



Cisco TechClub webinář



Příští dekáda ve znamení UCS X

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Agenda

UCS X-series

- Jak jsme se dostali až sem?
- šasi
- výpočetní nody
- konektivita
- správa systému
- validovaná řešení

UCS X-series

Jak jsme se dostali až sem?

Strategie Cisco Compute

Inovace zachycující technologické přerody

First 5 years

Virtualization strategy
Winning the architectural battle,
focus on simplify management, reduce
TCO, consolidation and CI

Second 5 years

Dominance of cloud and data
Helping customers scale operations and
address agility requirements,
big data, HCI, Flash and cloud as
a platform

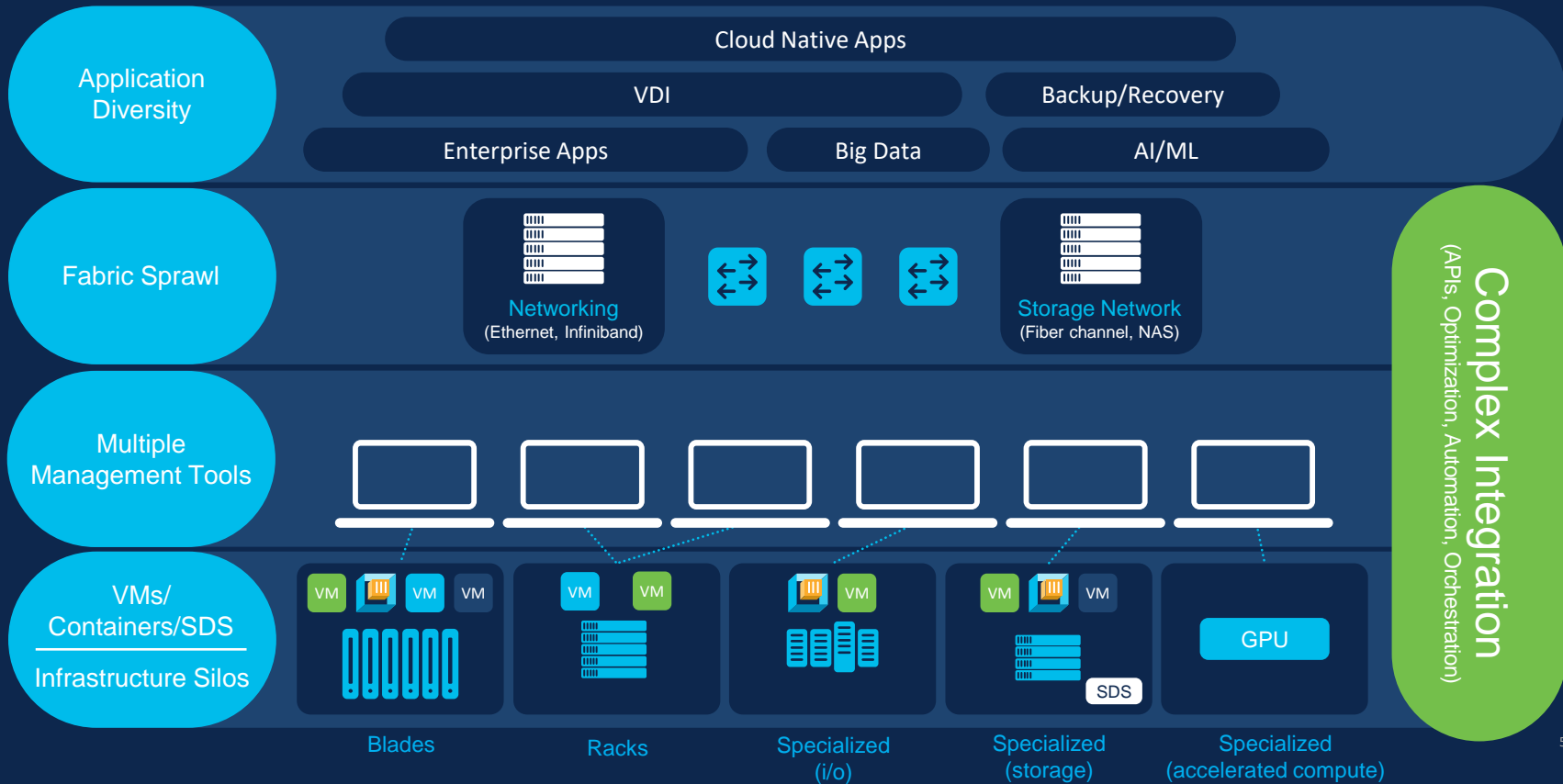
Next Decade

Hybrid everything: Hybrid Cloud, Hybrid
Apps, Hybrid Ops, Heterogenous
Compute – CPU, Storage, GPU, and
Hybrid Development models

