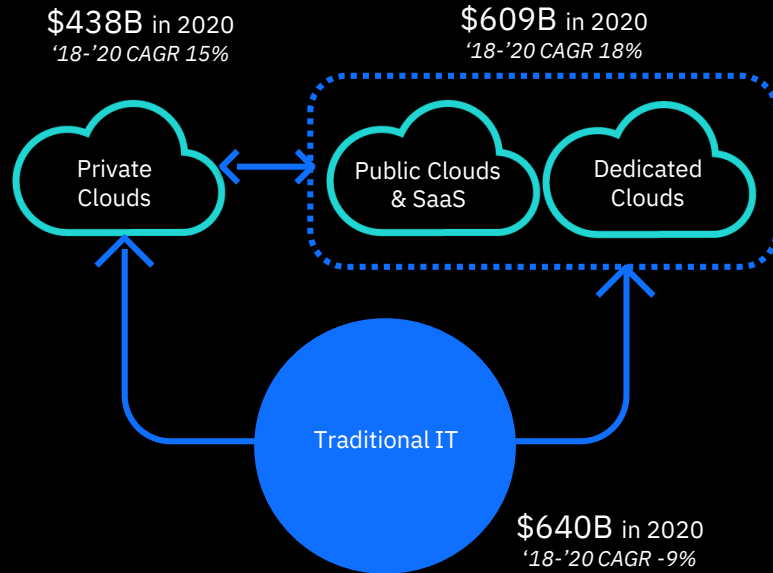IBM Cloud
Container Workshop

IBM Offerings

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

$438B in 2020
'18-'20 CAGR 15%

$609B in 2020
'18-'20 CAGR 18%

Private Clouds

Public Clouds & SaaS

Dedicated Clouds

Traditional IT

$640B in 2020
'18-'20 CAGR -9%

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)

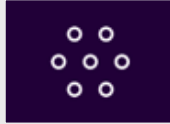| ✈ | **Movement between clouds** | 73% priority concern | ☁☁ | **Connectivity between clouds** | 82% priority concern | 🔍 | **Consistency of management** | 67% priority concern |

IBM provides a choice of cloud adoption models

Choice with consistency

Hybrid integration

DevOps productivity

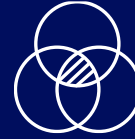**Powerful, accessible data and analytics**

Cognitive solutions

PUBLIC
Maximize on cloud agility and economics

DEDICATED
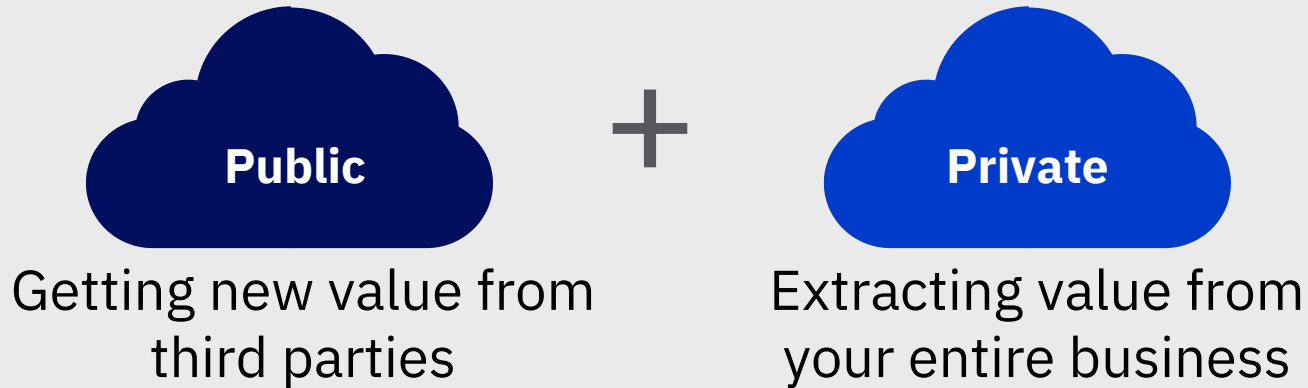Public cloud benefits, with dedicated infrastructure

