The bridge to possible

Intersight Managed Mode (IMM) for UCS Manager admins

A technical overview of IMM

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Session objectives

- Get familiar with Intersight Managed Mode
- Understand what are its main differences & benefits from UCS Manager/Central
- Know how to perform common configuration & deployment tasks of both fabric and server components
- Discuss when and how to transition from UCS Manager/Central to IMM

Session non-objectives

- This session does not include:
  - A technical overview of the UCS architecture and its components
  - A detailed presentation of Intersight
  - An in-depth comparison of each individual policy between UCSM & IMM
  - An exhaustive list of all possible operations in IMM
  - An explanation of the Intersight licensing model
  - A step-by-step guide on how to transition a domain to IMM

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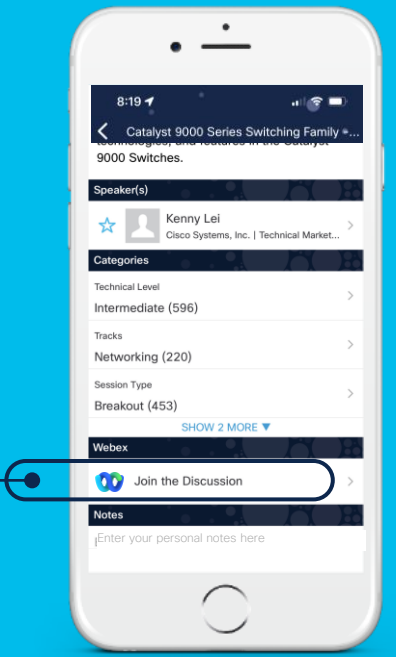


Agenda

- Introduction
- What is Intersight Managed Mode?
- Why Intersight Managed Mode?
- How to use Intersight Managed Mode?
- Transitioning to Intersight Managed Mode
- Key Takeaways

Introduction

Intersight

IT Operations. Simplified.

Visualize

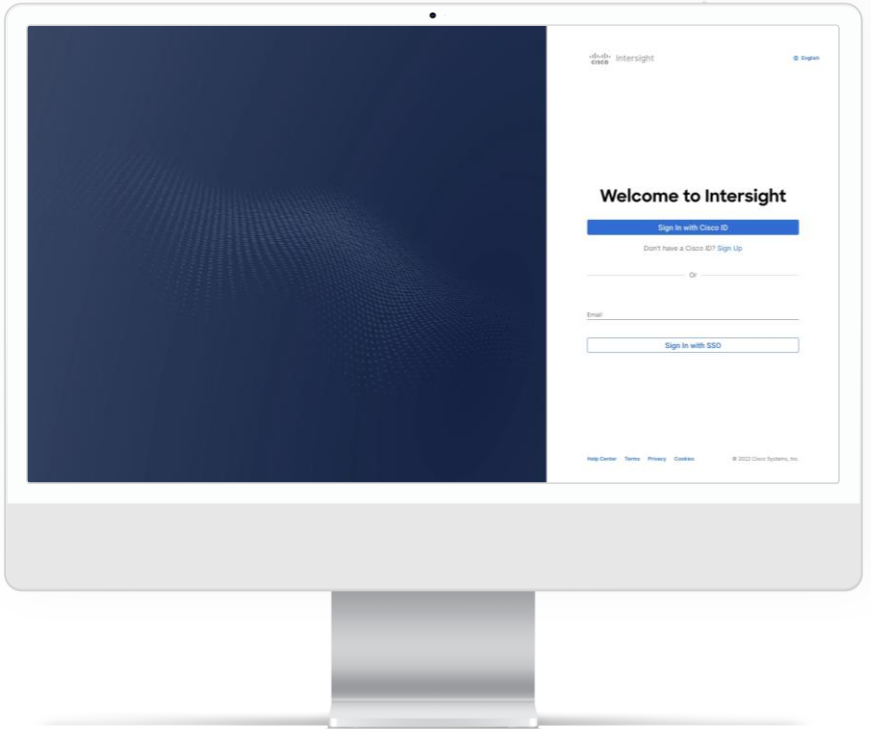
Your global on-premises, cloud, and edge environments

Automate

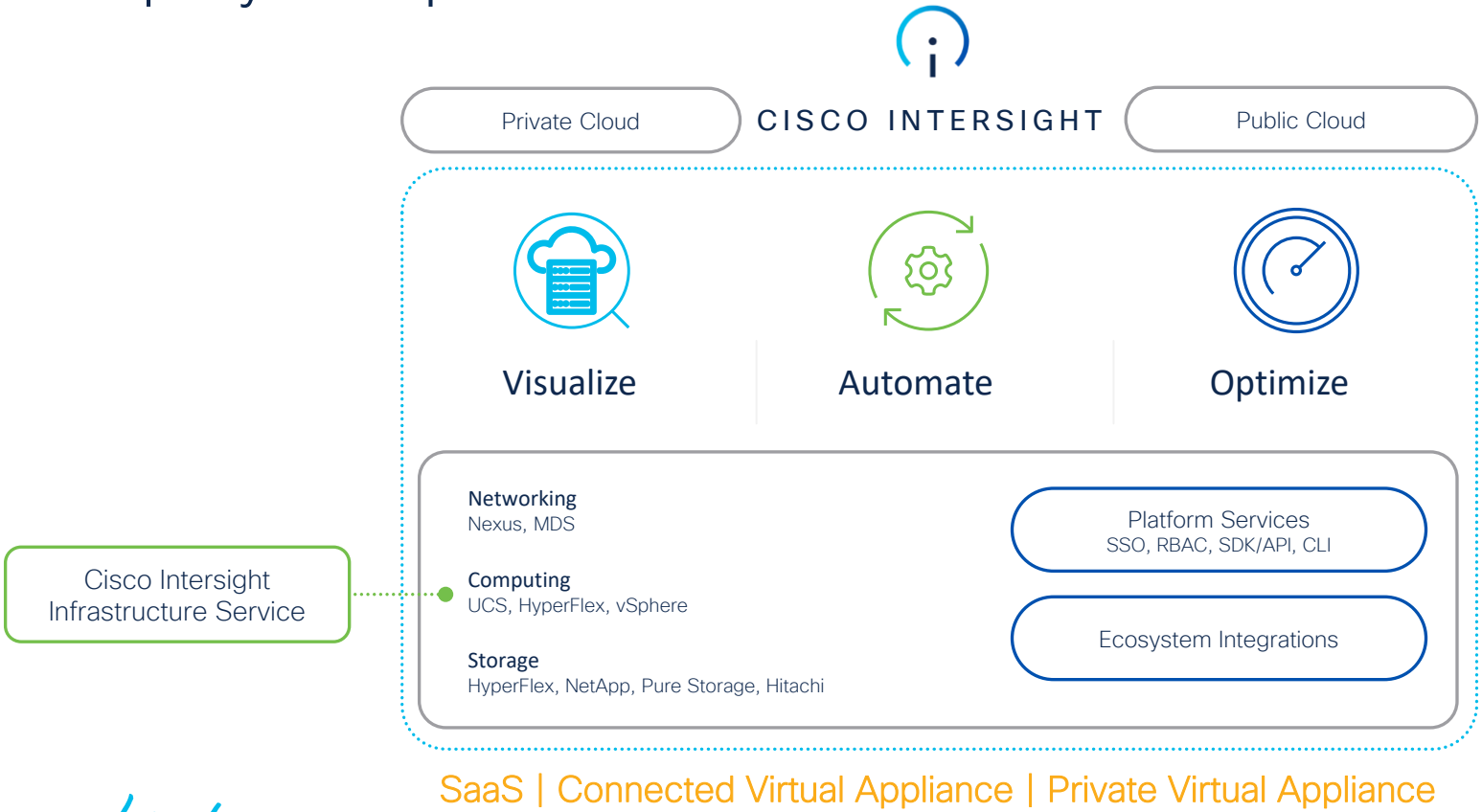
Networking and computing deployments and configuration

Optimize

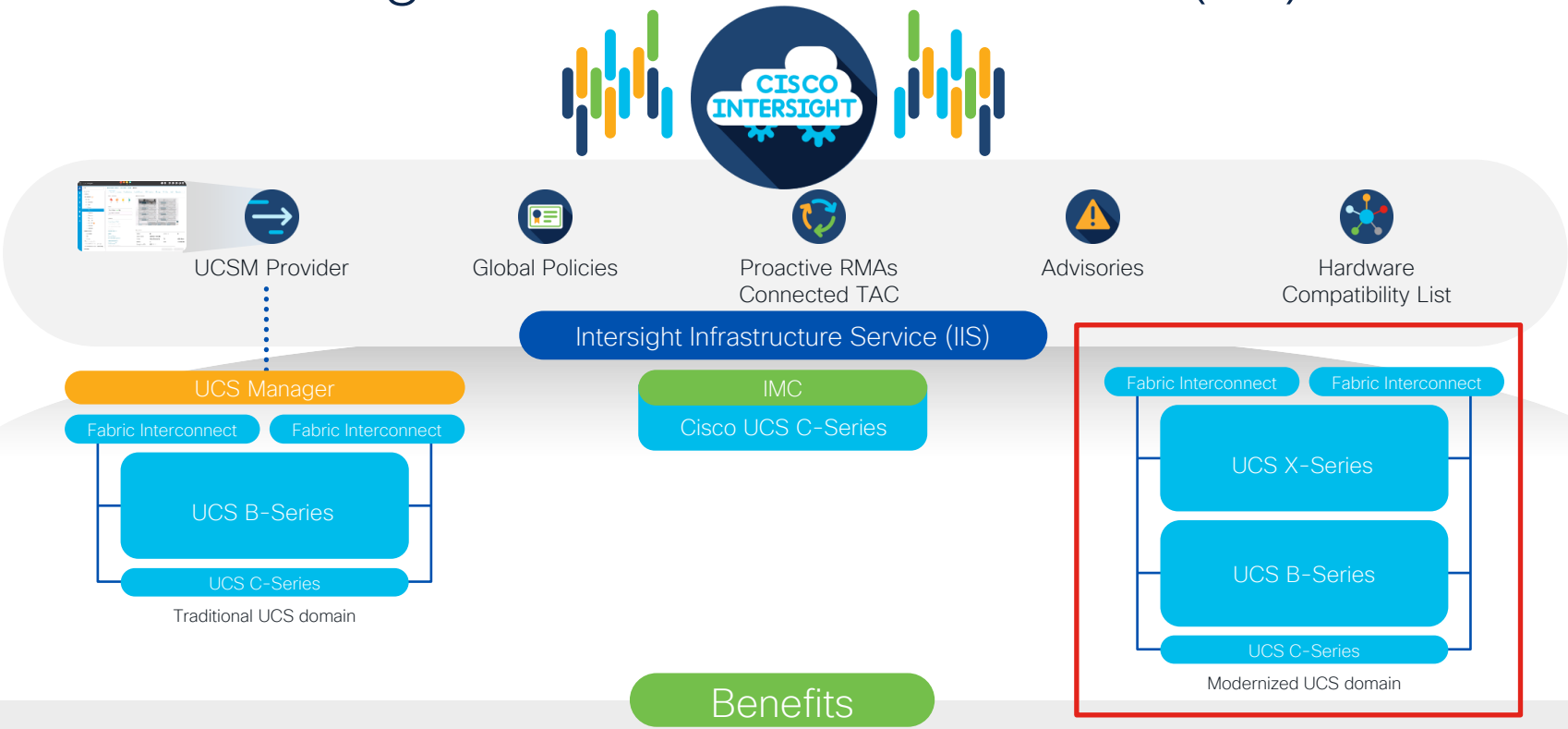
Performance, cost, and user experience



Simplify IT Operations



Cisco Intersight Infrastructure Service (IIS)



Benefits

Single Pane of Glass for the entire infrastructure | Common operational model | Proactive services

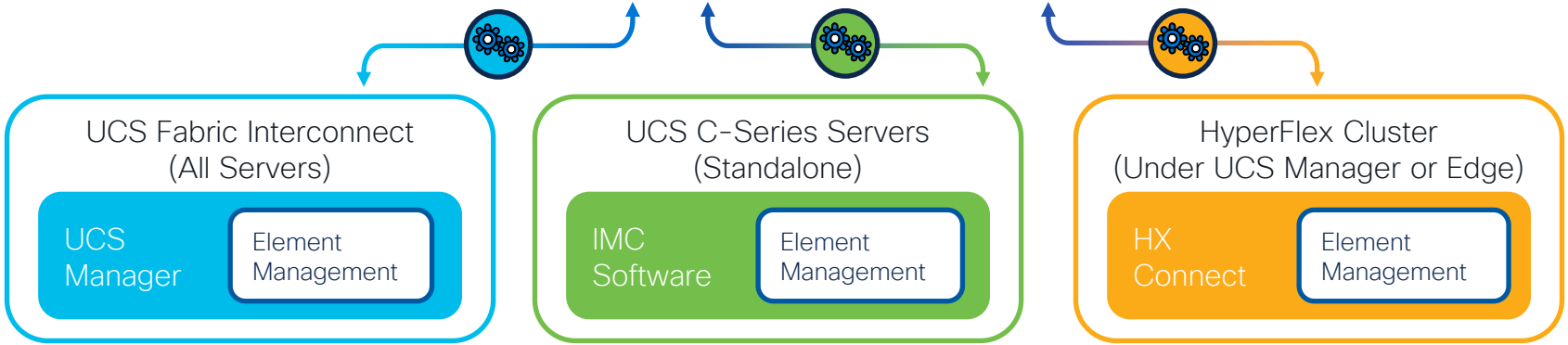
Intersight Device Connector

A very light and autonomous piece of software allowing:

- Communication with the Intersight portal, wherever the portal is.
- Capable of inserting tasks / calls against infrastructure via pluggable / extensible framework

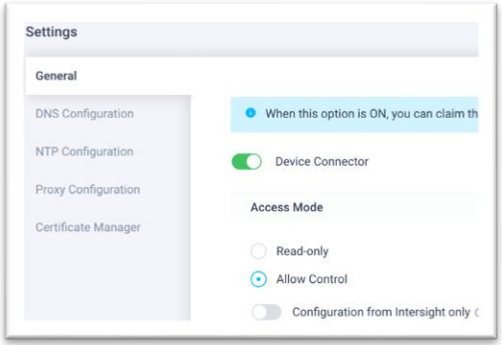
Key Features:

- Bundled with Firmware
- Embedded Product Feature
- Secure “Durable” Communications
- Self Updated
- Autonomous Check-In

