Webinar UCS - Hyperflex

Cisco – Riviera Networks

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DC Technical Solutions Specialist

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Networks and Systems Engineer, CEO

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Riviera
NETWORKS

Présentation

Vos Interlocuteurs

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CEO

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Qui sommes-nous ?

Société crée en 2002 dont le siège social est à Aix en Provence

Notre Activité principale est d'être un intégrateur à forte valeur ajoutée en infrastructures réseaux, sécurité, télécoms et systèmes.

Nous possédons un laboratoire accessible à nos clients, à distance ou dans nos locaux à Aix en Provence.

Tous nos collaborateurs ingénieurs sont certifiés constructeurs, à haut niveau (CCIE, CCNP, MCSE, CNSE, PCNSA, PCNSE, Forescout NE, etc…)

Capacité à intervenir partout dans le monde (Europe, Amériques, Afrique, Asie…)

Nos Métiers

Intégration de solutions et infrastructures réseaux, sécurité et systèmes

Audit & Conseil

Suivi de projet (MOA / MOE)

Maintenance et Assistance

Distributeur de solutions reseaux, sécurité et systèmes

Prestation au forfait ou en régie

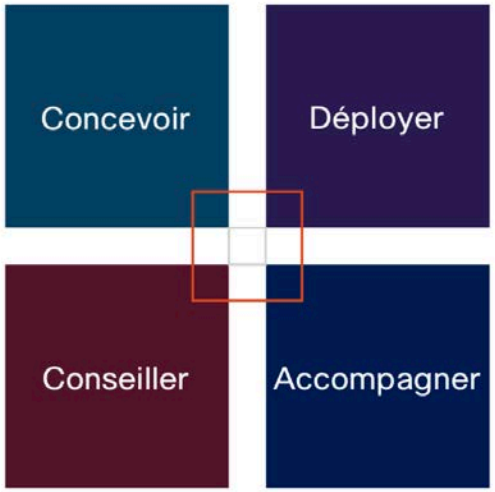
Nos Domaines de Compétences

Réseaux : notre activité historique. Lan, Wan, Wifi, Performance monitoring, fault management

Télécoms : ToIP, VoIP, architecture opérateur, Collaboration

Sécurité : Firewalling, Filtrage, VPN, anti-spams, AntiDDOS, IPS, IDS, SIEM, Endpoint Protection, NAC, etc…

Systèmes : Messagerie, Backup, Virtualisation, Cloud Public - Privé



Merci !

Introduction UCS - Hyperflex

Guillaume Brisson
DC Technical Solutions Specialist

Infrastructure Operations Challenges we are Addressing

Distributed apps and IT

Physical and virtual sprawl, IoT, microservices

Human limitations

Scale, speed, complexity that make modern data centers unmanageable

Traditional management

“Building a monster to manage the monster”

Strategy for next-generation systems management

Use the cloud

Connect everything

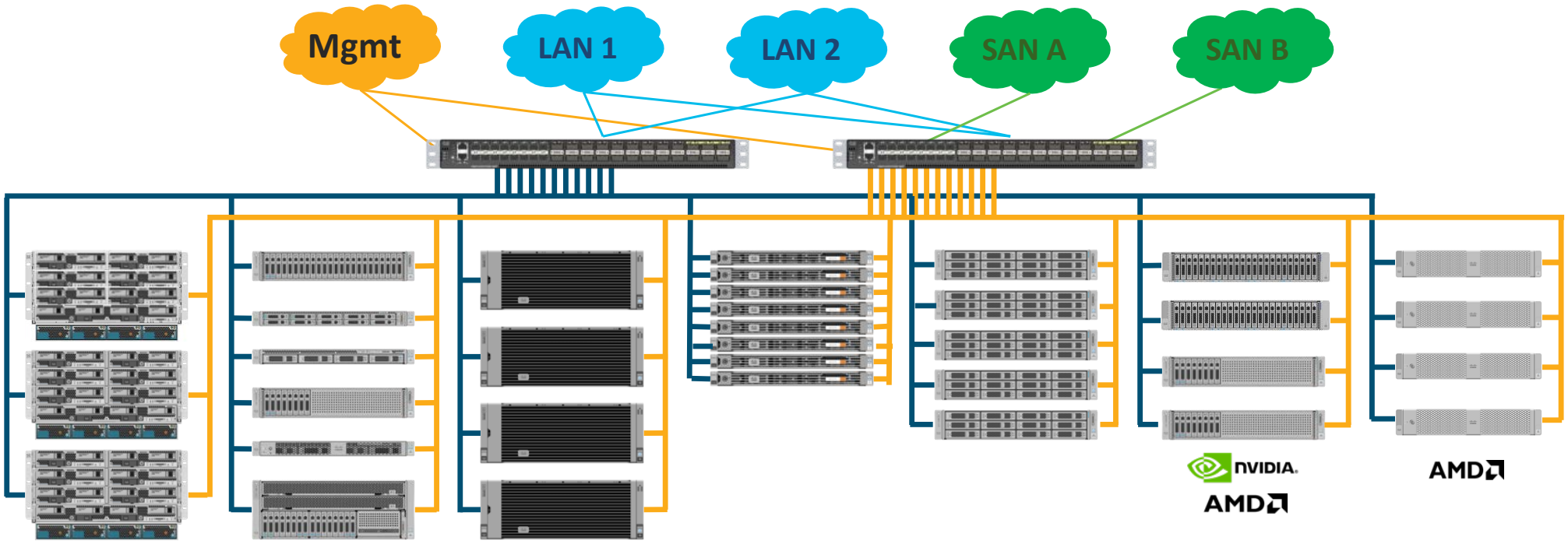
Analyze the telemetry

Create actionable insight

Combine insight with automation

Have machines manage machines

Unified Computing System

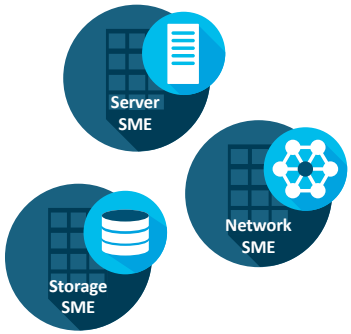


Avant HX, UCS a changé la définition de serveurs

- Cisco UCS (Unified Computing System) unifie du point de vue architectural:
  - Compute: serveurs
  - Réseau unifié (FCoE, vNIC…)
  - “System as a whole”
- On ne configure pas un serveur, mais un système
- On ne configure pas les ports des switch LAN DC, on se câble une fois sur les FIs (dont le management est automatisé)
- On supprime la complexité et on aligne les configurations de serveurs et du réseau DC

Embedded Automation

Policy based systems management with service profiles



- Server Policy
- Storage Policy
- Network Policy
- Virtualization Policy
- Application Profiles

Uplink port configuration, VLAN, VSAN, QoS, and EtherChannels

Server port configuration including LAN and SAN settings

Network interface card (NIC) configuration: MAC address, VLAN, and QoS settings; host bus adapter HBA configuration: worldwide names (WWNs), VSANs, and bandwidth constraints; and firmware revisions

Unique user ID (UUID), firmware revisions, and RAID controller settings

Service profile assigned to server, chassis slot, or pool

configuration: MAC address VLAN, and QoS settings; host bus adapter HBA configuration: worldwide names (WWNs), VSANs,

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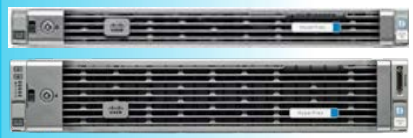


1 Subject matter expert define policies > 2 Policies used to create service profile templates > 3 Service profile templates create service profiles > 4 Applying service profiles to bare metal configures servers automatically

UCS Hardware Portfolio

Performance Optimized for Bare Metal, Virtualized, and Cloud Applications

Cloud Scale

S3260
Ideal Capacity-Optimized Platform for Large Object Storage at Scale
2 Node 2S each
14 DIMM Slots per Node
Up to 720TB LFF Storage
Up to 90TB Flash

Enterprise Performance

C240 M5
2S, 56 Cores
Up to 6TB DDR4 Memory
26 SFF/12LFF, up to 10 NVMe

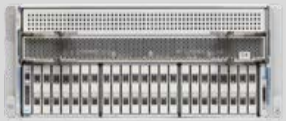
C220 M5
2S 56 Cores
Up to 6T DDR4 Memory
10 SFF/10NVMe/4 LFF

C4200 SFF
4Node/2S Each – AMD 64 Cores
16 DIMM Slots per node
SAS/SATA/NVMe drives