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

Public

+

Private

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
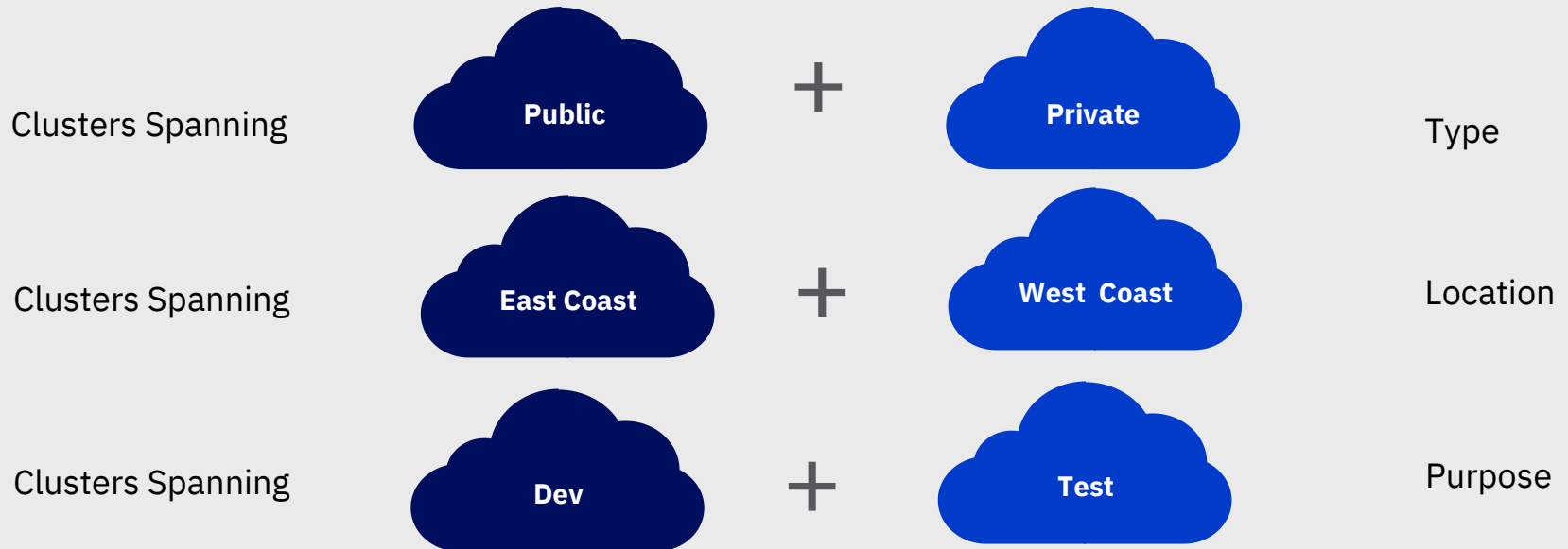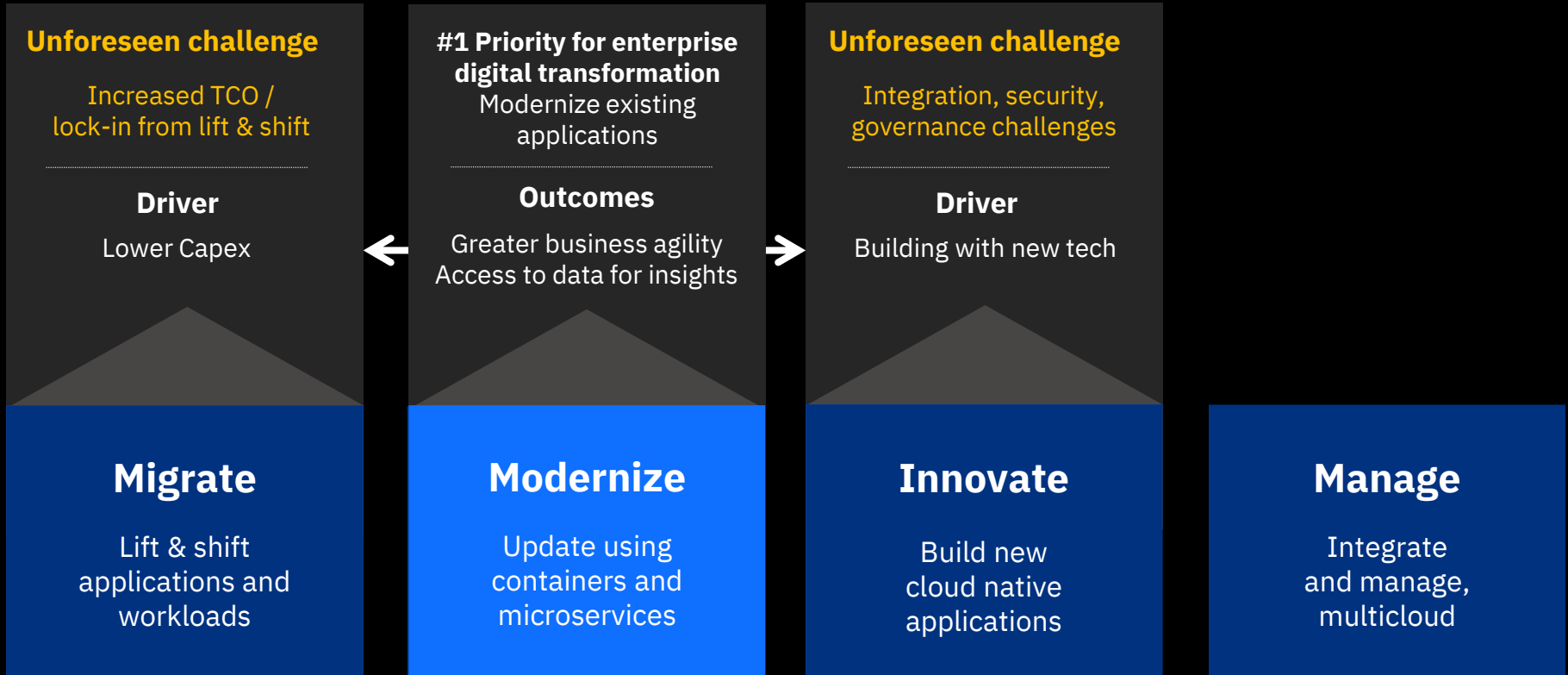
200%