2009

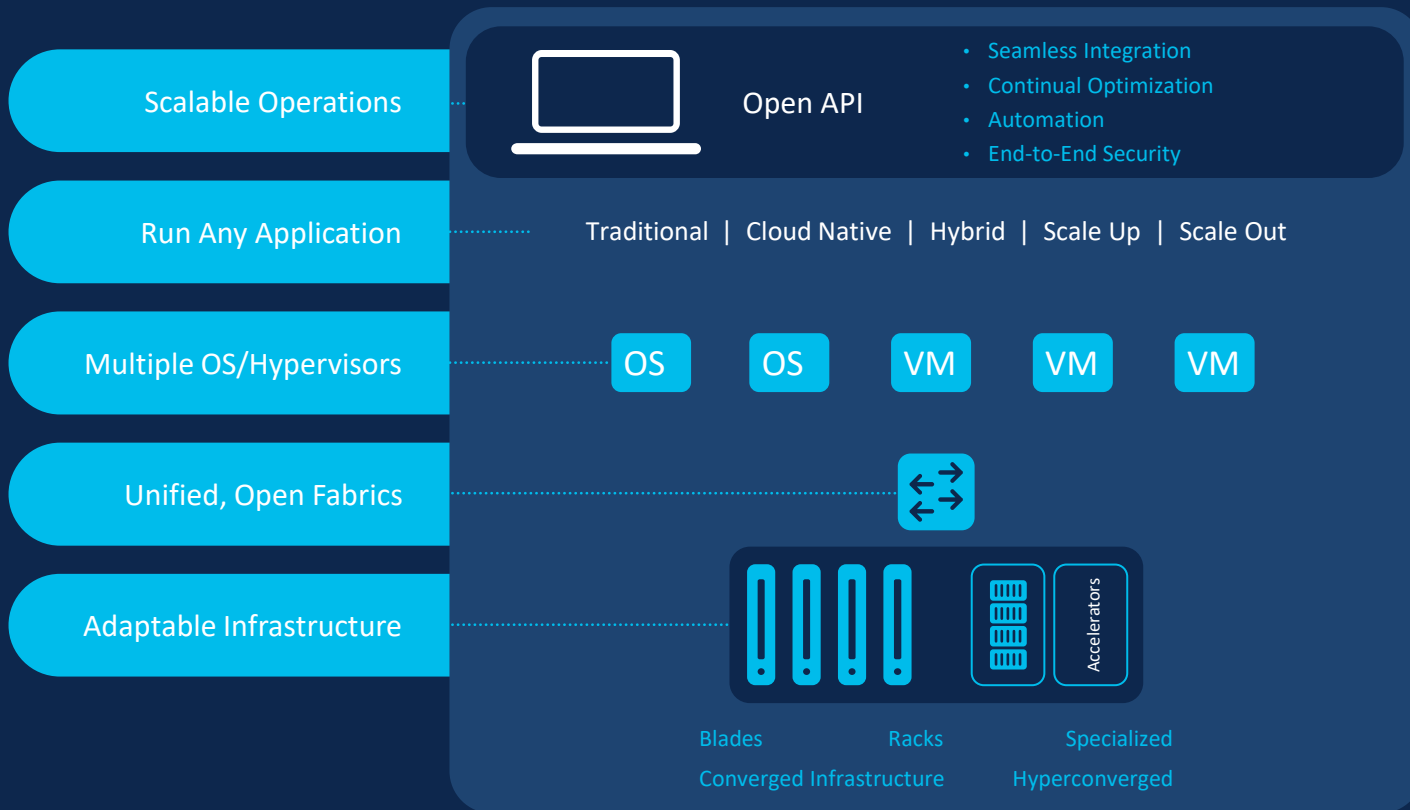
2025+

Nové typy aplikací vyžadují unikátní a komplexní infrastrukturu

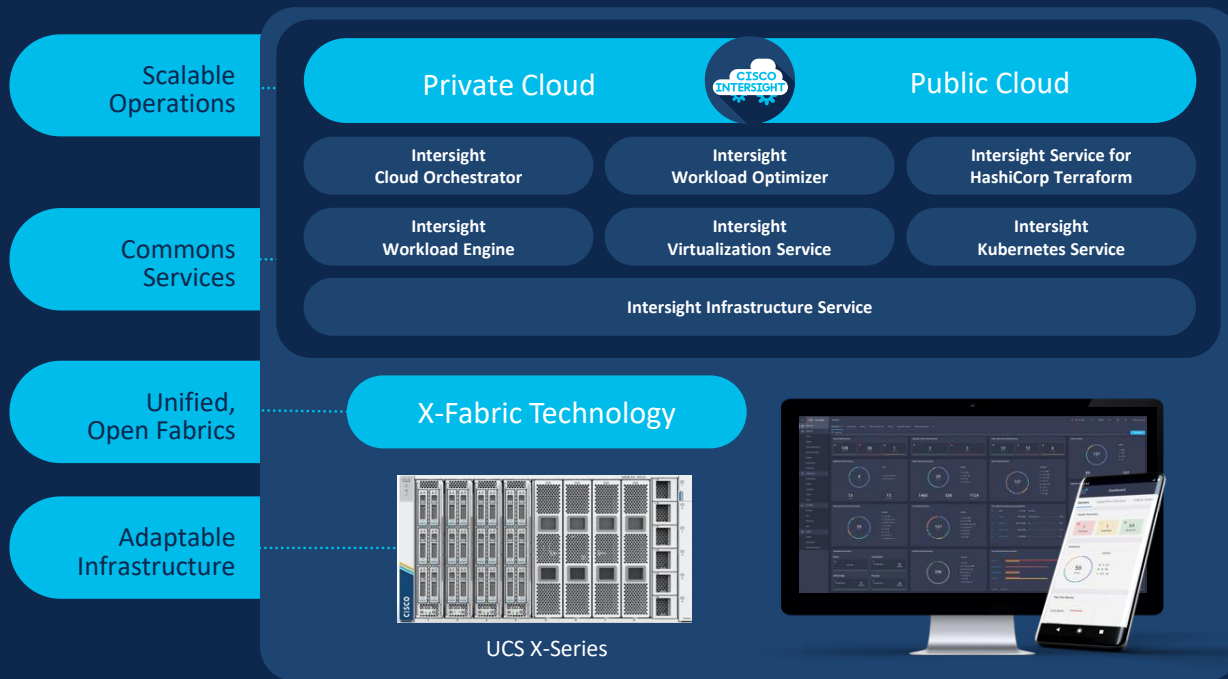


Je nutná moderní infrastruktura pro hybridní cloud

Umožňující jednoduché škálování, automatizaci i provoz



Výpočetní systém pro věk hybridního cloudu



Zásadní zjednodušení infrastrukturou pro hybridní cloud



Simplify with
cloud-operated infrastructure



Simplify with a system designed for
modern applications



Simplify with a system engineered
for the future



UCS X-Series

Nativně integrovaná v Cisco Intersight Cloud Operations Platform



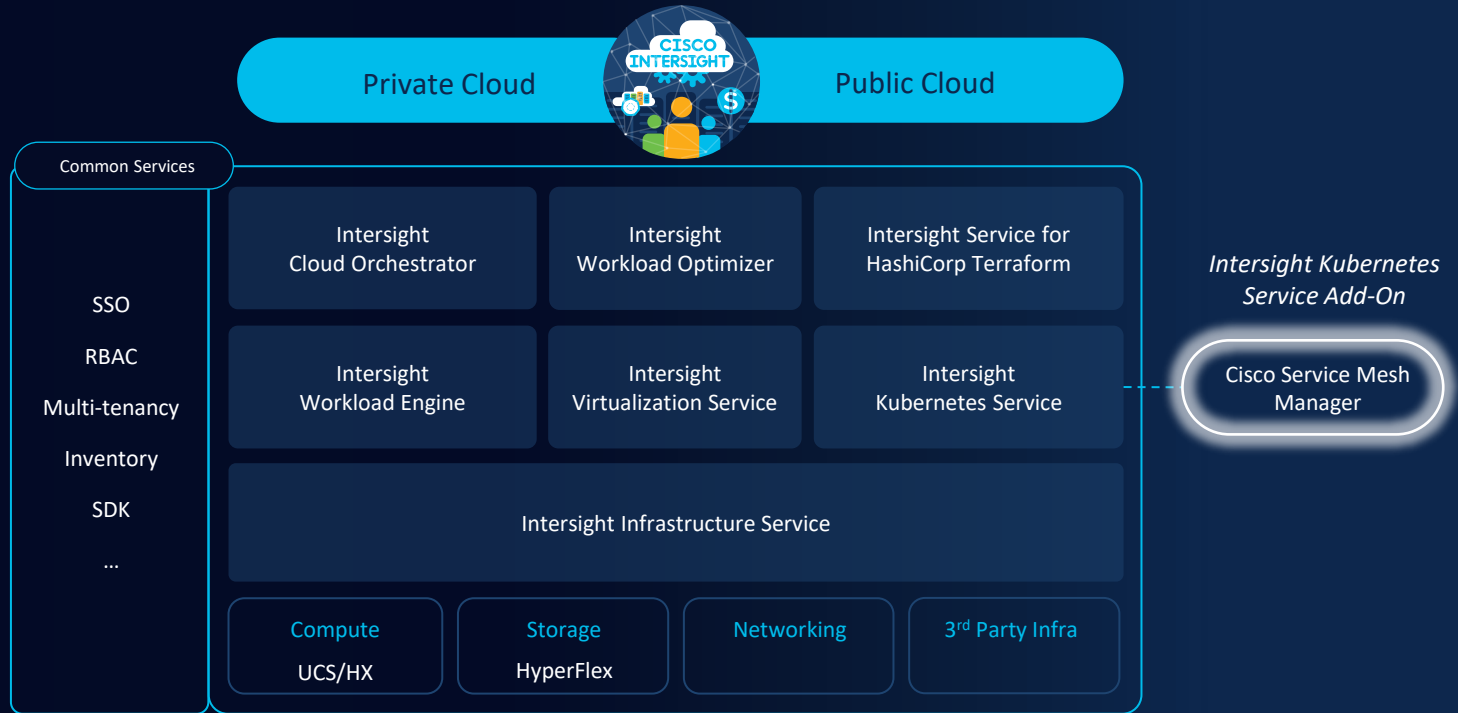
Automation



Observability



Cloud native



UCS X-series

šasi

UCS X9508 System chassis

Chassis

- 7RU IO direct connect
- 8 flexible slots
- Optical ready
- Liquid cooling ready

