

IBM Cloud Private Overview

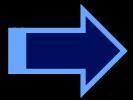
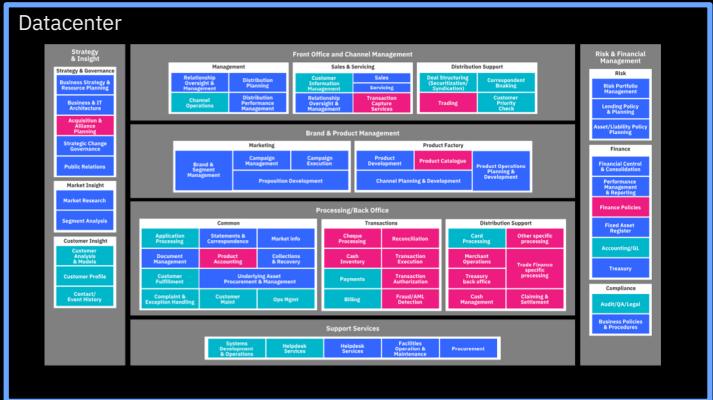
IBM



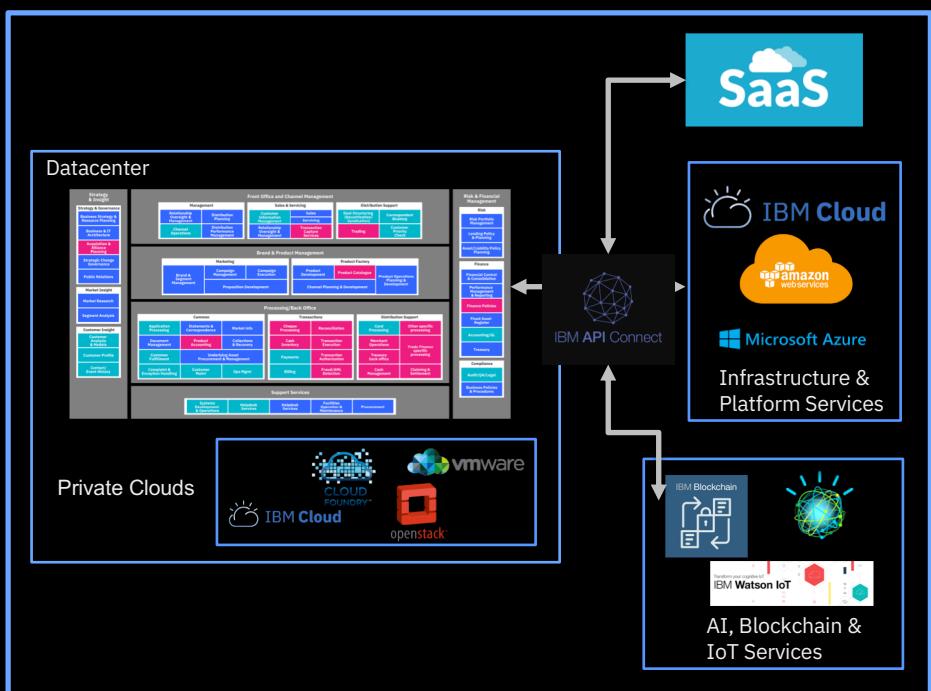
IBM Cloud

To accelerate digital transformation, enterprises are extending their applications and data to “clouds”...