Increase in Kubernetes adoption since 2017

Organizations are deploying multiple clusters

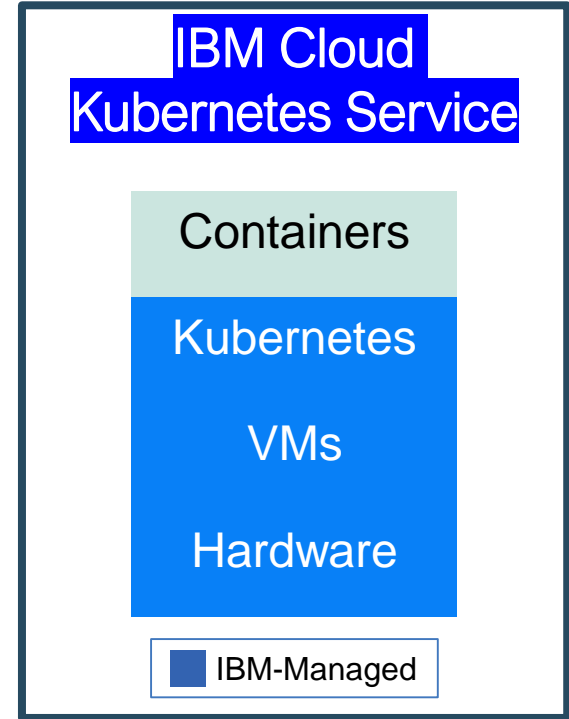9 out of 10 enterprises adopting Kubernetes have already deployed multiple clusters

Clusters Spanning   **Public** + **Private**   Type

Clusters Spanning   **East Coast** + **West Coast**   Location

Clusters Spanning   **Dev** + **Test**   Purpose

Emphasis has been on simple migration and innovation...

Unforeseen challenge

Increased TCO /
lock-in from lift & shift

Driver

Lower Capex

#1 Priority for enterprise digital transformation
Modernize existing applications

Outcomes

Greater business agility
Access to data for insights

Unforeseen challenge

Integration, security,
governance challenges

Driver

Building with new tech

Migrate

Lift & shift
applications and
workloads

Modernize

Update using
containers and
microservices

Innovate

Build new
cloud native
applications

Manage

Integrate
and manage,
multicloud

IBM solutions based on Kubernetes

IBM Cloud Private

| Containers |
| Kubernetes |
| VMs |
| Hardware |

Customer-Managed

IBM Cloud Kubernetes Service

| Containers |
| Kubernetes |
| VMs |
| Hardware |

IBM-Managed

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
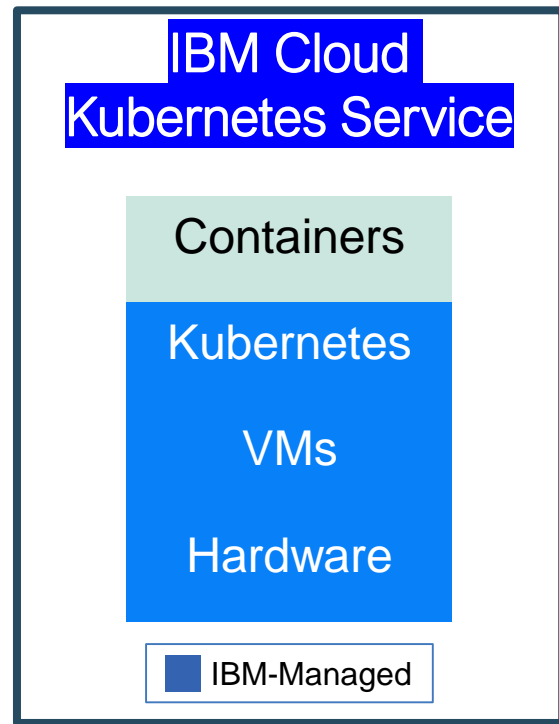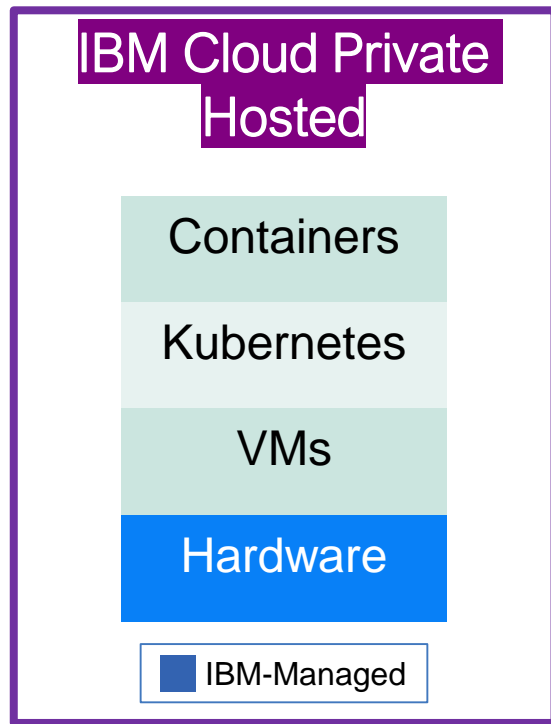
Seamless integration with IBM Cloud services

