



*TOMORROW
starts here.*

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UCS Systems Management Deep Dive with UCS Foundational Software

BRKCOM-2017

Brad TerEick

#clmel

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What To Expect...

**Best
Practice**

Many Hidden
("For Your Reference")
&
Animated Slides

For Your Reference

Agenda

Review: UCS Fundamentals

- Building Blocks & Connectivity

- Stateless, Policy Driven by Design

- UCS Manager Architecture – Underneath the Hood

UCS Notifications

- Finding the Needle in the Haystack with UCSM

Scaling UCS Management with UCS Central Role

- Getting Started – Domain Registration

- Use-cases

- What's New / Next?

Managing Stand-alone C-Series

- Automating Configuration Tasks w/UCS PowerTool



A nighttime photograph of a city street. In the background, there are several tall buildings with lit windows. A pedestrian bridge with a glass railing spans across the street. In the foreground, there are long, colorful light trails from cars, primarily in shades of yellow, orange, and red, indicating motion. The text "Review: UCS Building Blocks and Connectivity" is overlaid in white on a dark blue background that covers the middle portion of the image.

Review: UCS Building Blocks and Connectivity

Unified Computing System Components

Cisco UCS Central
Multi - UCS Manager

Cisco UCS Manager
Embedded Element Manager, GUI and CLI

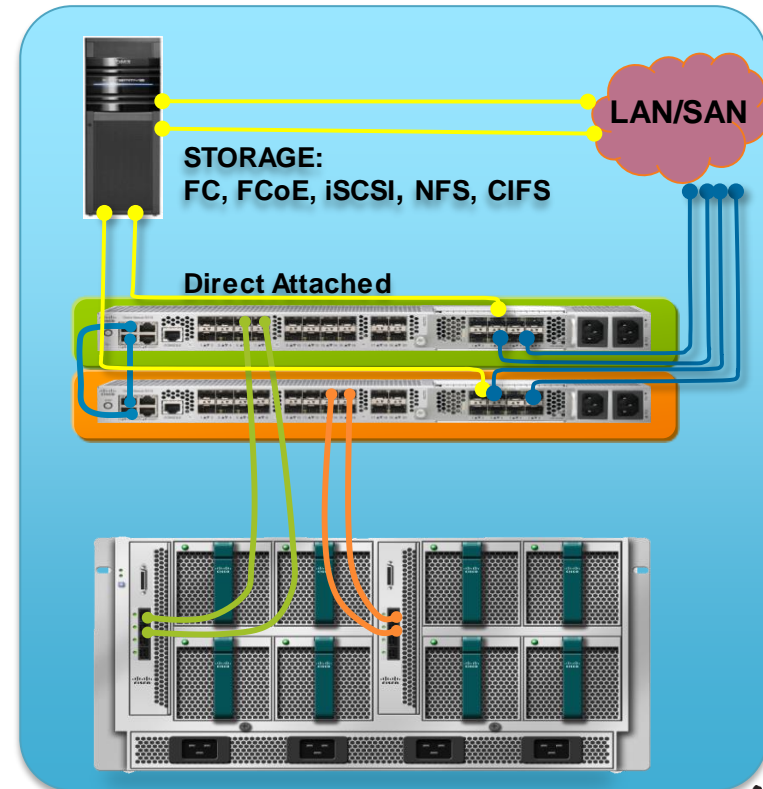
Cisco UCS Fabric Interconnects
SNMP, Syslog, SMTP, SMASH, CLP,
CIM XML, Smart Call Home

Cisco UCS I/O & FEX Modules

Cisco UCS Blade Server Chassis

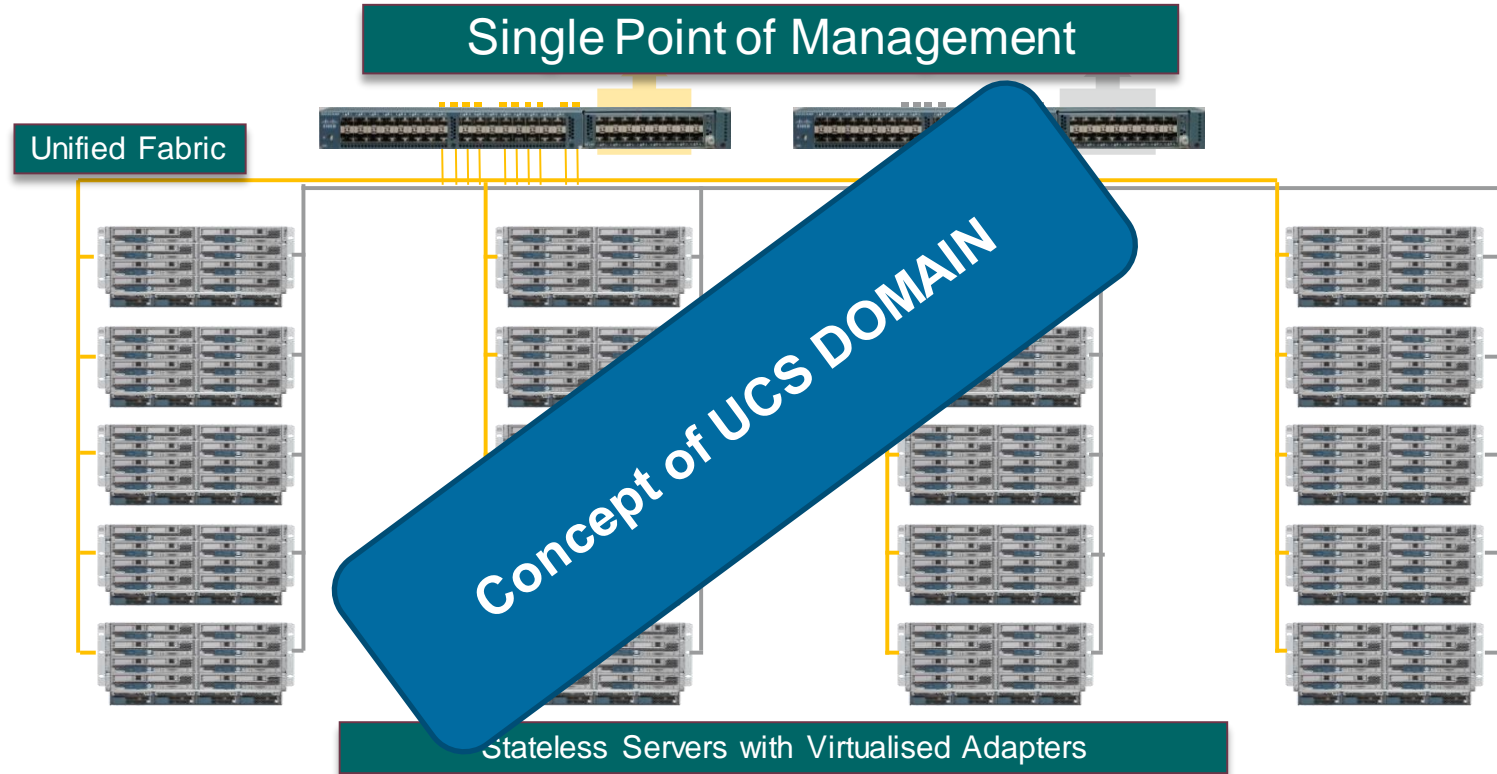
Cisco UCS Blade and Rack Servers
(Cut through interfaces to Cisco IMC)
Serial over LAN, KVM, IPMI

Cisco UCS I/O Adapters

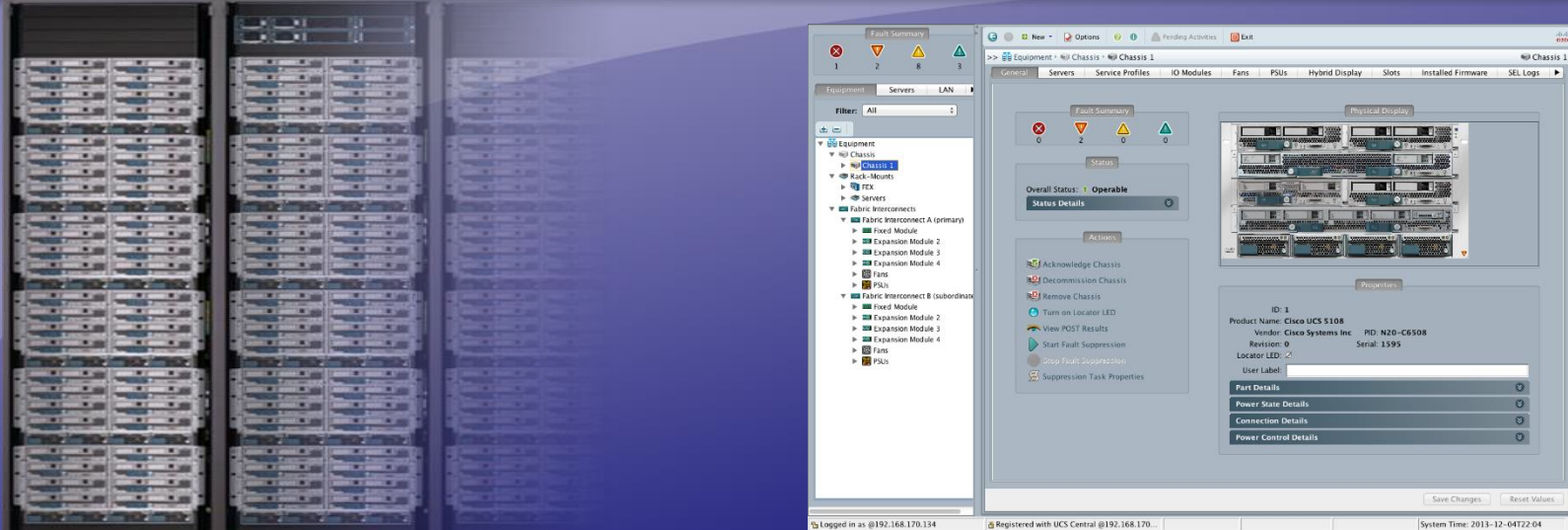


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Unified Computing System (UCS)



Unified Computing System Manager

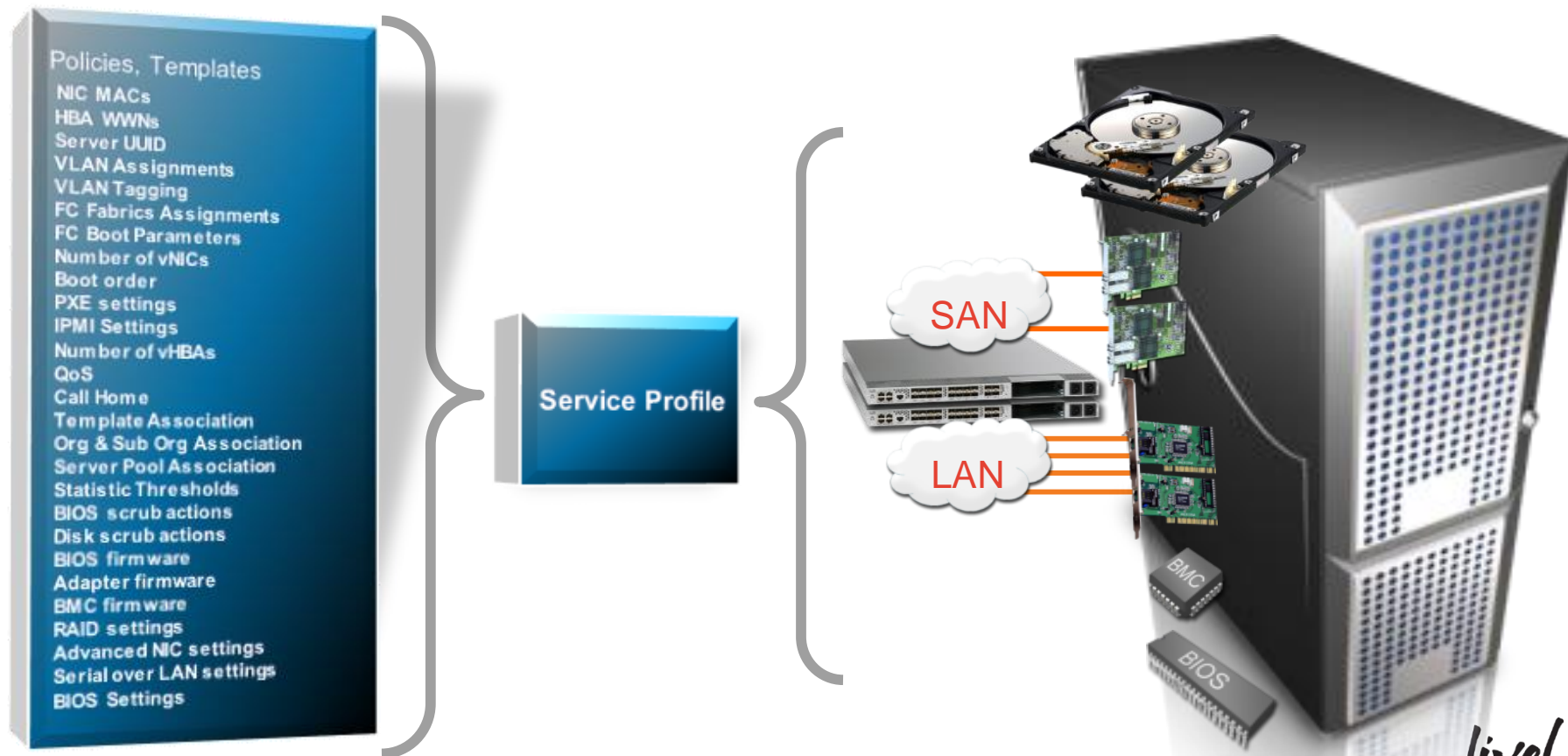


- Embedded device manager for family of UCS components
- Deepest possible abstraction of hardware and connectivity
- Efficient at scale: Same effort for 1 or N servers, Blade or Rack

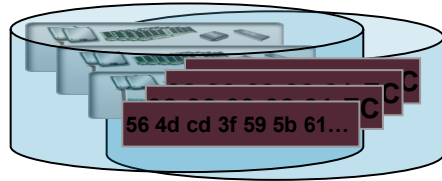
A nighttime photograph of a city street. In the background, there are modern buildings with lit windows and a pedestrian bridge with blue lights. The foreground shows a road with long, colorful light trails from cars, primarily in yellow and orange, indicating motion. The text "Review: UCS Stateless, Policy Driven by Design" is overlaid in white on a dark blue horizontal band across the middle of the image.

Review: UCS Stateless, Policy Driven by Design

UCS Service Profiles



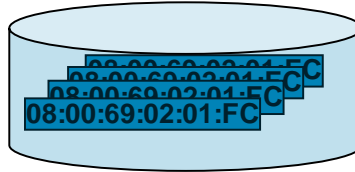
UCS Pools, Role Based Access, Example



Server Pools



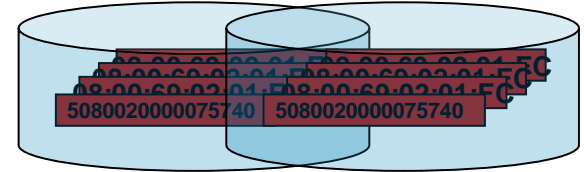
Server
Administrator



MAC Address Pools



Network
Administrator



WWPN Address Pools



Storage
Administrator

Cisco UCS Manager

UCS Policies, Role Based Access, Examples

Cisco UCS Manager



Server
Administrator

Server Polices:
Discovery, Boot, Bios
settings, Firmware,
Scrub, Templates, Pre
Provisioning, etc



Network
Administrator

LAN Policies:
vLAN ID's,
QoS, Port Channels,
Connectivity, vNIC
Templates, etc



Storage
Administrator

Storage Policies:
vSAN, Adapter,
Pin Groups,
Thresholds,
Northbound ports, etc

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UCS Device Management, Role Based Access

Server Policies:
Discovery, Boot, Bios
settings, Firmware,
Scrub, Templates, Pre
Provisioning, etc

LAN Policies:
vLAN ID's,
QoS, Port Channels,
Connectivity, vNIC
Templates
etc

Storage Policies:
vSAN, Adapter,
Pin Groups,
Thresholds,
Northbound ports, etc

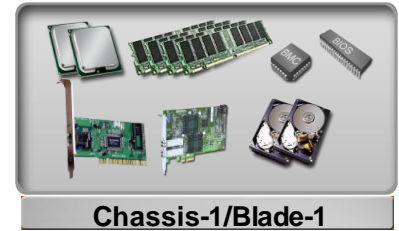


Server Administrator

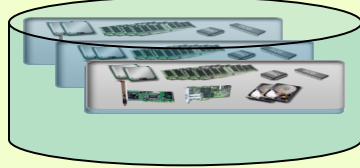
Server Name: **Bob**
UUID: 56 4d cd 3f 59 5b 61...
MAC : 08:00:69:02:01:FC
WWN: 5080020000075740
Boot Order: **SAN, LAN**

Service Profile

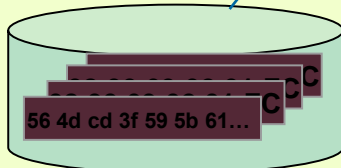
Association



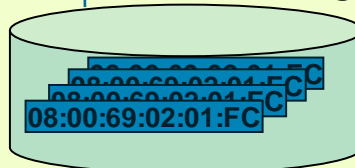
Cisco UCS Manager



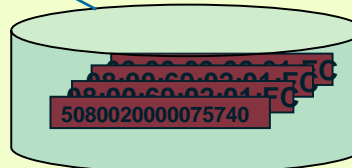
Server Pools



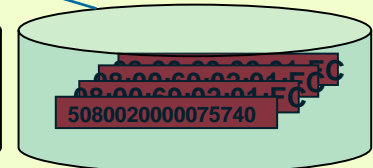
UUID Pools



MAC Address Pools



WWPN Address Pools



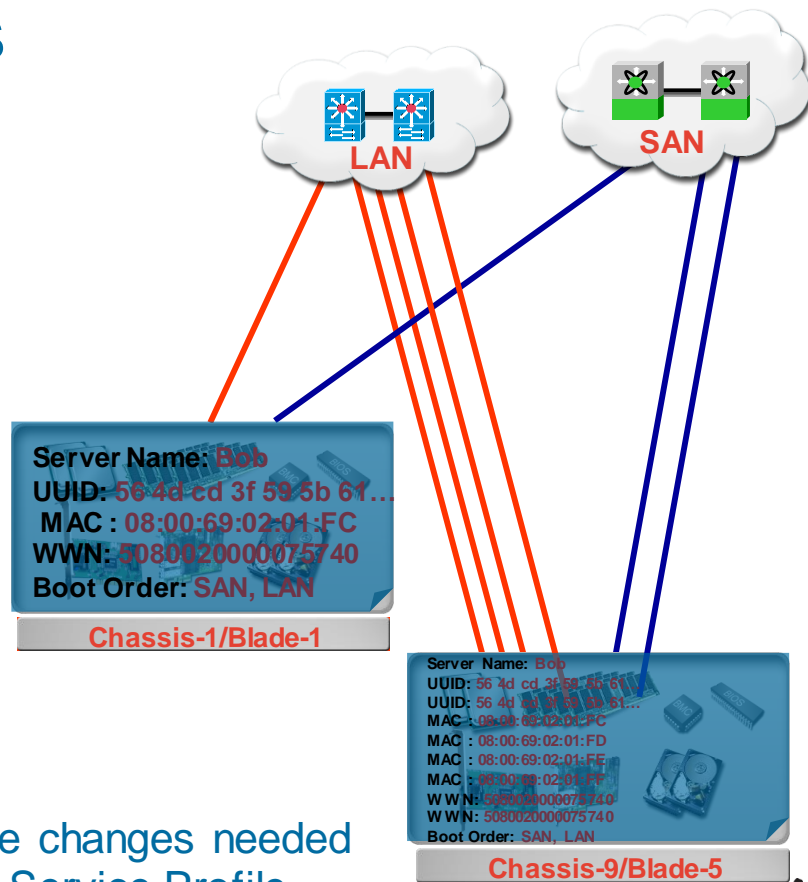
WWNN Address Pools

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Stateless Computing, Benefits

