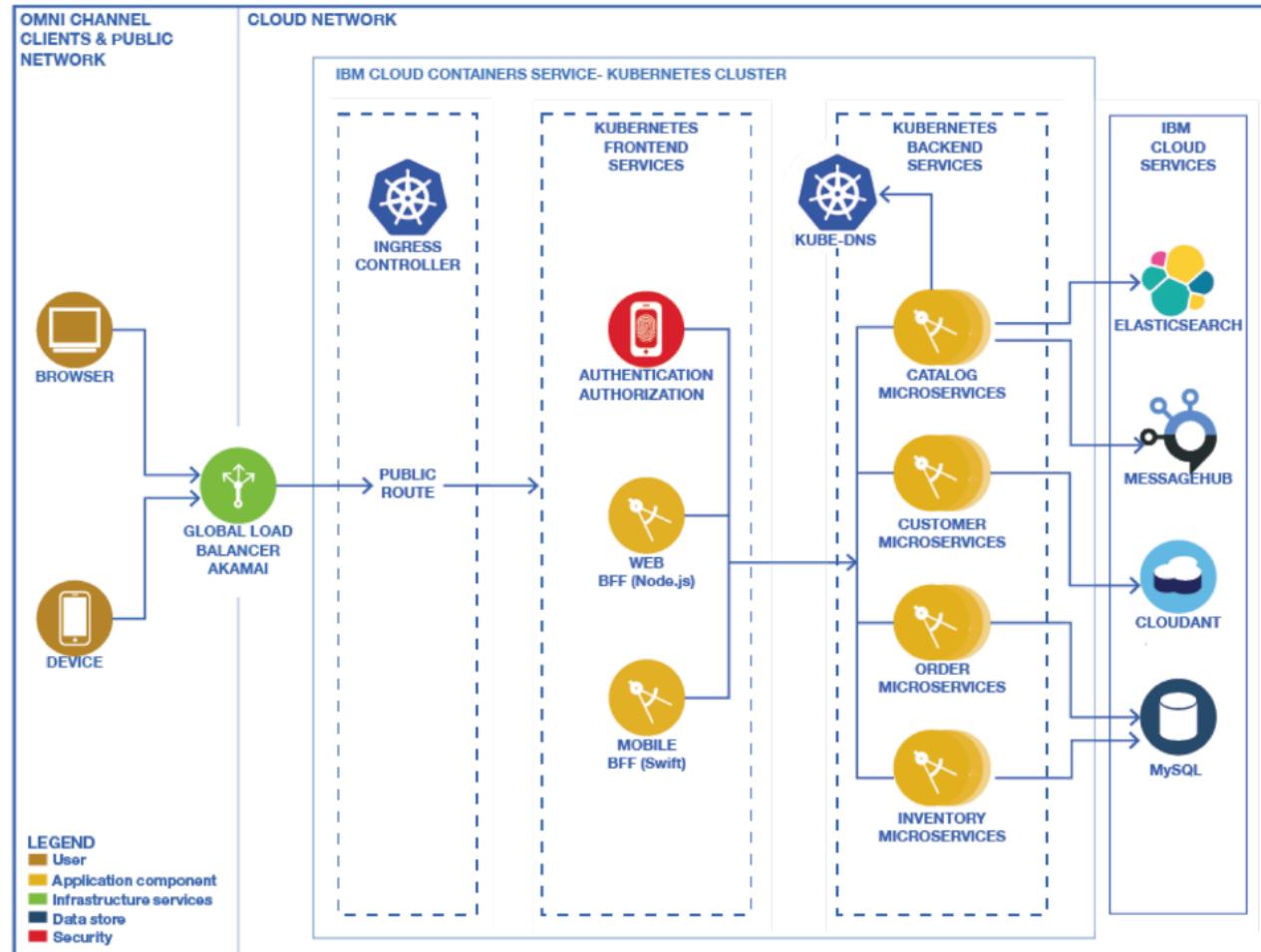


IBM

Native Container Orchestration IBM Cloud Kubernetes Service (IKS)