C220 M5 SD
Edge 2RU form factor for wide range of edge deployments

B200 M5
2S, 56 Cores
Up to 6TB DDR4 Memory
2 SFF

Intensive/Mission Critical



C480 M5 ML
2S, 56 Cores
Up to 3TB DDR4 Memory
24 SFF, 6 NVMe
8 SMZ1 V100 GPUs

C480 M5
4S, 112 Cores
Up to 12TB DDR4 Memory
32 SFF/NVMe
10 GPUs

B480 M5
4S, 112 Cores
Up to 12TB DDR4 Memory
4 SFF, 4 GPUs

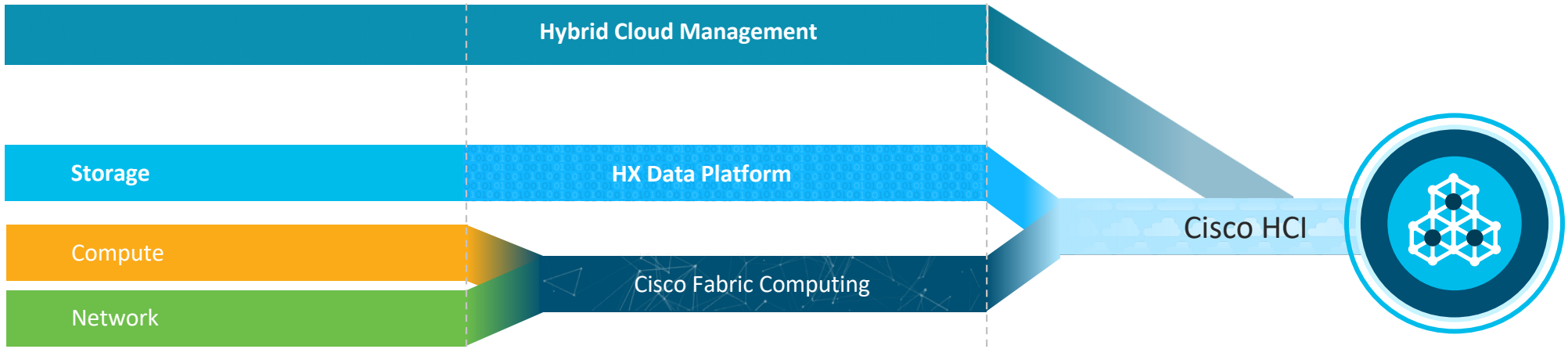
Hyperconvergence

HX220 Hybrid and All Flash
High Performance in Small Footprint (Databases, VDI, VSI)

HX240 Hybrid and All Flash
High Density with Performance (Databases, VDI, VSI, Test/Dev)

HX Edge
2-4 Nodes
Single pane of glass for deployment and management
Invisible Cloud Witness Service

Evolution vers l'Hyperconvergence
Compute, Network, Software HCI unifiés



Infrastructure Traditionnelle

Silos entre Compute, Storage et Networking + différents vendeurs

Différent points de management

Pas de test d'interopérabilité

Pas de point unique de support

Cisco UCS Foundations

Converged Compute & Networking System

Cisco HyperFlex

Solution clé en main axée sur la simplicité

Déploiement automatisé

Management unifié

Scale-out expansion

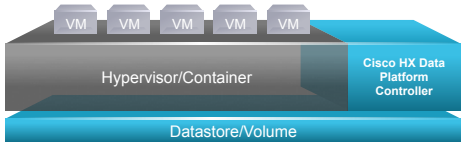
Software-defined Storage

Un point unique de support

Les éléments d'HyperFlex

Fabric Interconnect
+ Cisco UCS

+



HX Data Platform Software
on top of ESXi or Hyper-V

=

Cisco HyperFlex Systems

Un cluster commence à 3 noeuds…

… et supporte différentes architectures

Hybride

All-Flash

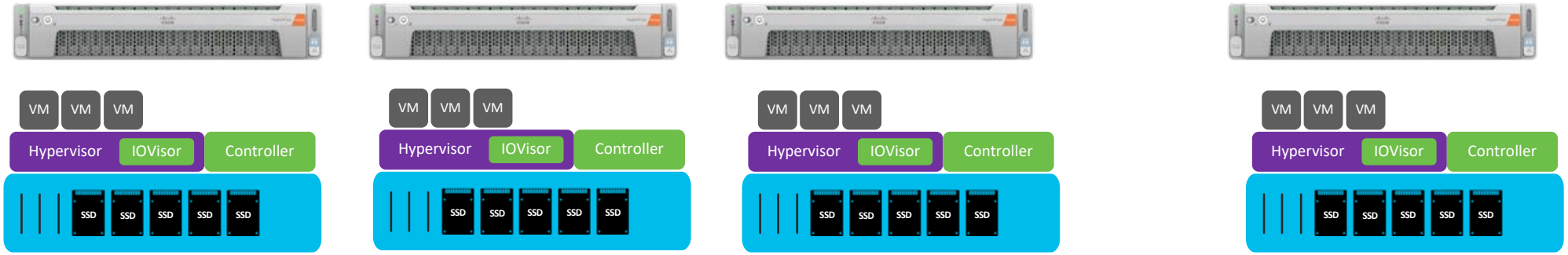
All-NVMe

SFF/LFF

220c/240c

Hyperflex et le stockage distribué

Tout le stockage du cluster est disponible aux VMs, quel que soit l'host



L'ajout d'un noeud augmente la capacité globale du stockage

Cisco HyperFlex Architectural Differentiators

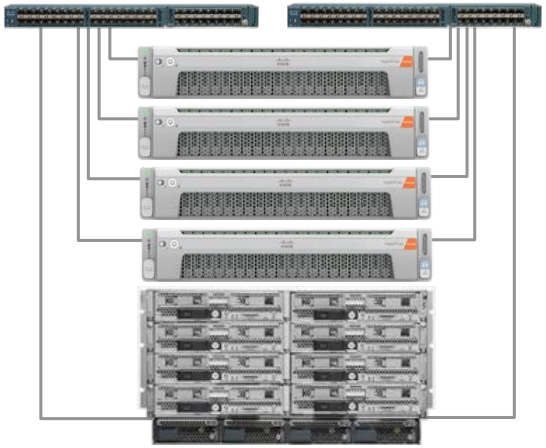
Hardware and Software Engineered Together

Next Gen Distributed Data Platform

- Enterprise Scale
- Performance without hot spots
- Extremely consistent IO

Simplified Policy Based Management

- Simplified operations across compute, storage and network
- Intelligent, adaptive & Cloud managed with Intersight



Cisco HyperFlex System w/ UCS compute only nodes

Complete Hyperconvergence with Integrated Network Fabric

- Unified Network Infrastructure
- Guaranteed QoS with low latency

Pre-integrated Hardware & Software

- Single point of support
- Backed by world class Cisco TAC Support

Hypervisor Choice
ESXi and Hyper-V

Data Protection & High Availability

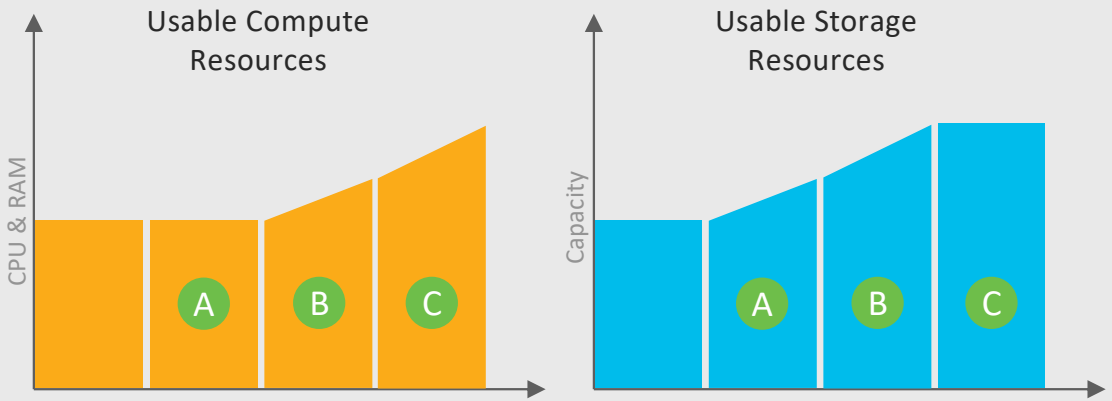
Enterprise grade data services

Tetration
ACI

CloudCenter
AppDynamics, CWOM

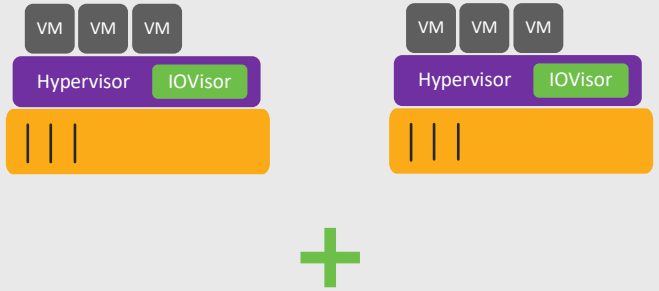
Back to Overview

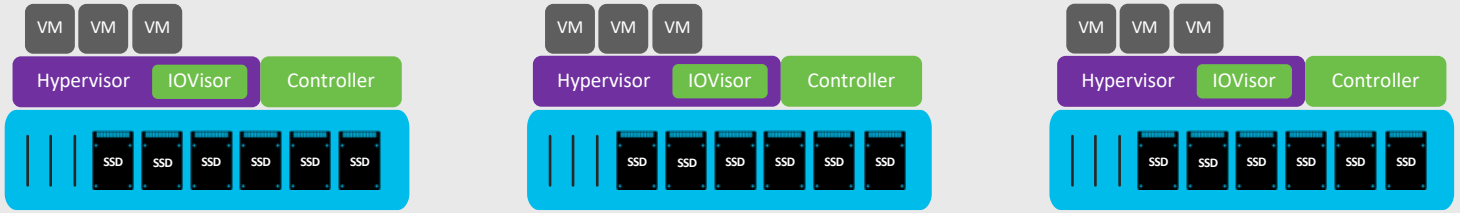
Independent Scaling of Compute and Capacity