Ethernet fabric

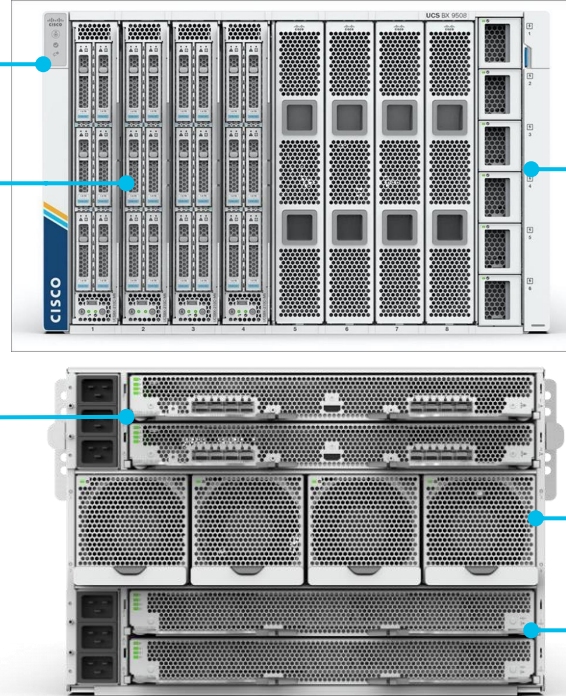
- Two Ethernet Modular fabrics (Ethernet, Mgmt, FC, NVMeOF etc)
- 2 Tb/s throughput

Power and cooling

- 6x 2800W PSU
- 54V power distribution
- 4x 100mm Dual rotor fan

X-Fabric modules

- Two flexible IO modules
- For storage and GPU nodes connectivity

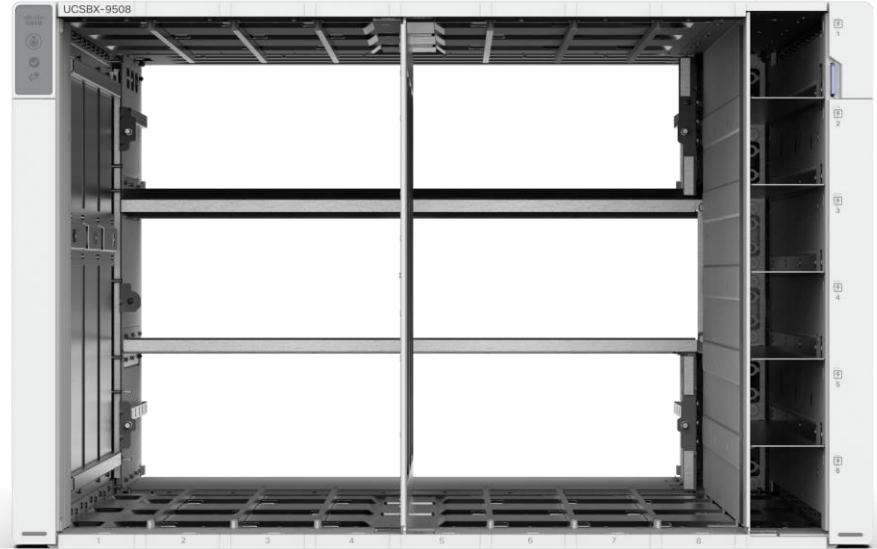


Open chassis eliminates IO midplane

- Prevents technology lock-in
- Reduced airflow restriction
- Maximize power efficiency
- Configure as needed for workload

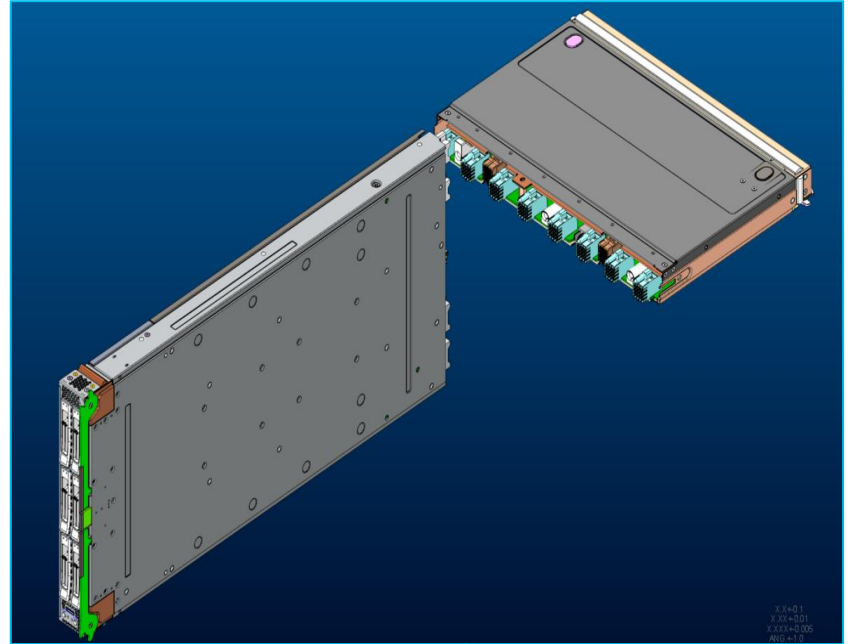
Substantially higher performance per RU with flexibility for a long term technology roadmap

UCS X 9508



Direct node to IFM connection

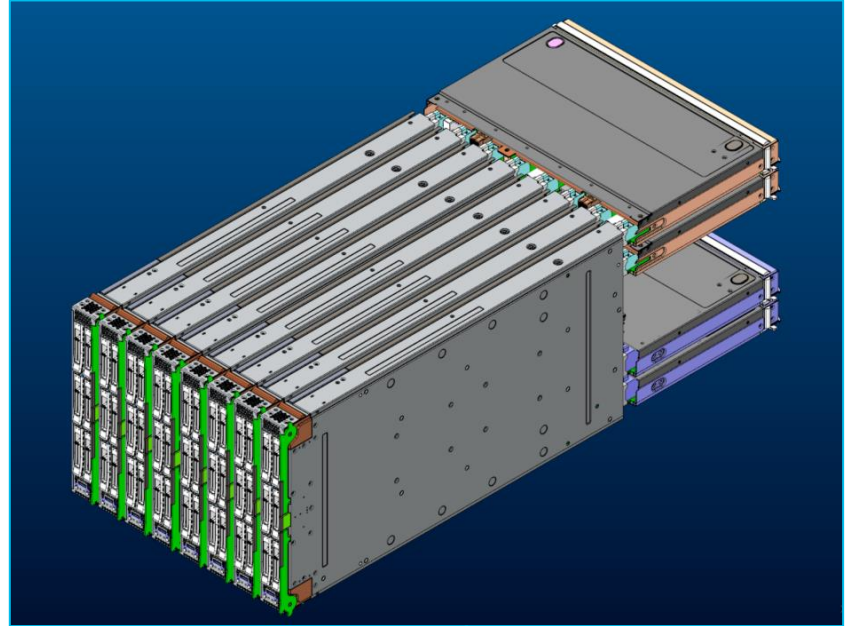
No IO midplane



Direct node to fabric connections

Dual redundant fabrics

- Network (top)
- X-Fabric (bottom)



UCS X-series

Výpočetní nody

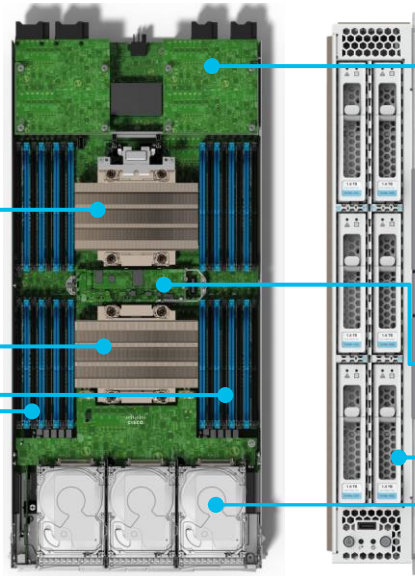
UCS X210c M6 Compute Node – Key features

CPU

Up to 2 Intel 3rd Gen Xeon SP CPUs

Memory

Up to 32x DDR4 3200 DIMMs
Up to 16x Optane Persistent Memory 200 Series



VIC

1. 25G Cisco mLoM based on 14000 Series VIC
2. 25G Cisco VIC Mezz based on 14000 Series VIC (optional)

