How does IBM Fusion make Maximo on OpenShift easier?
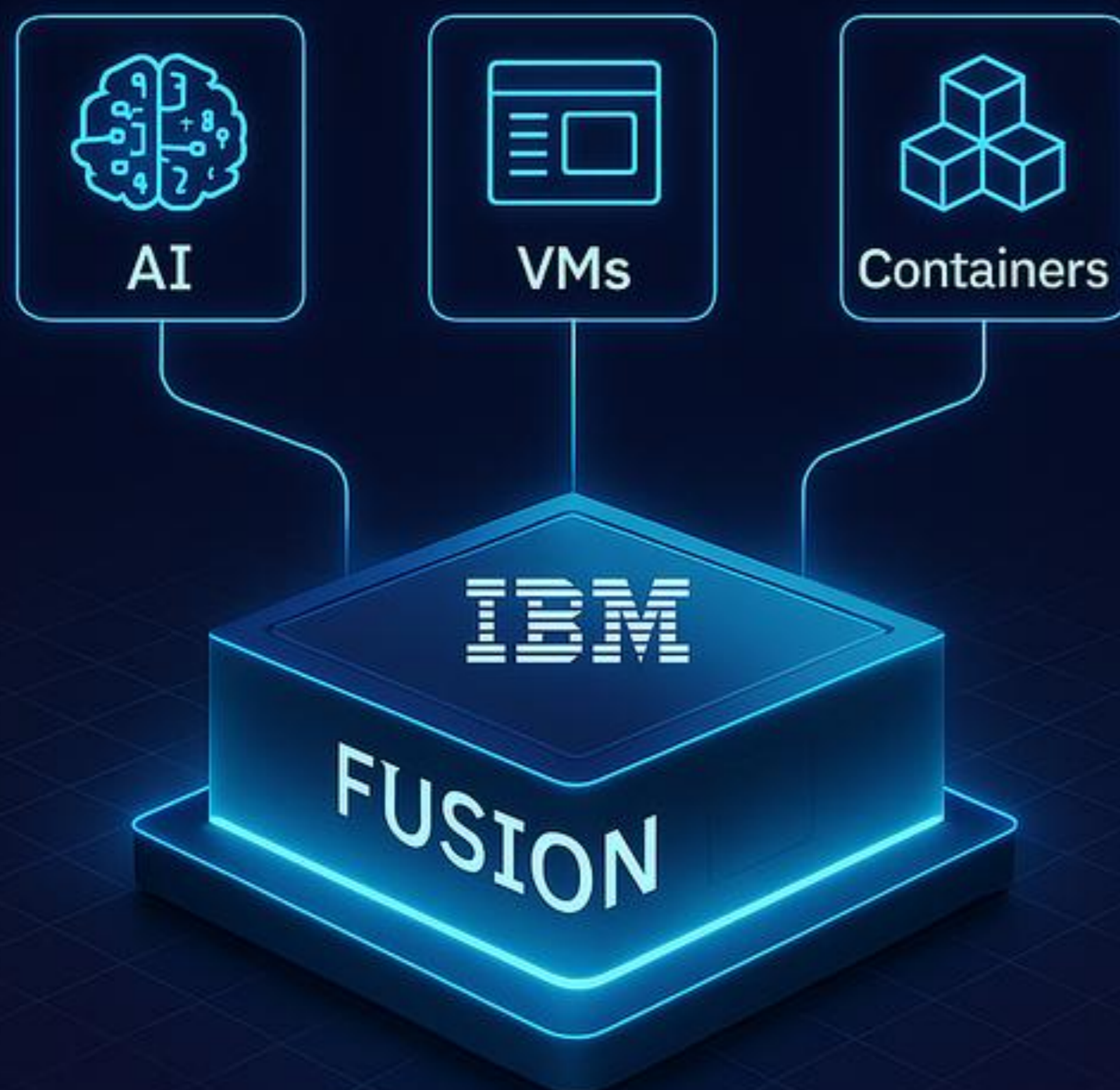
IBM

Naz Nageer(naz.nageer@ibm.com)
Americas Sales Fusion Leader
IBM Storage

IBM Fusion
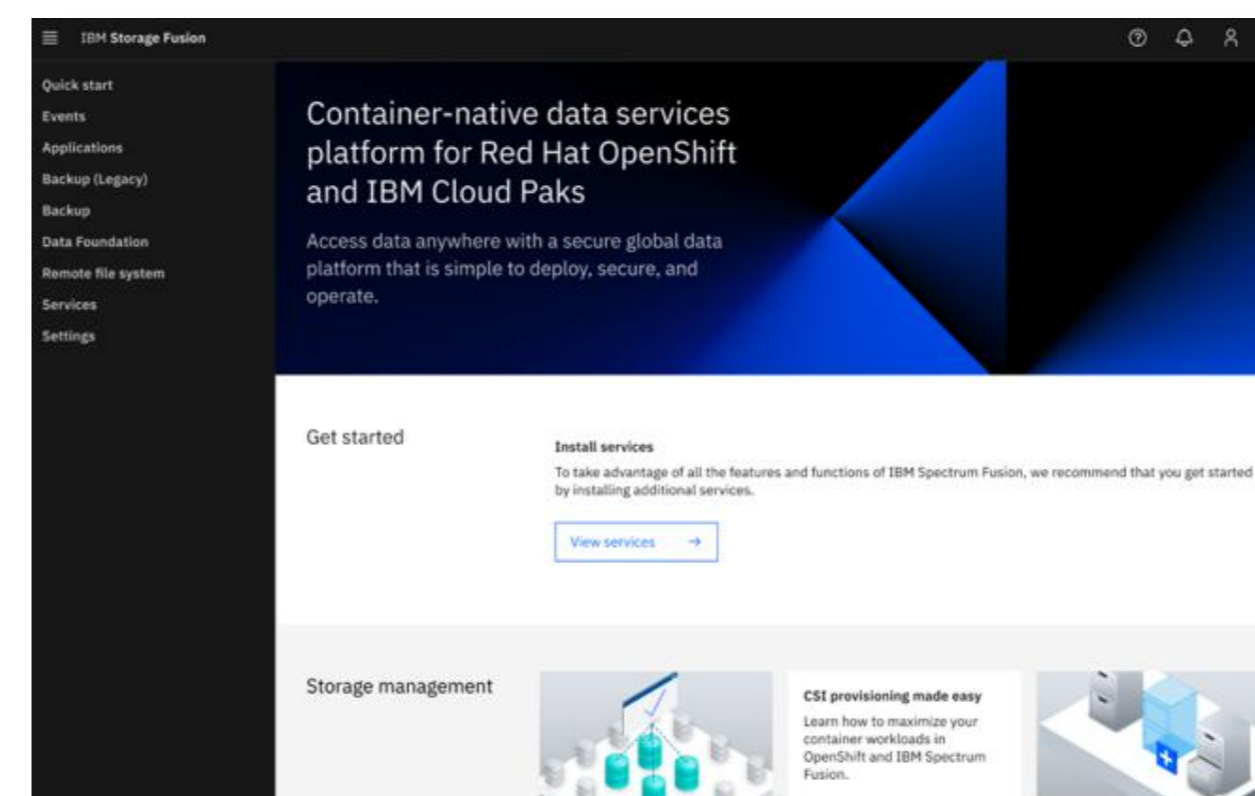## The unified OpenShift platform for AI, VMs and containers