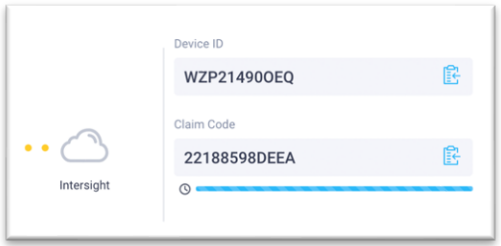


Device Claiming

1 Configure device with IP connectivity to Intersight

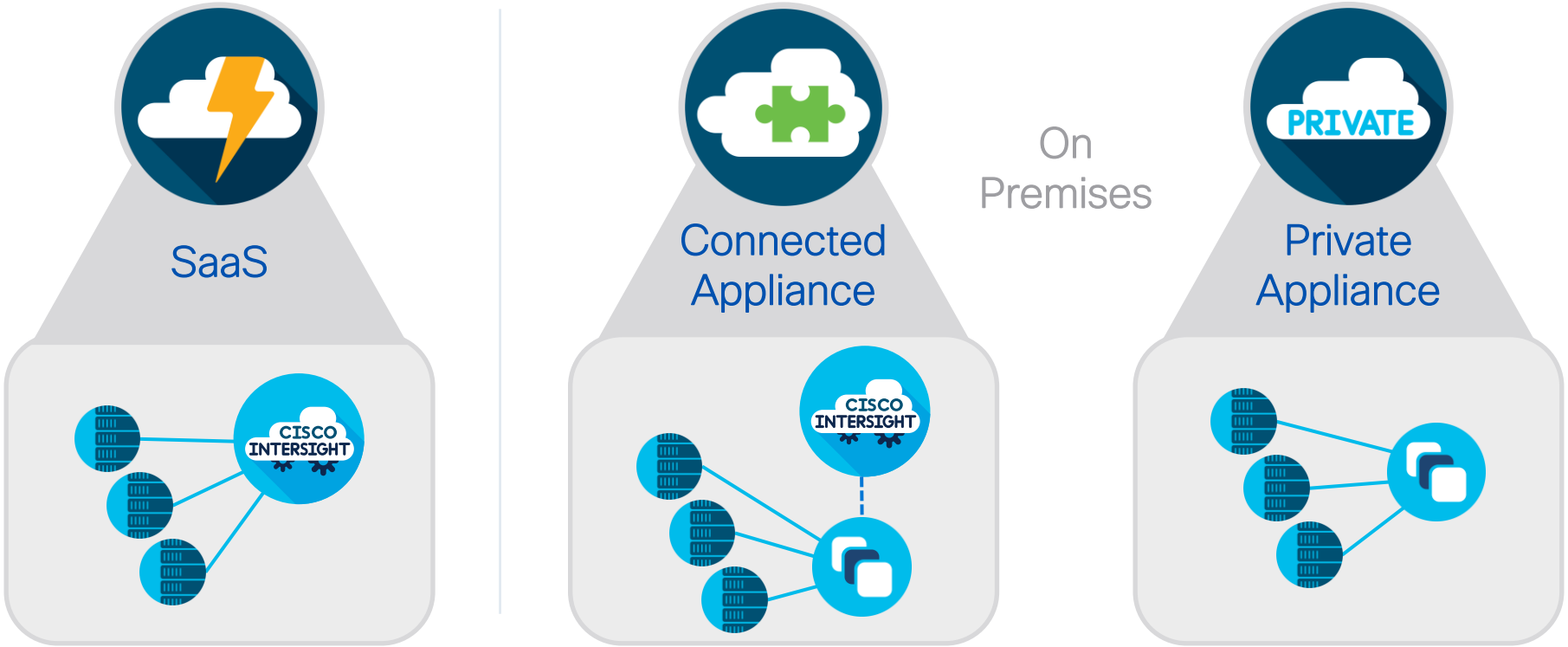


2 Copy Device ID & Claim Code from device



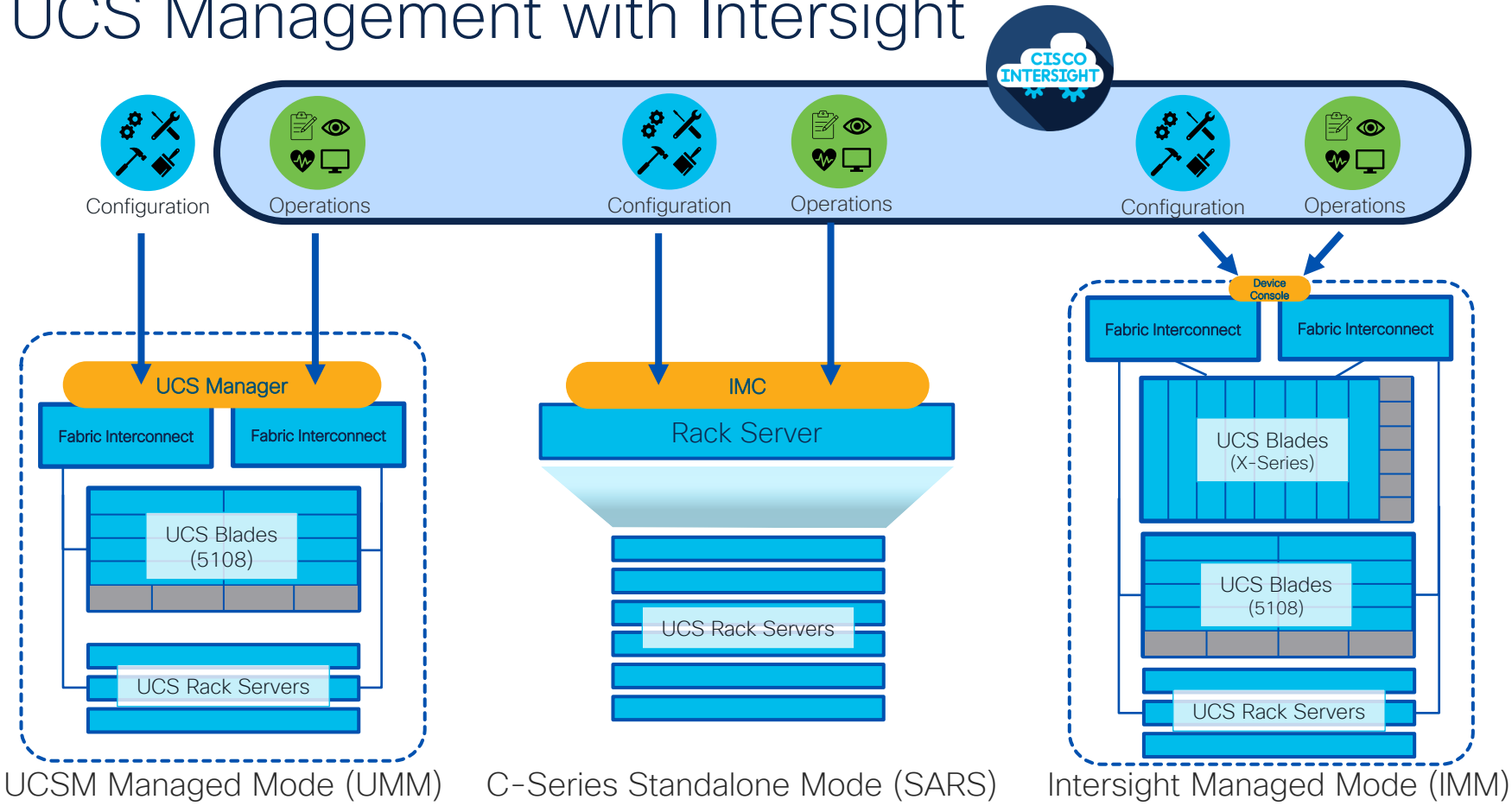
3 Paste Device ID & Claim Code to Intersight

Intersight Deployment Modes



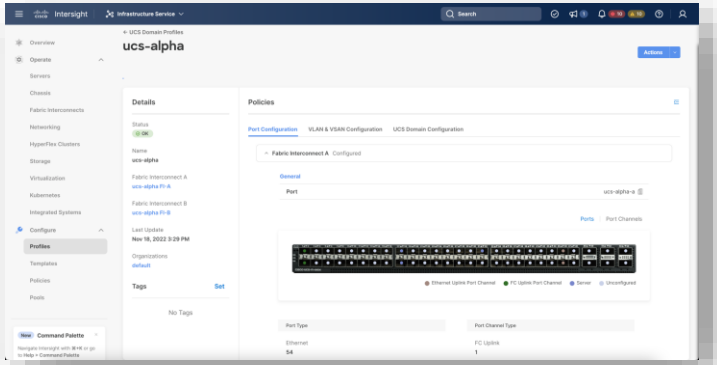
What is Intersight Managed Mode?

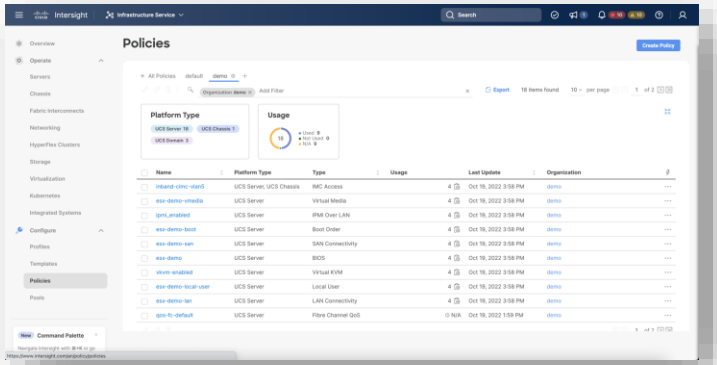
UCS Management with Intersight



UCSM Managed Mode (UMM) C-Series Standalone Mode (SARS) Intersight Managed Mode (IMM)

Intersight Managed Mode (IMM)





UCS policy-based management for servers & fabric in Intersight

Intersight Managed Mode

Hardware & Software Requirements

Hardware

- Fabric Interconnects: 6454/64108/6536 (x2)
- IO Modules: 2204/2208/2304/2408
- IFM: 9108-25G/9108-100G
- Servers: B-, C- & X-Series M5 & M6
- VIC: 1300/1400/15000

Firmware

- Infrastructure (A-bundle): 4.1(3) or higher
- Servers (B/C-bundles): 4.1(3) or higher
- 4.2(3) for most comprehensive support

Licensing

Intersight: Essentials or higher (all servers in domain)

Scope

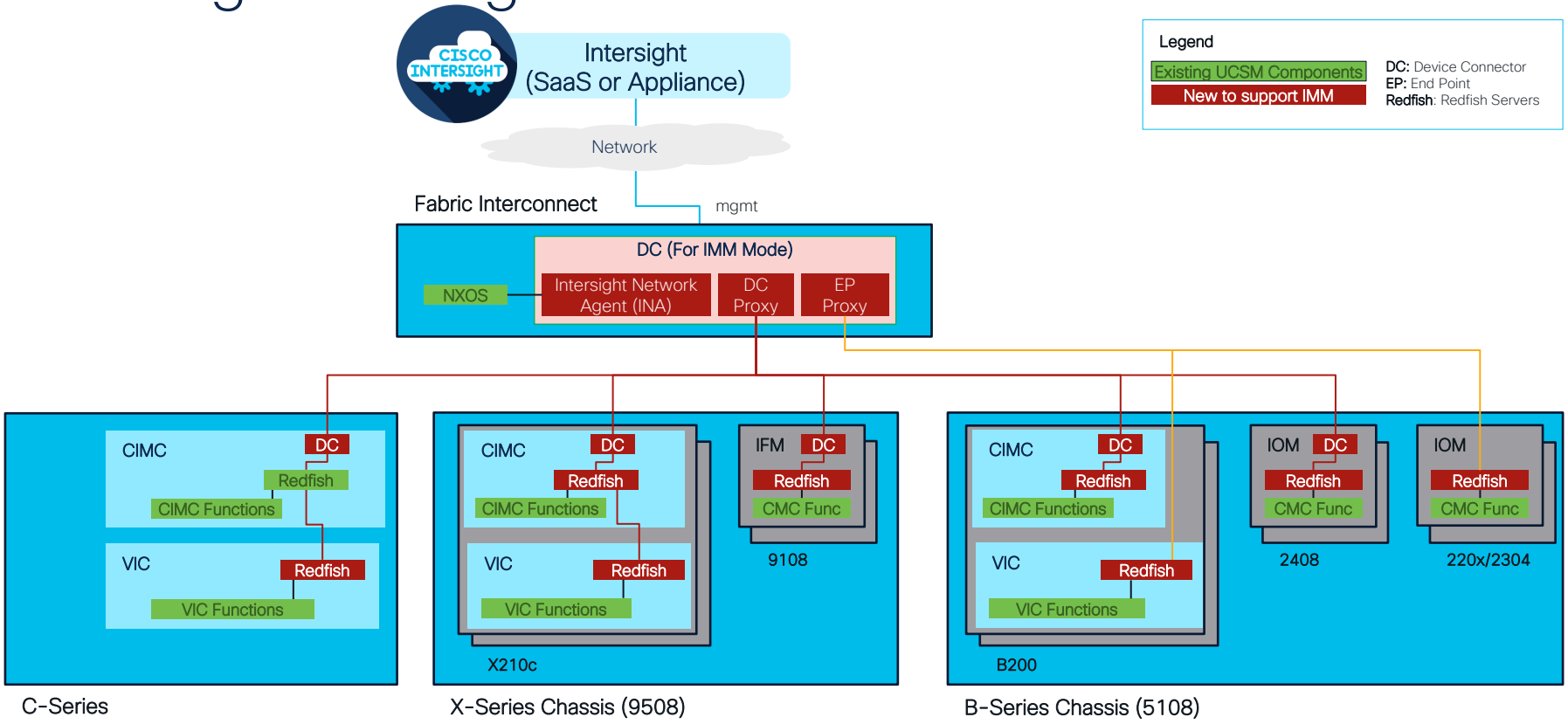
Entire UCS domain will be configured in Intersight Managed Mode (exclusive of UCS Manager)

Scale

20 chassis / 160 servers (same as UCSM)

https://intersight.com/help/saas/supported_systems#supported_hardware_for_intersight_managed_mode

Intersight Managed Mode Architecture



Why Redfish?

- Standard, Scalable, Secure replacement for IPMI
- RESTful API with JSON-formatted data
  - Modern replacement for the UCS XML API
- Supports OEM/vendor extensions
  - VIC management
  - Firmware management
  - Custom actions (Reset CMOS, Clear TPM, …)
- Available on many server platforms
  - Support for third-party servers (C890 M5, Dell, HPE)

GET /redfish/v1/Chassis/{ChassisId}/Thermal


```
{
  "@odata.context": "/redfish/v1/$metadata#Thermal.Thermal",
  "@odata.id": "/redfish/v1/Chassis/FCH22347N7W/Thermal",
  "@odata.type": "#Thermal.v1_6_2.Thermal",
  "Description": "Represents the properties for Temperature",
  "Id": "Thermal",
  "Name": "Thermal",
  "Status": {
    "Health": "OK",
    "State": "Enabled"
  },
  "Temperatures": [
    {
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      "Name": "TEMP_SENS_FRONT",
      "PhysicalContext": "Front",
      "ReadingCelsius": 22,
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        "State": "Enabled"
      },
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      "UpperThresholdFatal": 85
    },
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      "ReadingCelsius": 33,
      "Status": {
        "Health": "OK",
        "State": "Enabled"
      },
      "UpperThresholdCritical": 75,
      "UpperThresholdFatal": 85
    },
```

Why Intersight Managed Mode?

