



# Připravte své datové centrum na příští dekádu

2. 2. 2022 | 9:00–12:30

**Possibilities**

# Compute modul

2. 2. 2022 | Připravte své datové centrum na příští dekádu



Q&A

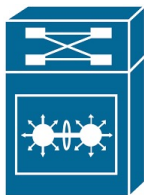
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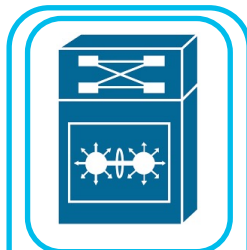
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# Tradiční IT vs CI vs HCI

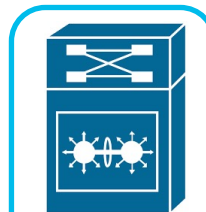
## Traditional IT



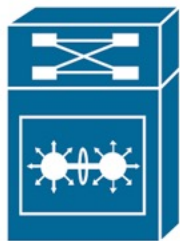
## Converged Infrastructure



## Hyperconverged Infrastructure



## Tradiční IT



### Pro:

- svoboda výběru jakéhokoliv řešení od jakéhokoliv dodavatele

### Proti:

- Variace dodavatelů a problémy s tím související
- Upgrades, Upgrades, Upgrades
- Neudržitelný seznam kompatibility produktů

# Konvergovaná Infrastruktura



## Pro:

- Validované designy
- Jednotný management
- Zkrácený čas na uvedení do funkčního stavu
- Jednotný support
- Jednodušší správa

## Proti:

- Restrukturalizace IT týmů
- Změna interních procesů
- Omezený výběr dodavatelů

# Hyperkonvergovaná Infrastruktura



Jednoduchost a Automatizace

Enterprise Class

Škálovatelnost

Zabezpečení

Cloud Native podpora



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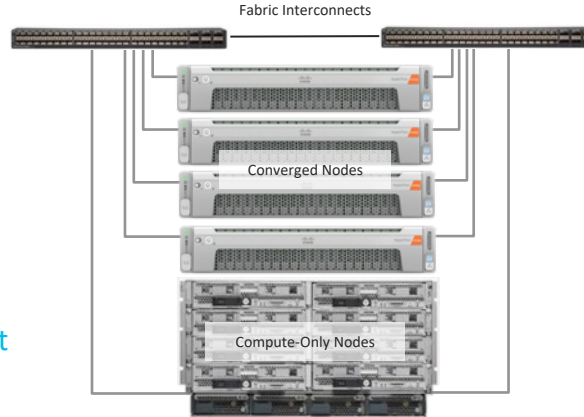
# Cisco Hyperflex

## 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

Data Protection &  
High Availability

Enterprise Grade  
Data Services

Tetration  
ACI

AppDynamics, IWO



# Hybrid Cloud Operations Platform

## Intersight Hybrid Cloud Operations Platform



Telemetry  
and Analytics



Policy Based  
Orchestration



Secure and  
Compliant



API Driven,  
DevOps Enabled



Connected  
TAC

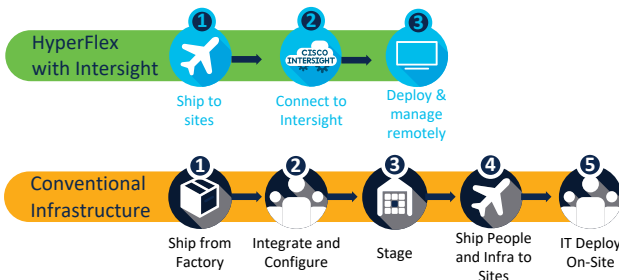
Cisco Intersight

SaaS  
Simplicity

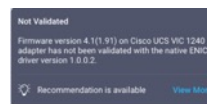
Actionable  
Intelligence



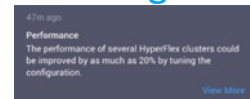
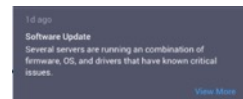
## Remotely Deploy & Manage



## Compatibility(HCL) Check



## Recommendations Engine

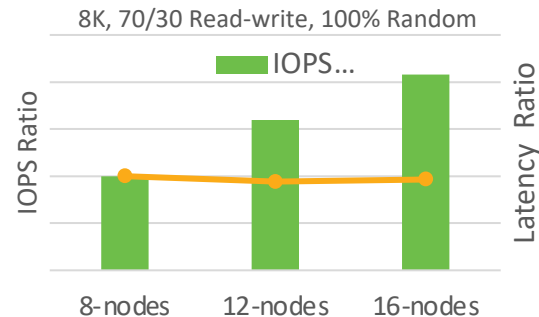
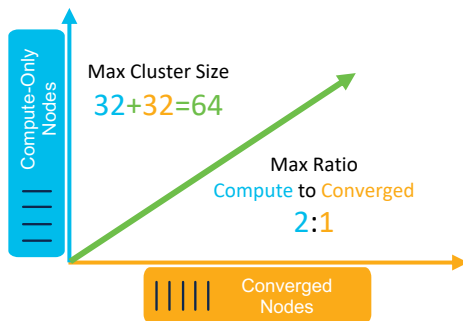