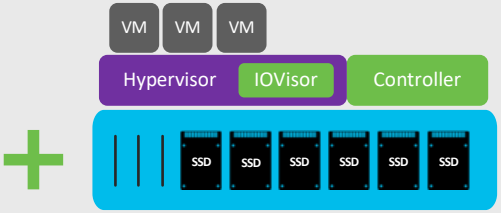
C Add Compute-Only Nodes

Non-HyperFlex hosts can connect to storage with IOVisor





A Add Capacity Drives to Existing Converged Nodes

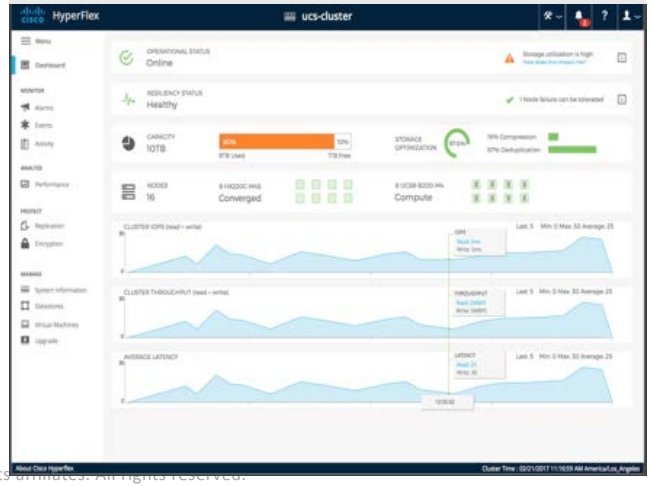


B Add Converged Nodes

Flexible Local Management and Monitoring

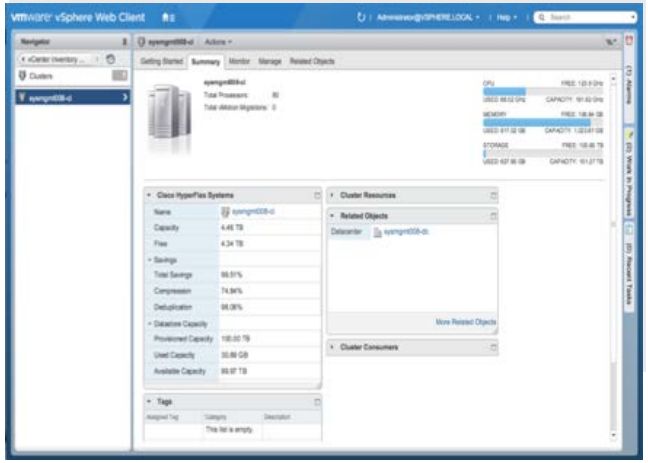
HyperFlex Connect

- Easy to use
- Extremely intuitive
- Fast and Responsive



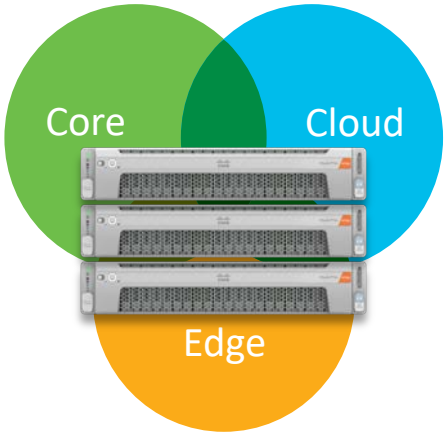
vCenter Plugin

- Web Client Plugin
- Monitor all events in VC
- No separate console, no learning curve



Hyperflex est un écosystème de partenaires:

Back to Overview



Enterprise Apps

Microsoft · Exchange · Citrix · Citrix XenDesktop · VMware Horizon · Siebel · Oracle E-Business Suite · SAP · PeopleSoft · Oracle Database · VMware · SharePoint · Cisco Unified Contact Center · Cisco Webex · Murex · Splunk> · McKesson · Epic · Microsoft SQL Server · SAP HANA

Hybrid/Multicloud

Google Cloud Platform · Microsoft Azure · amazon web services · Cisco Cloud Center · Cisco AppDynamics

Containers / Cloud Native Apps

Google Anthos · kubernetes by Google · OpenShift by Red Hat · docker · Cisco Container Platform

Intelligent Management (AI Ops)

Cisco Intersight · Citrix Cloud · turbonomic · Cisco Workload Optimization Manger

AI/ML Apps

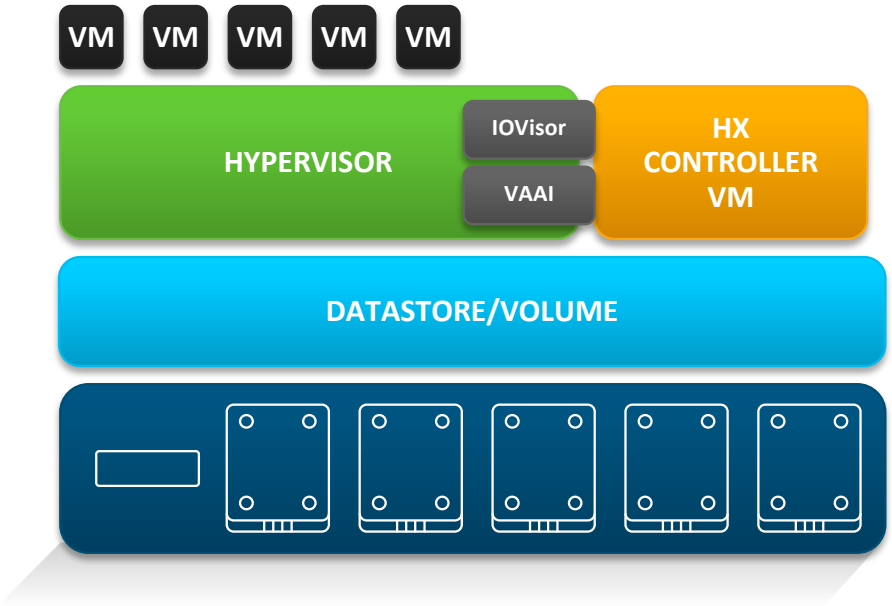
Google Cloud Platform · NVIDIA · skymind · Anaconda · OpenVINO