Benefits of the IMM model

Modernize

- **Feature velocity** with CI/CD
- **Modern RESTful API** with OpenAPI
- **Redfish** standard

Simplify

- **Common management framework** for all Cisco Compute
- **Merging of Local & Global** Service Profile/Template (Multi domain)
- Policy Model **simplification**

Safer operations

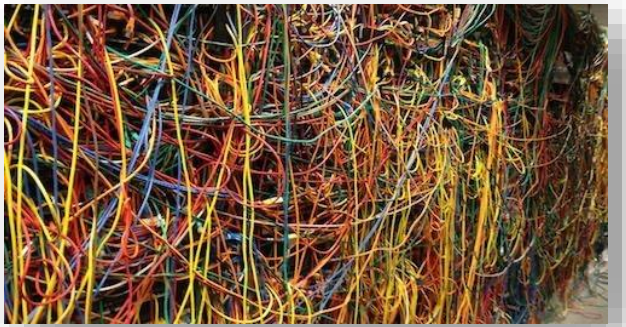
- **Configuration consistency** across domains
- **Decoupling** of firmware / software features
- **Improved Change Control** with Assign/Deploy steps
- **Better policy scale** – not limited by FI resources

When should you start using IMM?

Hardware refresh

New domain deployment / Greenfield

X-Series adoption



Lab / Tests

How to use Intersight Managed Mode?

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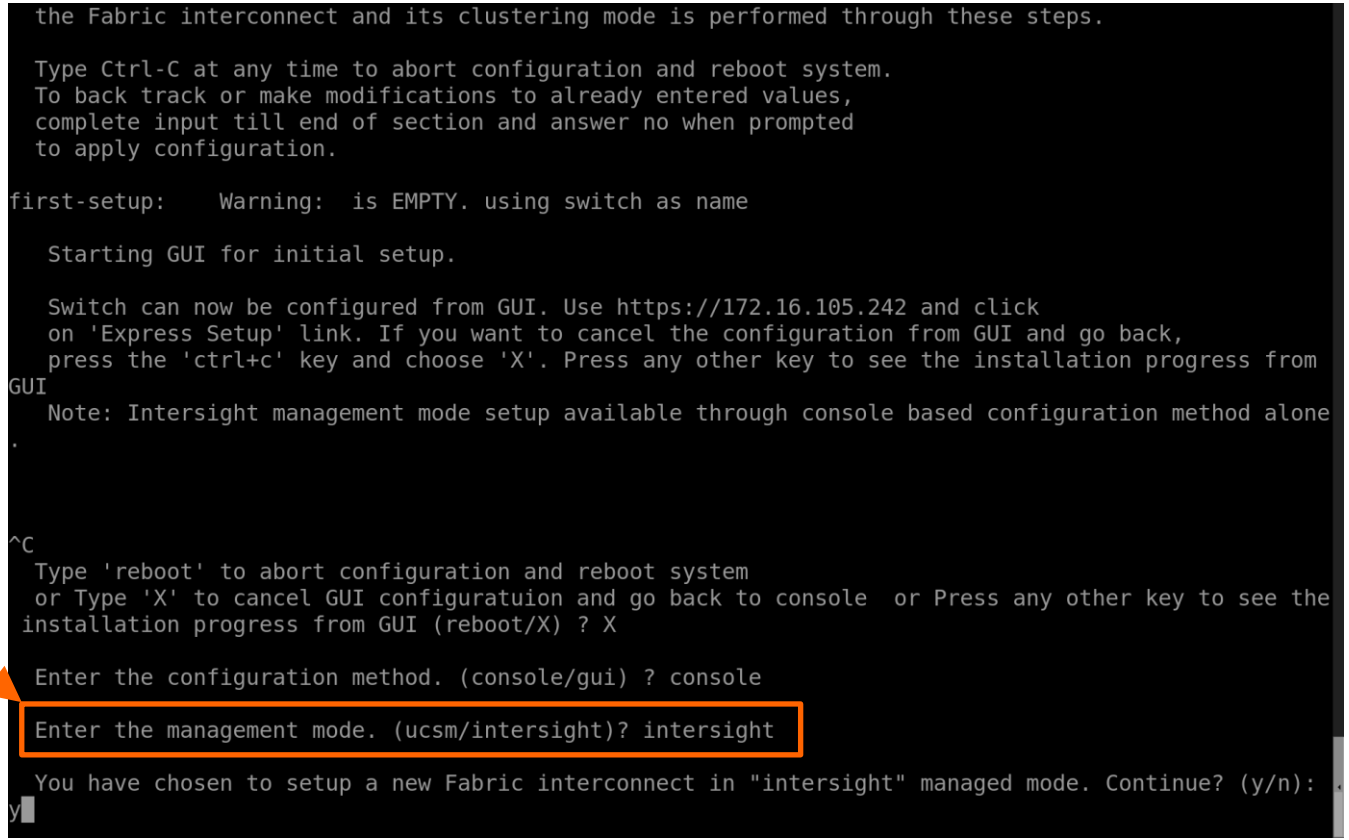
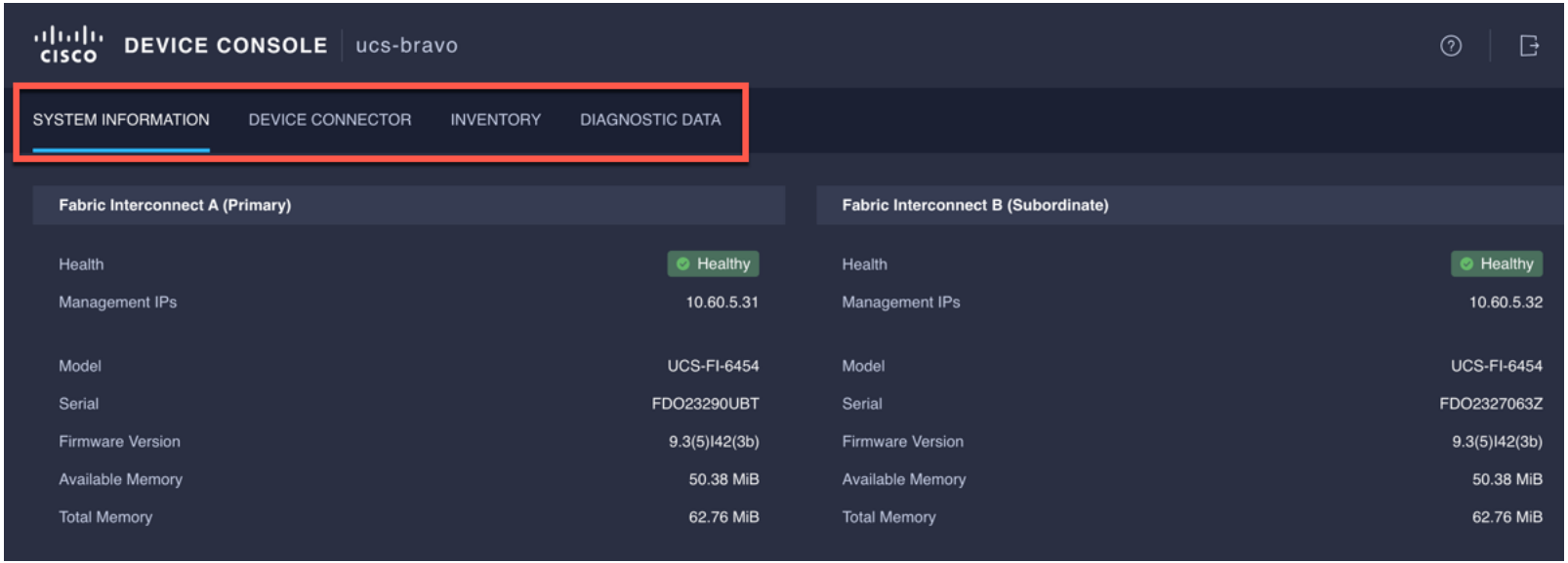
Setting up a domain in Intersight Managed Mode

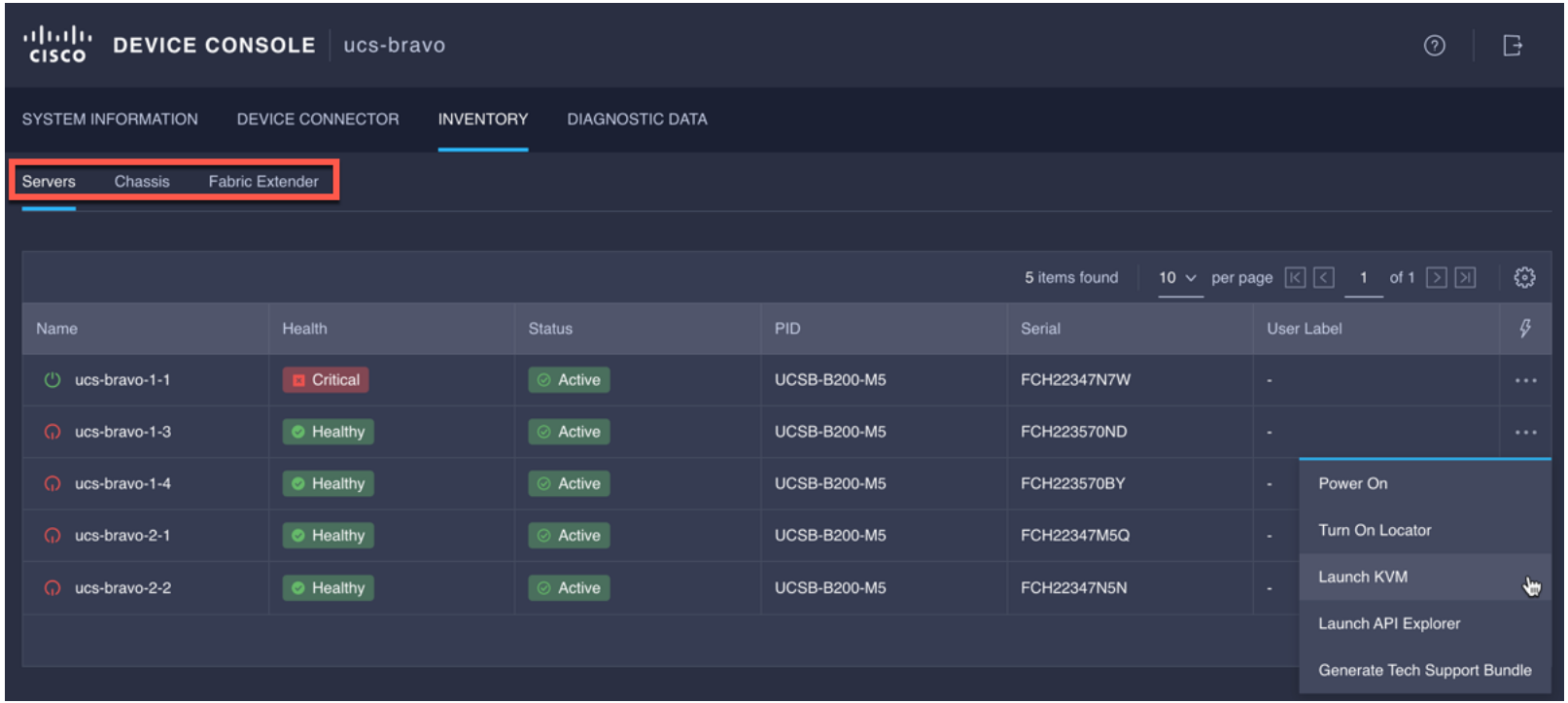
Management mode



Device Console – System Information



Device Console - Inventory

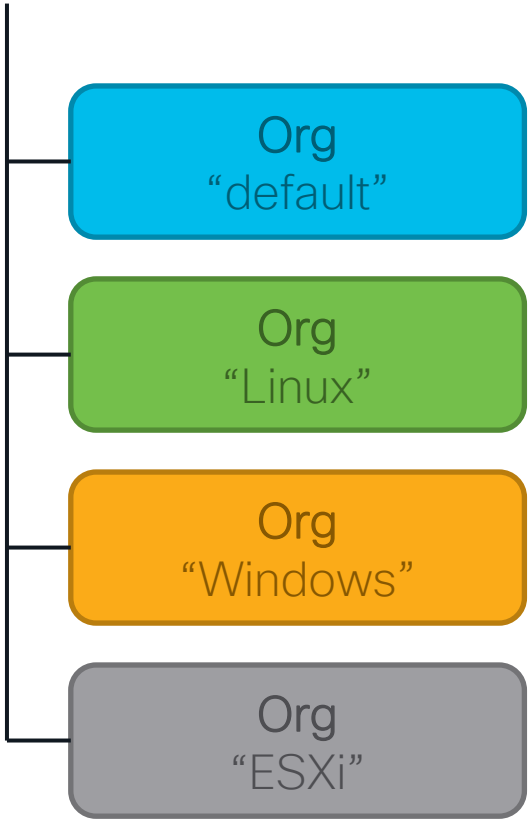


And… that's it!