# Seamless Scalability

## Independent Scaling

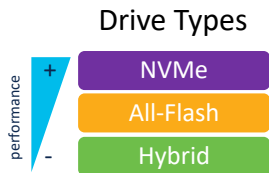


## Scale Up and Scale Down

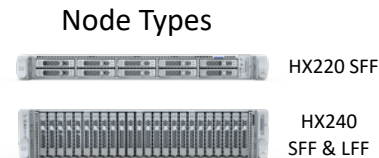


## Capacity, Performance, Cost and Footprint...

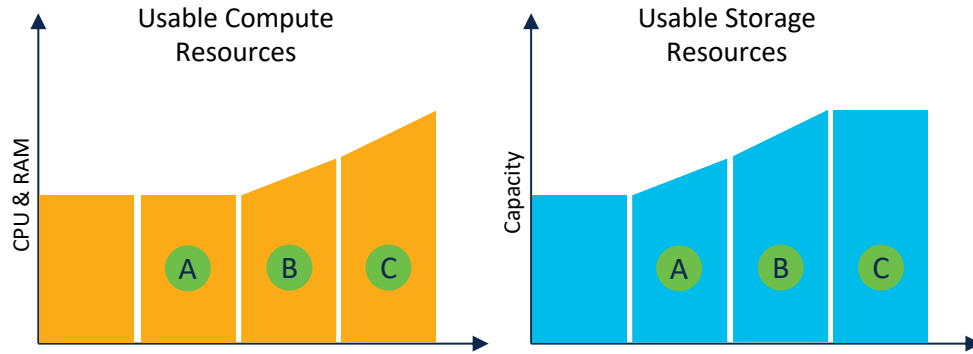
...Choose what is important to you



Many Drive Capacity Options  
Available

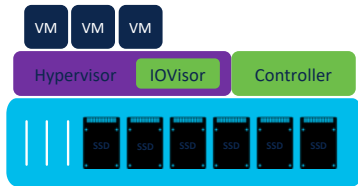
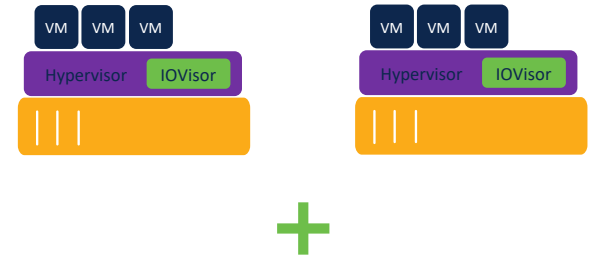


# Nezávislá škála Výpočetního výkonu a Kapacity

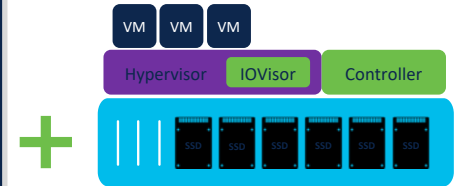
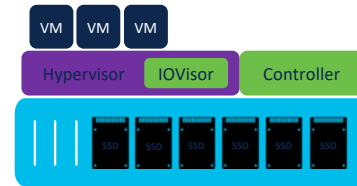
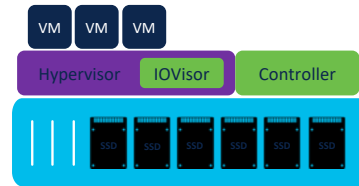


## C Add Compute-Only Nodes

Non-HyperFlex hosts can connect to storage with IOVisor



## A Add Capacity Drives to Existing Converged Nodes

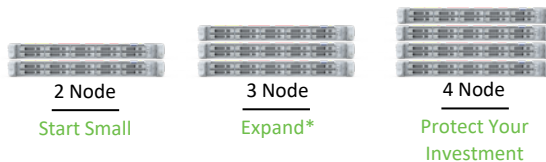


## B Add Converged Nodes



# Hyperconverged at the Edge

## HyperFlex Edge Size for your Environment



## Edge Form-Factor Options

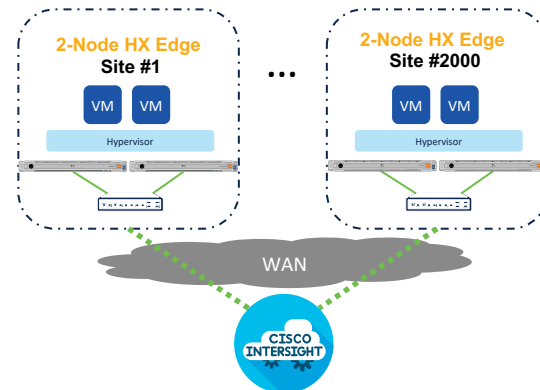


HyperFlex M6 Now Available

## SaaS-Driven Lifecycle Mgmt. Any Location, At Any Scale



## Invisible Cloud Witness via Cisco Intersight



- Cisco Intersight serves as the witness for 2 node HyperFlex Edge clusters
- No additional license cost
- No requirement for 3<sup>rd</sup> site or infrastructure to run witness
- Built on efficient protocol stack, no periodic heartbeats over WAN
- No lifecycle management of witness required, all handled automatically by Intersight