Secondary Storage / Backup and Recovery

nexenta · Cloudian · Cohesity · Veeam · commvault · rubrik

HX Internal Operations

Inside HX Data Platform Node

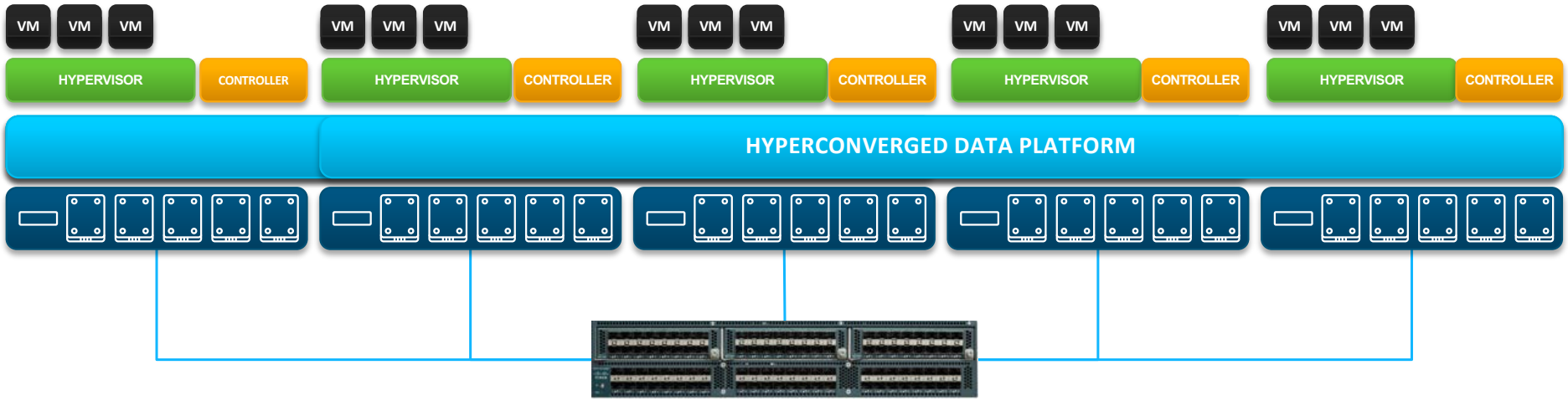


HX Controller VM Assumes Direct Access of Local Storage

IOVisor Module Presents Pooled Storage to HyperVisor and Stripes IO

Data Services are Offloaded to HX Data Platform

Hyperconverged Scale Out and Distributed File System



Start with as Few as Three Nodes

Hyperconverged Data Platform Installs in Minutes

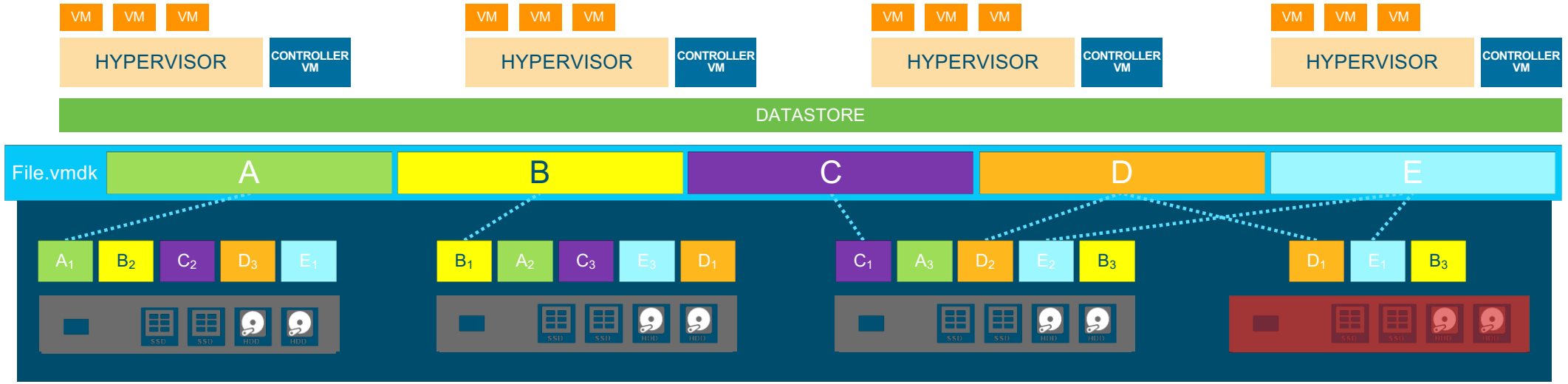
Network Fabric Policy Configures QoS Settings

Add Servers, One or More at a Time

Distribute and Rebalance Data Across Servers Automatically

Retire Older Servers

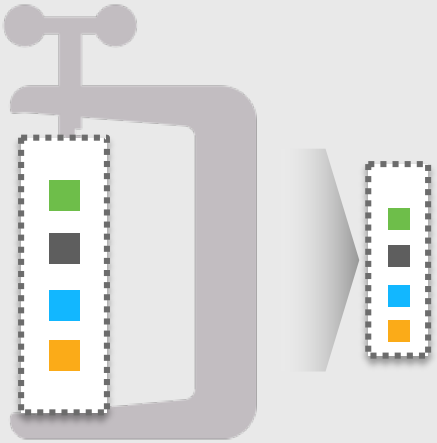
High Availability and non-disruptive operations



- Stripe blocks of a file across servers
- Replicate one or two additional copies to other servers
- Handle entire server or disk failures
- Restore back to original number of copies
- Rebalance VMs and data post replacement
- Rolling software upgrades

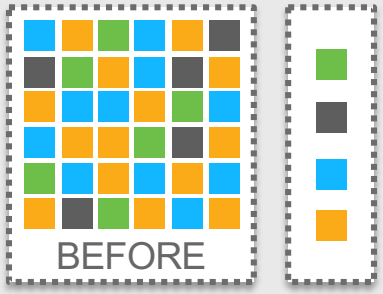
Continuous Data Optimization

Log-Structured File System Yields More Efficient Data Optimization



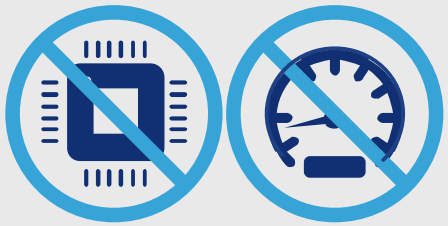
Inline Compression

30–50% space savings



Inline Deduplication

20–30% space savings



No Special Hardware

No Performance Impact

No Config lock-in

No Additional License

Lower Cost

Back to Overview

High Availability & Reliability

Enterprise Class Filesystem

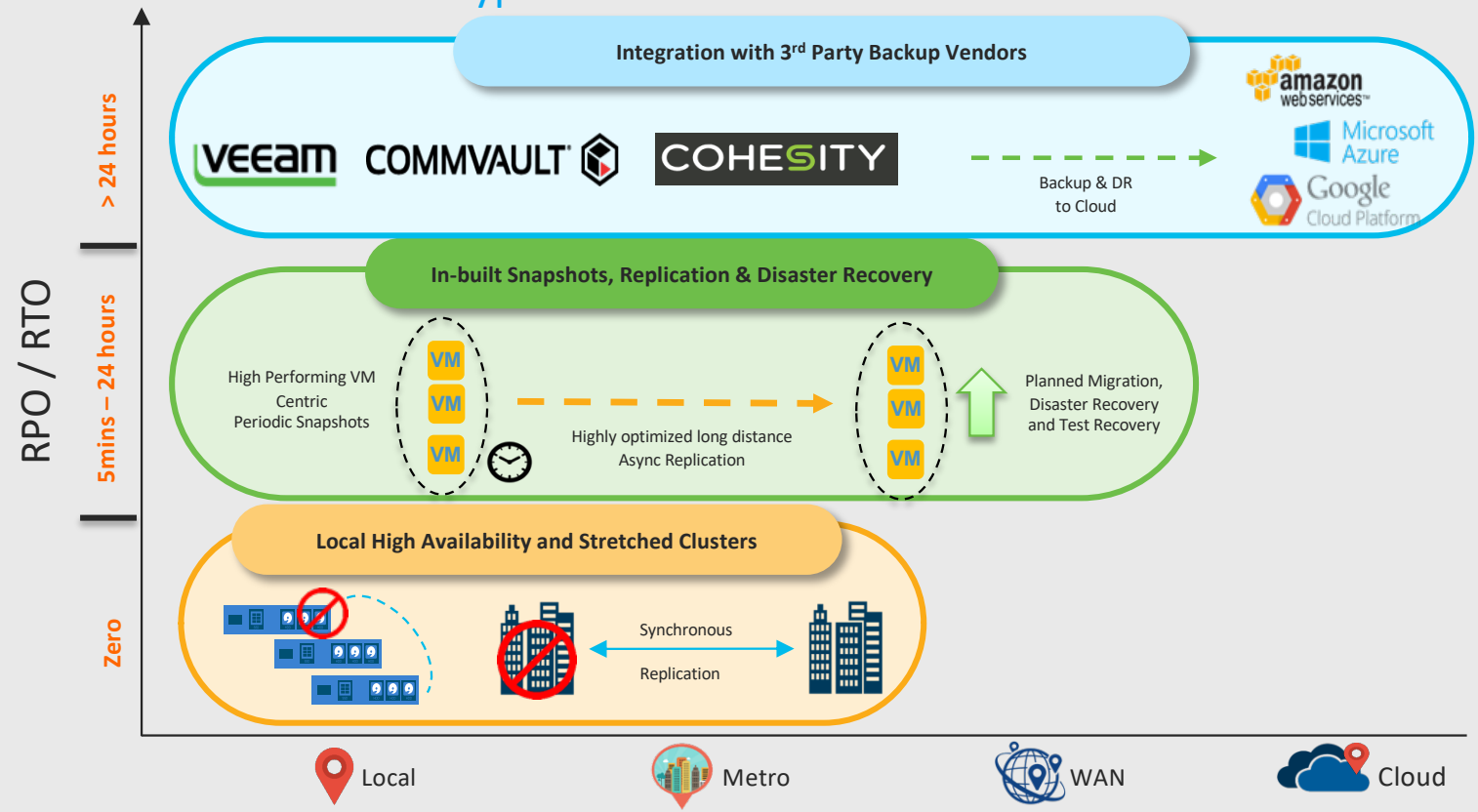
Data Integrity & Reliability

- Block checksums protect against media errors
- Flash friendly layout helps maximize flash life
- Zero overhead, instantaneous snapshots for DP

High Availability

- Fully-striped architecture helps with faster rebuilds
- Fine grained data-resync and rebalance
- Non-disruptive rolling upgrades

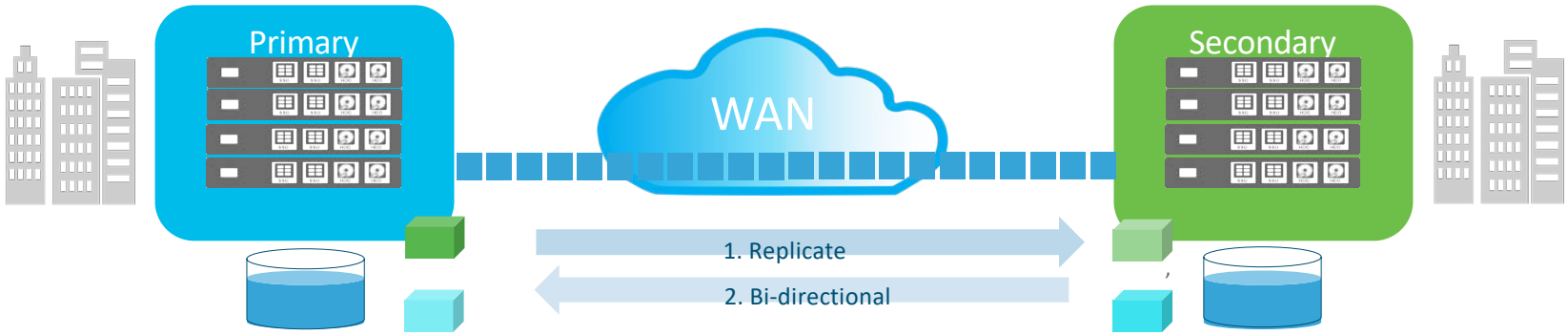
HyperFlex Data Protection



Native Replication

HX Replication Overview

Use Case: Replication for Disaster Recovery



Supported Configuration

- Point-to-Point (1-to-1) Replication
- Different number of Cluster nodes on each site
- Replicate between HX220 and HX240 Clusters
- Replicate between All-Flash and Hybrid Configurations