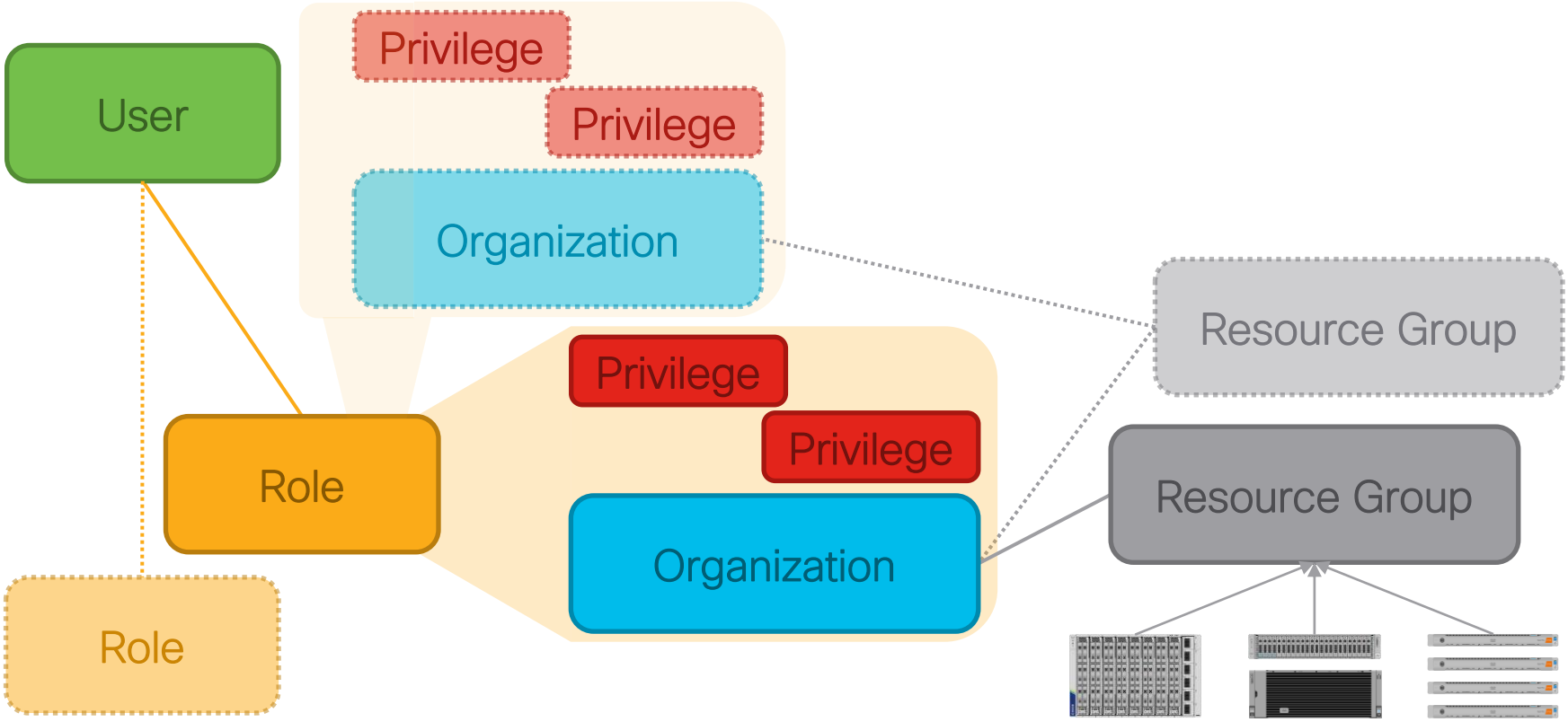
Everything else is done on

Organizations in Intersight

- Flat structure (no hierarchy like in UCSM/Central)
- Logical container to hold:
  - Logical resources (policies / pools / profiles / …)
  - Physical resources (servers, storage, …)
    - Grouped into Resource Groups
    - A physical resource can belong to multiple organizations
- Used to perform Role-Based Access Control
  - Users are assigned Roles (set of Privileges)
  - Roles are assigned a Scope (”all” or a list of organizations)
- Sharing between orgs in the roadmap



Role-Based Access Control with Intersight



Policy-based Model

- Similar to UCS Manager / Central

Pools	Policies
Profiles	Templates

- Everything is configured via policies
  - Servers, Chassis, Fabric
- Provides configuration consistency
- Ensures compliance

Intersight Managed Mode

Pools, Policies, Profiles & Templates

Pools

- IP Pools
- MAC Pools
- WWNN Pools
- WWPN Pools
- IQN Pools
- UUID Pools
- Resource Pools

Policies

Domain Policies
- VLAN/VSAN
- Port
- NTP/DNS/QoS/ Fabric & Switch

Server Policies
- BIOS
- Boot
- Storage/SD Card
- LAN/SAN Connectivity
- IMC Access
- KVM/IPMI/Serial/vMedia
- SNMP/Syslog
- Power
- Firmware*

Chassis Policies
- SNMP
- Power/Thermal

Profiles

- Domain Profiles
- Server Profiles
- Chassis Profiles

Templates

- Domain Profile Templates**
- Server Profile Templates
- Chassis Profile Templates**

** Coming soon*
*** Other Templates in roadmap*

IMM Pools

Key differences with UCS Manager/Central

For your reference

Missing/Removed

- No **WWxN** pools
- No **Qualification policies*** for Resource (Server) Pools

Added/Simplified

- **Rename** pools
- Blocks with **up to 1024 entries** for all pool types
- **Sequential** allocation only
- Preliminary support for **VRF** to allow **overlapping** addresses

Changed

- **Netmask/Prefix, Gateway, DNS** on a per-IP Pool basis
- No **default** pools

** In roadmap*

IMM Policies

Key differences with UCS Manager/Central

For your reference

Missing/Removed

- No **Scrub*** policies
- No **Firmware*** policies

Added/Simplified

- **Rename** policies
- **Domain policies** for consistent configuration across domains
- **Single** policy type per function
- **Shared policies** between Standalone & FI-Attached

Changed

- No **default** policies
- **Sourcing of default values** when creating Adapter policies

** In roadmap*

IMM Profiles & Templates

Key differences with UCS Manager/Central

For your reference

Missing/Removed

- No **Initial** Templates (use cloning instead)
- No support for **assigning IP at the physical server** level (only at the profile)*

Added/Simplified

- *Did I mention* **Rename** profiles & templates
- No need for **Maintenance Policy**
- **Merging of Local & Global** Service Profile/Template

Changed

- **Improved change control** (separate assign & deploy steps)

* *In roadmap*

Managing
UCS Domains

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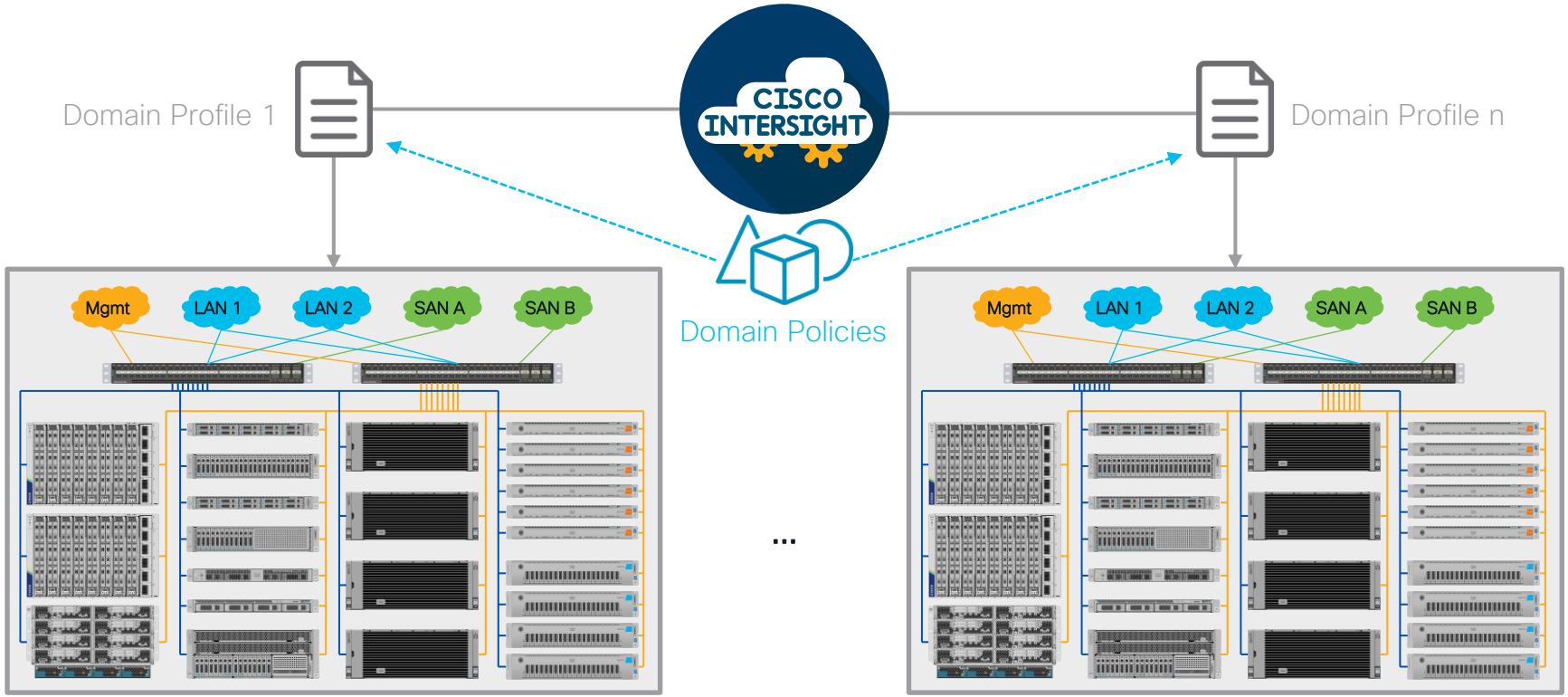
UCS Domain Profiles

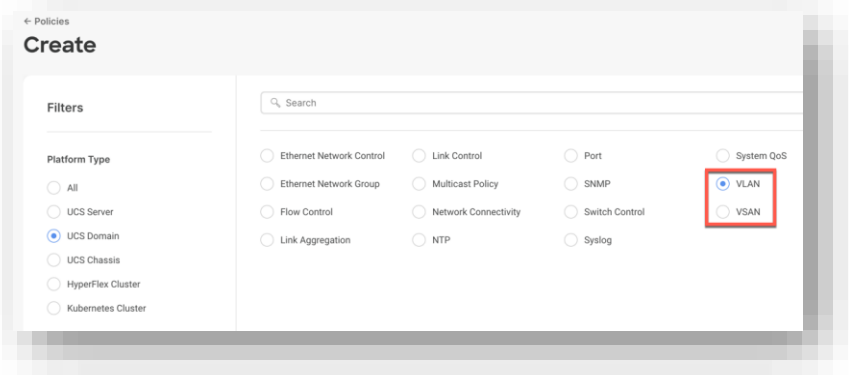
Policy-based configuration of the UCS fabric

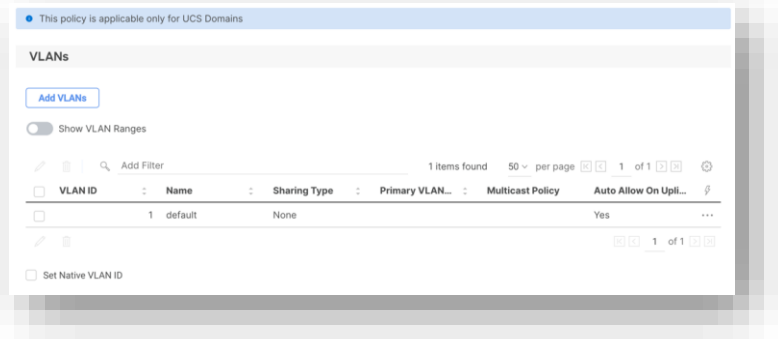


UCS Domain Profiles

VLAN / VSAN Policy

- Defines the list of VLANs / VSANs that need to be deployed at the Fabric Interconnect level
- Domain Profile can use:
  - a common policy for both Fabrics (common scenario for VLANs) or
  - separate policies (VSANs are often different on each Fabric Interconnect)
- VLANs can be defined using a range to simplify configuration
- Private VLANs supported

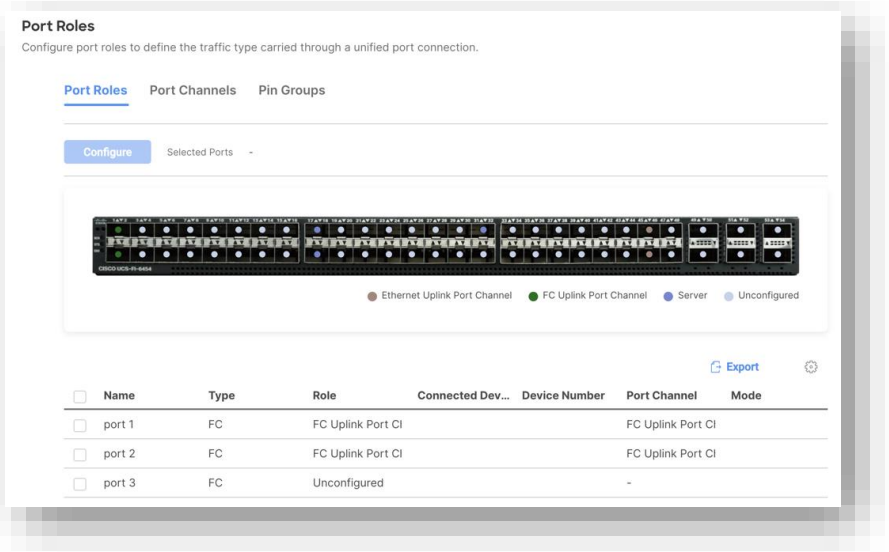




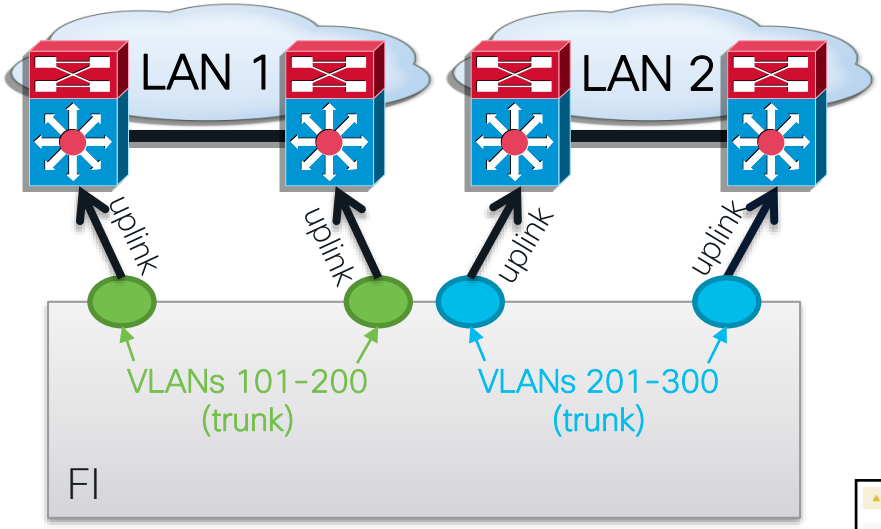
UCS Domain Profiles

Port Policy

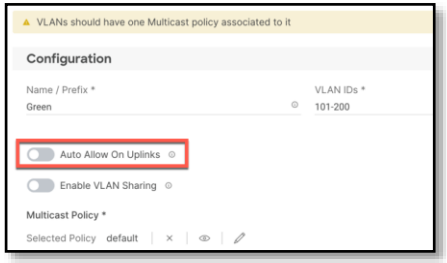
- Defines the port configuration of the Fabric Interconnects
  - Unified Port configuration (range) (requires a reboot during deployment)
  - Breakout Port configuration
  - Port Roles configuration (Server, LAN/SAN/FCoE Uplink, Appliance, FC Storage, Port-Channels)
- Domain Profile can use either:
  - a common policy for both Fabrics (for symmetric deployments)
  - separate policies for each Fabric (for better granularity)
- Ability to define device ID for chassis/racks



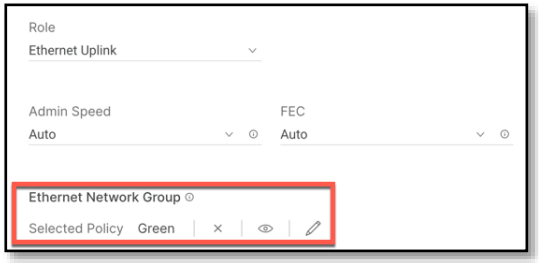
Disjoint Layer 2 configuration in IMM



- To connect to disjoint L2 networks, VLANs can be filtered on uplink ports (or port-channels)
  - A single uplink port is designated as broadcast/multicast receiver for each VLAN
- VLANs must be grouped as part of Ethernet Network Group Policies (Green and Blue)
  - All VLANs used for Disjoint L2 must have "Auto Allow On Uplinks" set to Disabled
  - Native VLAN can be defined per Eth. Network Group Policy
- Ports with role "Ethernet Uplink" part of Port Policy can be assigned an Ethernet Network Group Policy