- Server identity no longer tied to physical server hardware
 - Profiles provide identity
 - Seamless server mobility
 - Stateless components
- Boot over network (LAN or SAN)
 - Boot order and boot devices are part of the pre-defined logical server profile
 - On-board disks can be used for temp, swap, etc.
- LAN and SAN Connectivity
 - # of NIC's
 - # of HBA's

No infrastructure changes needed
when moving a Service Profile



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Architecture of UCS Manager “Underneath the Hood”

The Foundation

- Model Driven Framework
 - Everything is an object
 - Component
 - Events
 - Faults
 - Management Information Tree (MIT)
 - Maintains object relationships
 - Lifecycle of objects
- Architectural Components
 - Server Array Manager (SAM) aka: UCSM
 - Data Management Engine (DME)
 - Application Gateways (AG)
 - Managed Endpoints

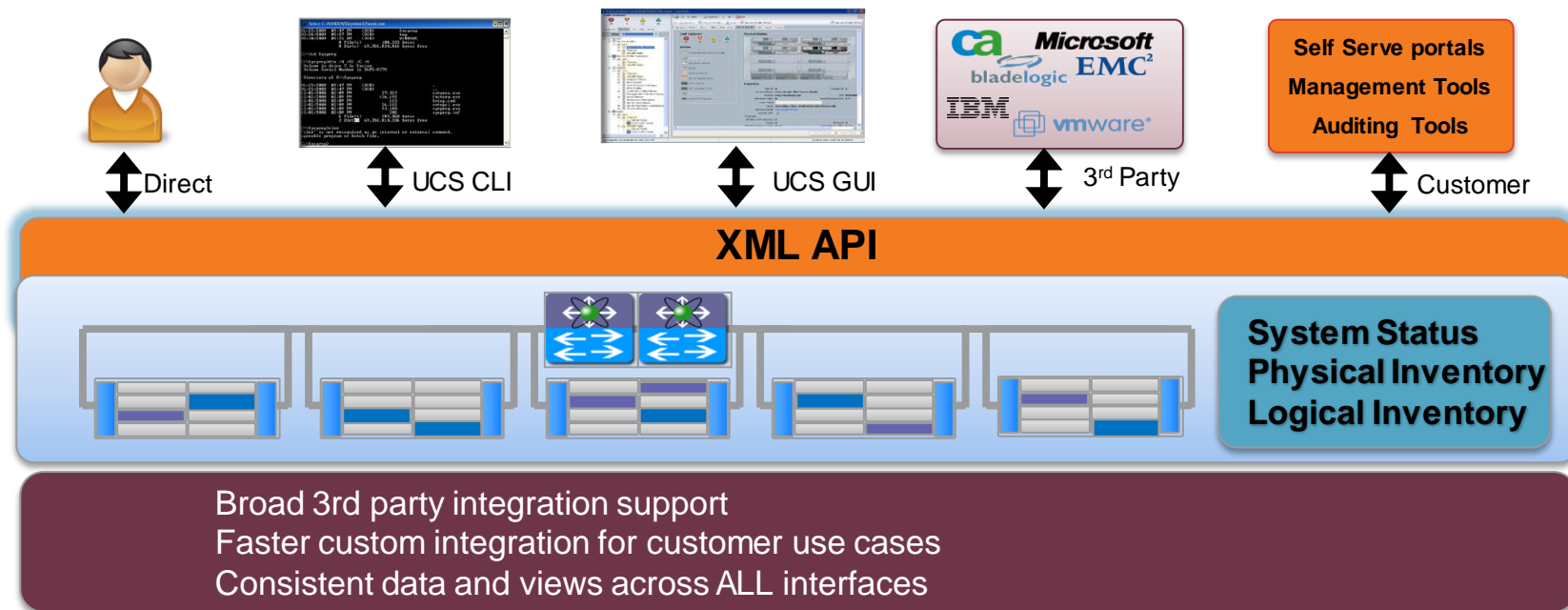
- UCS Reference Guide
 - ISBN-10: 1587141930
 - <http://www.amazon.com/dp/1587141930>



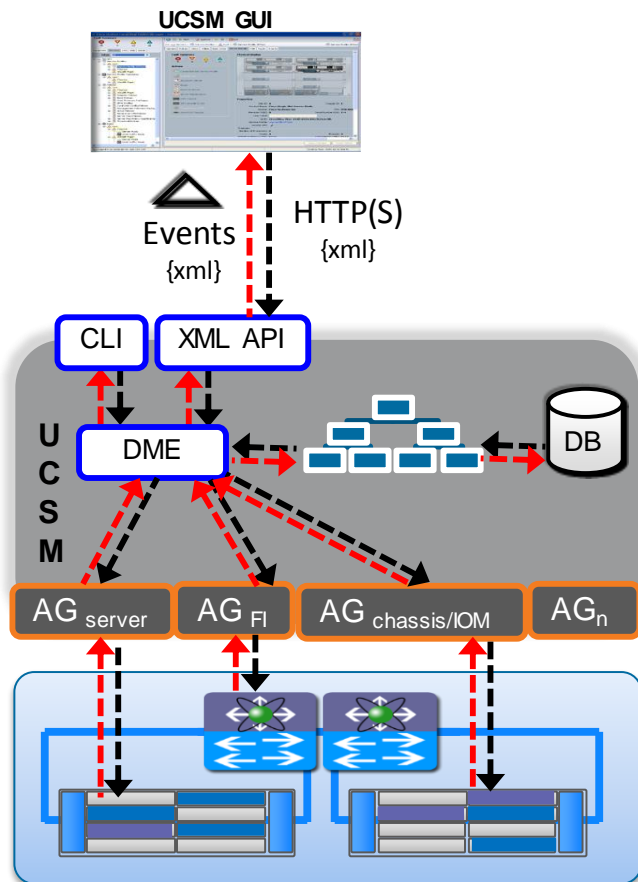
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Programmatic Infrastructure

- Comprehensive XML API, standards-based interfaces
- Bi-Directional access to physical & logical internals



Architecture of UCS Manager



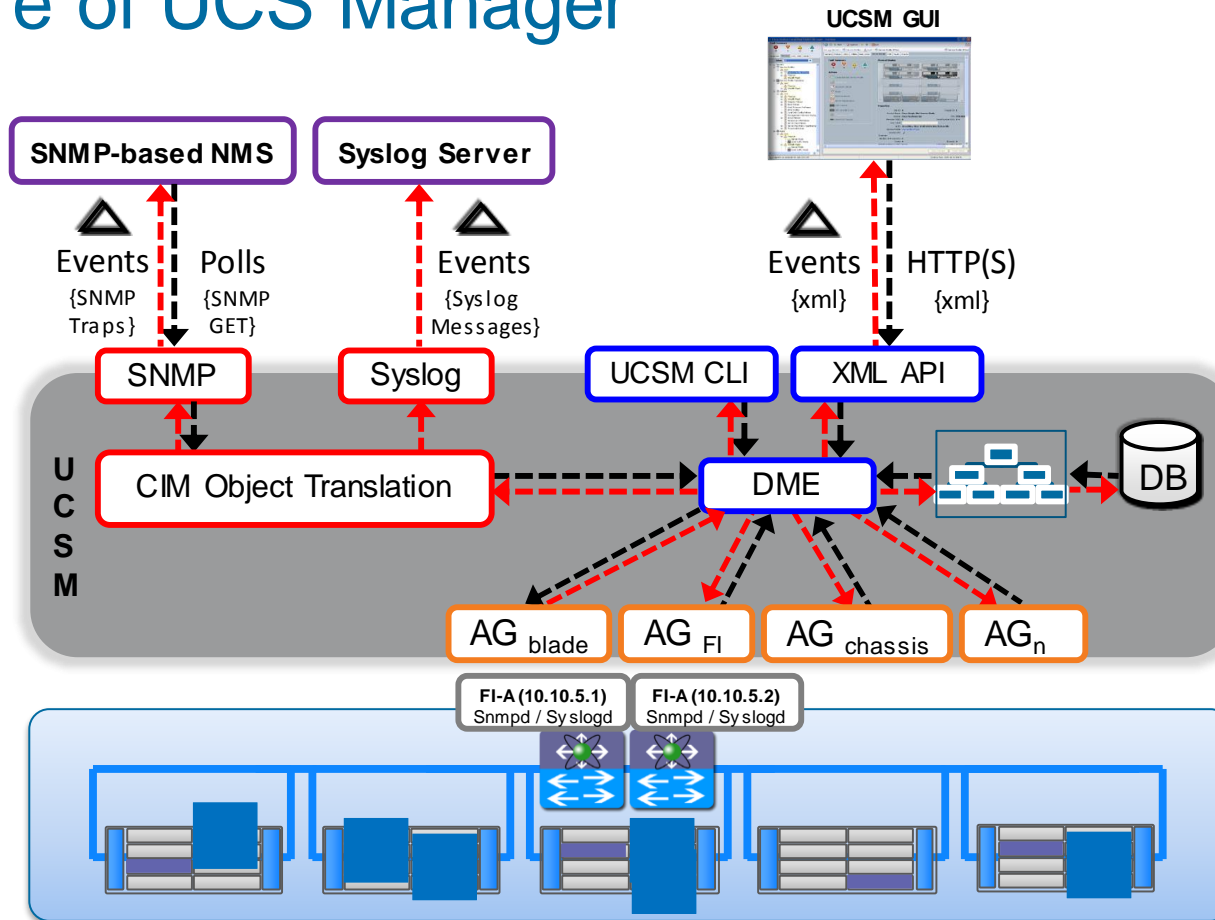
Data Management Engine (DME)

- “Traffic Cop” of the entire UCS Domain
- Entry point of XML API
- Owner of UCS XML Database
 - Physical Inventory (FI's, IOM's, FEX's, Servers w/components, Chassis)
 - Logical Configuration (Service Profiles, Connectivity Templates, Pools, Policies)
- Manages configuration, inventory, health of all end points
- Manages and monitors FSM task sequence execution handled by AG's

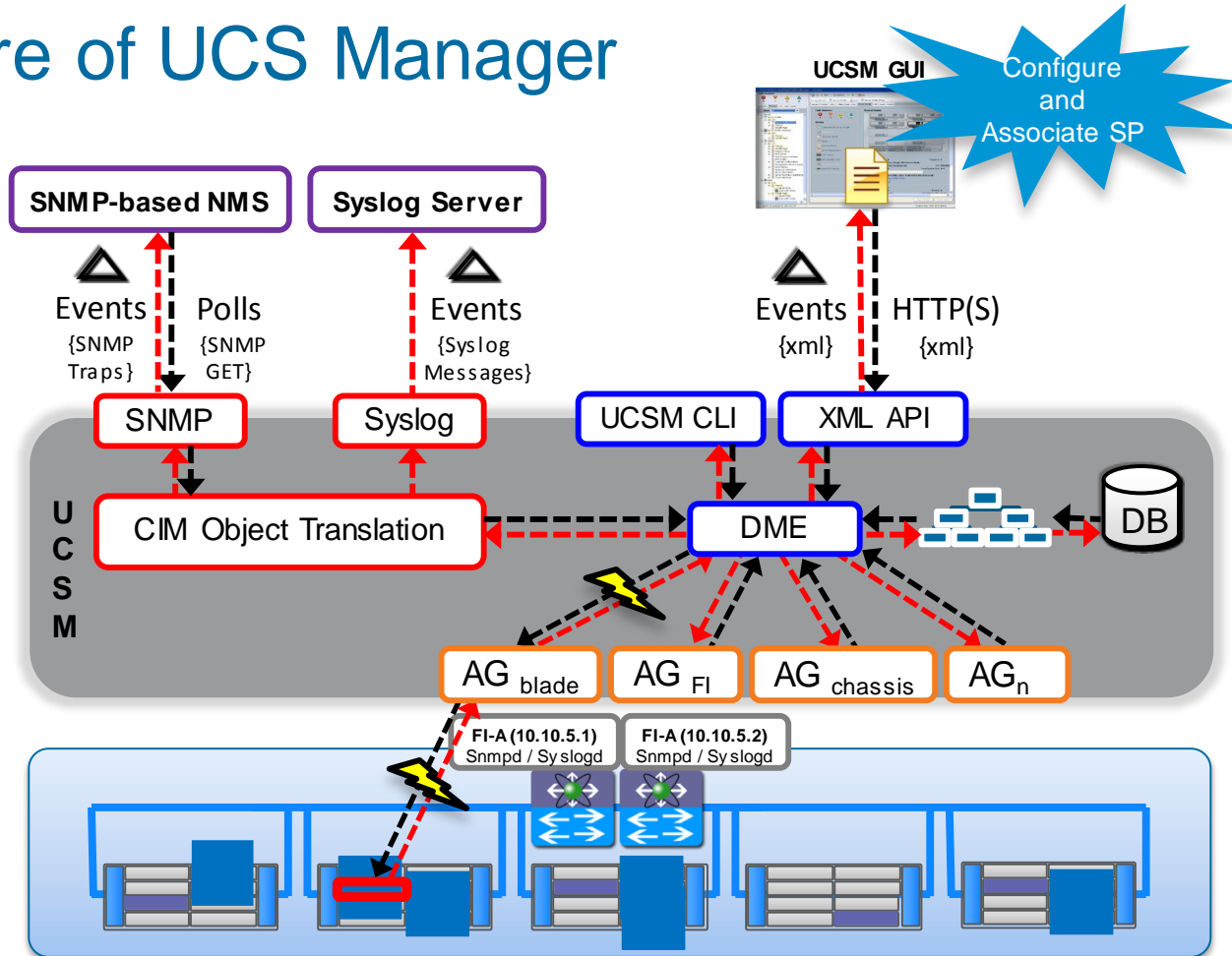
Application Gateways (AG)

- “Worker Bee” for a particular type of endpoint in UCS Domain
- Monitors health and state of endpoints in UCS Domain
- Configures endpoints to desired state configuration as defined by input from DME as the UCS XML Database mutates
 - Executes stimuli for FSM tasks on end point
 - Reports back to DME the ongoing status of task success or failure

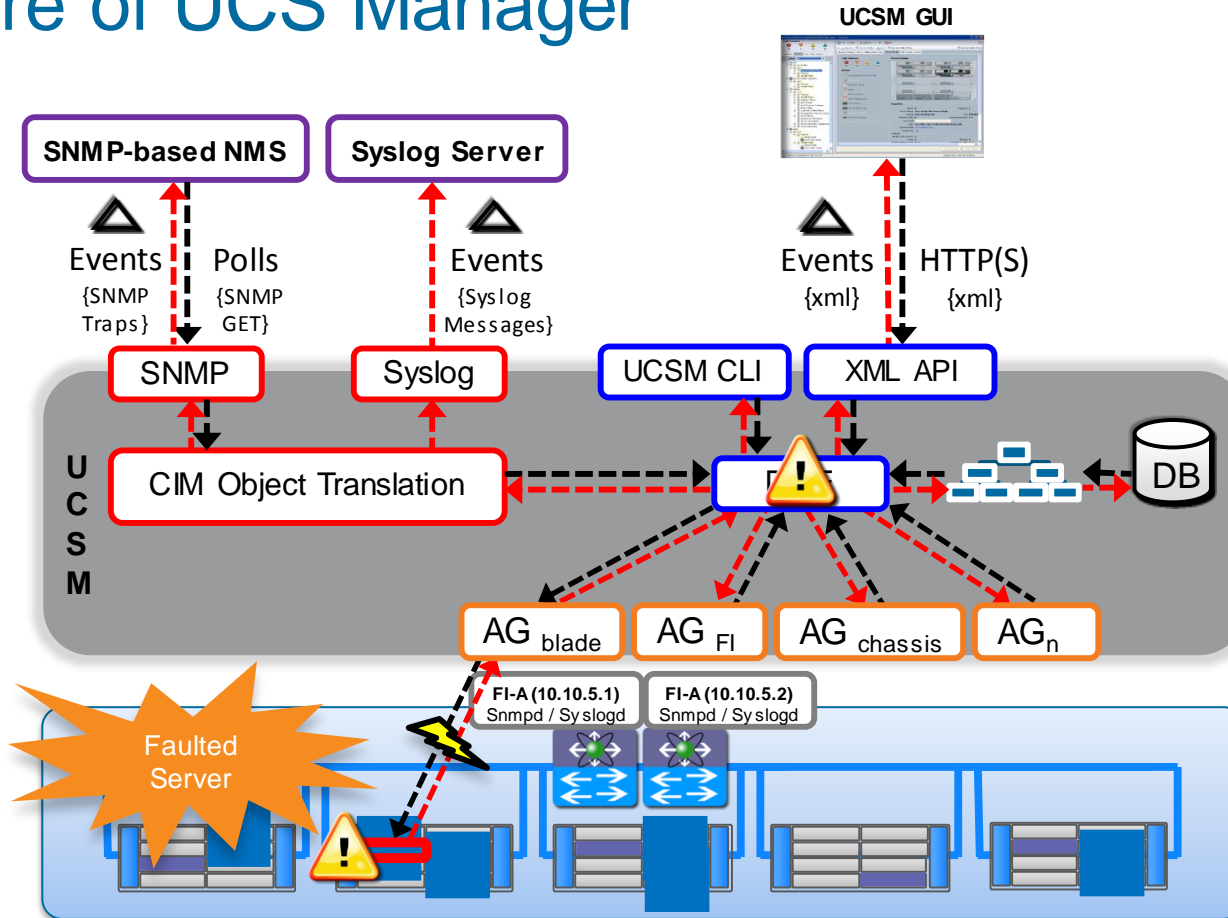
The Core of UCS Manager



The Core of UCS Manager



The Core of UCS Manager





UCS Notifications: Finding The Needle In The Haystack

Definition #1 : UCS Events

- Object managed by UCSM
 - Immutable
- Examples:
 - Server power on
 - Turn off locator LED
- Causes
 - Non-persistent condition
- Persistence
 - None
- Properties
 - Affected Object
 - Description
 - Cause
 - User
 - Code

The screenshot displays the UCSM management interface. On the left, the 'Fault Summary' panel shows counts for different fault types: 13 (Critical), 88 (Major), 15 (Minor), and 42 (Warning). Below this, a navigation pane shows 'Faults, Events and Audit Log' with 'Events' selected. The main area on the right shows a table of events. The table has two columns: 'Affected object' and 'Code'. The events listed are related to the locator LED on various rack units.

Affected object	Code
sys/rack-unit-1/locator-led	E4194990
sys/rack-unit-1/locator-led	E4194990
sys/rack-unit-1/locator-led	E4194990
sys/rack-unit-2/locator-led	E4194990
sys/rack-unit-2/locator-led	E4194990

UCS Event Examples

Enable Locator LED

The screenshot shows the UCS Event Manager interface. At the top, a table lists events. The 'Cause' column for several events is circled in purple. Below the table, a 'Properties for: event' dialog box is open, showing details for event E4194990. The 'Affected Object' is 'sys/rack-unit-2/locator-led', the 'Cause' is 'transition', and the 'Code' is 'E4194990'. These three fields in the dialog are also circled in purple.