## Flexible Network Options

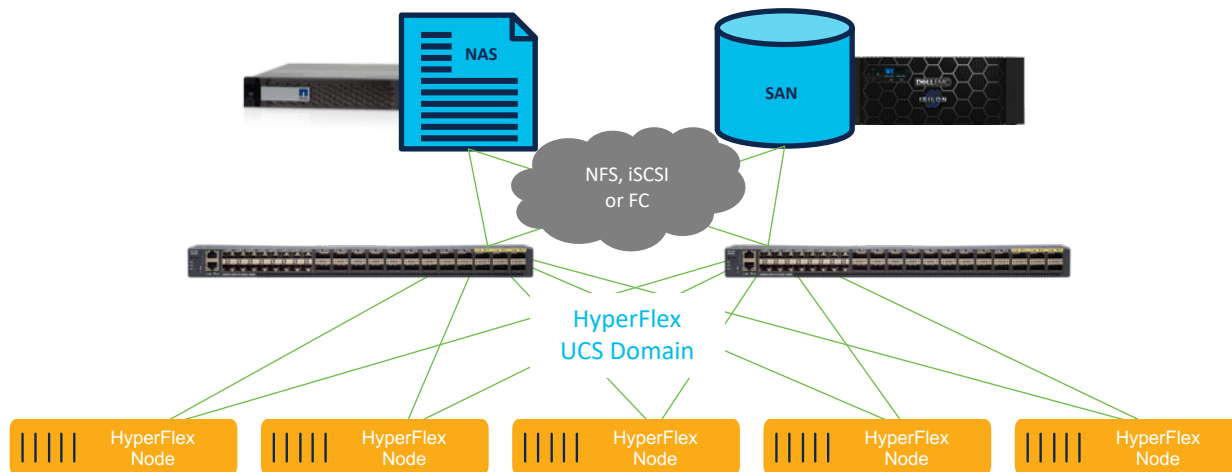




# Adaptive Infrastructure

## Support for External Storage

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



## 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.





# Business Continuity

## Enterprise Class Filesystem

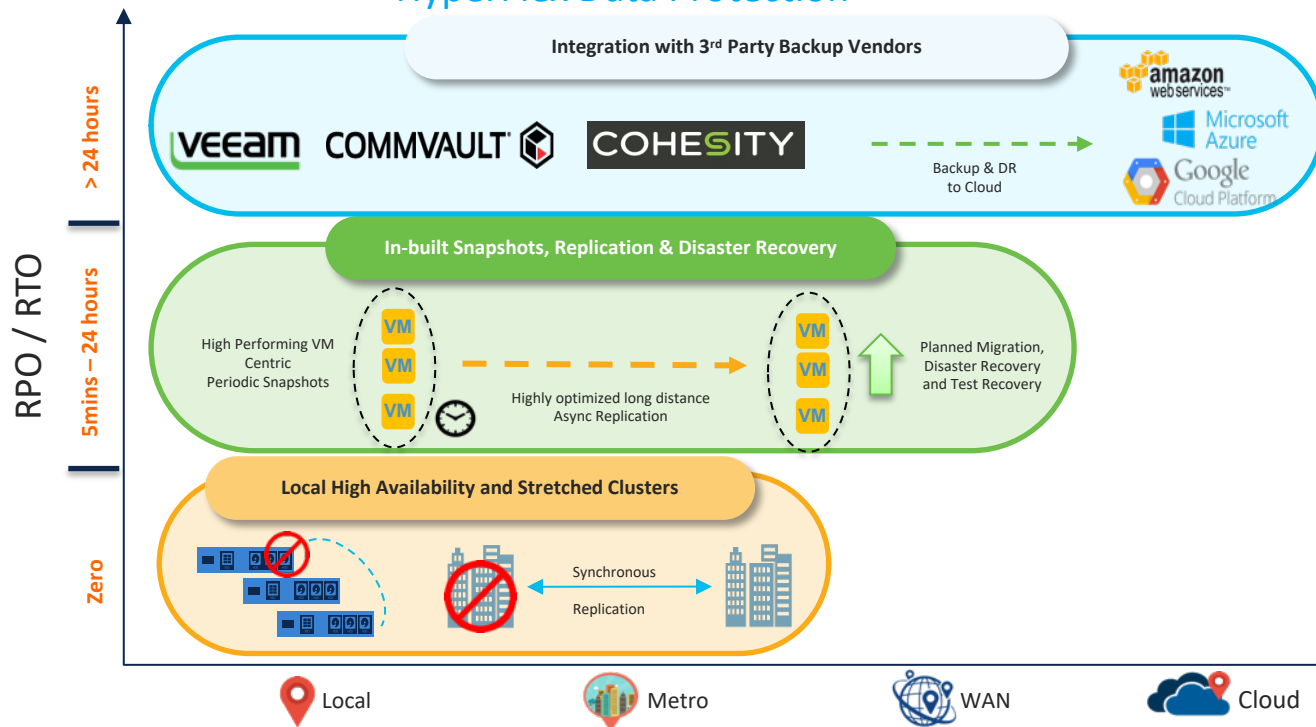
### Data Integrity & Reliability

- 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





# Focus on Security

## Focus on End-to-End Security



Development



Supply Chain



Platform  
(HW/FW)



Operating  
System

HyperFlex

Application

### HyperFlex Security Features

#### Secure CLI/Shell

Reduced attack surface, command-restricted administration shell accessible by SSH using the 'admin' user only.

#### Secure Boot

Verifies trustworthiness of ESXi hypervisor by chaining each stage of boot with a hardware root of trust provided by the Cisco Trust Anchor Module

#### Secure Technical Implementation Guide (STIG) APIs

APIs to implement settings as defined by Defense Information Security Agency (DISA)

#### System Files Integrity Check

Software architecture designed to monitor critical system files for changes by extending the Health Check Framework in Intersight. This makes it dynamic and independent of HX upgrades.

#### Data-at-Rest-Encryption (SED)

Support for self-encrypting drives with local passphrase or remote key management

#### Native Software Encryption (coming in HXDP 5.0.1b)

Filesystem software encryption built into HyperFlex with key management via Intersight

### Cisco Product Security Incident Response Team (PSIRT)



Vulnerability  
Management



Incident  
Response



Proactive  
Engagement

- Cisco is committed to security across entire product portfolio
- Proactively test for product vulnerabilities
- Proactively communicate vulnerabilities and resolution to customers

### Regulatory Compliance

- Certification:
  - FIPS (w/ HyperFlex 4.5)
  - Common Criteria (4.5)
- Compliance for Data Privacy & Regulations
  - HIPAA, PCI-DSS, etc.
- SOC2-type 2 for Intersight



