Maximo EAM to MAS

OpenShift Platform Options

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May 2024

IBM

MAS Overview: Technology Stack

Manage	**Monitor**	**Health**	**Predict**	**Visual Inspection**	**Schedule**	**Mobile**	**Assist**	**Control**
Intelligent Asset Management	Monitor and Detect Anomalies	360 View of Assets	Predictive Failures	AI-Powered Insights	Schedule Work and Resources	Technician Work Execution	Prescriptive Assistance	ITIL Based Technology Service Management

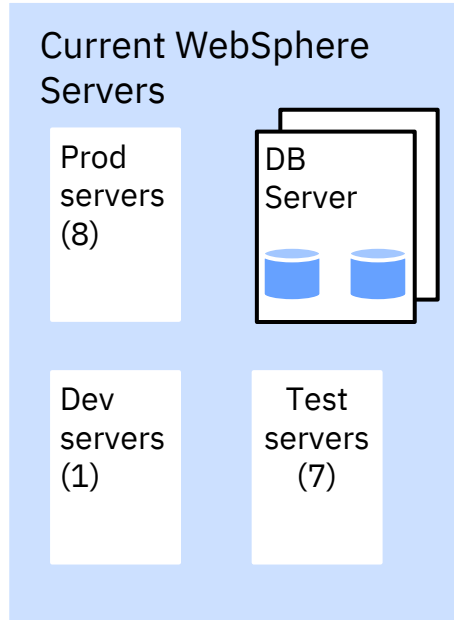IBM Cloud Pak for Data | IBM Watson Studio | IBM Watson ML

Red Hat OpenShift — Infrastructure Independent Common Operating Environment

IBM Cloud   aws   Azure   Google Cloud   Private   Edge   Systems

IBM

MAS Example - Current and target environments

Maximo 7.6 on-prem

Current WebSphere Servers

Prod servers (8)

DB Server

Dev servers (1)

Test servers (7)

Major Architectural shift

Maximo Application Suite (MAS) runs as Containers on Red Hat OpenShift

Registry

Networking

Telemetry

Security

Automation

Storage

MAS Core   Manage   Monitor

Health   Predict   Visual Inspection

Kubernetes (Orchestration)

Containers

Red Hat OpenShift
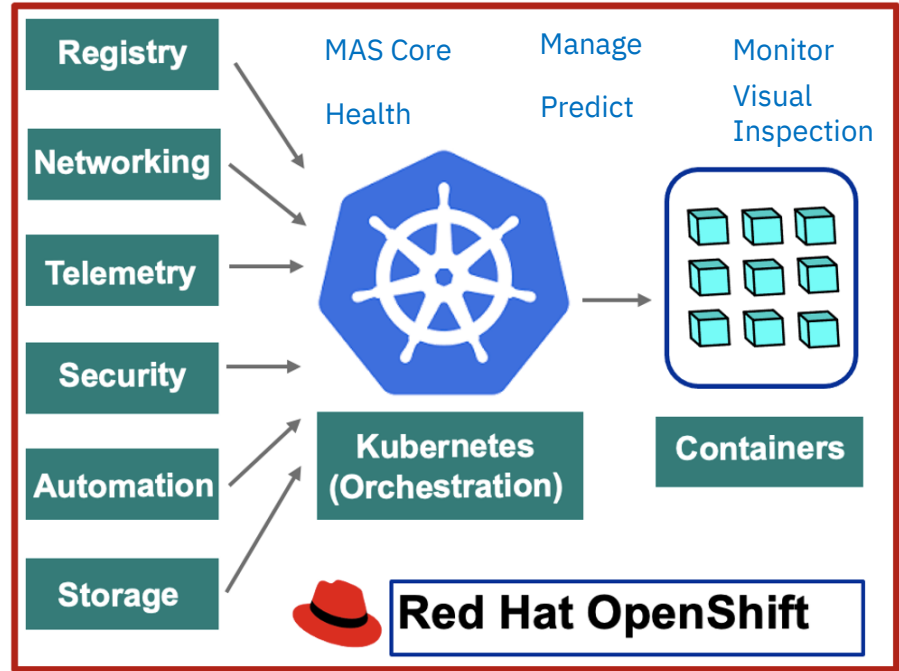
We must upgrade to MAS but have challenges:

We have databases and applications on-prem that must integrate with MAS

We don't want to migrate everything to cloud

We have regulatory or latency requirements requiring data to stay on-prem

Not all data can go to the cloud. Regulatory or network latency requirements force application to stay on-prem

Need to deploy and be in production quickly

We don't have months to spend on building and testing a new containers platform

No OpenShift Skills (or not enough)

Container skills are in high demand, tough to find (especially in small markets) and can be very expensive

Common Deployment Options

Deployment	Procure	Provision & Operate	Client Benefits
On Premises Customer Managed	Client purchases software from IBM, partner or ISV Client provides data center and infrastructure	Client provisions, manages, and operates full stack	• Maximum operational flexibility
SaaS ISV Managed	Client purchases software as a service including infrastructure, hosting, platform and software.	Client logs in and uses immediately	• Reduced time-to-value • No data center, hosting, infrastructure or maintenance • Allows clients to focus on business priorities
Hyperscalers Customer Managed Software with Optional Managed OpenShift	BYOL or Marketplace Software Purchase Infrastructure-as-a-service by cloud provider Optional platform-as-a-service provided by cloud provider	Provision IaaS and/or OpenShift on Hyperscalers' cloud Client manages and operates both software and infrastructure with option for managed OpenShift platform	• Simplifies procurement and deployment • Client can focus on application and not platform • OpenShift platform as a service does not require client labor or skills for management
Custom Managed Service	Client procures partial or full stack service from a managed service provider	MSP provisions, manages and operates Client's partial or full stack environment on prem, in a co-location facility, or in any cloud	• Option for full stack management • Allows clients to focus on business priorities • Can leverage IBM Cloud Satellite and ROKS for speed and lower costs
On Premises IBM Cloud Satellite w/ Managed OpenShift Service *IBM Exclusive*	Client purchases software from IBM, partner or ISV Client provides infrastructure or partner provided ***Platform services including IBM Cloud Satellite and managed Red Hat OpenShift via subscription***	Client provisions and manages infrastructure & application, **IBM manages platform including OpenShift with optional installation services**	• IBM manages the OpenShift platform across on prem and hyperscalers in a hybrid or multi cloud topology • Lower cost than DIY • Cloud benefits in client data center • Consistent OpenShift operational experience across hybrid and multi cloud

OPENSHIFT
version(n-2)
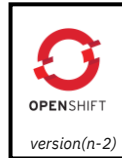
First to market for 4 years and counting!

Fully automated. As-a-service. Extend anywhere.

Key Capabilities

OpenShift experience built on Kubernetes
Use the OpenShift tools and APIs you already know for a single, consistent experience, even when working across hybrid environments or different cloud providers.

Heightened cluster and app security
IBM provides security features to protect your cluster infrastructure, isolate your compute resources, encrypt data, and ensure security compliance in your container deployments. Further, OpenShift sets up strict Security Context Constraints for greater pod security by default.

Worldwide, continuous availability
Deploy and scale workloads across the globe in all IBM Cloud multizone regions. OpenShift clusters include a managed master that is automatically spread across zones within the region for high availability.

Integrated OpenShift catalog
Quickly set up a CI/CD with Jenkins or deploy a variety of apps in a guided experience that's fully integrated into your OpenShift cluster.

Innovation with watsonx, Cloud Paks, & the IBM Cloud platform
Easily integrate generative AI with Watson APIs to extend the power of your apps. Access the IBM middleware in IBM Cloud Paks from within the scalable public cloud. You also get built-in services for monitoring, logging, load-balancing, storage, and security to help you manage an app's lifecycle.