Code	ID	Cause	Created at	User	Description
95317	9439849	transition	2013-04-15T09:20:10.525	internal	[FSM:STAGE:STALE-FAIL]: sending update request to cnic(FSM:STAGE:...
95317	9439850	transition	2013-04-15T09:20:10.525	internal	[FSM:STAGE:REMOTE-ERROR]: Result: end-point-unavailable Code: unsp
95824	9439851	transition	2013-04-15T09:20:10.525	internal	[FSM:STAGE:STALE-FAIL]: Configuring external user access(FSM:STAGE:...
95824	9439852	transition	2013-04-15T09:20:10.525	internal	[FSM:STAGE:REMOTE-ERROR]: Result: end-point-unavailable Code: unsp
95795	9439833	transition	2013-04-15T09:20:10.525	internal	[FSM:BEGIN]: IOM offline(FSM:sam:dme:EquipmentIOCardMuxOffline)
95795	9439834	transition	2013-04-15T09:20:10.525	internal	[FSM:STAGE:END]: (FSM:STAGE:sam:dme:EquipmentIOCardMuxOffline:b

Properties for: event

General

Affected Object: **sys/rack-unit-2/locator-led**

Cause: **transition**

Created on: 2013-04-15T09:20:10.525

User: **internal**

Code: **E4194990**

OK Apply Cancel Help

```
PS C:\> Get-UcsEvent -Code E4194990
```

```
Affected : sys/rack-unit-2/locator-led
Cause    : transition
Changeset :
Code     : E4194990
Created  : 2013-04-15T09:20:10.525
Descr    : EquipmentLocatorLedSet)
Id       : 9439976
Ind      : state-transition
Severity : info
Trig     : special
TxId     : 17452229
User     : internal
Dn       : event-log/9439976
Rn       : 9439976
Ucs      : RCDN-UCS01
```

Definition #2 : UCS Fault


- Object managed by UCSM
 - Mutable
 - Includes operational state
- Causes
 - Instance of failure in UCS
 - Alarm Threshold
- Persistence
 - Remain until resolved AND cleared
 - Controlled by collection policy
- Properties
 - Severity
 - Last transition
 - Affected Object
 - Description
 - ID
 - Type
 - Cause
 - # of Occurrences
 - Original Severity
 - Previous Severity
 - Highest Severity

UCS Fault Example


Thermal Error

Details

Summary

Severity:  **Critical**
Last Transition: **2013-04-15T14:35:30**

Actions

 Acknowledge Fault

Properties

Affected object: **sys/chassis-2**
Description: Thermal condition on chassis 2. IOM-B reports: IOM unable to get thermal sensor reading from blades(2); IOM-A reports: Thermal sensor reading not available from blades(2);
ID: 9443872
Type: **environmental**
Created at: **2013-04-15T12:15:53**
Cause: **thermal-problem**
Number of Occurrences: **7**
Original severity: **Critical**
Previous severity: **Critical**
Highest severity: **Critical**

```
PS C:\> Get-UcsFault -Code F0411 | ft
```

Ack	Cause	Code	Created	Descr	HighestSeverity	Id	LastTransition
---	----	-----	-----	-----	-----	--	-----
no	thermal-problem	F0411	2013-04-15T12:1...	Thermal conditi...	critical	9443872	2013-04-15T14:

Clearing and Acknowledging Faults

- Requisites for Removal
 - Resolve Fault Condition (Clear)
 - Acknowledge Fault
- Removal Methods
 - Manual
 - Automated with Policy
 - Global Fault Policy
 - Scripted
- Other Factors
 - Retention Interval
 - Flapping/Soaking Interval

The screenshot displays the Cisco Unified Computing System Manager interface for RCDN-UCS01. The top section shows a 'Fault Summary' with 14 cleared, 87 major, and 12 minor faults. The left pane shows a tree view of the system hierarchy, including Chassis 1, Chassis 2, and Chassis 3, with various components like Fans, IO Modules, PSUs, and Servers. The right pane shows a list of faults with columns for Severity, Code, ID, Affected object, Cause, Last Transition, and Description. Below this, the 'Details' section for a specific fault (F37614) is shown, including a 'Summary' with severity 'Cleared' and a 'Properties' section with details like 'Affected object: sys/chassis-1/blade-1/board/cpu-1' and 'Cause: new-link'.

Severity	Code	ID	Affected object	Cause	Last Tra...	Description
✓	F37614	9453938	sys/chassis-1...	new-link	2013-04-15T...	TCA: processorEnvStats temperatureAvg, recovered above
✓	F37614	9453834	sys/chassis-1...	new-link	2013-04-15T...	TCA: processorEnvStats temperatureAvg = 63.000000, raised above 62.
⚠	F0181	9453877	sys/chassis-1...	equipm...	2013-04-15T...	Local disk 1 on server 1/1 operability: inoperable. Reason: Firmware Dete
⚠	F0461	3170702	sys/chassis-1...	log-cap...	2012-10-29T...	Log capacity on Management Controller on server 1/1 is very-low

Details

Summary

Severity: **Cleared**
Last Transition: 2013-04-15T19:26:38

Actions

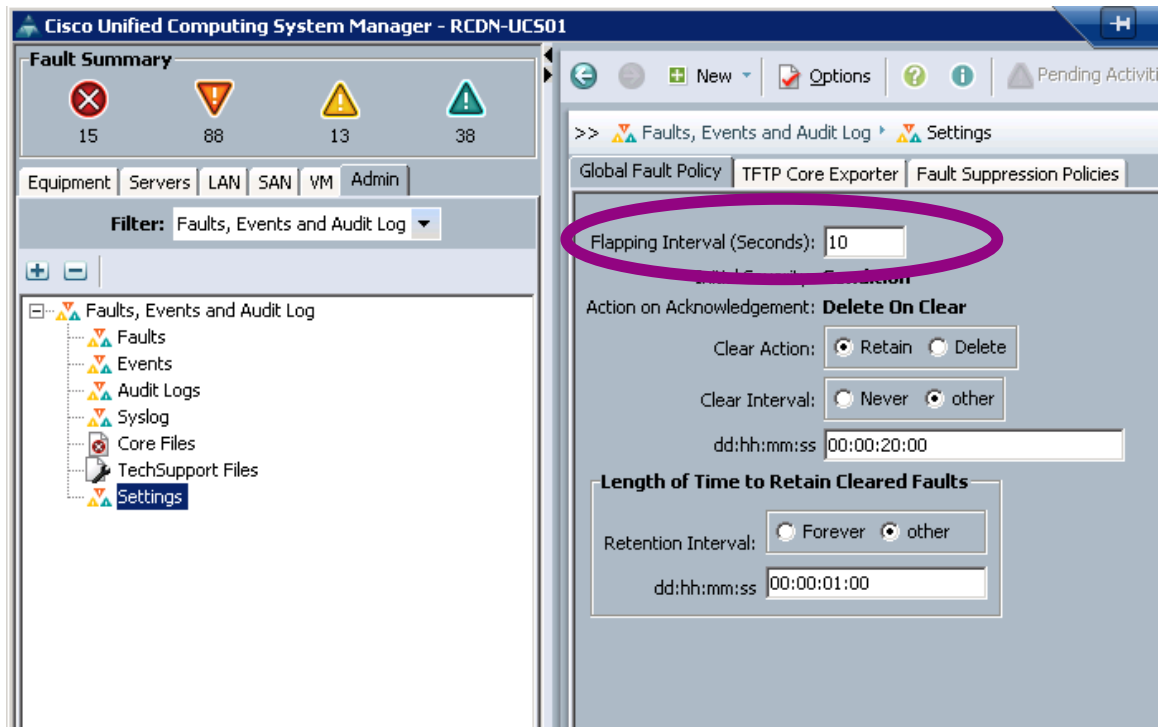
✓ Acknowledge Fault

Properties


Affected object: sys/chassis-1/blade-1/board/cpu-1
Description: TCA: processorEnvStats temperatureAvg, recovered above
ID: 9453938
Cause: new-link
Code: F37614
Original severity: Minor
Previous severity: Minor
Type: s
Created at: s
Number of Occurrences: 2
Highest severity: M




Flapping/Soaking Interval


- Time between fault raised and condition cleared
- Prevents excessive notifications
 - “Flapping”
 - e.g. “interface down”
- User Definable
 - Admin > Settings > Global Fault Policy






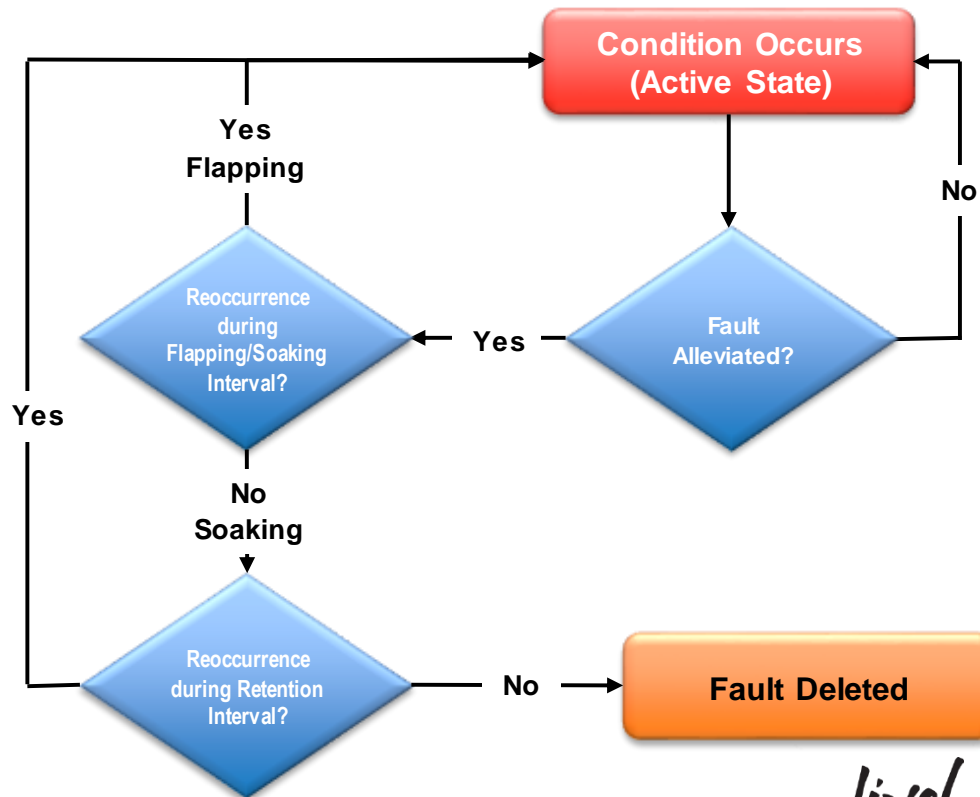
Fault Lifecycle

 soaking

Seve...	Code	ID	Affected object
 	F37614	9374820	sys/chassis-1/blade-1/board...
	F37614	9374791	sys/chassis-1/blade-1/board...

 flapping

Seve...	Code	ID	Affected object
 	F37614	9374791	sys/chassis-1/blade-1/board...
	F37614	9374688	sys/chassis-1/blade-1/board...

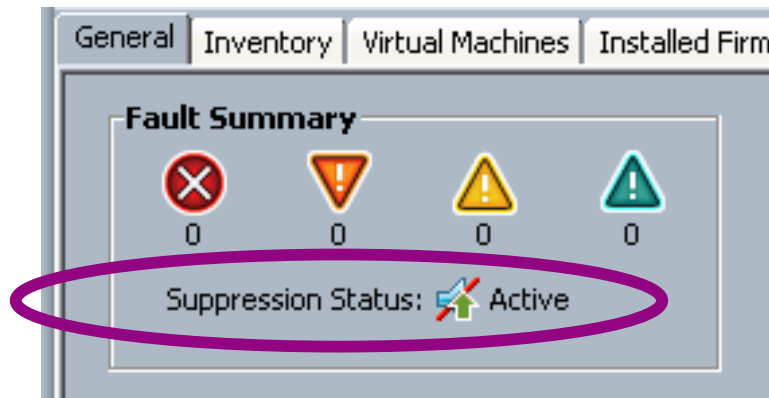


A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a pedestrian bridge spans the street, and various city buildings are illuminated with lights. The overall scene is a dynamic urban environment.

Configuring Notifications in UCSM

Fault Suppression

- Faults maintained in UCSM
- What's Suppressed?
 - SNMP Traps
 - Call Home Notifications
- Duration
 - Fixed time interval
 - Manually Stopped
 - Schedule
- Policies
 - Pre-defined in UCSM
 - Admin > Faults, Events... > Settings > Fault Suppression Policies





Using Fault Suppression Demo

Fault Suppression – Demo

Select Device:

- Chassis
- IOM
- Server
- Service Profile
- Organisation

The screenshot displays the Cisco UCS Manager interface. On the left, a tree view shows the hierarchy: Equipment > Chassis > Chassis 1 > Servers > Server 5. The 'Fault Summary' section at the top shows four status icons with counts: 14 (red X), 86 (orange exclamation mark), 12 (yellow exclamation mark), and 38 (green checkmark). The 'Physical Display' section shows a rack of servers. The 'Status' section indicates the overall status is 'Unassociated'. The 'Actions' list includes various server management tasks, with 'Start Fault Suppression' highlighted by a purple circle and a purple arrow pointing to it from the left pane.

Fault Summary

Equipment: Servers LAN SAN VM Admin

Filter: All

Equipment

- Chassis
 - Chassis 1
 - Fans
 - IO Modules
 - PSUs
 - Servers
 - Server 1
 - Server 2
 - Server 3
 - Server 4
 - Server 5
 - Server 6
 - Server 7
 - Adapters
 - Chassis 2
 - Chassis 3
- Rack-Mounts
 - PEX
 - Servers
- Fabric Interconnects

Fault Summary

0 0 0 0

Status

Overall Status: **Unassociated**

Actions

- Create Service Profile
- Associate Service Profile
- Get Desired Power State
- Boot Server
- Shutdown Server
- Reset
- Recover Server
- Server Maintenance
- KVM Console
- SSH to CIMC for SoL
- Turn on Locator LED
- Start Fault Suppression**

Physical Display

Properties

Slot ID: 5

Product Name: **Cisco UCS B200 M2**

Vendor: **Cisco Systems Inc**

Revision: 0

Name:

User Label:

UUID: **ab92a872-11ab-11e0-b694-d8d385**

Service Profile:

Locator LED: ☒

Summary

Number of Processors: 2

Cores: 12

Effective Memory (MB): **98304**

Operating Memory Speed: **N/A**

Arbiters: 1

A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on the left. The overall scene is a dynamic urban environment.

Notification Tools

UCS Fault SNMP Traps

- **cucsFaultActiveNotif**
 - Sent when a fault is active, or when any of the fault attributes change
 - Severity changes, number of occurrences changes...
- **cucsFaultClearNotif**
 - Sent when a fault is cleared
- Trap Variable Bindings help to identify the nature and cause of the problem

UCS Fault SNMP Trap VarBinds

- **Fault Instance ID (Table INDEX):** A unique integer identifying the fault
- **Affected Object DN:** The distinguished name of the MO that has this fault
- **Affected Object OID:** The OID of the MO that has this fault
- **Creation Time:** the time when the fault object was created
- **Last Modification:** the time when any of the attributes below were modified
- **Code:** A code providing specific information about the nature of the fault
 - 1400 fault codes: board power error, link down, fan module identity...
- **Type:** The type of the fault (broad categorisation)
 - 9 fault types: environmental, management, equipment...
- **Cause:** A probable cause of the fault
 - 241 fault probable causes: firmware upgrade problem, equipment offline, power problem...
- **Severity:** The severity of the fault
 - 6 fault severities: minor, major, critical, clear...
- **Occurrence:** the number of time this fault has occurred since it was created
- **Description:** a human readable string providing more information about the fault, including possibly more information about the probable cause

UCS Manager Fault Types

Type	Description
fsm	UCSM was executing a Finite State Machine (FSM) and the FSM failed to complete successfully, or UCSM is retrying one of the FSM stages
equipment	UCSM has detected a physical component is inoperable, such as component health problems, equipment missing or unidentified
Server	UCSM is unable to complete a server task. For example, it is unable to associate a Service Profile to a blade, or a blade server has diagnostic failures
configuration	UCSM was unable to successfully configure a component
environmental	UCSM has detected an environmental issue, such as power problems, thermal problems, voltage problems, or loss of CMOS settings
management	UCSM has detected a serious management issue, such as failing to start critical services, failing to elect the primary switch, detecting that a management service has become unresponsive, or detecting software version incompatibilities
connectivity	UCSM has detected a connectivity issue to one of its components
network	UCSM has detected a network link failure
operational	UCSM has detected an operational issue, such as a log datastore reaching its maximum capacity, being unable to transfer files, or being unable to discover components

UCS Errors and System Messages

- UCS Faults and Error Messages Reference Guide

- UCS Faults Spreadsheet

- Fault Codes

- Not all user Threshold Codes included

- Call Home

- Diagnostic
 - Environmental

- Go to:

- http://www.cisco.com/en/US/products/ps10477/products_system_message_guides_list.html

The screenshot shows the Cisco website's navigation bar with links for Products & Services, Support, How to Buy, and Training & Events. Below the navigation bar, the page title is "Cisco Unified Computing System Error and System Messages". A left-hand navigation menu lists various links, with "Error and System Messages" highlighted. The main content area includes a note about opening links in a new browser window, a "View Documents by topics" dropdown menu, and a list of links for UCS 2.x, UCS 1.x, and Related Documentation.

Worldwide

CISCO

Products & Services Support How to Buy Training & Events

Cisco Unified Computing System

Error and System Messages

HOME
SUPPORT
PRODUCT SUPPORT
SERVERS - UNIFIED COMPUTING
CISCO UNIFIED COMPUTING SYSTEM
TROUBLESHOOT AND ALERTS
Error and System Messages
Field Notices
Troubleshooting Guides
Troubleshooting TechNotes

Some links below may open a new browser window () to display the

View Documents by topics Choose Topic

UCS 2.x
[Cisco UCS Faults and Error Messages Reference Guide, Release 2.2\(3\)](#) **New**
[Cisco UCS Faults and Error Messages Reference Guide, Release 2.1\(3\)](#) **New**
[Cisco UCS Faults and Error Messages Reference, Release 2.0](#)
[Cisco UCS Faults Spreadsheet, Release 2.0](#)

UCS 1.x
[Cisco UCS Faults and Error Messages Reference](#)

Related Documentation
[Cisco UCS Manager Configuration Guides](#)

Fault Reference Guide

- http://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ts/faults/reference/2-2/UCSFaultsErrorsRef_2-2.pdf

fltMemoryUnitDisabled

Fault Code:F0844

Message

DIMM [location] on server [chassisId]/[slotId] operState: [operState]DIMM [location] on server [chassisId]/[slotId] operState: [operState]

Explanation

This fault is raised when the server BIOS disables a DIMM. The BIOS could disable a DIMM for various reasons, including incorrect location of the DIMM or incompatible speed.

Recommended Action

If you see this fault, refer to the Cisco UCS B-Series Troubleshooting Guide for information on how to resolve the DIMM issues.



Error Message Decoder

- <http://www.cisco.com/cgi-bin/Support/Errordecoder/index.cgi>

- Limited info for UCS

- `%fsmRmtErrMgmtControllerUpdateUCSManager: start : [FSM:STAGE:REMOTE-ERROR]: Scheduling UCS manager update (FSM-STAGE:sam:dme:MgmtControllerUpdateUCSManager:start)`
- `%fsmFailMgmtControllerUpdateUCSManager : [FSM:FAILED]: sam:dme:MgmtControllerUpdateUCSManager`

The screenshot shows the Cisco Error Message Decoder web page. The top navigation bar includes links for Products & Services, Support, How to Buy, Training & Events, and Partners. The main heading is "Error Message Decoder". On the left, there is a sidebar with links for HOME, SUPPORT, and TOOLS & RESOURCES, with "Error Message Decoder" highlighted. The main content area has a "Select Software:" dropdown menu set to "Unified Computing System". Below it is a "Paste Error Message:" text box containing "%[FSM". There is a checkbox for "suggest related documents within results" which is checked, and a "Submit" button. The results section shows "Showing 1-5 of 784 results" and "Page: 1". The first result is: "1. %fsmFailAaaEpUpdateEp : [FSM:FAILED]: sam:dme:AaaEpUpdateEp". Below this, it says "None set." and provides a "Recommended Action" to copy the message exactly as it appears on the console or in the system log, and to research and attempt to resolve the issue using the tools and utilities provided at <http://www.cisco.com/tac>. It also refers to the Release Notes for Cisco UCS Manager and the Cisco UCS Troubleshooting Guide. Finally, it states "Related documents- No specific documents apply to this error message."

A long-exposure photograph of a city street at night. The background shows tall buildings with lit windows and a pedestrian bridge. The foreground is dominated by vibrant, multi-colored light trails from moving vehicles, creating a sense of motion and energy.