Current Application Landscape



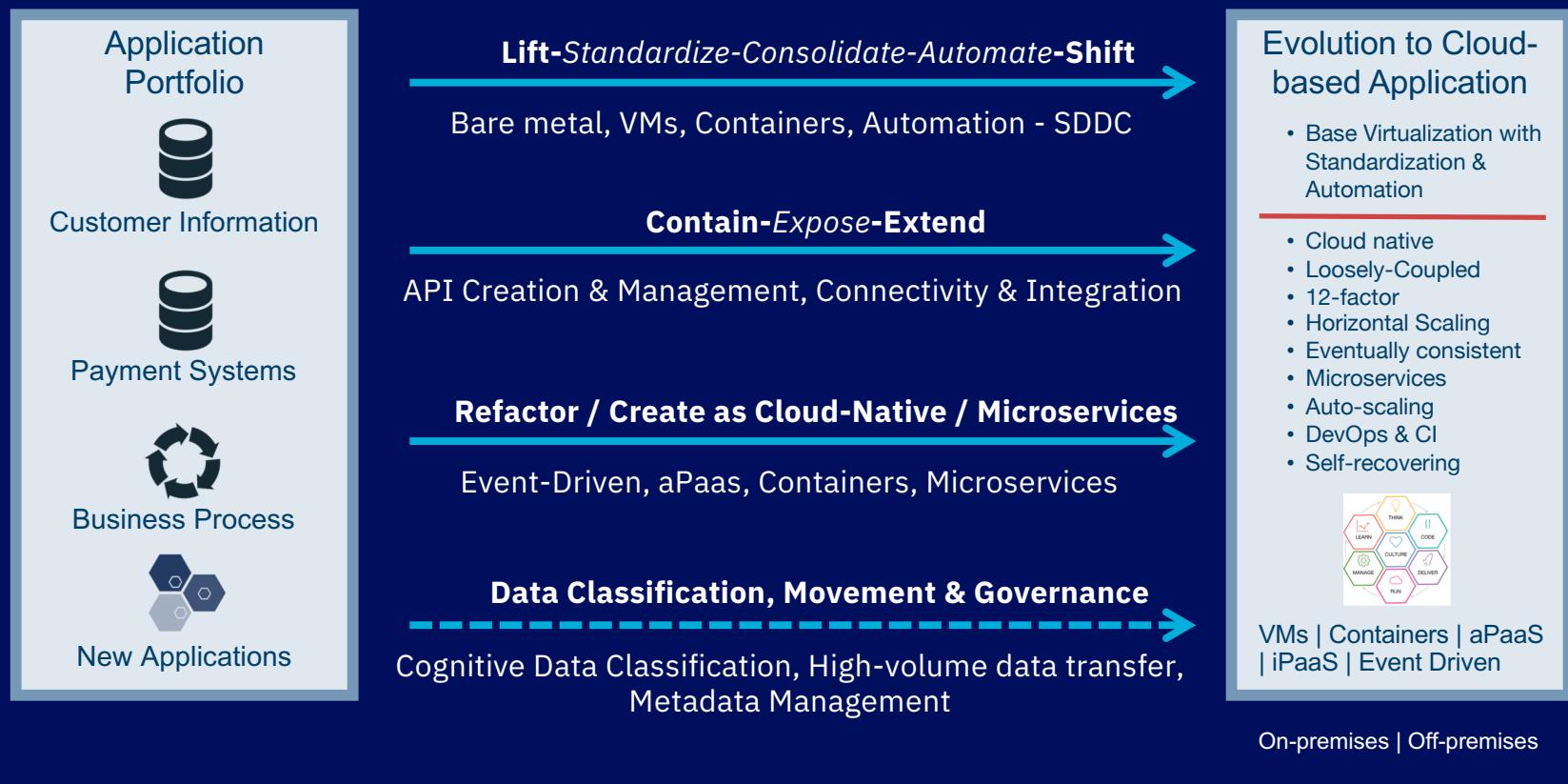
The New Application Landscape



The new landscape will be multi-cluster & multi-cloud

Transformation uses multiple concurrent approaches

... to minimize risk & cost while leveraging new & existing investments to innovate & differentiate



Use cases driving private cloud adoption

Optimize legacy apps with cloud

Self-service Experience
Next Generation Middleware, Data & Analytics
Automation & Orchestration
Containers & Common Services

Cloud-enabled middleware

Open your datacenter to work with cloud services

APIs
Integration Services & Cloud Native Programming Models
Automation & Orchestration