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

**IBM Cloud
Kubernetes Service**

IBM solutions based on Kubernetes

IBM Cloud Private

| Containers |
| Kubernetes |
| VMs |
| Hardware |

Customer-Managed

IBM Cloud Private Hosted

| Containers |
| Kubernetes |
| VMs |
| Hardware |

■ IBM-Managed

IBM Cloud Kubernetes Service

| Containers |
| Kubernetes |
| VMs |
| Hardware |

■ IBM-Managed
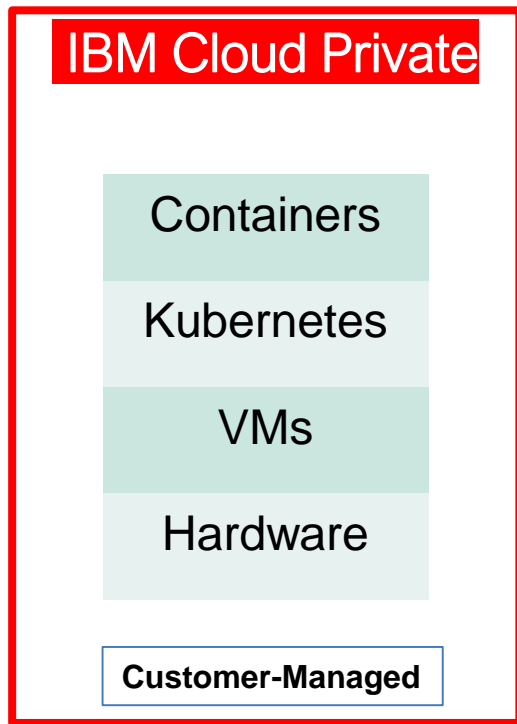
IBM Cloud Private Hosted

IBM Cloud Private Hosted
Customer manages everything from VMWare up to the containers and applications, enabling:
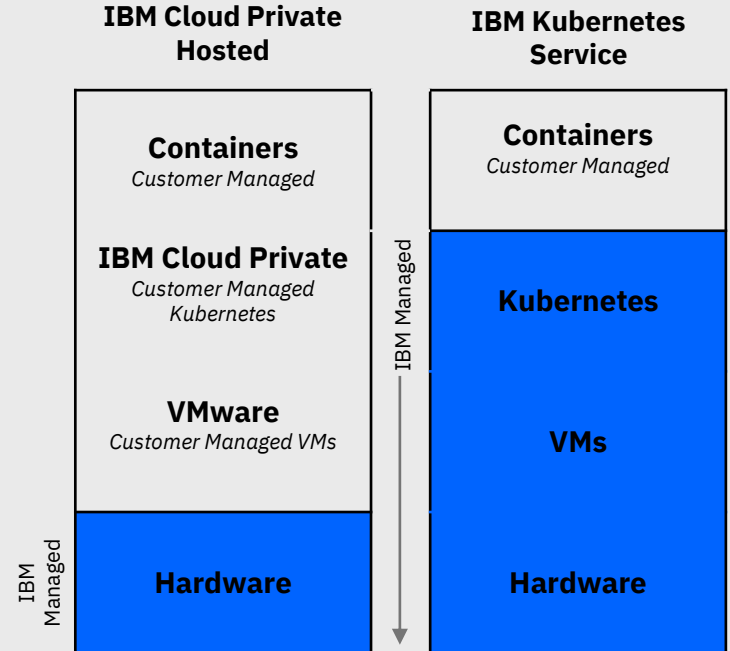
- Control over the full environment lifecycle

- Consistency with ICP and VMWare on-prem

- BYOL of PVU-based entitlements

IBM Kubernetes Service
Customer manages *JUST* the containers; everything below the container level is managed by IBM enabling

- IBM handles most of the environment lifecycle; customer just worries about the containers

- No worrying about set up, installation, patches or configuration of the environment

IBM Cloud Private Hosted

Containers *Customer Managed*
IBM Cloud Private *Customer Managed Kubernetes*
VMware *Customer Managed VMs*
Hardware

IBM Managed (left vertical label)

IBM Kubernetes Service

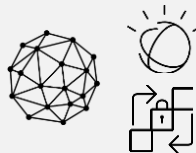| |
|---|
| **Containers** *Customer Managed* |
| **Kubernetes** |
| **VMs** |
| **Hardware** |

IBM Managed (right vertical label)
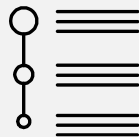
IBM Cloud Private Solution Overview

Enterprise Content Catalog
Open Source and IBM Middleware, Data, Analytics, and AI Software

Core Operational Services
Log Management, Monitoring, Metering, Security, Alerting

Kubernetes Container Orchestration Platform

kubernetes

docker

Choose your infrastructure:

Power Systems

openstack

IBM Spectrum

amazon web services

AZURE

RED HAT OPENSHIFT

IBM Z

intel

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

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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)
PostreSQL (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
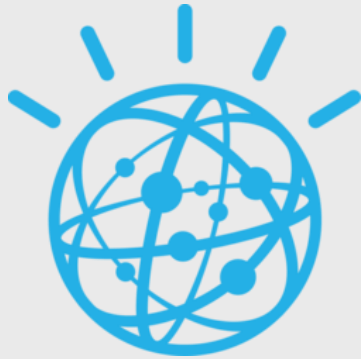
AI for the enterprise, deployed on the infrastructure of your choice