# Cloud Native Ecosystem

## HyperFlex Container & Cloud Native Ecosystem



Kubernetes



Google Cloud's  
Anthos



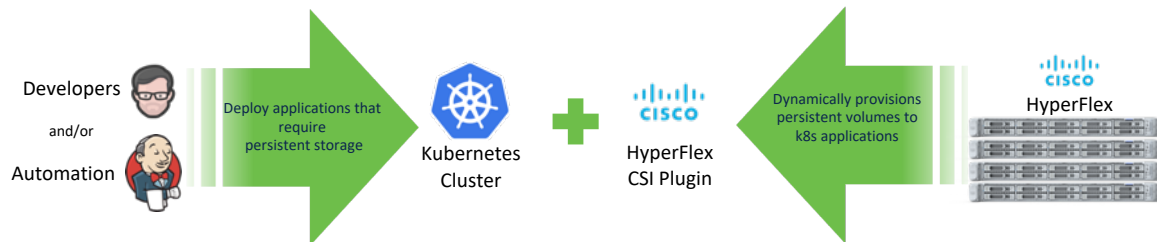
Red Hat OpenShift  
Container Platform



Intersight  
Kubernetes Service

## HyperFlex Storage Integration for Kubernetes

Dynamic Lifecycle Management of Kubernetes Persistent Volumes



- 1 Developer/Automation submits storage requirements in the form of standard Persistent Volume Claims
- 2 The HyperFlex CSI Plugin listens to and intercepts Persistent Volume Claims based on Storage Class
- 3 Storage provisioning API call sent to HyperFlex and storage is provisioned on the cluster
- 4 Provisioned storage is discovered and mounted by Kubernetes nodes and made available to pods/containers

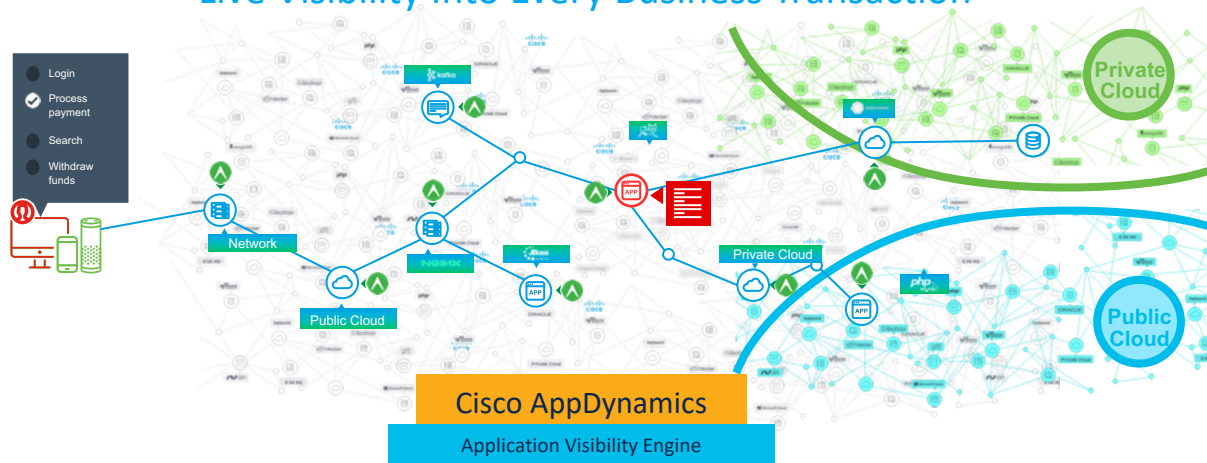
Leverages standard Kubernetes PVC objects, no new tools to learn, no changes to automation required

Extend the performance, efficiency and resiliency of HyperFlex to Kubernetes stateful applications



# Application Performance Monitoring

## Live Visibility Into Every Business Transaction



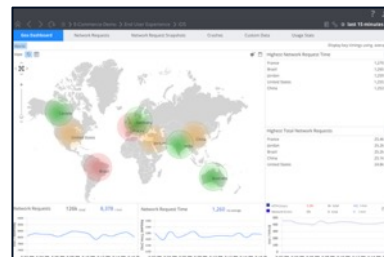
### Visualize

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



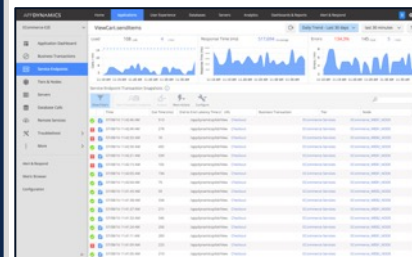
### Know

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



### Understand

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

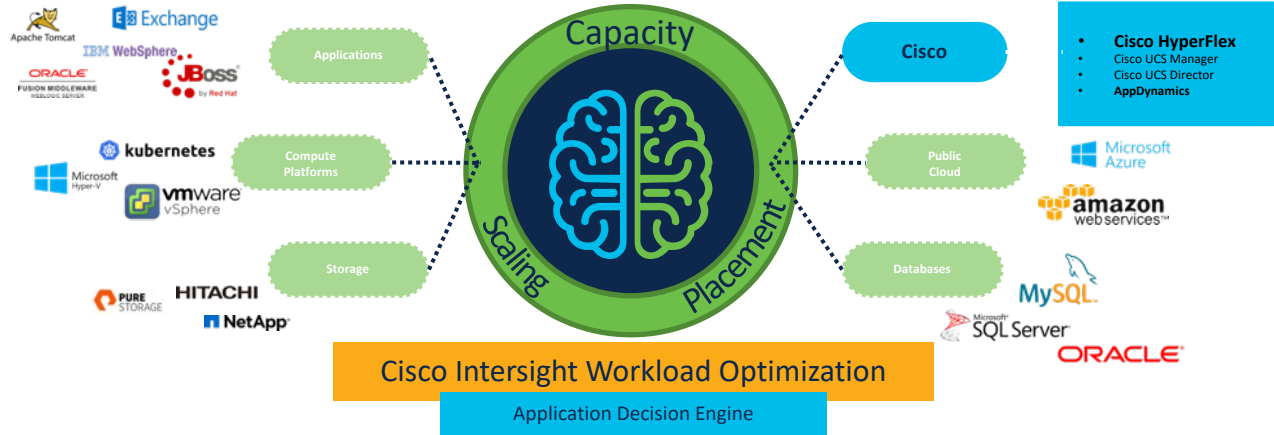




# Intelligent Resource Optimization

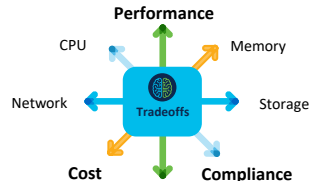


## Intelligent Workload Placement & Decision Automation



### Dynamic Optimization

Optimize performance, cost and compliance in the data center and/or public cloud with one platform



