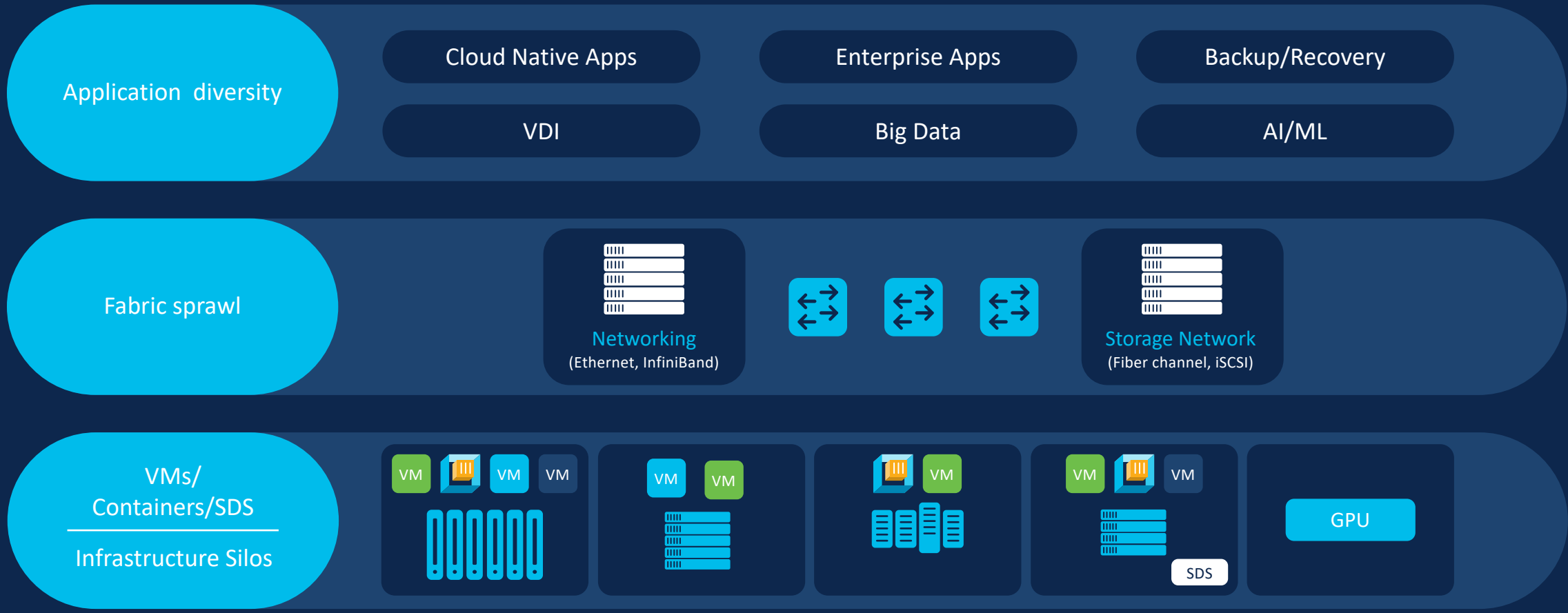
Cisco Tech Club Days

Cisco Hyperflex & UCS-X – infrastruktura pro příští dekádu

Miloš Pavlík
Cisco TSA
Date

It’s a hybrid cloud world

Architectural silos drive complexity



Modern Hybrid Cloud Infrastructure

Simplify to scale, automate, and operate

Scalable Operations

Run Any Application

Multiple OS/Hypervisors

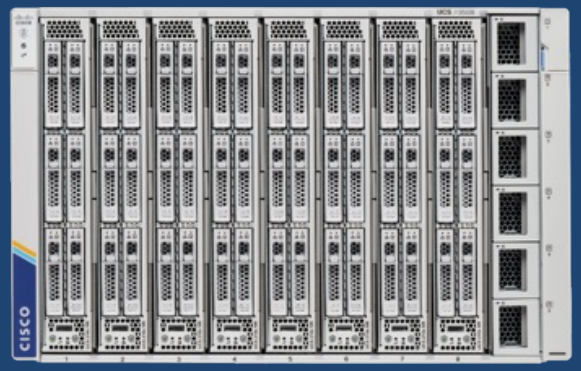
Unified,
Open Fabrics

Adaptable Infrastructure

Cisco Intersight

Traditional | Cloud Native | Hybrid | Scale Up | Scale Out

OS OS VM VM VM



Blades

Racks

Specialized

Hyperconverged

Converged Infrastructure

Simplify with an Adaptable System

Open, modular design

New nodes

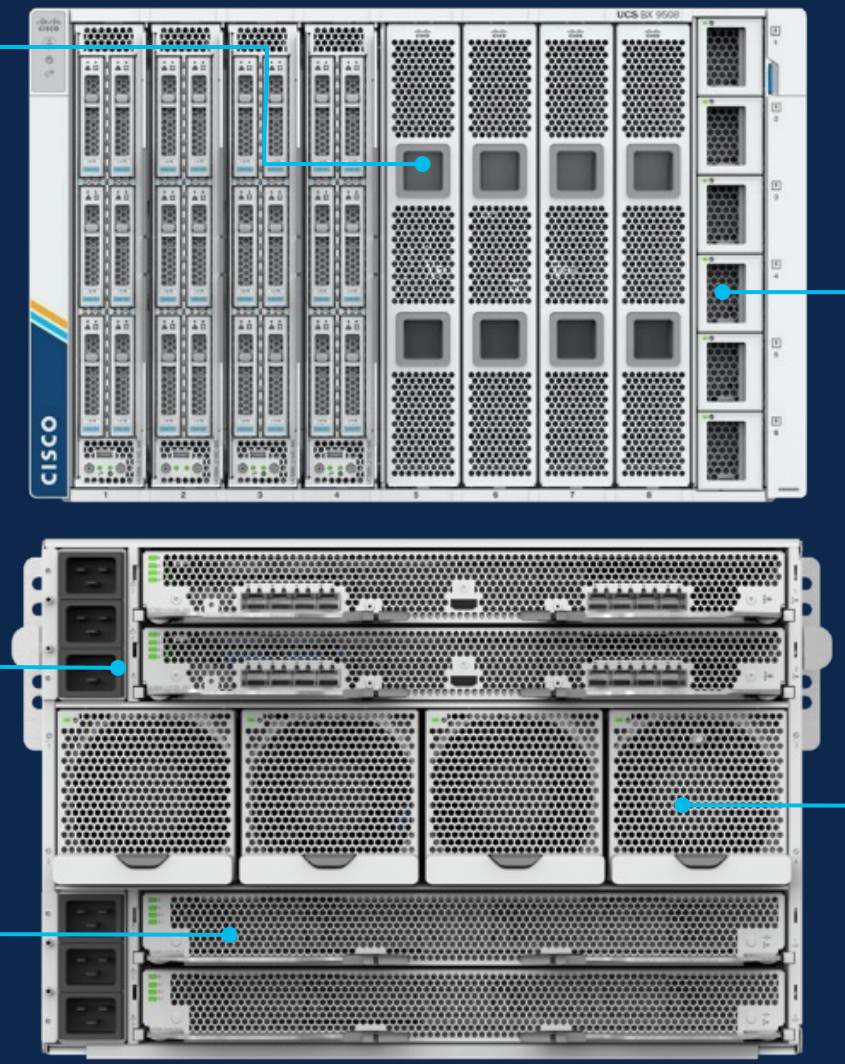
- Compute Nodes
- Storage nodes*
- Accelerator nodes
- External Persistent Memory nodes*

Future I/O

- New SmartNIC Features, 100Gb+

UCS X-Fabric Technology

- PCIe Gen4/5/6
- CXL



Power and Cooling Margins

- Ready for high-watt CPUs and GPUs
- Liquid colling enabled

Architecture which enables:

- Modularity for seamless integration of Next Innovations
- Efficiency of power and cooling
- Balanced Compute and Drive Ratios
- Optimal Failure Domains
- High Performance

* Roadmap – subject to change

Introducing the 5th Generation UCS Fabric

Simplify with cloud-operated infrastructure for workload of choice

Scalable and Resilient converged compute fabric for modern applications

Future-ready to address growing compute bandwidth needs

CISCO INTERSIGHT

6536 Fabric Interconnect

9108-100G IFM

VIC 15000 Series

Building Blocks of 5th Generation Fabric

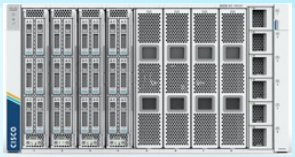
Cisco Intersight
Policy-driven Infrastructure Provisioning

Cisco UCS Fabric Interconnect
100GE unified fabric switch
7.4 Tbps bandwidth

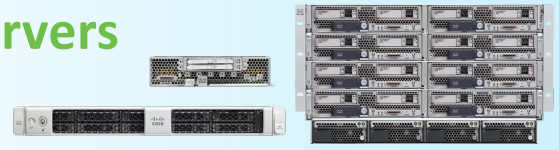
Cisco UCS Fabric Extender
IFM-100G for 1.6 Tbps per X9508 Chassis
IFM-25G, IOM-2408, FEX 93180YC-FX3