VLAN Policy



Port Policy

UCS Domain Profiles

System Settings Policies

- These policies define the Fabric Interconnects configuration
  Similar to Domain Group settings in UCS Central.
  - Network Connectivity Policy: Defines DNS settings
  - NTP Policy: NTP & Timezone settings
  - System QoS Policy: QoS classes settings
  - Switch Control Policy: VLAN compression, MAC Address aging, Link Control, Switch modes for Ethernet & FC
  - SNMP Policy: SNMP settings
  - Syslog Policy: Syslog settings
- Multiple policies are generic and can be shared with other platform types (Standalone server, FI-Attached server, Chassis)

Managing
UCS Servers

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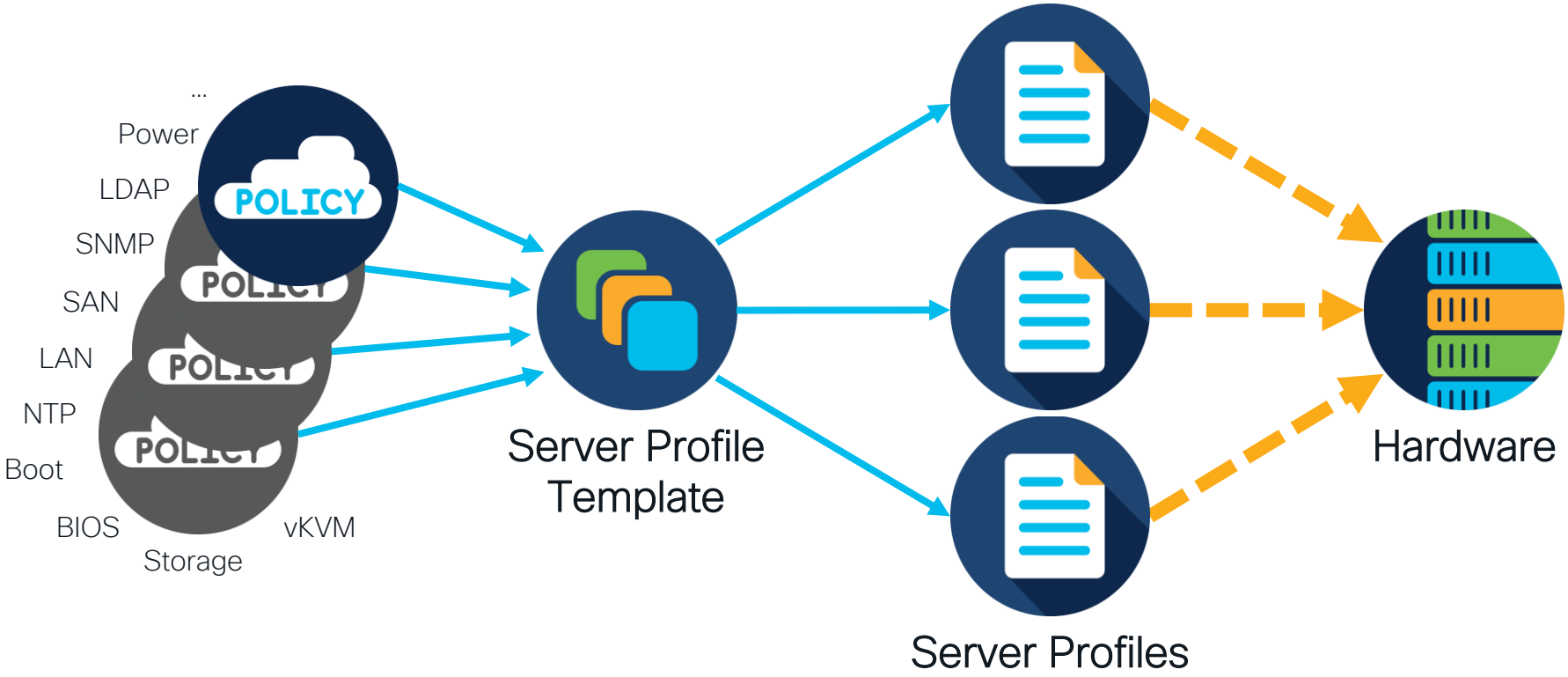
UCS Server Profiles & Templates

Policy-based configuration of the UCS servers



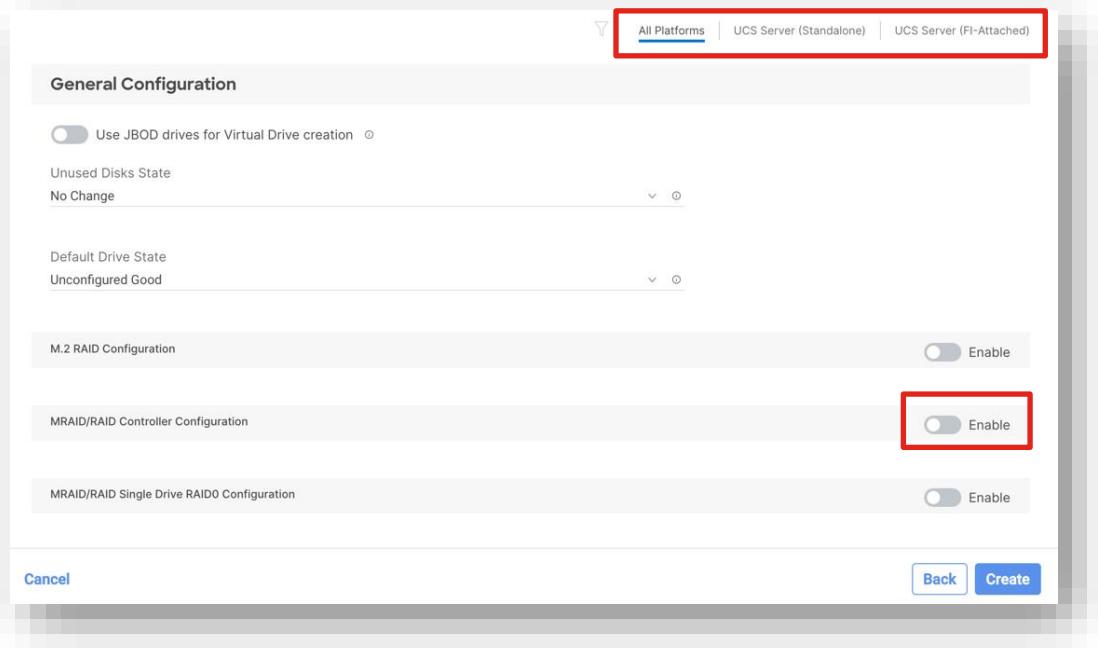
UCS Server Profiles & Templates

Server Configuration Policies

- Server configuration policies – similar to UCS Manager/Central policies
  - BIOS Policy: Defines BIOS settings
  - Boot Order Policy: Defines server boot order
  - LAN Connectivity Policy: Defines vNICs
  - Power Policy: Configures power management (profiling & restore)
  - SAN Connectivity Policy: Defines vHBAs
  - SD Card Policy: Defines SD Card settings
  - Storage Policy: Defines local storage settings (M.2 and RAID controllers)
- Multiple policies are generic and can be shared with other platform types (Standalone server, FI-Attached server, Chassis)

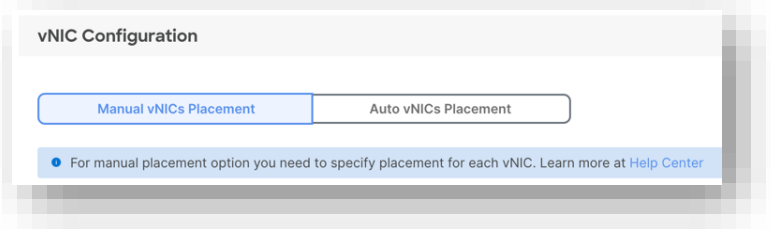
Storage Policy: All in One!

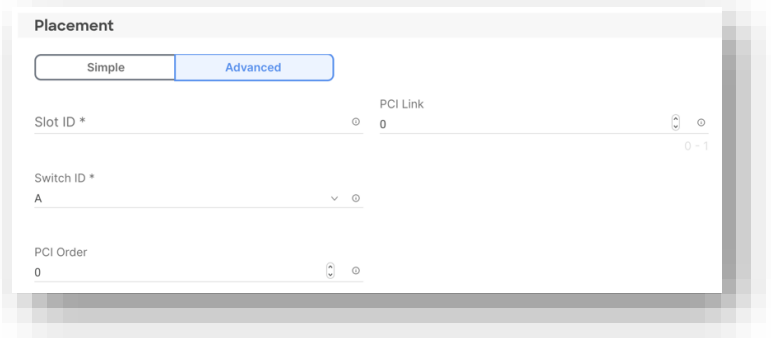
- Single policy for everything Storage
  - Replaces *Local Disk Config Policy*, *Disk Group Policy* & *Storage Profile*
  - Applies to Standalone & IMM servers
- Simple toggle button for M.2 RAID configuration
- Supports setting default & unused drives state
- Support for automatic disk assignment in roadmap



LAN/SAN Connectivity Policy changes

- Merging of “inline” vNICs/vHBAs and LAN/SAN Connectivity Policies
- No concept of “desired” and “actual” order
  - “*Auto*” placement automatically distributes vNICs/vHBAs
  - “*Manual*” placement lets you specify PCI order at the vNIC/vHBA level
    Order needs to start at 0 and be contiguous for all vNICs/vHBAs
- vCon placement simplified
  - Use “Simple” placement for single-VIC deployments (automatically sets “Slot ID” and “PCI Link”)
  - Use “Advanced” placement to define the “Slot ID” for each vNIC/vHBA (and “PCI Link” for VIC 1300)
- vNIC/vHBA Templates in roadmap





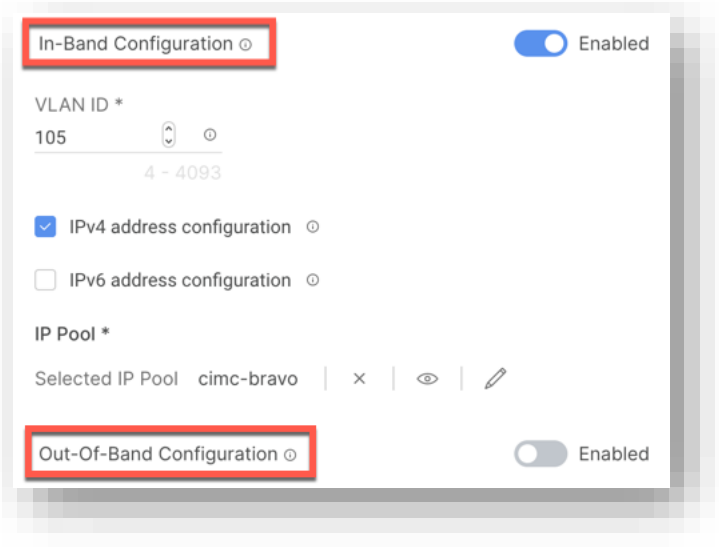
UCS Server Profiles & Templates

Server Management Policies

- Server management policies – similar to UCS Manager/Central policies
  - IMC Access Policy: Defines VLAN/IP address for server CIMC
  - IPMI over LAN Policy: Defines IPMI settings
  - Local User Policy: Configures local users for KVM/IPMI/SNMP access
  - Serial over LAN Policy: Defines SoL settings
  - SNMP Policy: Configures SNMP for server CIMC
  - Virtual KVM Policy: Defines vKVM settings
  - Virtual Media Policy: Configures vMedia settings
- Multiple policies are generic and can be shared with other platform types (Standalone server, FI-Attached server, Chassis)

IMC Access Policy – Required!

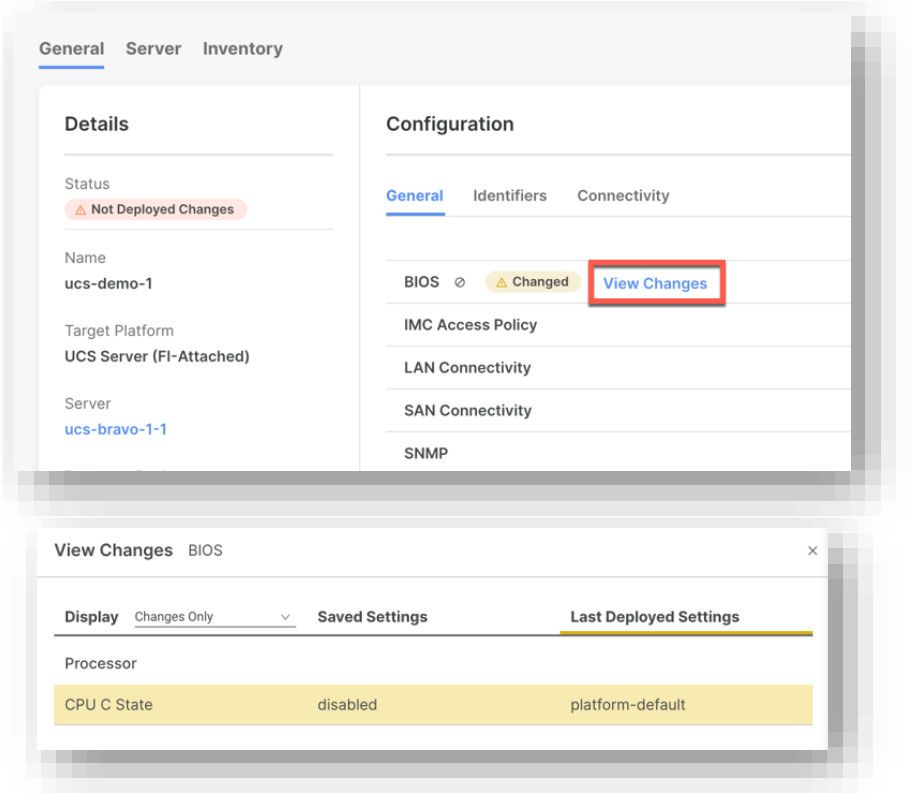
- Provides connectivity to the server's CIMC
  - IP assigned to Server Profile, not physical server*
  - Also used for accessing the chassis' CMC (SNMP)
- Inband configuration
  - VLANs 1-3 not supported (same as UCSM)
  - IPv4 & IPv6
- Out-Of-Band configuration
  - vMedia, SNMP & Syslog not supported*
  - IPv4 only
- Corresponds to "*Management IP Address*" + "*Inband Profile*" in UCS Manager