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

Delivering Insight Applications

Test

Development

ML Model Deployment

Model building

Refining Data

Continuous Delivery of Applications

Continuous Delivery of Insights

App Deployment

New Requirements & Engagement

Monitoring Retraining

Acquiring Data/ Self Service

Data

Hadoop

EDW

NO SQL

Virtual Data Lake

Search for Data

Multi-Cloud

Microservices & APIs

Governance
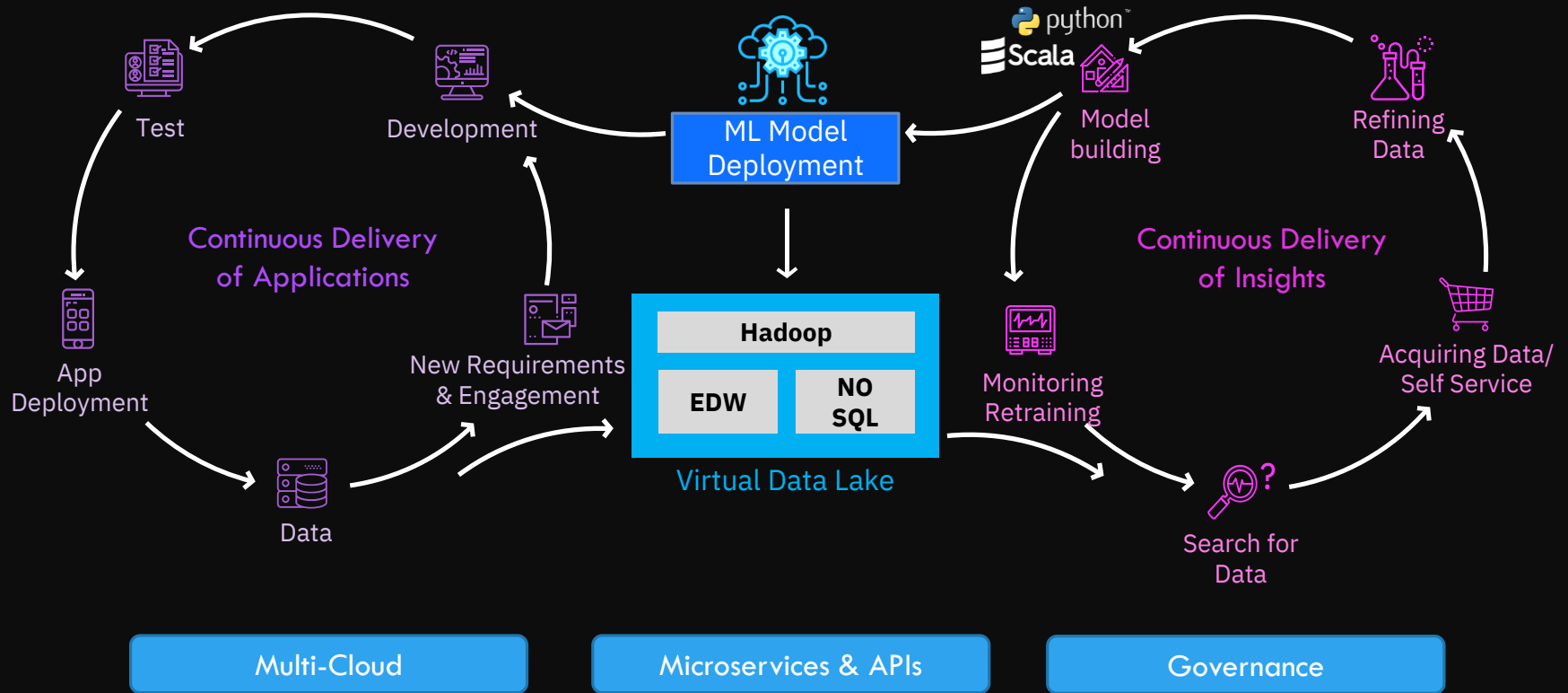
IBM AI Portfolio

Everything you need for Enterprise AI, on any cloud

The Ladder to AI

Interact with Pre-built AI Services
Watson Application Services

Build	Deploy	Catalog	Manage
Watson Studio	**Watson Machine Learning**	**Watson Knowledge Catalog**	**Watson AI OpenScale**