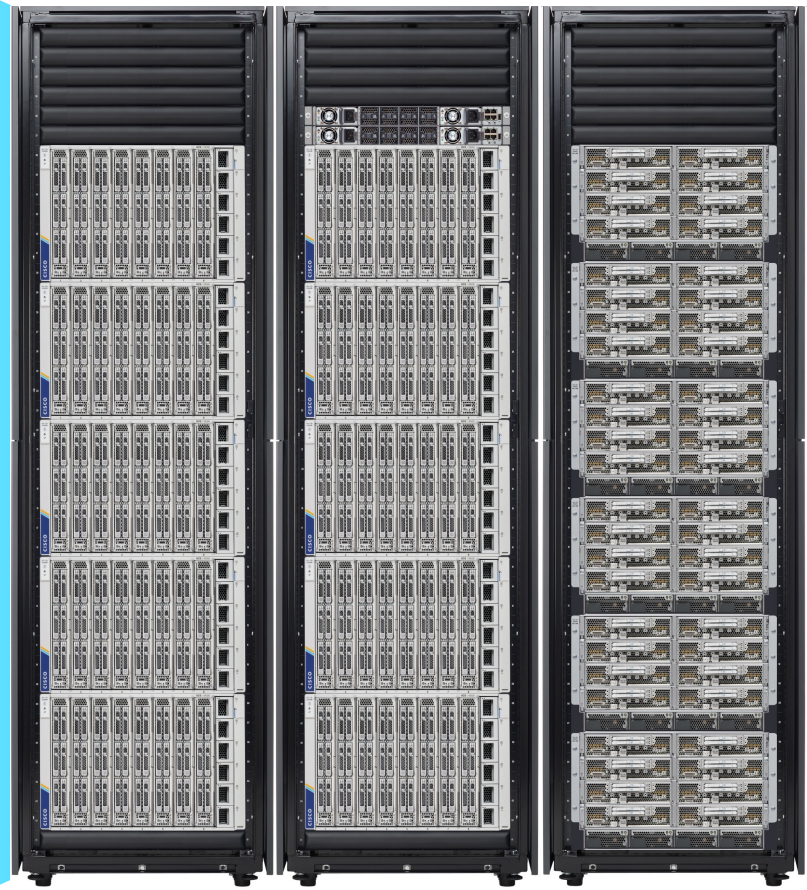
Cisco UCS I/O Adapters
VIC 1400/14000/15000 Series

Cisco UCS X-series Chassis
200G per x210c compute node
E2E 100G, 32G FC



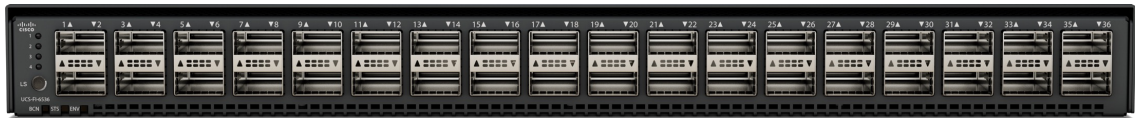
Cisco UCS Blade and Rack Servers
Support for M5/M6 B-,C- series
E2E 25/40/100G, 32G FC



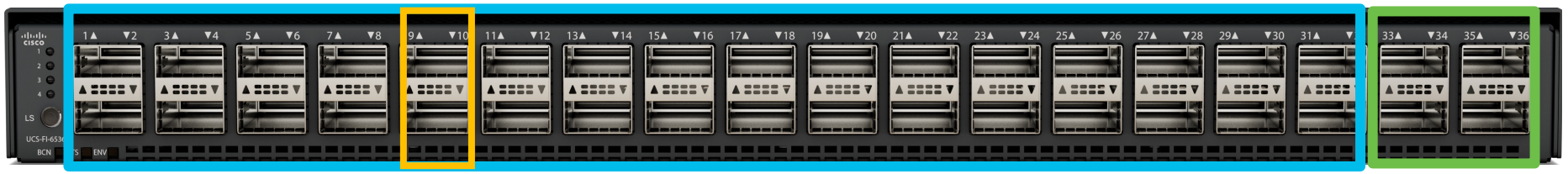


UCS 6536 Fabric interconnect

- 5th Generation UCS Fabric Interconnect (FI)
- 36x 100G Ethernet ports , 1 RU form-factor
- 1/10/25/40/100 Gbps Ethernet speeds
- 8/16/32G Fibre Channel speeds
- Support X9108-IFM-100G and X9108-IFM-25G
- Support IOM 2408 and FEX 93180YC-FX3
- Support UCS VIC 1400/14000 and 15000 Series
- Support M6 x210c, M5/M6 B- and C- Series
- Intersight Managed mode support from 4.2(2)



FI 6536 – Rear and front view



1GbE with QSA

32 x 40/100 GbE
10/25GbE by breakout, QSA or QSA28

4x Unified Port
4x 40/100G Ethernet or
16x 8/16/32G FC after breakout

Power supply
(hot swappable)

6 x Fan modules
(hot swappable)

2 x L1/L2
1 x console
1 x GbE Mgmt port

Power supply
(hot swappable)

FI 6536
Hardware Support

- X9508 Chassis
- X9108-IFM-25G, X9108-IFM-100G
- X210c M6 servers

- UCS 5108 rev 1 & 2 chassis
- IOM 2408
- B-Series M5 and M6 servers

- C-Series M5 and M6 servers
- VIC 1400/14000 , 15000 series
- Nexus 93180YC-FX3 in FEX mode
- Server support at 25/40G/100Gbps
- Managed by Intersight at FCS.

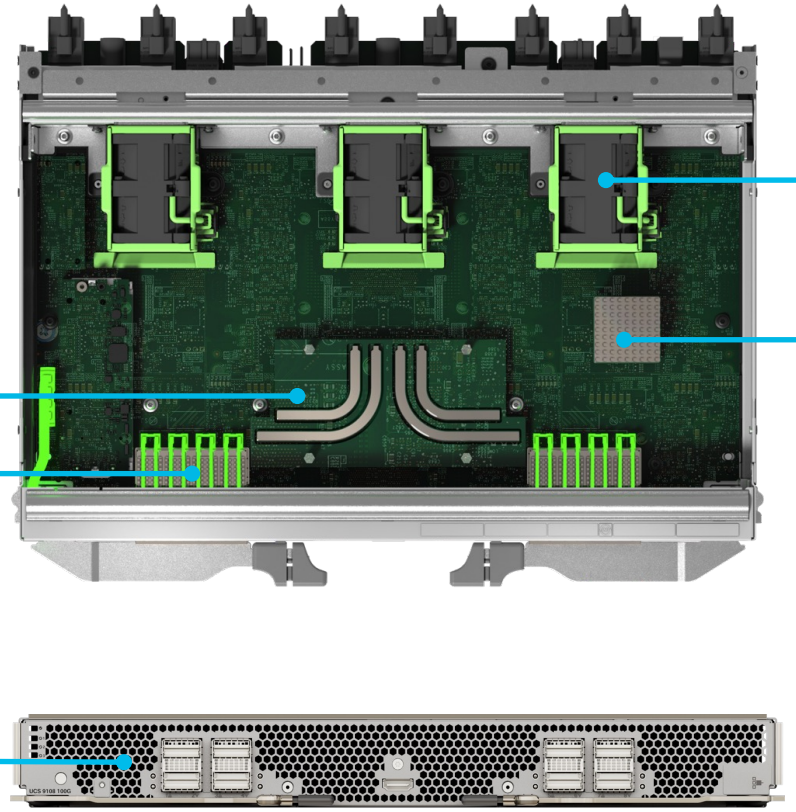
Cisco UCS 9108-100G Intelligent Fabric Module

- 2nd Generation UCS Intelligent Fabric Module (IFM)
- Supports UCS 6536 Fabric Interconnect
- Supports UCS 14000 and 15000 series VICs
- Hosts “Chassis Management Controller” (CMC) for chassis management
- Enhanced Security – FPGA (Secure Boot), ACT2 (Anti-Counterfeit)

Cisco UCS 9108-100G Intelligent Fabric Module

Cisco ASIC

- Single ASIC
- 3.2 Tbps throughput per IFM
- 8 x 100G or 32 x 25G ports per server