### App-Aware Infrastructure

Recommendations/Decisions based on complete application infrastructure dependency and resource data



### Informed Decisions Through Integrations

Integrations with several key Cisco hybrid cloud software products to get additional information and make more informed decisions

- Cisco HyperFlex
- Cisco UCS
- Cisco AppDynamics
- Cisco ACI



# 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

# Důraz na poslední dekádu

## Simplifying Infrastructure & Operations

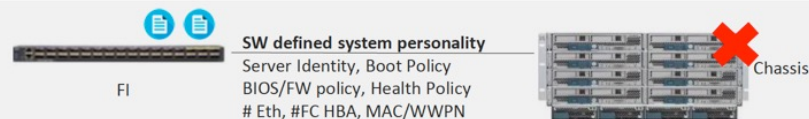
### Unified/Converged Fabric

Simplicity, Cable Reduction, Adapter Reduction



### Stateless System (Service Profiles), Policies, Unified Mgmt

Ease of deployment, upgrade and replacement at scale



### Resiliency and Performance For Mission Critical Apps

Consistent perf, No downtime – failures, upgrades  
150+ Perf Benchmark Records



### Solutions, Eco – System Partnership

Simplicity of bring up of full app stack, Support for full stack

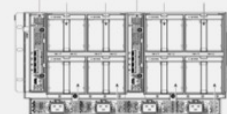


CVDs For  
Virtual Infrastructure (VDI/VS), Hybrid Cloud,  
Enterprise Apps, Data Protection

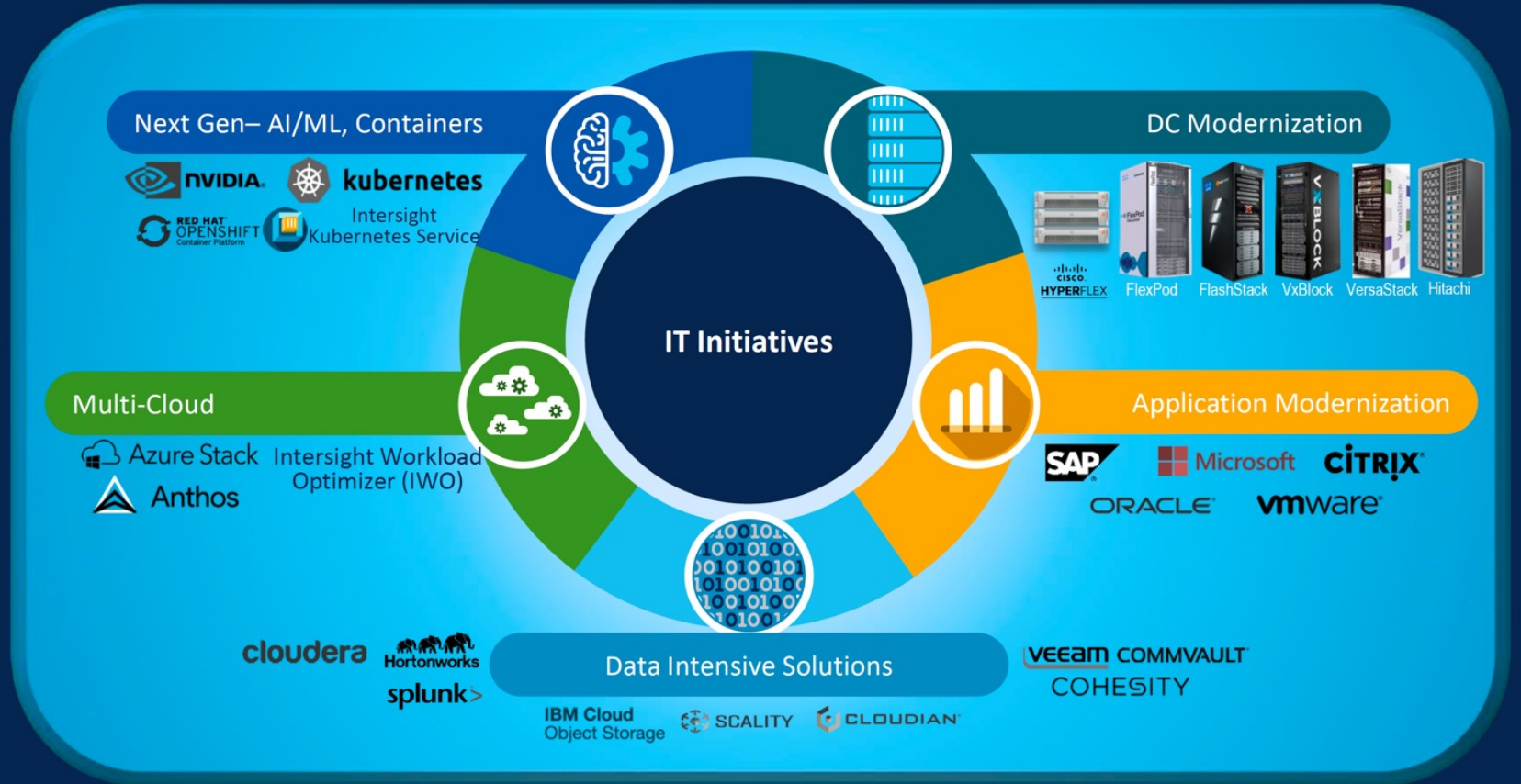
### Power and Cooling, Chassis and Blade Design