Integration & Hybrid Cloud

Public Cloud Services

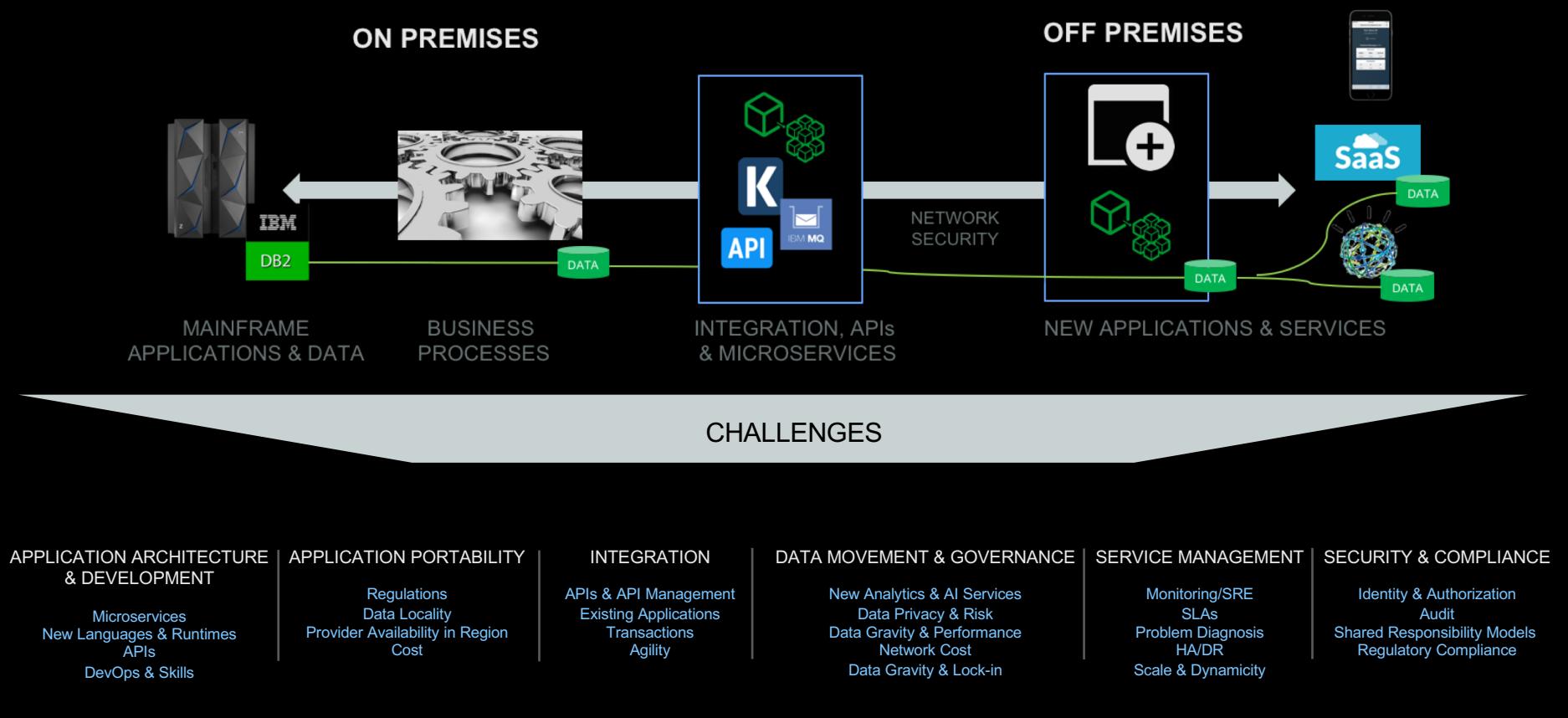
Machine Learning on p/z
Blockchain
Business Process
Data & Apps
On-Premises Software & Services

Create new cloud native applications

New Applications
Cloud Native Services & Runtimes
Automation & Orchestration
Containers & Common Services

New Applications

Enterprises will face new challenges in broadening the adoption of Cloud to critical applications



IBM Cloud Private



Kubernetes based container platform

Industry leading container orchestration platform across private, dedicated & public clouds

Common Services

To simplify operations management, DevOps and hybrid integration

IBM Middleware, Data & Analytics Services

Cloud enabled middleware, application runtimes, messaging, databases and analytics to optimize current investments and rapidly innovate

Cloud Foundry

For prescribed application development & deployment

IBM Cloud Private capabilities

IBM DevOps Tools + Open Source

- Urban Code Release/Deploy
- Cloud Automation Manager

IBM Supported Languages & Frameworks

- Container Images & Buildpacks for Java, Node, Swift, .Net
- Frameworks: Spring, JEE, Mobile, Many Node & Reactive

