Being Cloud Native with IBM Cloud

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IBM Cloud

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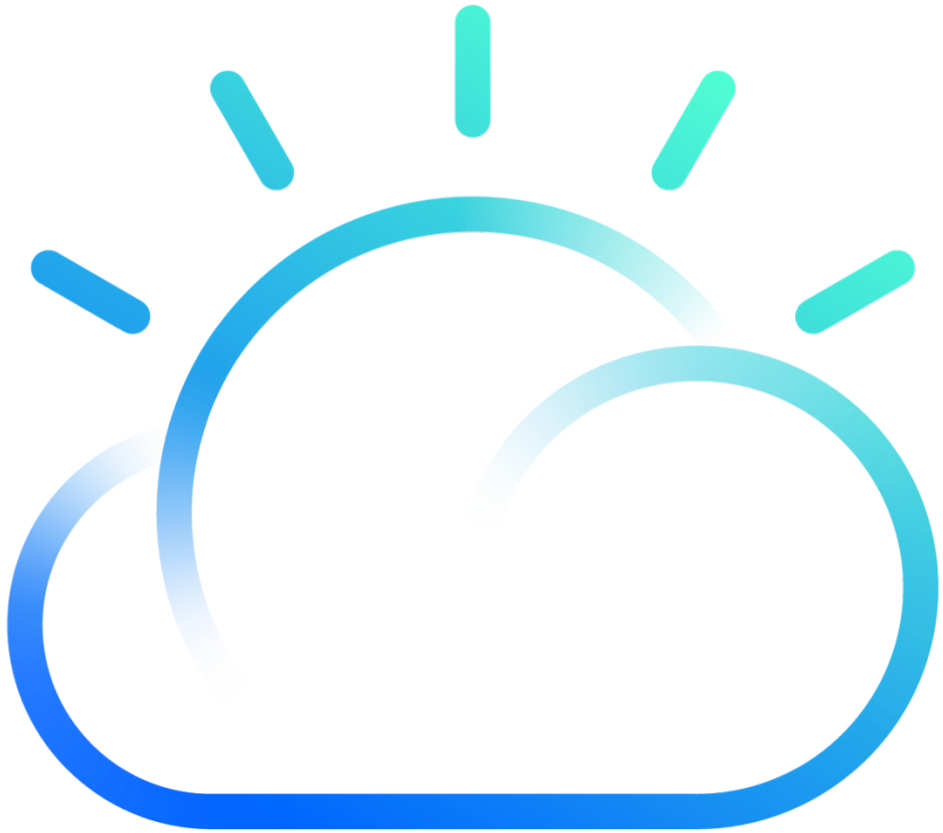
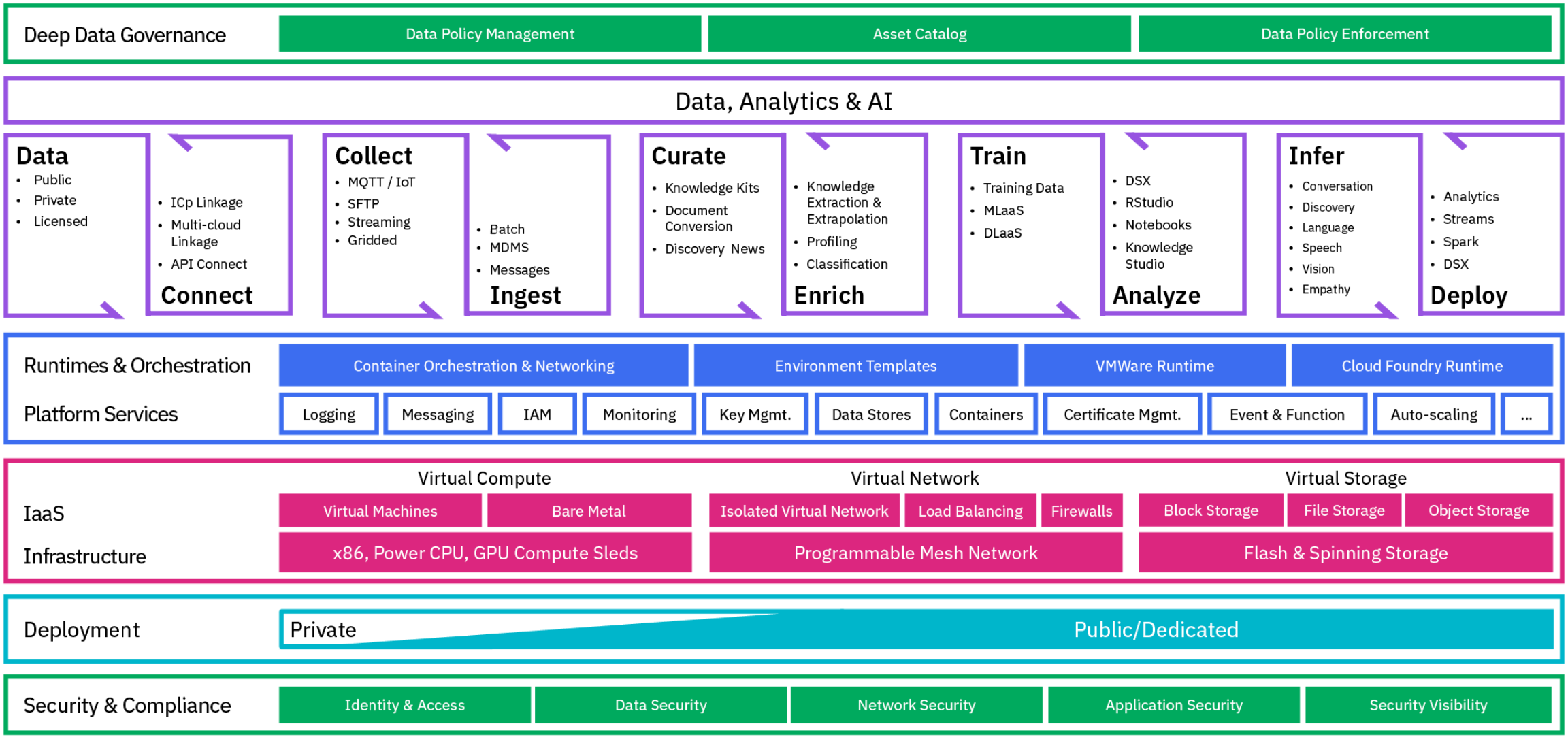


IBM Cloud

IBM Cloud


Deep Data Governance
Data Policy Management
Asset Catalog
Data Policy Enforcement
Data, Analytics & AI
Data
Public
Private
Licensed
ICp Linkage
Multi-cloud Linkage
API Connect
Connect
Collect
MQTT / IoT
SFTP
Streaming
Gridded
Batch
MDMS
Messages
Ingest
Curate
Knowledge Kits
Document Conversion
Discovery News
Knowledge Extraction & Extrapolation
Profiling
Classification
Enrich
Train
Training Data
MLaaS
DLaaS
DSX
RStudio
Notebooks
Knowledge Studio
Analyze
Infer
Conversation
Discovery
Language
Speech
Vision
Empathy
Analytics
Streams
Spark
DSX
Deploy
Runtimes & Orchestration
Container Orchestration & Networking
Environment Templates
VMWare Runtime
Cloud Foundry Runtime
Platform Services
Logging
Messaging
IAM
Monitoring
Key Mgmt.
Data Stores
Containers
Certificate Mgmt.
Event & Function
Auto-scaling
...
IaaS
Virtual Compute
Virtual Machines
Bare Metal
Virtual Network
Isolated Virtual Network
Load Balancing
Firewalls
Virtual Storage
Block Storage
File Storage
Object Storage
Infrastructure
x86, Power CPU, GPU Compute Sleds
Programmable Mesh Network
Flash & Spinning Storage
Deployment
Private
Public/Dedicated
Security & Compliance
Identity & Access
Data Security
Network Security
Application Security
Security Visibility