AI · VMs · Containers

IBM FUSION

Fusion Software

Simple
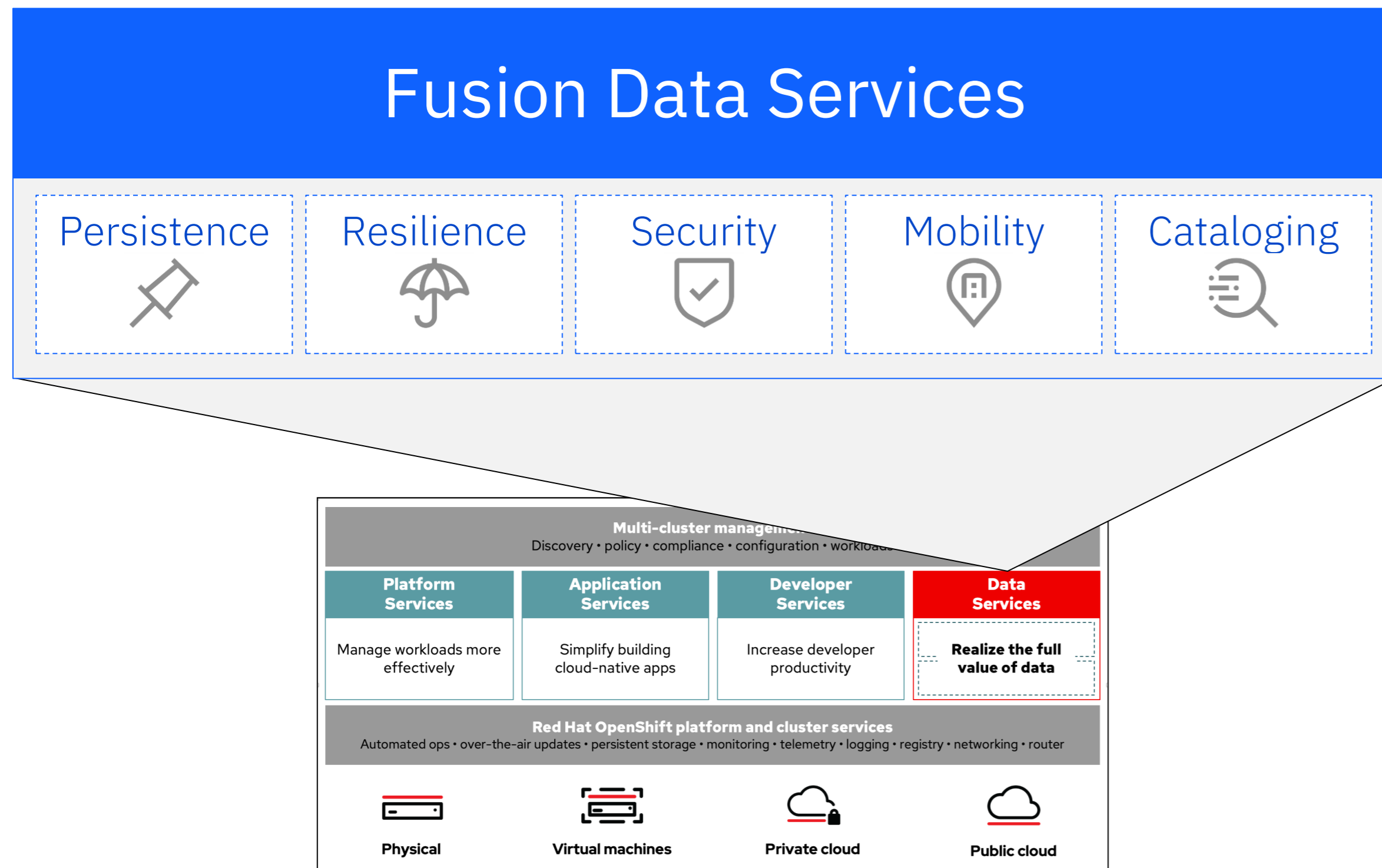Runs anywhere and everywhere

Fusion HCI

Fast
OpenShift and watsonx appliance

Fusion Unified Data Services

Completely **solve** the problem of managing data for stateful OpenShift applications!

Fusion Data Services

Persistence	Resilience	Security	Mobility	Cataloging

Multi-cluster management
Discovery • policy • compliance • configuration • workloads

Platform Services	Application Services	Developer Services	Data Services
Manage workloads more effectively	Simplify building cloud-native apps	Increase developer productivity	Realize the full value of data

Red Hat OpenShift platform and cluster services
Automated ops • over-the-air updates • persistent storage • monitoring • telemetry • logging • registry • networking • router

Physical   **Virtual machines**   **Private cloud**   **Public cloud**

- Persist application state
  CSI compliant. RWX and RWO file. S3 object

- Backup and restore application state
  Snapshots. Backup and restore workflows.
  Hub and spoke architecture.

- Replicate application state across HA sites
  Synchronous and asynchronous replication.

- Accelerate access to data on NFS and S3
  Give applications secure, real-time access to remote data in NFS and S3 stores at local file system speed without data copies

- Catalog enterprise data for easy retrieval
  Scan, index, and tag data residing anywhere in the organization for use in data science projects

Integrated - Day 2 & Day 3 Ops

What can you run on Fusion System?

IBM Cloud Paks

For Data

Integration

Security

Cloud Satellite

Business automation

Watson AIOps

Network automation

watsonx

watsonx.ai

watsonx assistant

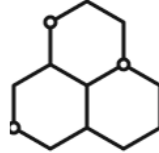watsonx.data

Databases

Cassandra

MongoDB

RabbitMQ

Elastic search

PostgreSQL

Spark

Off the shelf

Pega

Mulesoft

TIBCO

Custom apps

Home grown

Maximo Application Suite

And more! *(Windows and Linux VMs)*

# Customer Feedback on why they chose IBM Fusion

Fusion HCI Client View of Business Value		Fusion SW Client View of Business Value	
81%	Deploy OpenShift Easier, Faster, Better	100%	Backup & Restore / HA & DR for OpenShift
81%	Single Company / One Point of Support	80%	Deploy OpenShift Easier, Faster, Better
56%	Backup & Restore / HA & DR	60%	Accelerate App Modernization
56%	> 50% TCO Benefits	60%	Single Company / One Point of Support
50%	Accelerate App Modernization		

