CISCO

Are you building for the future today? Or just keeping the lights on?

Cisco HyperFlex, doing Hyper-convergence in different way

Tomi Jalonen
Data Center & Cloud Lead
1.11.2018

Multicloud Ready

Infrastructure needs to be multicloud ready and interoperable

85% Evaluating or using public cloud

87% Have a hybrid cloud strategy

94% Will use multiple clouds

Overcome Infrastructure Challenges

Hyperconverged Infrastructure

Cloud Like Resource Model

Speed, economics, simplicity for any application

Speed and Simplicity

Common platform across data center

Predictable, reliable performance

Pay as you grow

Pay-as-you-grow Economics with Resource Scaling On-Demand
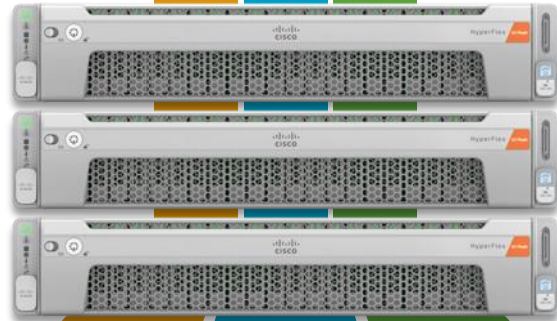
Streamlined Operations

Cloud like simplified management and orchestration

Are you building
for the future today?

...or just keeping the lights on?
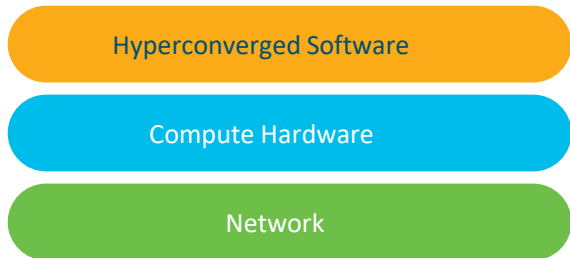
Modernize on a Platform That Will Simplify the Future

How HyperFlex is Different?

Complete Hyperconvergence

One Engineered and Optimized HCI Solution

Software Only HCI on X86 Server Platforms

vs.

Engineered & Optimized HCI

| Hyperconverged Software |
| Compute Hardware |
| Network |

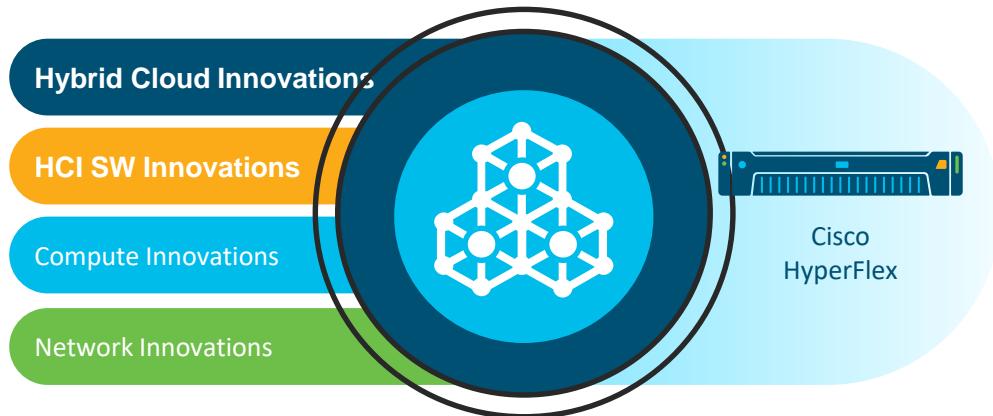| Hybrid Cloud Innovations |
| HCI SW Innovations |
| Compute Innovations |
| Network Innovations |