* *In roadmap*

Improved change control

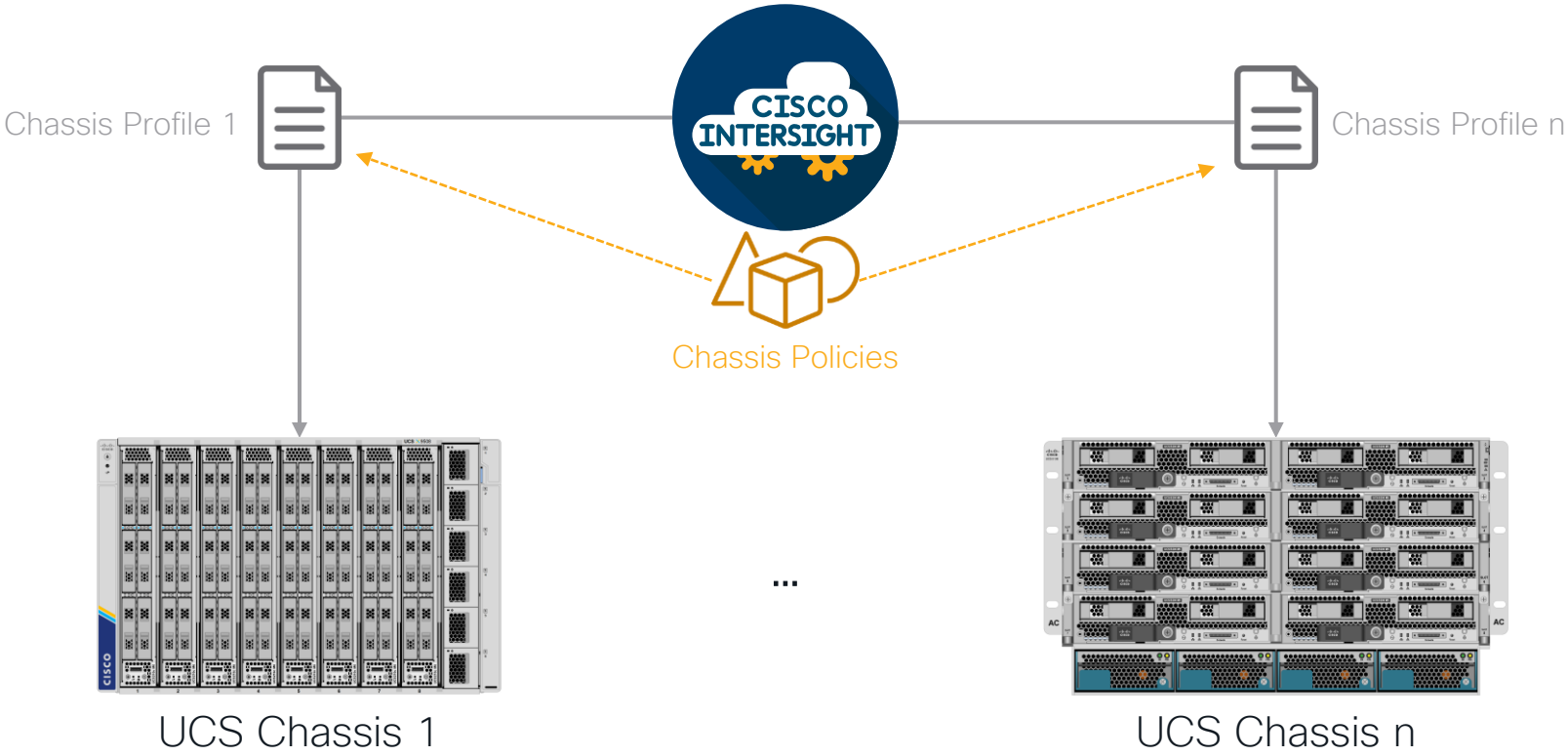
- No need for a “Maintenance Policy”
- Server Profile must be redeployed for changes to be applied – requires manual intervention
- Once redeployed, the server might need to be rebooted, depending on the changes
  - Estimate impact in roadmap
- Ability to view the pending changes before deploying, with a side-by-side comparison view
- Same change control for Domain & Chassis Profiles



Managing
UCS Chassis

UCS Chassis Profiles

Policy-based configuration of the UCS chassis



UCS Chassis Profiles

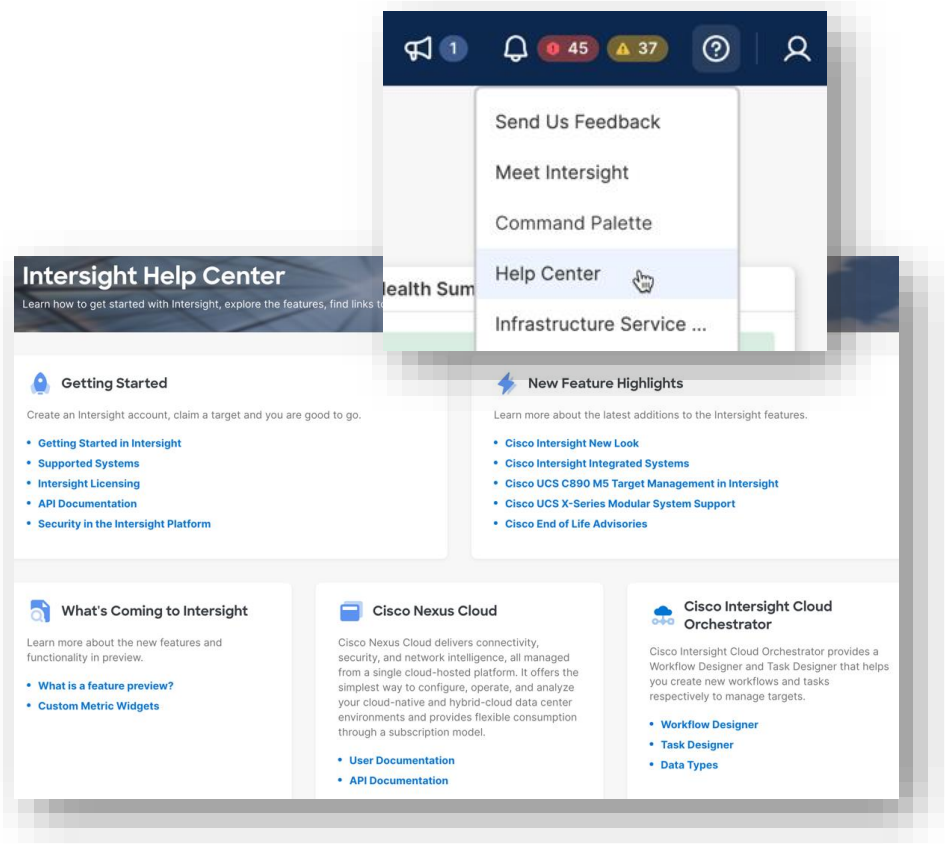
Chassis Policies

- Chassis policies – to support per-chassis settings (different from UCSM)
  - IMC Access Policy: Defines VLAN/IP address for chassis CMC (used by SNMP)
  - Power Policy: Configures power management (redundancy & power budget)
  - SNMP Policy: SNMP settings
  - Thermal Policy: Fan control settings
- Multiple policies are generic and can be shared with other platform types (Standalone server, FI-Attached server, Chassis)
- Not required to have a fully functioning chassis (defaults to Grid power)

Performing (some) **Operations**

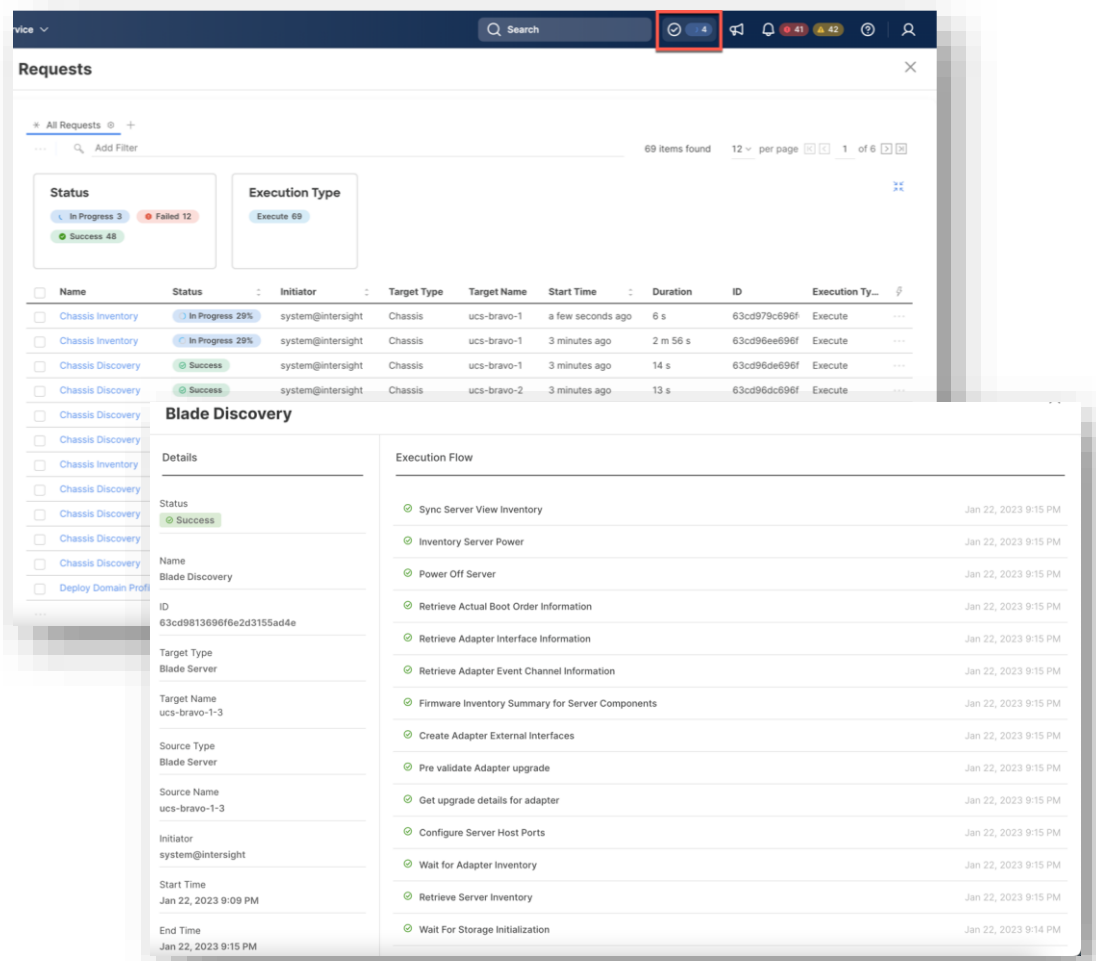
Intersight Help Center & documentation

- All documentation is available via the Help Center
  - SaaS: https://intersight.com/help/saas
  - Appliance: https://intersight.com/help/appliance or on the Appliance
- Release Notes & Release Bundle Contents
  - https://www.cisco.com/c/en/us/support/servers-unified-computing/intersight/products-release-notes-list.html



Where is my FSM?

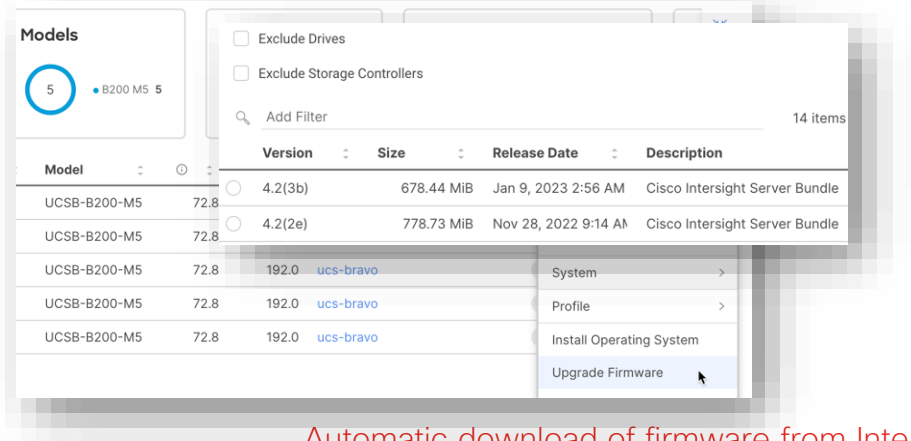
- Common place for all requests and workflows (orchestrator)
  - In progress, successful or failed
- View request details with individual steps



Managing Firmwares

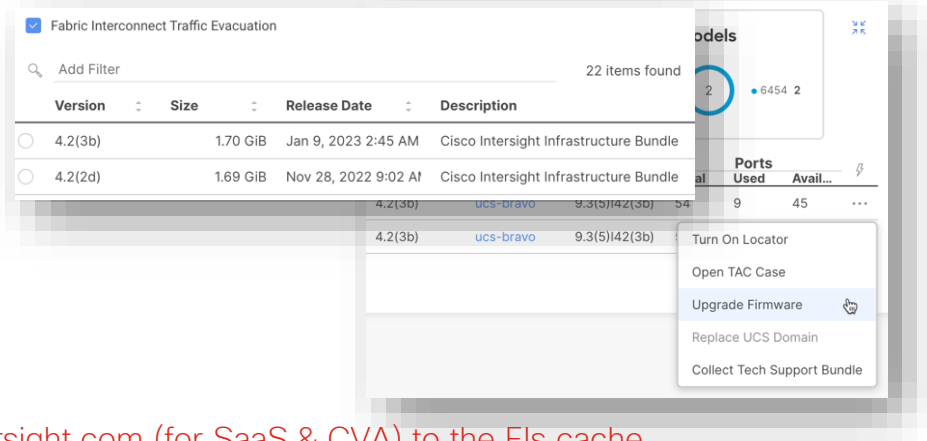
UCS Servers

- Single/Multi-server parallel upgrade
  - Firmwares installed on next boot or immediately
- Similar for IMM and standalone servers
- Firmware Policy in roadmap



