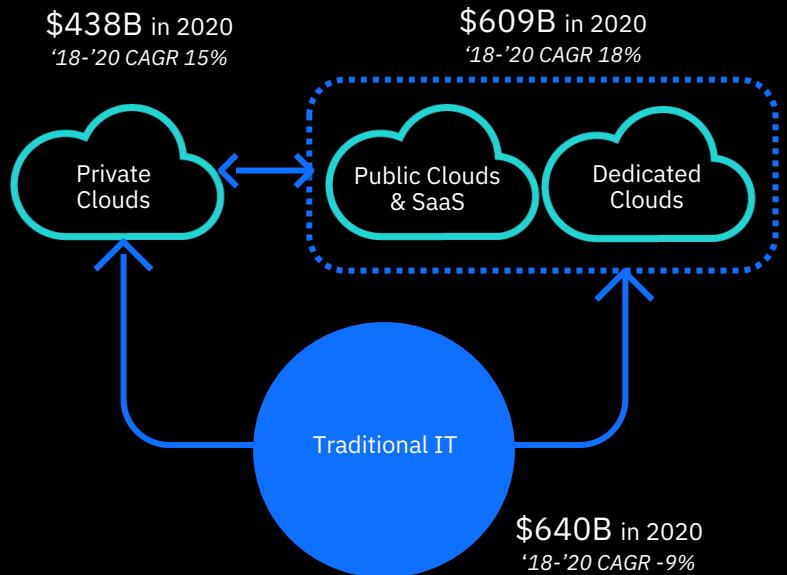


IBM Cloud Container Workshop

IBM Offerings



Today's hybrid multicloud reality presents new opportunities for clients, as well as new challenges



A real world look at multicloud

94%

of enterprise customers are using multiple cloud environments (public and/or private)

67%

of enterprise customers are using more than one public cloud provider (expected to remain constant or increase by 2022)



IBM provides a choice of cloud adoption models



Choice with consistency



Hybrid integration



DevOps productivity



Powerful, accessible data and analytics



Cognitive solutions



PUBLIC

Maximize on
cloud agility
and
economics



DEDICATED

Public cloud
benefits, with
dedicated
infrastructure



PRIVATE

Behind the
firewall for the
most demanding
workloads

Seamless Experience

Regardless of which combination you choose, you get a single, seamless experience.

Multi-cloud is the key to organizational agility

8 out of 10 committing to Multi-Cloud

71% use 3 or more clouds



Getting new value from
third parties



Extracting value from
your entire business

77%

of containers are managed
by Kubernetes

Organizations saved upwards of **70%**
on dev/test costs, **40%** on production
costs, while operating on **80%** fewer
servers



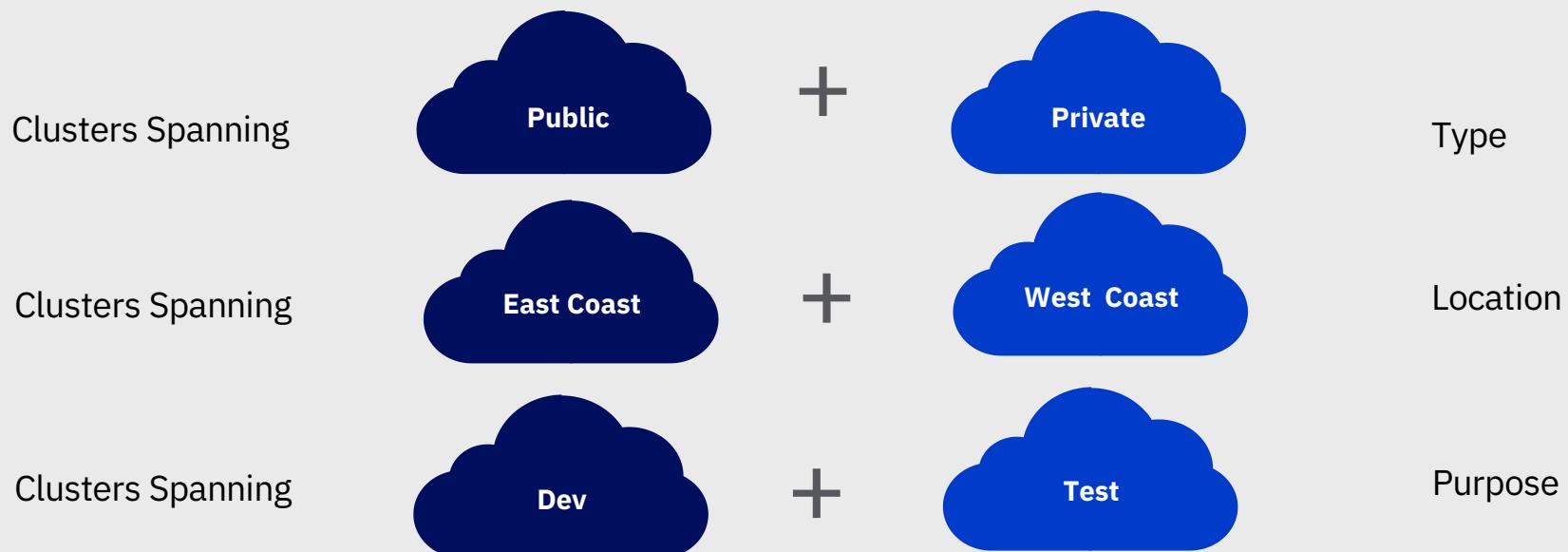


200%

Increase in Kubernetes adoption
since 2017

Organizations are deploying multiple clusters

9 out of 10 enterprises adopting Kubernetes have already deployed multiple clusters



Emphasis has been on simple migration and innovation...