Cisco HyperFlex

HCI SW only innovations

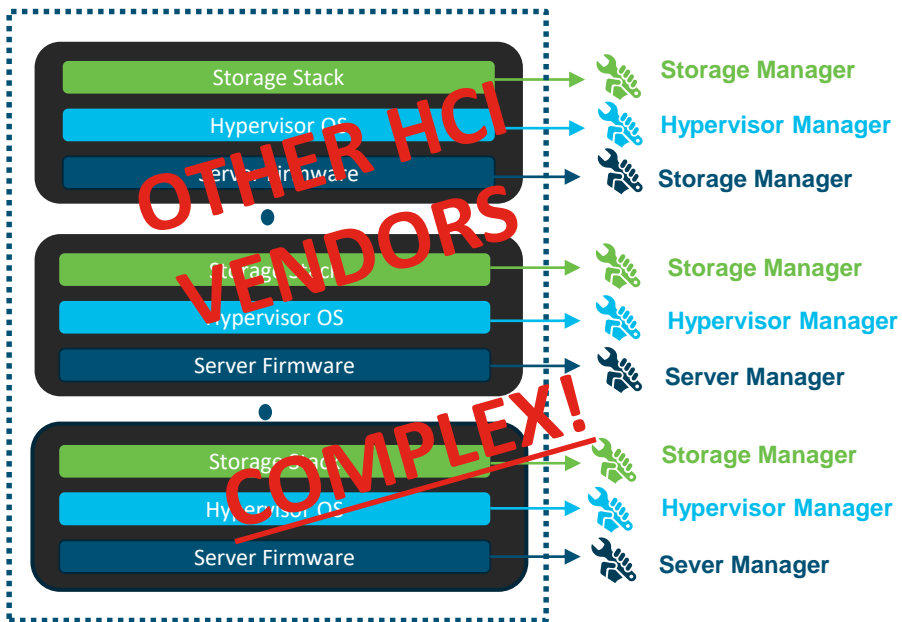HCI SW independently validated on X86 server platforms

HW innovations are independent

HCI software, compute, networking fully-engineered together

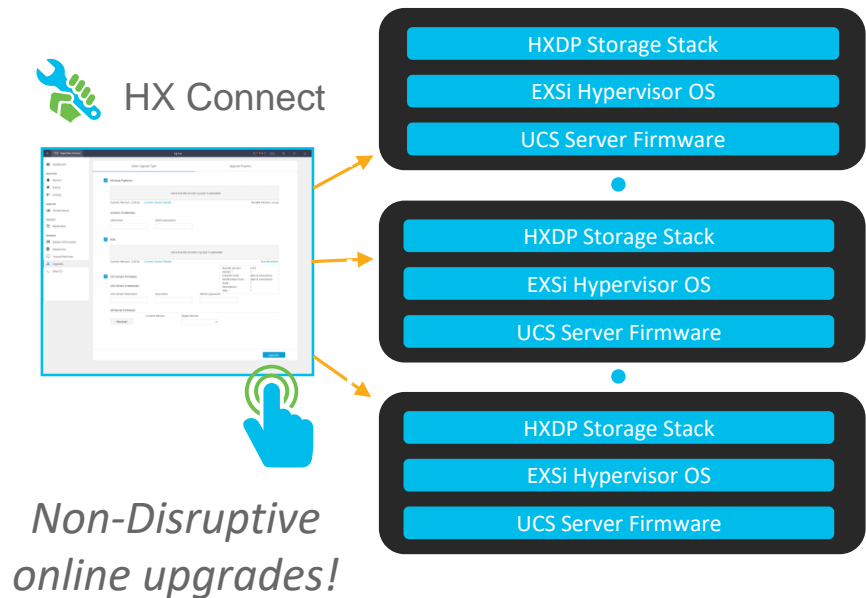Optimized for performance and scaling density

One-Click Full Stack

NEW
HX 3.5

Hyperconverged Cluster Upgrades

HyperFlex

HCI vendors use different management tools to upgrade each portion of the HCI stack in a cluster.

With Cisco HX 3.5, one-click, fully integrated stack upgrades are possible via HX Connect.*

OTHER HCI VENDORS

COMPLEX!

Storage Stack → **Storage Manager**
Hypervisor OS → **Hypervisor Manager**
Server Firmware → **Storage Manager**

Storage Stack → **Storage Manager**
Hypervisor OS → **Hypervisor Manager**
Server Firmware → **Server Manager**

Storage Stack → **Storage Manager**
Hypervisor OS → **Hypervisor Manager**
Server Firmware → **Sever Manager**

HX Connect

HXDP Storage Stack
EXSi Hypervisor OS
UCS Server Firmware

HXDP Storage Stack
EXSi Hypervisor OS
UCS Server Firmware

HXDP Storage Stack
EXSi Hypervisor OS
UCS Server Firmware

Non-Disruptive online upgrades!

34 secs – 100%

Seamless Scalability

Seamless Scalability

Independent Scaling

Compute-Only Nodes

Max Cluster Size
32+32=64

Max Ratio
Compute to Converged
2:1

Converged Nodes

8K, 70/30 Read-write, 100% Random

IOPS...