Up to **99.99% SLA**

24x7 SRE global support

Secure by default

Keep Your Own Key (KYOK) with Hyper Protect Crypto Services, FIPS 140-2 Level 4 Certified

Highly-compliant

Cluster Autoscaler

Worldwide SZRs & **MZR**s & extend **on-prem**, at the **edge**, or public cloud environments with **IBM Cloud Satellite**

Seamless GPU support

Public Slack workspace

Add-on Capabilities

OpenShift Data Foundation
Manage data, stay consistent everywhere, handle application needs.

OpenShift AI
Build, deploy, and manage AI-enabled applications.

TEKTON
Tekton
Create Kubernetes-native CI/CD pipelines with maximum speed and flexibility.

Our Clients

OpenShift Day 2 Responsibilities

IBM enables you to focus on your your core business, not platform management

Responsibilities:

- 🔴 Customer
- 🟢 IBM
- 🟠 Shared

	DIY	With Satellite
Create and configure OpenShift clusters, including geographic deployment options	🔴	🟠
Integrate CI/CD pipeline to appropriate endpoints & manage your applications	🔴	🟠
Automated provisioning and configuration of Infrastructure (compute, network and storage)	🔴	🟢
Automated **installation and configuration of OpenShift,** including HA cross zone configuration	🔴	🟢
Automatic upgrades of all components (operating system, OpenShift components, and in cluster services)	🔴	🟢
Security patch management for OS and OpenShift	🔴	🟢
Automatic **failure recovery** for OpenShift components and worker nodes	🔴	🟢
Automatic **scaling** of OpenShift configuration	🔴	🟢
Automatic **backups** of core OpenShift ETCD data	🔴	🟢
Built in integration with cloud platform - monitoring, logging, KeyProtect, IAM, ActivityTracker, Storage, COS, Security Advisor, Service Catalog, Container Registry and Vulnerability Advisor	🔴	🟢
Built in **Load Balancer, VPN, Proxy, Network edge nodes, Private Clusters and VPC** capabilities	🔴	🟢
Built-in Security including **image signing**, image deployment enforcement, and **hardware trust**	🔴	🟢
24/7 **global SRE** team to maintain the health of the environment and help with OpenShift	🔴	🟢
Global SRE has deep experience and skill in IBM Cloud Infrastructure, Kubernetes and OpenShift, resulting in much **faster problem resolution**	🔴	🟢
Automatic compliance for your OpenShift environment **(HIPAA, PCI, SOC1, SOC2, SOC3, ISO)**	🔴	🟢
Capacity expansion through a single click	🔴	🟢
Automatic **multi-zone deployment in MZRs**, including integration with CIS to do cross zone traffic routing	🔴	🟢
Automatic Operating System **performance tuning and security hardening**	🔴	🟢

MAS Deployment Options with IBM Cloud Satellite

Public Clouds

IBM Cloud Satellite

On-premises

IBM Cloud Satellite

IBM Cloud

Edge

IBM Cloud Satellite
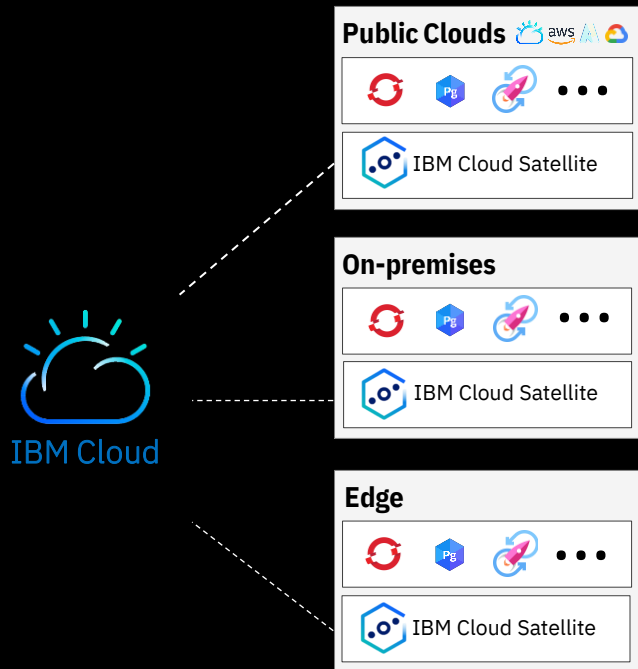
IBM Cloud Satellite
Workloads located where you need them