OS AI Open Source Frameworks

Unify on a Multicloud Data Platform
IBM Cloud Private for Data
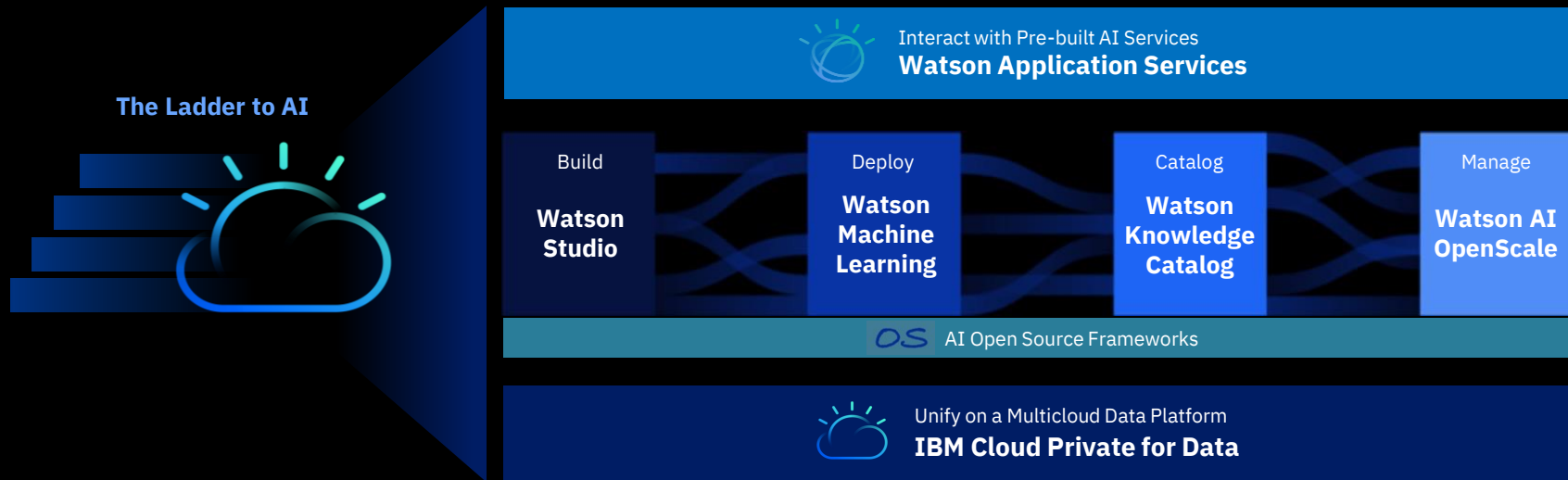
IBM AI on IBM Cloud Private for Data

Add-on AI Services

Watson Studio/ML
Data Science Premium

Premium tools to design, build & deploy AI models

- 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*

Foundational AI Services

AI Services
Open Source frameworks to build, train and deploy Machine Learning models powered by **Watson Studio** and **Machine Learning**

TensorFlow · Keras · Caffe · XGBoost · R Studio · Jupyter · Apache Zeppelin · SCALA · learn · python · Spark ML · torch · ML

- Data visualization
- Machine learning learning
- Model build & deploy
- Model management
- Dashboards & reporting

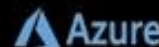| *Data Collection Services*	*Data Organization Services*

IBM Cloud Private

IBM Cloud · RED HAT OPENSHIFT · openstack · amazon web services · Azure

IBM Cloud Private for Data

Data Sources

Data acquisition & application access

- Machine & Sensor data
- Image & Video
- Content Services
- Social Data
- Internet Data Sets
- Weather Data
- Commercial Data Sets
- Third-Party Data
- Transactional Data
- Application Data
- System of Record Data

Ingestion & Integration

DataStage DataFlow Designer

Analytical Data Management & Storage

On ICPD

Base Entitlement:

Db2 Warehouse

Premium Add-ons:

Db2 AESE
Db2 Event Store
MongoDB

Outside ICPD

Leverage Existing Investments:

Hortonworks HDP
Cloudera
Oracle
Db2
MongoDB
Postgres
Teradata
Microsoft SQL Sever
And more

Analytics In-Motion

IBM Streams

Data Access

Data Virtualization

Discovery & Exploration

- Enterprise Search
- Data Catalog
- Data Refinery

Actionable Insight

- Cognos Dashboards
- Watson Studio Local (Open source components)
- Data Science (SPSS Modeler, Decision Optimization, WEX, etc)
- AI OpenScale
- Watson Services
- Cognos Analytics

Enhanced Applications

- Customer Insights
- New Business Models
- Planning & Analysis
- Compliance & Fraud
- Security
- Operations

Information Management & Governance

- Business Glossary
- Policies & Rules
- Autodiscovery
- 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.)

Proven Solutions to Accelerate Modernization
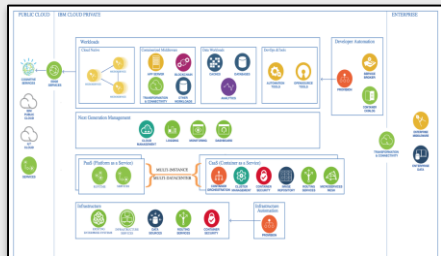
IBM Cloud Garage

Best Practices

Reference Architectures

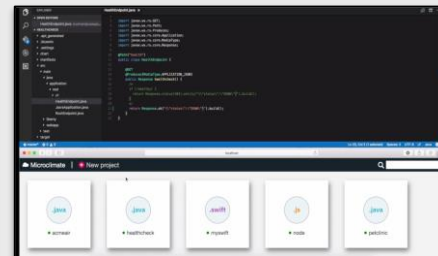**Transformation Advisor**

Assess and Plan

Prescriptive Guidance
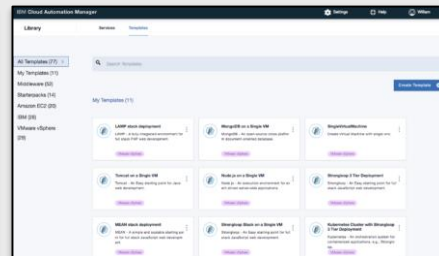
Cloud Automation Manager