Drives

Options of

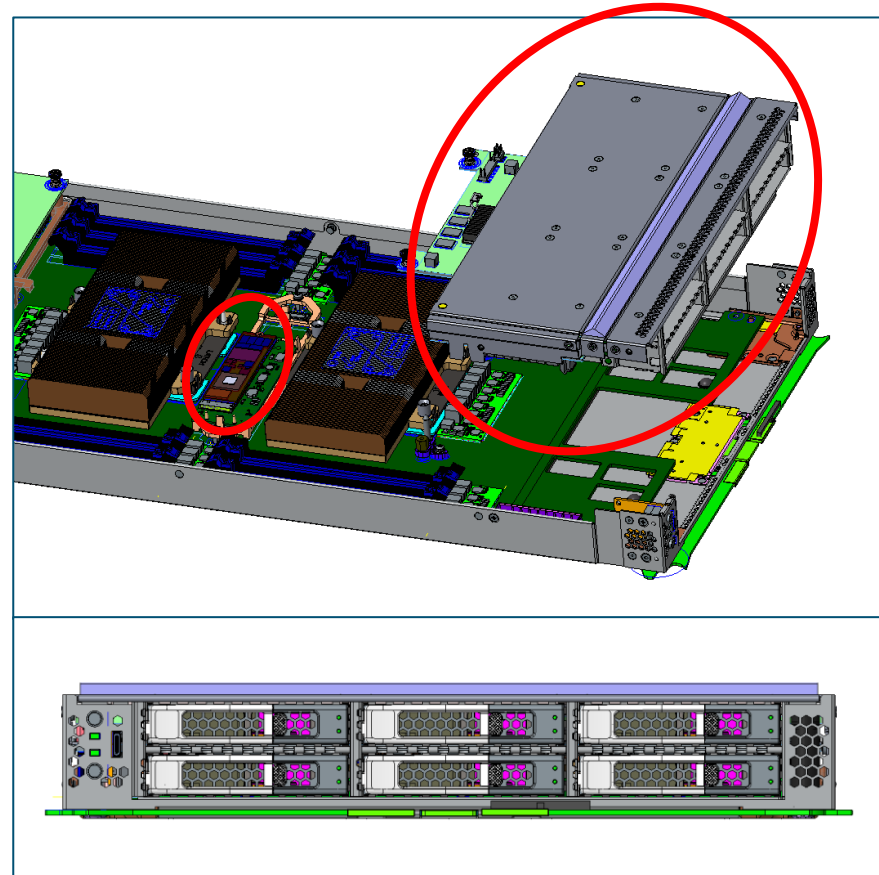
1. Up to 6 SAS/SATA with RAID Controller
2. Up to 6 NVMe Drives with PCIe Gen4 x4
3. Up to 2 M.2 HW RAID1 Drives

B200 M5 to UCS X210c M6 comparison

Feature	B200 M5	UCS X210c M6
CPU	1 st /2 nd Gen Xeon SP to 205W Up to 28 cores per socket	3 rd Gen Xeon SP to 270W Up to 40 cores per socket
Memory (Max)	6TB: 24x DDR4 2933 MHz 6TB: 12x Optane PMM 2666 MHz 9TB Max w/ 12x DDR4 + 12x PMM	8TB: 32x DDR4 @ 3200 MHz 8TB: 16x Optane PMM 3200 MHz 12TB Max w/ 16x DDR4 + 16x PMM
Drives	2x hot swap SAS or Gen3 NVMe 2x SD-Card or M.2 Up to 15TB total	6x hot swap SAS or Gen4 NVMe 2x M.2 Up to 93TB total
RAID Controller	Broadcom 3008	Broadcom 3900
VIC	1440/1480	14425/14825
Fabric Bandwidth	8x 10GbE or 2x 40GbE	8x 25GbE

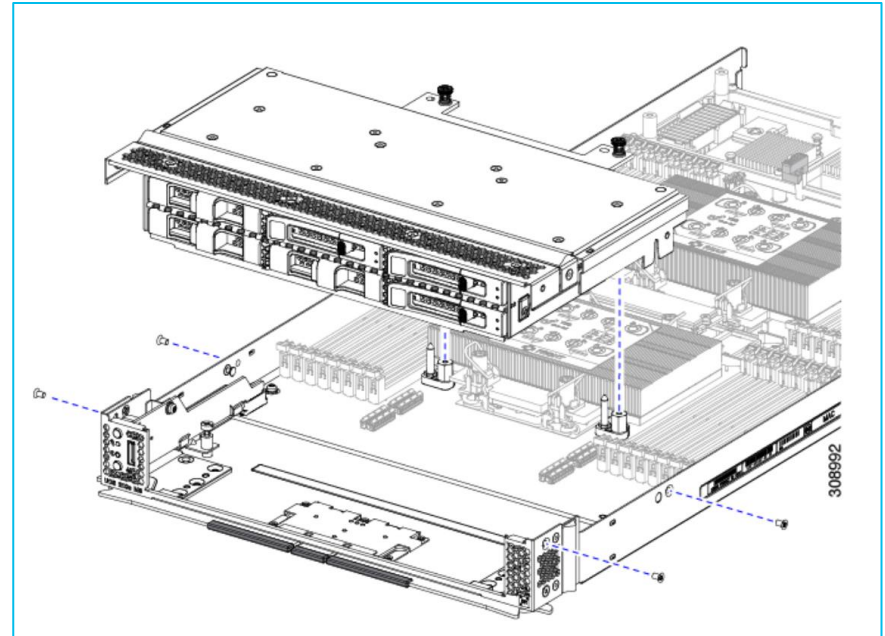
Local drive options

- Optional front Mezz supports up to 6 hot swap drives
- Optional boot optimized M.2 RAID module
- No SD-Card support



Front drive mezzanine

- UCSX-X10C-RAIDF
 - UCS X10c Compute RAID Controller with Broadcom 3900
 - Controller is integrated into Mezz module
 - PCIe Gen4 x8
 - 2x SAS/SATA + 4x SAS/SATA/NVMe
- UCSX-X10C-PT4F
 - UCS X10c Compute Pass Through Controller (PCIe Gen4)
 - 6x NVMe
- UCSX-X210C-FMBK
 - UCS 210c Compute Node Front Mezz Blank
 - No drives

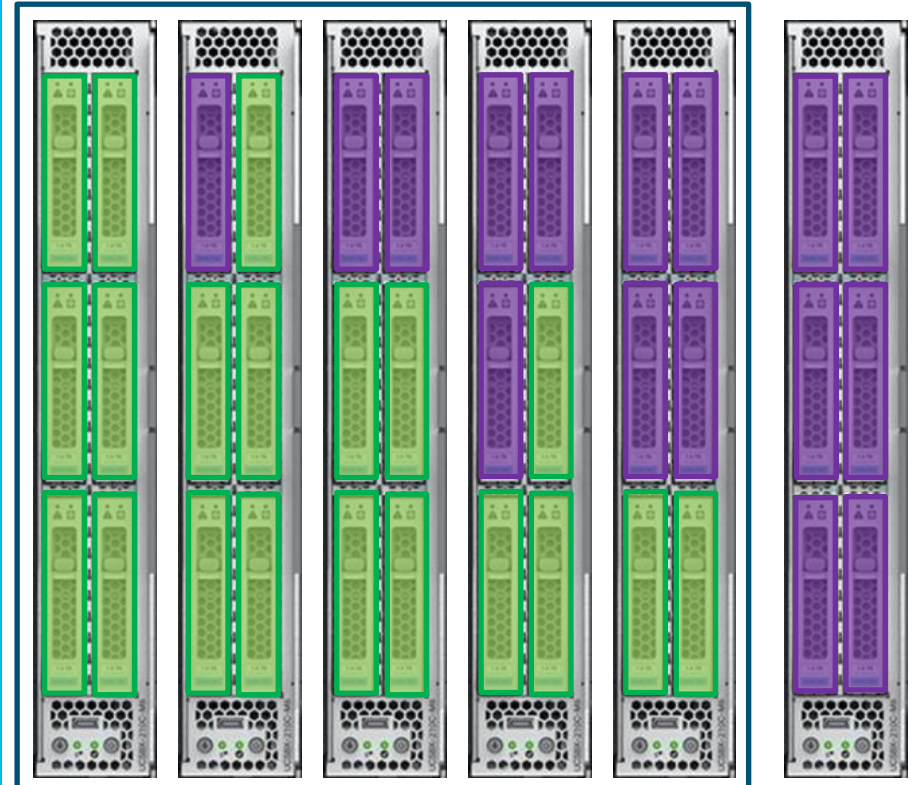


Front Hot Swap Drive Mezzanine

- Optional front Mezz supports up to 6 hot swap drives
- SAS HW RAID or NVMe mezzanine
 - SAS/SATA HW RAID
 - 6x U.2 SAS, SATA, or NVMe
 - Up to 4x NVMe (x4 PCIe Gen4)
 - JBOD or RAID 0,1,5,6,10
 - 4GB cache
 - SuperCap
 - NVMe mezzanine
 - 6x NVMe (x4 PCIe Gen4)
 - RAID with VROC