Underlying Technology

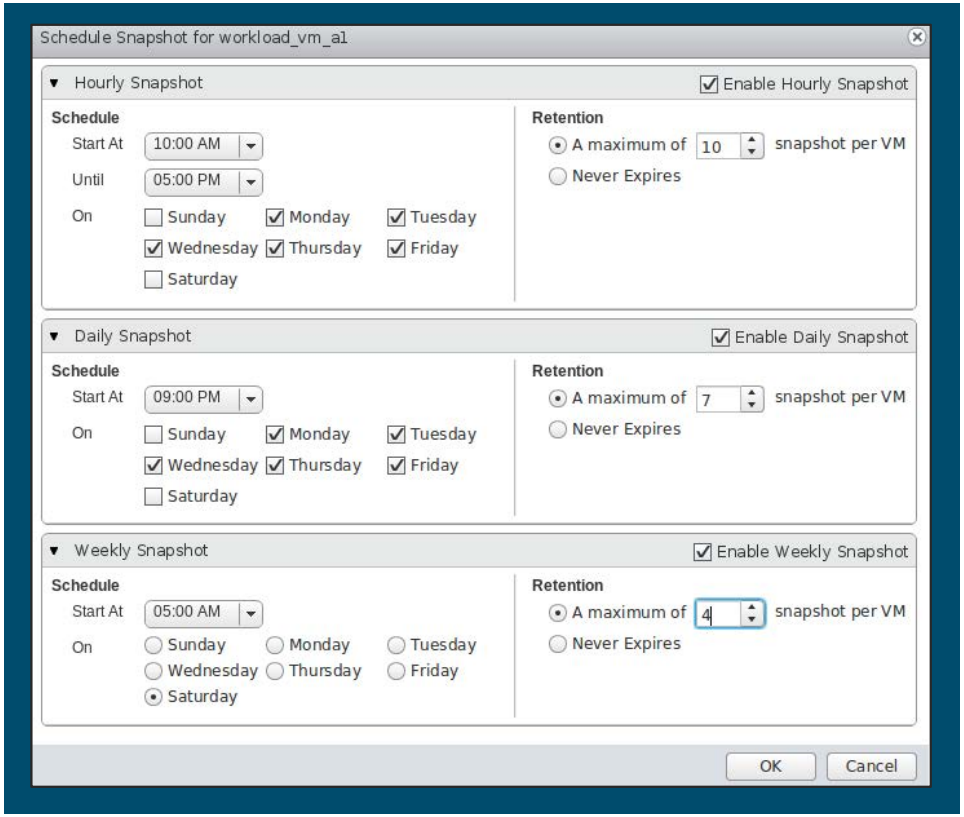
- Snapshot based, Periodic Replication
- Scale-out, performant, reliable and network optimized
- VM Centric Replication
- Single PIT (latest) image for Recovery
- Flexible RPO of 15mins to 24 hours
- HTML 5 based , REST API & CLI based operations and monitoring

Disaster Recovery

- Recover from the latest Snapshot copy
- Supports planned and unplanned recovery
- Active – Active and Active-Passive DR via bi-directional replication
- Enabled to integrate with 3rd party DR orchestration products

HyperFlex Data Protection
Fast and Flexible Native Snapshots

- Pointer-based snapshots
  - Space-efficient with no performance penalty vs. Vmware Redo Log Snaps
  - Fast creations and deletions
- Fine-grained or coarse-grained
  - VM-level or VM folder-level
- VAAI-integrated
  - Quiesced and crash-consistent
- Use vCenter Snapshot Manager
- Policy-based schedules and retention

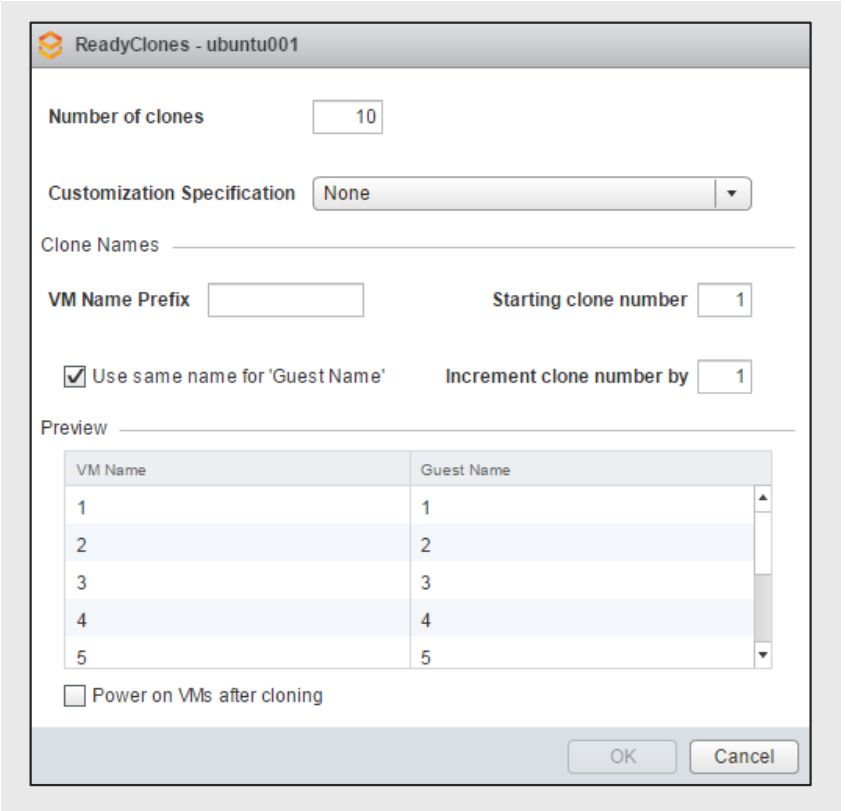


All This Functionality Enabled with the HX Data Platform Filesystem

Native VM Clones for Rapid Provisioning

- Pointer-Based Writeable Snapshots (Instantaneous Clones)
- VAAI integrated
- VM-level granularity

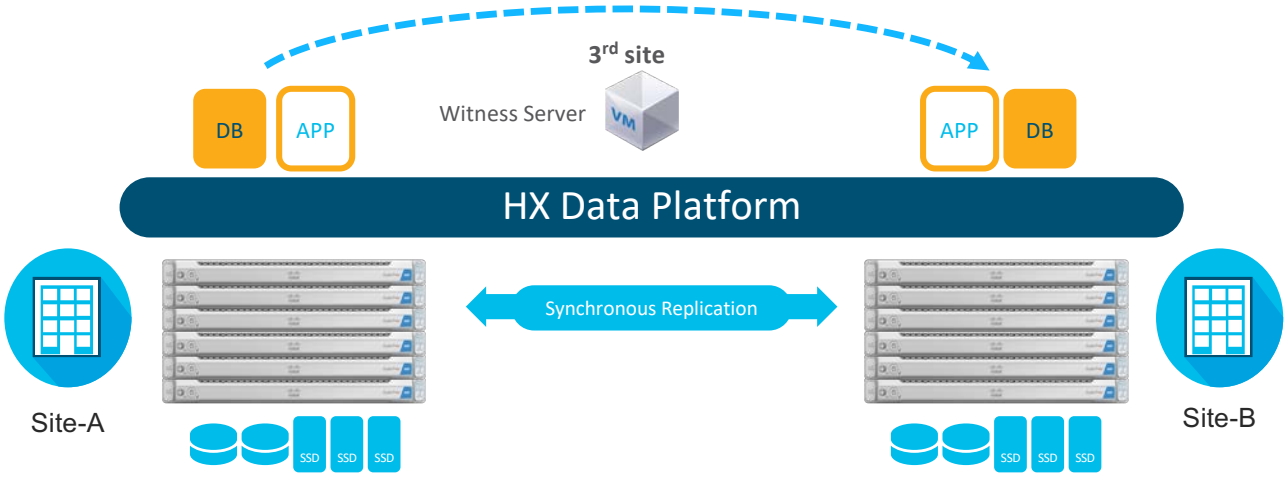
- Batch creation GUI
  - Apply unique names
  - Use customization spec to apply IP
  - Powerful tool to rapidly setup a large set of VMs using just VC (without scripting or View composer); Up to 256 clones in parallel per job
  - Golden/Base VM can be a template, powered on or powered off



Stretched Cluster

What is a Stretched Cluster?