Location

Client-controlled infrastructure outside of IBM Cloud data centers

Client manages their hosts (infrastructure) within a location

Flexibility

Run app where it makes sense

For regulated workloads, sovereignty & data gravity concerns, migrations, edge platforms, low latency

Flexible infrastructure options including bring your own – Install on HyperV, Vmware, bare metal, any cloud, integrated appliances

Control

Auditable inventory of all network connections and traffic

Central observability

IBM Cloud for Financial Services Validated

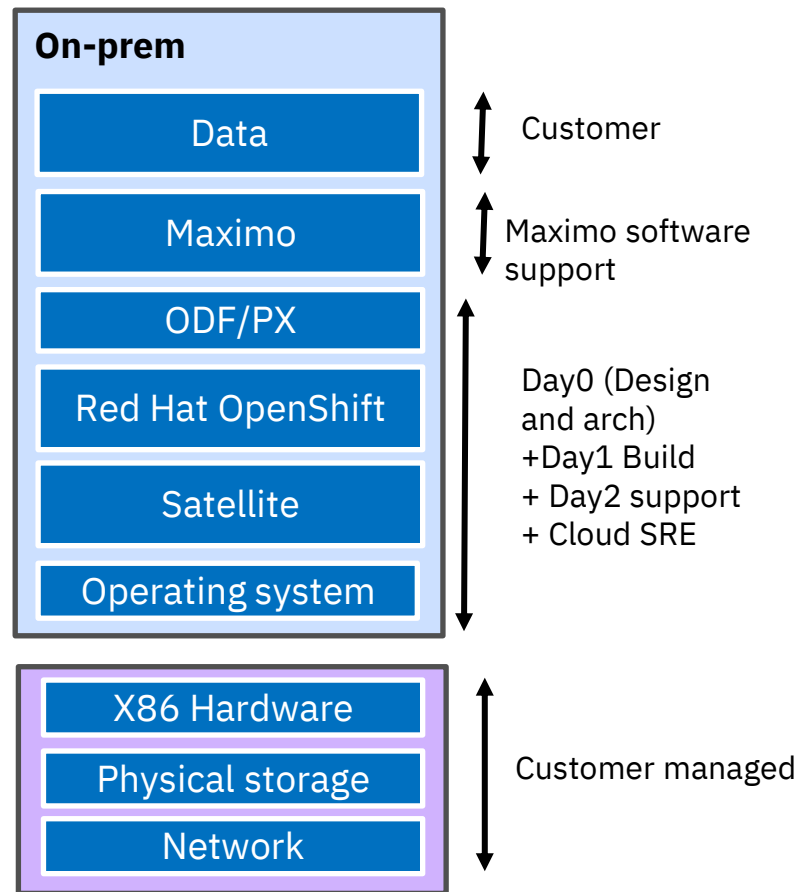Satellite Reference Architecture for FS Cloud

Shared responsibility model for end-user support

IBM :
- Provides support for OS and above
- Includes lifecycle management of managed platform aaS
    - Red Hat OpenShift
    - Satellite
    - Storage - Red Hat OpenShift Data Foundation (ODF)
- IBM Cloud SRE support to help debug platform related problems
- Maximo software support
- **Optional** – Full stack build and Day2 support from OS to Maximo software as single point of support avoiding silos (IBM Consulting)
- **Optional** - Architectural services for DR and multi-cluster/location design(Expert labs)