FAN

- Three internal fans

CMC Processor

- Chassis management

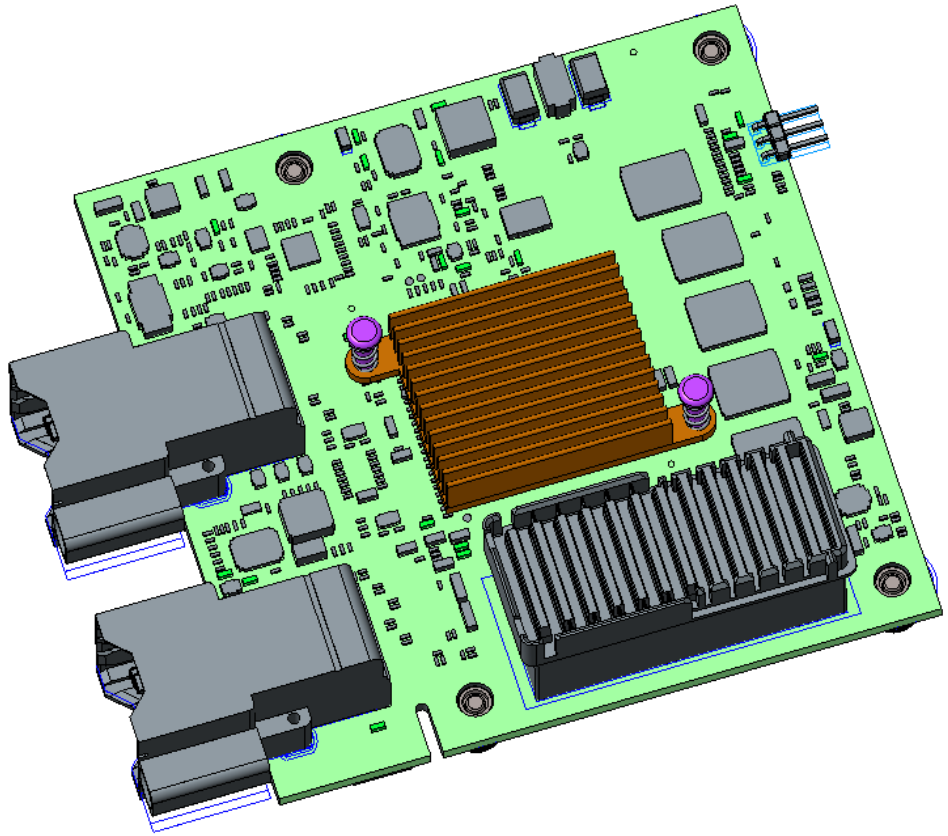
EXTERNAL PORTS

- 8x 100G QSFP ports
- Can cable from 1 to 8 ports

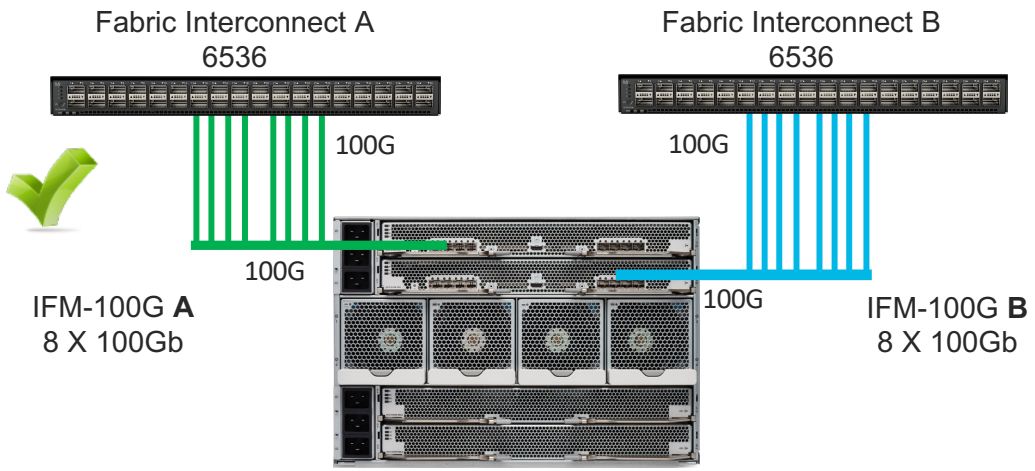
VIC 15000 Series

- 5th Gen VIC card for X- , C- Series
- Supports 10G/25G/40G/50G/100G/**200G***
- CNA, Single Wire Mgmt
- Dynamic FC and Ethernet virtual interfaces
- x16 PCIe Gen 4
- NVMeoF: FC-NVMe, RoCEv2
- Overlays: NVGRE, VXLAN, Geneve
- RSS, NetQueue, VMQ, VMMQ, RSSv2*
- usNIC, DPDK
- PTPv2, 16K Rx Ring Size

- VIC 15231 (x210c MLOM) and VIC 15428 (rack-server MLOM) at FCS

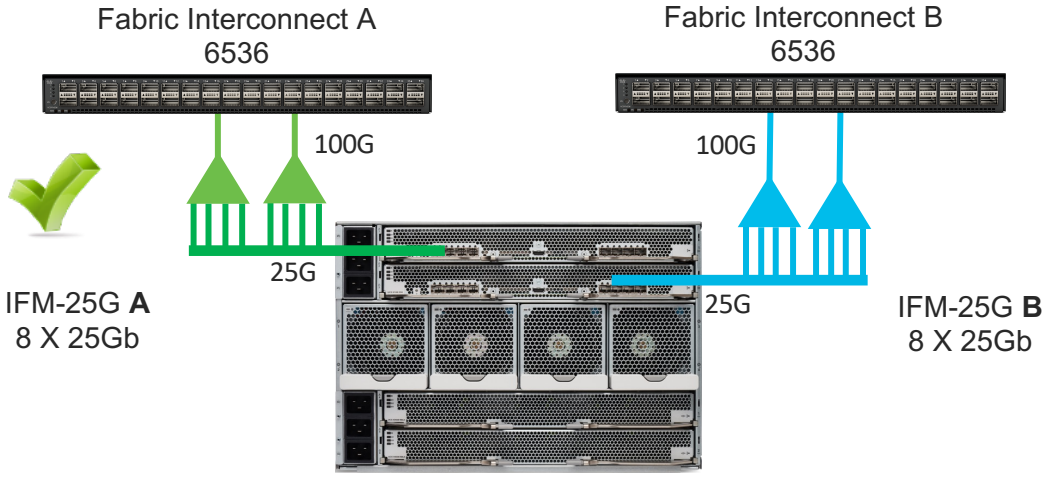


IFM-25G/100G to 6536 Fabric Interconnect Support



X9108-IFM-100G to 6536 FIs : **Supported**

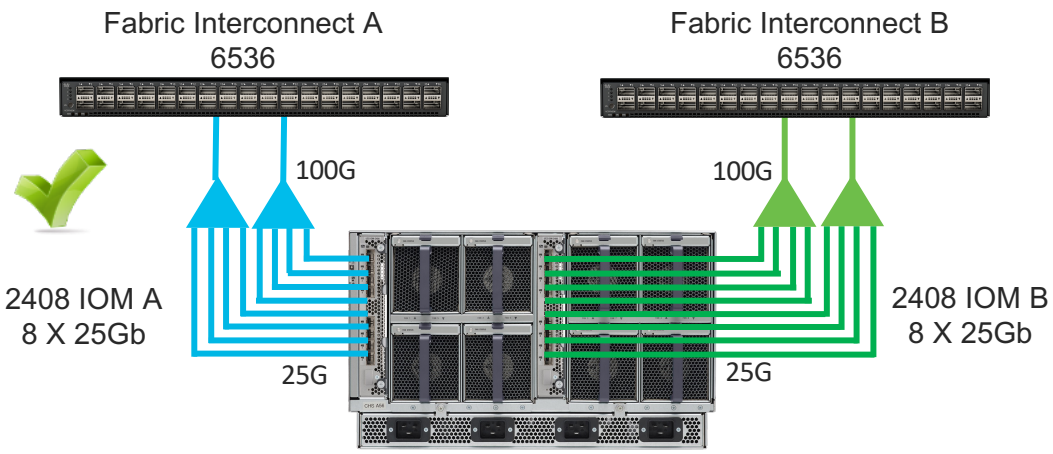
- 1600G per X9508 chassis
- 100G E2E single-flow per x210c
- 32G E2E FC I/O
- 200G per x210c with 1:1 oversubscription



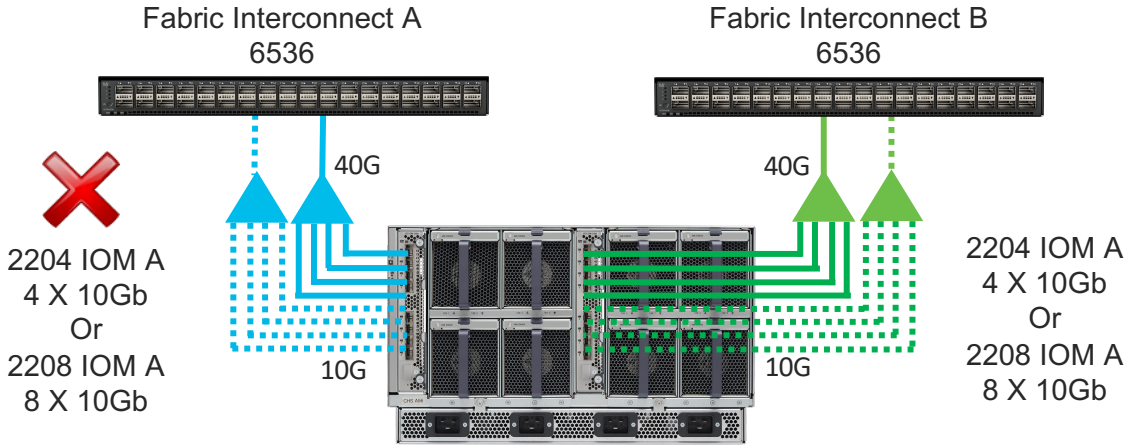
X9108-IFM-25G to 6536 FIs : **Supported**

- 400G per X9508 chassis
- 25G E2E single-flow per x210c
- 200G per x210c with 4:1 oversubscription

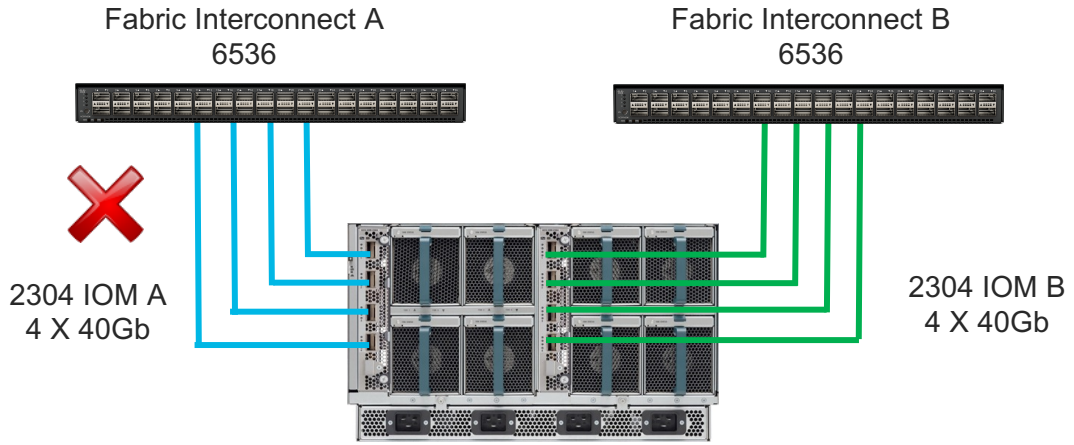
IO Modules to 6536 Fabric Interconnect Support