Multi-generation CPU support in same Chassis

Now 6<sup>th</sup> Generation Blade  
(IceLake) with 32 DIMM



# Simplifying Infrastructure & Operations



# Simplifying Infrastructure & Operations

Centralized Management  
Global Policies



Intuitive  
experience



Enhanced  
Support



Proactive  
Guidance



Secure and  
Extensible



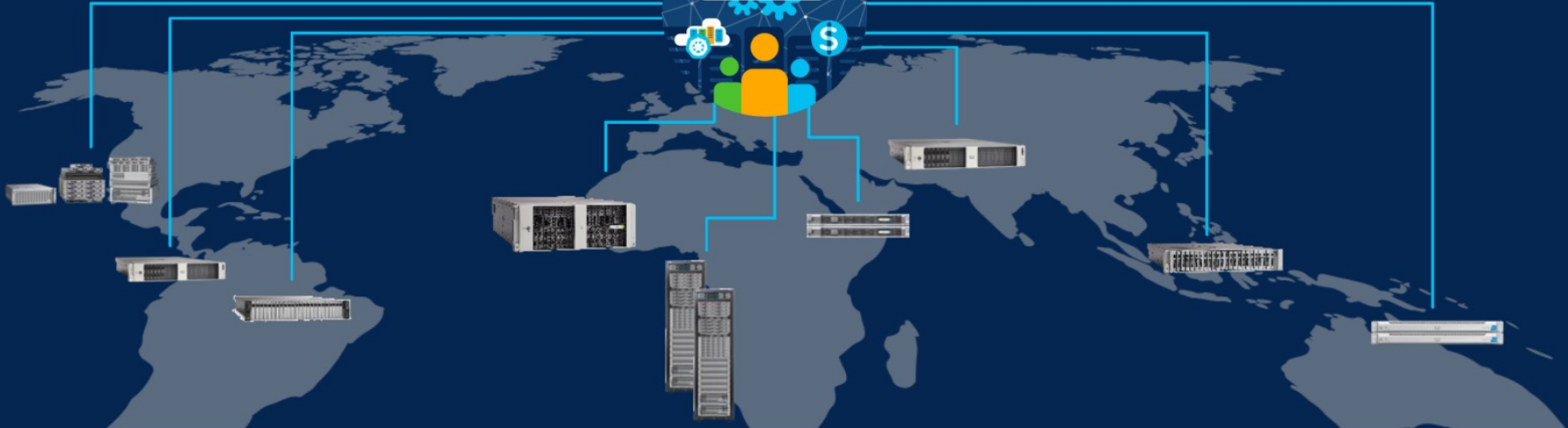
Comprehensive Automation

SaaS or Virtual  
Appliance

SaaS Simplicity

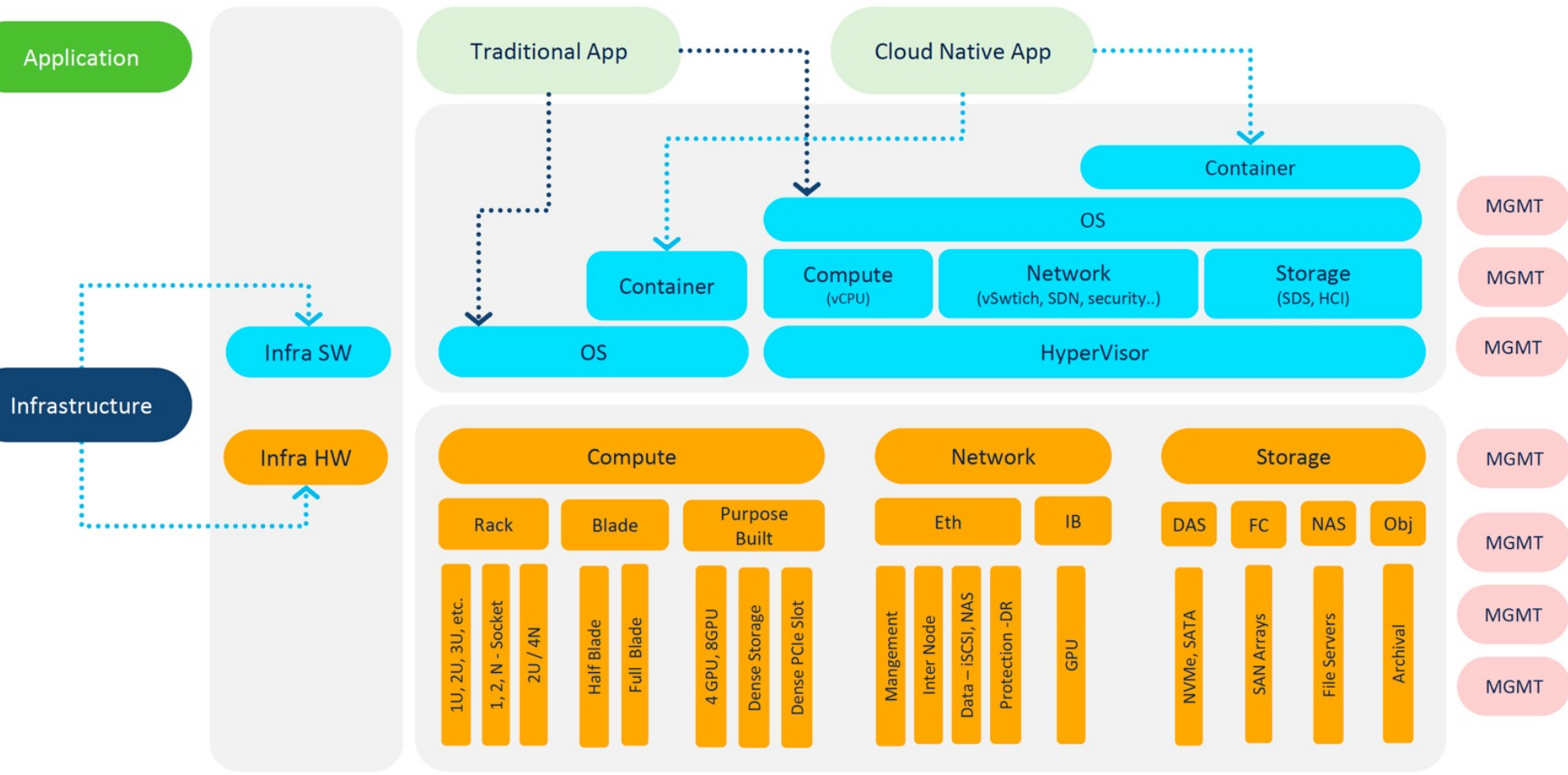


Actionable Intelligence





# Komplexná řešení dnešních i příštích datacenter

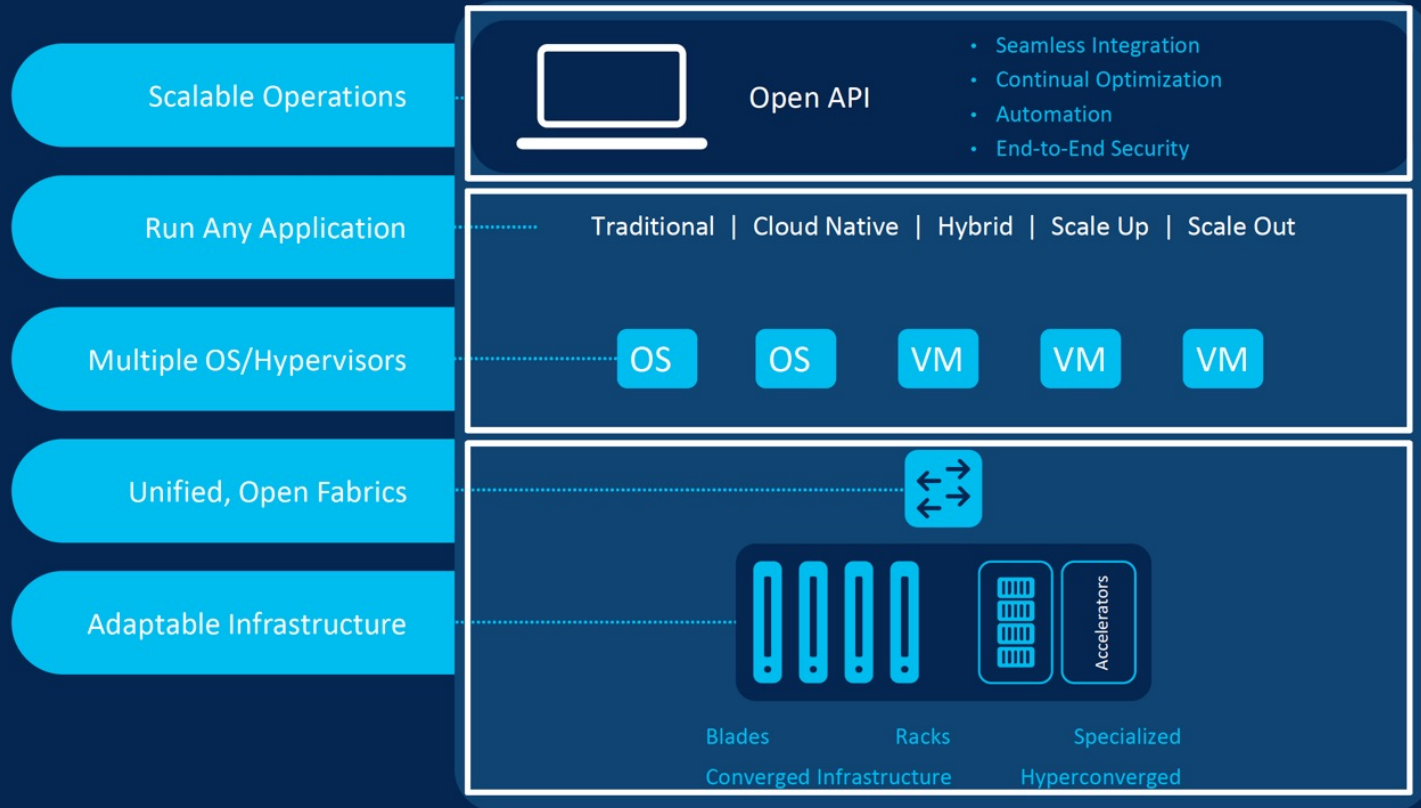