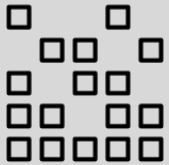
Full spectrum of compute options for any workload, across global infrastructure

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

IBM Cloud deployment options

Private

When to use

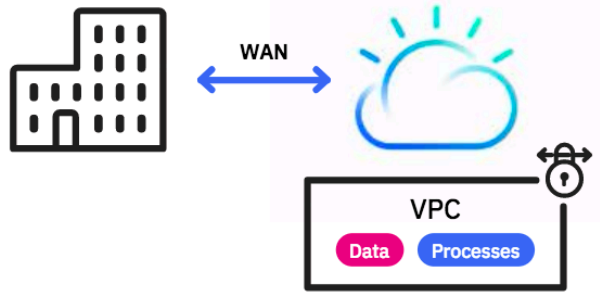
Organization has requirement to utilize on-premises infrastructure (security policy, investment equity, limited WAN bandwidth, etc)

30-40 IBM Cloud services

Optimal Workloads

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

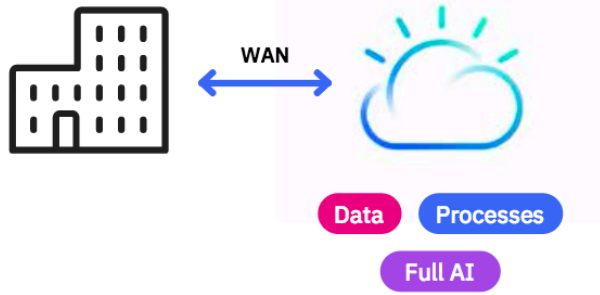
Dedicated



When to use

Organization has isolation requirement for security and/or performance reasons

Public



When to use

Organization embraces encrypted multi-tenant data and shared processing models

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

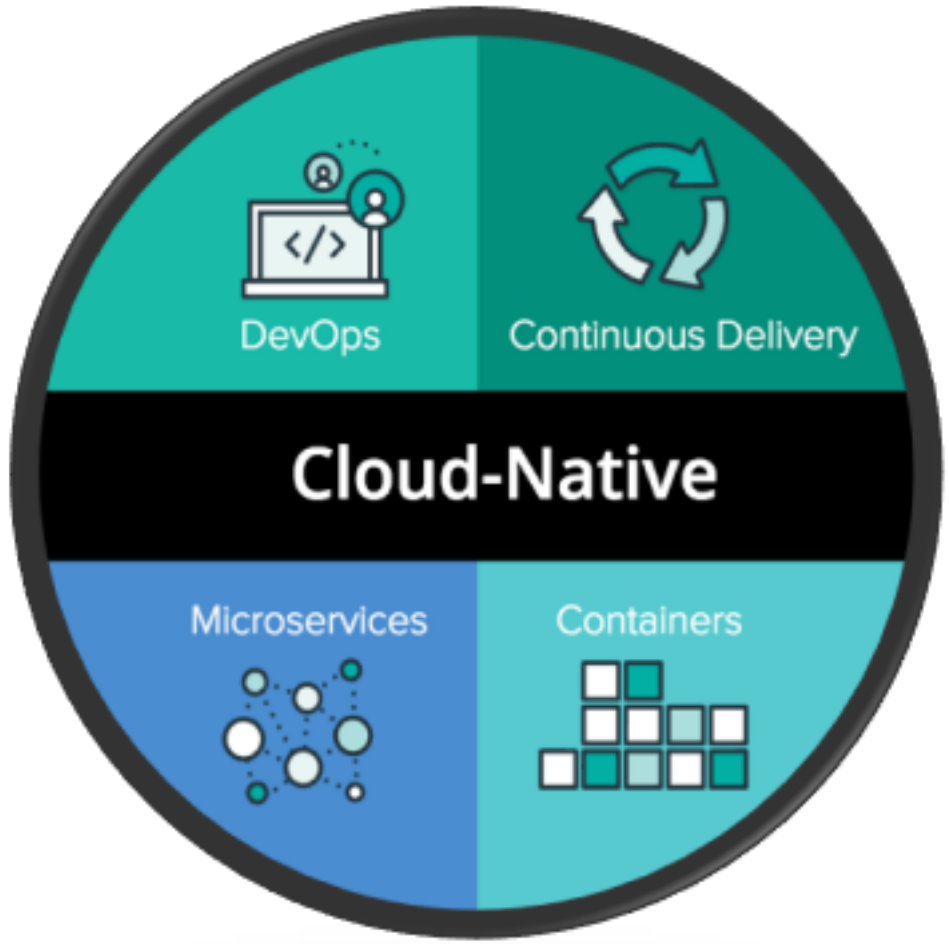
So, What is Cloud Native?

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

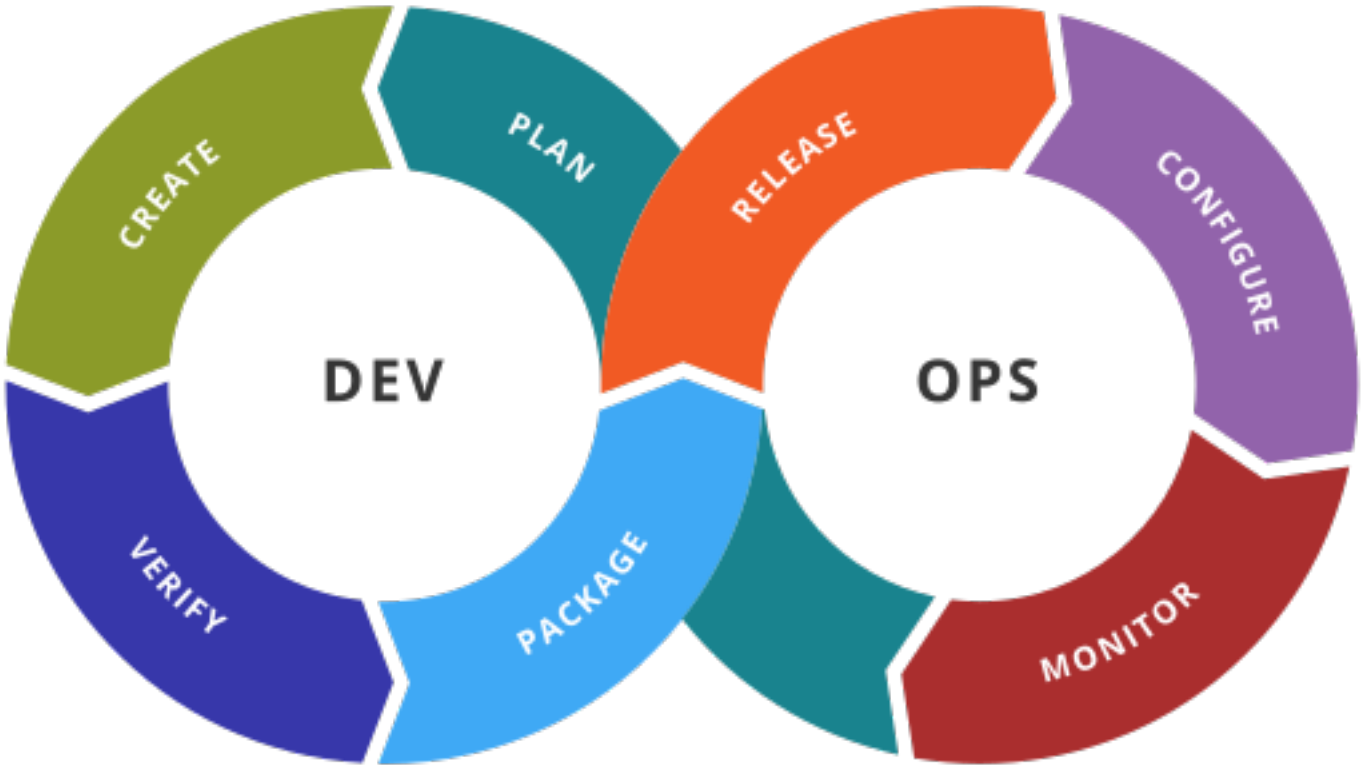
1. **Containerized**. Each part (applications, processes, etc) is packaged in its own container. This facilitates reproducibility, transparency, and resource isolation.
2. **Dynamically orchestrated.** Containers are actively scheduled and managed to optimize resource utilization.
3. **Microservices**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