IBM Cloud Architecture Center

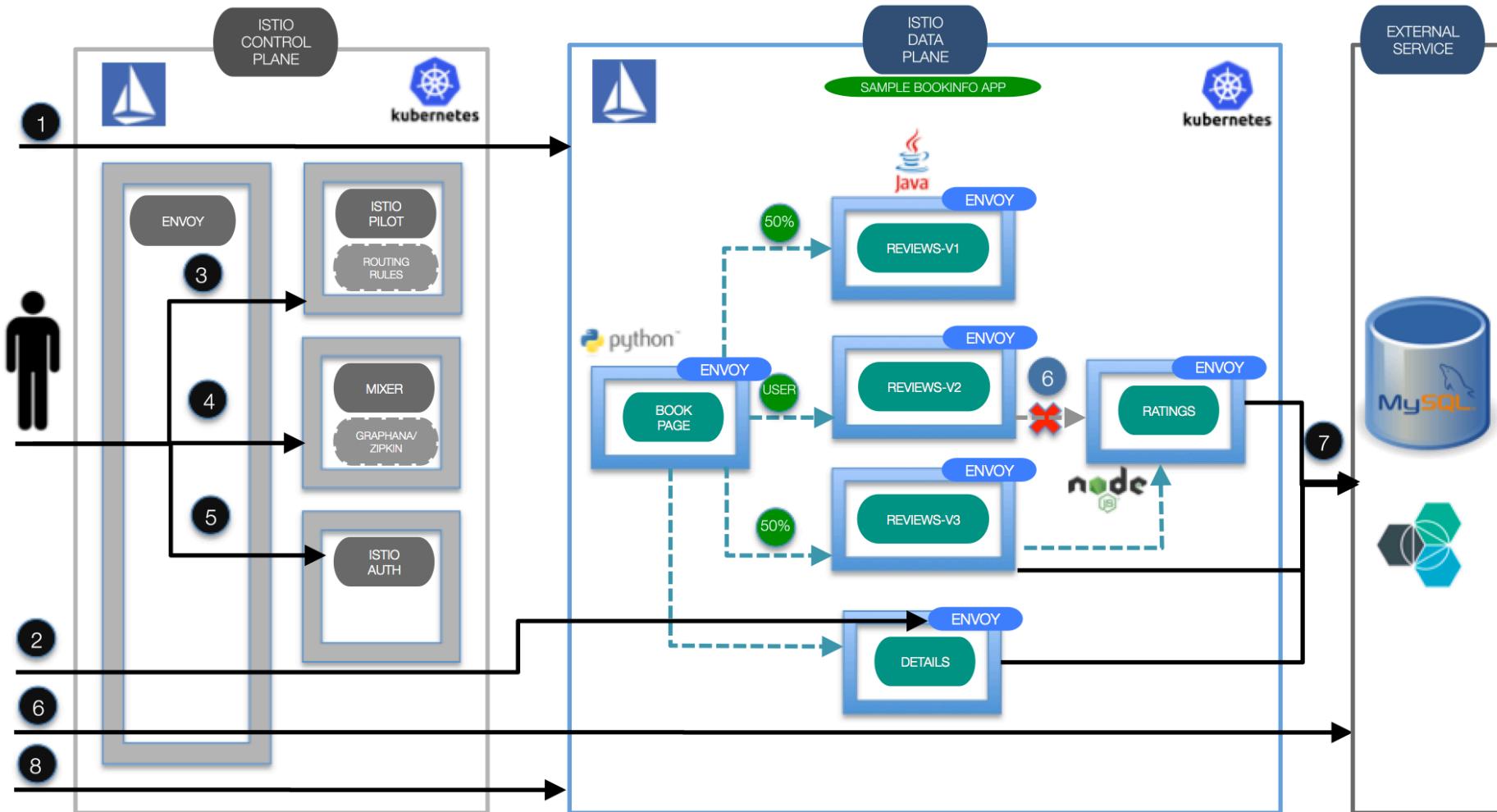
Microservices with Kubernetes



This implementation is based on the **Microservices Reference Architecture**



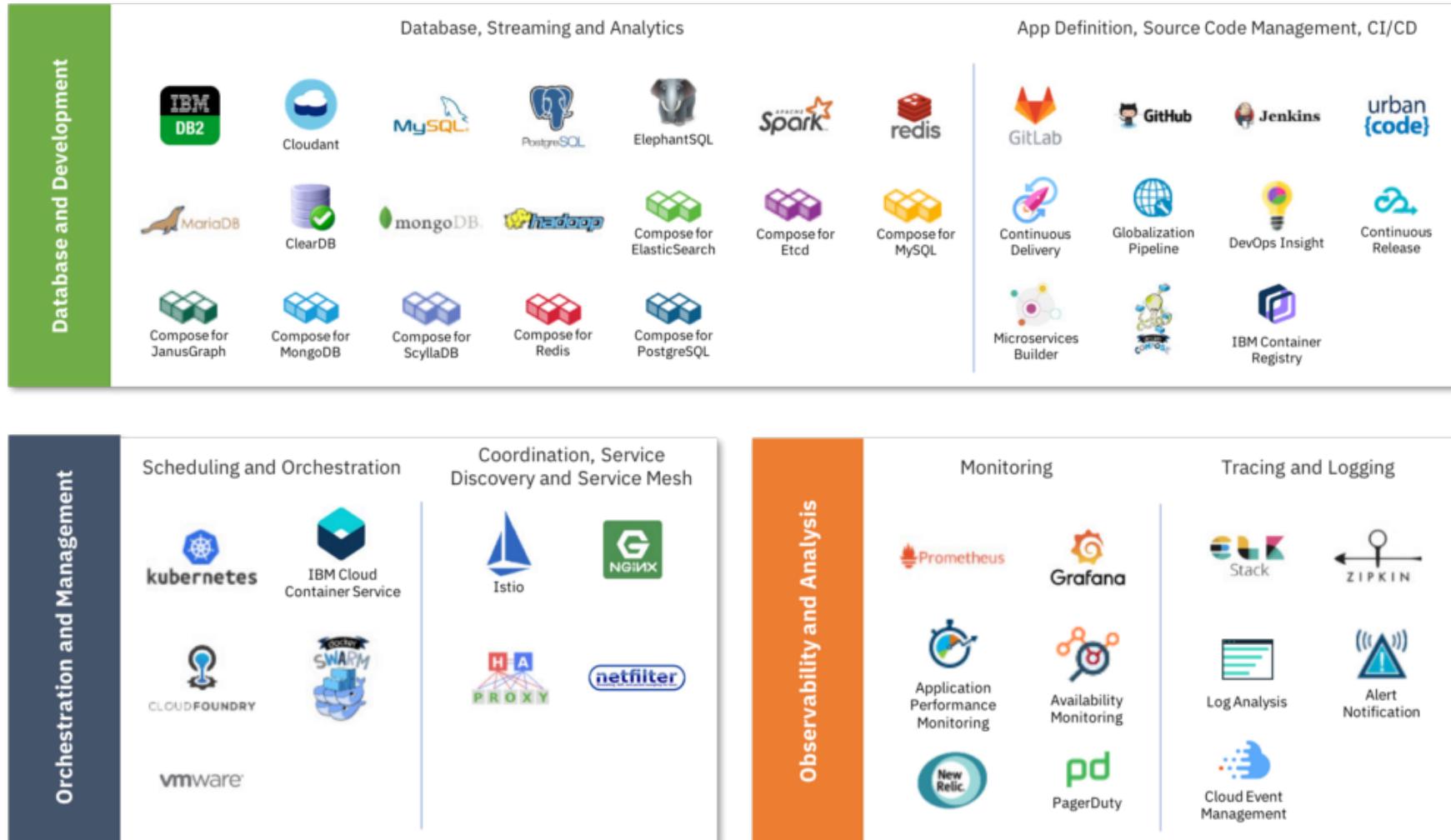
ServiceMesh with Istio



<https://www.ibm.com/cloud/info/istio>