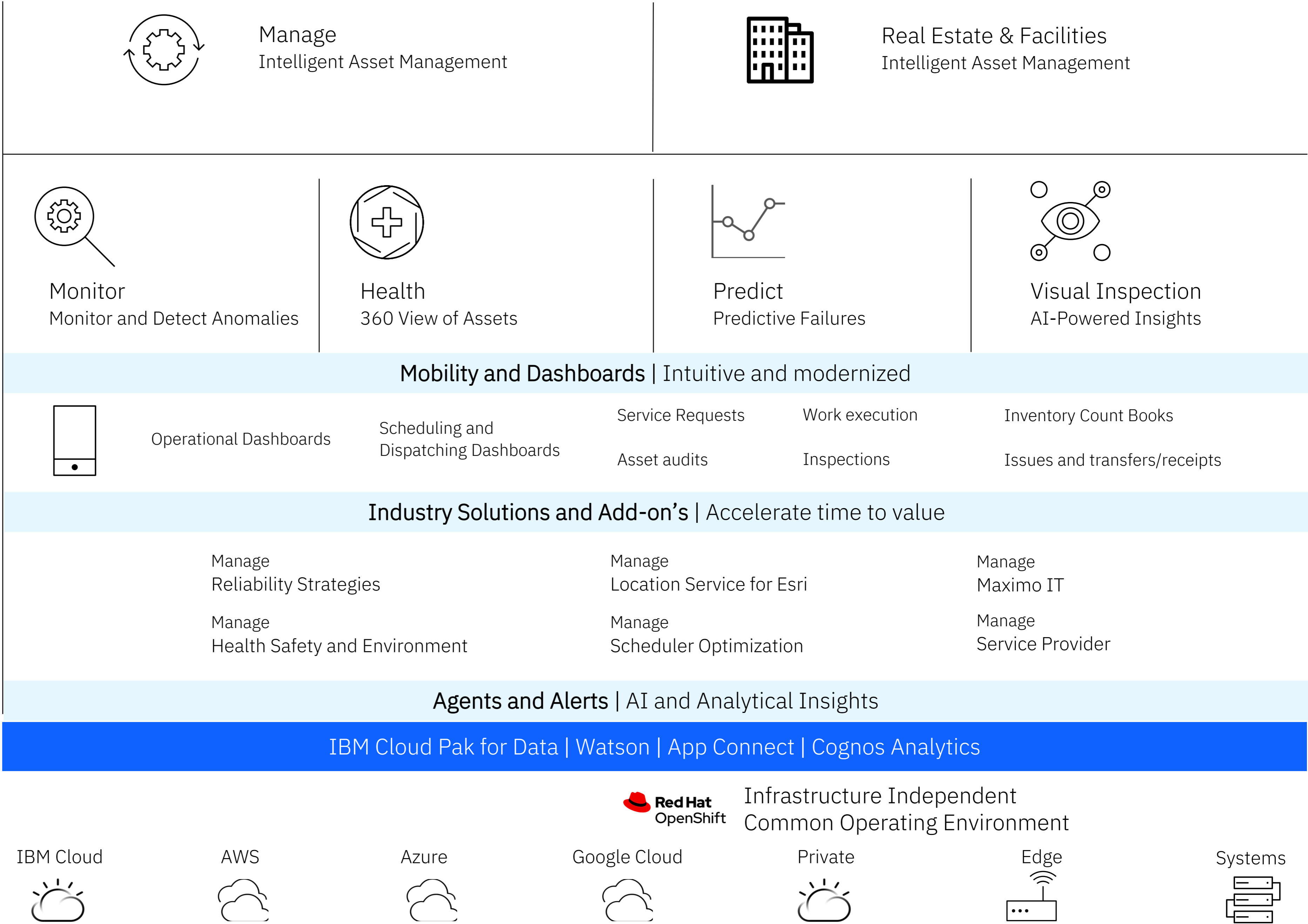Source: Customer feedback surveys

Fusion value with IBM Maximo

➢ Hybrid Cloud and AI Infrastructure Platform

➢ Consistent Data Services Platform for OpenShift Anywhere

➢ Unified File, Block and Object for any OpenShift application

    ➢ Fusion Essentials with IBM Cloud Paks

➢ Co-created Backup and DR solutions

➢ Continuous testing and validation with IBM containerized software

➢ Single Company Solution and Support
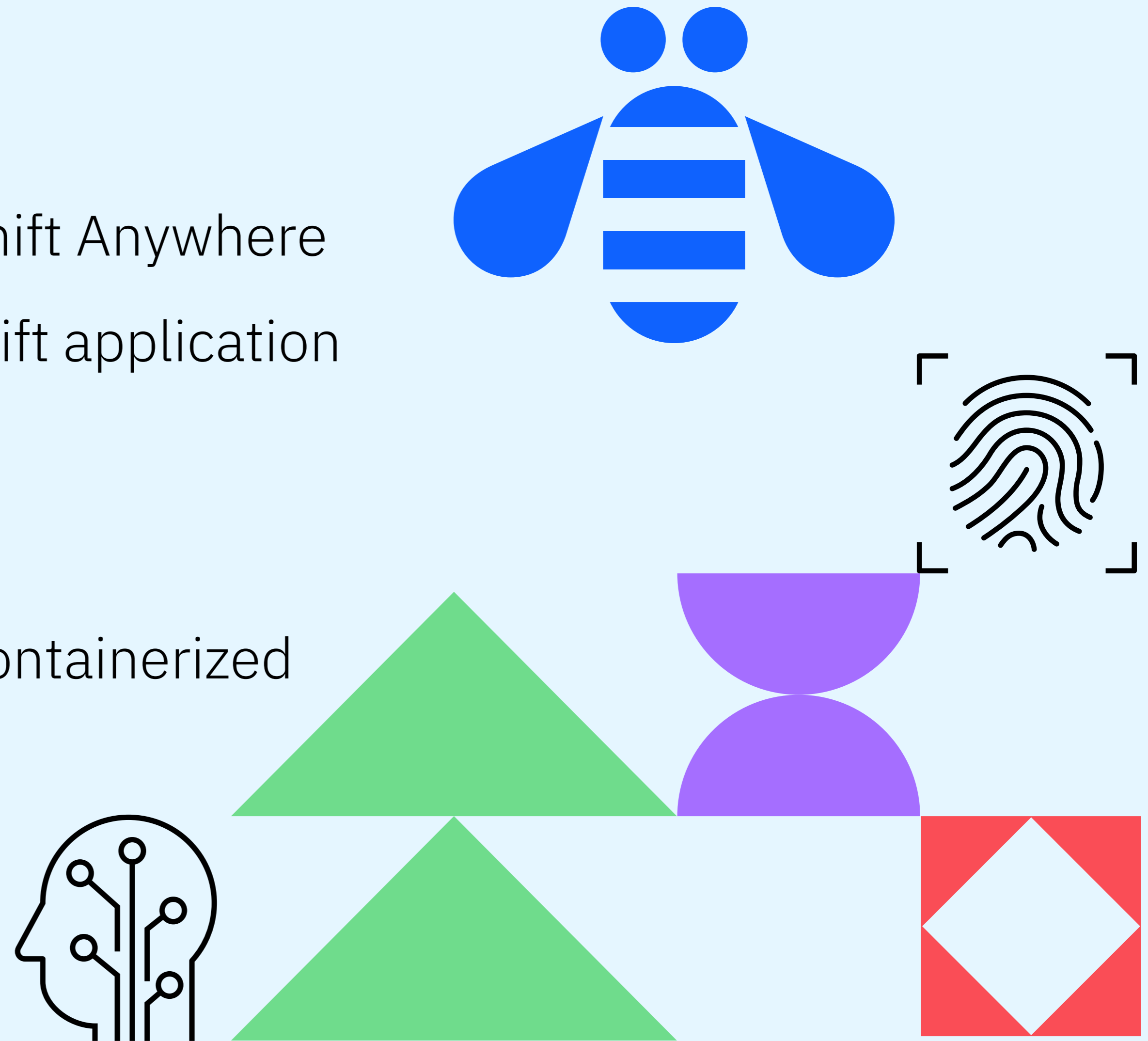
Maximo Application Suite

Best-of-class capabilities to provide a complete view of your assets addressing the needs of key personas in your organization.