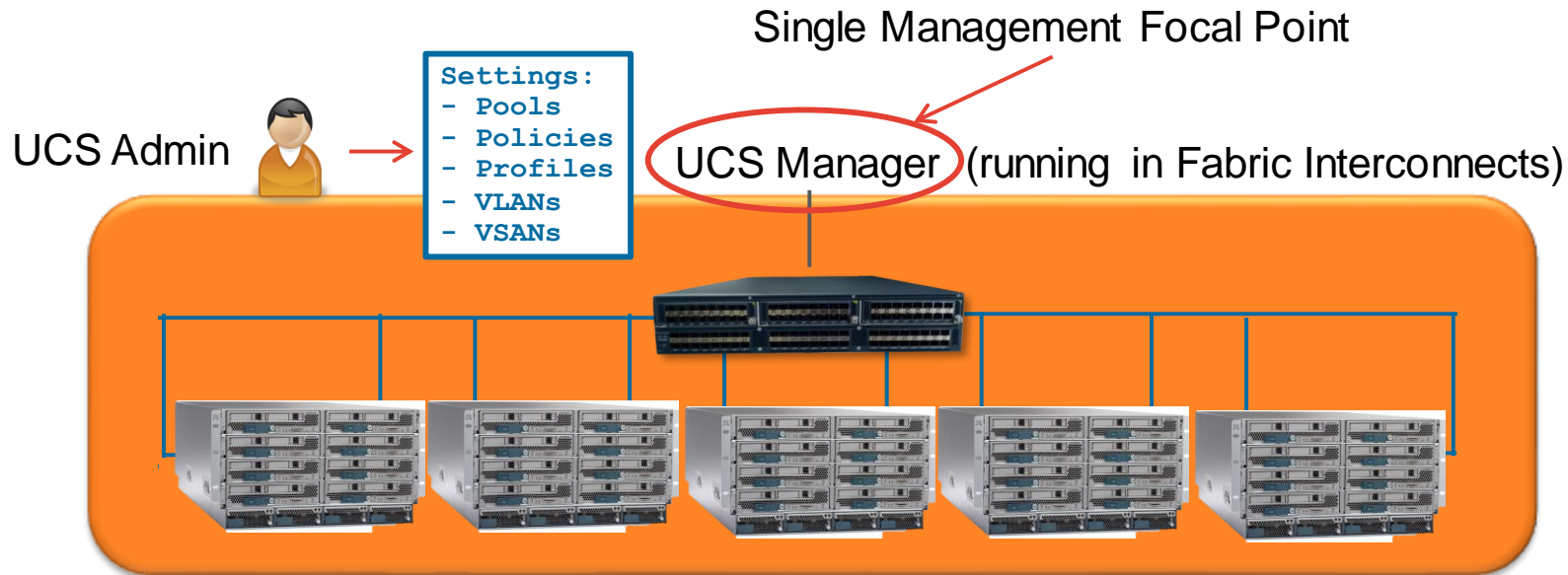
Scaling UCS Management with UCS Central

A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on poles to the left.

Intro: Why UCS Central?

Management of Multiple UCS Systems - Review

Management of One UCS “Domain”



Many physical servers – Up to 160 (blade or rack-mount)

1 “manager” for entire UCS “Domain” or “pod” or “system” or “instance”

Management of Multiple UCS Systems - Review

UCS Admin



Settings:

- Pools
- Policies
- Profiles
- VLANs
- VSANS

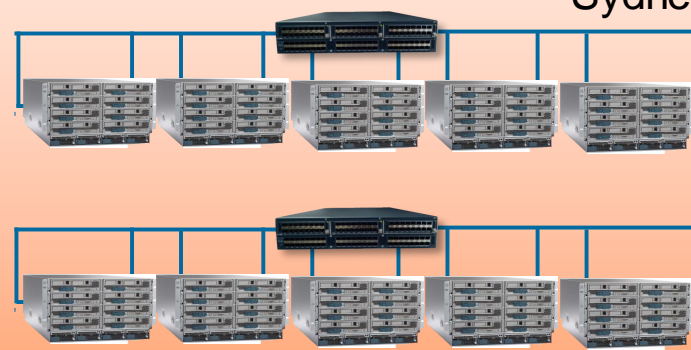


UCS Central will Simplify & Enhance
Your Multi-UCS Management

Melbourne



Sydney



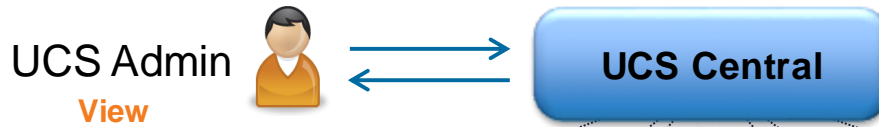
Perth



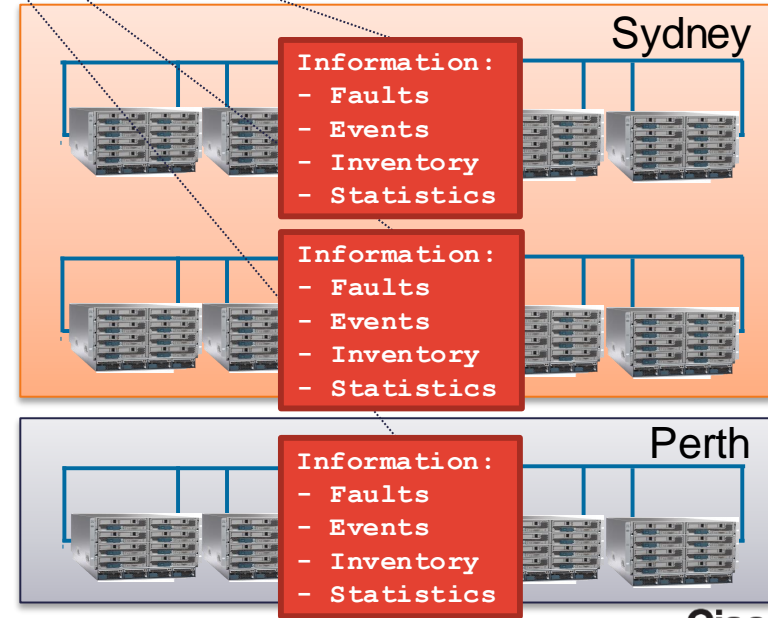
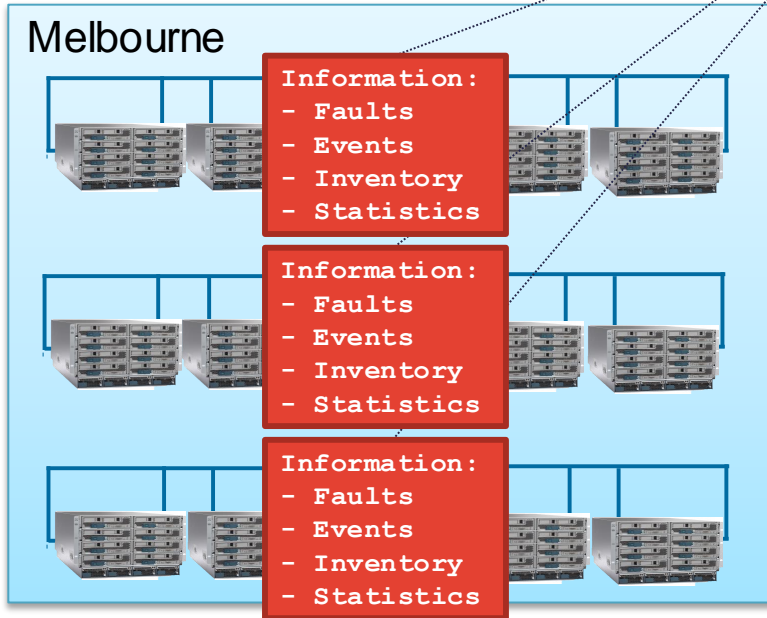
A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on the left side.

Role of UCS Central

UCS Central: High-level Logical View



1. UCS Information Dashboard
2. UCS Configuration Tool
3. UCS Object Repository
4. UCS Workload Manager



UCS Central: High-level Logical View

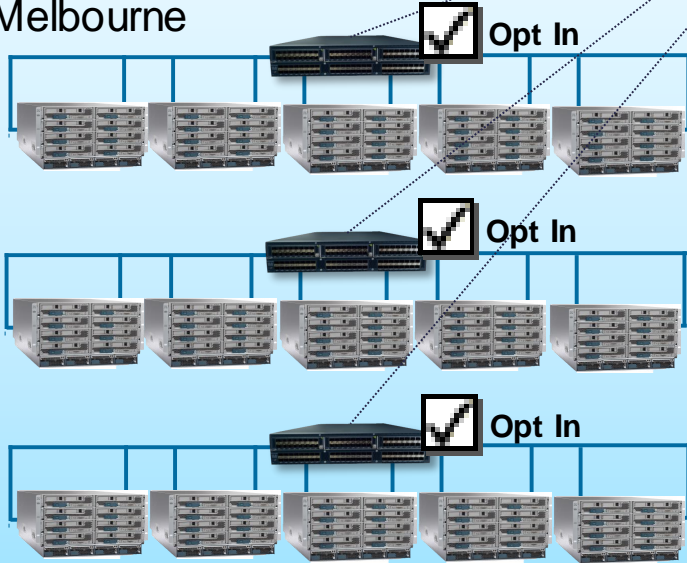
UCS Admin
Configure



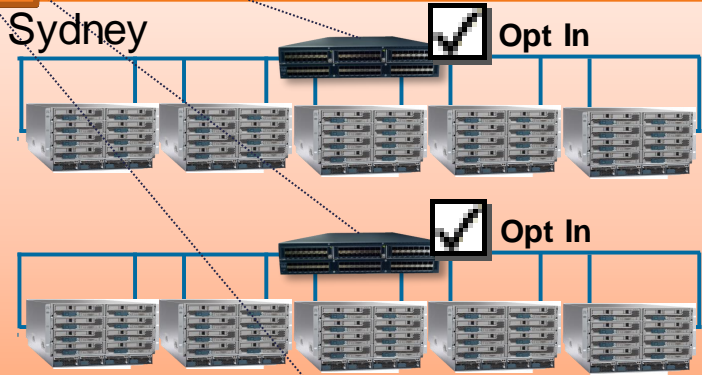
Domain Settings:
- Authentication
- Date/Time
- Monitoring
- Firmware
- Backup/Restore
- And more...

1. UCS Information Dashboard
2. UCS Configuration Tool
3. UCS Object Repository
4. UCS Workload Manager

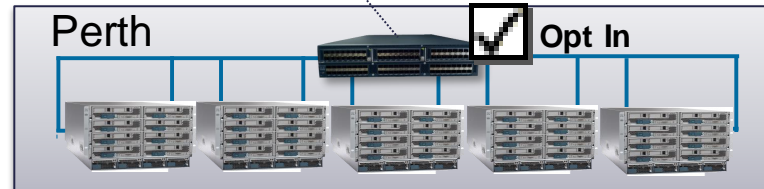
Melbourne



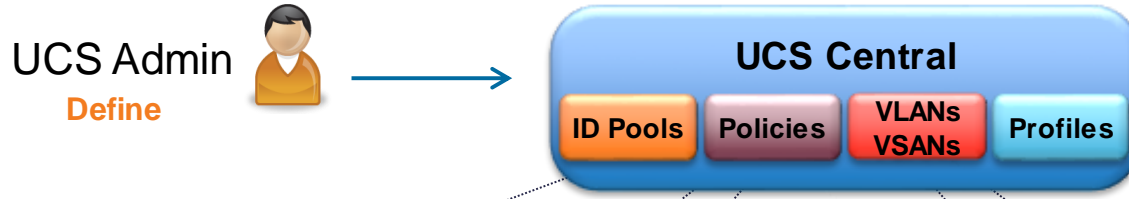
Sydney



Perth

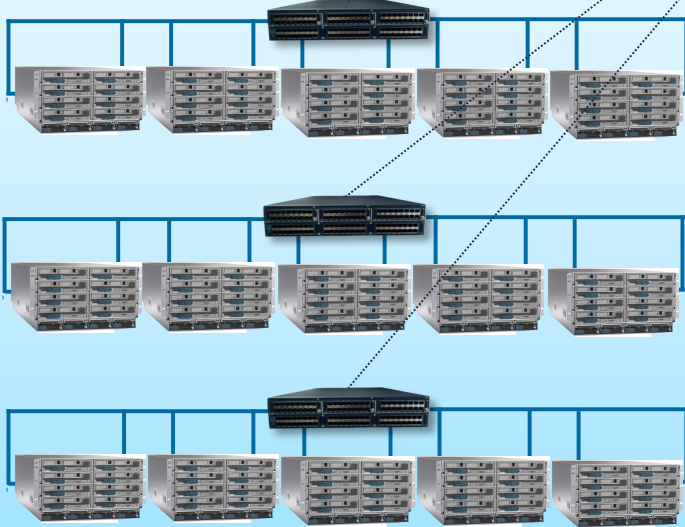


UCS Central: High-level Logical View



1. UCS Information Dashboard
2. UCS Configuration Tool
3. UCS Object Repository
4. UCS Workload Manager

Melbourne



Sydney



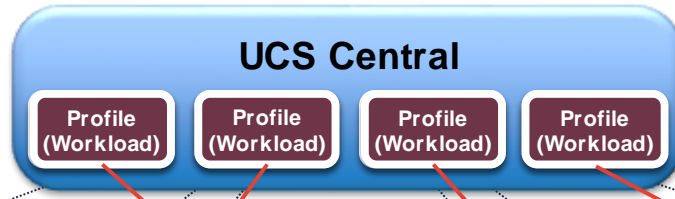
Perth



UCS Central: High-level Logical View



Define
Place
Control
Change
Move

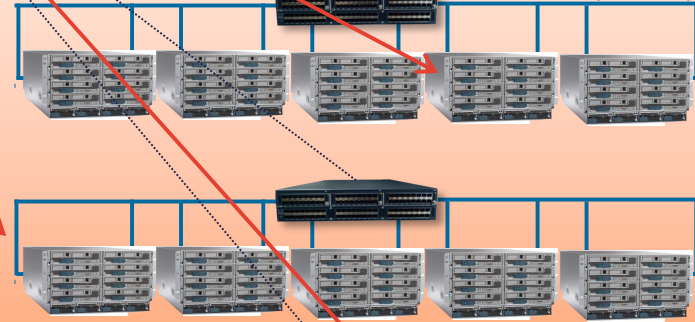


1. UCS Information Dashboard
2. UCS Configuration Tool
3. UCS Object Repository
4. UCS Workload Manager

Melbourne



Sydney



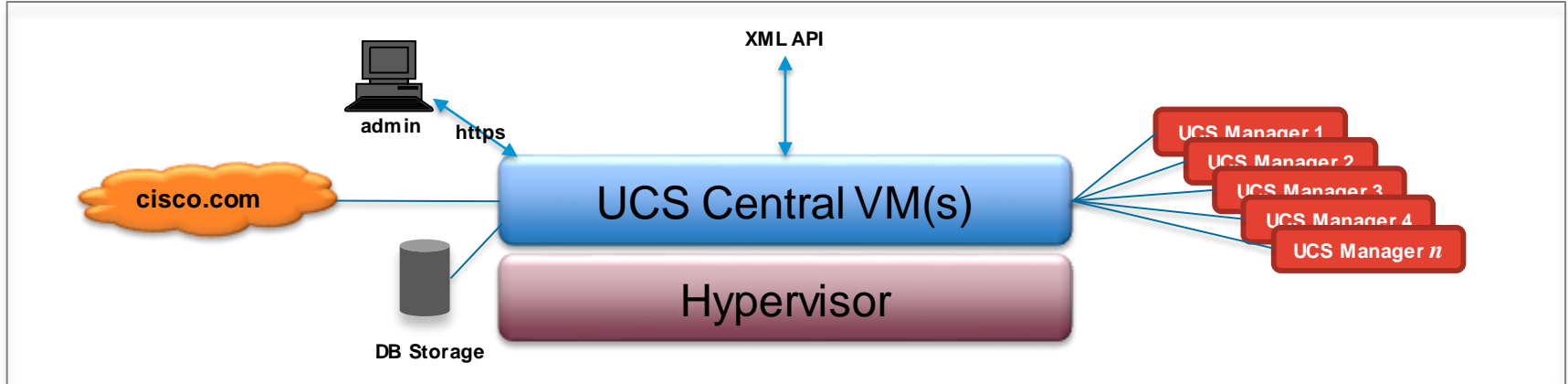
Perth



UCS Central: What Is It?

What Does It Look Like?

- External, VM-based management appliance
- Download as .OVA or .ISO from cisco.com
- Architecture:



Intro: UCS Central Capabilities

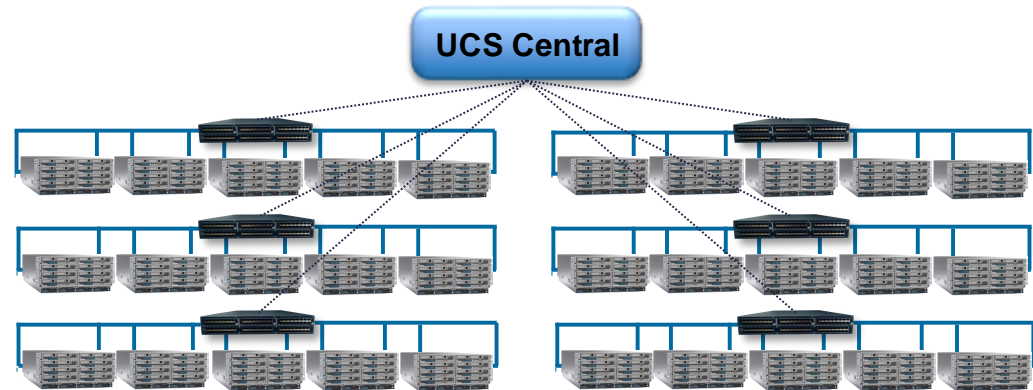
High-level Summary

Four Main Global Capabilities:

1. UCS Information Dashboard
2. UCS Domain Configuration Tool
3. UCS Object Repository
4. UCS Workload Manager



➔ What is it not?



A long-exposure photograph of a city street at night. The foreground is filled with vibrant, streaky light trails from moving vehicles, primarily in shades of yellow, orange, and red. In the background, a modern cityscape is visible with illuminated buildings and a pedestrian bridge spanning the street. The overall scene conveys a sense of dynamic urban activity.

Getting Started: Domain Registration

Enabling My UCS Domain

- UCS Central cannot manage a UCS Domain until it is “registered” with UCS Central
- Registration initiated by UCS Domain admin

The screenshot displays the Cisco Unified Computing System Manager (UCS Manager) interface. On the left, the 'Fault Summary' shows 0 errors, 0 warnings, 8 alerts, and 0 criticals. Below this, the 'Filter' is set to 'All'. The main pane shows the 'Actions' section with a red circle around the 'Register With UCS Central' button. A dialog box titled 'Register With UCS Central' is open, showing fields for 'Hostname/IP Address' and 'Shared Secret', and a 'Policy Resolution Control' section with an 'All Global' button. The dialog box also includes options for 'Infrastructure & Catalog Firmware' (Local/Global) and 'Date & Time' (Local/Global).

Requires UCS Manager 2.1+

What Happens During Domain Registration

- Shared Secret & Certificate exchange
- Initial Inventory: Hardware, Fault Counts, Local Objects (IDs, profiles, policies)
- Policy & Profile map definition established → Dependencies
- Initial feature exchange between UCSM and UCS Central
- Globalised Domain admin settings are resolved (if necessary) → Warning!
- Registration process may be automated – XML API

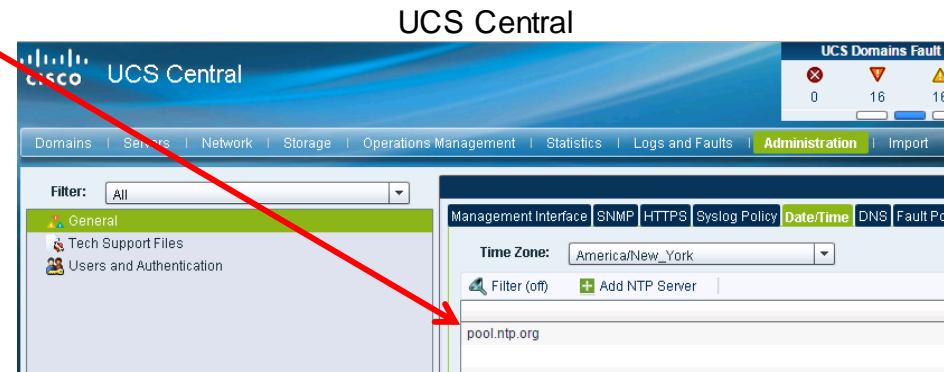
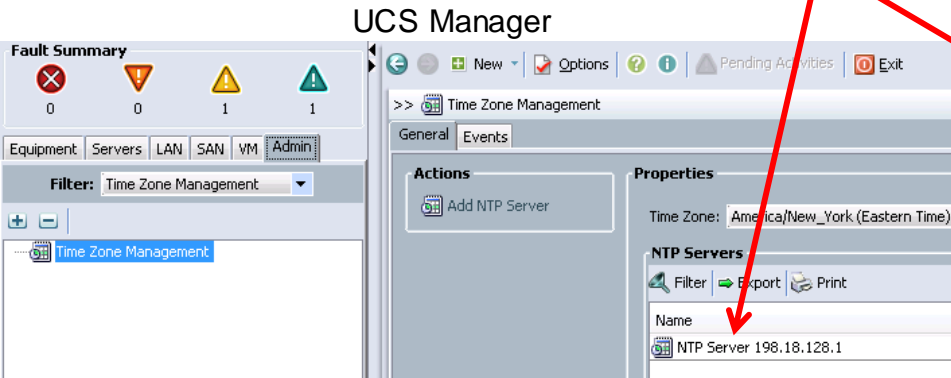


Note: Requires UCSM 2.1+

Domain Registration - Challenges

- Number 1 Issue = Time Synchronisation
- UCSM and UCS Central time must be identical
- Use NTP time source for
 - UCS Domain
 - UCS Central

Specify NTP Source



Cisco live!