Customer:
- Owns and manages infrastructure
    - Hardware
    - Storage
    - Network
- Owns and manages Maximo integration to other backend systems
- Respond to end user issues and initiate troubleshooting
    - Work with IBM Cloud SRE teams to debug platform issues

On-prem

Data	↕ Customer
Maximo	↕ Maximo software support
ODF/PX	
Red Hat OpenShift	Day0 (Design and arch) +Day1 Build + Day2 support + Cloud SRE
Satellite	
Operating system	

X86 Hardware	
Physical storage	Customer managed
Network	

# MAS Deployment Decisions

On-Premises or Cloud/Hosted

Fully managed, partially managed, managed OpenShift

Hybrid Cloud or Multi Cloud

IBM Cloud Satellite with ROKS can:

Bring managed OpenShift to your data center and/or other clouds with IBM Cloud Satellite

Simplify Hybrid and/or Multi Cloud deploy and management complexity including single pane management
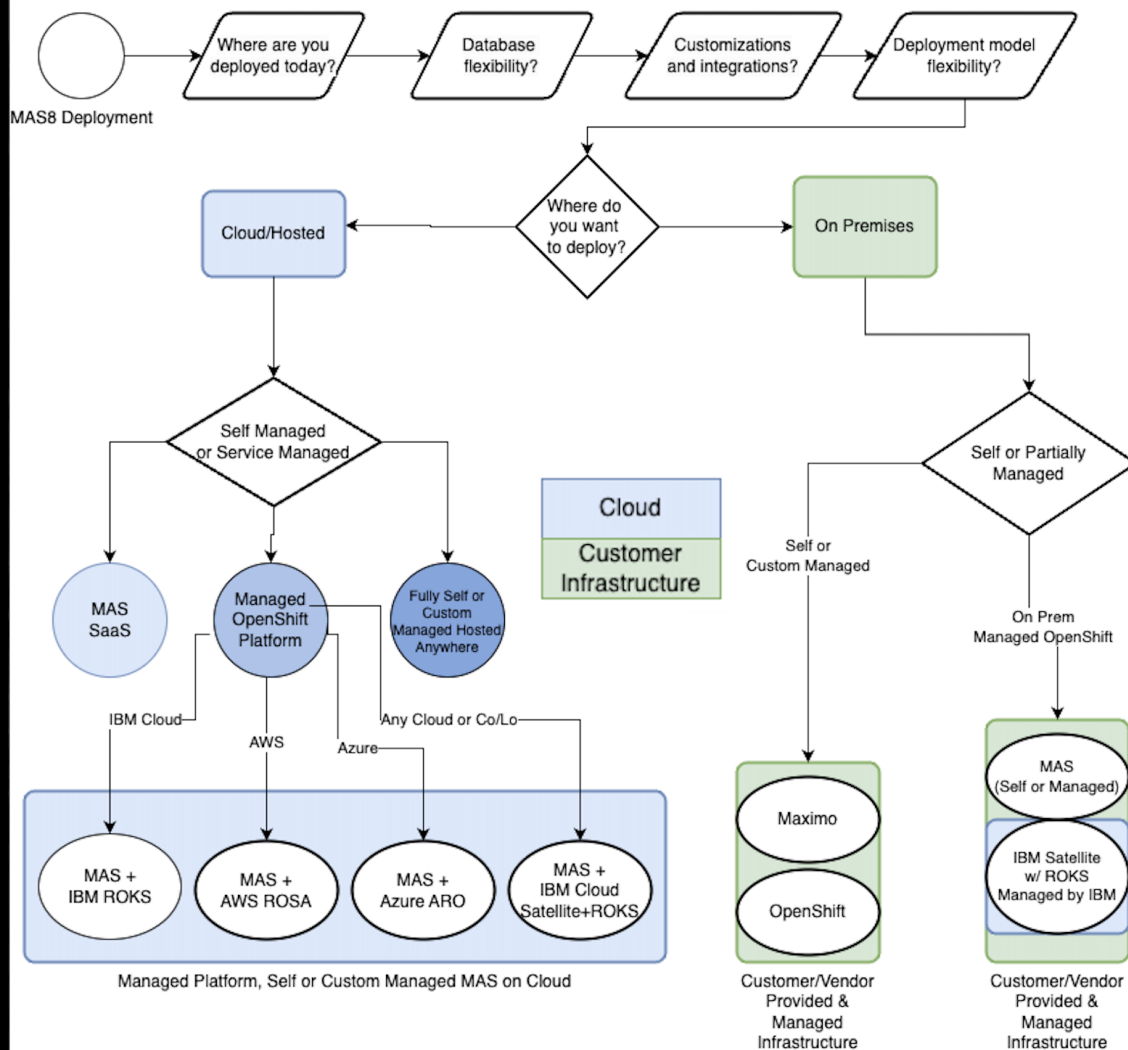
Why IBM Cloud Satellite and ROKS for MAS