Multi-Cloud Provisioning and management

Microclimate

End-to-End Development Experience

IBM Cloud Garage

- Best Practices

- Prescriptive Guidance from Industry Experts

- Proven Methodology
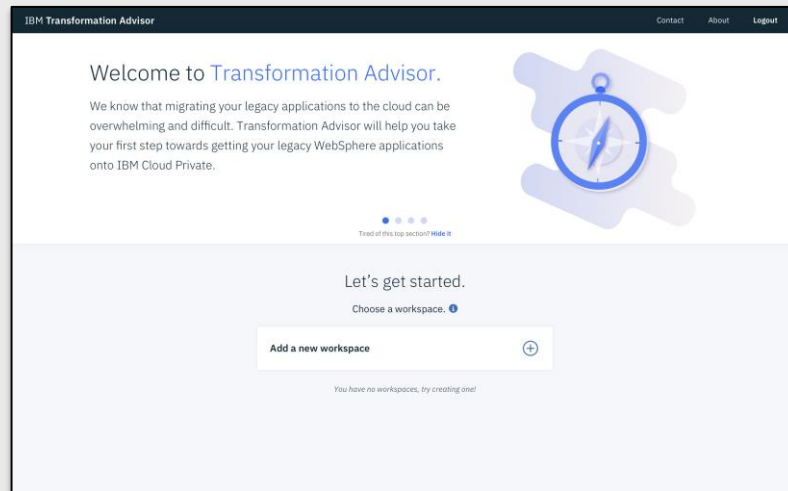
- Reference Architectures

IBM Cloud Garage

San Francisco   Melbourne   Nice   Nordics

New York   Tokyo   Singapore   Dubai

Toronto   Austin   London   DACH

Garage Method

THINK

LEARN   CODE

CULTURE

MANAGE   DELIVER

RUN

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 Transformation Advisor

Contact   About   **Logout**

Welcome to Transformation Advisor.

We know that migrating your legacy applications to the cloud can be overwhelming and difficult. Transformation Advisor will help you take your first step towards getting your legacy WebSphere applications onto IBM Cloud Private.

Tired of this top section? Hide it

Let's get started.

Choose a workspace. ⓘ

Add a new workspace   ⊕

You have no workspaces, try creating one!
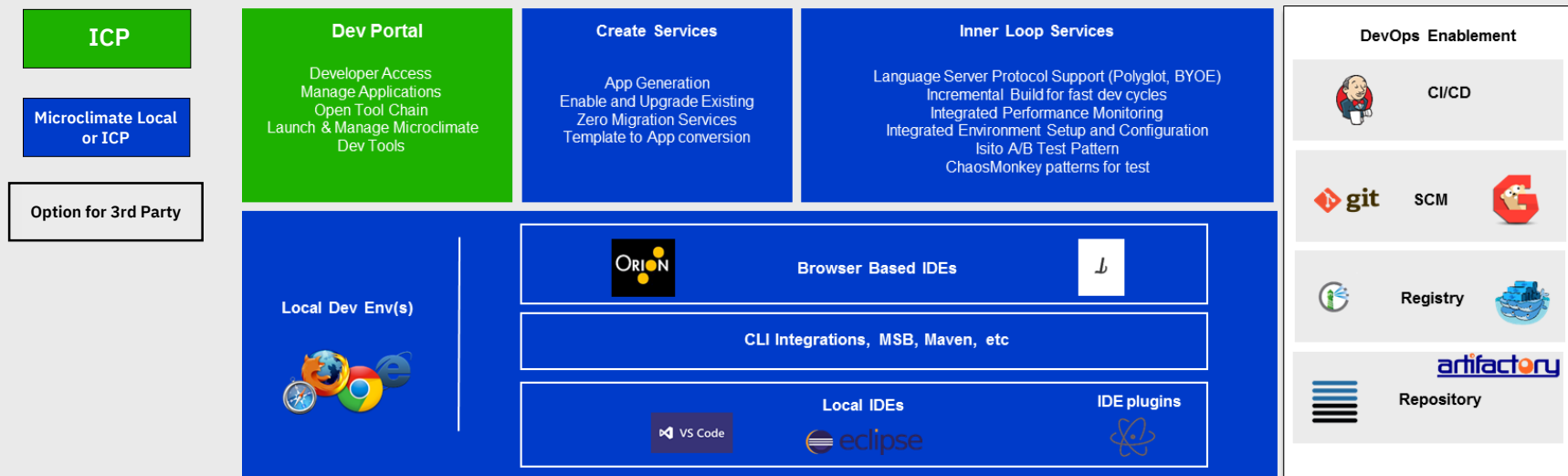
IBM Cloud Automation Manager