Domain Registration with UCS Central

Common Questions

1. Does UCS Central “take over” my domain as soon as it is registered?
 - No - Registration “enables” UCS Central, but does not “empower” UCS Central
 - UCS Manager admin may enable policy specific control of Domain-wide settings
2. Can UCS Central make changes to a Domain upon Registration?
 - Technically, yes (but not by default) – Domain Group “auto-registration policies”

A nighttime photograph of a city street. In the background, there are several tall buildings with lit windows. A pedestrian bridge with a glass railing spans across the street. In the foreground, there are long, colorful light trails from cars, primarily in shades of yellow, orange, and red, indicating motion. The text "Using UCS Central – Changing UCS Management Paradigm" is overlaid in white on a dark horizontal band across the middle of the image.

Using UCS Central – Changing UCS Management Paradigm

UCS Central Use-Cases

1. Information Dashboard

- Inventory
- Faults/Logs
- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

4. Workload Manager

- Service Profile Usage & Placement



UCS Central Use-Cases

1. Information Dashboard

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UCS Central Use-Case: Domain Configuration

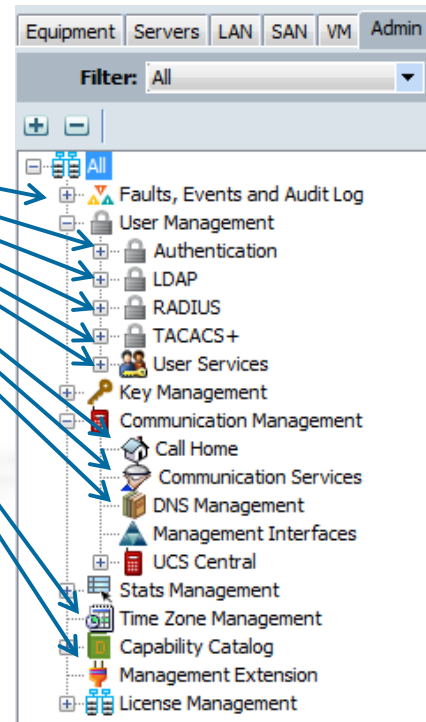
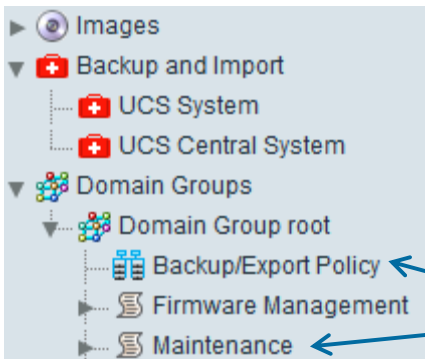
Globally Defined – Domain-wide Infrastructure Policies

Define UCS Infrastructure Operational Policies

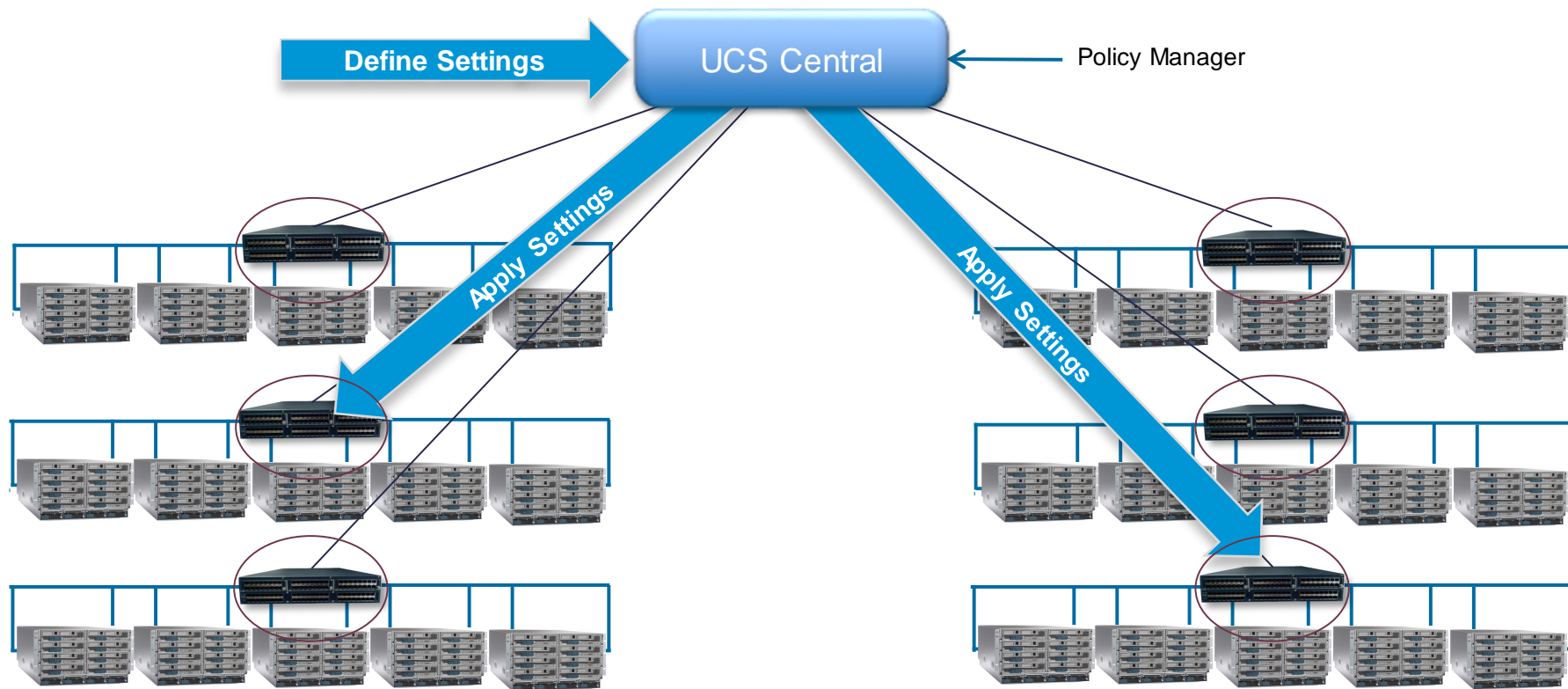
Settings can be controlled / enforced

Consistency

Define Operational Policies
for UCS Infrastructure



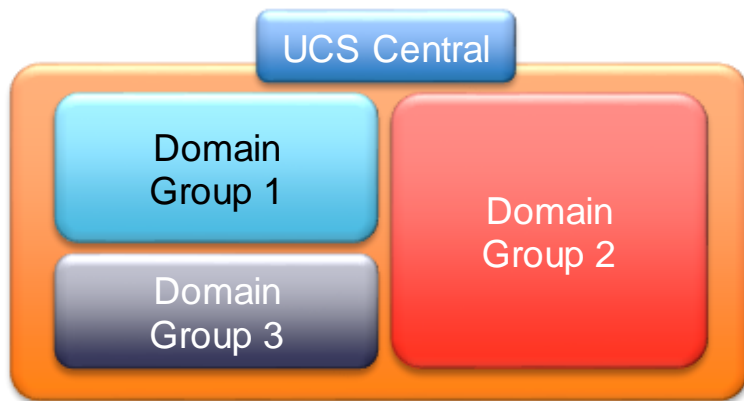
UCS Central – Global Configuration Policies



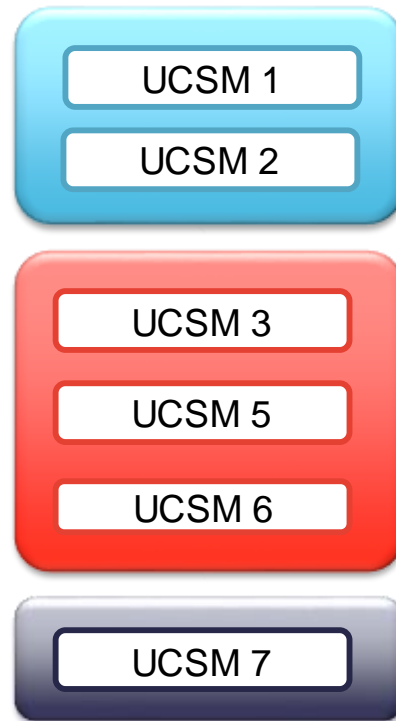
Each UCS Manager becomes the policy recipient and resolver

Controlling the Configuration

UCS Central Domain Groups



- **Domain Group (DG) is arbitrary grouping of UCS domains**
- Domains can be a part of only one DG at a time
- Policies defined in the DG are in effect for all domains in the DG
- Domains can move between DGs
- DG to DG move for domain can be disruptive depending on new policies
- Domain can auto-join DG based on qualification policies at registration



Using UCS Central Domain Groups – Opt In / Out

Example: Time Zone Management

Time Zone Policy:
US Central



Time Zone Management: ☒ Local ☐ Global



Time Zone Management: ☐ Local ☒ Global

Time Zone Policy:
US Eastern



Time Zone Management: ☒ Local ☐ Global



Time Zone Management: ☐ Local ☒ Global



Time Zone Management: ☐ Local ☒ Global

Time Zone Policy:
US Pacific



Time Zone Management: ☐ Local ☒ Global



UCS Manager → UCS Central Menu

Policy Resolution Control

All Global

Infrastructure & Catalog Firmware: ☒ Local ☐ Global

Time Zone Management: ☒ Local ☐ Global

Communication Services: ☒ Local ☐ Global

Global Fault Policy: ☒ Local ☐ Global

User Management: ☒ Local ☐ Global

DNS Management: ☒ Local ☐ Global

Backup & Export Policies: ☒ Local ☐ Global

Monitoring: ☒ Local ☐ Global

SEL Policy: ☒ Local ☐ Global

Power Allocation Policy: ☒ Local ☐ Global

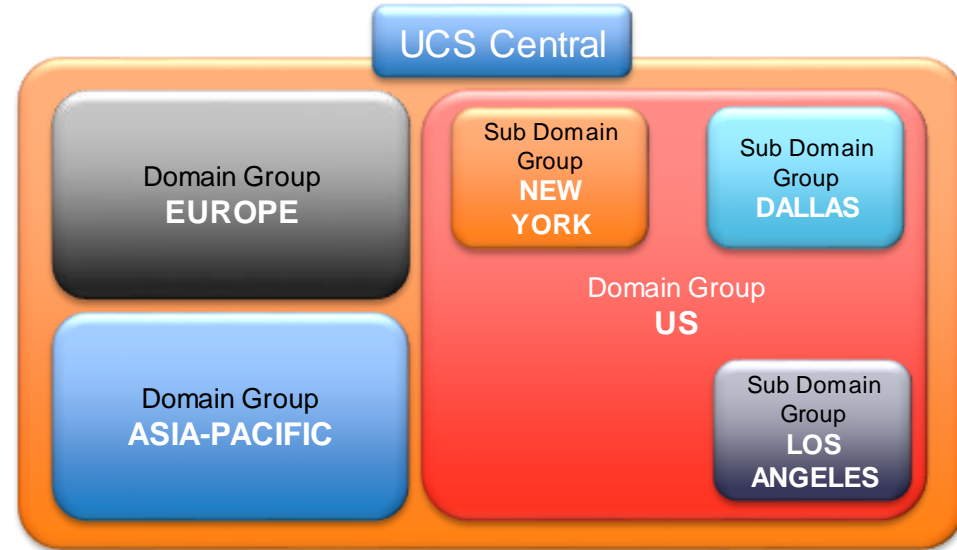
Power Policy: ☒ Local ☐ Global

UCS Central does not take control - Control is given

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UCS Central Domain and Sub Domain Groups

- Domain Groups can have up to 5 levels of sub domains
- Sub domains have hierarchical relationship with their parent
- Easy to manage policy exceptions while administering large number of UCS domains



Global Configuration Settings in Sub Domains

Domain Group: US

Date & Time: NTP
DNS
Remote Access
SNMP
Debug Settings
Call Home
Authentication (LDAP, Radius, TACACS)
Equipment Power and SEL policies
Firmware

Sub domain groups inherit properties from parent domain(s)
Easy way to manage exceptions to “master” policies
Exceptions get defined at the sub-domain level

Any domain in the sub-domain has all parent properties
+
the local policies defined at the sub-domain level

Sub Domain Group: New York

Date & Time: Time zone **US Eastern**



NEW YORK

Sub Domain Group: Dallas

Date & Time: Time zone **US Central**



DALLAS

Sub Domain Group: Los Angeles

Date & Time: Time zone **US Pacific**



LOS ANGELES

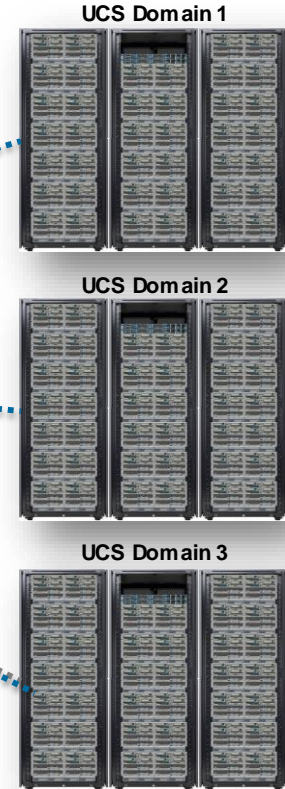
Global Configuration Policies - Standardisation

Global Admin Policies in a Domain Group

Date & Time: NTP, Time zone
DNS
Remote Access
SNMP
Debug Settings
Call Home
Authentication (LDAP, Radius, TACACS)
Equipment Power and SEL policies
Firmware

- Admin Policies are defined at the domain group
- Any domain that is a member of the DG inherits policies

Question: Are policies always inherited?



A horizontal banner image showing a nighttime city street scene. On the left, there are long, horizontal light trails in blue and red, likely from a train or tram. In the background, there are city buildings and streetlights, with a yellowish glow from the streetlights. The overall scene is a blurred, long-exposure shot of an urban environment at night.

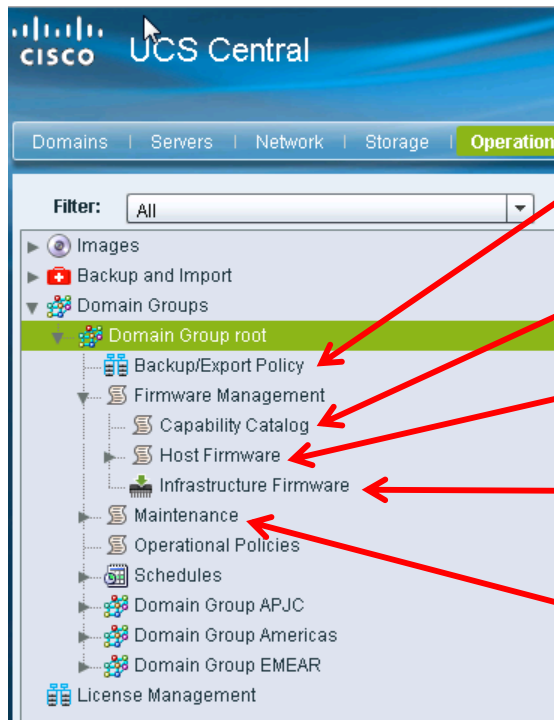
Configuration Policies Demo

Domain-wide Global Configuration Policies Demo

Administrative Configuration – Domain-wide Global Configuration Policies

- Domain Groups
 - Explore / Create
 - Membership
- Admin Policies
 - Create
 - Use
- UCS Manager Policy Resolution Control
 - Opt In / Out
 - Observe UCS Manager “effective settings”

Other Domain-wide Global Configuration Policies



Defines how member domains are backed up
(both full-state & config-all)

Defines capability catalog in use for member domains (opt-in)

Defines host firmware bundles available for Local Service Profiles only

Defines infrastructure firmware bundle in use member domains (opt-in)

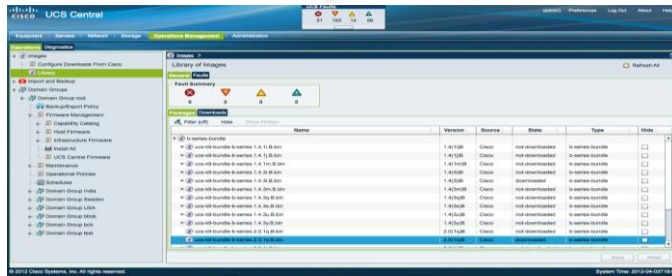
Defines maintenance policies available for Infrastructure
and Local Service Profiles