NEW
HX 3.0

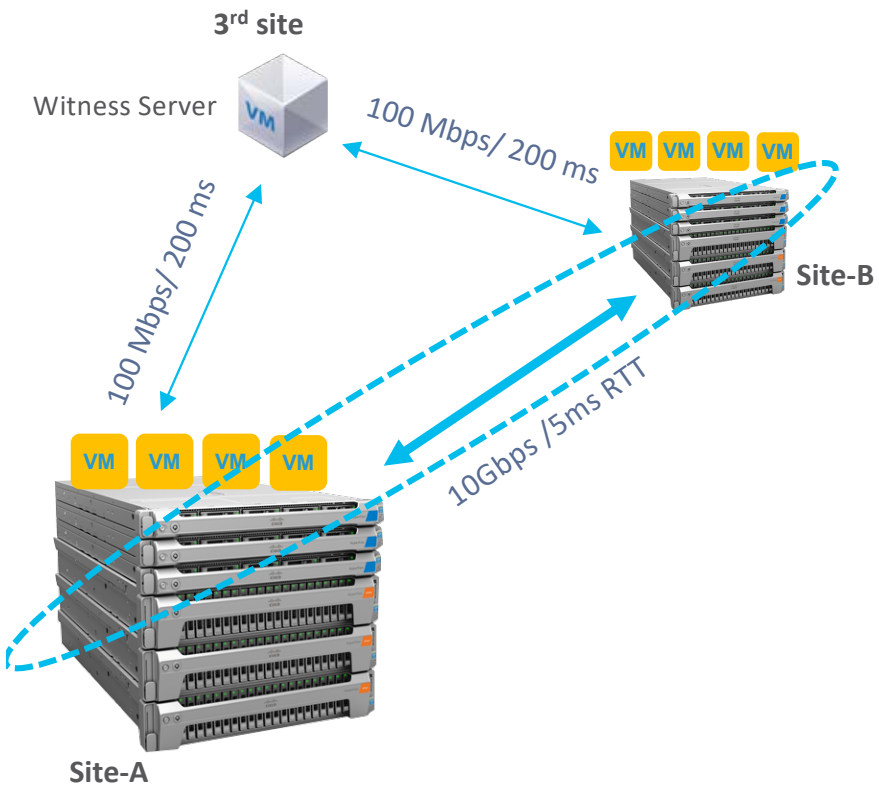


1. A stretched cluster is a single cluster with nodes geographically distributed
2. Storage is mirrored across each sites
3. Sites need to be connected over low latency network
   - Second site is few hundred kilometers apart
4. Geo-failover (VM) is like failover in a single cluster
5. "Split-Brain": Condition when nodes on either sites cannot see each other
   - Network failure
   - Site failure
6. "Witness" : An entity hosted on a 3rd site responsible for deciding the which site survive after a split-brain

HyperFlex Stretched Cluster

ZERO RPO! NEAR ZERO RTO!

NEW
HX 3.0



Configuration Support

- ✓ Symmetric Configuration
- ✓ "Witness Server" (small VM)
- ✓ 2 to 8 HX nodes on each site
- ✓ M5 only support
- ✓ No support for SED, Hyper-V, Edge, compute-only nodes
- ✓ External storage support

Management

- ✓ Site awareness in HX Connect
- ✓ Cross site Cluster creation
- ✓ Site specific Alarm and Events on a single Dashboard

IO Path

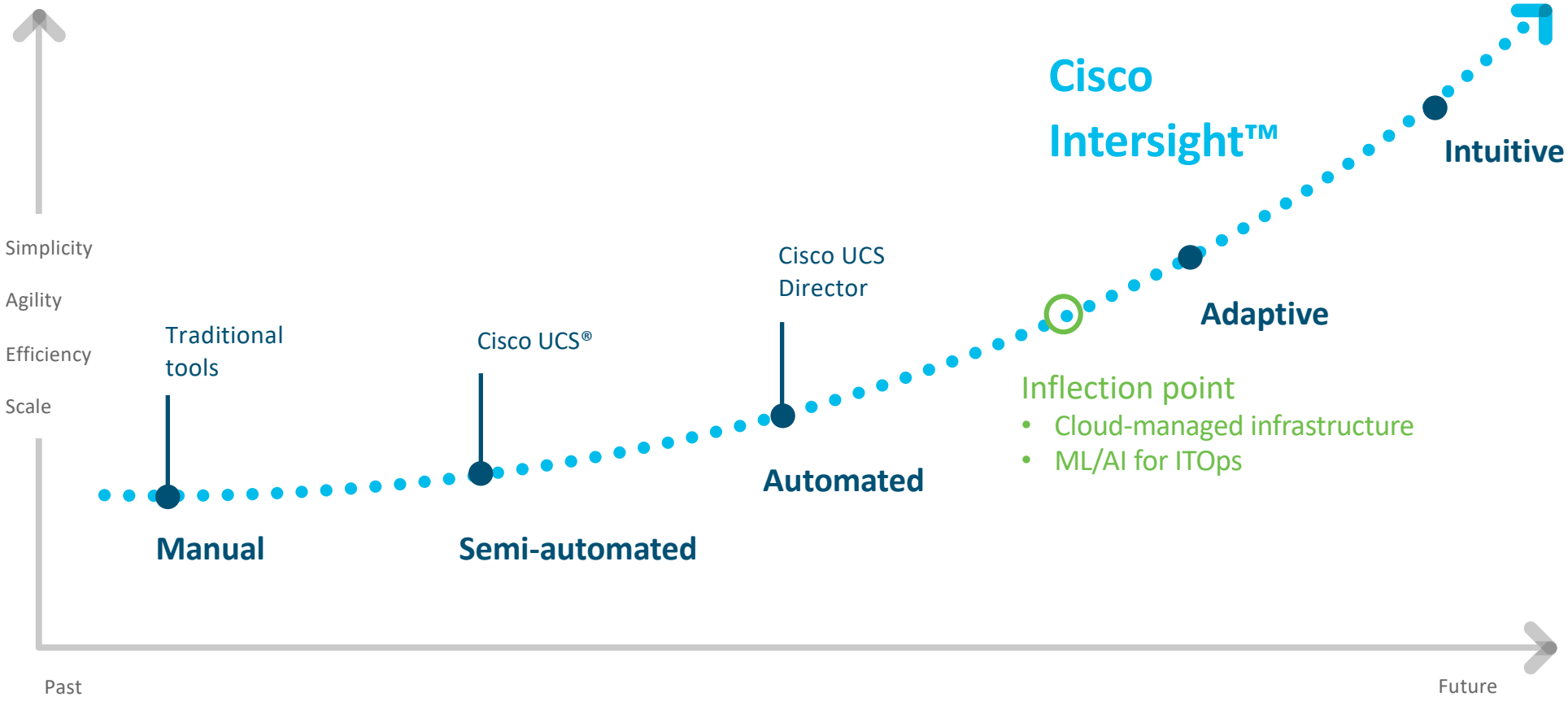
- ✓ Active-Active sites – VMs Active on each site
- ✓ VM Read IOs served locally
- ✓ VM Write IOs in sync
- ✓ 2x copies on each site (RF=4)

HA Operations

- ✓ Recover from a Node failure
- ✓ Recover from a Site failure
- ✓ Recover from a Network failure
- ✓ Failover of VM
- ✓ Split Brain handling