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*
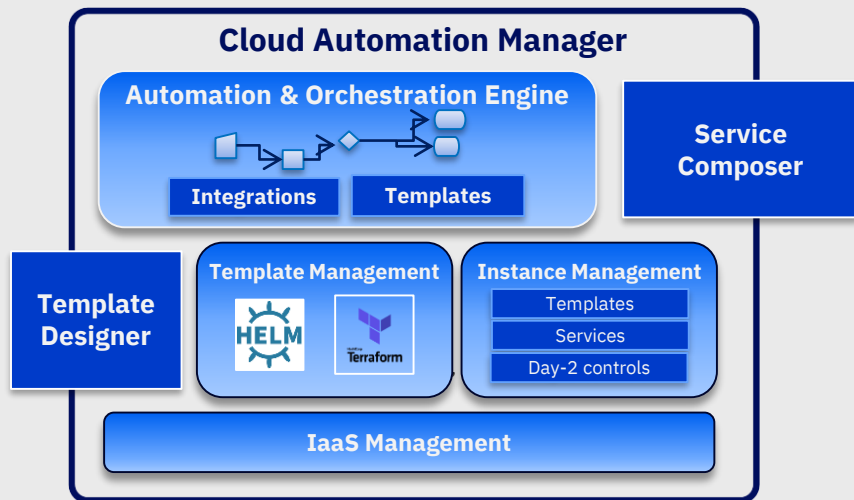
- Manage infrastructure as code consistently in all clouds to reduce errors and improve predictability

- 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.**

ICP

Microclimate Local or ICP

Option for 3rd Party

Dev Portal

Developer Access
Manage Applications
Open Tool Chain
Launch & Manage Microclimate
Dev Tools

Create Services

App Generation
Enable and Upgrade Existing
Zero Migration Services
Template to App conversion

Inner Loop Services

Language Server Protocol Support (Polyglot, BYOE)
Incremental Build for fast dev cycles
Integrated Performance Monitoring
Integrated Environment Setup and Configuration
Isito A/B Test Pattern
ChaosMonkey patterns for test

Local Dev Env(s)

Browser Based IDEs

CLI Integrations, MSB, Maven, etc

Local IDEs

VS Code   eclipse   **IDE plugins**

DevOps Enablement

CI/CD

git   SCM

Registry

artifactory
Repository

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
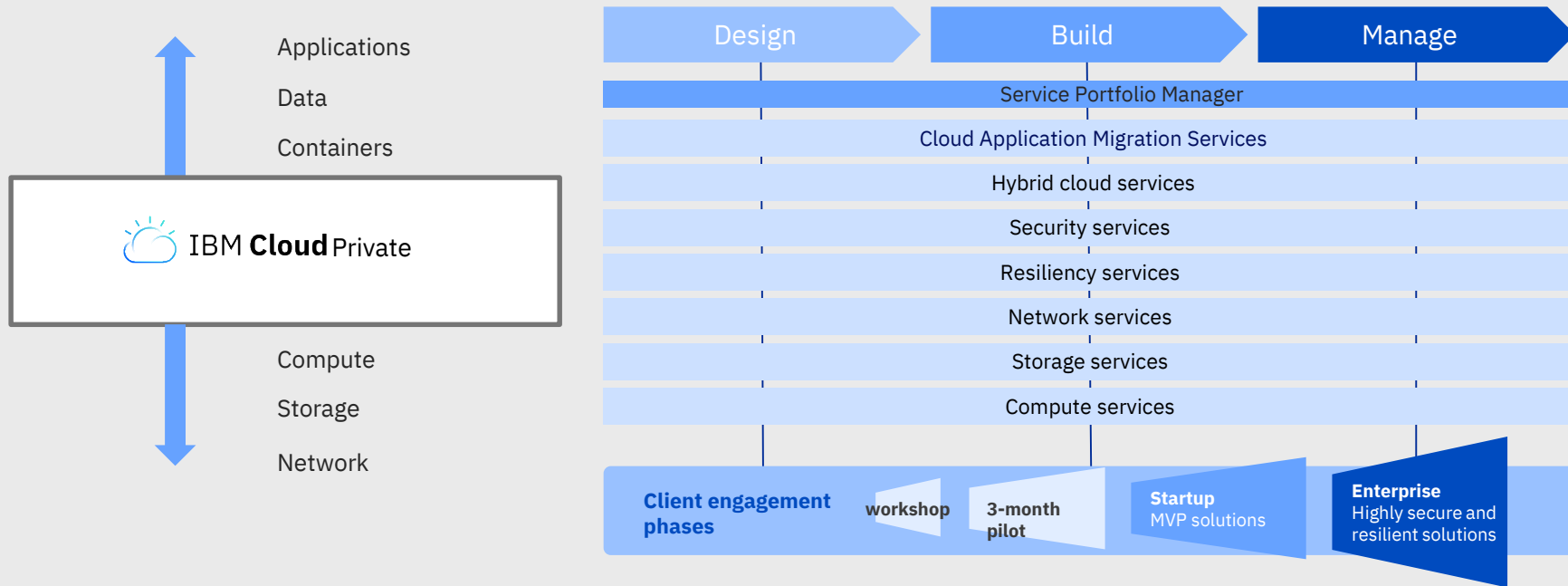
Update middleware and monolith applications

- 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

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