IOPS Ratio

Latency Ratio

8-nodes   12-nodes   16-nodes

Scale Up and Scale Down

HyperFlex Edge

HyperFlex

HyperFlex Edge

Branches   Core Data Centers   SMB

Scale Across Clouds

Cisco HyperFlex

+

Cisco CloudCenter
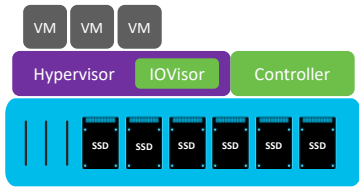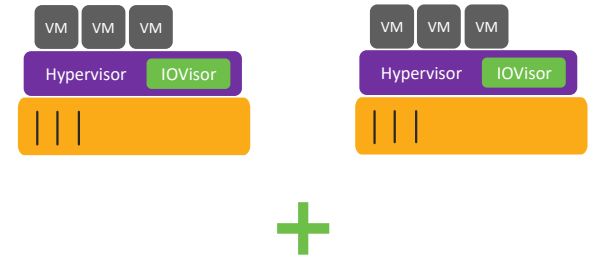
=

PRIVATE

Application Mobility

PUBLIC
PRIVATE
PUBLIC
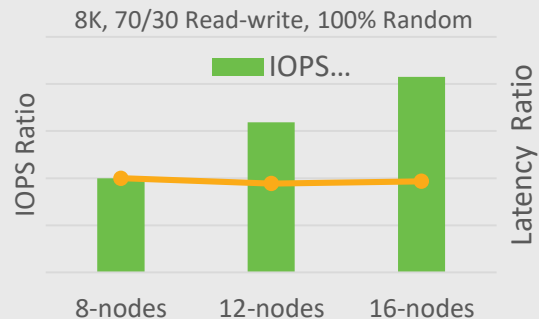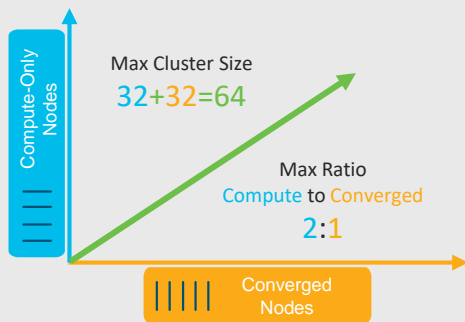
Independent Scaling of Compute and Capacity

Usable Compute Resources

CPU & RAM

A B C

Usable Storage Resources

Capacity

A B C
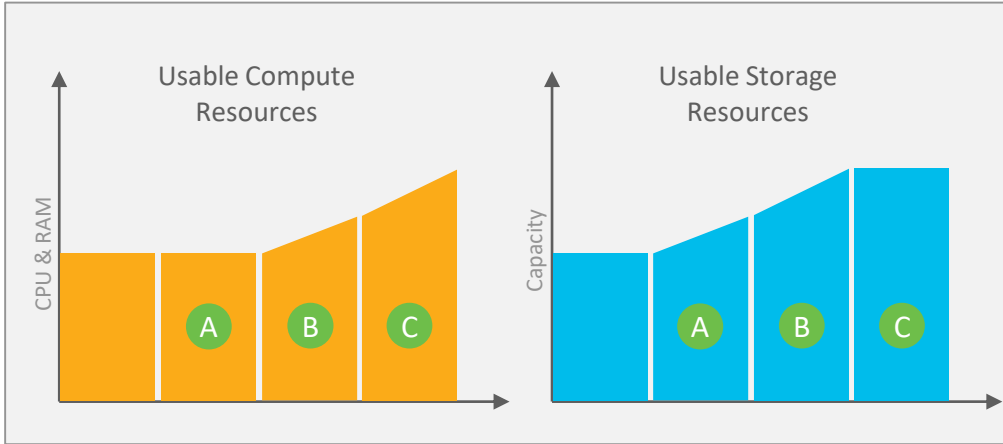
C Add Compute-Only Nodes
Non-HyperFlex hosts can connect to storage with IOVisor

VM VM VM
Hypervisor IOVisor

VM VM VM
Hypervisor IOVisor

+

VM VM VM
Hypervisor IOVisor Controller
SSD SSD SSD SSD SSD SSD

VM VM VM
Hypervisor IOVisor Controller
SSD SSD SSD SSD SSD SSD

VM VM VM
Hypervisor IOVisor Controller
SSD SSD SSD SSD SSD SSD

+

VM VM VM
Hypervisor IOVisor Controller
SSD SSD SSD SSD SSD SSD

A Scale Capacity Within Converged Nodes
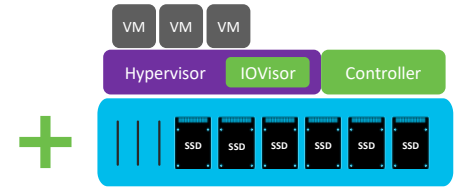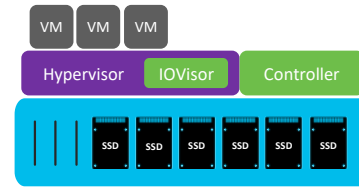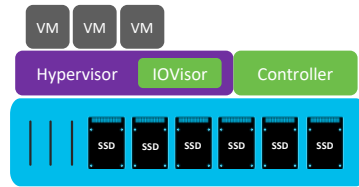
B Add Converged Nodes