2408 IOMs to 6536 FIs : **Supported**



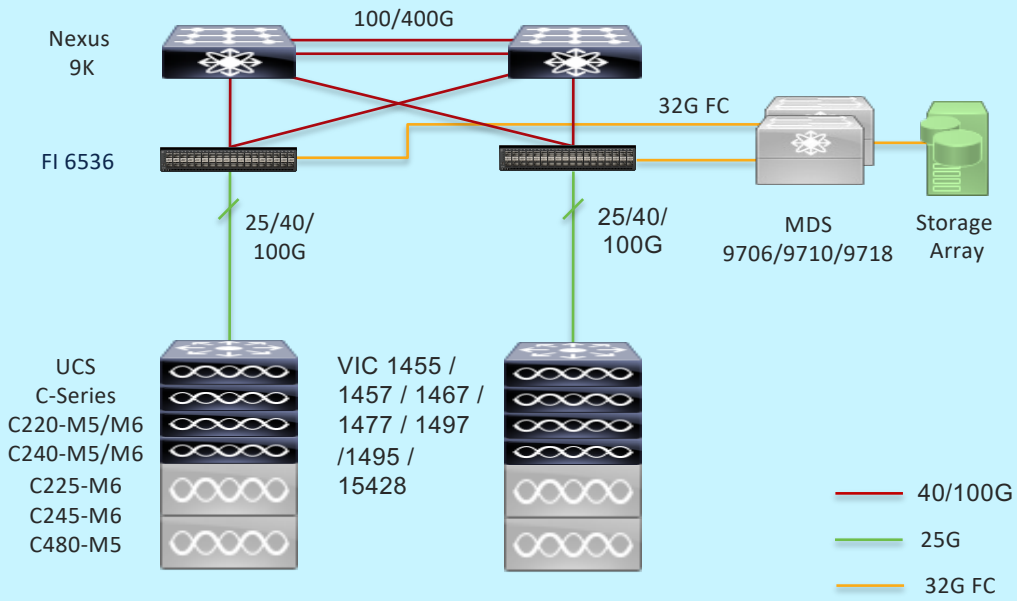
2204 or 2208 IOMs to 6536 FI : **Not Supported**



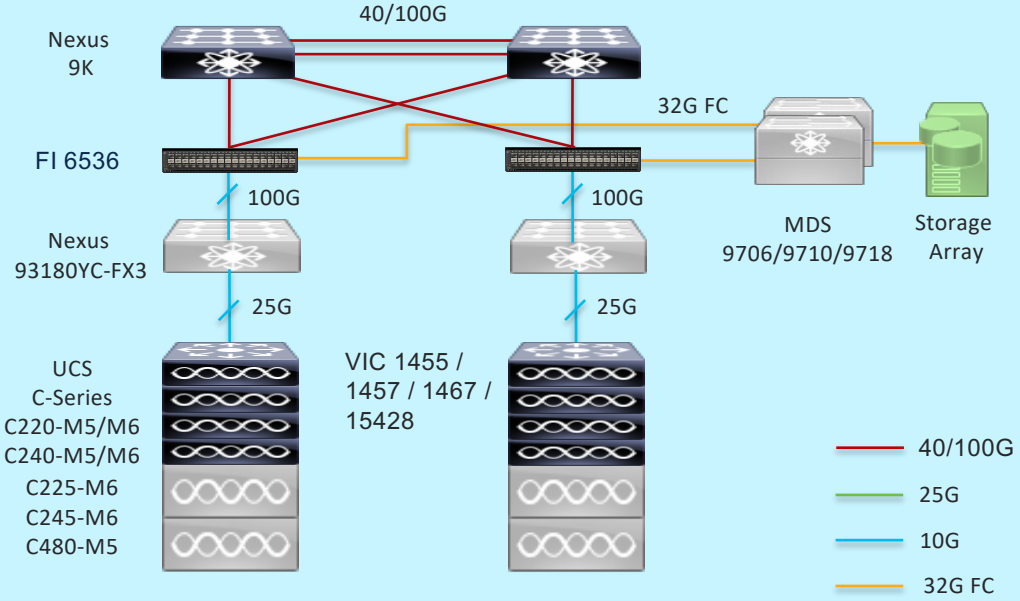
2304 IOMs to 6536 FIs : **Not Supported**