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IBM Cloud Native Landscape

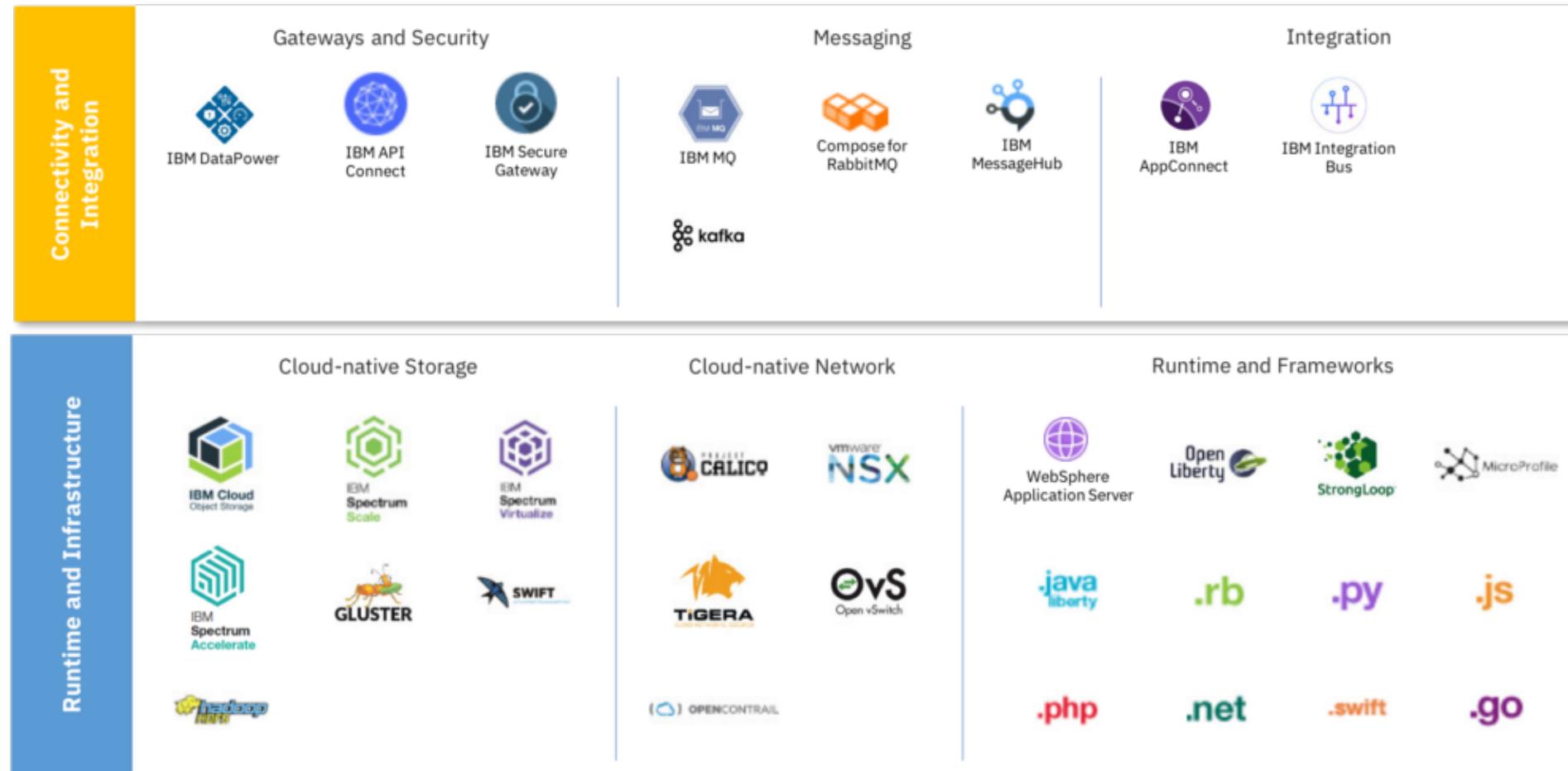


Inspired by the [Cloud Native Computing Foundation \(CNCF\) Landscape](#).

* IBM Cloud Container Service is now IBM Cloud Kubernetes Service (IKS)



IBM Cloud Native Landscape



Inspired by the [Cloud Native Computing Foundation \(CNCF\) Landscape](#).



IBM Cloud Native Landscape



Inspired by the [Cloud Native Computing Foundation \(CNCF\) Landscape](#).

* IBM Cloud Schematics is deprecated.



You'll see cloud native used interchangeably with twelve-factor app.