Global Configuration Policies – Firmware Management



Automated
Firmware versions
list downloads
from Cisco.com

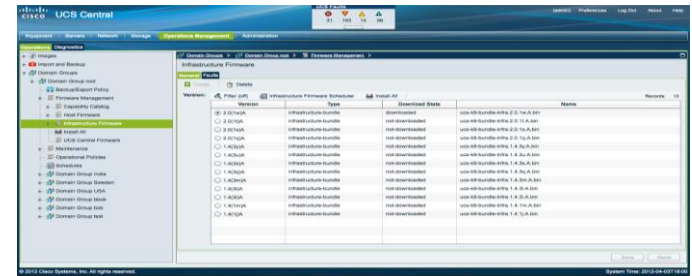
Cisco.com



UCS Central Firmware Library



Firmware Auto Install



Global Firmware Policies

UCS Central Use-Cases

1. Information Dashboard

- Inventory
- Faults/Logs
- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

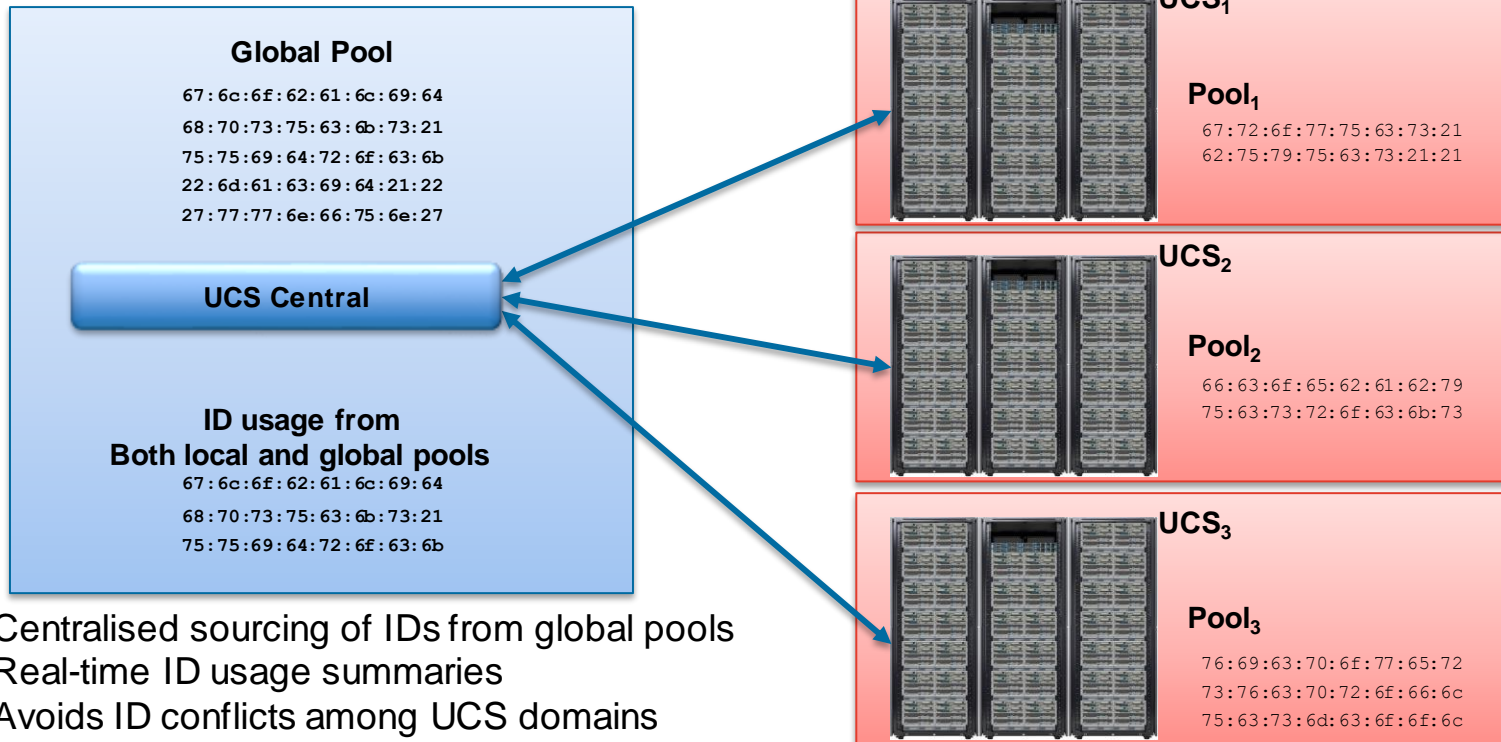
4. Workload Manager

- Service Profile Usage & Placement



UCS Central Use-Case: Object Repository

Global ID & ID Pool Management



UCS Central Use-Cases

1. Information Dashboard

- Inventory
- Faults/Logs
- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

4. Workload Manager

- Service Profile Usage & Placement

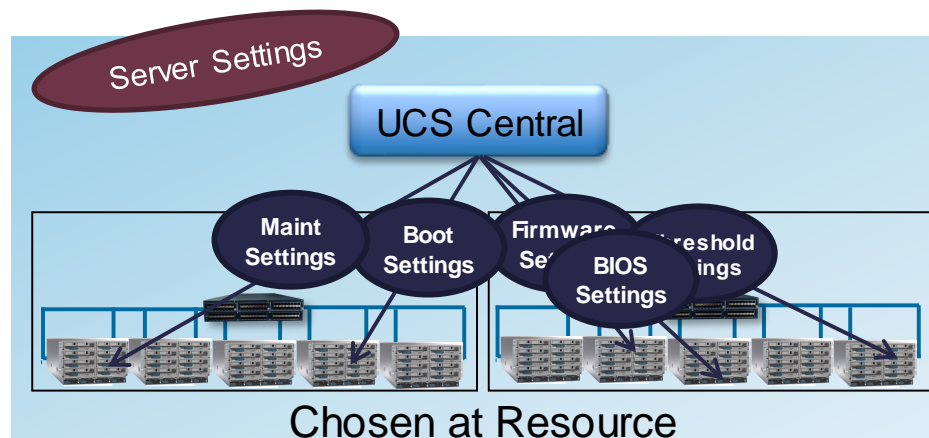
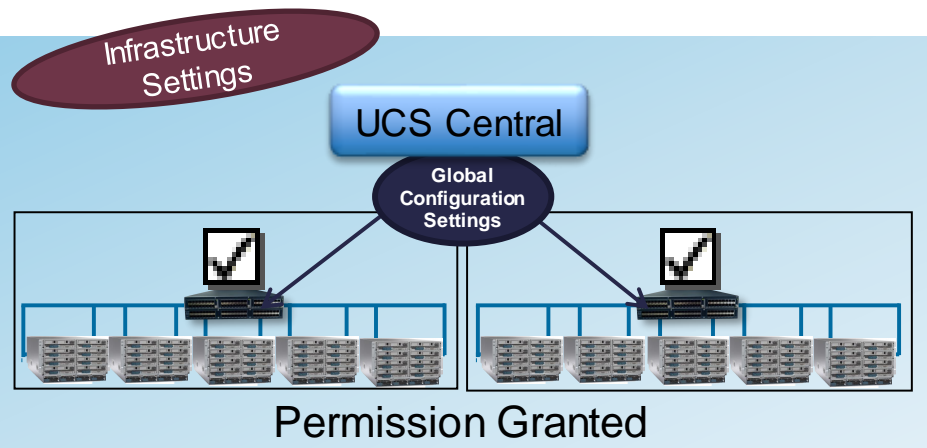


UCS Central Use-Cases – Object Repository

Global Policy Usage Scenarios

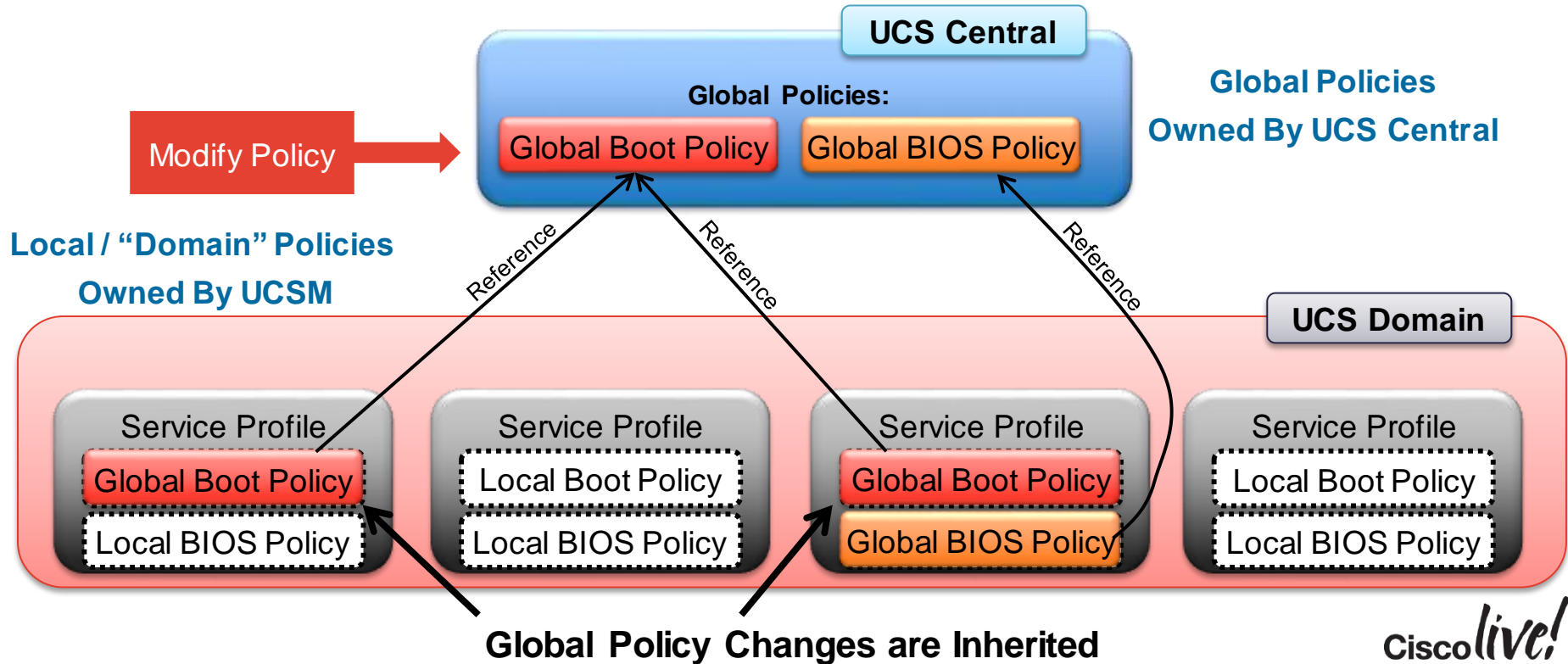
“Policies” used in two ways:

1. **Domain Configuration Settings** – Domain Admin “opts-in” to globally-defined Domain-wide Policy
2. **Server Settings** – Global Policy “Object” chosen from UCS Central Repository (database)



UCS Central Use-Cases – Object Repository

Global Resource Policy Object Ownership – Example

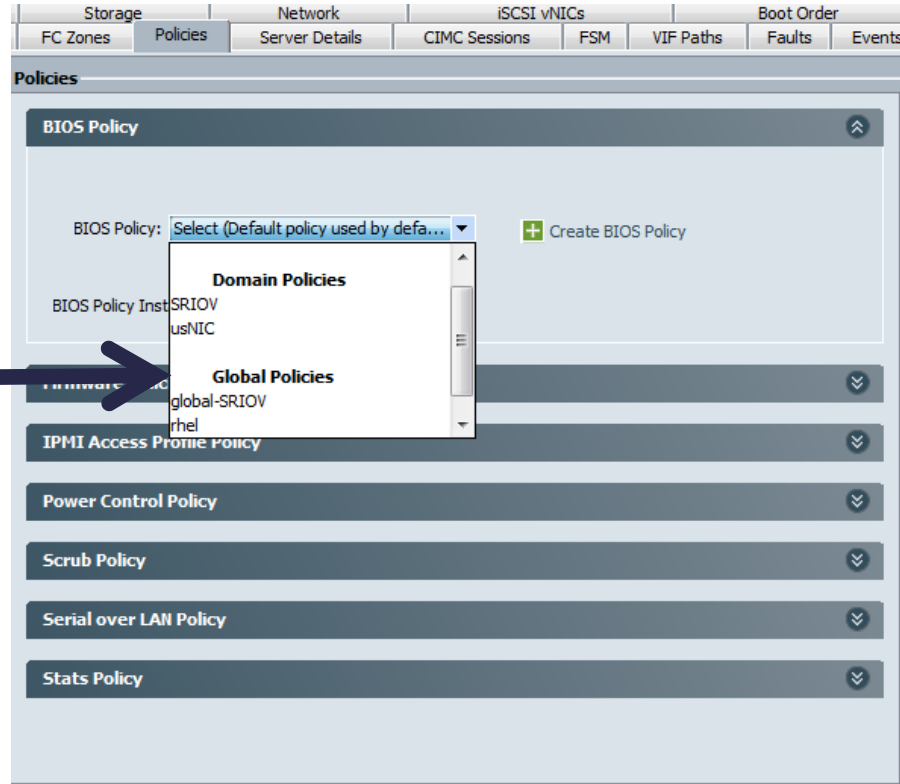


UCS Central Use-Cases – Object Repository

Global Policy Usage Scenarios: BIOS Policies

UCSM admin selects, either:

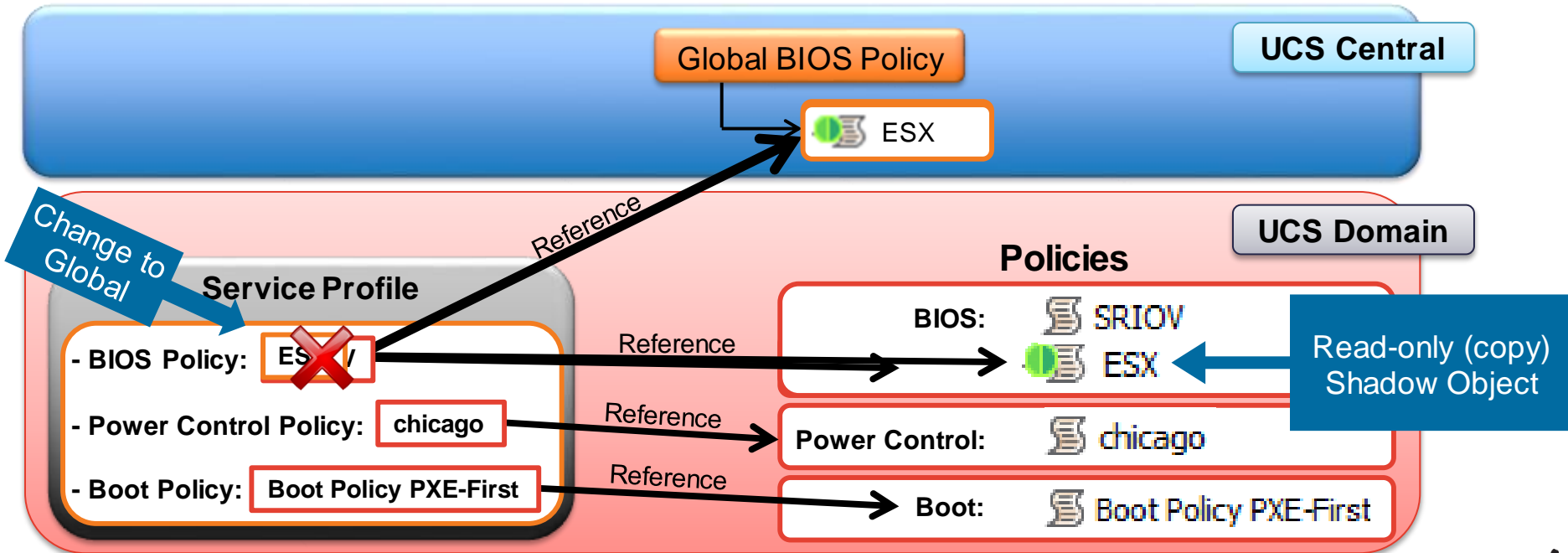
- Local (Domain) Policy
- Global Policy



UCS Manager

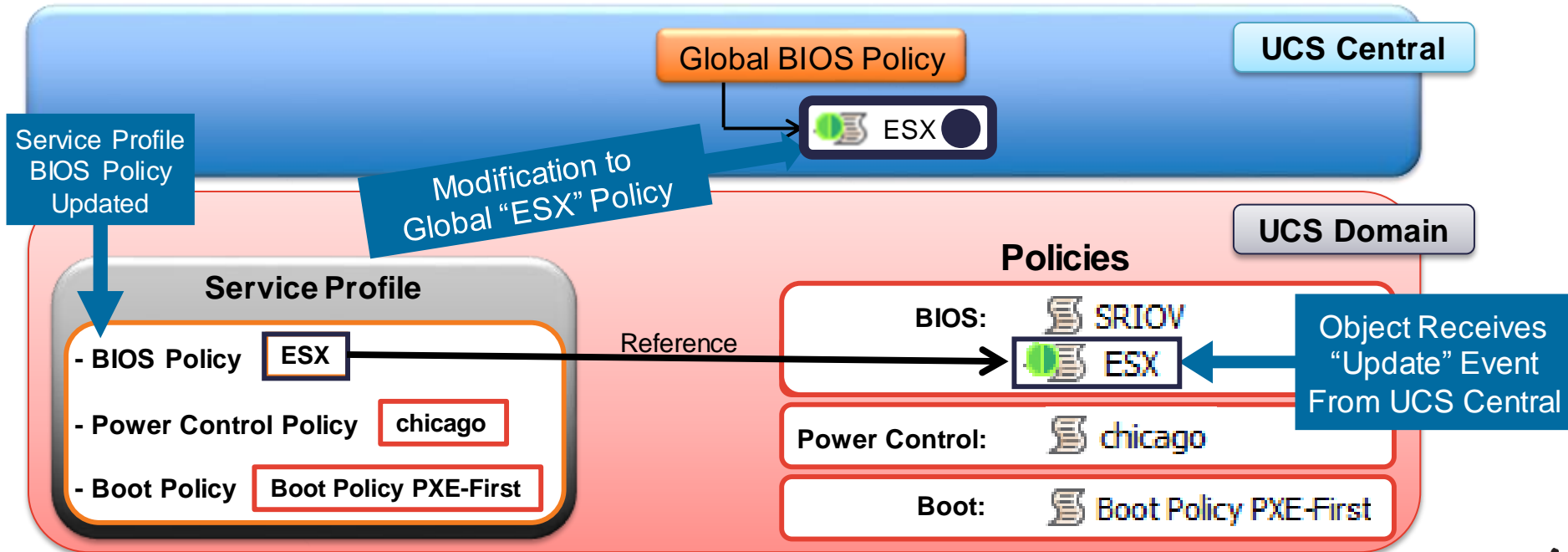
Where Does a Global Policy Live?

Shadow-Object Creation - Example



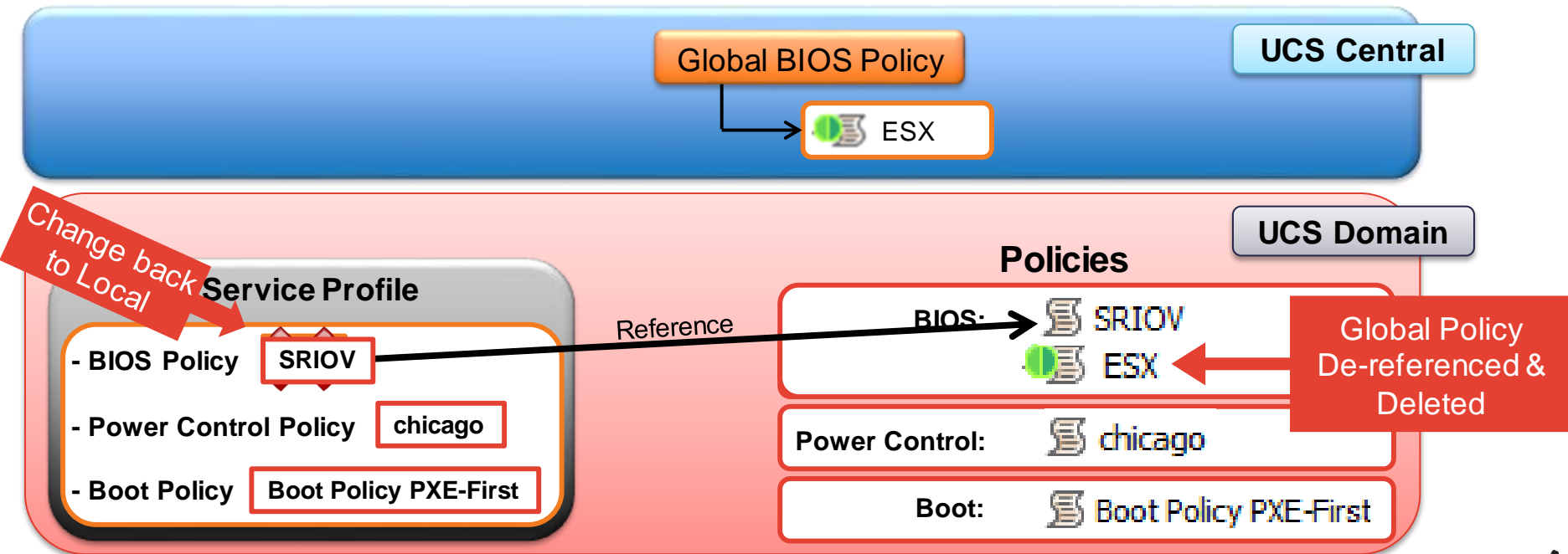
Where Does a Global Policy Live?

Shadow-Object Modification - Example



Where Does a Global Policy Live?

Shadow-Object De-reference - Example





Global Policies Demo

Controlling Server Settings with Global Policies Demo

Controlling Server Settings with Global Policies

- Create & Use Global Policies
 - Maintenance Policies
 - BIOS Policies
 - Others
- Change Global Policy
- Dereference Global Policy

UCS Central Use-Cases

1. Information Dashboard

- Inventory
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- Statistics

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- Connectivity Templates

4. Workload Manager

- Service Profile Usage & Placement



Workload Mobility

Requires: Common / Global Resources

Why – Common / Global Resources?

- ☑ Simplification → One “Source of Truth” vs. Many Disjoint Resources
 - ☑ Enforceability → Admin Policies can be Prescribed for Standardisation
 - ☑ Consistency → Same Experience in all UCS Domains
-
- Portability → Requires all of the above....