# Jak dál? Řešení?



# Modern Hybrid Cloud Infrastructure

Simple to operate, scale and evolve





# Cisco UCS X-Series



## Chassis

7RU, 8 nodes, Intersight Managed

**Density:** 600+ cores, ~100TB Mem, >1PB drive

**Performance:** >20M IOPS

## Power and cooling Innovation

Efficient 54V PD, Fan Speed Sensors, Fan Control Policy, Air Flow Design, Discrete thermal zones

Higher Power envelope, Liquid cool ready design

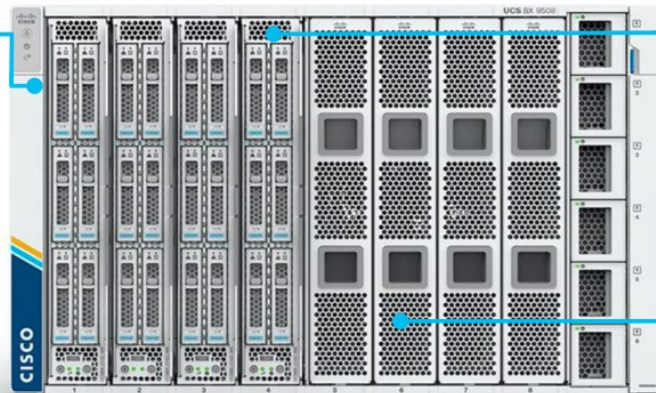
Intersight integration with Intel Power capping technologies

**Higher TDP CPUs, GPUs with lower energy consumption**

## Intelligent Fabric Module (IFM)

New High Perf Converged Fabric to support Current and future network technologies and B/W needs