Source: https://www.cncf.io/about/faq/

IBM


DevOps
Continuous Delivery
Cloud-Native
Microservices
Containers

DevOps & Continuous Delivery



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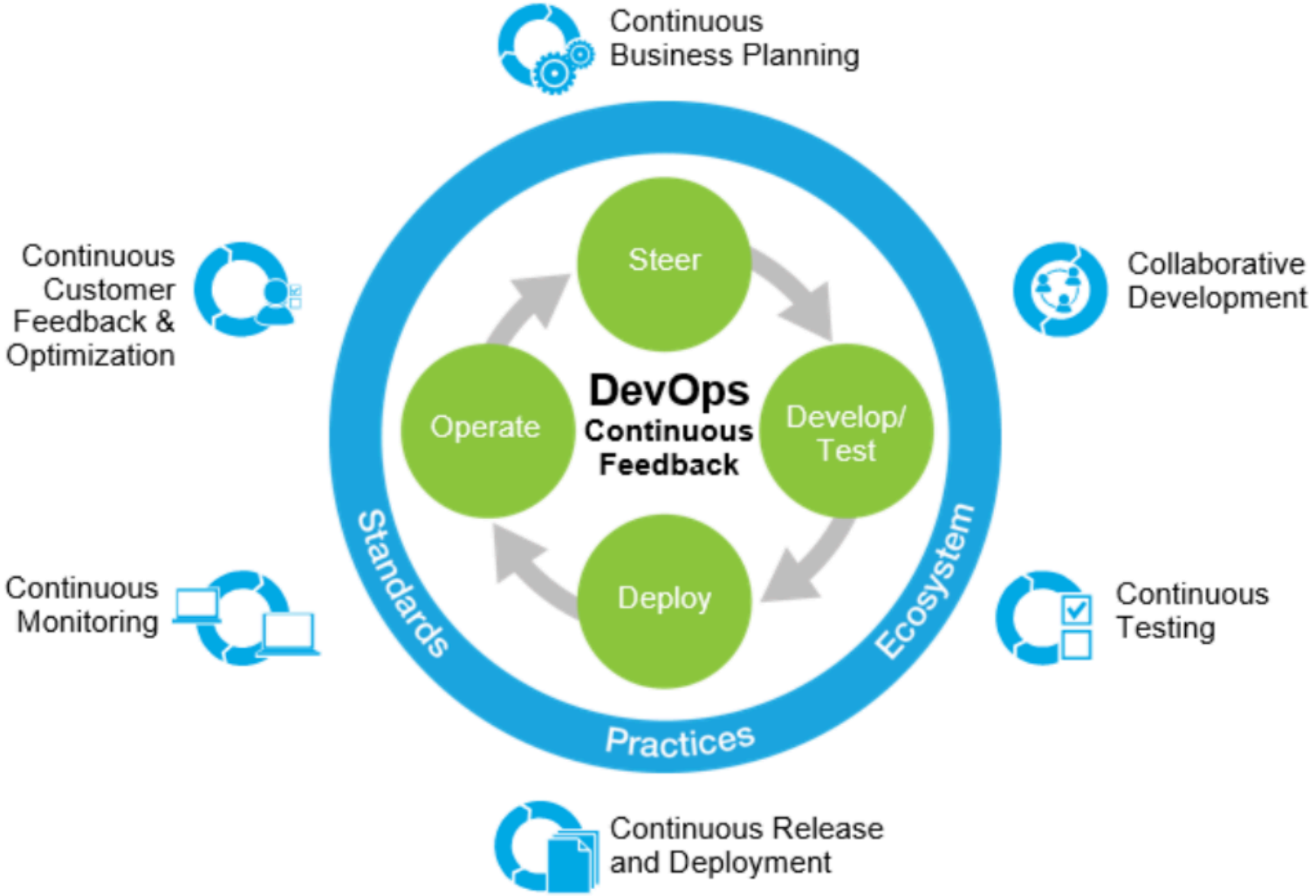
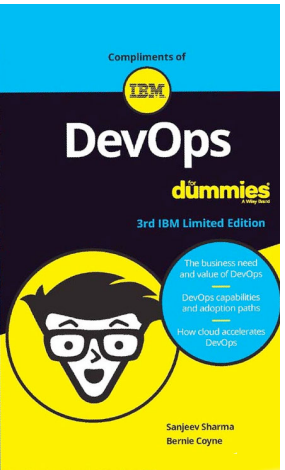
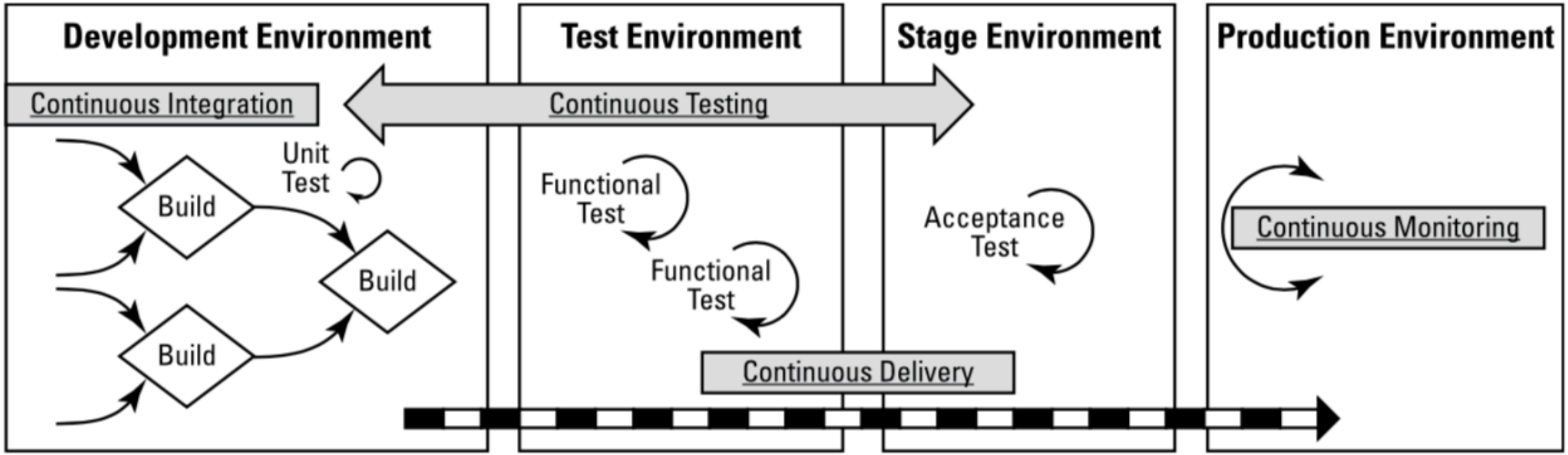
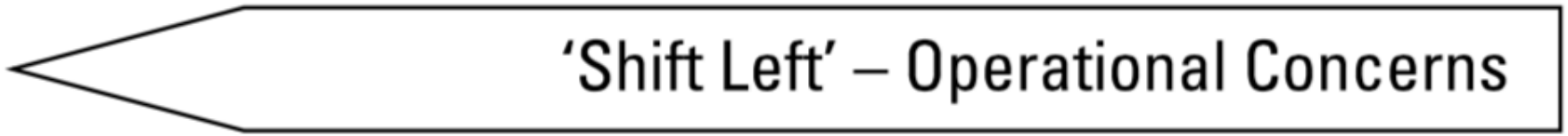
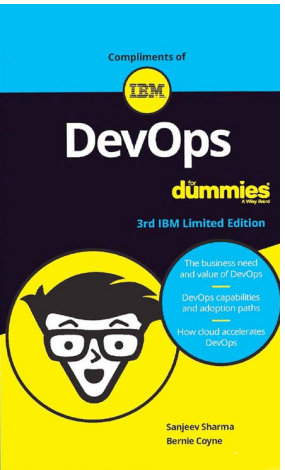
DevOps reference architecture