“

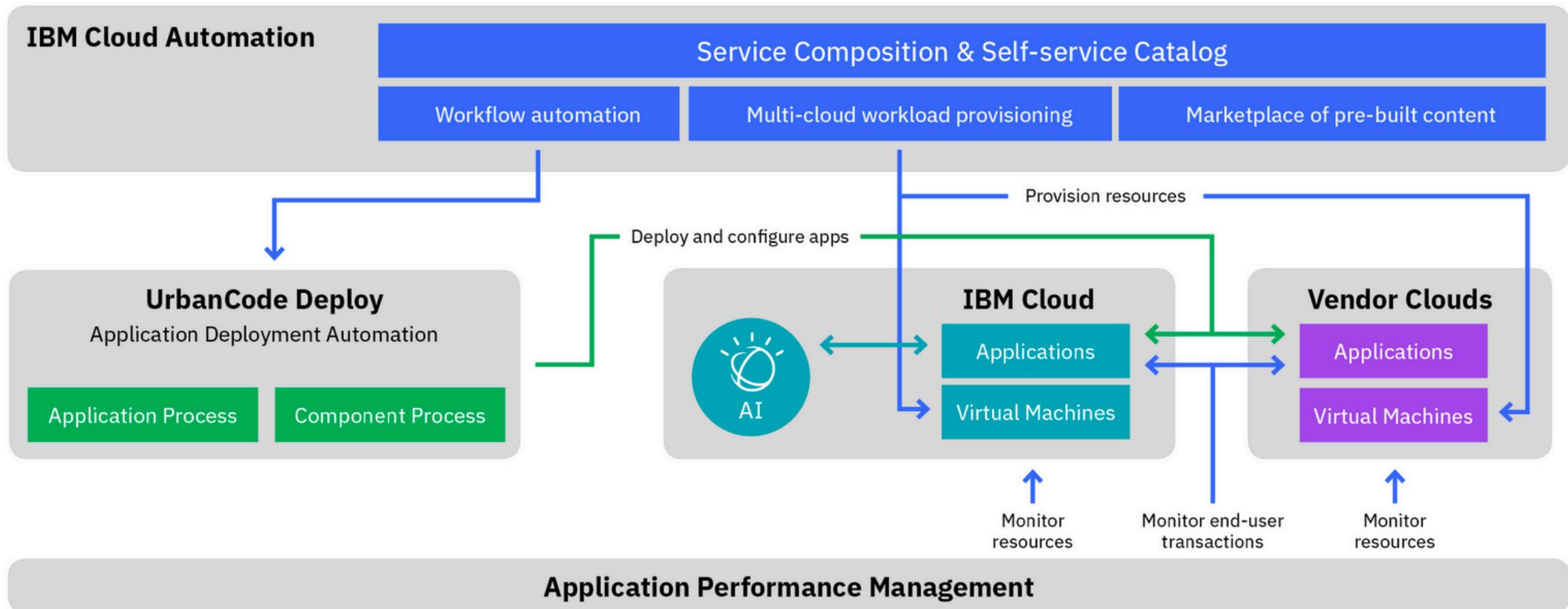
Twelve-factor is the methodology, and cloud native refers to a computing environment and its tools.

Source: <https://developer.ibm.com/courses/all/get-started-istio-ibm-cloud-container-service/>



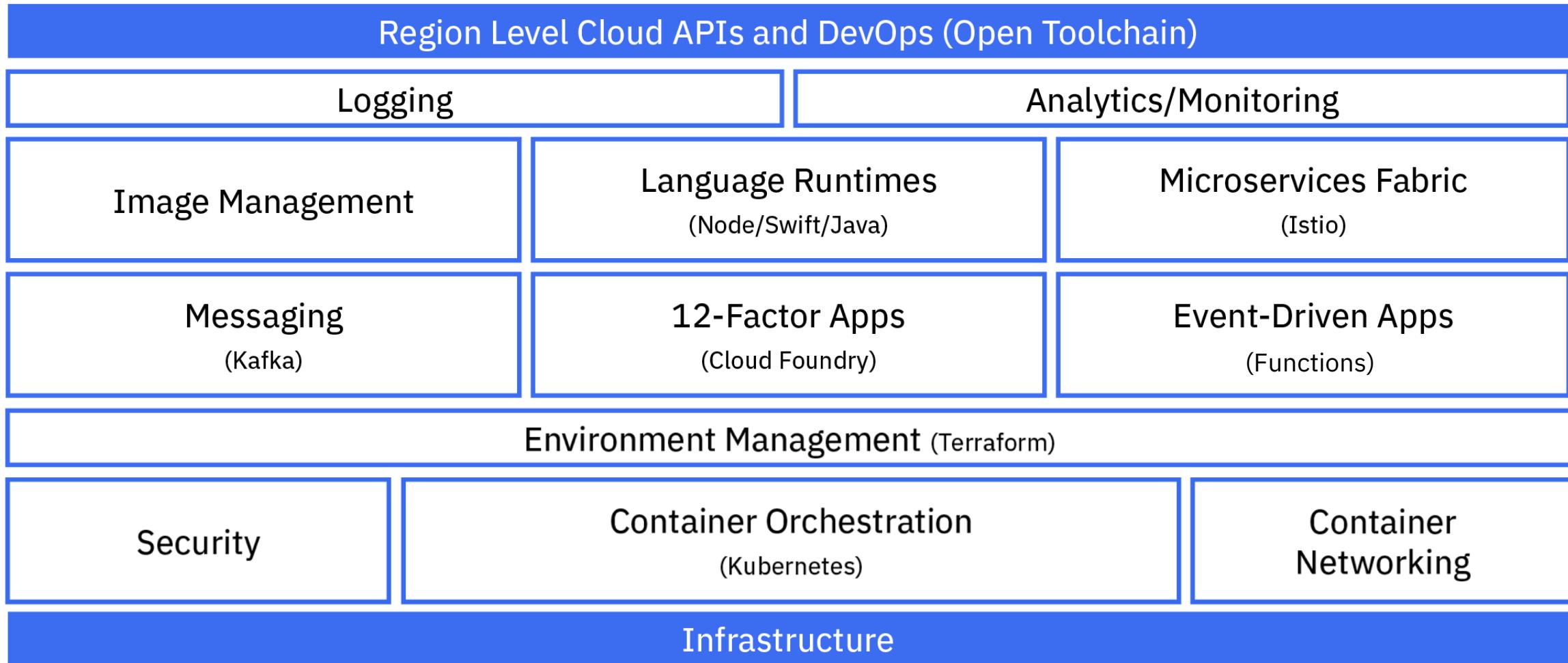
IBM provides tools to help clients manage multi-cloud environments