UCS Infrastructure

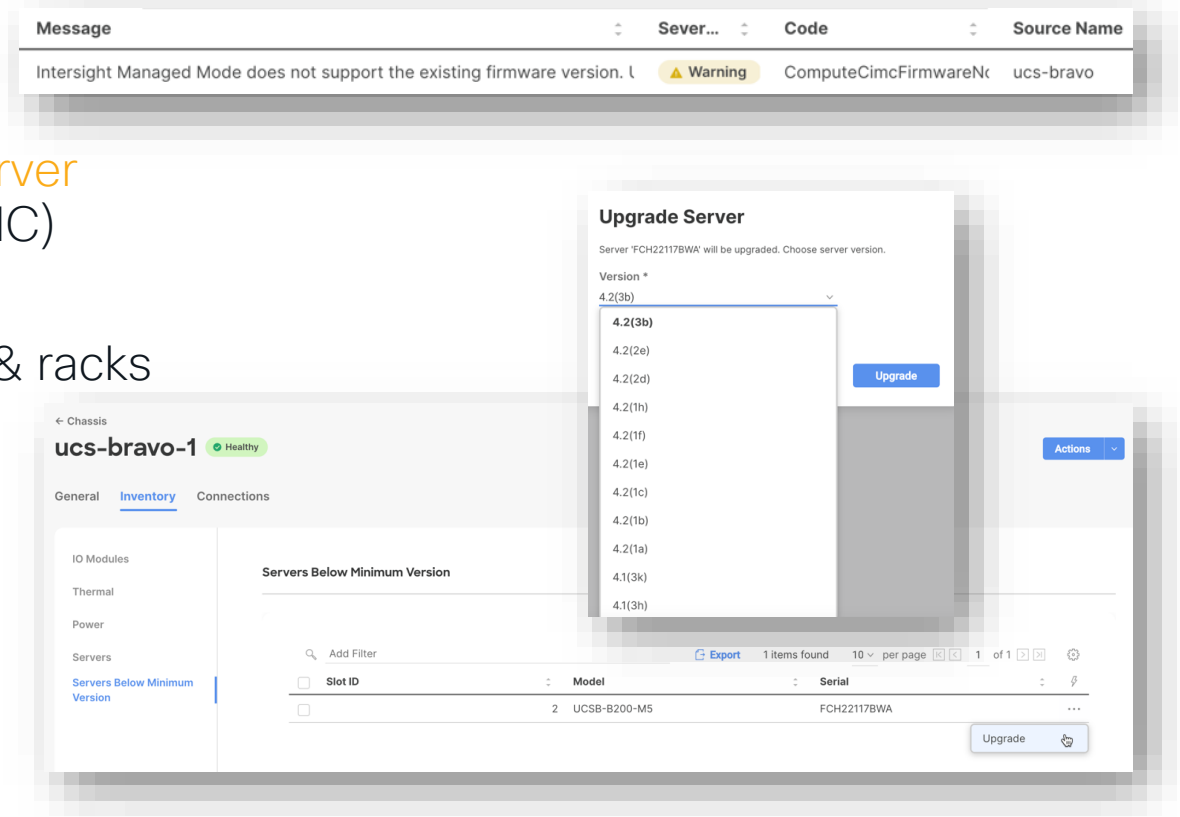
- Similar to UCS Manager Auto-Install
- User acknowledgement for each FI reboot
- Integration of fabric Traffic Evacuation



Automatic download of firmware from Intersight.com (for SaaS & CVA) to the FIs cache

Handling Servers below minimum version

- Alarm generated
- Mechanism to upgrade server firmware (CIMC, BIOS & VIC) running older versions
- Supports both M5 blades & racks
- Found under chassis/FI inventory
- Typical use case: RMA

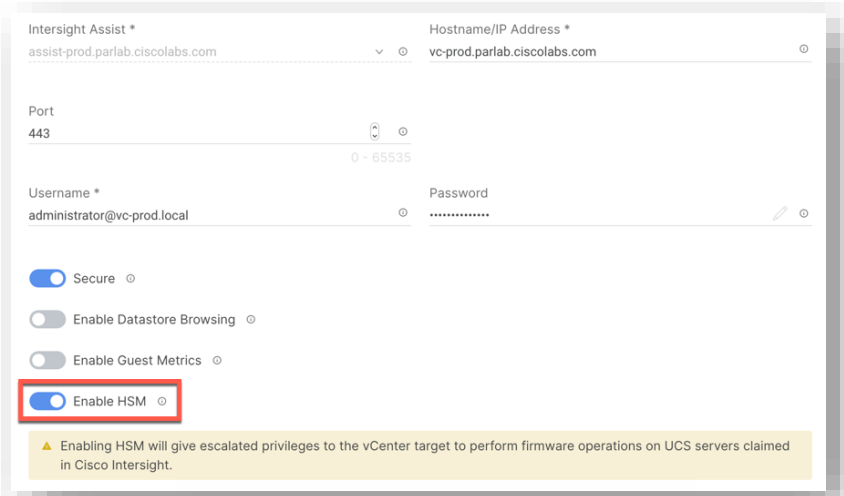


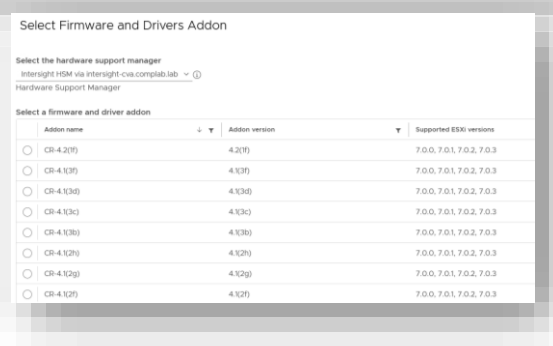
VMware vLCM/HSM Integration

- Automate UCS servers firmware updates via vLCM
- Claim vCenter in Intersight
  - Enable HSM when claiming
- No additional setup/plugin required

- Select "Firmware and Driver Addon" bundle directly from vLCM (auto-populated)
- Run Pre-Check & Remediate Hosts

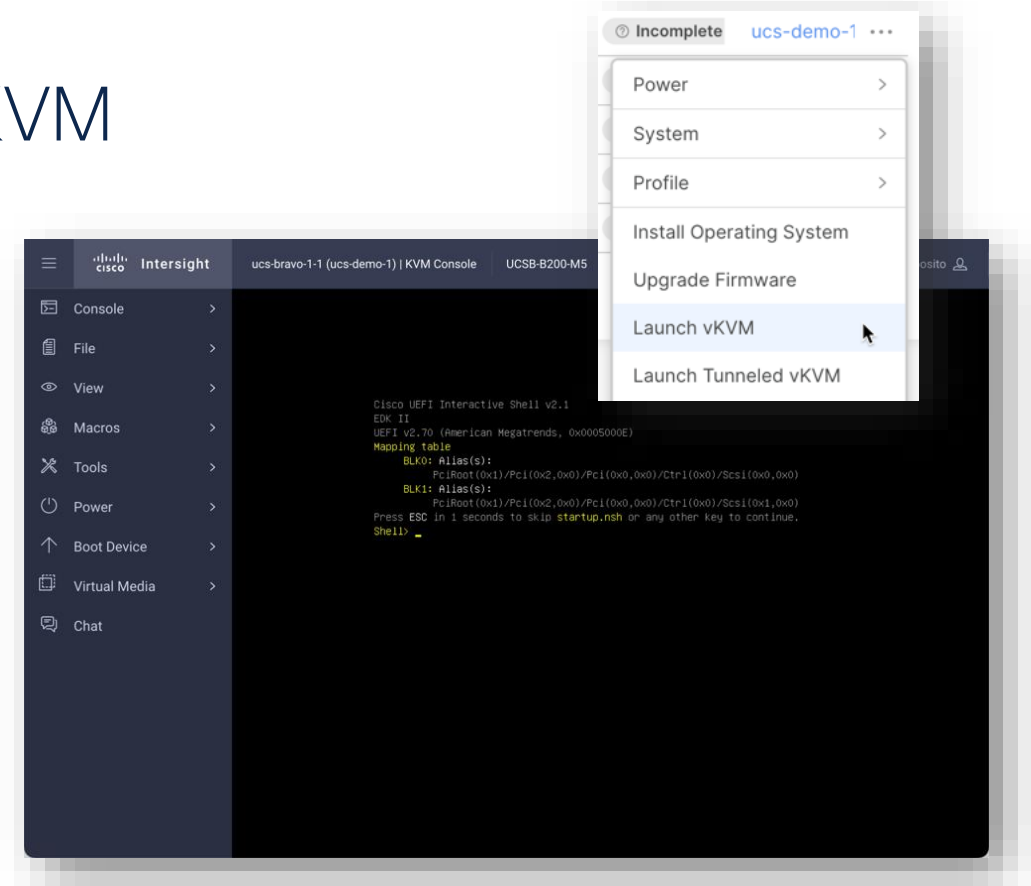
- Supported on SaaS & Appliance
- Supported with Standalone & IMM servers





Connecting to Virtual KVM

- Virtual KVM Policy
  - Enable/Disable vKVM
  - Tunneled vKVM support
- Virtual Media Policy
  - Disabled by default
  - Virtual Media mounts
- IMC Access Policy required
  - Virtual Media supported on Inband only
- Authentication
  - SSO from Intersight by default
  - Local User Policy required for KVM Direct
- One Time Boot device support
- Session Management: under System → Sessions

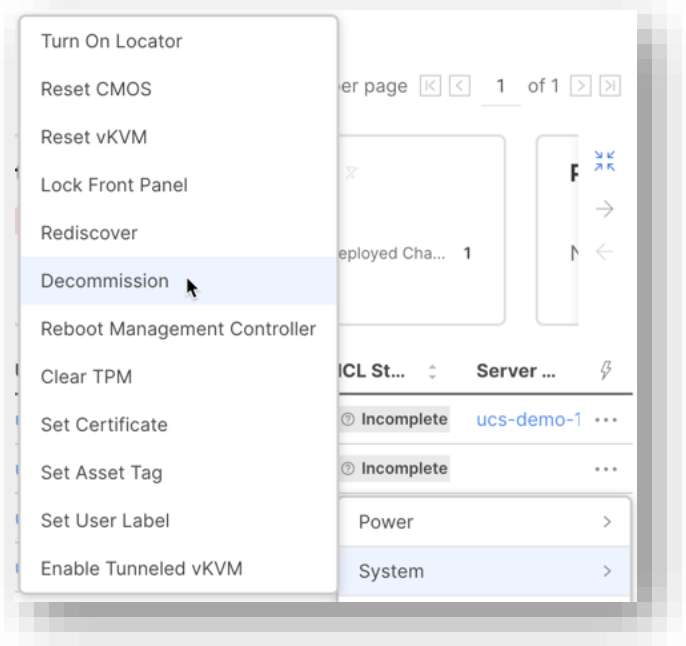


New Cisco vKVM with M5*/M6 servers

Decommission / Recommission

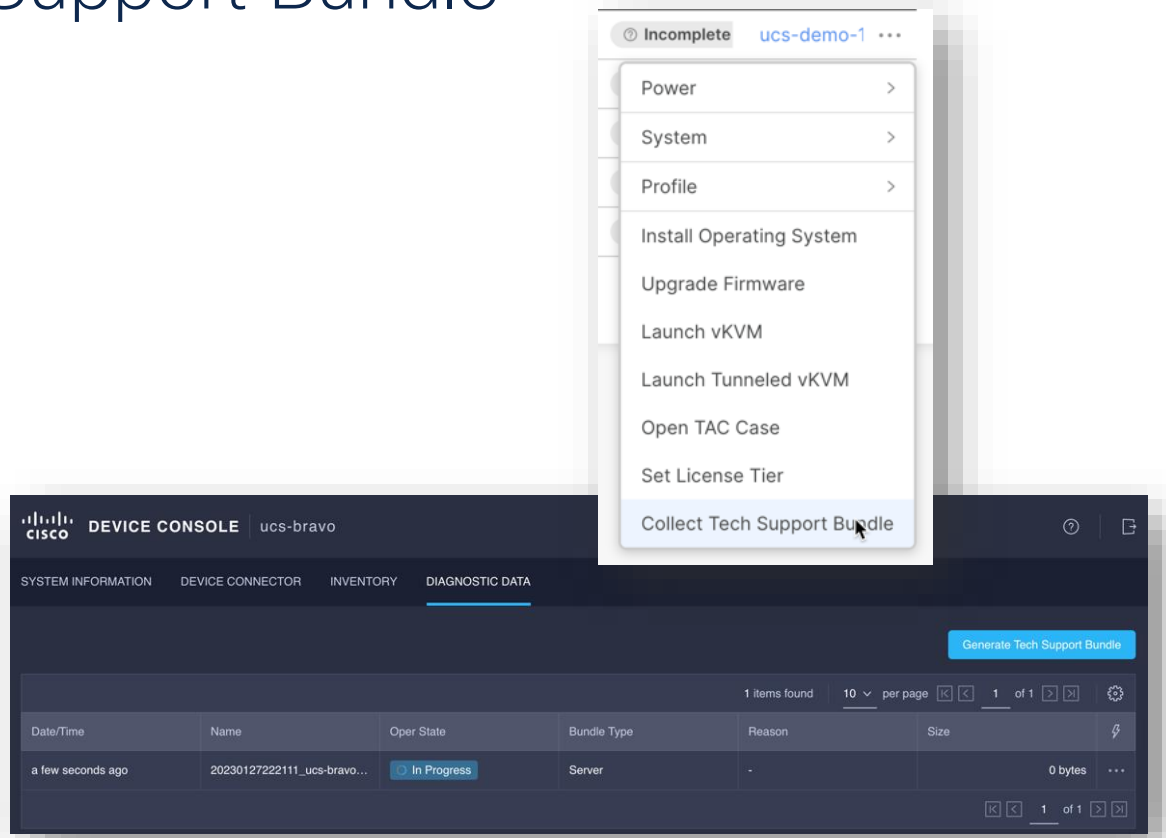
- Similar to UCS Manager

- To recommission:
  - Fabric Interconnect → Connections → Decommissioned
  - Can also be removed
- Ability to change ID of chassis / rack server / FEX when recommissioning