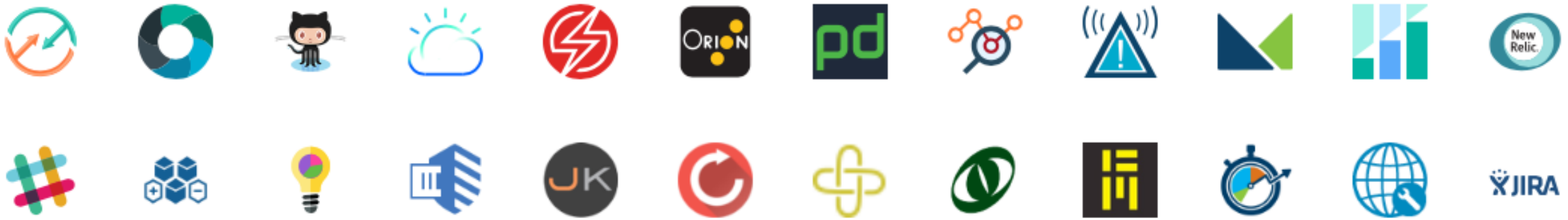




The shift-left concept moves operations earlier in the development life cycle.

IBM

Create an integrated DevOps toolchain



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

IBM

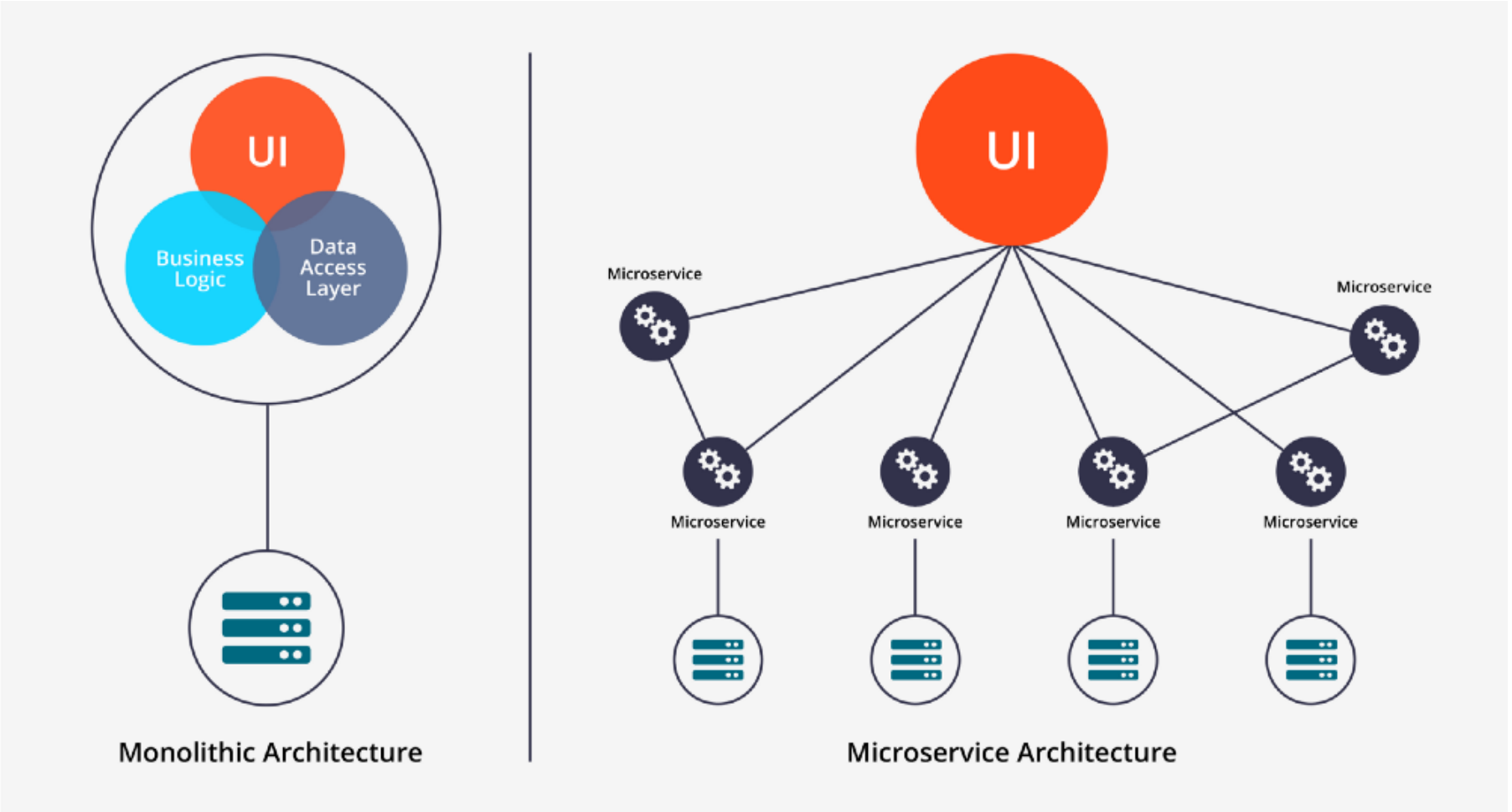
Demo

Check

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

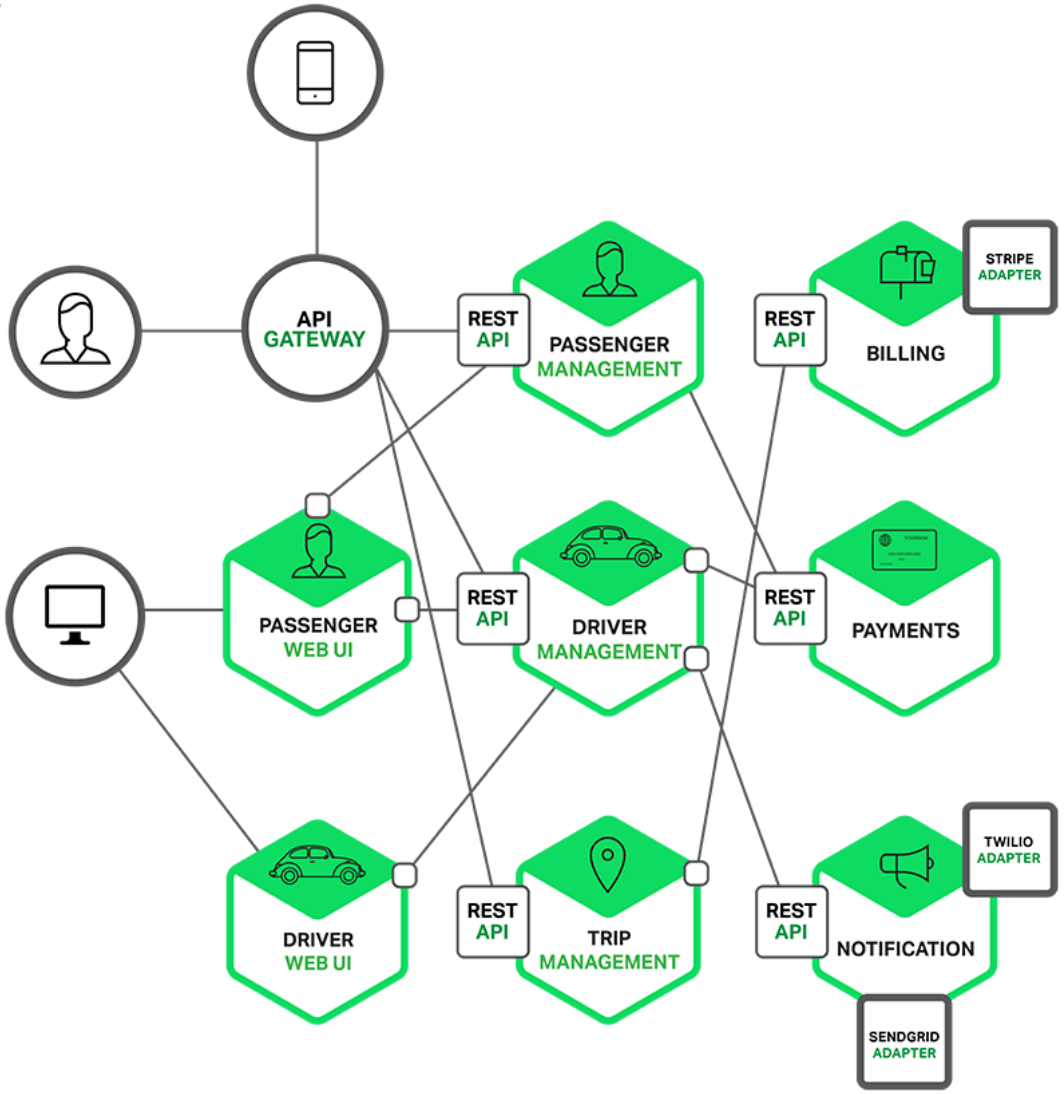
https://www.ibm.com/developerworks/learn/devops/index.html