Cisco Intersight

Systems management evolution



Cloud-Based Systems Management as-a-Service

Centralized Management

Global Policies

Intuitive experience

Enhanced Support

Proactive Guidance

Secure and Extensible

SaaS or Connected Appliance

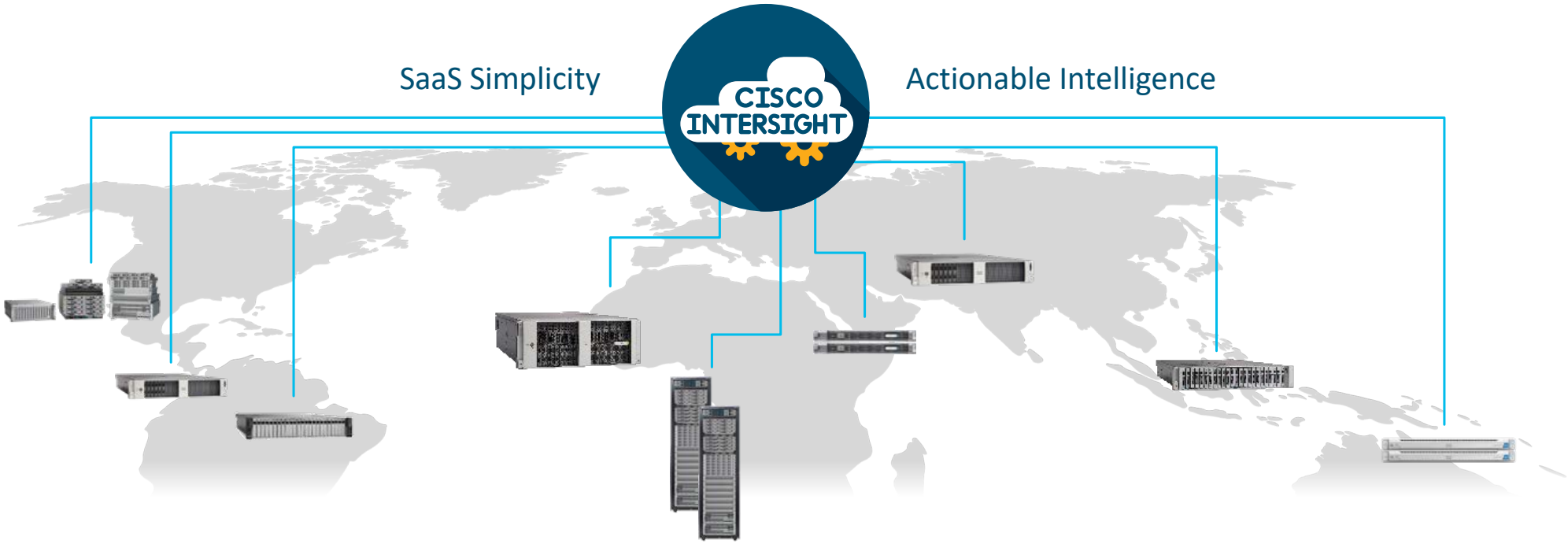
Comprehensive Automation

Single Pane of Glass

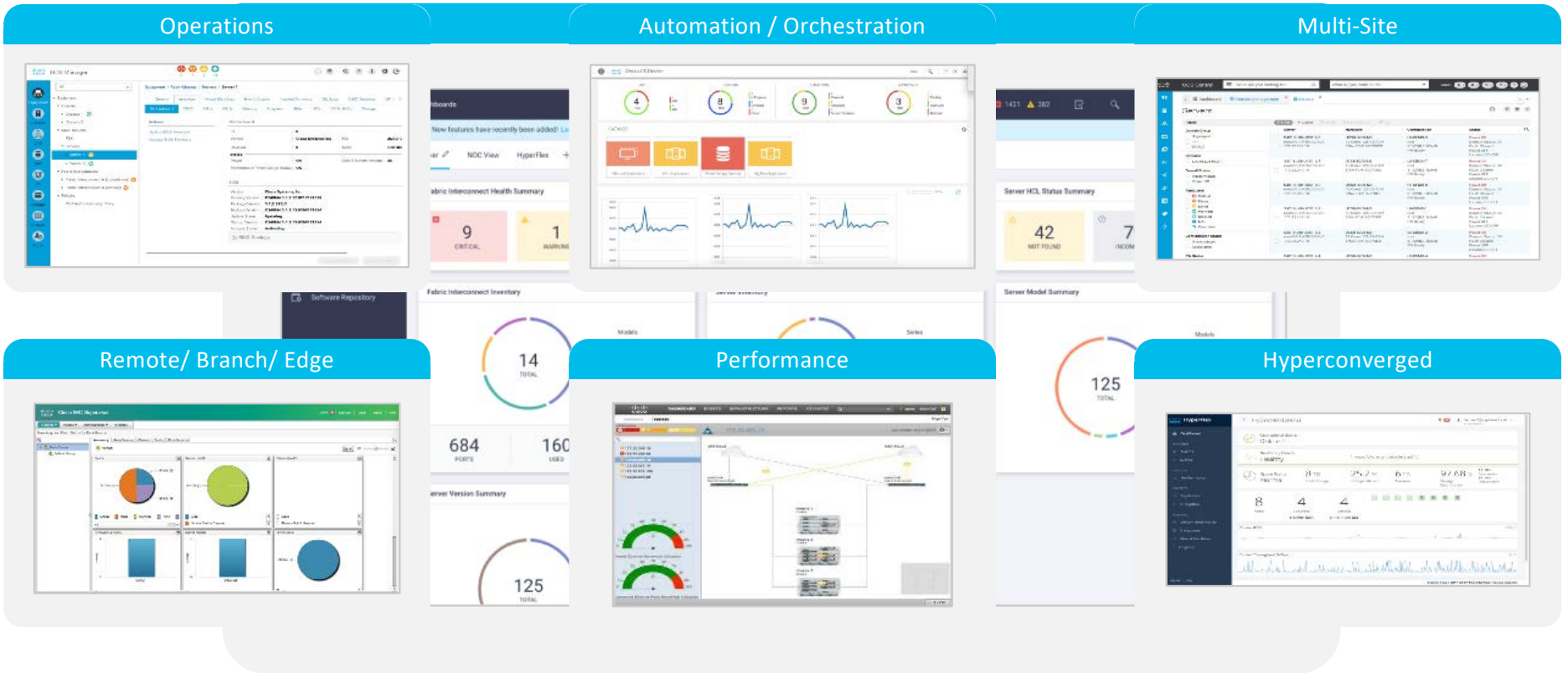
SaaS Simplicity

CISCO INTERSIGHT

Actionable Intelligence

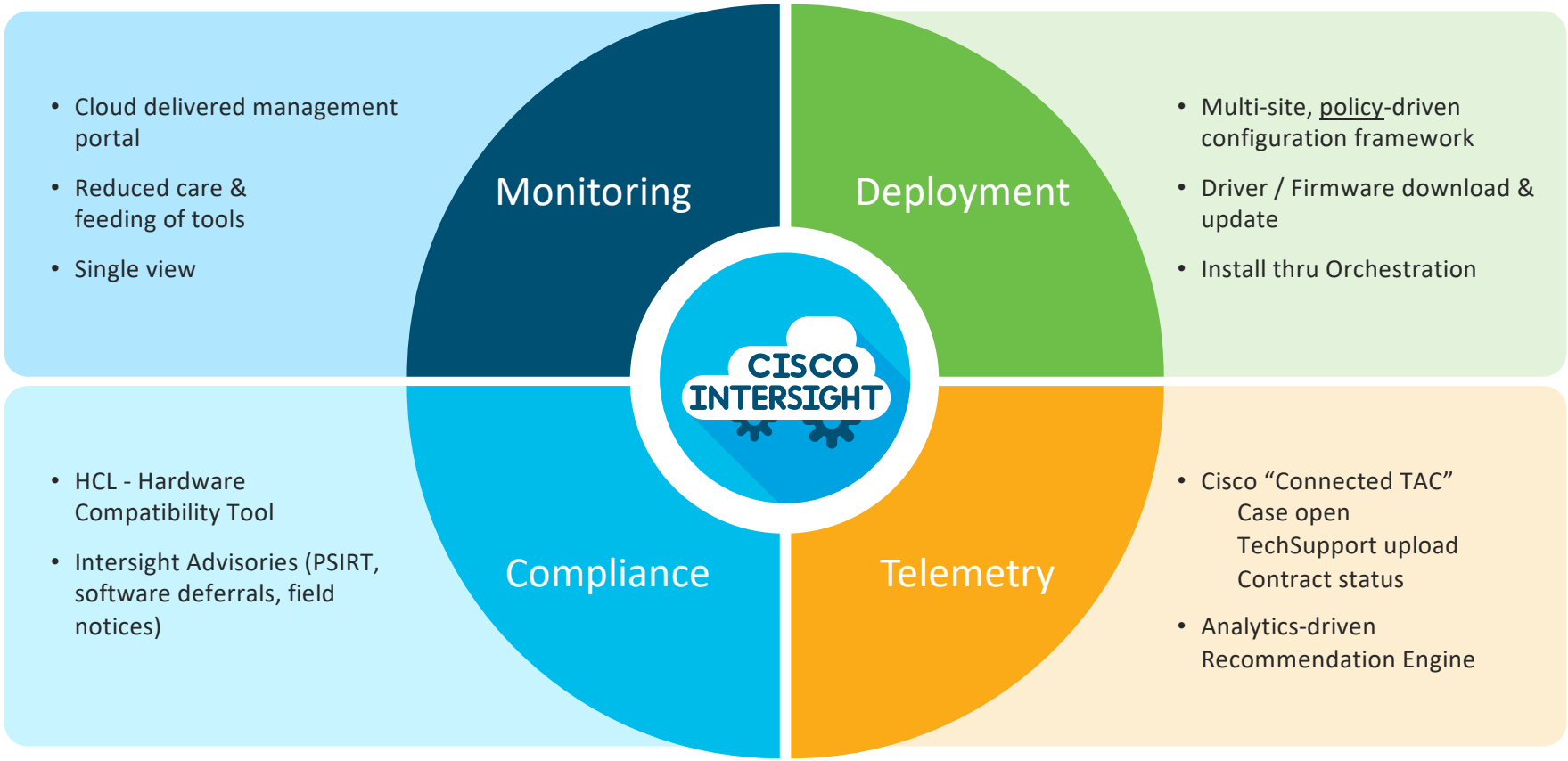


Start with radical simplification…



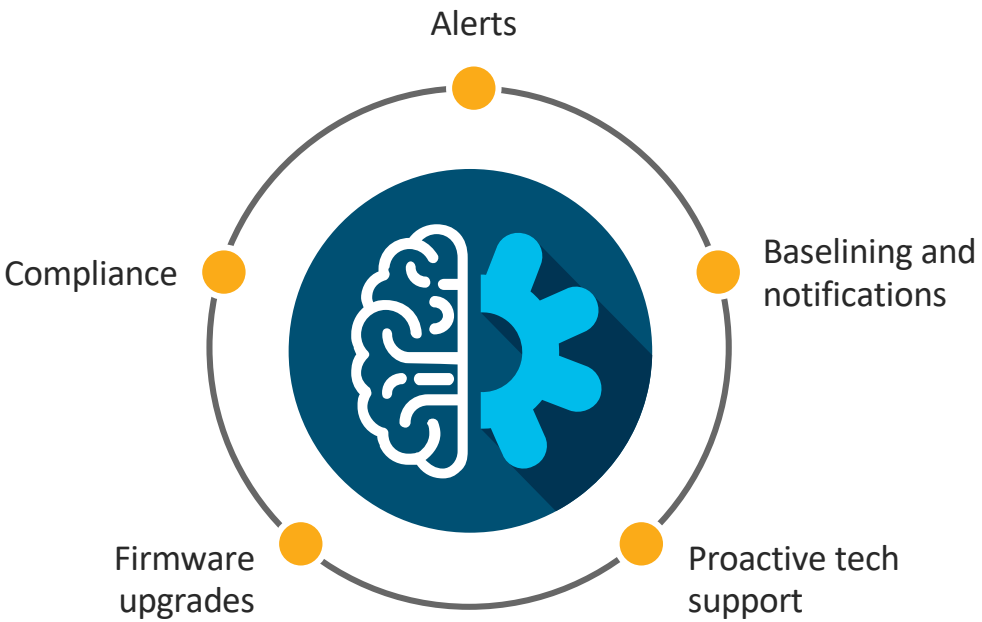
Build Slide

Core capabilities – Infrastructure operations



Cisco Intersight: proactive guidance

Recommendation engine



Key features in Cisco Intersight security architecture

Use of industry-standard security protocols

Encryption of all data

Compliance with stringent Cisco® InfoSec security and data handling standards

Transition to SaaS

Cisco UCS® capabilities today

- Infrastructure-as-a-service and orchestration
- Third-party integrations: infrastructure and toolchains
- Global resource pooling and policy management
- Policy-based automation
- Unified element management

Traditional delivery model
On-premises software and hardware-embedded tools