By 2020, over 90% of enterprises will use multiple cloud services and platforms¹

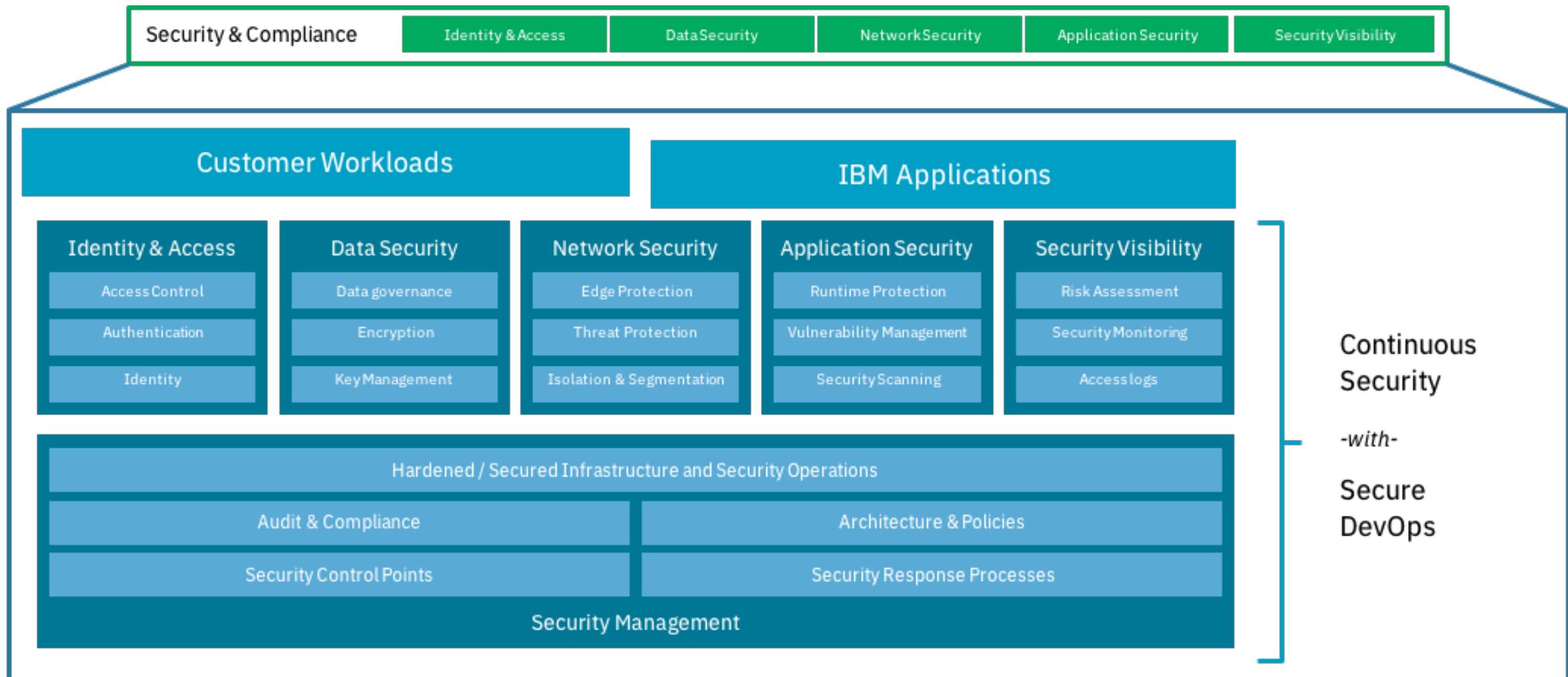


¹IDC Futurescape, [Worldwide Cloud 2018 Predictions](#)

IBM Cloud – Public Cloud Runtimes & Platform Services



IBM Cloud Security and Compliance



IBM

ibm.biz/tutorials

<https://console.bluemix.net/docs/tutorials/index.html#tutorials>



IBM Cloud Architecture Center

The screenshot displays the main interface of the IBM Cloud Architecture Center. At the top left is a navigation bar with icons for Culture, Think, Code, and Deliver. Below this is a section titled "Practices" featuring the "Garage Method". To the right is a section on "DevOps Toolchains". The central part of the page is titled "Architecture Center" and contains a brief description of how IBM's architectures provide best practices for building applications in the cloud. On the right side, there is a circular diagram divided into six hexagonal segments, each representing a different aspect of architecture: THINK (yellow), LEARN (red), CODE (teal), CULTURE (blue), MANAGE (green), and DELIVER (purple). Below the central text are links for "Architectures & Technologies", "Practices", and "Architectures". The "Architectures" section is expanded, showing ten categories: Cognitive, Microservices, Data and analytics, DevOps, e-commerce, Hybrid, Internet of Things, Mobile, Security, Service management, Social, and Virtualization. Each category has a small icon and a brief description.

Practices
IBM's Garage Method combines the best practices from Design Thinking, Agile development, Lean Startup, and DevOps to build innovative solutions

DevOps Toolchains
Integrated tools accelerate development, deployment, and operations.

Architecture Center

IBM's architectures provide the best practices for building applications in the Cloud. The reference architectures define the basic pattern, while implementations provide specific technology, practices, and tool choices to build and deploy that pattern.

Putting it all together

Architectures & Technologies