Microservices & Containers

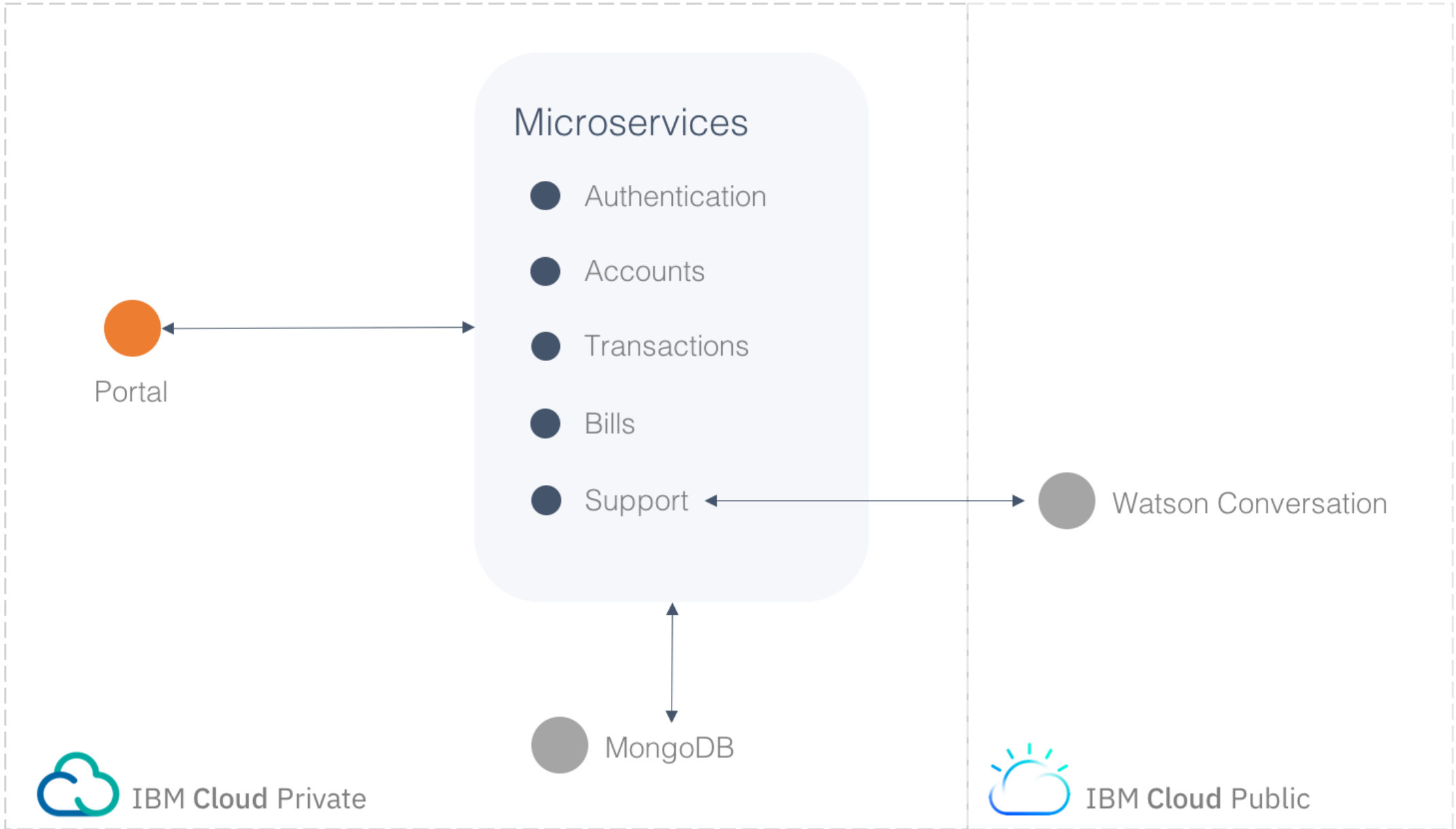


Source: Medium.com

APIs are the key...



Source: NGINX


Microservices
Authentication
Accounts
Transactions
Bills
Support
Portal
Watson Conversation
MongoDB
IBM Cloud Private
IBM Cloud Public

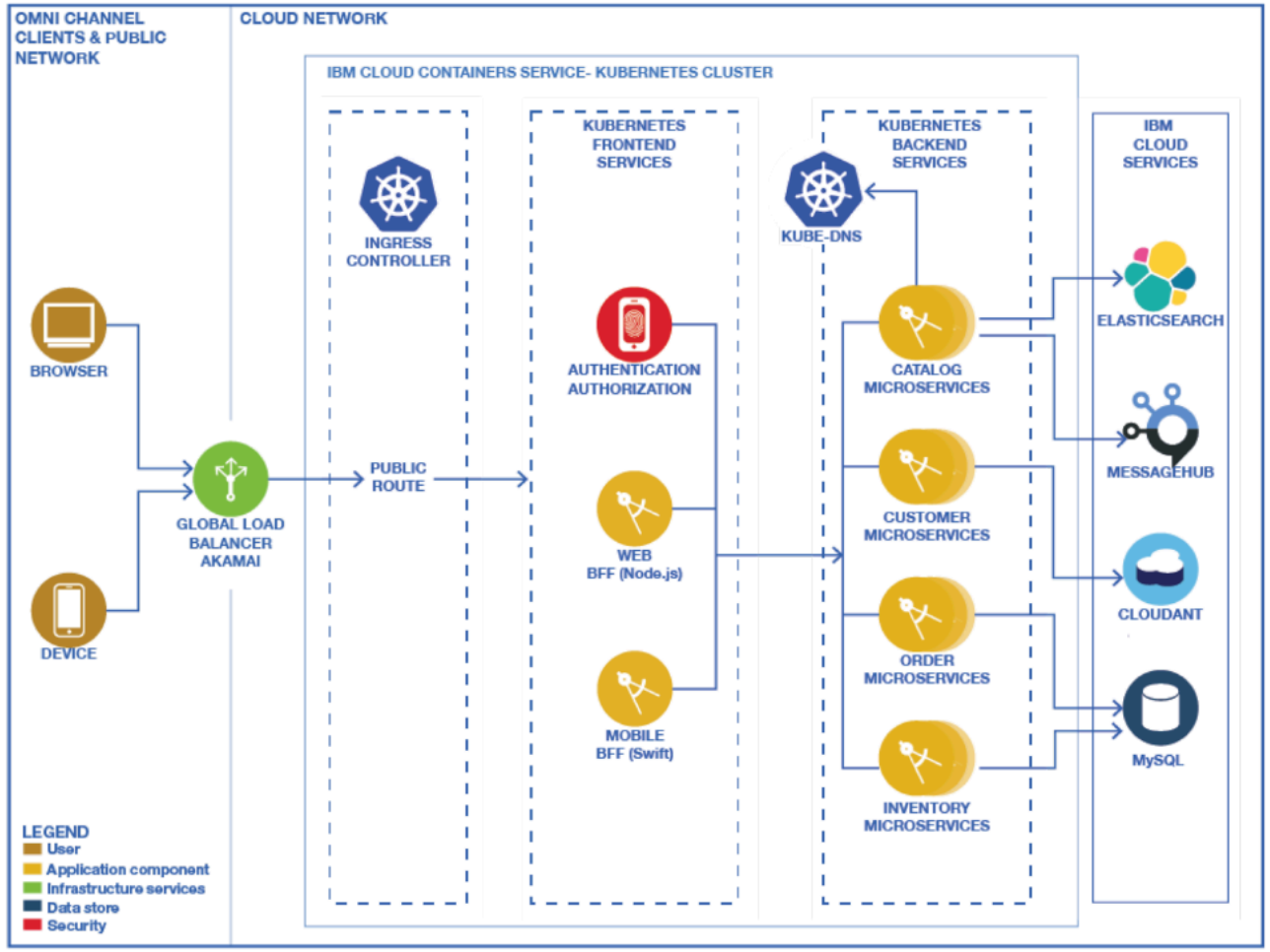
https://www.ibm.com/cloud/garage/tutorials/microservices-app-on-kubernetes/