IBM solutions based on Kubernetes



IBM Cloud Kubernetes Service

A **certified, managed Kubernetes service**

Built-in **security and isolation** to enable rapid delivery of apps.

Available in six IBM regions WW, including **40+ datacenters**.

Fully **dedicated, single tenant clusters** deployed within customer account and network

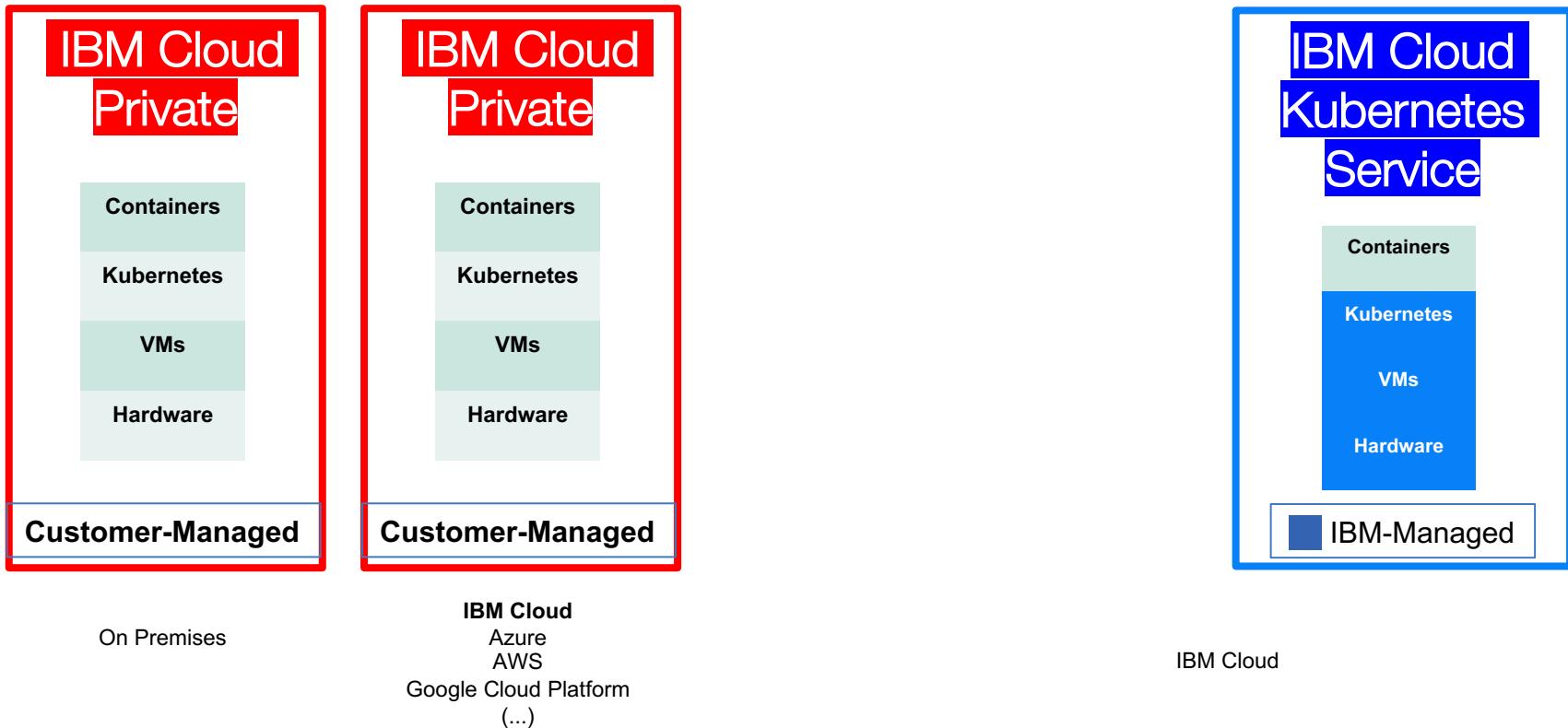
Seamless integration with IBM Cloud services