Analogy: Local Traffic Rules = Local Traffic Policies

- Two specific regions
 - Mainland China – RH driving
 - Hong Kong – LH driving
- Independent ecosystems
 - No problem
- Vehicle moves from Mainland China to Hong Kong?
 - Problem
- Need: Common “Driving” Policy
 - U.S. to/from Canada



Source: www.fastcompany.com/1660258/ingenious-flipper-bridge-melds-left-side-drivers-right-side-drivers and www.tourist-spots.lv21w.com

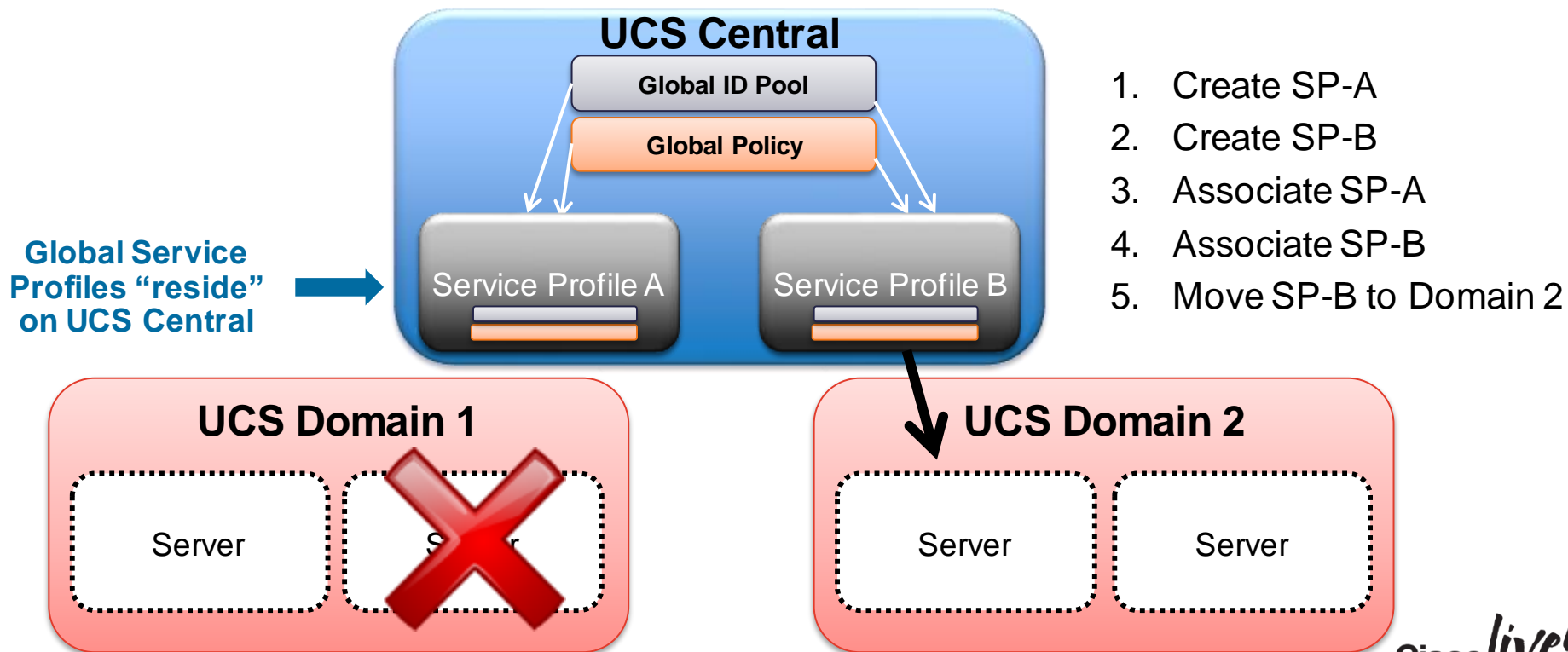
Workload Mobility

The “vehicle” for workload mobility is a Global Service Profile

The screenshot displays the Cisco UCS Central web interface. At the top, the 'Cisco UCS Central' logo is visible. A 'UCS Faults' summary bar shows counts for different fault types: 1 Critical (red X), 8 Major (red triangle), 4 Minor (yellow triangle), and 6 Informational (green triangle). The main navigation bar includes tabs for Domains, Servers, Network, Storage, Operations Management, Statistics, Logs and Faults, Administration, and Import. The 'Servers' tab is active, and the left-hand navigation tree shows a hierarchy: Servers > Global Service Profiles > root > rhel1. The 'rhel1' profile is selected and highlighted. The right-hand pane shows the configuration for 'rhel1' with tabs for General, Network, Storage, vNIC/HBA Placement, Boot Order, UCS Domain View, Policies, Status, Faults, and Events. The 'General' tab is active, displaying the 'Status' section with an 'Overall Status' of 'ok' (green up arrow). Below this, the 'Association' section shows 'Associate State' as 'associated' (green up arrow), 'Associated Server' as 'compute/sys-1008/chassis-1/blade-1', and 'UCS Domain' as 'ucs2'. The 'Assignment' section is partially visible at the bottom.

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Global Service Profiles



Global Server Pools

UCS Central

Static Pool

Custom

Server 1/1/1
Server 1/2/4
Server 3/4/6
Server 4/5/8

Dynamic Pool

Mem > 96000MB

Server 2/1/4
Server 3/2/4
Server 4/3/6
Server 4/5/8

Dynamic Pool

Chas/Slot = 2/8

Server 1/2/8
Server 2/2/8
Server 3/2/8
Server 4/2/8

Domain 1



Domain 2



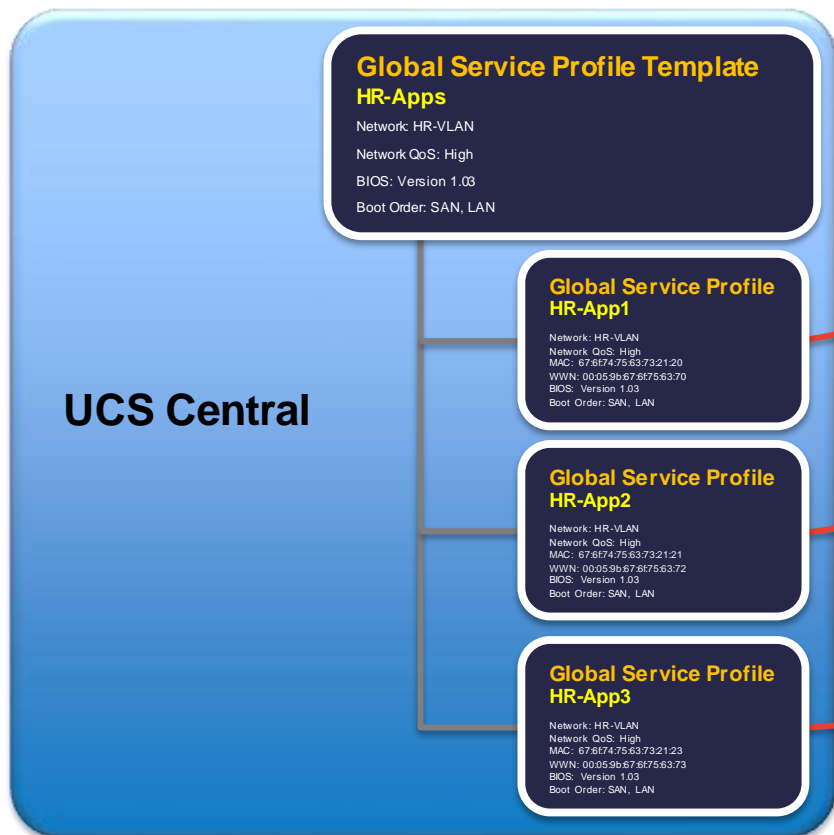
Domain 3



Domain 4

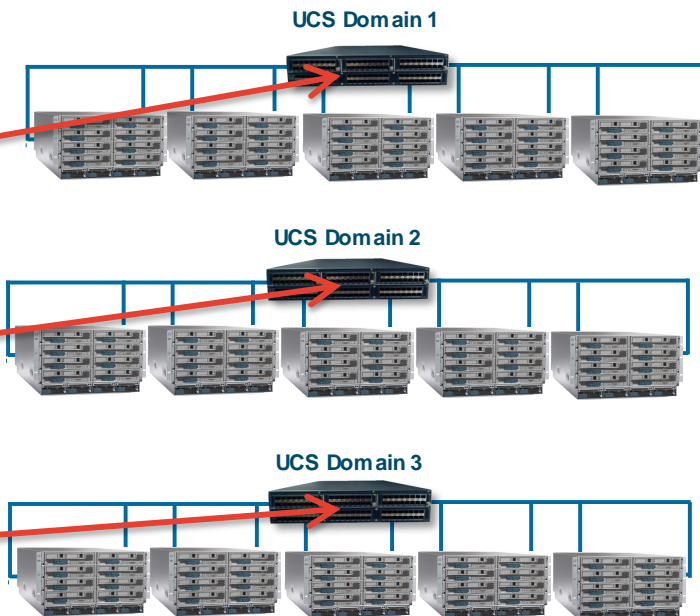


Global Service Profile Templates



Global Service Profile Templates may:

- Leverage “Global Server Pools”
- Be “Updating” or “Initial”



How Does a Global Service Profile Look in UCSM?

Global Service Profile



Global Policy



The screenshot displays the Cisco Unified Computing System Manager (UCSM) interface. The left pane shows a tree view of the UCSM hierarchy. The 'Servers' node is expanded, showing 'Service Profiles' and 'Policies'. Under 'Service Profiles', the 'root' node is highlighted with a yellow box. Under 'Policies', the 'root' node is also highlighted with a yellow box, and the 'global-hyperthr' policy is highlighted with a green box. The right pane shows the 'Fault Summary' and 'Status' sections. The 'Fault Summary' section shows 0 faults. The 'Status' section shows the overall status as 'Ok' and details for the 'Desired Power State' (Up), 'Assoc State' (Associated), and 'Assigned State' (Assigned). A note at the bottom states: 'Note: The "Desired Power State" is the Power State of the server set via UCSM. It may be therefore different from the actual value. For the actual server power state click the "Server Details" Tab'.

UCS Central Use-Cases

1. Information Dashboard

- Inventory
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- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

4. Workload Manager

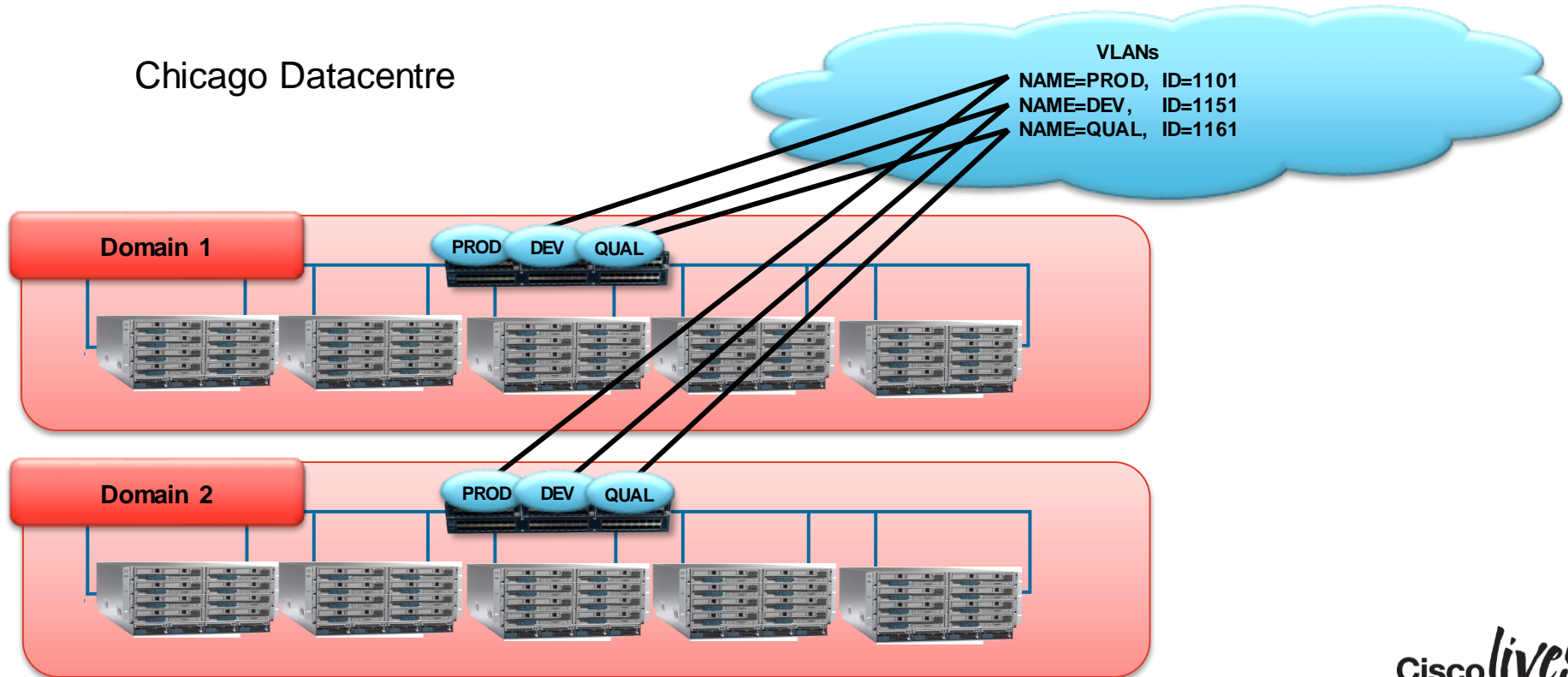
- Service Profile Usage & Placement



Connectivity Templates

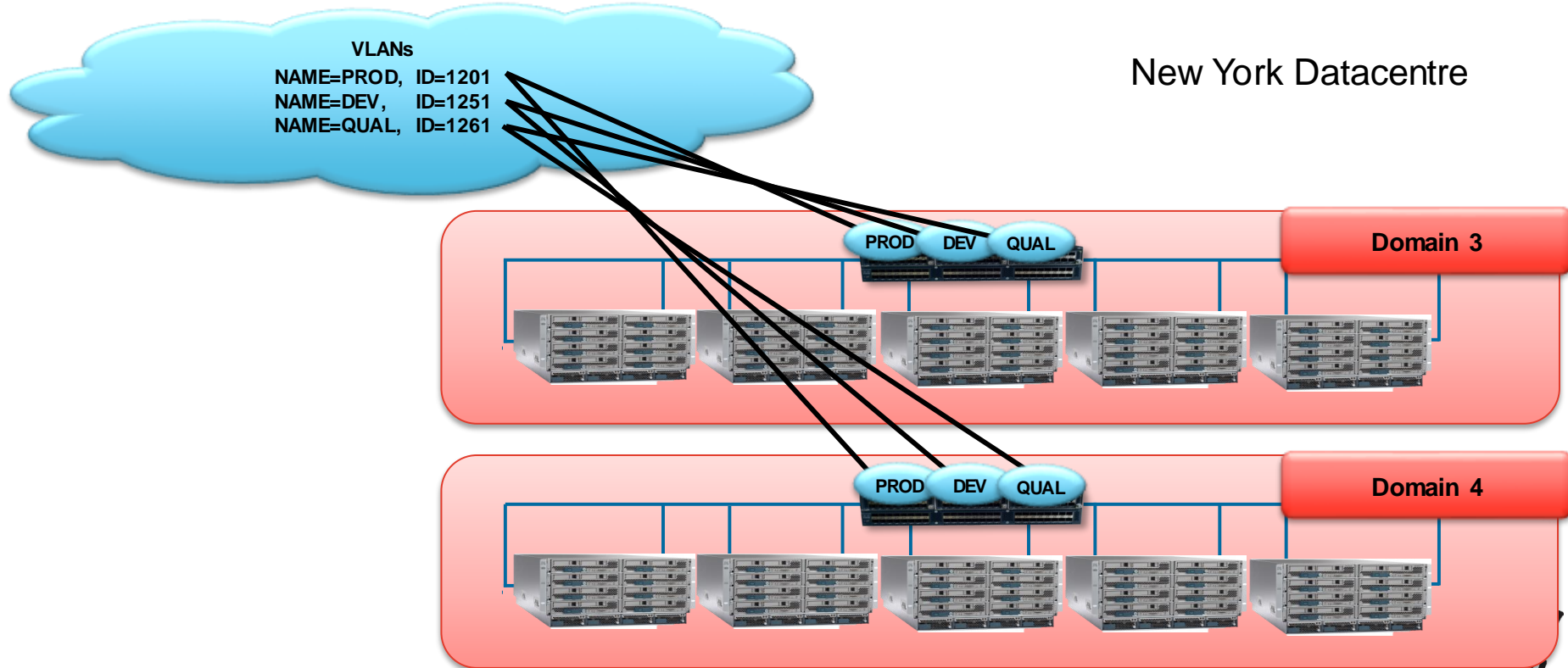
Review: Provisioning VLANs without UCS Central

Chicago Datacentre



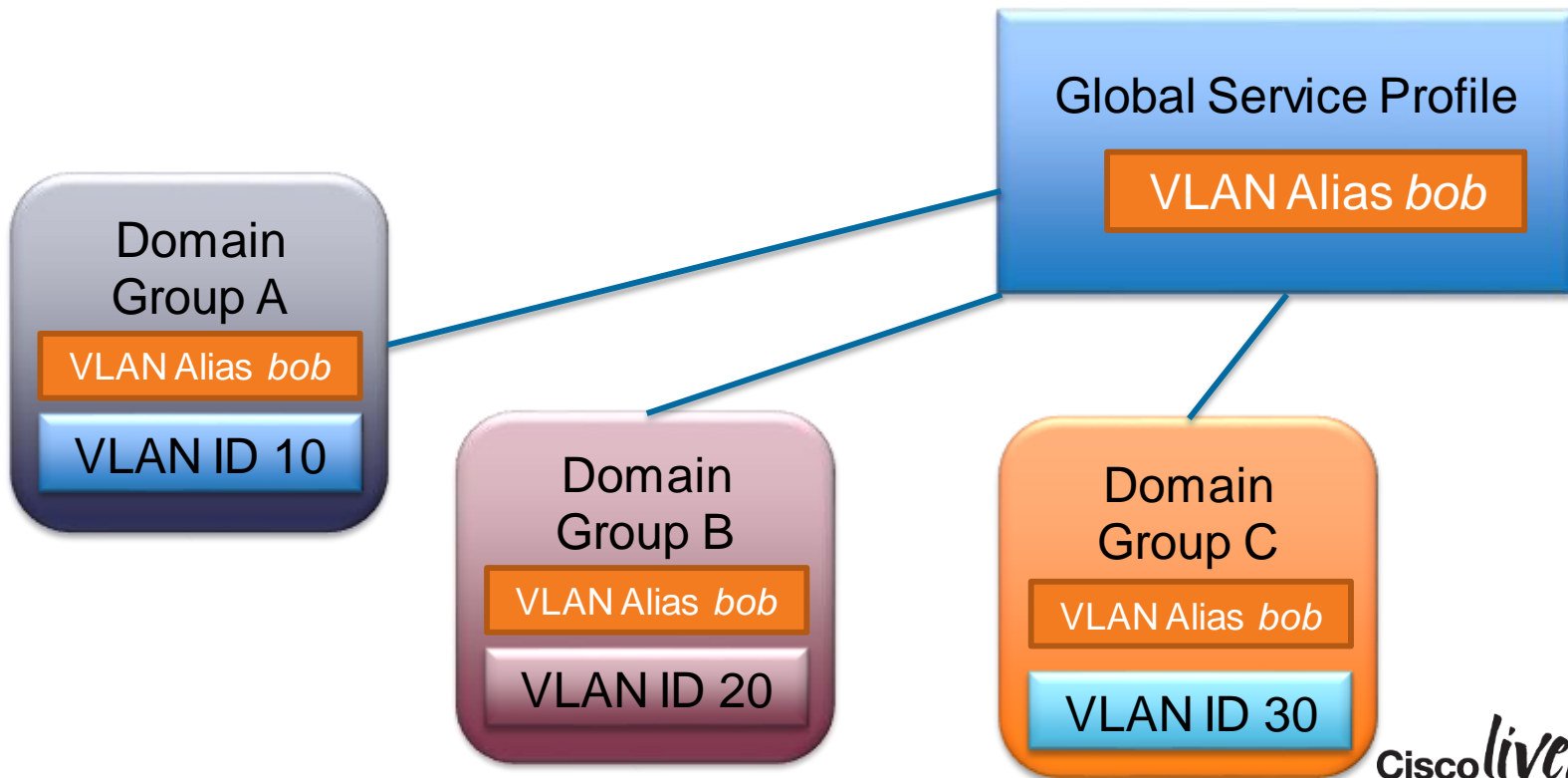
Connectivity Templates

Review: Provisioning VLANs without UCS Central



Site Specific Settings

UCS Central VLAN ID Aliasing



Provisioning VLANs with UCS Central

Using VLAN ID Aliasing Across Two Sites (Example)

Move GSP to
Server in
New York DG

Global Service Profile

vNIC Settings

eth0
GL-PROD
eth1
GL-PROD

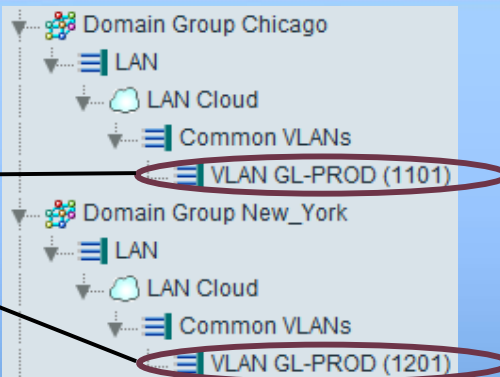
UCS Central

GL-PROD

1101

GL-PROD

1201



Chicago Datacentre Domain Group Chicago

Domain 1



Domain 2



VLANs
PROD, ID=1101
DEV, ID=1151
QUAL, ID=1161

New York Datacentre Domain Group New_York

Domain 3



Domain 4



VLANs
PROD, ID=1201
DEV, ID=1251
QUAL, ID=1261

UCS Central Use-Cases

1. Information Dashboard

- Inventory
- Faults/Logs
- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

4. Workload Manager

- Service Profile Usage & Placement





Workload Mobility Demo

Workload Mobility Demo

Workload Mobility & Global Server Pools

- Create Global Service Profile
 - Use Global Policies & Global Pools
 - Associate with any server
- Create Global Service Profile Template (time permitting)
 - Associate with Global Server Pool
 - Create Global Service Profiles from Global Service Profile Template
- Migrate Global Service Profile from one Domain to another Domain

UCS Central Use-Cases - Review

1. Information Dashboard

- Inventory
- Faults/Logs
- Statistics

2. Domain Configuration

- Domain Admin Settings/Enforcement

3. Object Repository

- IDs / ID Pools
- Policies
- Service Profiles & Templates
- Connectivity Templates

4. Workload Manager

- Service Profile Usage & Placement




A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on poles to the left.