Source: NGINX

Native Container Orchestration IBM Cloud Kubernetes Service (IKS)

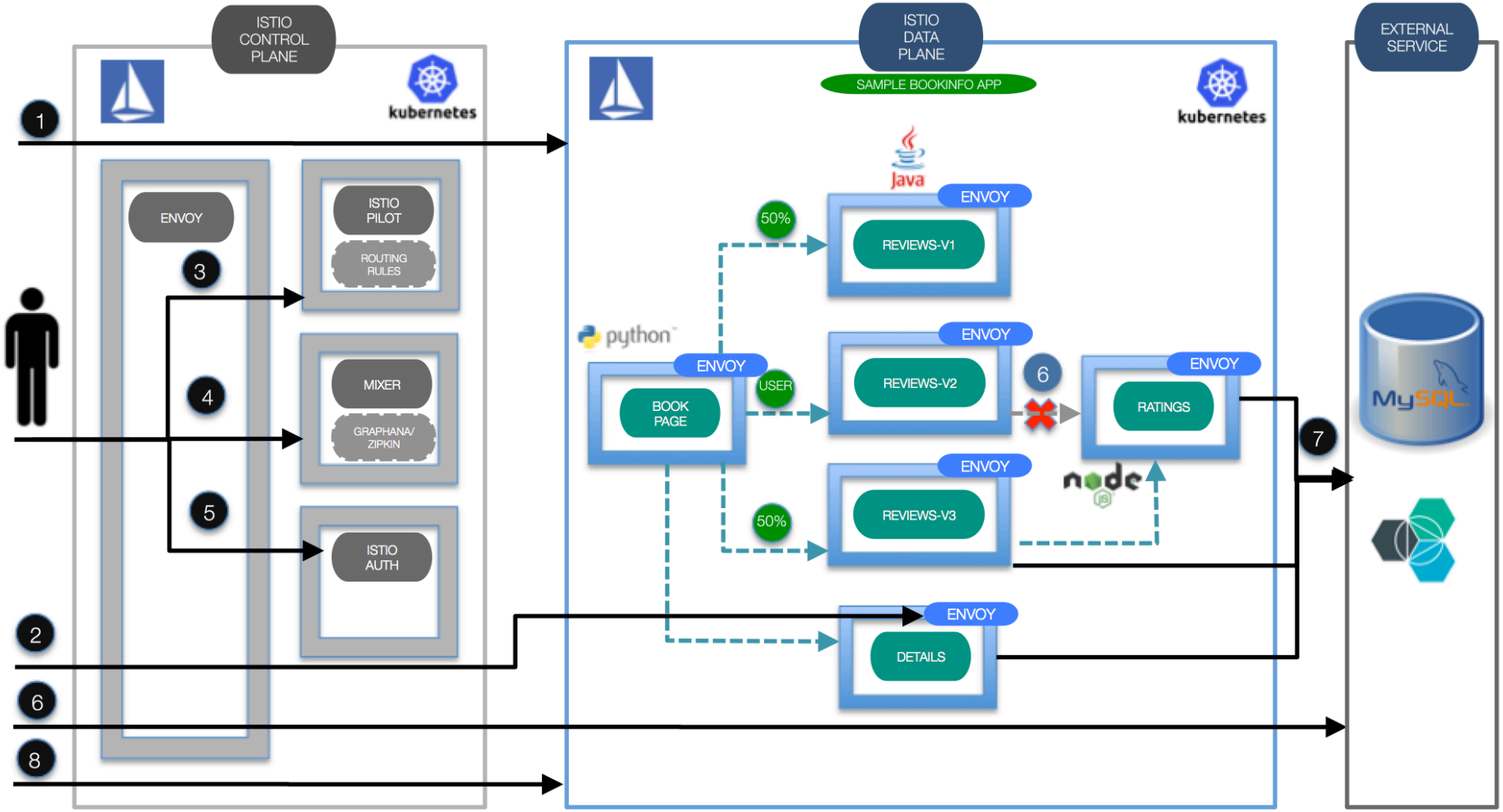
IBM Cloud Architecture Center

Microservices with Kubernetes



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

ServiceMesh with Istio



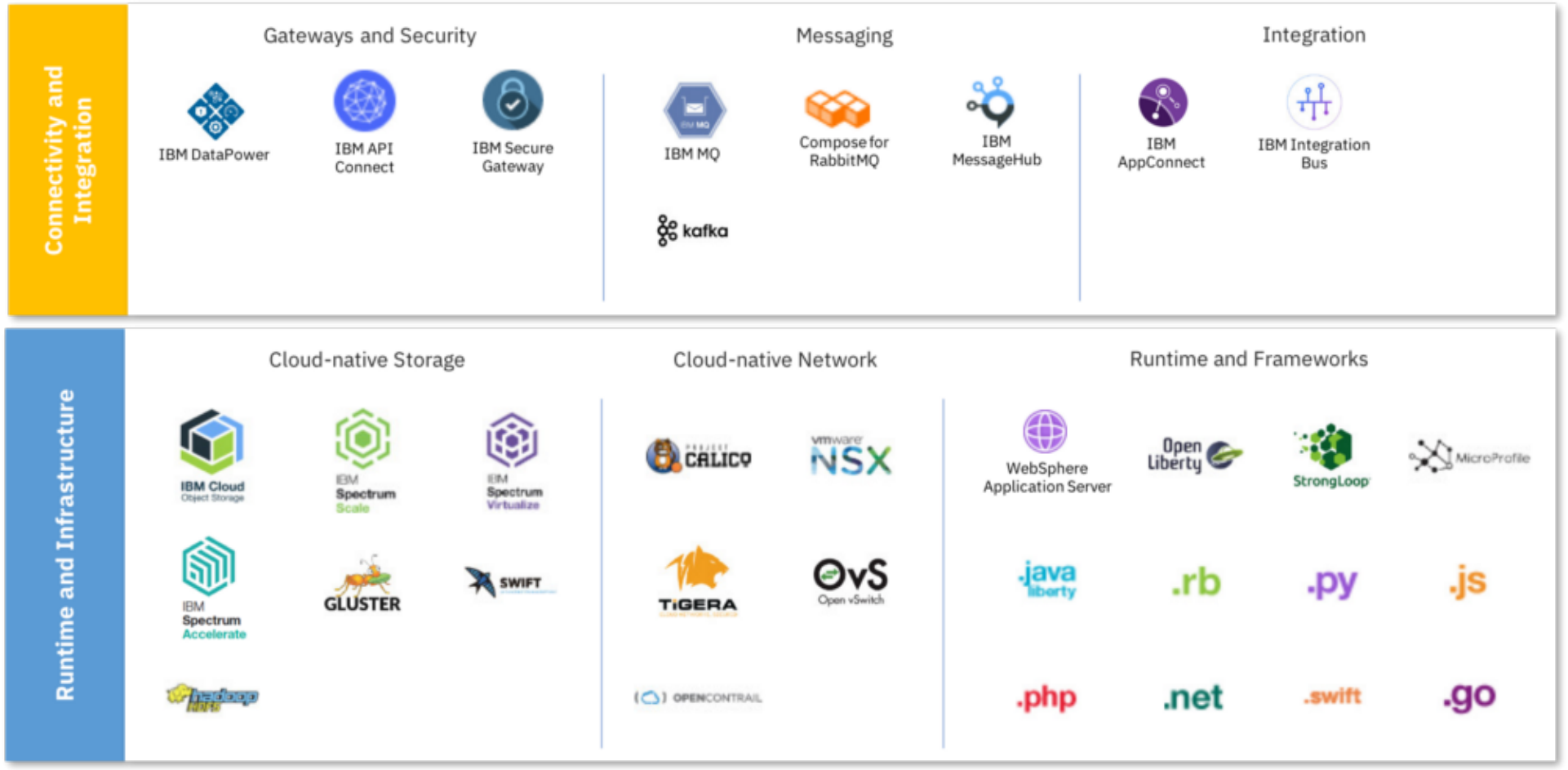
https://www.ibm.com/cloud/info/istio

IBM