Why ROKS Hosted in the IBM Cloud?

- ☑ **Speed –** Reduce your MAS migration by months versus DIY OpenShift
- ☑ **Skills – No OpenShift skills or not enough.** Easily address the OpenShift skills requirement of MAS, you focus on MAS
- ☑ **Save $$$** – Over 70% ROI versus DIY deployment and management of OpenShift, use MAS included OpenShift entitlements

Why ROKS with IBM Cloud Satellite?
…all the ROKS benefits anywhere, plus:

- ☑ **Stay on prem** – Regulatory requirements, latency, investment, etc. On-prem OpenShift management by IBM.
- ☑ **Keep your MAS Database As-Is –** No migration required
- ☑ **We bring the cloud to you –** Speed, agility, lower costs… all in your data center or ANYWHERE: hybrid cloud, multi-cloud

Focus on MAS and your business while IBM reduces your OpenShift load

IBM

Backup

Satellite Architecture
Multi-Zone HA Architecture Built on Kubernetes

Satellite Architecture

IBM Cloud

Satellite management plane

Link tunnel server

Satellite Config IBM Cloud Monitoring

Satellite-enabled services

IBM Cloud Log Analysis IBM Cloud Monitoring

IBM Cloud Object Storage IBM Key Protect

Tunnel
L ≤ 200 ms

Edge, on-prem, or cloud infrastructure

Satellite location

Control plane node (n)
L ≤ 10 ms

Link tunnel client

Cluster 1 master

IBM Cloud Monitoring

Cluster 2 master

Cluster 1 worker node (n)
L ≤ 10 ms

L ≤ 100 ms

Pod

Cluster 2 worker node (n)
L ≤ 10 ms

L ≤ 100 ms

ConfigMap

L ≤ 100 ms

Satellite-enabled service
L ≤ 10 ms

☐ Logical node   ☐ Prescribed node   ▱ Multiple instances, where n ≥ 1   L = latency requirement