Adaptive Infrastructure

Adaptive Infrastructure

Support for External Storage

HyperFlex supports mounting external storage arrays via NFS, iSCSI, or FC

NAS

SAN

NFS, iSCSI or FC

HyperFlex UCS Domain

HyperFlex Node

HyperFlex Node

HyperFlex Node

HyperFlex Node

HyperFlex Node

Example Use-Cases

- VM migration and data transfer
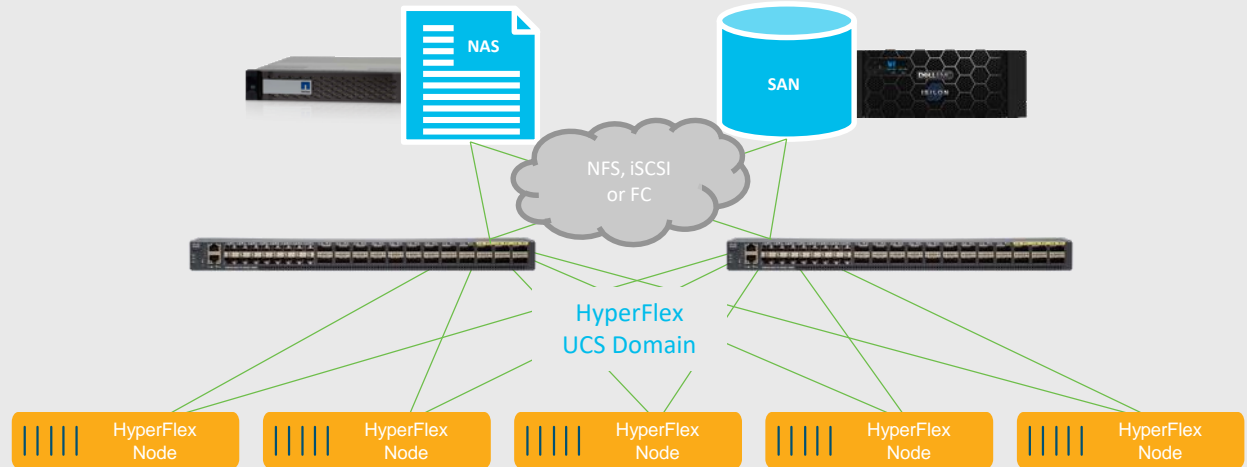- Co-existence with existing SAN environment/data
- Present RDM from SAN to VMs
- Use VMware storage vMotion for migrations over Ethernet
- Use for backup and other application support

Use Existing Fabric Interconnects

- Leverage existing investment in UCS Fabric Interconnects
- Support multiple HyperFlex clusters, CI stacks, Bare Metal Servers, etc.

HyperFlex

HyperFlex

Converged Infrastructure

Bare Metal Servers
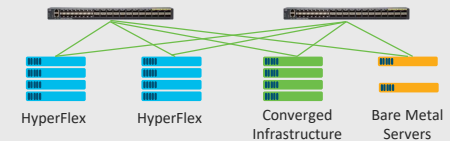
High Availability & Reliability

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

Native Data Replication & DR

In-built Snapshots, Replication & Disaster Recovery

High Performing VM Centric Periodic Snapshots

VM
VM
VM

Highly optimized long distance Async Replication

VM
VM
VM

Planned Migration, Disaster Recovery and Test Recovery

3rd Party Backup Integrations

COHESITY

COMMVAULT

VEEAM

Logical Availability Zones

RF data copies striped across groups

Logical Availability Group 1

Logical Availability Group 2

Logical Availability Group 3

Stretched Cluster

VM VM   VM VM

Single Cluster

VM VM   VM VM
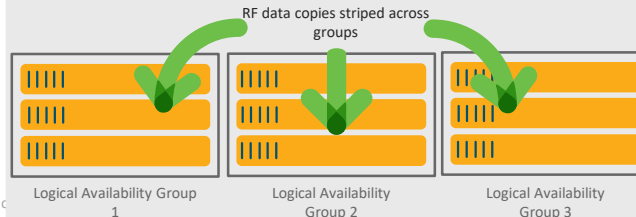
Witness Server
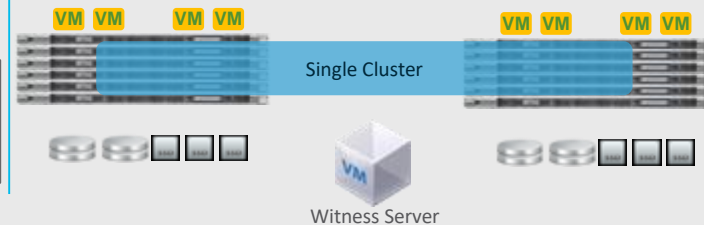
Global Support with Next Gen Management