- Technicians
- Technician Supervisor
- Asset Maintenance Manager
- Plant Manager
- Fleet Manager
- Finance Manager
- Operations Manager
- Reliability Engineer
- Quality Manager
- Planners/Schedulers
- Dispatchers
- Storeroom Managers
- Purchasing Managers

Manage
Intelligent Asset Management

Real Estate & Facilities
Intelligent Asset Management

Monitor
Monitor and Detect Anomalies

Health
360 View of Assets

Predict
Predictive Failures

Visual Inspection
AI-Powered Insights

Mobility and Dashboards | Intuitive and modernized

Operational Dashboards

Scheduling and Dispatching Dashboards

Service Requests

Work execution

Inventory Count Books

Asset audits

Inspections

Issues and transfers/receipts

Industry Solutions and Add-on's | Accelerate time to value

Manage
Reliability Strategies

Manage
Location Service for Esri

Manage
Maximo IT

Manage
Health Safety and Environment

Manage
Scheduler Optimization

Manage
Service Provider

Agents and Alerts | AI and Analytical Insights

IBM Cloud Pak for Data | Watson | App Connect | Cognos Analytics

Red Hat OpenShift

Infrastructure Independent
Common Operating Environment

IBM Cloud

AWS

Azure

Google Cloud

Private

Edge

Systems

Two deployment options for maximum flexibility

With single entitlement to all applications
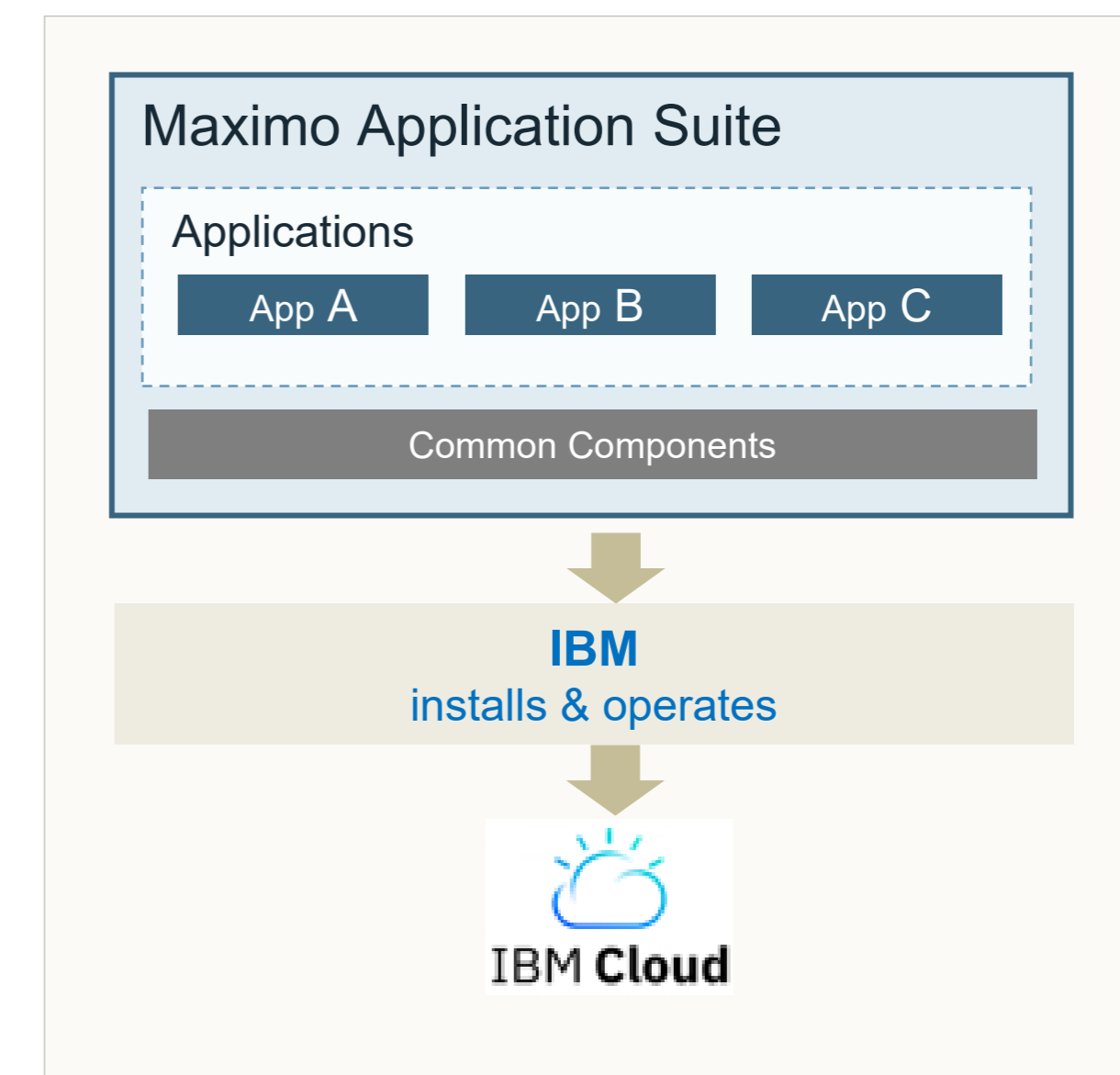*available via Committed Term Licenses*