SAS/SATA RAID Mezzanine drive options

NVMe Mezzanine



SAS/SATA



NVMe

UCS X-series

Konektivita

6400 Series Fabric interconnect

- 4th Generation UCS Fabric Interconnect (FI)
- Two form factors - 1RU 6454 and 2RU 64108
- Support UCS IFM 9108-25G
- Supports UCS VIC 14425 and VIC 14825
- X Series supported from 4.2.1
- 1/10/25/40/100 Gbps Ethernet and 8/16/32 FC ports
- **X series management only thru Intersight Managed Mode**



FI 6454



FI 64108

UCS FI 6400 series

FI 6454

- 16 x UP (10/25 or 4/8/16G FC), 28 x 10/25GbE, 4x 1/10/25 GbE & 6 x 40GbE QSFP+ ports
- 3.82Tbps switching performance
- 1RU fixed form factor, two power supplies & four fans



FI 64108

- 16 x UP (10/25 or 4/8/16G FC), 72 x 10/25GbE, 8x 1/10/25 GbE & 12 x 40GbE QSFP+ ports
- 7.42Tbps switching performance
- 2RU fixed form factor, two power supplies & three fans



9108-25G Intelligent Fabric Module

- 1st Generation UCS Intelligent Fabric Module (IFM)
- Supports UCS 6400 Series Fabric Interconnect Only
- Supports UCS VIC 14425 and 14825 Only
- 8 x 25Gb IFM to Fabric Interconnect Uplinks (NIF Ports)
- 32 x 25Gb IFM to VIC Connections (HIF ports)
- Enhanced Security – FPGA (Secure Boot), ACT2 (Anti-Counterfeit)
- Connects X series compute node to external network.
- Hosts “Chassis Management Controller” (CMC) for chassis management
- Supported in Intersight Managed Mode (4.2.1)



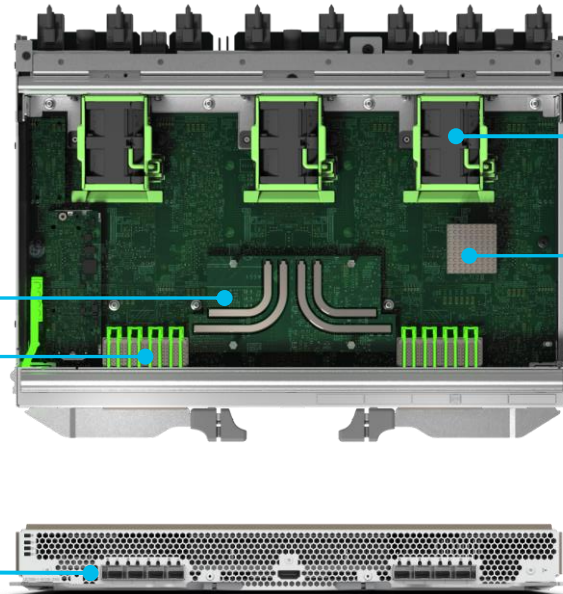
UCS 9108-25G Intelligent Fabric Module

Cisco Sundown ASIC

- 8x 25G Fabric links to FI-6400
- 32x 25G Host Ports to 8x UCS x210c compute node
- 100G BW to each UCS x210c Compute Node
- 2Tbps throughput per IFM

External Ports

8x 25G SFP28 Ports



FAN

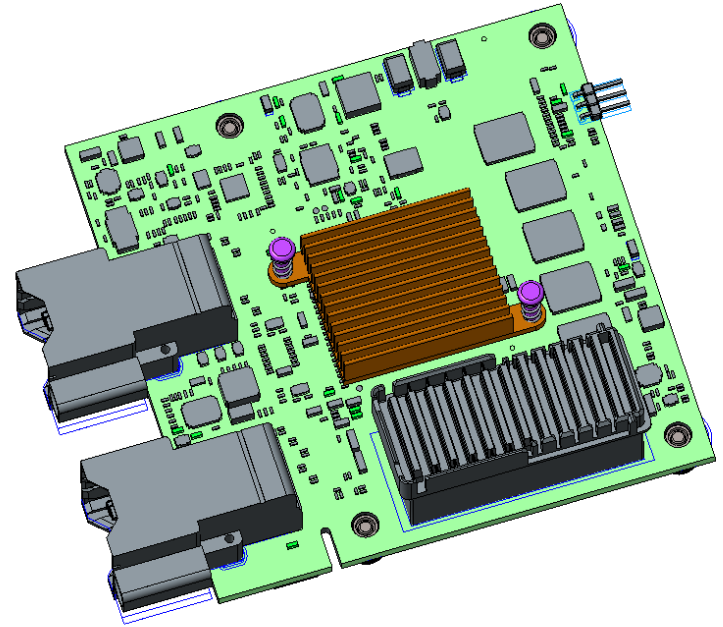
3 Internal Fans

CPU

Intel Denverton
4Core/2.1GHz CPU

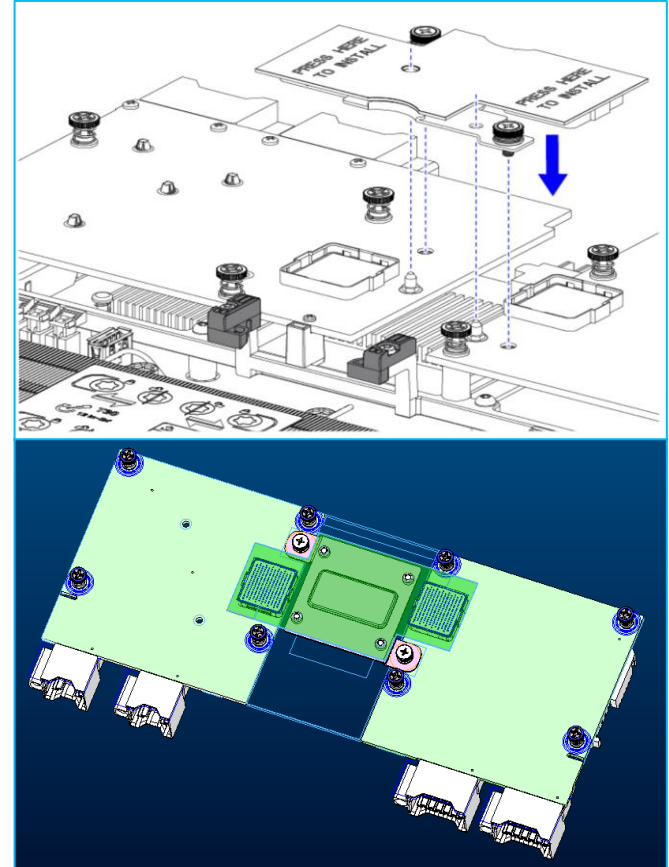
VIC 14425 (mLOM) VIC 14825 (Mezz)