Satellite Architecture with Direct Link

IBM Cloud

Customer account
Direct Link terminates here

Satellite relay

Points to link private address

Direct Link address

Direct Link

Private network

Satellite account

IBM Cloud Monitoring

IBM Cloud Log Analysis

IBM Cloud Activity Tracker

Edge, on-prem, or cloud infrastructure

Enterprise network
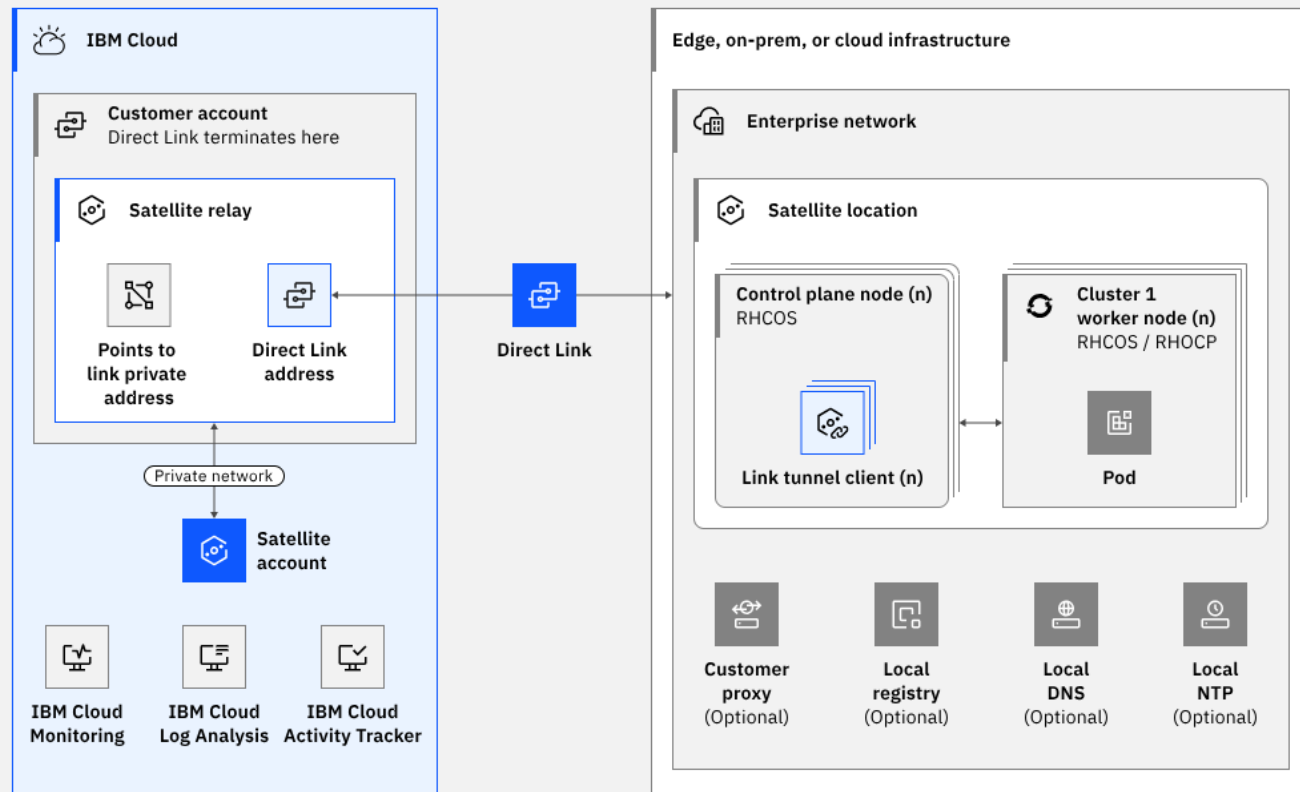
Satellite location

Control plane node (n)
RHCOS

Link tunnel client (n)

Cluster 1 worker node (n)
RHCOS / RHOCP

Pod

Customer proxy (Optional)

Local registry (Optional)

Local DNS (Optional)

Local NTP (Optional)

☐ Logical node   ☐ Prescribed node   ▭ Multiple instances, where n ≥ 1

RHCOS = Red Hat Enterprise Linux CoreOS   RHOCP = Red Hat OpenShift Container Platform