Portability with native Kubernetes experience and **full API support**

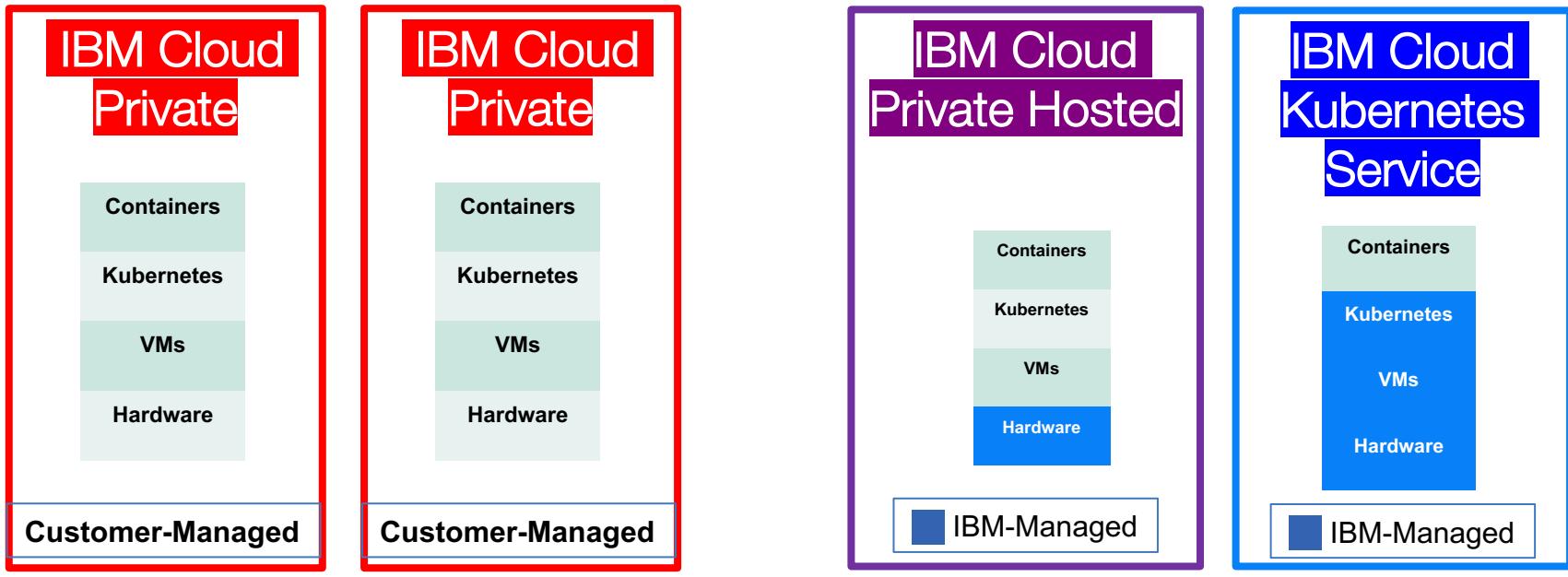


IBM Cloud
Kubernetes Service

IBM solutions based on Kubernetes



IBM solutions based on Kubernetes



On Premises

IBM Cloud
Azure
AWS
Google Cloud Platform
(...)

IBM Cloud

IBM Cloud Private Solution Overview



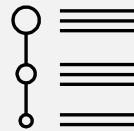
Enterprise Content Catalog

Open Source and IBM Middleware, Data, Analytics, and AI Software



Core Operational Services

Log Management, Monitoring, Metering, Security, Alerting



kubernetes

Kubernetes Container Orchestration Platform



Choose your infrastructure:



Power Systems



IBM Spectrum



IBM Z

vmware®

Strategic Value:

Reduced infrastructure, license, and maintenance costs

Self-service catalog

Agility, scalability, and elasticity

Self-healing

Enterprise security

No vendor lock-in



IBM Cloud Private Editions

Community

Platform

- Kubernetes (+ Helm)
- Core services
- Content catalog (Containers)

**Freely Available
in Docker Hub**

Cloud Native

Platform

- Kubernetes (+ Helm)
- Core services
- Content catalog (Containers)

Cloud Foundry (Optional)

IBM Enterprise Software

- Microclimate
- WebSphere Liberty
- IBM SDK for node.js
- Cloud Automation Manager

Enterprise

Platform

- Kubernetes (+Helm)
- Core services
- Content catalog (Containers)

Cloud Foundry (Optional)

IBM Enterprise Software

Cloud Native Edition, plus:

- + WAS ND
- + MQ Advanced
- + API Connect Professional

Enterprise Content Catalog



Toolchain & Runtimes

- IBM UrbanCode Deploy
- Microclimate
- Jenkins (open source)
- IBM WebSphere Liberty (MicroProfile, Web Profile, JEE Profile)
- Open Liberty (open source)
- Node.js runtime (open source)
- Swift runtime (open source)
- Reactive Platform (open source)
- Nginx (open source)
- IBM WAS for ICP VM Quickstarter Community ed.
- IBM WAS for ICP VM Quickstarter (Supported with ICP)

Integration

- IBM Integration Bus
- IBM Integration Bus for Developers
- IBM DataPower Gateway Virtual Edition
- IBM DataPower Gateway for Developers
- IBM API Connect Professional
- IBM API Connect Enterprise
- IBM AppConnect Enterprise Developer Edition
- IBM AppConnect Enterprise 11.0.0
- IBM Aspera CLI Client

App Modernization Tooling

- IBM Transformation Advisor

Multi-cloud Management

- IBM Cloud Automation Manager
- IBM Cloud Cost and Asset Management

Messaging

- IBM MQ Advanced 9.0 and 9.1
- IBM MQ Advanced for Developers
- Rabbit MQ (open source)
- IBM Event Streams for Developers (Based on Apache Kafka)
- IBM Event Streams (Based on Apache Kafka)

Digital Business Automation

- IBM Operational Decision Manager
- IBM Operational Decision Manager for Developers
- IBM FileNet Content Manager 5.5
- IBM Content Foundation 5.5

IoT

- IBM IoT MessageSite Developer Edition

Blockchain

- IBM Blockchain Platform Remote Peer Beta

Management

- IBM Netcool Operations Insight
- IBM Netcool - integration (Probe for ICP Services – Logging events & Monitoring alerts)
- IBM Netcool – integration with Omnibus
- IBM Cloud App Management 2018.2.0
- IBM Netcool - integration (Probe to manage ICP Events – Sold with IBM Netcool Insights product)
- IBM Cloud Event Management for IBM Cloud Private (free and commercially supported versions)
- IBM Operations Analytics Predictive Insights Mediation Pack (Manage ICP monitoring metrics – ILAN Licensed for discovery and try from catalog)
- IBM Operations Analytics Predictive Insights Mediation Pack (Sold with Predictive Insights product)
- IBM Workload Automation Agents for Developers
- IBM Workload Automation Agents