Managed by You

1. Purchase software only

2. Host it in the cloud or environment of your choice
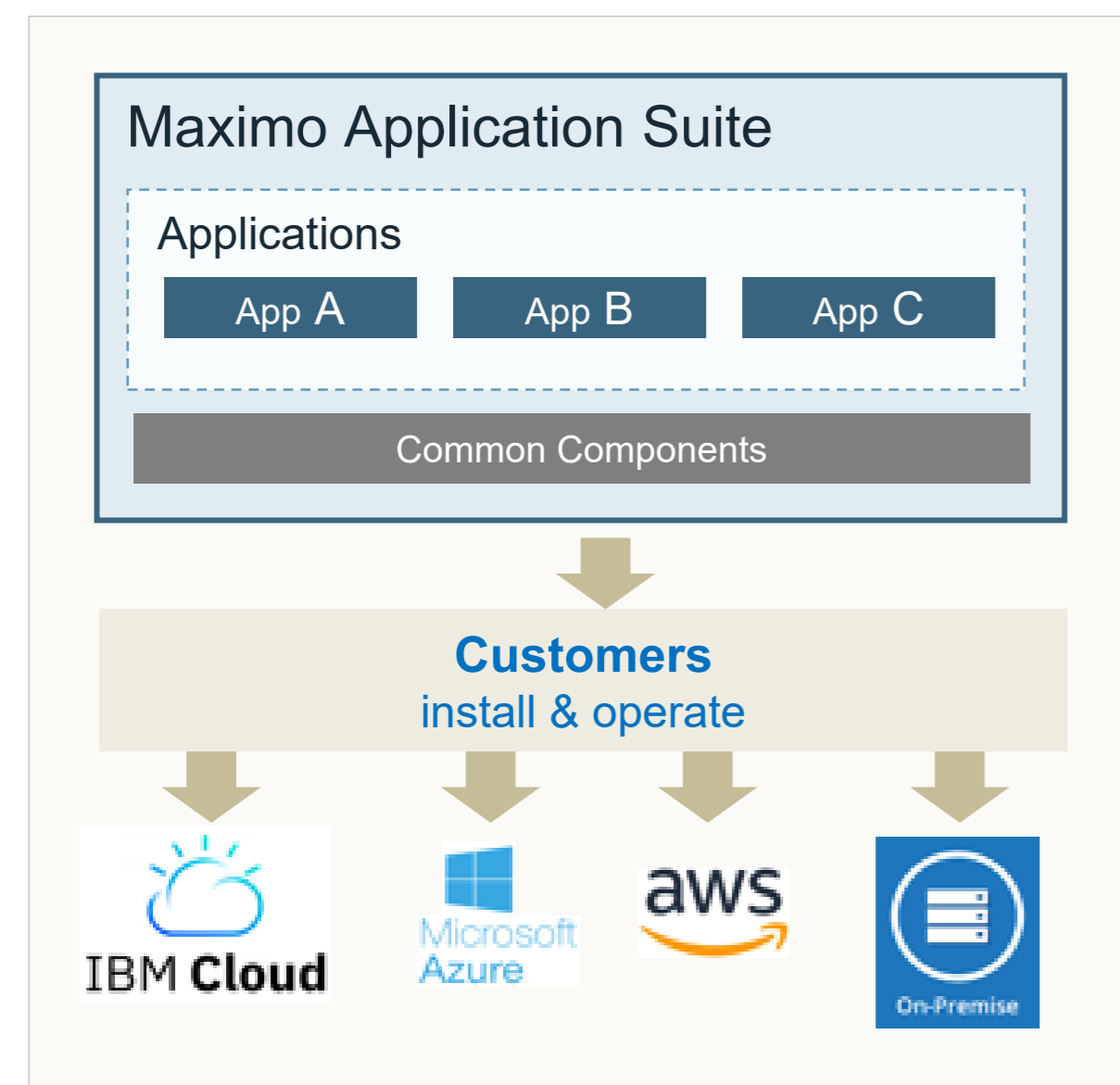
Managed by IBM

1. Purchase software and hosting fees

2. Let IBM's trusted team take care of hosting for you
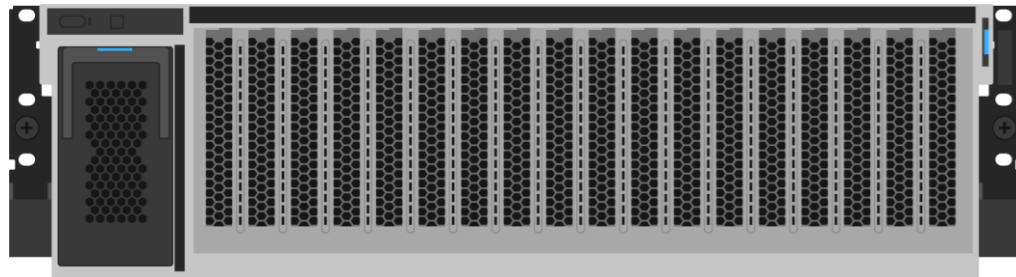
What makes Fusion HCI different?

Deep integration enables organizations to *streamline operations* and *reduce cost* vs roll-your-own
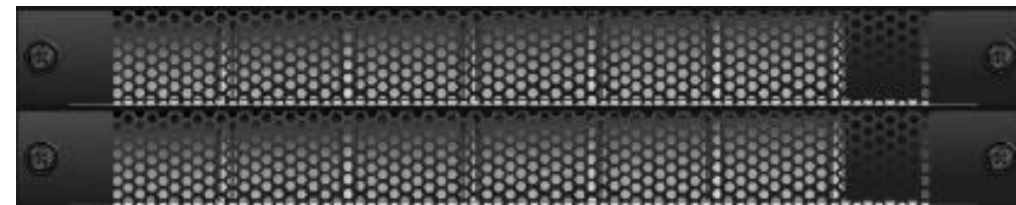
Hyper-converged systems with NVMe

Compute/storage nodes
32 or 64 core
256/512/1024/2048 GB memory

NVIDIA L40S and H100 NVL GPU

GPU nodes
Up to 16x NVIDIA L40S GPUs

Dedicated 100 GbE storage network

High speed switches
100 GbE storage network
25 GbE pod network

Optional S3 external storage

IBM Storage Ceph
96/144/192/240 TB raw
HDD for data
SSD for metadata

Optional remote scale-out file system

IBM Storage Scale System
for high i/o intensive workloads
common in AI

Fusion Differentiators

✓ Optimized for bare-metal OpenShift
Expertly designed hardware stack accelerates deployment and reduces risk by avoiding pitfalls with 'roll-your-own'.

✓ Engineered for production
Architected by IBM, so you don't have to. Fully redundant internal network architecture for high workload resiliency

✓ Integrated, seamless data services
Fusion container-native data services are purpose designed to fit seamlessly into OpenShift operations, providing a consistent experience everywhere

✓ Integrated, seamless lifecycle services
Fusion HCI container-native lifecycle services enables you to monitor, manage, and maintain the complete Fusion HCI infrastructure stack consistently for containers and VMs.