- 4th Gen VIC card for x210c compute node
- Converged Network Adapter
- 256 virtual interfaces
- FC and Ethernet virtual interfaces
- NVMeoF over RDMA (ROCEv2)
- FC-NVMe
- VxLAN, NVGRE, GENEVE Offload
- Hardware RSS
- Windows VMQ/VMMQ
- VMware NetQueue
- DPDK
- Low latency usNIC for HPC

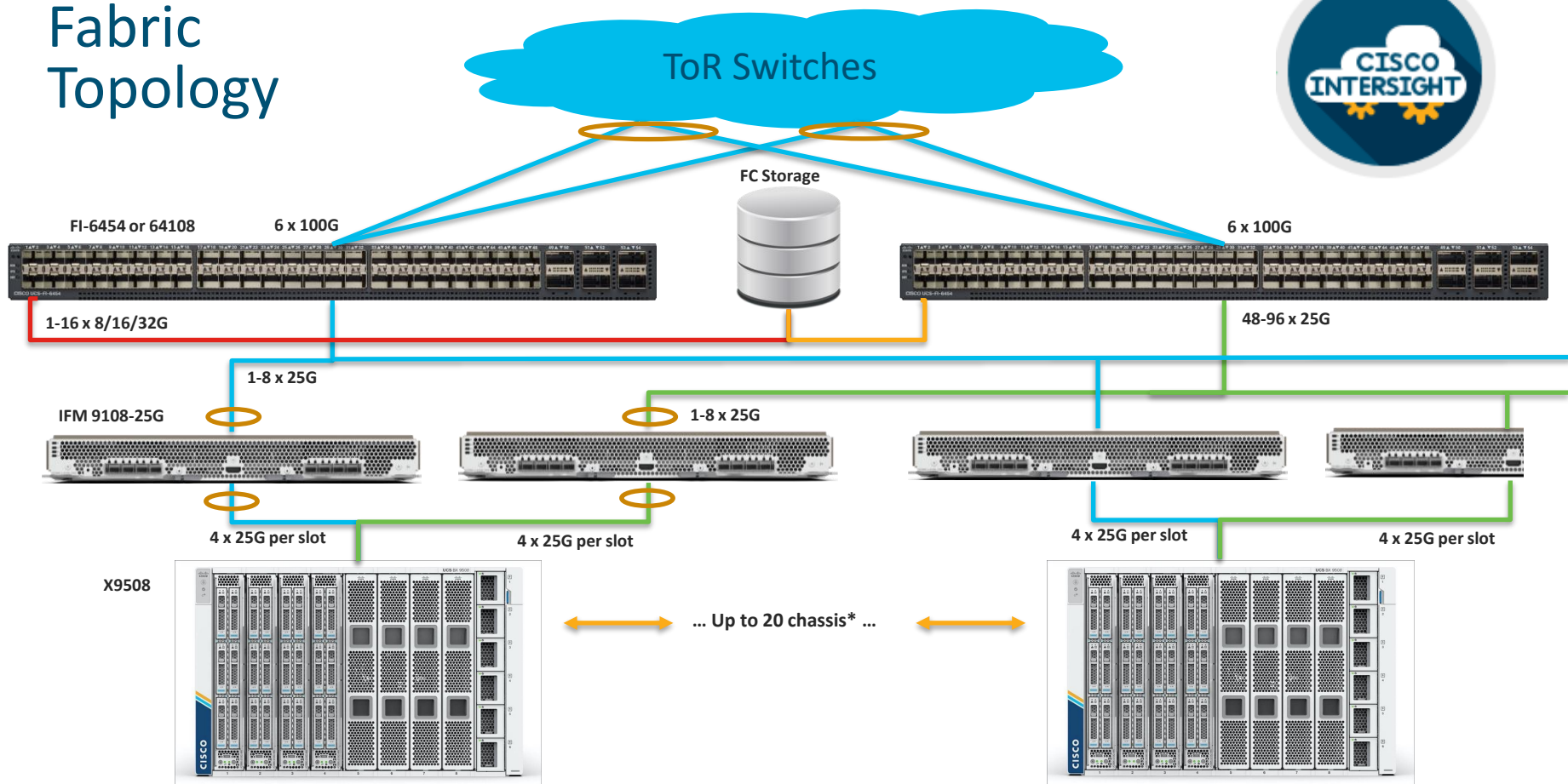


Mezzanine to mLOM bridge

- Routes signals from Mezz card to IFM via mLOM
- Specific to 14425 and 14825
 - 14825 requires 2 CPU
- X Fabric cards will utilize Mezz connector to X Fabric modules



Fabric Topology



UCS X-series

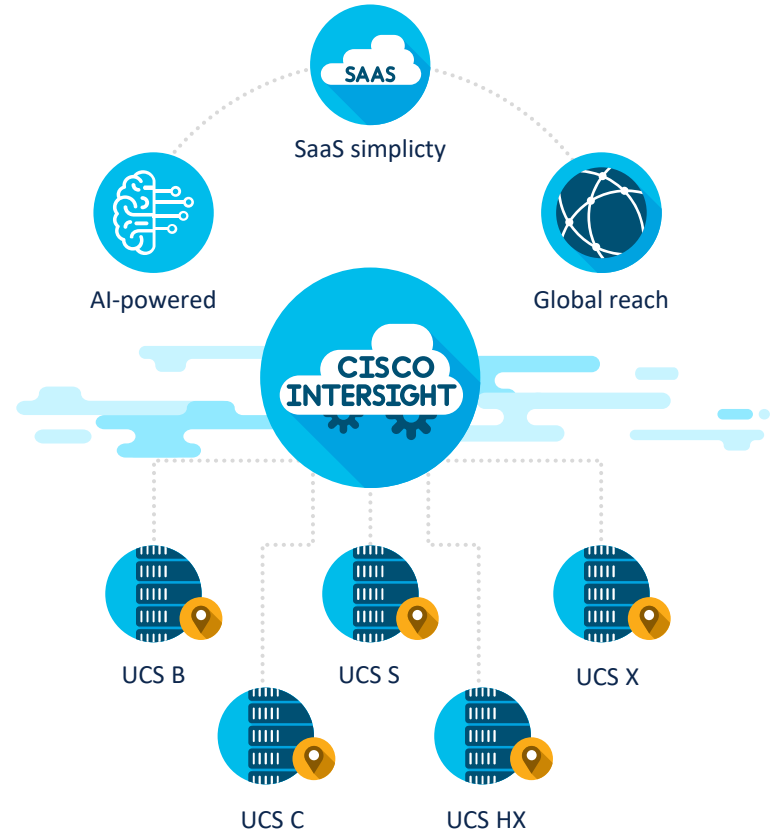
Správa systému

Effortlessly manage from a hybrid cloud environment

Hands-off concierge-level management experience

Automate routine governance

Offload system-level maintenance



IMM Experience in Intersight



Pools



Policy



Templates

Step 3/6
Ports Configuration
Create or select a port policy for the fabric interconnect pair.

Configure ports by creating or selecting a policy.