Enterprise Content Catalog (Continued)



Data Science and Analytics

IBM Data Science Experience Local
IBM Data Science Experience Developer Edition
IBM Watson Explorer Deep Analytics Edition
IBM Power AI
IBM Power AI Vision
IBM Power AI Enterprise (with Spectrum Conductor with Spark and Deep Learning Impact)

Watson

IBM Watson Compare & Comply: Element Classification
IBM Watson Speech to Text: Customer Care
IBM Watson Assistant for IBM Cloud Private

Mobile

IBM Mobile Foundation

Connectivity

IBM Voice Gateway Developer Trial
IBM Voice Gateway

Commerce and Customer Engagement

- IBM WebSphere Commerce Professional
- IBM WebSphere Commerce Enterprise

Data Services

IBM Db2 Advanced Enterprise Server Edition
IBM Db2 Direct Advanced Edition
IBM Data Server Manager
IBM Db2 Dev-C
IBM Data Server Manager (for Db2 Dev-C)
MongoDB (open source)
PostgreSQL (open source)
MariaDB (open source)
Galera clustering with MariaDB (open source)
Redis (open source)

HPC / HPDA

IBM Spectrum LSF Community Edition
IBM Spectrum Conductor with Spark Evaluation Ed.
IBM Spectrum Symphony Community Edition
IBM Spectrum Symphony Advanced Edition

Bring your own

Add your own charts locally or community repositories

Networking

F5 BIGIP Controller (open source)
Calico BGP-Peer (open source)
strongSwan IPSec VPN (open source)

Storage

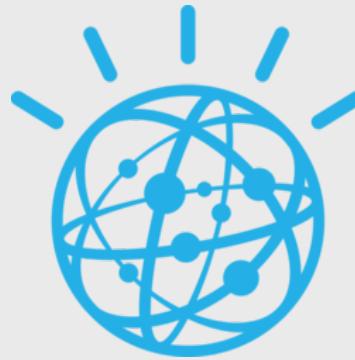
IBM PowerVC FlexVolume Driver (open source), (supported with PowerVC product)
GlusterFS Storage cluster with Heketi lifecycle management (open source)
Container Storage Interface (CSI) sample NFS driver (open source)
Rook Ceph Cluster (open source)
Minio object storage (open source)

Tooling

Web Terminal (open source)
Skydive – network analyzer (open source)

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Introducing Watson on IBM Cloud Private



AI for the enterprise, deployed on the infrastructure of your choice

Watson Speech to Text: Customer Care

Easily convert audio and voice into written text for quick understanding of content.

Watson Assistant for IBM Cloud Private

Build virtual assistants that can support a single user to supporting millions of conversations across your organization

Watson Compare and Comply: Element Classification

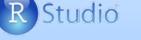
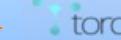
Apply semantic contract understanding and visual comparison techniques to streamline contract analysis

IBM AI on IBM Cloud Private for Data

Add-on AI Services

Watson Studio/ML <i>Data Science Premium</i> <i>Premium tools to design, build & deploy AI models</i>	 SPSS Modeler  Data Refinery  Model Builder  Decision Optimization  Watson Explorer  Streams Designer	Watson AI OpenScale ▪ Operational optimization services Watson Assistant ▪ Conversational AI services Watson Discovery ▪ Knowledge discovery AI services Watson APIs ▪ Interactive AI services (e.g., speech) AI Digital Automation ▪ AI-automated business processes
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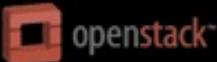
Foundational AI Services

 AI Services Open Source frameworks to build, train and deploy Machine Learning models powered by Watson Studio and Machine Learning	 TensorFlow  R Studio  python  Apache Zeppelin  ScalA  jupyter  Spark ML  torch  learn  ML	 Keras  Caffe  XGBoost <ul style="list-style-type: none">○ Data visualization○ Machine learning learning○ Model build & deploy○ Model management○ Dashboards & reporting
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Data Collection Services	Data Organization Services
IBM Cloud Private	



IBM Cloud

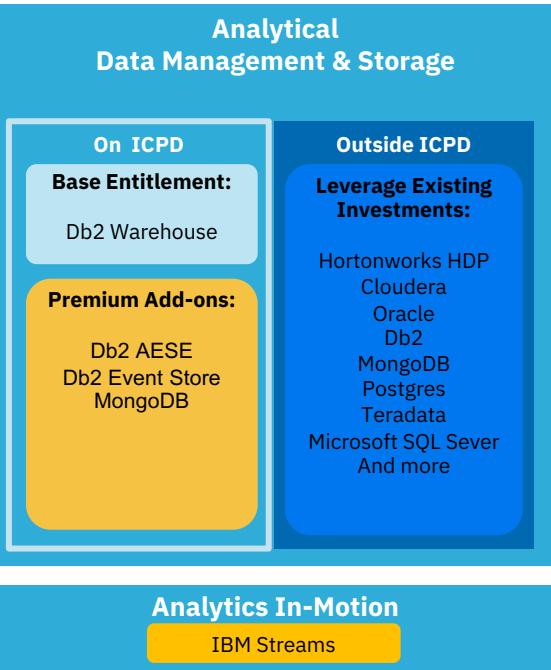
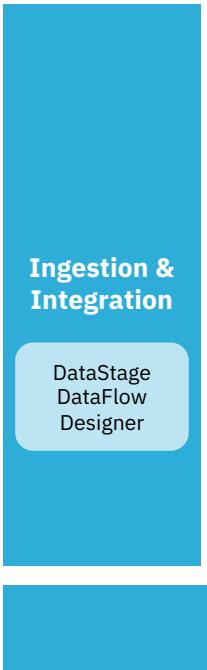
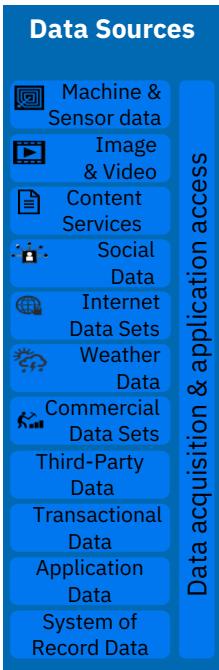