IBM Cloud Private Catalog

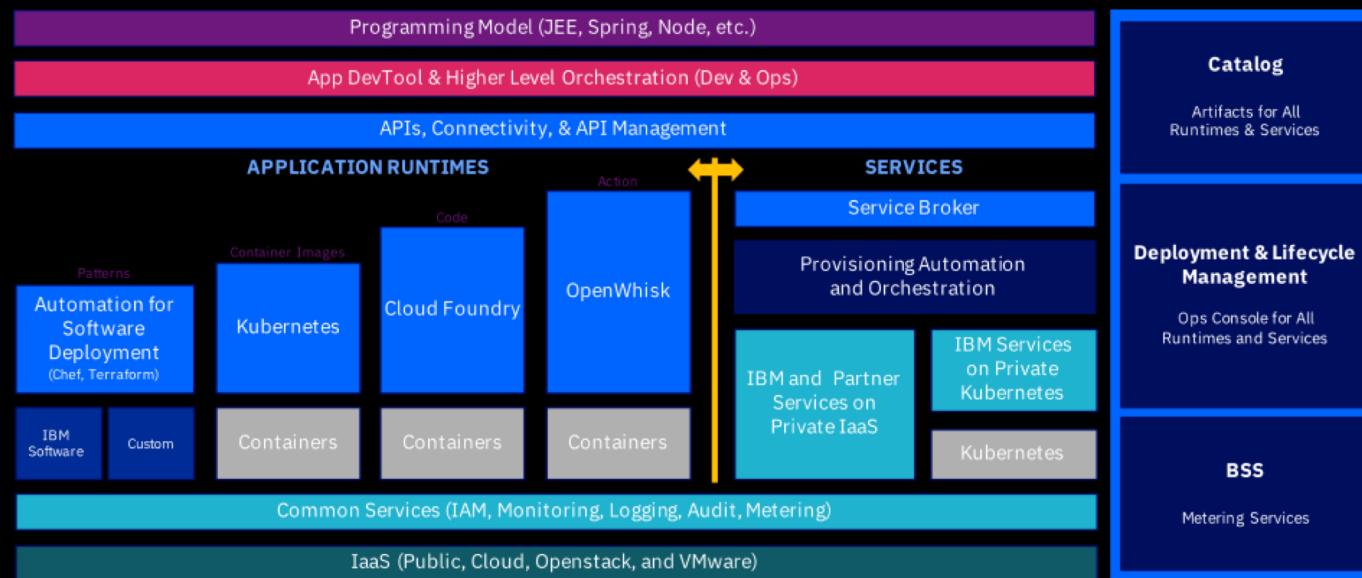
- Helm Charts
- Patterns
- Cloud Foundry Services

IBM API Connect

- API Management
- Multi-cloud
- Open Standards

Optimized runtimes for workloads

- Automation Patterns & Orchestration
- Container images
- Container Orchestration
- Buildpacks
- Actions, Events & Integrations



- Reuse existing infrastructure & virtualization
- Multiplatform support (Intel, System p & z)
- IBM Managed services
- IBM Storage

Common Services

- Monitoring: Prometheus, Grafana
- Logging: ELK
- IAM: Built-in + Federation to

Enterprise

- Metering: Product insights
- Key Management: Vault

Built upon Open Technologies

The Four Tenets

Built on 4 Key Tenets to
Drive Enterprise Transformation



Rapid
Innovation



Hybrid
Integration



Investment
Leverage



Management and
Compliance

Enterprise grade. **Open** by design.

IBM Cloud Private brings cloud native to the enterprise



Rapid Innovation

Open Kubernetes-based container platform

Cloud Foundry for app dev and deployment

Integrated DevOps toolchain



Hybrid Integration

Integration capabilities to unlock and connect

Secure access to public cloud services (AI, Blockchain)

Consistent experience across private/public



Investment Leverage

Containerized versions of IBM Middleware (WebSphere, MQ, DB2, DSX and popular Open Source)

Prescriptive guidance to optimize workloads

Work with existing apps, data, skills, infrastructure



Management and Compliance

Core operational services including logging, monitoring, security

Flexibility to integrate with existing tools and processes

Broadening the adoption of cloud

Preserve, standardize
and automate subset of
existing applications

Target: 20-30%
Full Automation

Modernize and cloud-
enable majority of
infrastructure and
applications

Target: 70-80%

Cloud-first approach to
new applications and
processes

Target: All new applications

Key Challenges:

- Cultural transformation is complex and limits the scope & velocity of movement to cloud native development & management
- Lack of integrated solutions and tools to build new cloud native applications while integrating & evolving existing applications
- Operational challenges in integrating, managing and securing cloud and on-premises applications and data

Key use cases are driving private cloud adoption

Use Case #1

Create new cloud-native applications

Use Case #2

Modernize and optimize existing applications

Use Case #3

Opening up enterprise data centers to work with cloud services



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Opening up enterprise data centers to work with cloud services



Use case #1: IBM Cloud Private for cloud-native applications

Use case #1: Developers need access to a platform of capabilities to create cloud native applications that meet the security and regulatory requirements of their organization.

IBM's Capabilities:

- IBM Microclimate
- APM for microservices
- Enterprise grade application development services integrated with the platform runtimes, data and analytics, messaging, DevOps services, and so forth.

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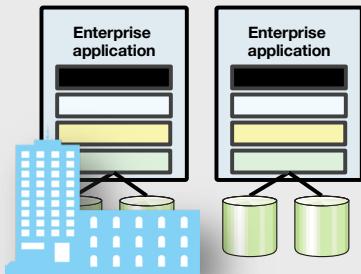
Opening up enterprise data centers to work with cloud services



Use case #2: Enterprise applications transformation journey

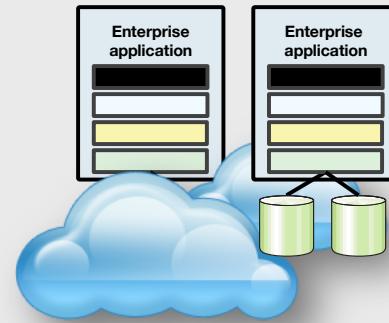
1 OPTIMIZE

Reduce **cost** and improve performance by selecting the right license and deployment model for existing workloads.



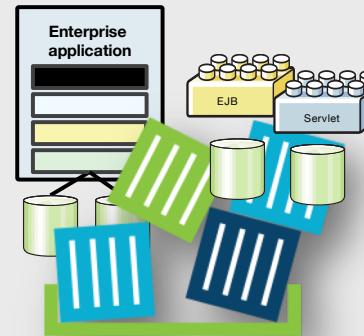
2 MOVE TO CLOUD

Move workloads to the cloud to **benefit from Cloud economics, scale, deployment automation, and improved development agility.**



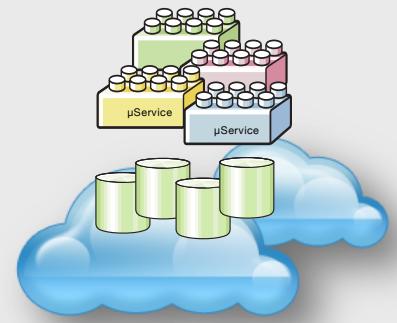
3 CONTAINERIZE

Developers improve **agility** using containers to **continuously deliver**, leveraging extreme standardisation and **automation**.



4 REFACTOR

Refactor applications to cloud native architectures to encompass APIs, microservices and cognitive capability for **innovation and disruption**.



Use case #2: IBM Cloud Private to cloud-enable applications

Use case #2: Developers need to cloud enable applications that meet security and regulatory needs. IBM Cloud private provides the platform for rapidly developing and deploying cloud enabled applications, while meeting the security and regulatory needs of the enterprise.

IBM's capabilities

- Transformation Advisor provides guidance on where to run your critical workloads
- Next generation versions of industry leading IBM Middleware and Analytics (WAS, MQ, DB2) to speed innovation and gain new insights into data
- Vulnerability assessment
- Elastic runtimes enable the enterprise to scale up and scale down as needed