Global Support

Cisco Support – Global Scale and Reach
Single Support for HW & SW

1.8M
Service Requests handled annually

2,800
Professionals averaging **5+** Years industry experience

TAC Support Capabilities

180+ Countries
24 TAC Facilities
17+ Languages

Smart Call Home & Support Integration

Proactive, fast issue resolution
- Continuous monitoring to detect early problems
- Critical events integrated with **Smart Call Home**
- Operational analysis and recommendations

Cisco Intersight Integration

Enhanced Support
Platform Inventory
Policy Compliance
Upgrade Checks
Capacity Planning

Proactive guidance
Advanced analytics
Signature analysis
Upgrade guidance

Next Generation Management

Centralized Cloud-Based Management of the Future

Telemetry and Analytics

Policy Based Orchestration

Secure and Compliant

API Driven, DevOps Enabled
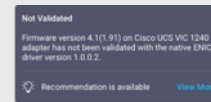
Connected TAC

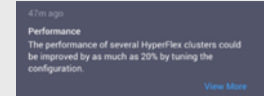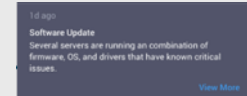Cisco Intersight

SaaS Simplicity

Actionable Intelligence

INTERSIGHT

Remotely Deploy & Manage

HyperFlex with Intersight

1 Ship to sites
2 Connect to Intersight
3 Deploy & manage remotely

Conventional Infrastructure

1 Ship from Factory
2 Integrate and Configure
3 Stage
4 Ship People and Infra to Sites
5 IT Deploy On-Site

Compatibility(HCL) Check

Not Validated
Firmware version 4.1(1.91) on Cisco UCS VIC 1240 adapter has not been validated with the native ENIC driver version 1.0.0.2.
Recommendation is available   View More

Recommendations Engine

1d ago
Software Update
Several servers are running an combination of firmware, OS, and drivers that have known critical issues.
View More

47m ago
Performance
The performance of several HyperFlex clusters could be improved by as much as 20% by tuning the configuration.
View More

Enterprise Application Ready with Microservices & Containers

Enterprise Application Ready

Enterprises Run Mission Critical Apps on HyperFlex

CITRIX • Exchange • Cisco webex • Microsoft SQL Server • ORACLE DATABASE • ORACLE E-BUSINESS SUITE

Microsoft • SharePoint • Cisco Unified Contact Center • MySQL • SIEBEL • PeopleSoft

vmware • McKESSON • Epic • MUREX • SAP • kubernetes by Google

Common HCI Apps ⟶ Business Critical Apps

#1 in Performance

HyperFlex vs. HCI Competition

ESG

Full ESG report: cisco.com/go/hyperflex

1. 3x higher VM density
2. 3x reduced read/write latency
3. 7:1 reduction IOPS variability

⟶

3x better TCO

More workloads On Hyperconverged

Predictable End User Experience

Enterprise Grade HCI

+35%
Clusters Running Databases(ASUP data)

25+%
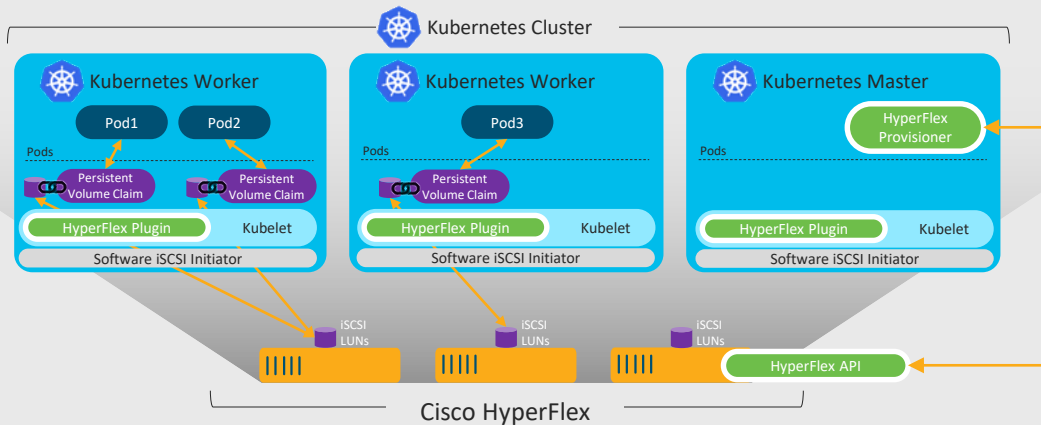Enterprise scale deployments

10+
New CVDs/Solution Guides for DB Apps

Microservices & Containers

HyperFlex Storage Integration for Kubernetes

Dynamic on-demand provisioning of Kubernetes persistent volumes through HyperFlex