IBM Cloud Private for Data

IBM Cloud Private for Data (Base)

IBM Cloud Private for Data – Premium Add-ons

Customer Investments Outside ICPD



Business Glossary

Policies & Rules

Autodiscovery

Information Management & Governance

Governance Catalog

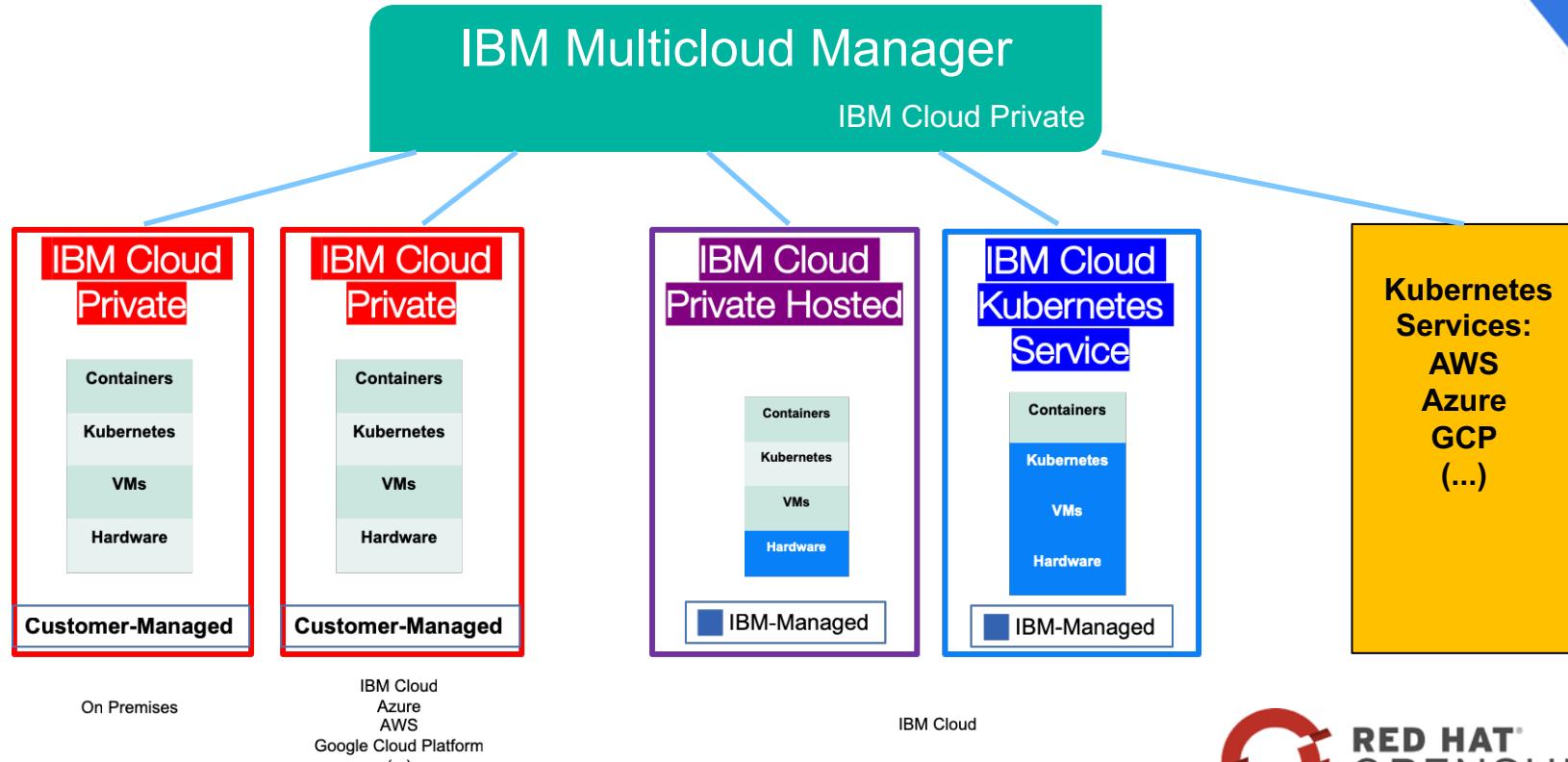
Industry Accelerators

OMRS

Security (pre-integrated stack, user roles, monitoring, industry certifications, etc.)

Pre-integrated Platform, Deploy Anywhere (private cloud, on-premises, AWS, OpenStack, OpenShift, etc.)