✓ Supported by IBM
Rely on IBM to support the complete technology stack

Flexible configuration options

6-node Fusion HCI 1 rack (min size)
- Raw storage with 12x 8 TB drives: 83 TiB
- Raw storage with 12x 4 TB drives: 41 TiB
- Total cores: 96 cores (192 threads)
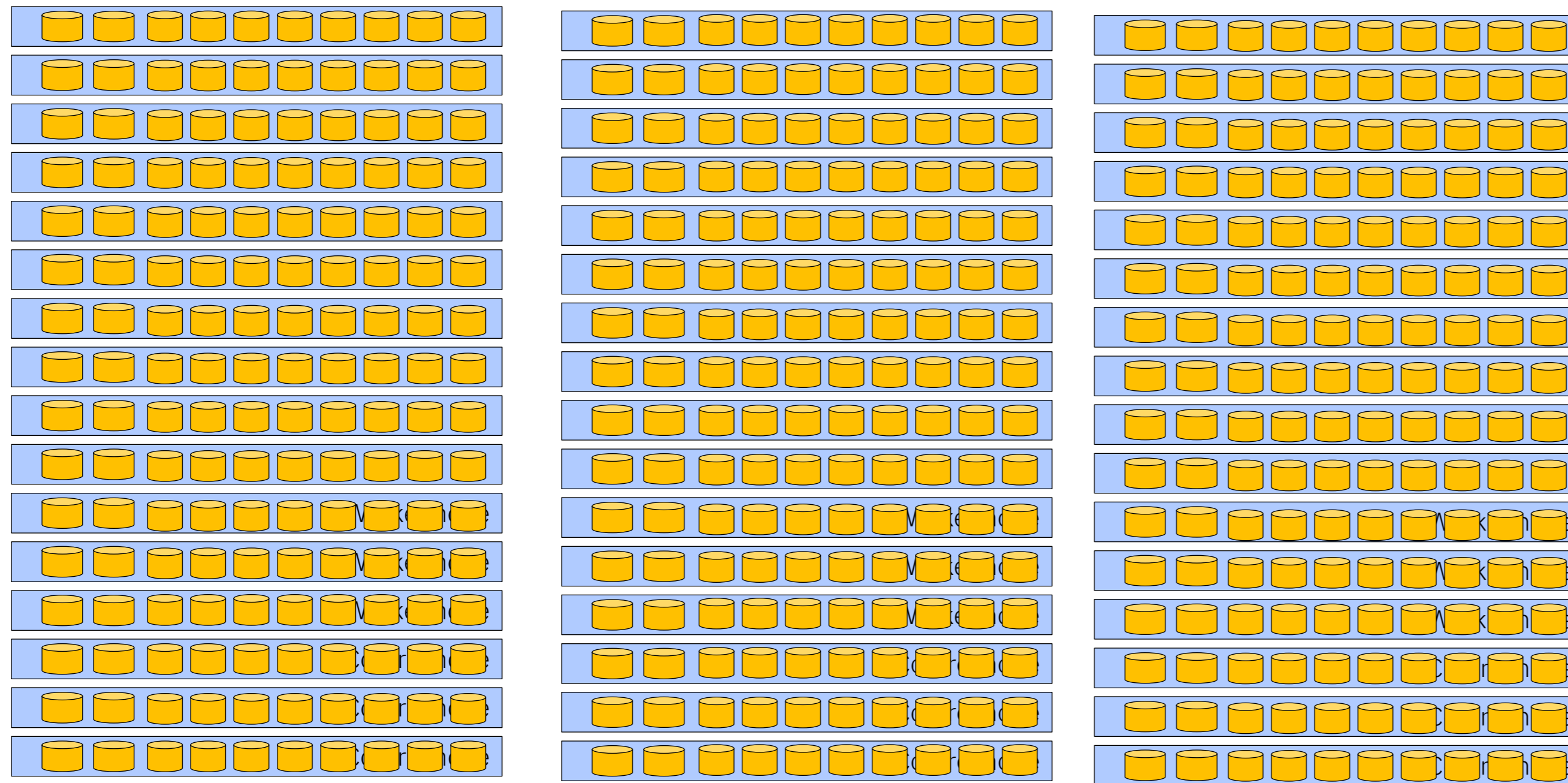
16-node Fusion HCI 1 rack (max size)
- Raw storage with 160x 8 TB drives: 1116 TiB
- Raw storage with 160x 4 TB drives: 558 TiB
- Total cores: 1024 cores (2048 threads)

48-node Fusion HCI 3 rack (max size)
- Raw storage with 480x 8 TB drives: 3348 TiB
- Raw storage with 480x 4 TB drives: 1674 TiB
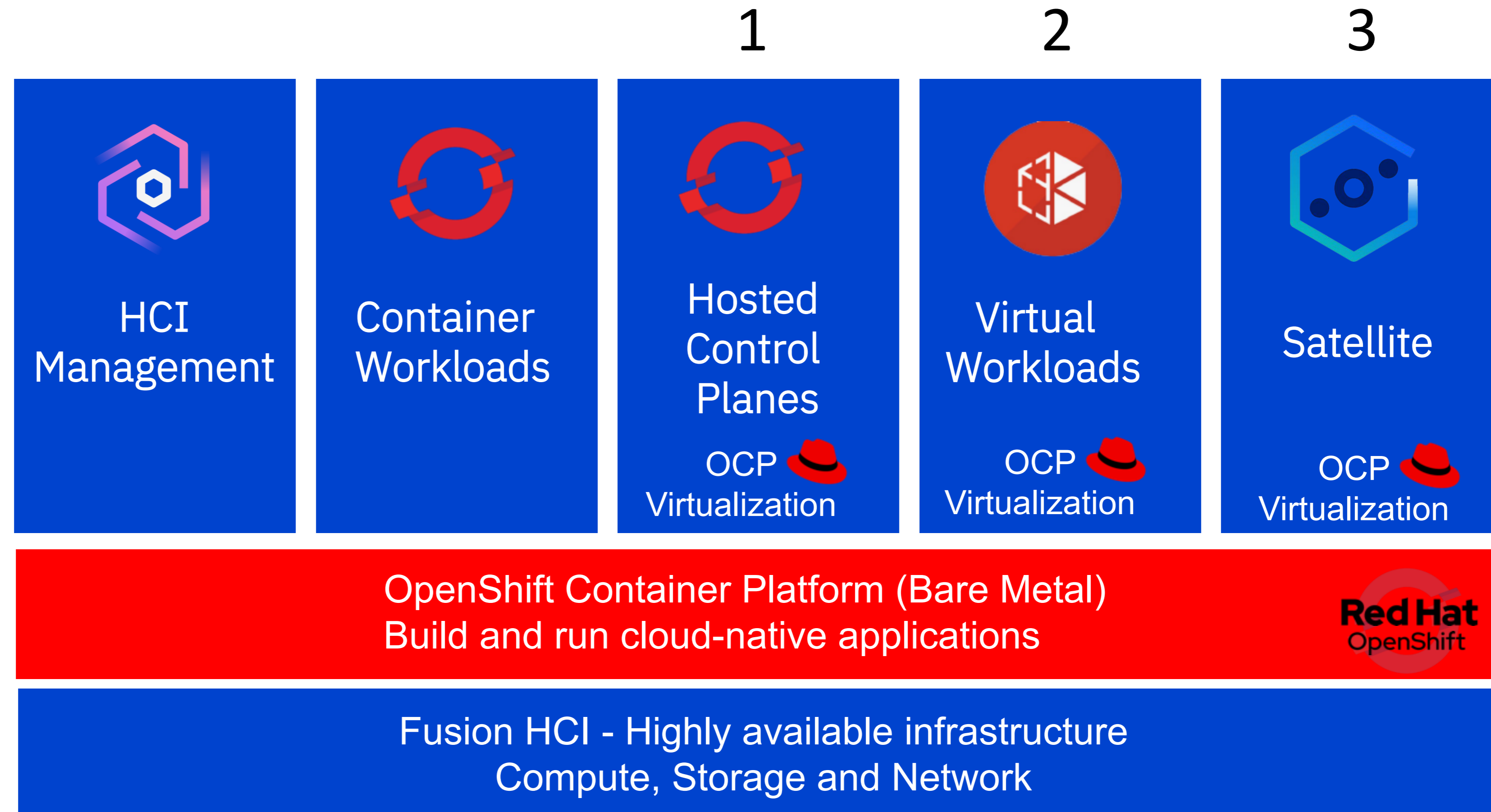- Total cores: 3072 cores (6144 threads)

Configuration options
- 4 TB or 8 TB NVMe drives
- 32 core or 64 core servers with and w/o storage
- Data Foundation or Global Data Platform provided

IBM Fusion: Containers and Virtual Machines side by side

What role will VMs play in the future?