Kubernetes Cluster

Kubernetes Worker
- Pod1
- Pod2

Pods
- Persistent Volume Claim
- Persistent Volume Claim

HyperFlex Plugin | Kubelet

Software iSCSI Initiator

Kubernetes Worker
- Pod3

Pods
- Persistent Volume Claim

HyperFlex Plugin | Kubelet

Software iSCSI Initiator

Kubernetes Master

HyperFlex Provisioner

Pods

HyperFlex Plugin | Kubelet

Software iSCSI Initiator

iSCSI LUNs | iSCSI LUNs | iSCSI LUNs

HyperFlex API

Cisco HyperFlex

1. Developer requests a persistent volume through a persistent volume claim
2. Persistent volume claim request is sent to the **HyperFlex Provisioner** (pod running in Kubernetes) via the StorageClass parameters
3. **HyperFlex Provisioner** makes call to **HyperFlex API** to provision backend iSCSI LUN for request
4. Software iSCSI initiator on each Kubernetes node VM discovers new iSCSI block device from HyperFlex cluster
5. **HyperFlex Plugi**n orchestrates the mounting of the new iSCSI block device and the creation of a Kubernetes persistent volume
6. Kubernetes binds the newly created persistent volume to the persistent volume claim

Ongoing KaaS Support

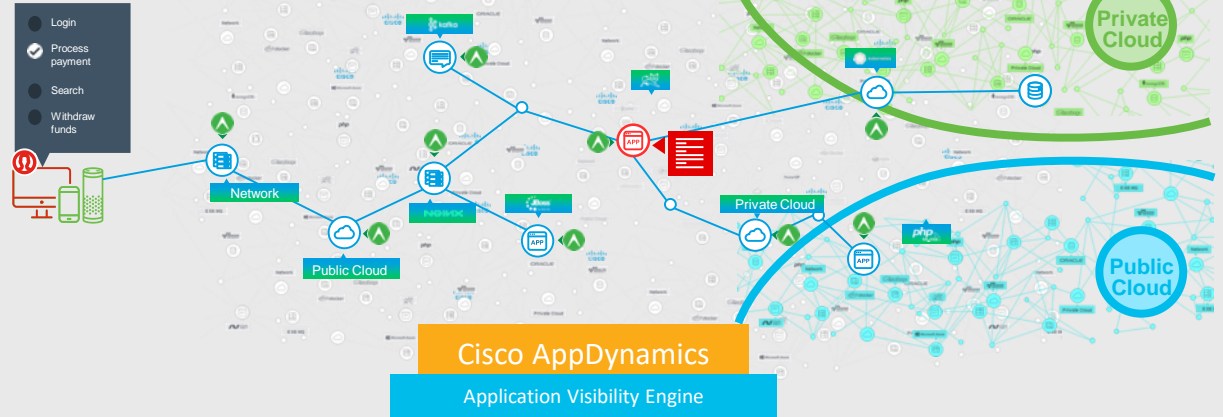**Cisco Container Platform**

Introducing PaaS Support

RED HAT OPENSHIFT Container Platform

KaaS = "Kubernetes as a Service"　　　　PaaS = "Platform as a Service"　　　　NOTE: All distros of Kubernetes are inherently supported on HyperFlex, support in this context pertains specifically to the HyperFlex Storage Integration for Kubernetes

Hybrid App Performance Monitoring

Live Visibility Into Every Business Transaction

- Login
- Process payment
- Search
- Withdraw funds

Network

Public Cloud

Private Cloud

Private Cloud

Public Cloud

Cisco AppDynamics

Application Visibility Engine

Visualize
See all application components, dependencies and connections instantly, in one user interface