IBM Multicloud Manager (multi-cluster for now)



IBM Multicloud Manager (multi-cluster for now)

IBM Multicloud Manager

Overview

Cluster: nodes VCPU usage (CPU): ■ above (none) ■ average (8.31 - 7.19) ■ below (0.74)

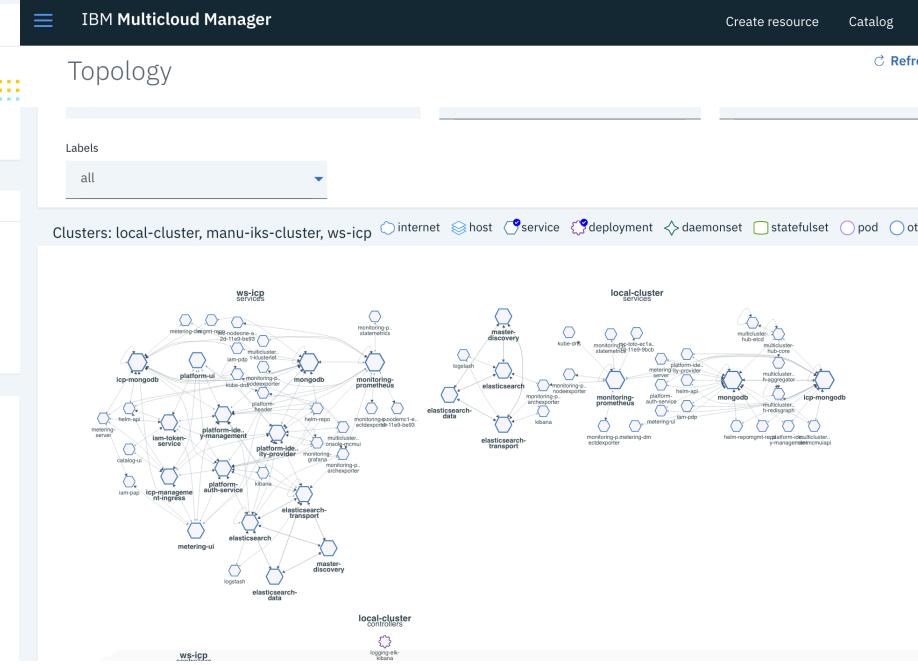
Refresh every 5s | Filter results 1:14:50 PM

Cluster compliance 3 Compliant 100% Non-compliant 0

Pods 214 Running 100% Pending 0 Failed 0

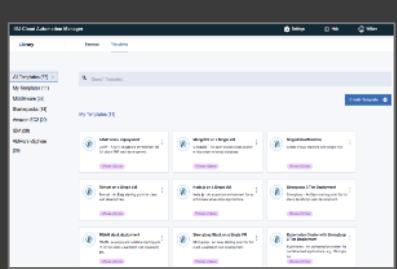
Cluster status 3 Ready 100% Offline 0

This screenshot shows the IBM Multicloud Manager's Overview dashboard. It displays three main metrics: Cluster compliance (3 compliant, 0 non-compliant), Pods (214 total, 100% running), and Cluster status (3 ready, 0 offline). A legend at the top indicates CPU usage levels: above (none) in red, average (8.31 - 7.19) in yellow, and below (0.74) in green. The interface includes a refresh button, a filter results dropdown, and a timestamp of 1:14:50 PM.



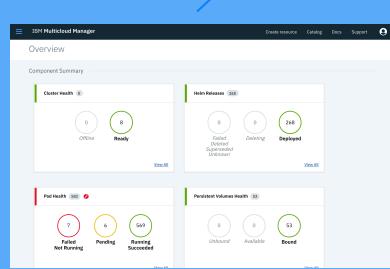
IBM capabilities for multicloud management

Manage **all** K8s clusters from a central control plane
Workload Placement and Policy management
Application centric operations

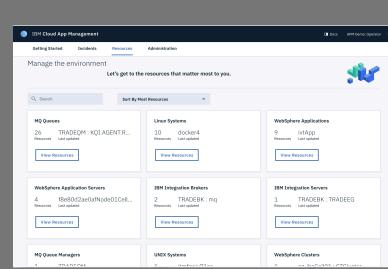


- Build and Provision
- Cloud Automation Manager

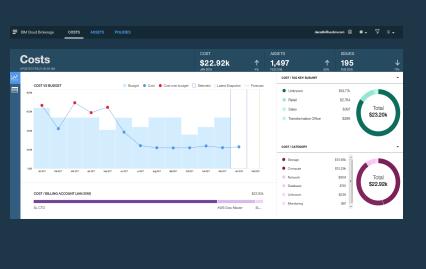
Declarative interface to cloud native APIs
based on open technology Terraform
“Infrastructure as Code”



- Kubernetes Management
- Multicloud Management



- Monitor and Manage
- Cloud App Management



- Govern and Optimize
- Cloud Cost and Asset Management

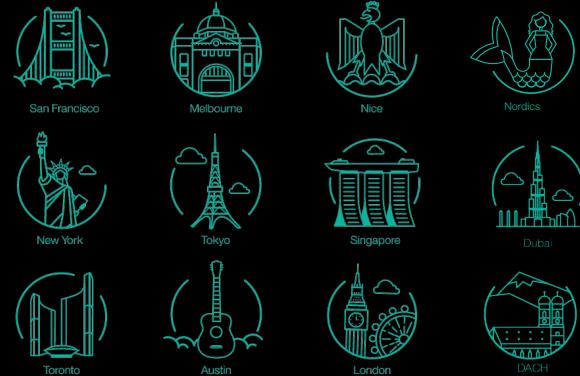
Including

- Netcool Operations Insight
- Application Performance Management
- Cloud Event Manager

IBM Cloud Garage

- Best Practices
- Prescriptive Guidance from Industry Experts
- Proven Methodology
- Reference Architectures