FI 6536 Series Use Cases with C-Series

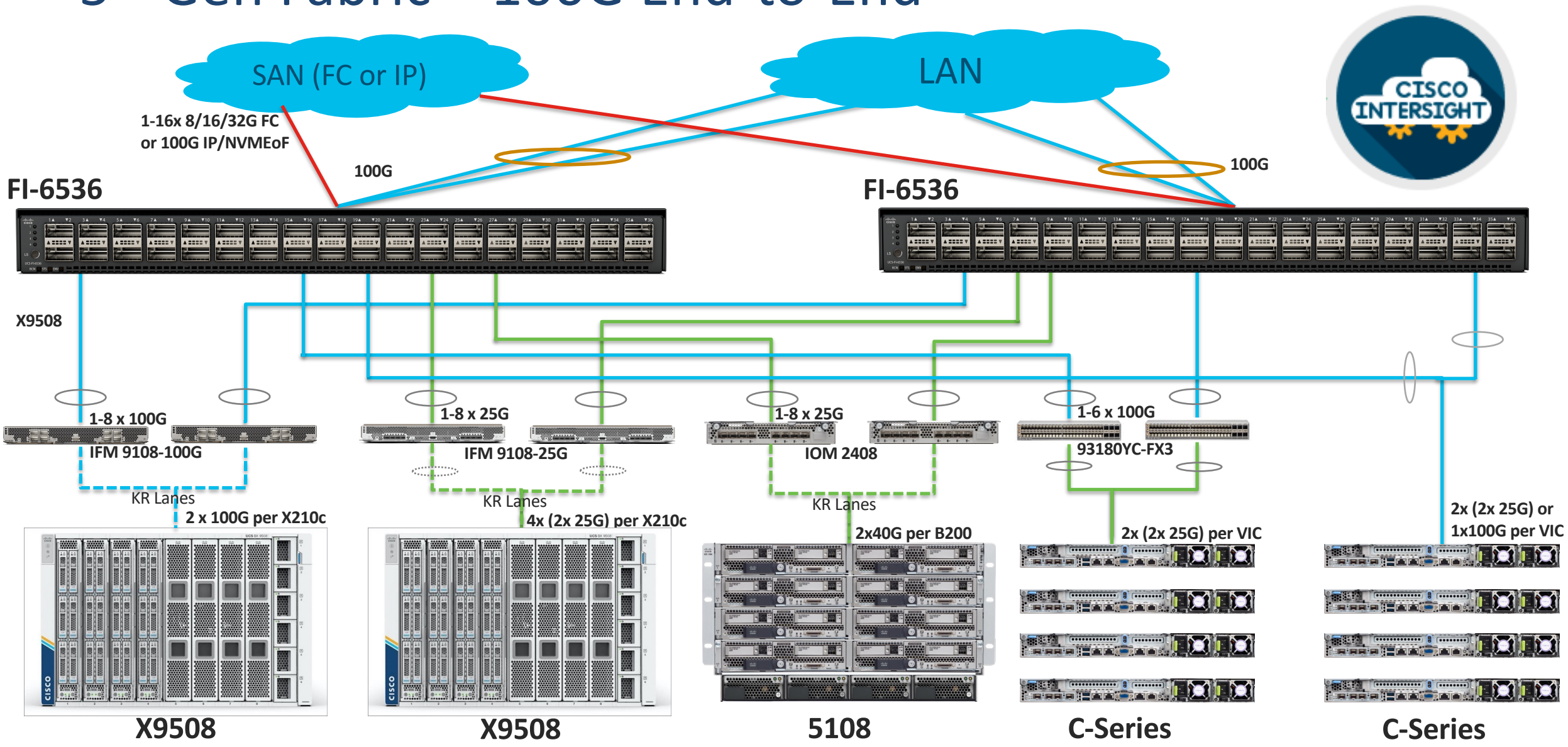
C-Series Direct



C-Series / FEX



5th Gen Fabric – 100G End-to-End



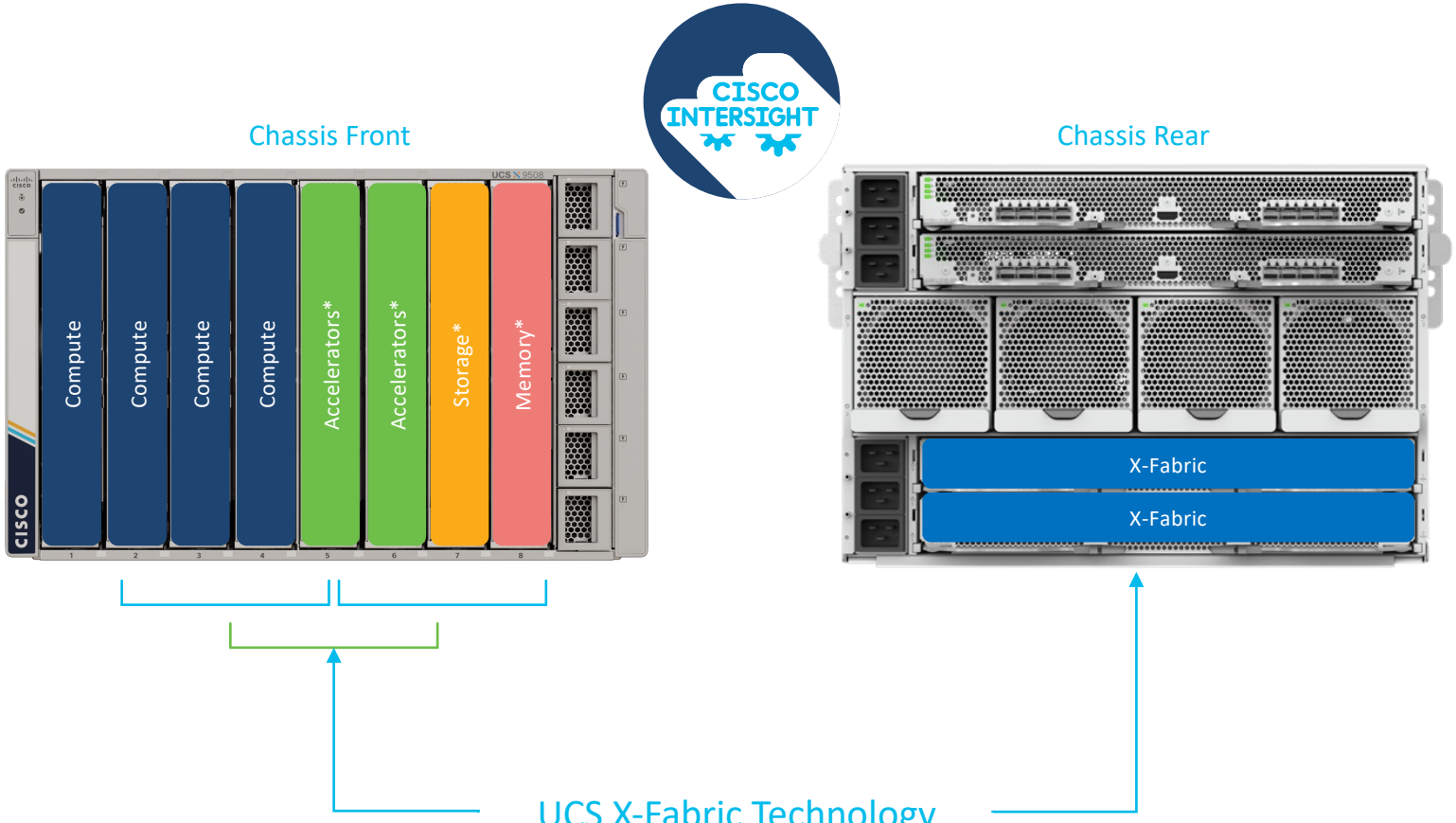
UCS X-Fabric Technology

Open, modular design shapes resources to applications

Run modern apps by assembling modules into systems

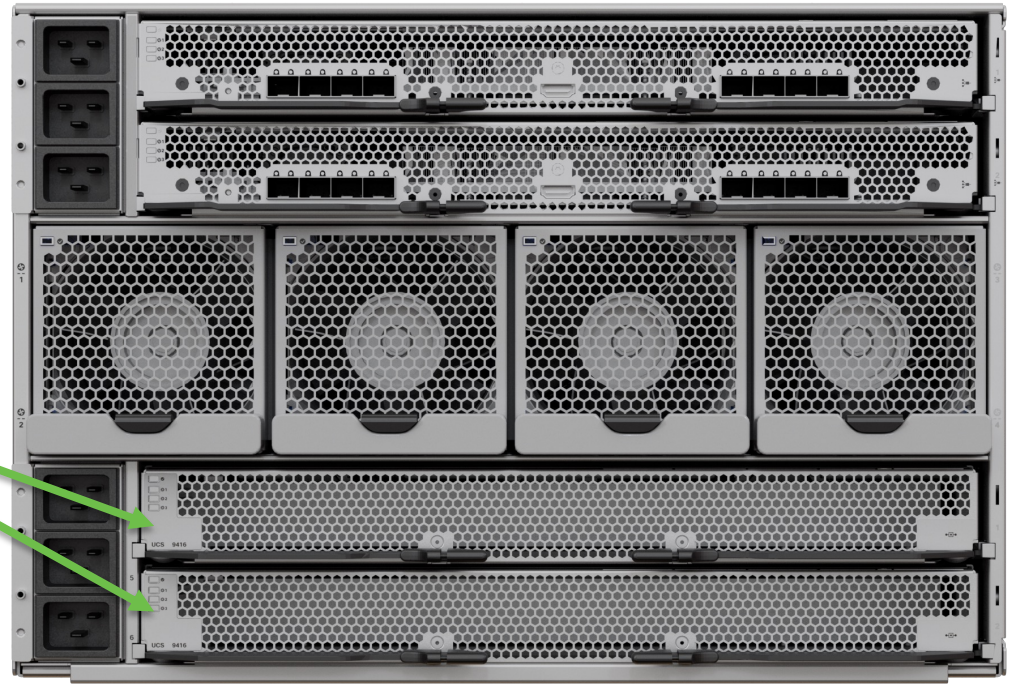
Simple policy-based definition of resources from Intersight

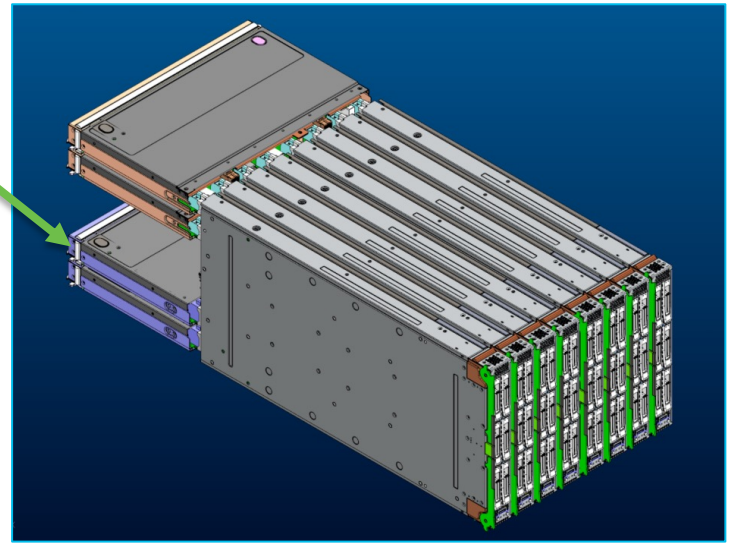
Engineered to accommodate future technologies



X9416 X-Fabric XFM Modules

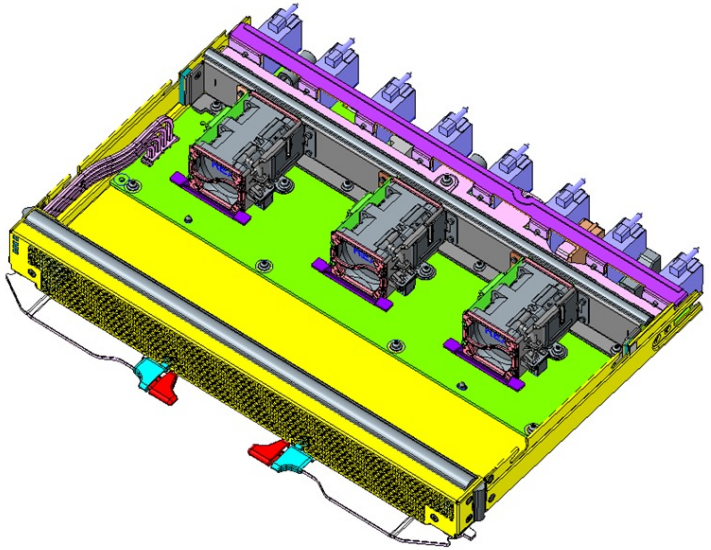
- Replaces lower fabric module pair
- Connects to all chassis slots
- The X9416 XFM provides fixed PCIe Gen4 x16 links between each pair of odd (N) and even (N+1) slots
- **No configuration required**