Know
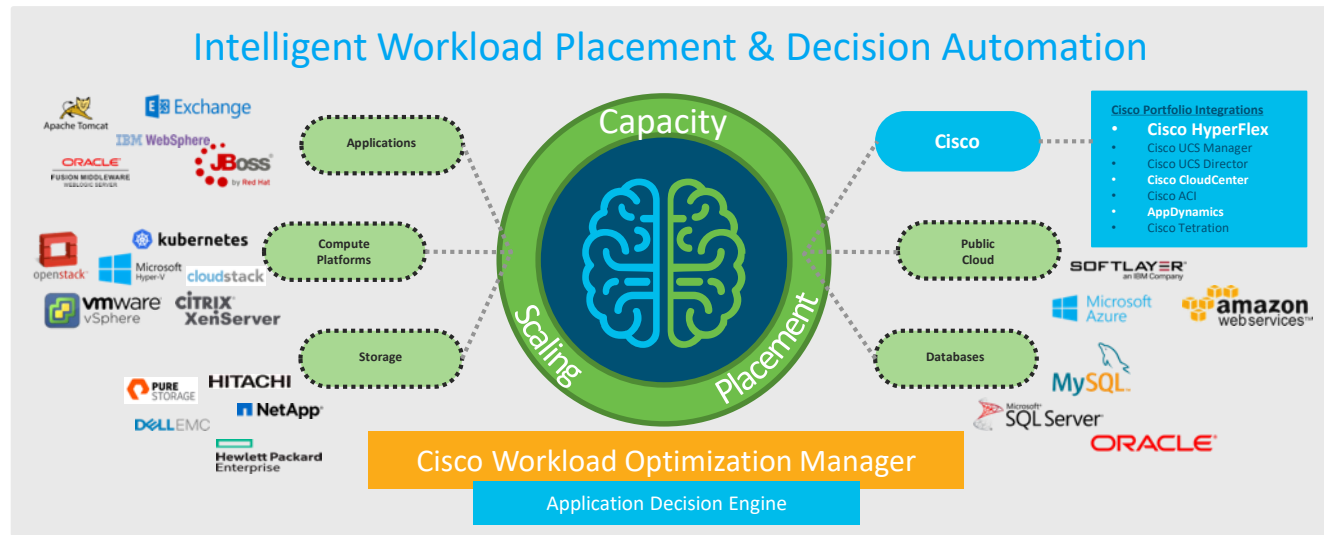Ensure applications meet user experience needs with the automatic monitoring of business transactions

Understand
Know the root-cause of application performance issues down to the code level

Intelligent Workload Placement

Hybrid Cloud Mobility & Services

Hybrid Cloud Mobility & Services

Model Once, Deploy and Manage Anywhere

Cisco CloudCenter
Application Deployment Engine

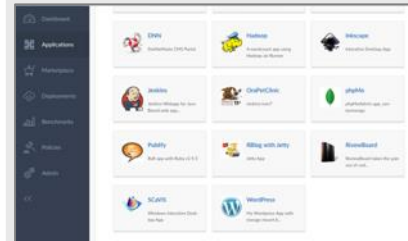Private Cloud Built on HyperFlex

Public Cloud
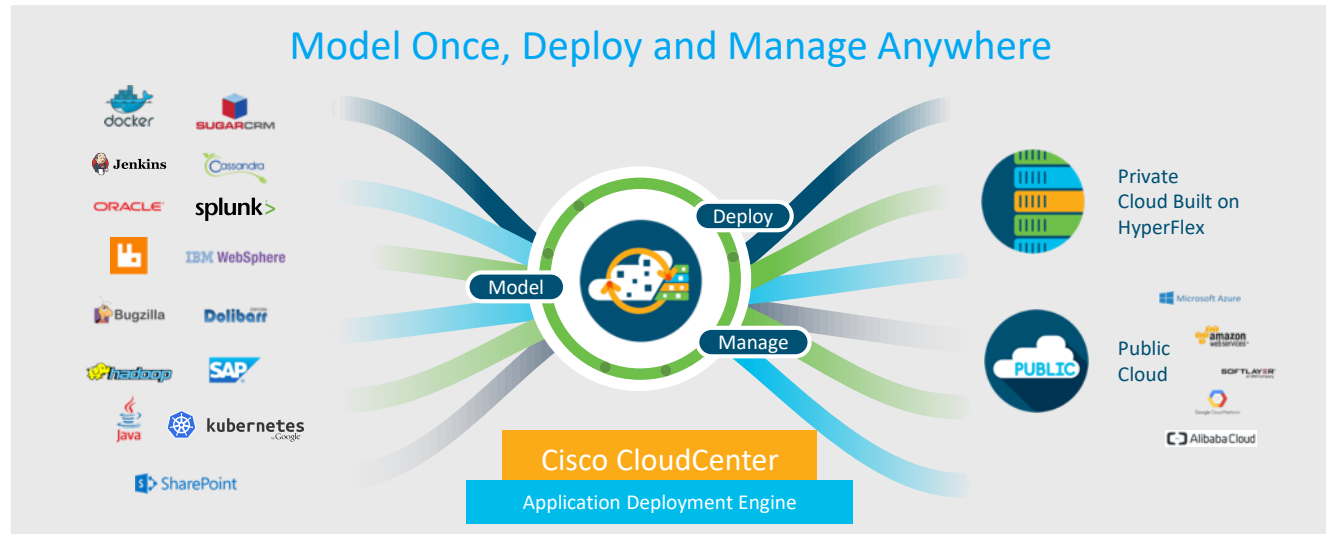
Model
Create portable application profiles for simple to complex applications through drag and drop interface.
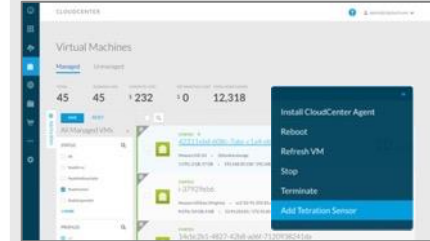
Deploy
Publish application profiles to users through self-service catalog. Deploy applications to or across one or more clouds.