IBM Cloud Garage



Garage Method



IBM Cloud Labs

IBM Cloud Labs covers a broad spectrum of use cases helping you in each stage of your Cloud Adoption Journey

THINK

Architect

Define your Private Cloud solution or use cases

- Delivered as **Architectural consultancy**
- Identify requirements and architect solutions on IBM Cloud Private - App, Integration, and Platform architectures

Business value

- Define Kubernetes based architecture
- Lay a strong foundation for your cloud adoption journey

TRANSFORM

Integrate & Manage

Deploy and Manage your Private Cloud

- Delivered as **Solution Initiation Workshop(s)**
- **ICP Ops Readiness** to ensure Operations teams are ready to manage this solution
- **IBM Hybrid Cloud Admin Bootcamp** to enable the Ops teams

Business value

- Ready to use Private Cloud
- Transform operations, roles, processes and skills for cloud
- Manage the cloud instance using in-house skills

TRANSFORM

Develop

Build on cloud using the IBM Cloud Garage Method

- Get introduced to our approach to innovation
- Participate in **IBM Design Thinking workshop** to identify the ‘low-risk, high-value’ solutions possible
- Build and deploy a cloud-native as a **Minimum Viable Product.**

Business value

- Validate hypothesis with user base
- Transform skills and apps to cloud-native
- Get your developers enabled on the IBM Cloud Garage Method

THRIVE

Modernize

Update middleware and monolith applications

- Use the **Application Modernization offerings** to :
 - plan and classify candidates
 - **move, refactor, or integrate** requires **deep skills** and **experience**.

Business value

- Align your business priorities
- Take inventory of your applications
- Spend your modernization dollars wisely
- Build Transformation velocity

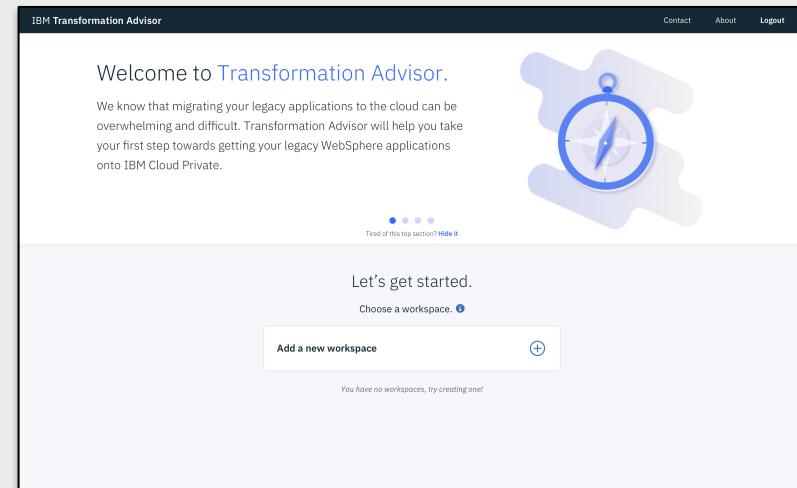


Transformation Advisor

Transformation Advisor is a tool that **consumes information about your J2EE Applications**.

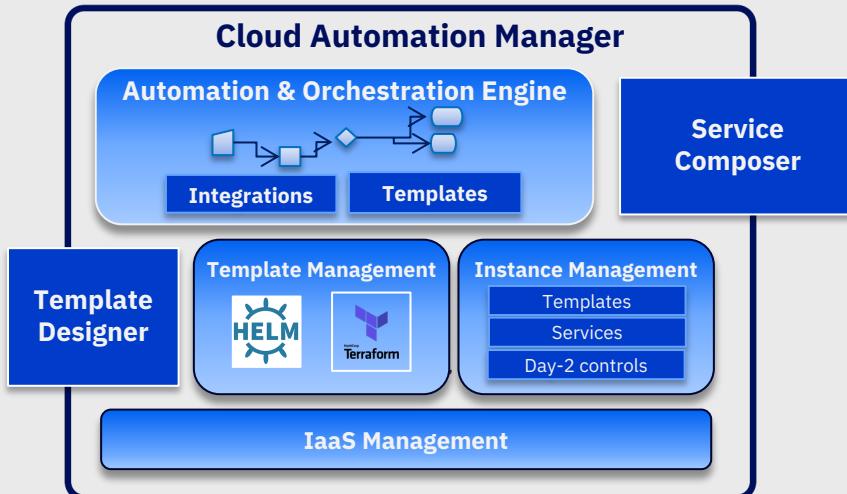
These inputs are combined with rules and insights gained from years of working with WebSphere and WebSphere applications to provide recommendations for your cloud journey.

- Included and deployed on IBM Cloud Private
- Analyses your J2EE Applications for cloud readiness
- Provides recommendations for lift and shift to containers and cloud
- Automates containerization of applications