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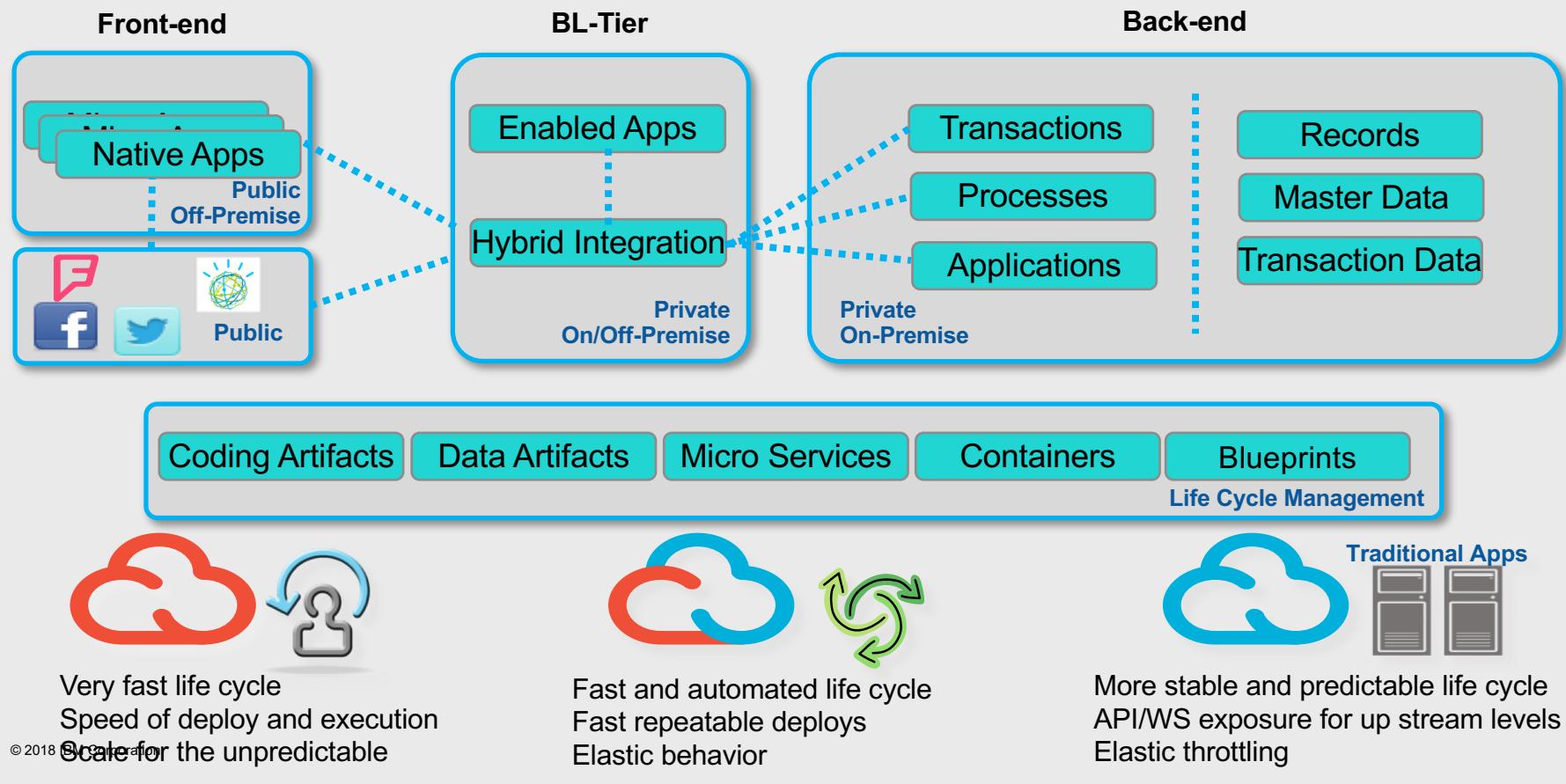
Use case #3: IBM Cloud Private for hybrid cloud applications

Use case #3: Enterprises need to integrate data and application services (from other locations) in their new cloud native and cloud enabled applications which are running in their own data center.

IBM's capabilities

- Kubernetes-based orchestration platform
- API Management, Application Integration Suite
- Cloud foundry platform for service syndication
- Multi-cloud deployments through CAM
- APM for Hybrid Workload

Use case #3: New applications need an agile cloud architecture



IBM Cloud Private transforms the way IT operations and developers work



Todd

Operations / Admin

Responsible for infrastructure, security, and management of the environment.