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.

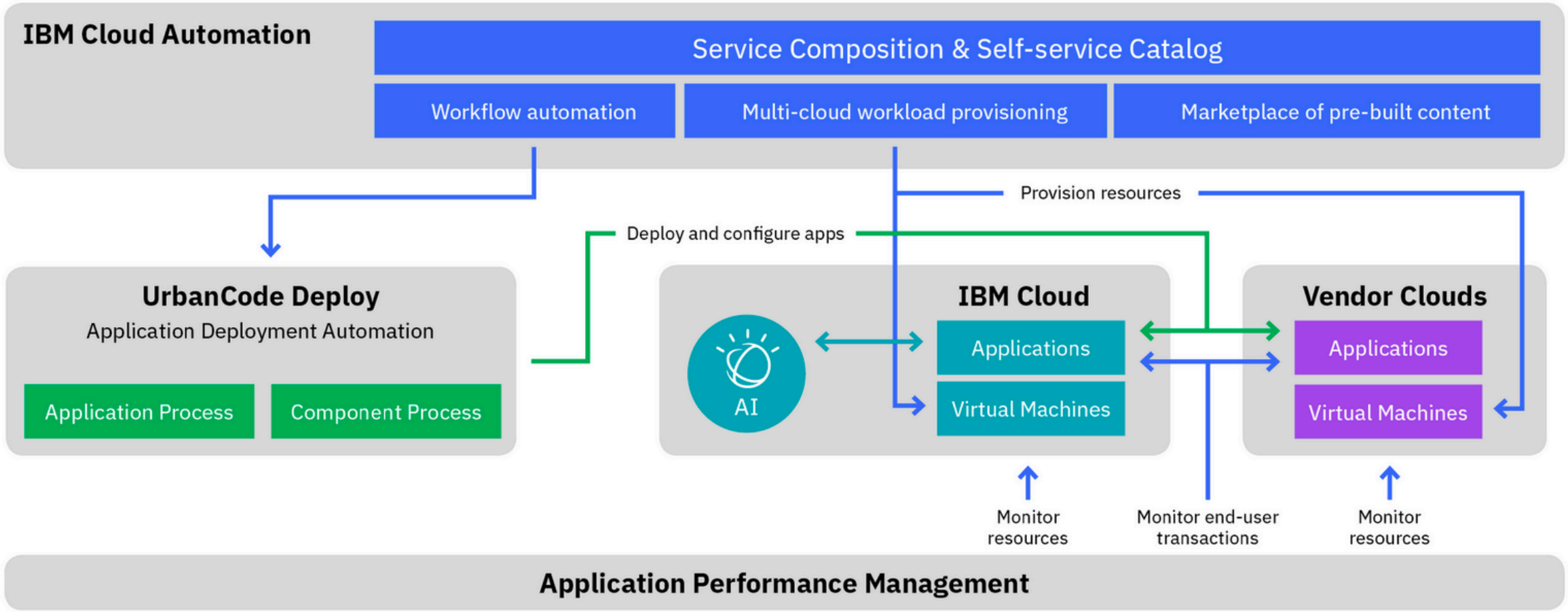
> "Twelve-factor is the methodology, and cloud native refers to a computing environment and its tools.

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

IBM

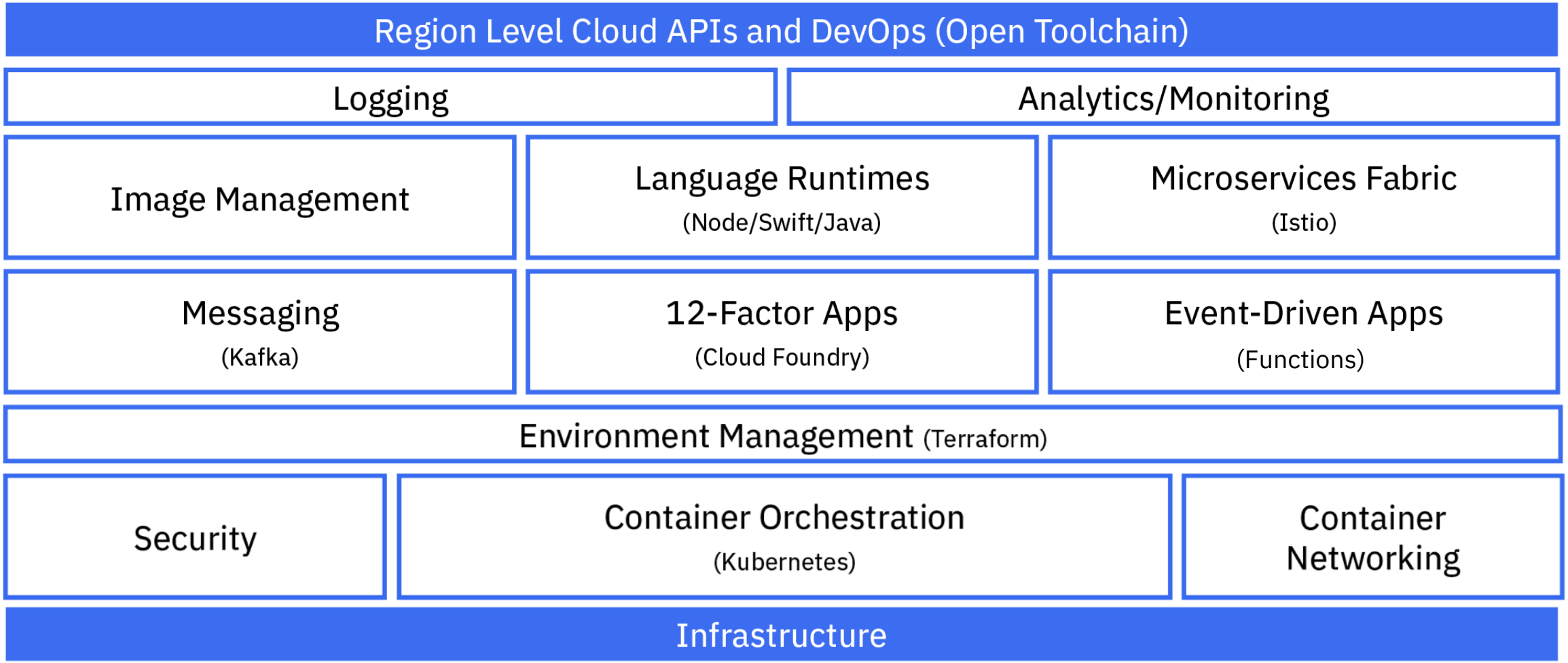
IBM provides tools to help clients manage multi-cloud environments