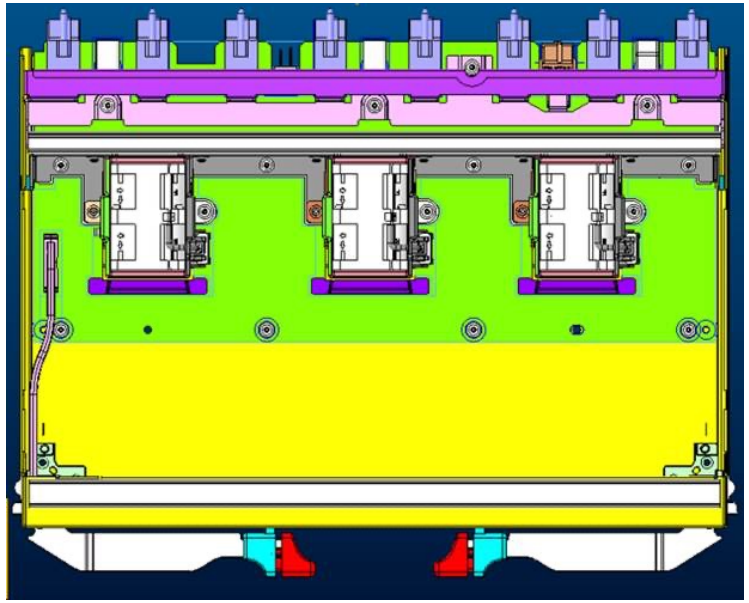




XFM Components

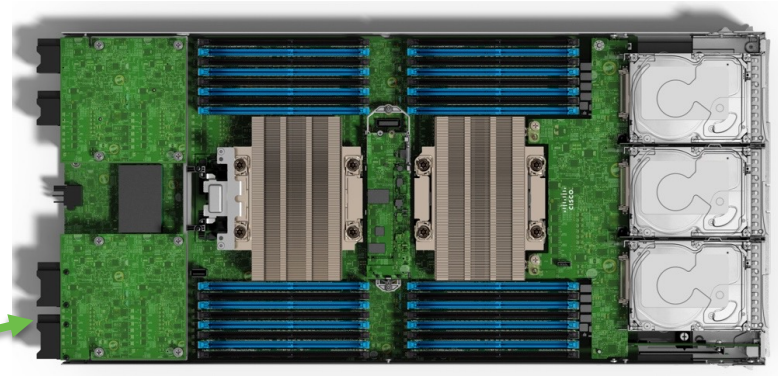
- No active components on the system board
- Three replaceable fan modules
- Same fans as X-Fabric blank and IFM

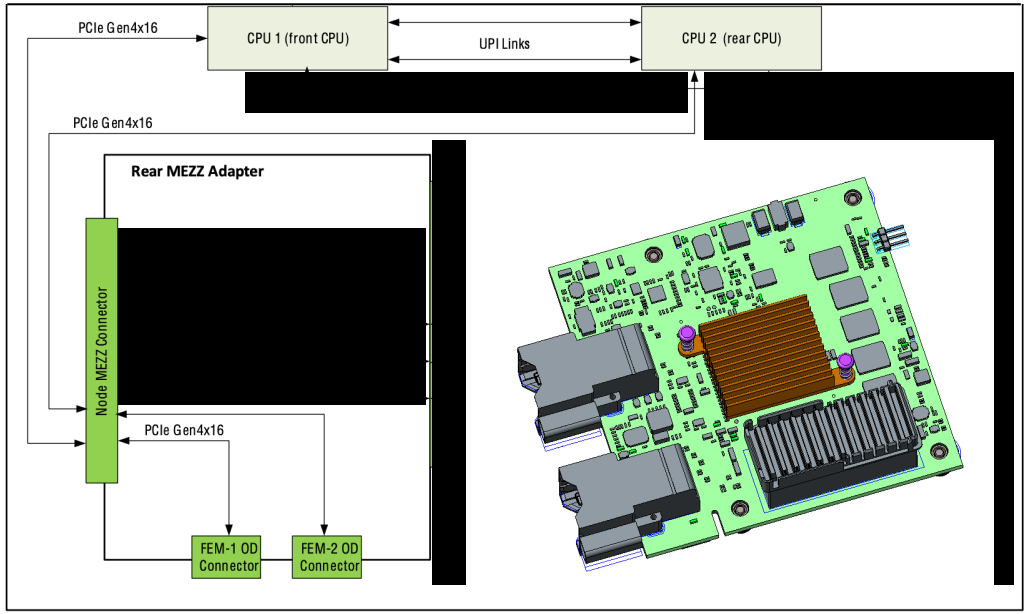




X-Fabric Mezz Cards

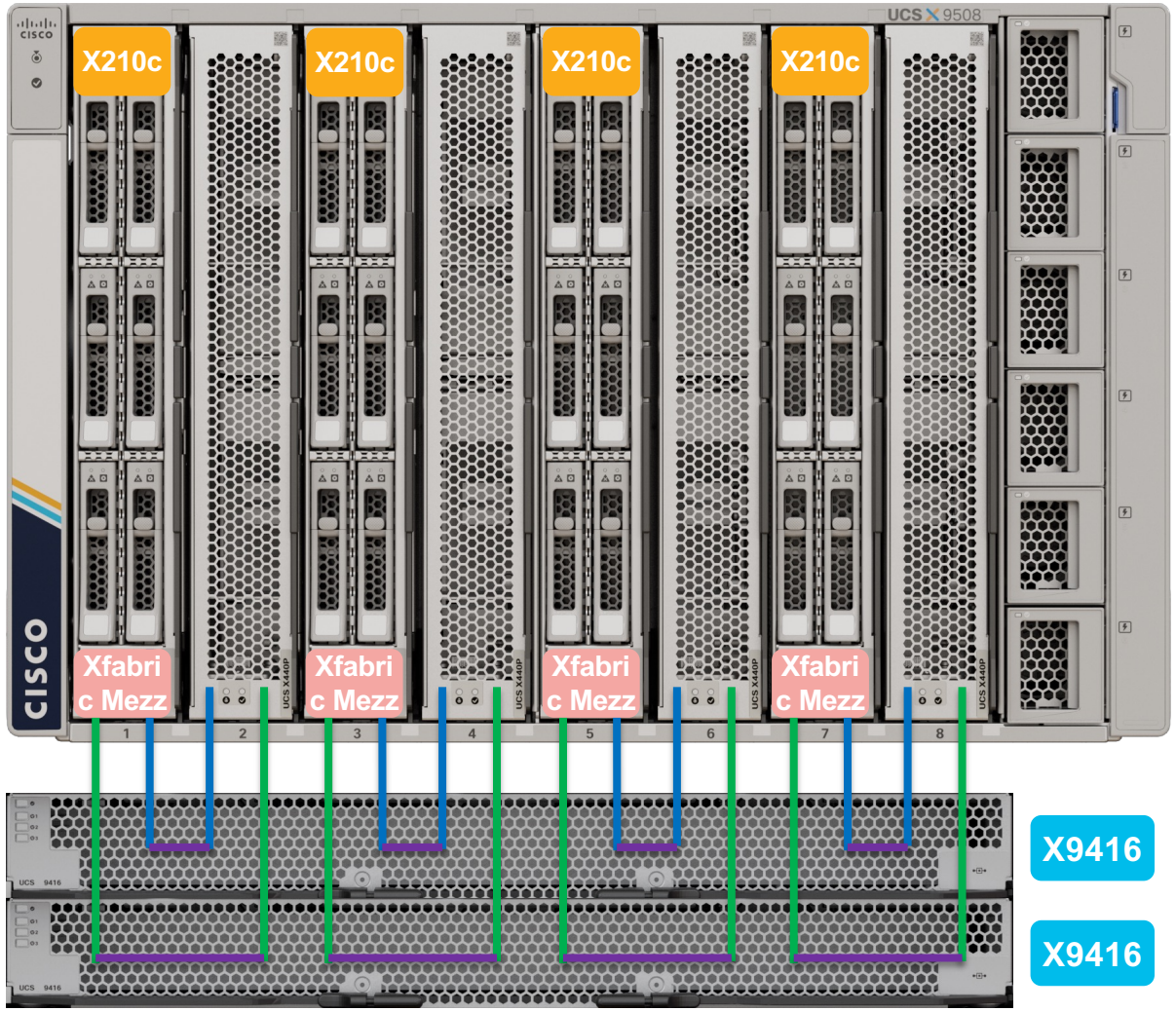
- All X-Series compute node mezzanine cards provide connectivity to the X-Fabric
  - 14000/15000 VIC Mezz
  - PCIe pass-through Mezz
- One PCIe Gen4 x16 link per CPU