Manage
Perform day two actions on deployed applications and virtual machines. Out of box and custom actions available.

Cisco Services are here to help

Drive HyperFlex Adoption with Services

Cisco experts reduce risk and accelerate results from start to finish

PoC and Pilot

Quickstart Implementation Service

- Four days onsite
- Implement a single four-node cluster
- Implement VMware
- Configure two workloads
- Transfer knowledge

ASF-ULT2-HPF-QSS

Production

Accelerated Deployment Service

- Onsite support with implementation and VM migration
- Up to 12/16 nodes
- Testing and training
- Tailored operations runbook

ASF-ULT2-HPF-ADS

Migration

Data and Application Migration Service

- Safely migrate data from physical and virtual machines
- Migrate specific application workloads
- Proven Cisco tools and expertise

AS-UCS-CNSLT
SOW-based pricing

Management

SNTC, Software and Solution Support

- Complete support for all HyperFlex components
- Flexible levels of service to suit need and budget
- Coverage for third-party elements

Customers with Cisco HyperFlex

Summary

HyperFlex Innovations
Driving Modernization Benefits

Industry Leading HCI Innovations

40GE Networking (1st)

End to End HCI Deployment Automation (1st)

Compute Only Nodes (1st)

Cloud Deployed Edge HCI (1st)

Integrated Fabric Networking (1st)

HCI & CI Integration (1st)

In HCI Performance (1st)

One Click HCI Upgrade Including HW (1st)

Cloud Based Management (1st)

3000+ Customers Are Saying

80% Savings vs. 3-tier Infrastructure[1]

75% Management time savings[3]

30% More Performance for Mission Critical Apps[5]

50% Improvement in ERP Response Time[6]

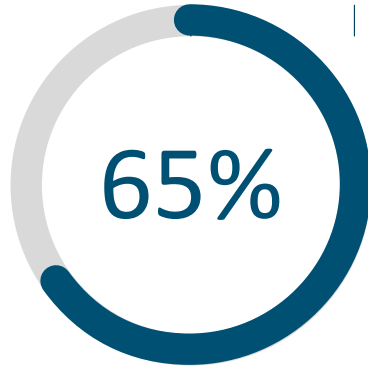**51%** Savings vs. Public Cloud Over 3 years[2]

2x Virtual desktop speed[4]

90% Downtime Reduction[7]

HyperFlex Value for Today and Tomorrow

95%

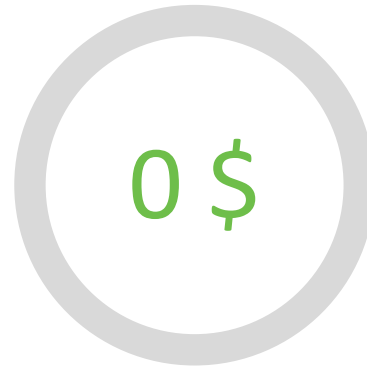**Faster Cluster Deployment Time**
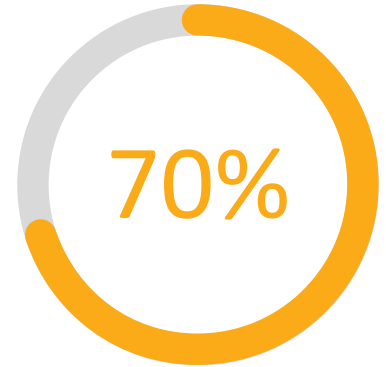
Including the network

65%

Lower TCO vs. SW Only HCI

Power More VM's with Less HCI Nodes & SW Licenses

0 $

Compute Scaling License Cost

HyperFlex UCS compute only nodes vs. SW Only HCI

70%

Savings vs. Public Cloud

HyperFlex's Better than Cloud Economics

Cisco HyperFlex in The Forrester Wave