**Designed to support high perf NW**



## Compute Node

More Real estate and thermal margin

**Designed to support high density of MEM/PMEM, Drives & GPUs in smaller footprint**

## PCIe, Drive, Memory Nodes \*

Additional GPUs, Memory, Drives to compute node

Intersight driven simplicity of resource assignment

**Blur the line between Racks and Blades**  
(Expand workload – AI/ML, Storage, Hyperconverged)



## X - Fabric \*

Modular Low Latency Traffic (PCIe, CXL)

Midplane-less design

Cable-less

**Support in-place upgrade of innovation with:**

- PCIe: Gen 5/6
- CXL: 1.0/2.0
- Silicon Photonics

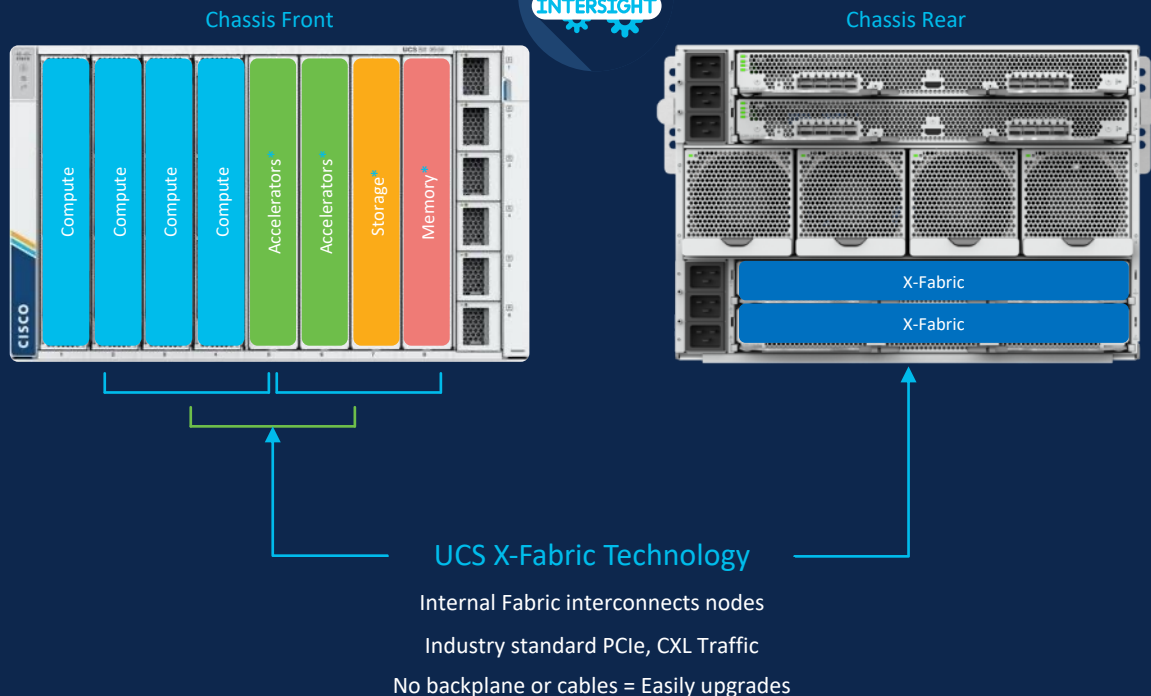
# UCS X-Fabric Technology

Shape infrastructure resources to applications

Run modern apps by assembling modules into systems

Simple policy-based definition of resources from Intersight

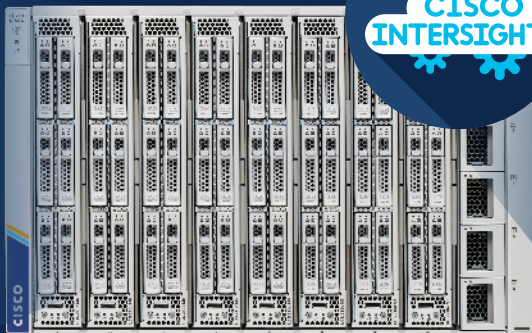
Engineered to accommodate future technologies



# Transformace Konvergované Infrastruktury pro Hybrid Cloud

## Adaptable Infrastructure

- ✓ Align configuration to match apps
- ✓ High-performance workloads
- ✓ HA, DR ready
- ✓ Built for the Hybrid cloud
- ✓ Streamlined vendor support



## Foundation for Hybrid-Cloud

- ✓ Intersight managed compute
- ✓ Intersight managed storage
- ✓ Automation services (Day 0 to N)
- ✓ Full-stack observability
- ✓ Intersight services:
  - Infrastructure service
  - Workload optimization
  - Kubernetes services
  - Terraform Services

UCS X-Series and Intersight combined with simplicity of CI



# Computing příští dekády

Scalable Operations

Private Cloud



Public Cloud

Intersight  
Cloud Orchestrator

Intersight  
Workload Optimizer

Intersight Service for HashiCorp  
Terraform

Intersight  
Workload Engine

Intersight  
Virtualization Service

Intersight  
Kubernetes Service

Intersight Infrastructure Service

Commons Services

Unified, Open Fabrics

New X-Fabric Technology



UCS X-Series

Benefits  
of Blades

Expandability of  
Racks

Constructs for  
Specialized

Adaptable  
Infrastructure

Hybrid Cloud  
Operating Model

Infra. as Code: Intersight svc for Terraform.  
Workload Optimizer, Cloud Orchestrator.

Time to App  
- Frictionless

Infrastructure Automation.  
Storage, NW automation.  
OS install, VM, K8s.

Flexible – Blurs the line b/w  
Rack and Blade

Classic Blade/Converged Infra.  
HCI, Accelerator/GPU, Big Data, CAN.

Engineered for the Next Decade

PCIe4/5/6, CXL.  
Liquid cool ready, Silicon Photonic.

# Závěr