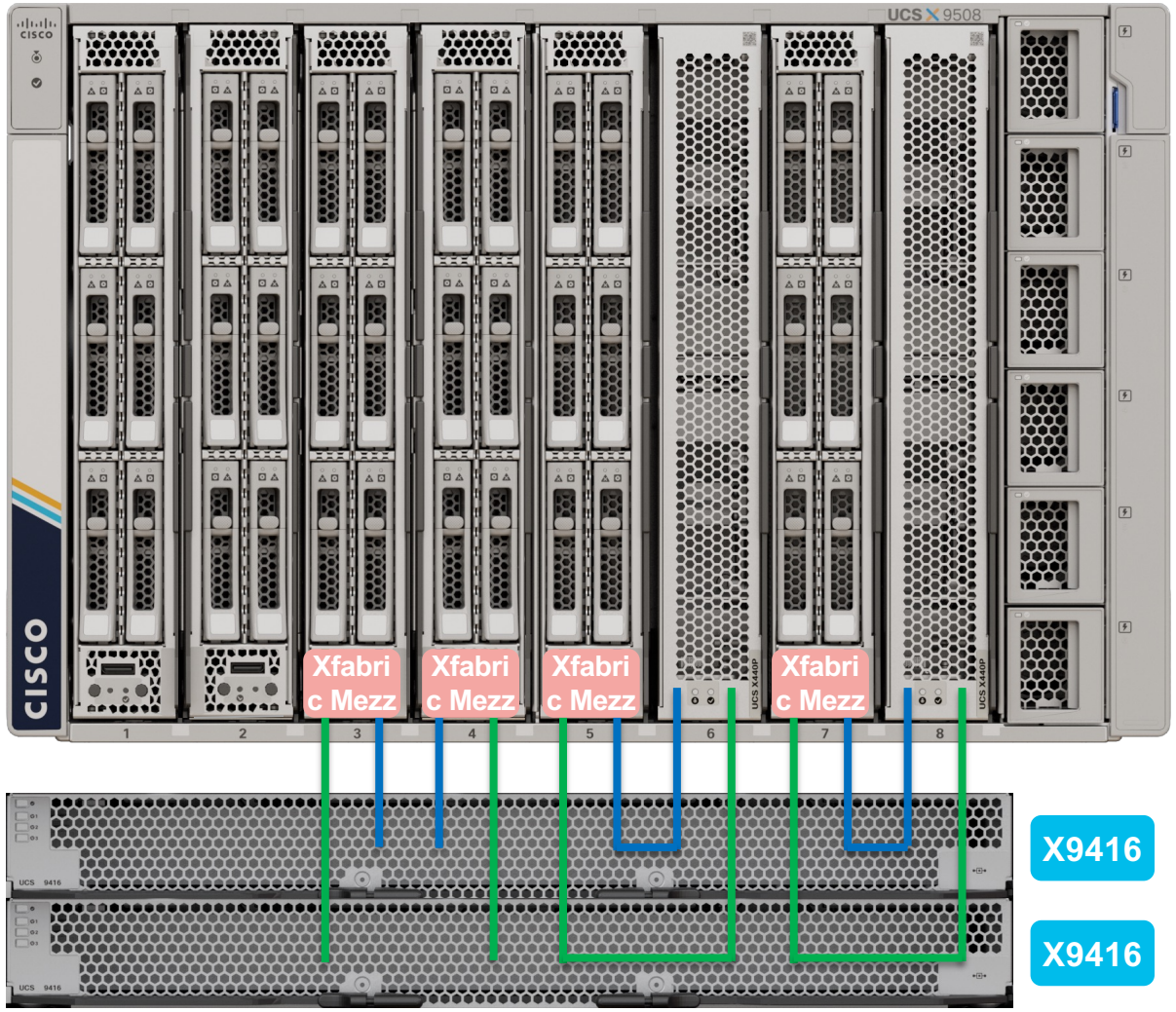
UCS X-Fabric - Connectivity

- An X-Fabric Mezz card (VIC or Pass-through) on the compute node connects it to the XFM pair
- Other node types may have fixed connections to the X-Fabric
- For the X9416 all inter-node connections are fixed as shown
- All connections are for data bandwidth, no redundancy



UCS X-Fabric – Flexible connectivity

- Compute nodes can continue to exist in adjacent slots where the PCIe node is not needed (example slots 1 and 2)
- PCIe links through the X-Fabric between compute nodes will not come up, even with an X-Fabric Mezz card installed on the compute node (example slots 3 and 4)



UCS-X nodes

x210C

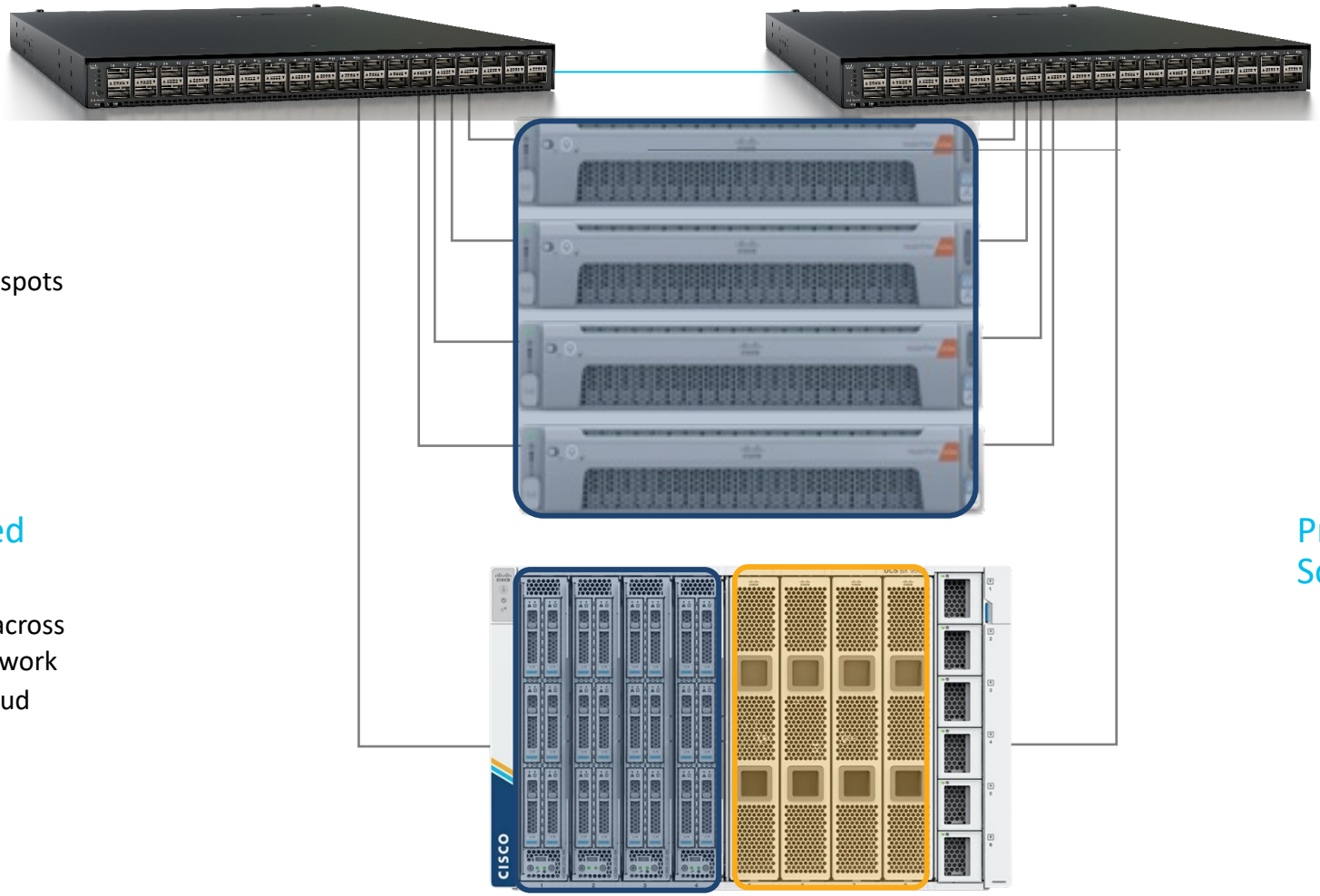
- Up to two 3rd Gen Intel Xeon Scalable processors (with up to 40 cores per socket)
- Memory:
  - 32 DIMM slots (16 DIMMs per CPU socket)
  - 3200 MHz DDR4
  - up to 8 TB of capacity using 256 GB DIMMs, or
  - Up to 12 TB of memory with Intel Optane™ persistent memory
- VIC 14425 mLOM, 4x25Gbps
- VIC 15231 mLOM, 2x100Gbps
- One rear mezzanine slot for 4x25Gbps VIC 14825
- Up to six SAS/SATA/NVMe disk drives plus up to two M.2 drives with hardware RAID support
- One front mezzanine slot for a Cisco® FlexStorage RAID controller, Cisco FlexStorage passthrough, or two drives and up to two GPUs

x440p

- Up to two Nvidia A100 Tensor Core GPU
- Up to two Nvidia A16 GPU
- Up to two Nvidia A40 GPU
- Up to four Nvidia T4 Tensor Core GPU

Note: Only one GPU family may be used in an X440p PCIe node.

Hyperflex on UCS-X



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

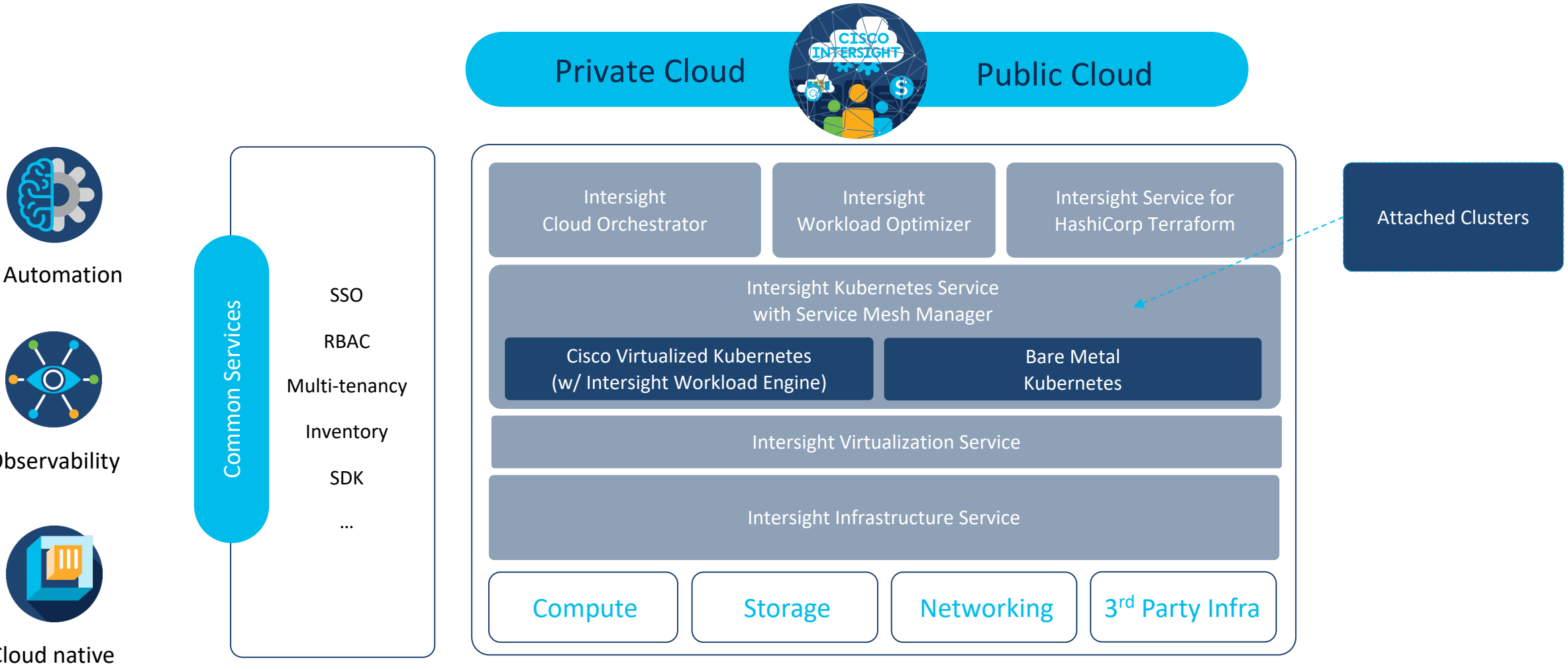
Complete Hyperconvergence with Integrated Network Fabric