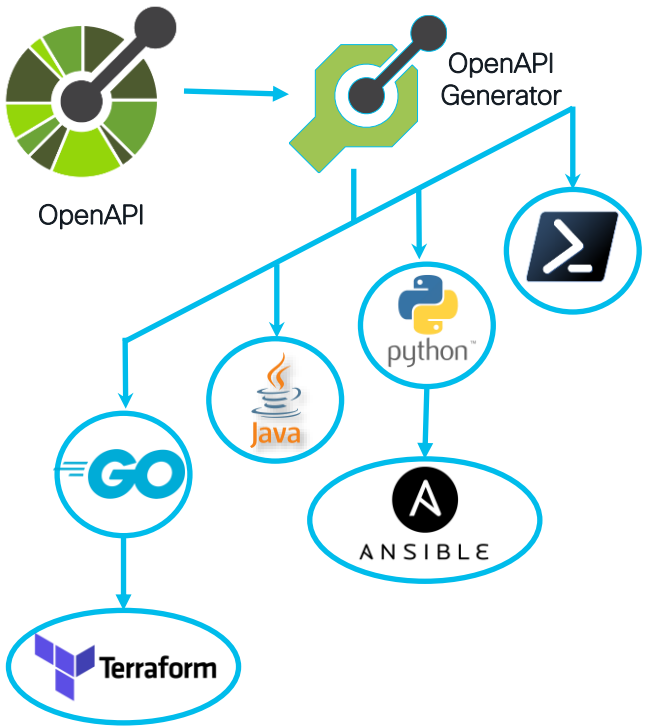


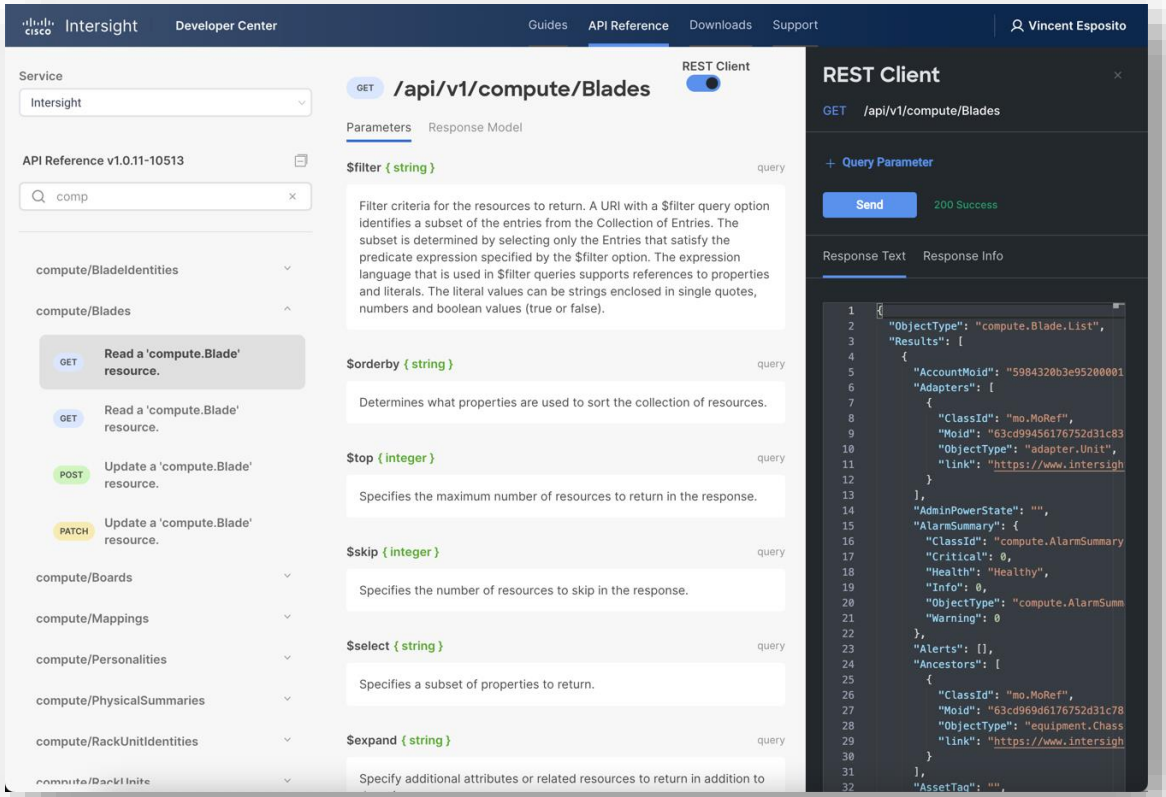
Collecting a Tech Support Bundle

- From Intersight
  - Action menu of the equipment
  - Download under System → Tech Support Bundles
- From Device Console
  - Action menu of the equipment under Inventory
  - Download under Diagnostic Data
- Connected TAC
  - Automated with SaaS and Connected Appliance



API is the new UI





https://intersight.com/apidocs/

Transitioning to Intersight Managed Mode

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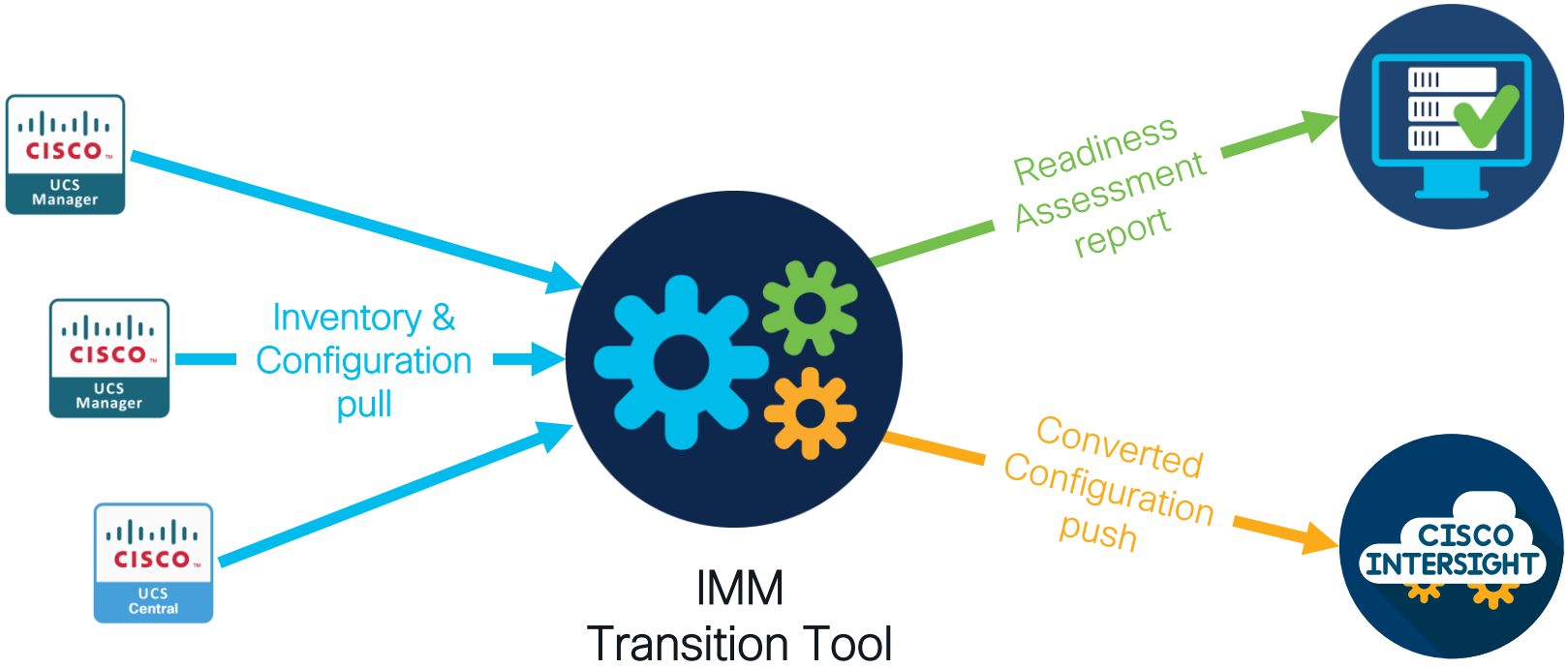
Introducing the IMM Transition Tool



Primary use cases

1 Accelerate deployments of UCS X-Series

- **Extends** existing **Service Profile Templates** to Intersight
- Automatically converts related **server policies** (boot, BIOS, LAN/SAN connectivity, etc.)
- Converts **fabric configuration** (VLANs/VSANs, port configuration, etc.)

2 Move existing servers to IMM domains

- Automatically **converts** existing **Service Profiles** to Intersight Server Profiles
- Maintains all **server identities** (MAC, WWN, etc.)
- Allows **transition** to new server generation (e.g. M3/M4 to M6)

3 Migrate an entire UCS domain to IMM*

- Assesses **hardware & firmware compatibility**
- Performs **complete conversion** of UCS Manager domain to IMM mode
- **Requires domain downtime**
- Handles **all necessary operations** automatically

** Roadmap*

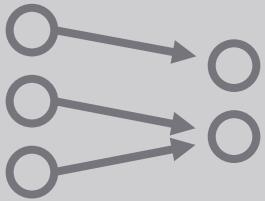
Additional use cases

* *Roadmap*

Release 3.0 Major New Features

Conversion with identities preservation

- Conversion of Service Profiles with **preservation of their identities** (IP, MAC, WWPN, WWNN, UUID)
- User-selectable option in the Transition Settings



Advanced Organization Mapping

- Gives **more flexibility** to control where converted policies are placed
- Supports **one-to-one** and **many-to-one** mapping

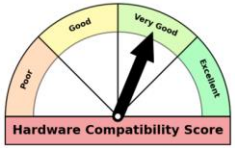
Cloning Intersight accounts/instances

- Allows quick **config replication** between Intersight instances
- Cloning of all **FI-Attached & Standalone** policies, pools, profiles, templates (no support for HX & IKS)

Sample Readiness Report

1. Intersight Managed Mode Conversion Overall Summary

1.1 Intersight Managed Mode Conversion Score



This score reflects the overall UCS Domain hardware compatibility with Intersight Managed Mode.
It takes into account all hardware components (fabric and servers). A detailed view can be found below.

3.2.16 Port Policies

These policies are used for converting attributes of the port roles of Fabric Interconnects in UCS Manager.

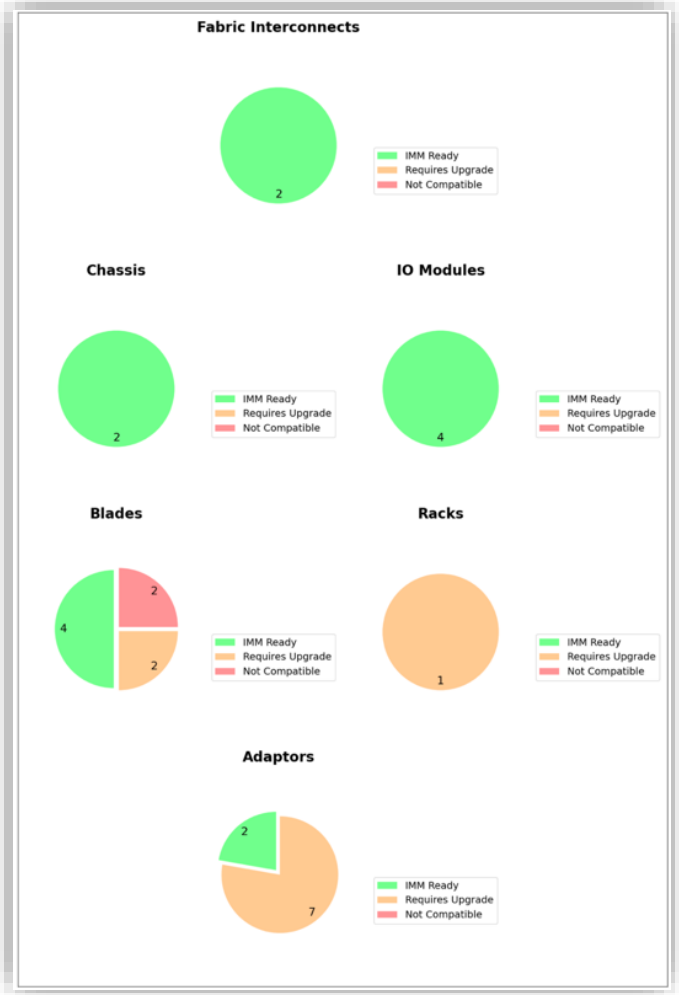
Port Policies are separate for each Fabric Interconnect
Source port configuration is different for both fabrics

Ignoring Link Profile configuration for FCoE Port-Channel
Different Link Profiles are configured on the following Member Interfaces: ['33']

Ignoring FCoE Storage Ports configuration as it is not yet supported in IMM
['A/1/14, A/1/21/4, B/1/39']

Ignoring SAN Ports configuration as Source FI Model is not supported in IMM
['UCS-FI-6332-16UP']

Ignoring source FI (6332-16UP) SFP+ ports configuration
Destination FI Model (6536) does not have any SFP+ ports



Additional Resources

- IMM Transition Tool demo videos
  - https://www.youtube.com/watch?v=tHJJ-prOrO0
  - https://www.youtube.com/watch?v=Oqmf2CAPxtE
  - https://www.youtube.com/watch?v=duczkclCYrk
- IMM Transition Tool download page
  - https://ucstools.cloudapps.cisco.com/
- IMM Transition Tool Documentation
  - User Guide: https://www.cisco.com/c/en/us/td/docs/unified_computing/Intersight/IMM-Transition-Tool/User-Guide-3-0/b_cisco_intersight_managed_mode_user_guide_3_0/m_new_changed_info_imm_tt_3.html
  - Release Notes: https://www.cisco.com/c/en/us/td/docs/unified_computing/Intersight/IMM-Transition-Tool/b_imm_tt_rn.html
- Transition CVDs
  - *FlexPod*: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-manager/transition-a-cisco-ucs-in-flexpod-from-ucs-manager-to-cisco-intersight.html
  - *FlashStack*: https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/transition-flashstack-from-ucs-to-imm-wp.html

Key Takeaways

Summary

- Intersight is much more than UCS Manager/Central
- Same DNA: Policy-based Server & Fabric Management
- Additional features (OS Install, HCL, Advisories)
- Improved Change Control
- Policies everywhere (Domain & Chassis Profiles, natively Multi Domain)
- Modernized Platform (OpenAPI, Redfish, Automated Updates, Feedback, …)
- IMM Transition Tool can help assess readiness and convert config

Intersight Managed Mode is the future of UCS Management

Call to Action

- Adopt Intersight by claiming your existing domains
- Start using IMM in the lab / new deployments
- Consider UCS X-Series as your next-gen server platform
- Generate a Readiness Report with the IMM Transition Tool

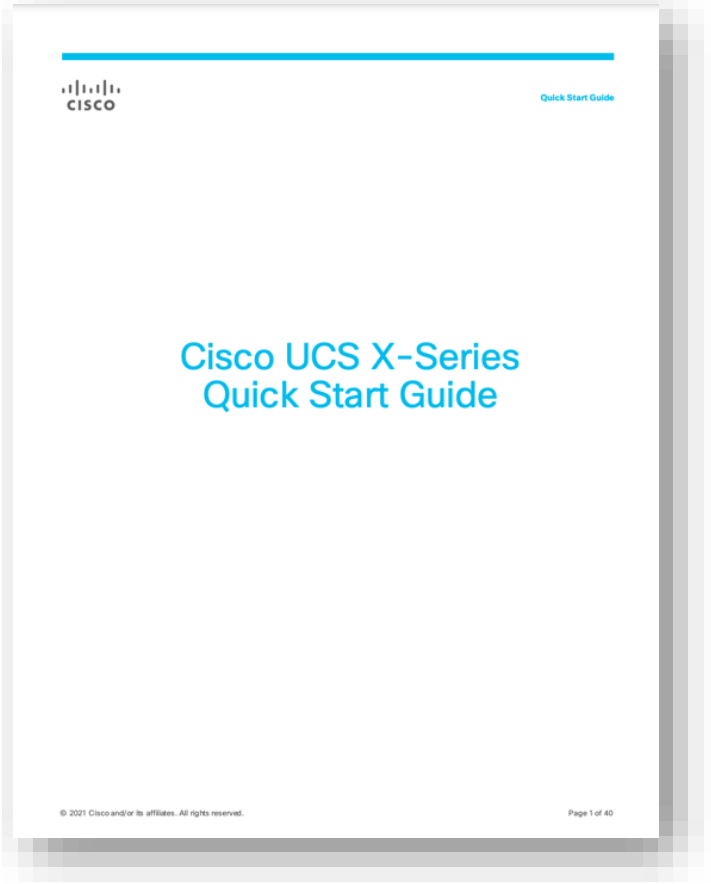
IMM Advantage

Modernized | Policies Everywhere | Simplified | Safer Operations | Multi Domain

For your reference

X-Series Quick Start Guide

- Complete deployment guide for an X-Series IMM deployment from scratch
- Contains IMM domain, chassis and server configuration steps with all details
- https://www.cisco.com/c/en/us/products/collateral/servers-unified-computing/ucs-x-series-modular-system/ucs-x-series-quick-start-guide.html



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