Get started with your favorite languages and runtimes, and deploy to the cloud within minutes. Incrementally add capabilities to build enterprise scale applications using our reference architectures.

Architectures

- Cognitive**
A runtime architecture that showcases the components involved in a trained and deployed cognitive engagement system.
- Microservices**
Take a cloud-native approach to building mobile and web applications with a microservices architecture.
- Data and analytics**
Build solutions that gather data from any type of source, including web and social. With those solutions, you can store, analyze, and report on data by using analytic engines to drive actionable insights and visualization.
- DevOps**
Rapidly execute and scale the IBM Bluemix Garage method. The DevOps architecture includes the best of Design Thinking, Lean Startup, Agile Development, DevOps, and Cloud to help enterprise organizations
- e-commerce**
Leverage IBM Cloud to develop, deploy, and manage scalable e-commerce solutions while connecting securely to backend infrastructure on the cloud or in the enterprise.
- Hybrid**
Create applications whose components are split across cloud and on-premises environments, or across different clouds.
- Internet of Things**
Connect to IoT devices and quickly build scalable apps and visualization dashboards to gain insights from IoT data, using Bluemix IoT, data, and cognitive services.
- Mobile**
With IBM® Cloud, develop, deploy, and manage scalable native and hybrid apps for mobile devices while you are securely connected to back-end infrastructure on the cloud or in an enterprise.
- Security**
Understand the security components that are needed for secure cloud deployment, development, and operations.
- Service management**
Cloud service management and operations refers to all of the activities that are performed
- Social**
A social platform provides a collaborative information exchange with intelligent and
- Virtualization**
Extend your existing data center to the cloud simply and quickly. IBM Cloud for VMware

<https://developer.ibm.com/architecture>



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Start building

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