- Unified Network Infrastructure
- Guaranteed QoS with low latency

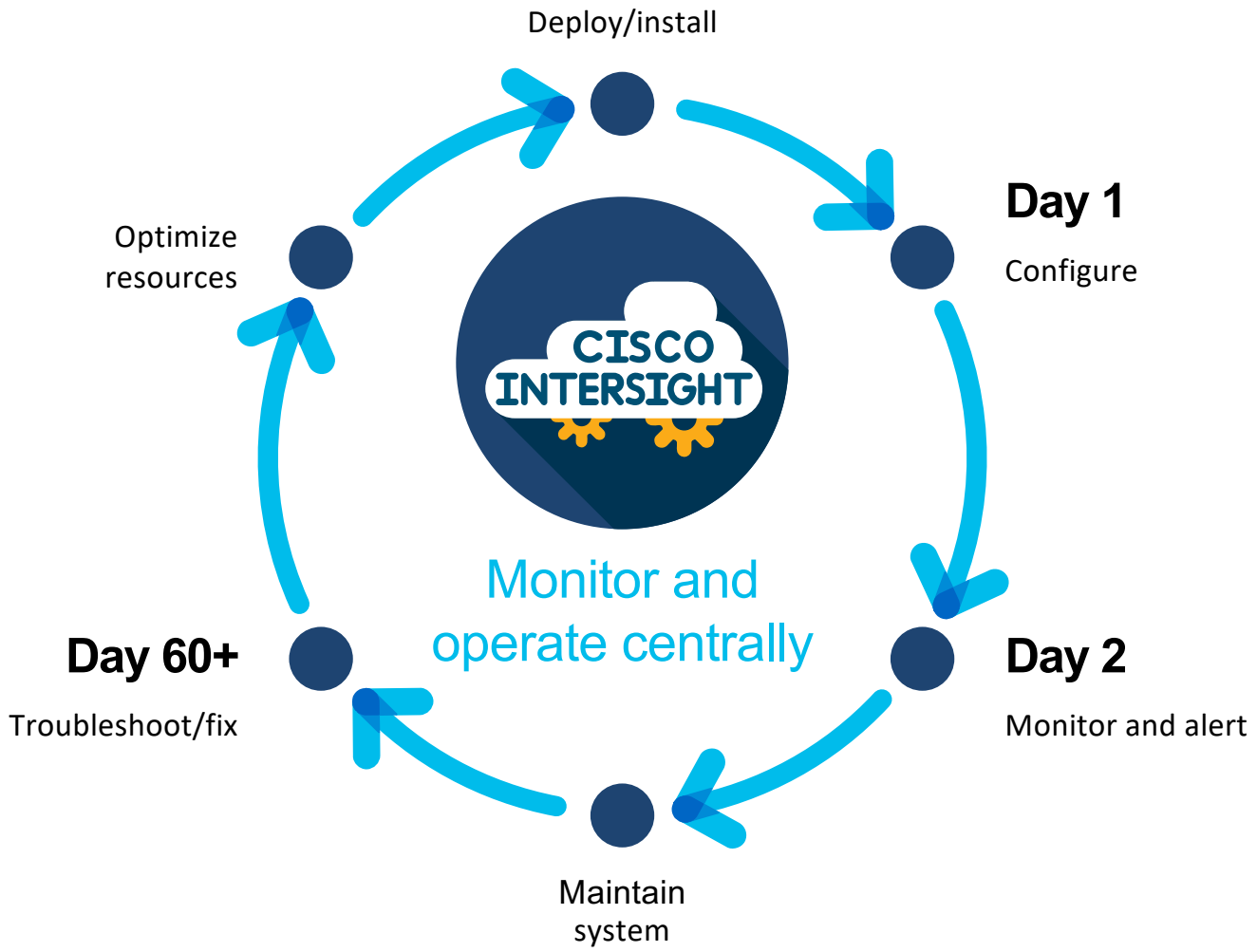
Pre-integrated Hardware & Software

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

Intersight Cloud Services



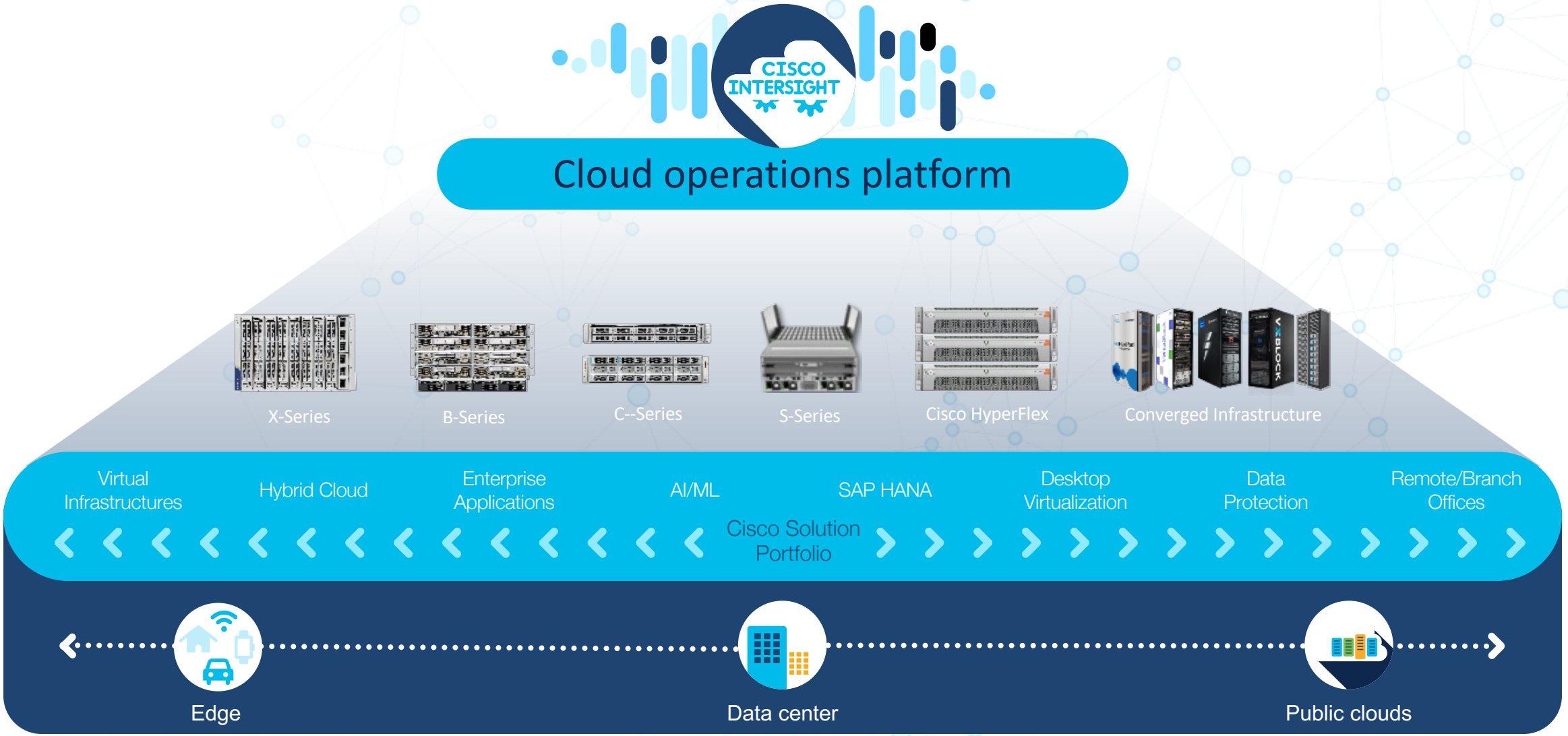
Cisco Intersight: Day 0 and ongoing benefits



Benefits

- Quicker deployment times
- Fewer tools
- Lower admininstration costs
- Lower configuration risk
- Faster Problem Resolution

Hybrid cloud infrastructure for all your apps and use cases



Cisco Tech Club Days

Ďakujem za pozornosť