Fabric Interconnect A Configured

Ports Configuration Selected Policy: FI-Beta-Port-Policy

Ports Port Channels

FC Ports	4	FC Uplink Port Channels	1
Ethernet Ports	50	Uplink Port Channels	1
		FCoE Uplink Port Channels	0
FC Uplink	0	FC Uplink Port Channel Member	4
Uplink	0	Uplink Port Channel Member	4
FCoE Uplink	0	FCoE Uplink Port Channel Member	0
Server	0	Unconfigured	46

Next >

Why IMM & Customer Benefits

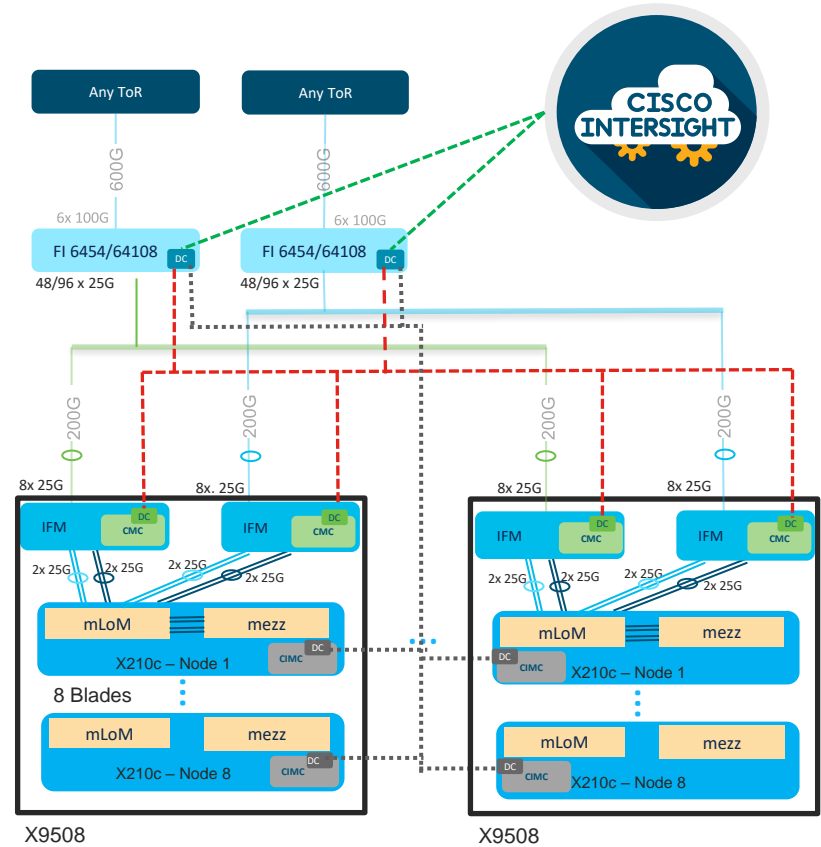
Current FI-based model has many limitations/drawbacks:

- Limited scale due to object model living on FI's – FI Resources limited
- Software packaging increasingly difficult as we drag along legacy with our expanding product portfolio
- Feature velocity and bug fixes slow to release due to software bundling
- Complex legacy API (xml based) and proprietary server policy automation

With IMM

- Infinite policy scale with Intersight SaaS
- CI/CD feature velocity by hosting UCSM functionality in Intersight – Feature Rollout being separated from FW.
- Pinpoint patching by removing the need to distribute firmware in bundles
- Modern API using OpenAPI framework – facilitates integrations
- Industry standard server policy automation with Redfish (enables 3rd party server support)

Intersight to FI, IFM and compute node communication



Intersight IMM mixed domain requirements

- All X9508 Chassis and nodes (M6 and beyond) will be managed through Cisco Intersight, IMM
- UCSM Domains will be setup in IMM Mode, thus all HW in those Domains will need to be on the IMM Supported HW List.
- Possible Mixed Domain Example – Intersight IMM:
 - 6454 or 64108 FI's
 - X9508 chassis with M6 compute nodes
 - 5108 Chassis with B200 M5/6 Blades (2204/2208/2408 IOMs and 4th Gen VICs)
 - FI Attached C-Series M5/M6 Servers.

UCS X-series

Validovaná řešení

FlashStack Overview



More Simplicity



More Flexibility



More Speed

Data-centric architecture



Stateless compute



Fast networks



Fast, reliable shared storage

Cisco UCS: Server platform built for the cloud

- Highly dense, modular, policy-driven compute platform
- Backward and future compatible; in-chassis upgrades

Cisco Fabric: State-of-the-art data center fabric switching

- Fibre Channel or Ethernet/iSCSI storage interconnect
- Nexus 5K, 7K, 9K. MDS. Customer-defined choice for configurations

Pure Storage: Fast, reliable and shared storage

- All-flash storage systems built for the cloud era
- Block, NFS, or S3 Storage
- Backward and future compatible; in-chassis upgrades
- Cisco Intersight integrated



FlexPod Overview



#1

Most trusted



Strong partnership

10-year track record of Cisco and NetApp partnership



Proven results

190+ CVDs



Secure foundation

Future-proof



Hybrid cloud integration

- Tiering, data protection, cloud services

Modern workloads and enterprise apps

- AI and ML, Oracle, SAP, SQL Server
- containers, Kubernetes

Modern Cisco UCS compute

- Intel and AMD servers
- Intel Optane memory
- NVIDIA GPUs

High-speed Nexus 9000 and MDS 9000 fabric

- 100GbE/32Gb Fibre Channel
- NVMe over fabric

All-flash NetApp storage with end-to-end NVMe

- Virtualized, bare-metal
- Built-in encryption

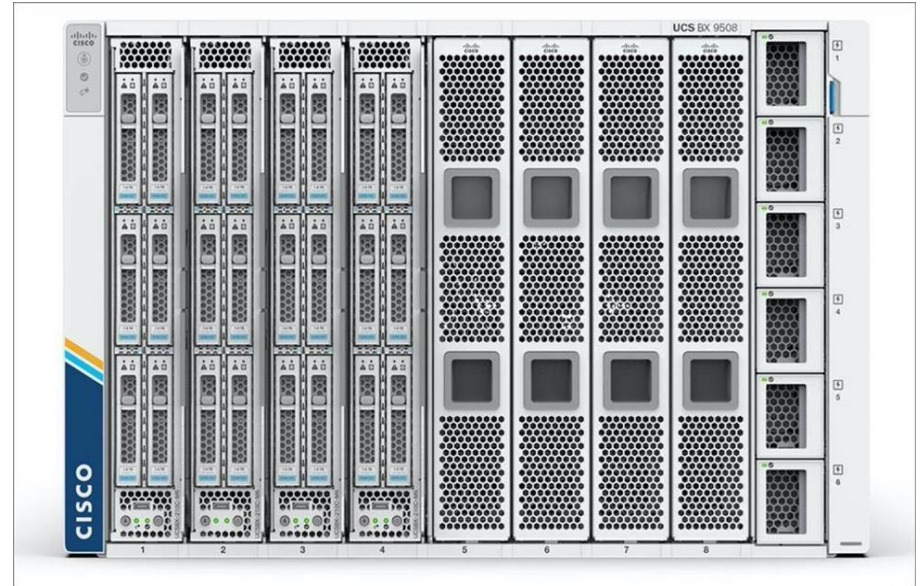
Single-vendor support

- Cloud-based monitoring
- Intersight integration

UCS X Series with SAP HANA

New SAP DRAM/CPU ratio for
Intel Xeon Ice-Lake:
BWoH = 1TB/CPU
SoH = 2TB/CPU

- Up to 2 x Intel Xeon Ice-Lake with 76 cores
- Up to 2TB DRAM and 8TB Intel Optane for BWoH
- Up to 4TB DRAM and 8TB Intel Optane for SoH
- SAP HANA scale-up only



SAP on Converged infrastructure



CVDs for SAP HANA on
FlexPod and FlashStack

Available in September 2021

- Virtual and bare metal
- Intel Optane
- HANA System Replication (HSR)
- ACI (FlexPod)



* Cisco UCS C220 M5 will be updated to M6 rack servers when available
** Pure Storage FlashArray model may be adjusted based on availability