By 2020, over 90% of enterprises will use multiple cloud services and platforms[1]



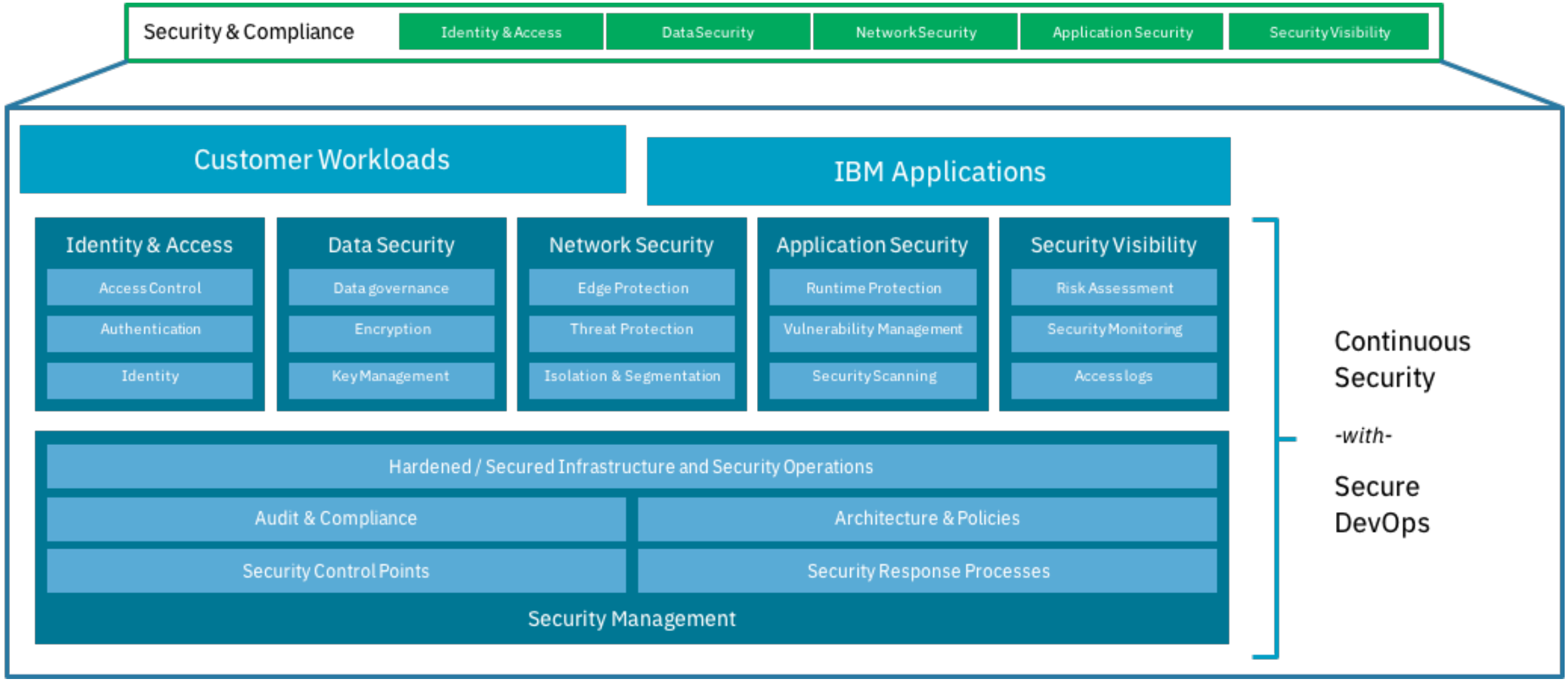
[1]IDC Futurescape, [Worldwide Cloud 2018 Predictions]

IBM Cloud – Public Cloud Runtimes & Platform Services



IBM

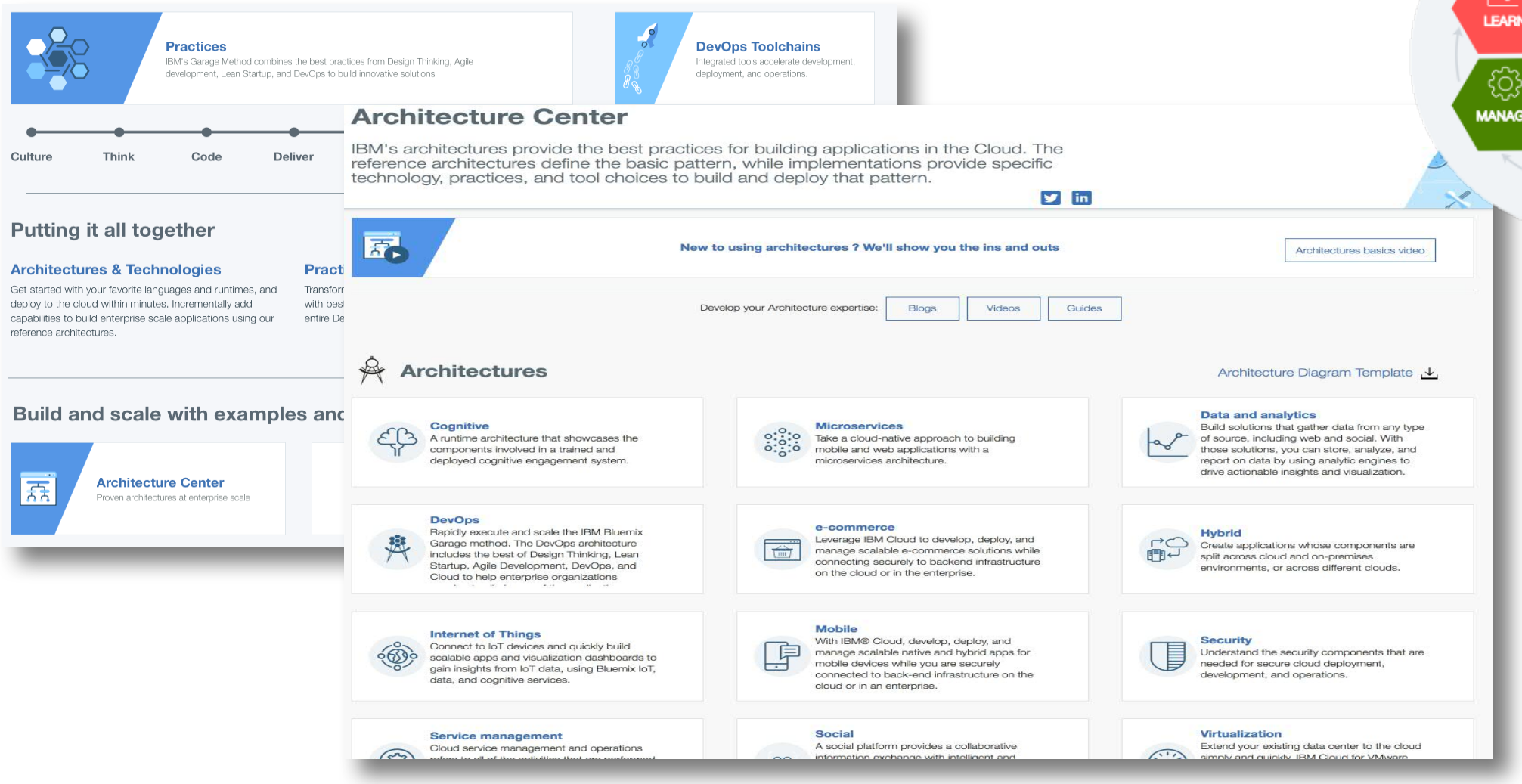
IBM Cloud Security and Compliance



ibm.biz/tutorials

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

IBM Cloud Architecture Center



https://developer.ibm.com/architecture

https://www.ibm.com/developerworks/

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