1　2　3

HCI Management	Container Workloads	Hosted Control Planes	Virtual Workloads	Satellite
		OCP Virtualization	OCP Virtualization	OCP Virtualization

OpenShift Container Platform (Bare Metal)
Build and run cloud-native applications

Red Hat OpenShift

Fusion HCI - Highly available infrastructure
Compute, Storage and Network

Fusion HCI arrives fully assembled and ready to install in a day! Our professionals perform most setup - Easy as 1, 2, 3

1

Cable up power and network
- Plug in, power up, and run system checks
  Performed by IBM Service Support Representative (SSR)
- Run Ethernet cables into the data center switches
  Performed by IBM SSR

2

Configure Network
- Configure the datacenter network
  Open ports in firewalls, configure DNS and DHCP servers. Performed by client
- Configure the Fusion HCI System high-speed switches
  Performed by IBM SSR

3

Download & Install OpenShift, Fusion
- Configure connections to container image registries
  Red Hat and IBM, or private enterprise registries. Performed by IBM Expert Labs
- Install OpenShift and Fusion with guided GUI experience
  Performed by IBM Expert Labs

Clients buy Fusion for Day 1, Day 2, & TCO benefits that make it easy to quickly deliver a cloud operating model for container and VM apps

Day 1

76% Deploy OpenShift Easier, Faster, Better

48% Accelerate App Modernization

43% Accelerate IBM Cloud Pak deployments

Day 2

67% Backup/Recovery HA/DR

48% Address skills & resource gaps

43% Leverage enterprise-grade architecture

Integrated Simplicity

43% Complete solution Cloud Pak, ISV, OpenShift, Fusion

TCO

52% Slash total cost of ownership

1 Call Support

71% One vendor to call – IBM

Client surveys: Percent of respondents

Supercharge Maximo Suite with IBM Fusion
The Easiest Way to Manage & Store Data

- ✓ Runs as OpenShift resources, very flat learning curve
- ✓ Meets all Maximo storage requirements, including high-performance block for DB2 internal deployment
- ✓ Automatic backup and restore of the entire MAS suite
- ✓ Application-level encryption to protect sensitive data
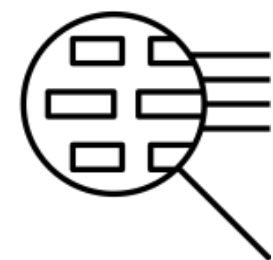- ✓ Simplified services and support – all from IBM

Fusion Software

Runs anywhere Maximo runs – public cloud, on-premises, bare metal and virtual machines.

Fusion HCI

Fully integrated software and hardware to expedite infrastructure roll-out of Maximo on-premise deployments. GPU option Maximo Visual Inspection.
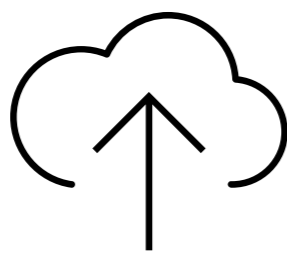
Why IBM Fusion for Maximo?

Integrated Backup & Recovery

MAS backup procedures are focused on persistent data volumes and databases – Fusion **fully automates** the backup and restore of the entire* Maximo Suite.

File, Block & Object

MAS requires file, block and object storage – Fusion provides all three a single solution to **reduce risk** and simplify adoption of additional Maximo modules.

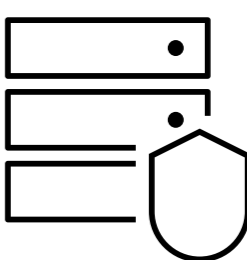## Essentials Included at No Added Cost
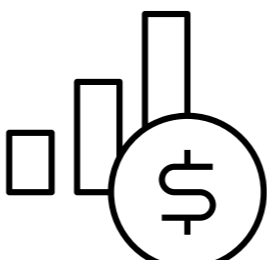
MAS requires about 1 TB of file, block and object storage – IBM Fusion Essentials is already **included with** MAS, providing 12 TB of usable storage.

Designed for Red Hat OpenShift
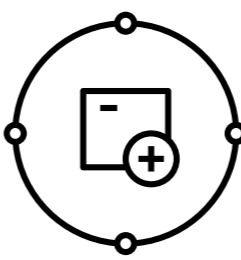
Leverage the market leading storage solution for OpenShift. Focus on Maximo deployment and management, not the infrastructure.
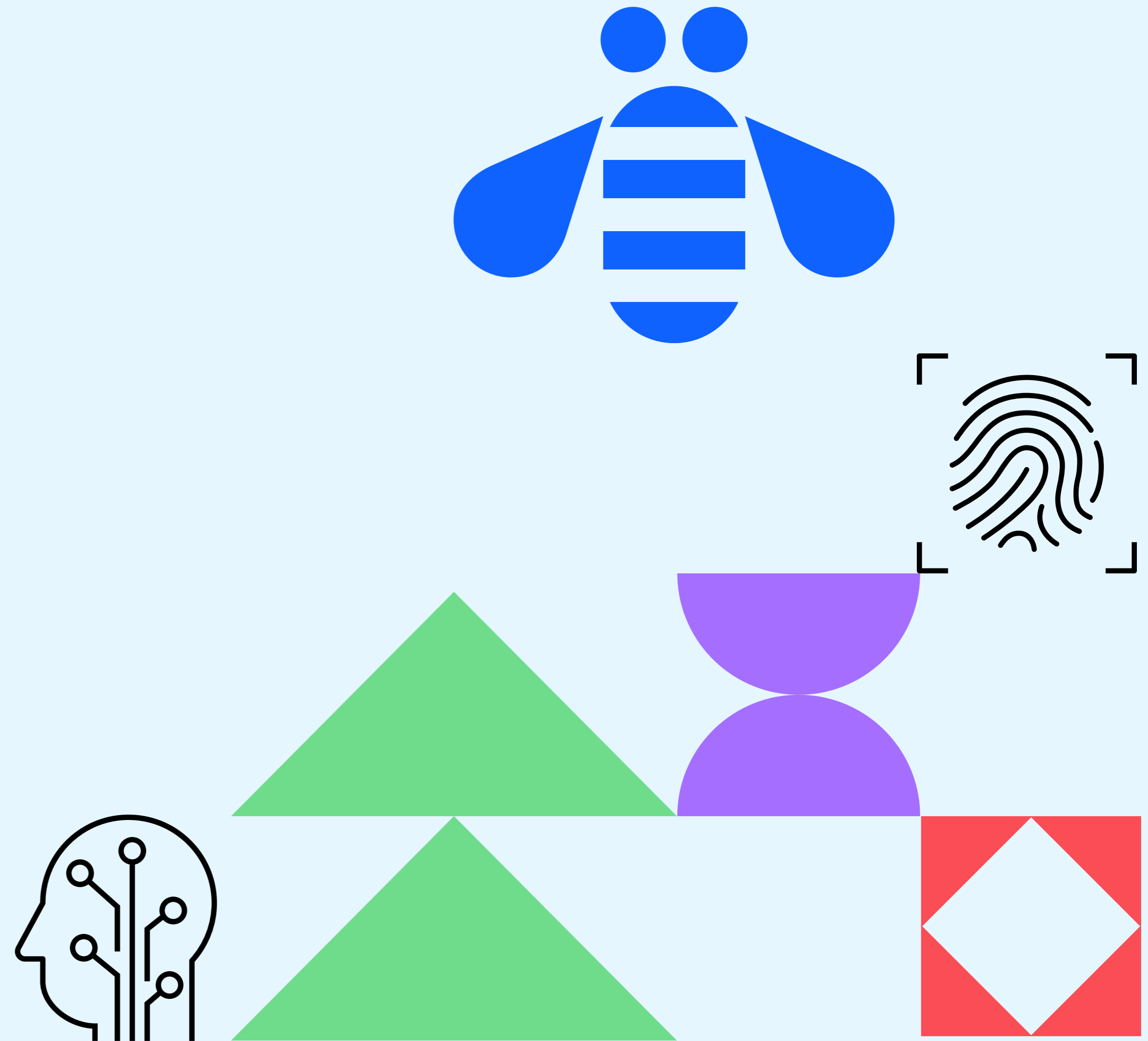
Security & Retention