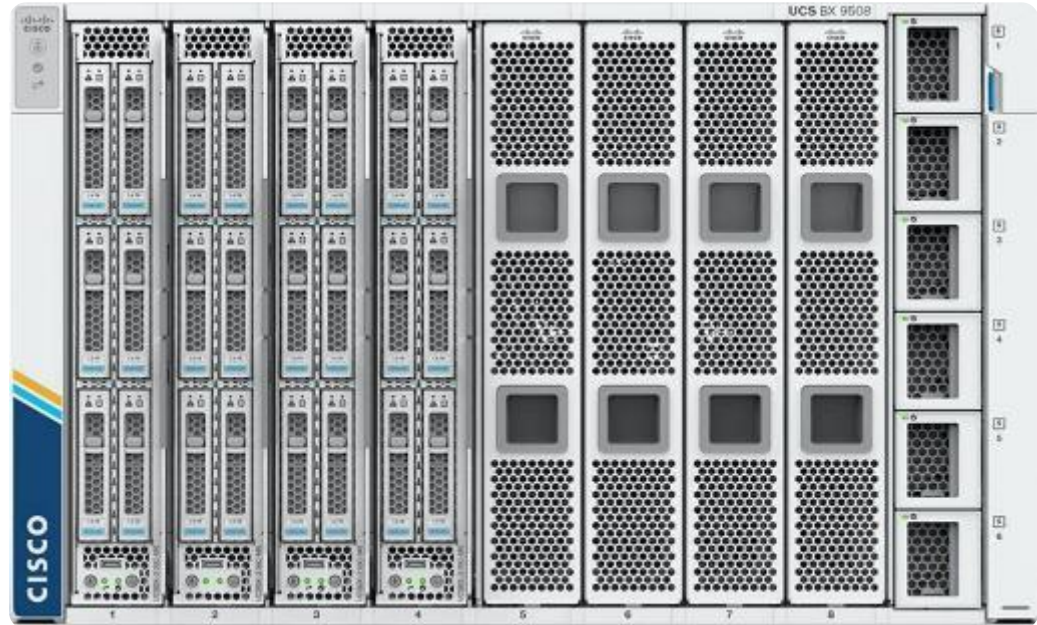
UCS X-Series Chassis – Oracle Database Deployments

A Wide Range Of Choice from All-In-One to Converged Infrastructure

All-In-One Benefit Summary

- Expanded storage capacity per Compute Node targets databases
- NVMe drive support enables superior database performance
- Lowers Database License Costs
 - No Oracle RAC required
 - Intel processor speed reduces number of processor cores req.
 - Take advantage of lower priced license options
- Large memory support enables smaller databases to run in memory
- Ideal for environments that can withstand time for Oracle RMAN utility to perform failover when required.

19^c ORACLE[®]
Database



Converged Infrastructure VDI Plans for M6 & X-Series in '21



FlexPod

- **FlexPod B200 M6 Citrix LTSR**, Scale to 5,000 Knowledge Workers or 6,000 Task Users
- **FlexPod B200 M6 Horizon 8**, Scale to 5,000 Knowledge Workers or 6,000 Task Users
- **FlexPod X-Series Citrix LTSR**, Scale to 2,500 Knowledge Workers or 3,000 Task Users



FlashStack

- **FlashStack B200 M6 Citrix LTSR**, Scale to 5,000 Knowledge Workers or 6,000 Task Users
- **FlashStack B200 M6 Horizon 8**, Scale to 5,000 Knowledge Workers or 6,000 Task Users
- **FlashStack X-Series Horizon 8**, Scale to 2,500 Knowledge Workers or 3,000 Task Users

Cisco Validated Designs for VDI

Proven Solutions to Implement In Your Data Center



Cisco
Validated
Design



Selected Customer Engagements

Gather end-to-end requirements

Product Development

Integrated solution

Integrated
Systematic
Approach

Thought Leadership

Incorporate best practices

Tested and Validated

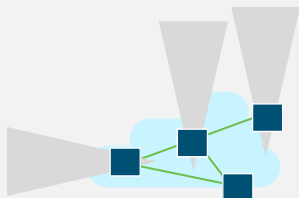
For consistent delivery by partners

System development guidelines

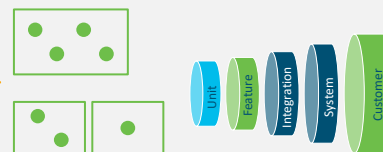
Planning



Design



End-to-End validation



Documentation



300-500 pages/CVD

Cisco Support Stands Behind All CVD's – Even If an Engineer Must Go On-Site

Sumář

Future-Ready Design

Engineered for the next decade

....Protect investments and focus on innovation



2030+

Liquid-cooling

Silicon photonics

Next gen. fabrics

Power and cooling capacity

Future accelerators

CPU support roadmap

2021



UCS X-Series: Right Design for What's Next

Simple

Cloud managed, without rigid hardware config rules

Flexible

The only modular system with best of blade and rack

Future-ready

Competitor systems aren't built for what's coming

Fewer Components

36%

30%

Larger Compute Nodes

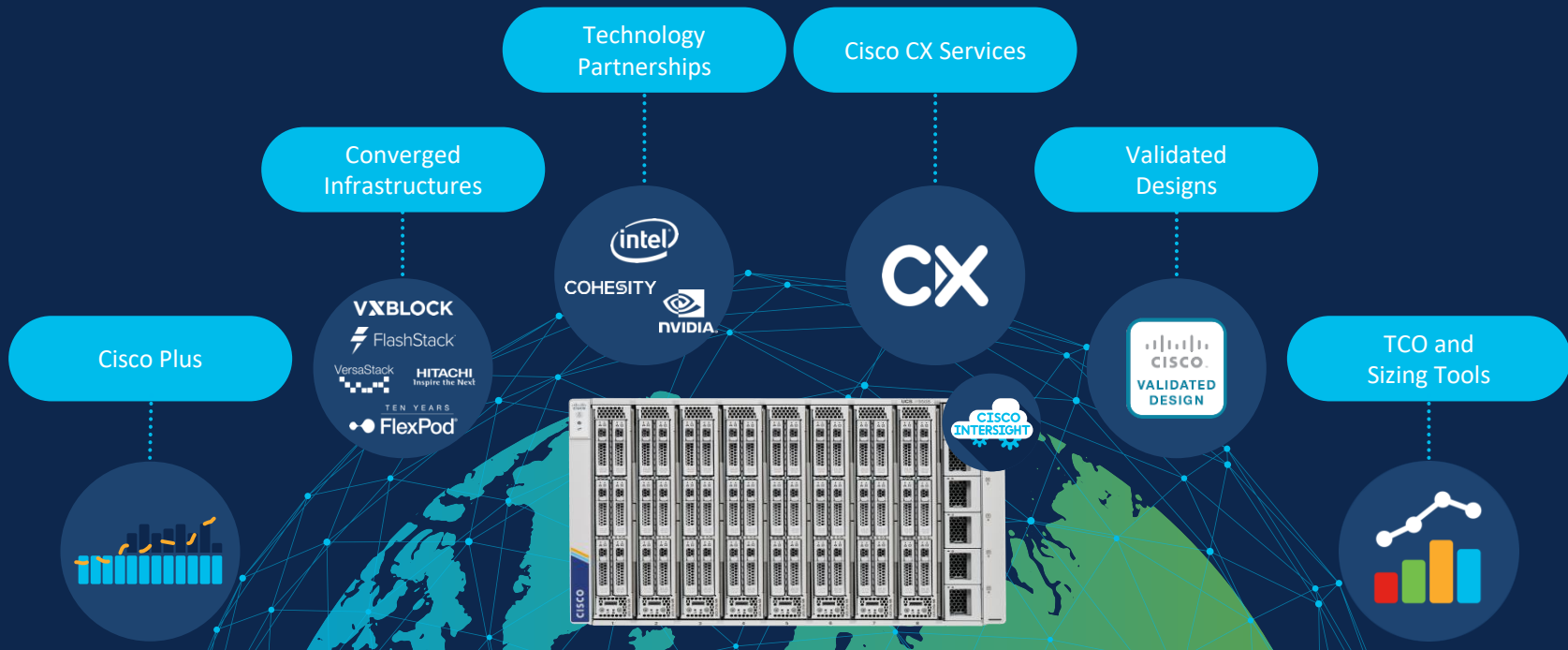
Power and Cooling

2X

1

Control Point in the Cloud

Computing for the Next Decade



Virtual Infrastructures

Hybrid Cloud

Enterprise Applications

AI/ML

Containers

SAP HANA

Desktop Virtualization

Data Protection

Cisco Solution Portfolio