Jane

Enterprise Developer

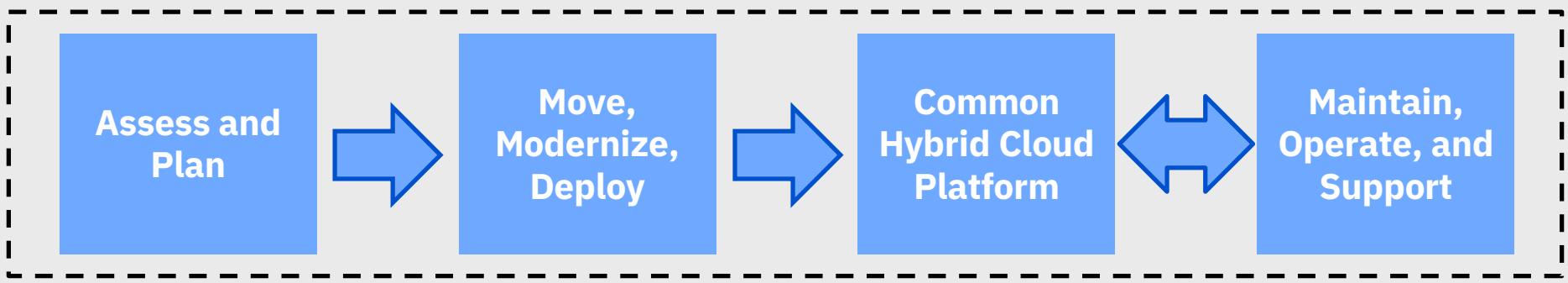
Responsible for modernizing existing applications and creating new Cloud Native Workloads.

IBM Cloud private empowers both developers and administrators to meet business demands:

- IT Operations and Administrators can quickly set up a modern, flexible, and compliant private cloud on enterprise infrastructure that enables enterprise developers to innovate; they can also integrate with their existing management tools and processes
- Developers can create new cloud-native applications, optimize existing ones, and securely connect their applications with data and services across all clouds

Organizations are focusing on modernization

- 70% of private cloud adoption is being driven by the need to modernize
- Enterprises are modernizing traditional on-prem deployments with a cloud native approach
- IBM delivers a framework to accelerate the app modernization journey:



Enterprise Content Catalog

Toolchain & Runtimes

IBM Microclimate
IBM WebSphere Liberty
Open Liberty (open source)
IBM SDK for Node.js
Swift runtime (open source)

Messaging

IBM MQ Advanced for Developers
IBM MQ Advanced
Rabbit MQ (open source)

Integration

IBM Integration Bus for Developers
IBM Integration Bus
IBM DataPower Gateway for Developers
IBM DataPower Gateway Virtual Edition

Data Services

IBM Db2 Dev-C
IBM Data Server Manager (for Db2 Dev-C)
IBM Db2 Direct Advanced Edition / AESE with Data Server Manager
IBM Db2 Warehouse Dev-C
IBM Db2 Warehouse Enterprise
IBM Cloudant Developer Edition
MongoDB (open source)
PostgreSQL (open source)
MariaDB (open source)
Galera for MariaDB (open source)

App Modernization Tooling

IBM Transformation Advisor

Multi-cloud Management

IBM Cloud Automation Manager

Data Science and Business Analytics

IBM Data Science Experience
Developer Edition
IBM Data Science Experience Local

Data Governance and Integration

IBM InfoSphere Information Server for Evaluation

Mobile

IBM Mobile Foundation

Network Analysis Tooling

Skydive (open source)

HPC / HPDA

IBM Spectrum LSF Community Edition
IBM Spectrum Symphony Community Ed.

IBM Cloud Private Editions

Community Edition

Platform

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

**Freely Available
in Docker Hub**

Cloud Native

Platform

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

Cloud Foundry (Optional)

IBM Enterprise Software

- Microservice Builder
- 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

IBM Cloud Private in a heterogeneous environment

- IBM Cloud Private (ICP) is an untethered Platform as a Service that combines the speed, agility and flexibility of the public cloud, with the security and performance guarantees of an on-premises cloud.
- ICP provides a core platform runtime based on Kubernetes and common services like logging, metering, auditing, user access control etc. along with a rich catalog of IBM and open-source products.