Complete the MAS solution by **protecting the data** and applications while also meeting data protection standards anywhere OpenShift runs.

Better together: Maximo + Fusion

➢ [MAS on premises infrastructure calculator](#)

➢ [Fusion documentation with Maximo](#)

➢ [MAS documentation for FDF](#)

➢ [MAS documentation B&R with Fusion](#)

➢ [Maximo B&R recipes](#)

IBM Fusion HCI
An engineered OpenShift platform for infrastructure modernization

Integrated solution stack

Bare-metal OpenShift
Bare-metal x86 servers, redundant networks, lower license cost, higher performance

Hyper-converged storage
on fast, low latency NVMe drives

Backup and restore
From simple PV snapshots to multi-PV full application consistent. Policy framework for maintaining compliance and governance.

HA/DR data replication
Fusion HCI supports several deployment topologies for ensuring application availability across multiple failure scenarios

Delivers these values

Simplify Operations
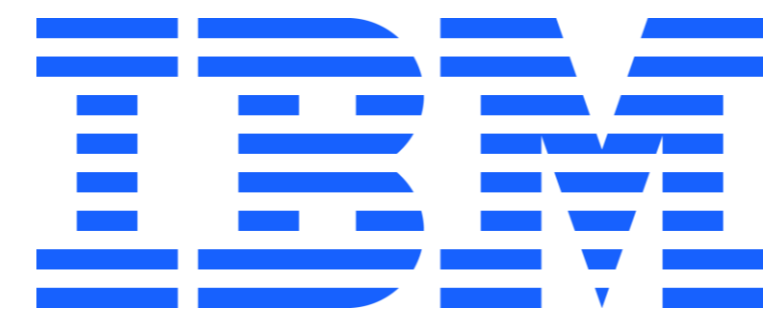*Unify operation of containers and VMs* with OpenShift and Fusion automation. Integrated tools for automated and non-disruptive version, patch, and update management.
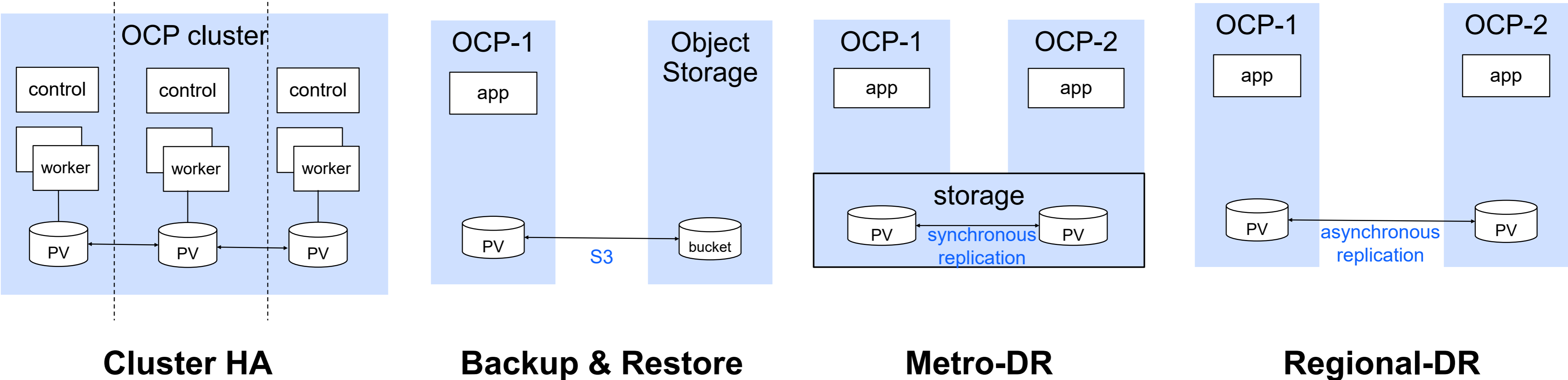
Accelerate Modernization
Deliver an on-premises, self-service cloud operating experience for containers and virtual machines

Reduce IT costs
Central, consistent operations able to leverage existing investments.

Data protection outcomes - compared

	Cluster HA	**Backup & Restore**	**Metro-DR**	**Regional-DR**
Topology	Single OCP cluster + multiple storage clusters deployed over multiple availability zones in single region	Object storage external to OCP cluster	Multiple OCP clusters + single storage stretch cluster deployed over low latency networks	Multiple OCP and storage clusters spread over multiple regions (no latency limits)
RTO (downtime)	RTO=0	RTO = function of data size	RTO=low	RTO=low
RPO (data loss exposure)	RPO=0	RPO = hours	RPO=0	RPO=minutes
Protection (fault domain)	Zone failure	OCP cluster failure, logical corruption, accidental deletion, malicious actions	OCP cluster failure	OCP cluster failure

Multi-Tier data protection

GTM

Proxy

Region 1

automated failover
management with ACM

Region 2

Object Storage

OCP

Master Node

Worker
Nodes

Master Node

Worker
Nodes

Master Node

Worker
Nodes

FDF

PV

PV

PV

Availability
Zone 1

Availability
Zone 2

Availability
Zone 3

asynchronous
replication
with FDF

OCP

PASSIVE

NAMESPACE

RESOURCES

RESOURCES

RESOURCES

PVs

NAMESPACE

RESOURCES

RESOURCES

RESOURCES

PVs

S3 Storage

backup and restore

Cluster hardening with multi-zone
spanning OCP cluster

Asynchronous replication
for hardware and data
center failures

Backup and restore form
snapshots for software and
logical failures

19