Consistent Architecture and tools across Hybrid multi-cloud and Edge locations
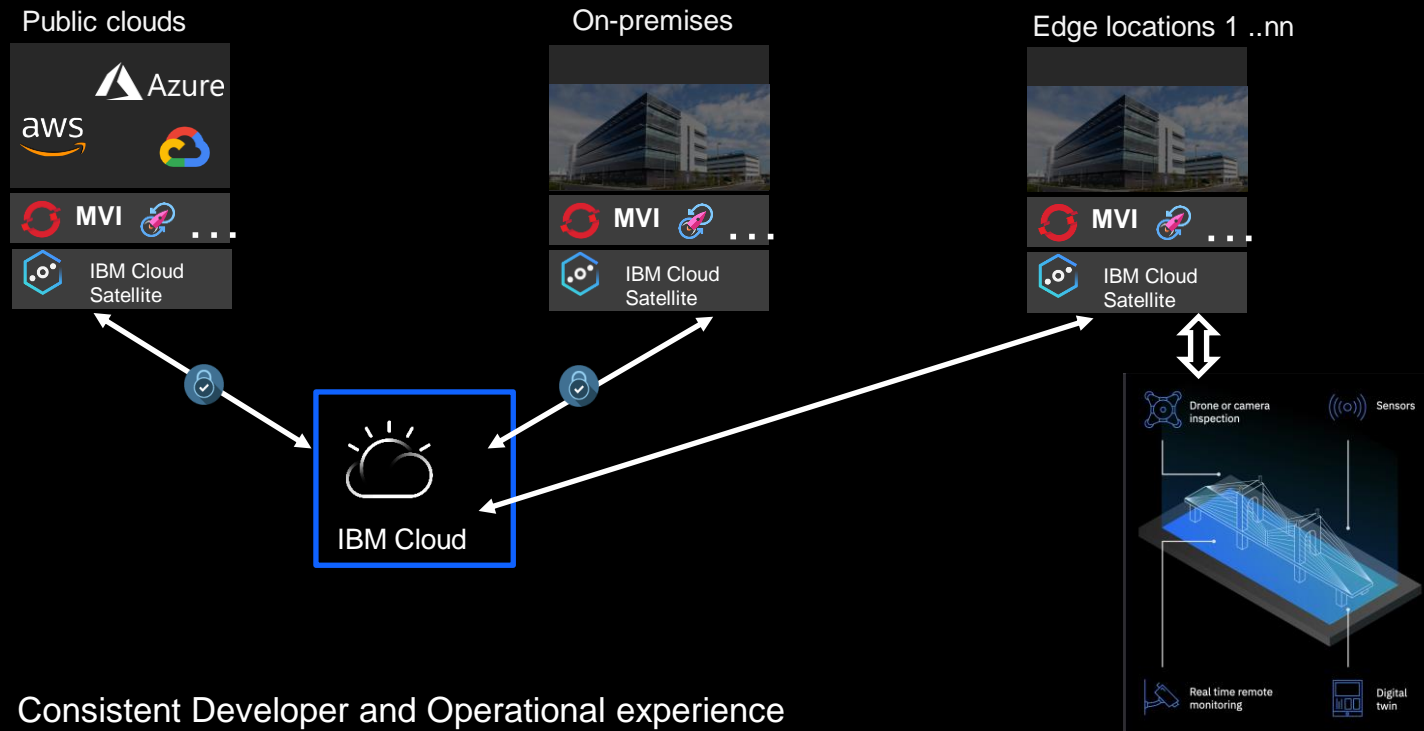
1. Consistent Developer and Operational experience
2. Fully Automated Deployments on other Clouds

Example MAS Hybrid and Multi-Cloud Management

On-Premises Data Center(s)   AWS Cloud   Azure Cloud   IBM Cloud

Application Layer

- MAS Production
- MAS Test
- MAS Development
- MAS Disaster Recovery

IBM Cloud Managed Platform

- Prod Cluster
- Test Cluster
- Dev Cluster
- DR Cluster

IBM Cloud ROKS (Managed OpenShift Platform)

Satellite Location/Control Plane   Satellite Location/Control Plane   Satellite Location/Control Plane

IBM Cloud Satellite Distributed Cloud – Single Pane Management

Satellite Master Control + Services

Infrastructure

- On-Premises Client Provided/Managed Infrastructure
- AWS EC2/Storage
- Azure VMs/Storage