SaaS model
Cisco-hosted cloud
Customer-hosted connected appliance
Partner-hosted cloud

SaaS-consumption model
Frees customers from care and feeding of management tools and eliminates upgrade dependencies

Seamless extensibility
Simplifies management across technologies and geography

Continuous feature integration
Rapid development, delivery, and customer feedback

Expanded Intersight capabilities with
Intersight Workload Optimizer

Single Interface / Single API

Intersight Workload Optimizer
(Application Resource Management)

Coming Soon Q2CY20

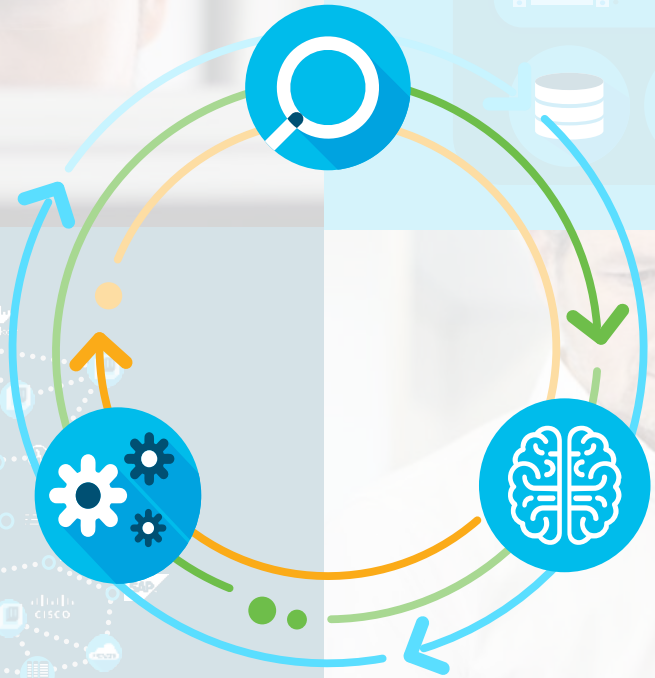
Integration with AppD for even deeper app insights

AppDynamics
(Application Performance Mgt)

Build Slide

Visibility

App and infra interdependencies and impact on business performance



Action

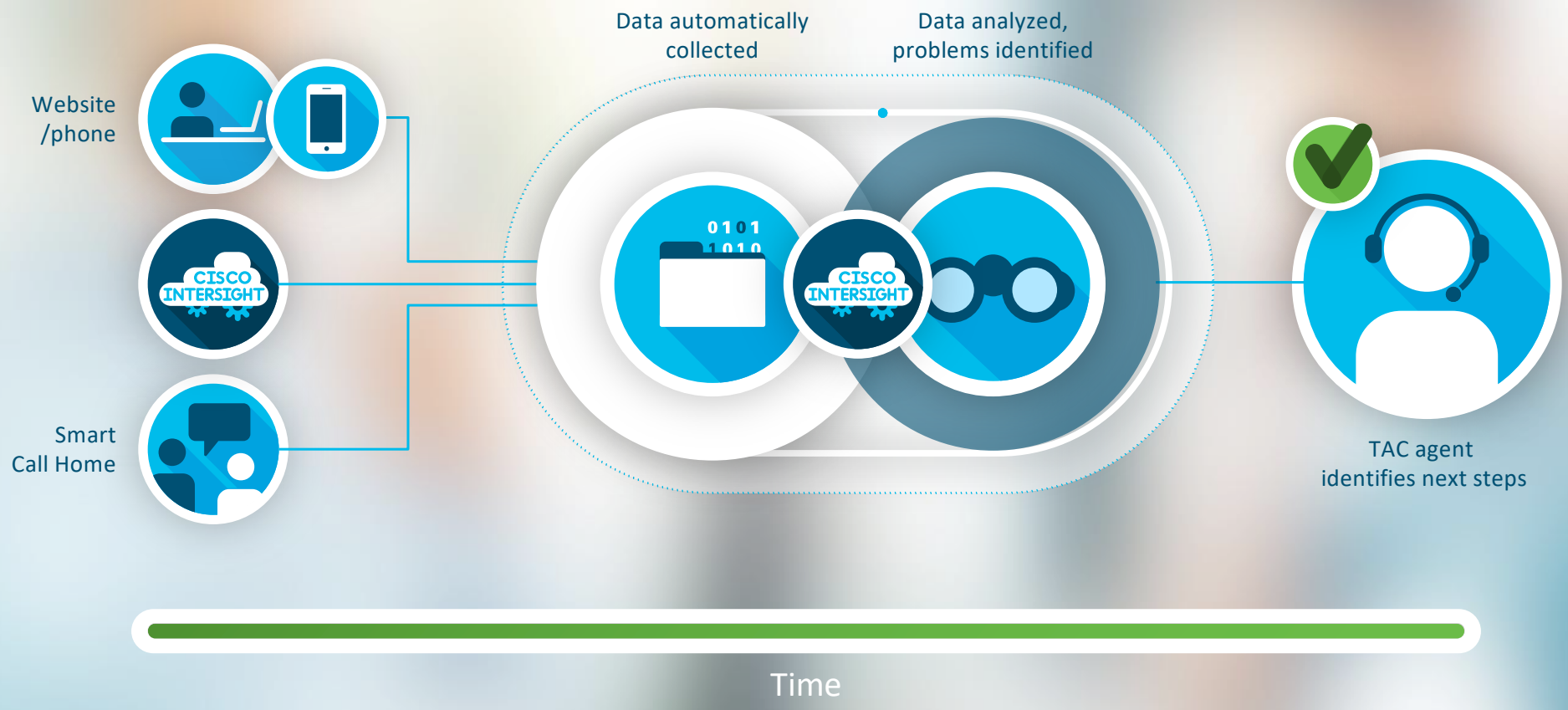
Full-stack automation to continuously optimize resources to the app

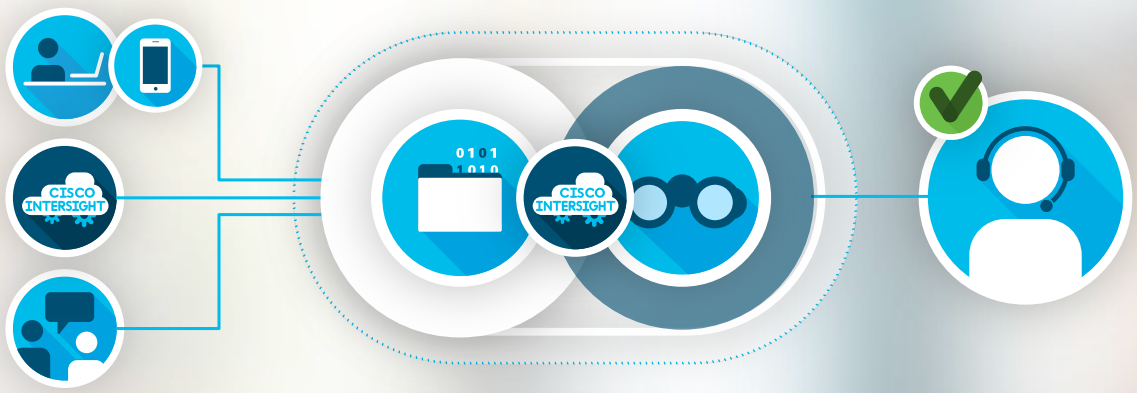
Insight

Analytics to drive the right resource decisions

Real world benefits of Intersight Connected TAC

Our **new** process





Time reduced to **minutes**

Increased **accuracy**

Less **customer involvement**

Save **money**


CISCO