IBM Cloud Automation Manager

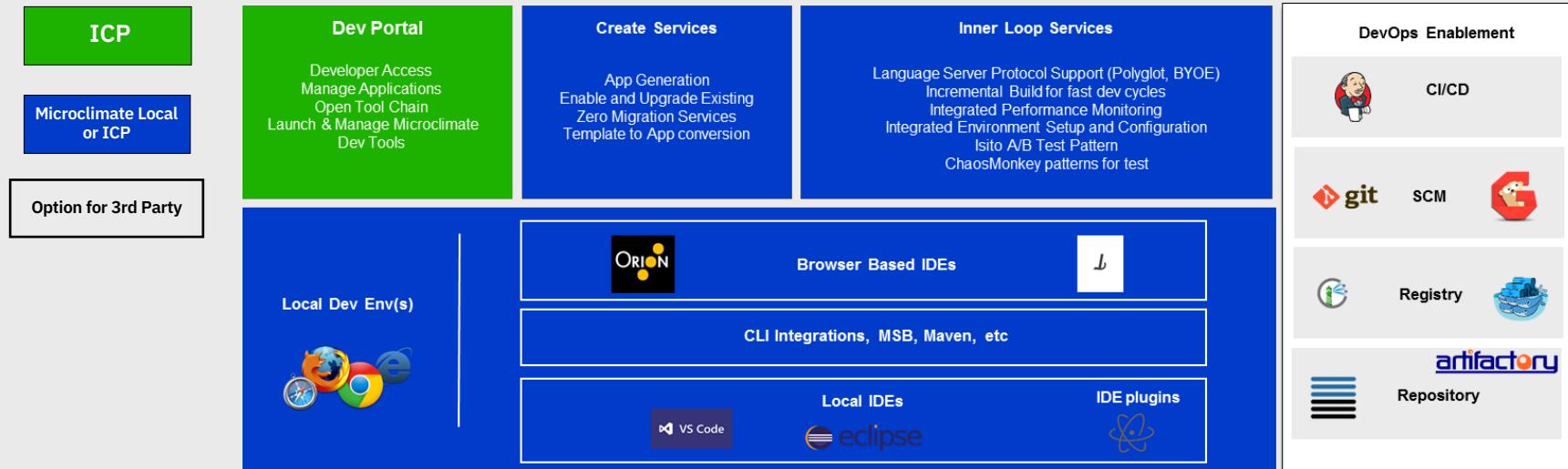
IBM Cloud Automation Manager is the anchor tenant of a modern cloud management solution architected to deliver application environments from idea into production with ***efficiency, speed, and predictability***



- Manage infrastructure as code consistently in all clouds to reduce errors and improve predictability
- Unified automation process that works consistently across all cloud environments: IBM, AWS, Google, Microsoft
- Standardize automation of cloud infrastructure and application stacks with a common automation framework

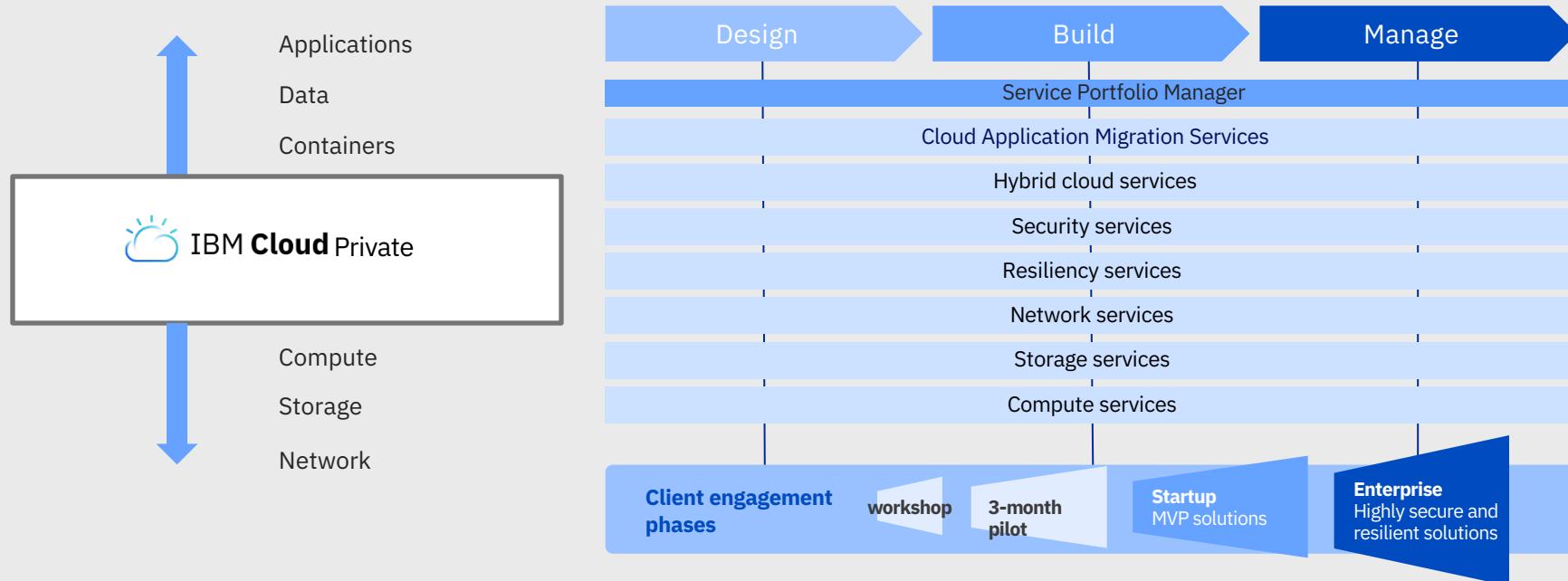
IBM Microclimate

Microclimate is an **end to end development environment that lets you rapidly create, edit, and deploy applications**. Applications are run in **containers** from day one and can be delivered into production on **Kubernetes** through an automated DevOps pipeline using **Jenkins**. Microclimate can be installed locally or on **IBM Cloud Private**.



IBM Services for Private Cloud (GTS)

End-to-end solutions for security-rich and resilient private cloud production infrastructure and workloads



For more information see <https://www.ibm.com/us-en/marketplace/services-for-private-cloud>