UCS Central - What's New / Next?

What's Next?

These Features are Expected in the very near Future – No Timeline Commitments

- Enhanced user interface – HTML5 Support
 - Improved SDK and scripting support – PowerTool beta
 - Support for new hardware
 - Feature Enhancements, including:
 - Scriptable vMedia Support (shipping today with 1.2(1e) patch)
 - Scheduled UCSM & UCS Central Backup Times
 - Domain Specific ID pools for Global Service Profiles
 - Additional Hypervisor Support
- 
- Your feedback drives features
 - Use <http://communities.cisco.com/ucs>
 - Be vocal, be heard!!

Cisco *live!*

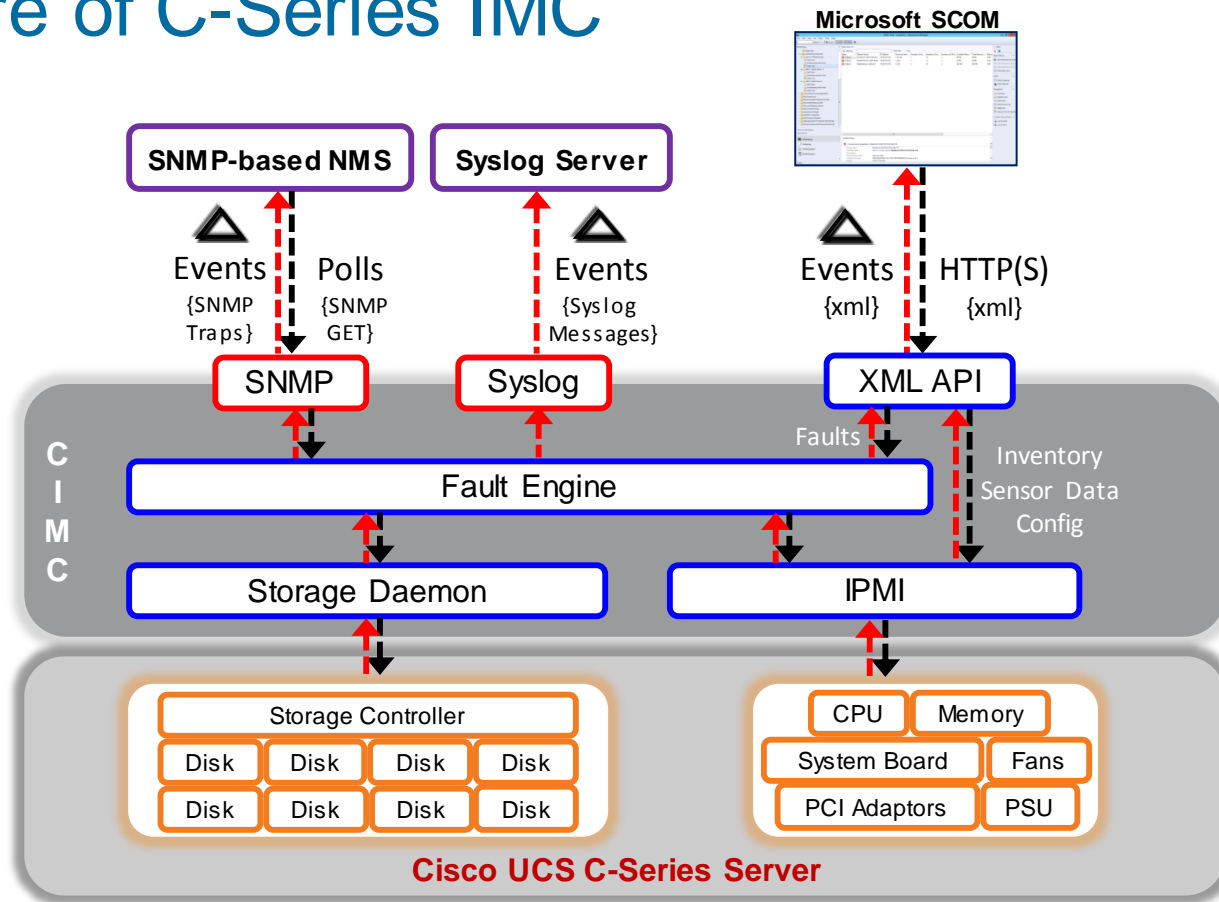


HTML5 UI Preview

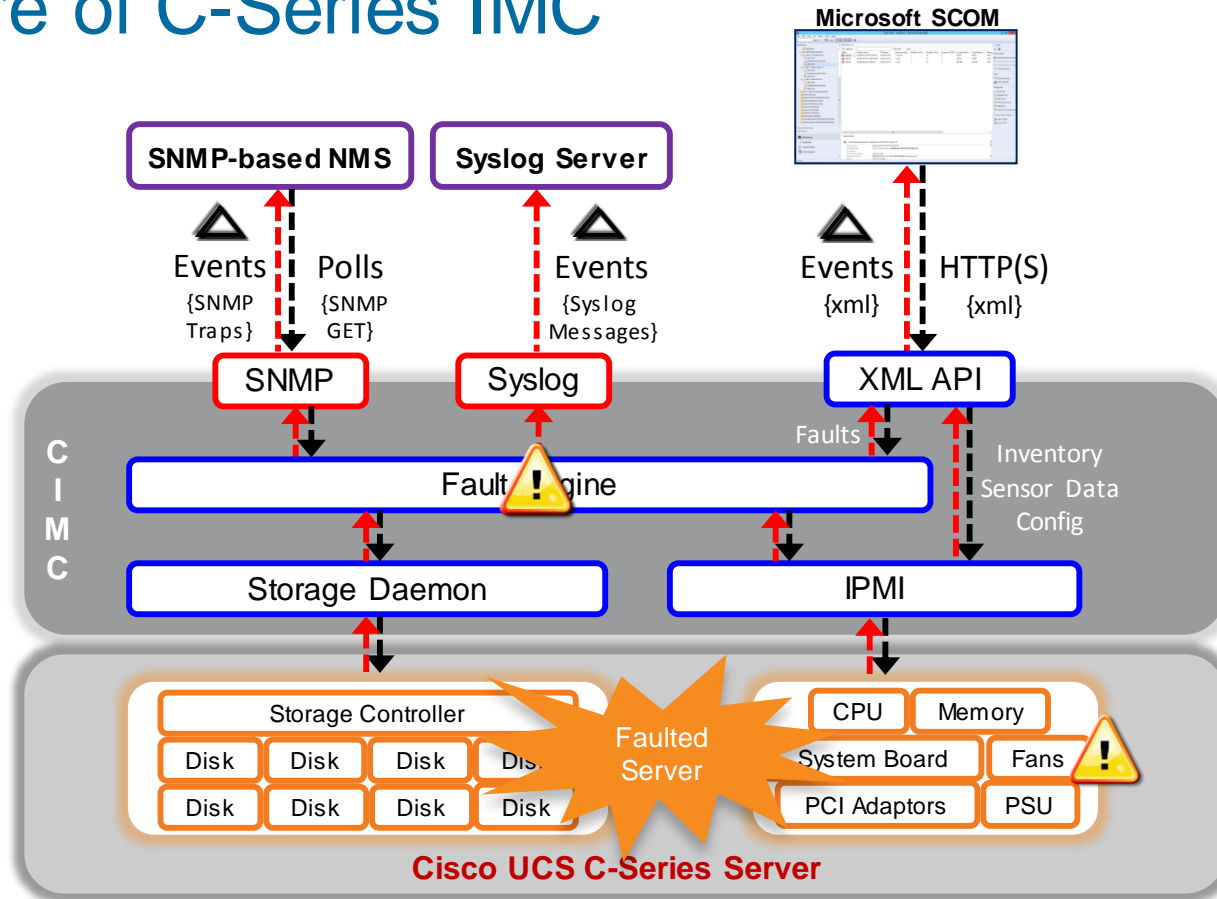
A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a pedestrian bridge spans the street, and various city buildings are illuminated with lights. The overall scene is a dynamic urban environment.

What About Stand-alone C-Series?

The Core of C-Series IMC



The Core of C-Series IMC



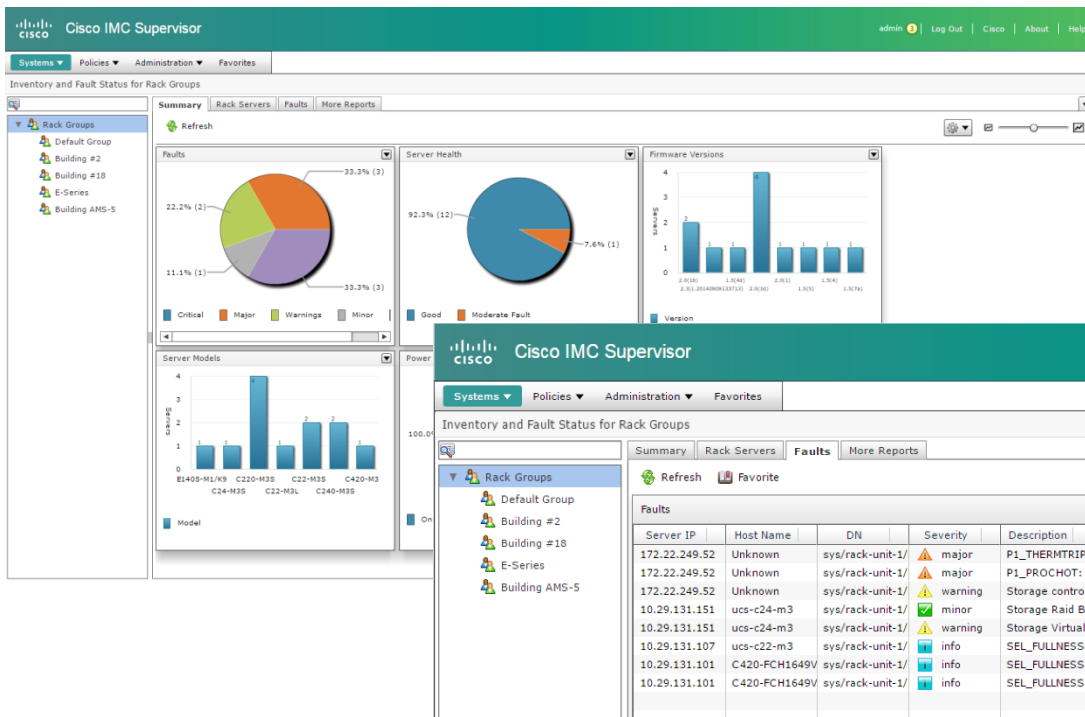
IMC Supervisor Features and Capabilities

IMC Supervisor enables:

- Hardware Health Status (Monitoring)
- Platform Hardware Inventory
- Platform Management with vKVM Launcher
- Firmware Inventory + Management
- Call Home (E-mail Alerting – Critical Faults)
- Platform Grouping & Tagging
- Group Discovery

Monitoring Data

Presented in List & Graphical views



Fault Data is available:

- Globally
- Filtered by Group
- Dashboard View Available

CiscoLive!

Platform Inventory

- Platform Information (Summary)

- Processors
- Memory
- Power Supplies
- PCI Adaptors (Including VIC)
- Network Adapters
- Storage Adapters
- Trusted Platform Module

- Logs

- Fault Log
- Cisco IMC Log
- System Event Log

The screenshot displays the Cisco IMC Supervisor web interface. The top navigation bar includes the Cisco logo, the title 'Cisco IMC Supervisor', and user information 'admin 3' with links for 'Log Out', 'Cisco', 'About', and 'Help'. Below the navigation bar, a breadcrumb trail shows 'Inventory and Fault Status for Building #2 > Rack Server (CIMC_10_29_131_101)'. The main content area is divided into several sections:

- Summary**: A table listing key system information.

Property	Value
Product Name	UCS C420 M3
Serial Number	FCH1649V0EP
PID	UCSC-C420-M3
UUID	FB517521-A4A4-4109-8F93-
Number of Ethernet Hosts	2
Number of FC Hosts	2
BIOS	C420M3.1.5.7.0 (Build Date: 01/15/2013)
Boot Order	PXE,HDD,CDROM,FDD
MAC Address	E0:2F:6D:AD:B7:19
Host Name	C420-FCH1649V0EP
- NIC Properties**: A table showing network interface card details.

Property	Value
NIC Mode	Shared_lom
NIC Redundancy	active-active
MAC Address	E0:2F:6D:AD:B7:19
- IPv4 Properties**: A table showing IPv4 configuration details.

Property	Value
Enable IPv4	Enabled
Use DHCP	Disabled
Obtain DNS Server Address	Disabled
IP Address	10.29.131.101
Subnet Mask	255.255.255.0
Gateway	10.29.131.1
Preferred DNS Server	0.0.0.0
Alternate DNS Server	0.0.0.0
- VLAN Properties**: A table showing VLAN configuration details.

Property	Value
VLAN	Disabled
VLAN ID	248
Priority	0
- Memory**: A table showing memory status and configuration.

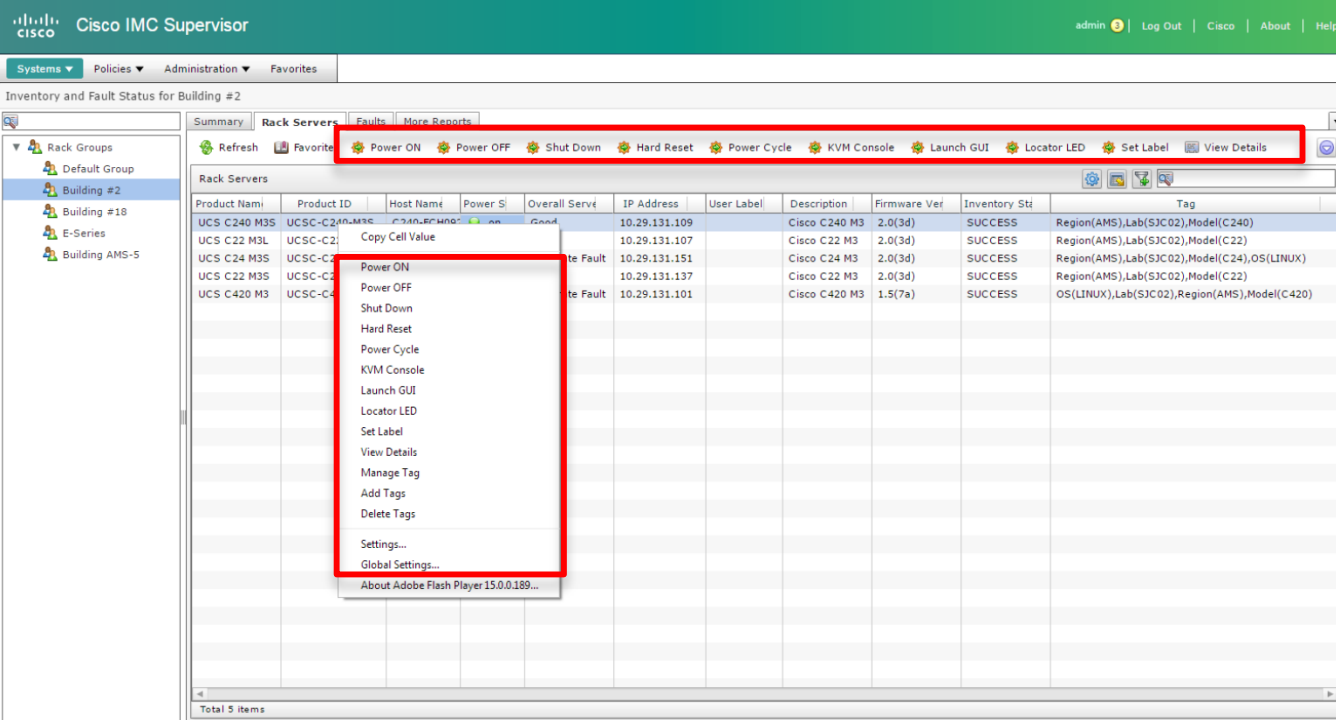
Property	Value
Memory Speed	1066 MHz
Total Memory	196608 MB
Available Memory	196608 MB
Redundant Memory	
Memory RAS possible	
Memory configuration	
Failed Memory	
Ignored Memory	
Number of ignored DIMMS	
Number of failed DIMMS	
DIMM blacklisting	
- Health**: A table showing overall system health.

Property	Value
Fans	
Locator LED	Off
Overall Server Status	Severe Fault
Power State	On
Power Supplies	
Temperature	Good
Overall Storage Status	Good
Overall DIMM Status	

Manage and Control System

Perform Platform Management Tasks including:

- Launch vKVM
- Power On
- Power Off
- Shut Down
- Power Cycle
- Launch WebUI
- Enable LED
- Set Label



The screenshot displays the Cisco IMC Supervisor interface. The top navigation bar includes 'Systems', 'Policies', 'Administration', and 'Favorites'. The main content area is titled 'Inventory and Fault Status for Building #2'. A sidebar on the left shows a tree view with 'Rack Groups', 'Default Group', 'Building #2', 'Building #18', 'E-Series', and 'Building AMS-5'. The 'Rack Servers' tab is active, showing a table of server inventory. A red box highlights the top toolbar with icons for Refresh, Favorites, Power ON, Power OFF, Shut Down, Hard Reset, Power Cycle, KVM Console, Launch GUI, Locator LED, Set Label, and View Details. Another red box highlights a context menu for a server, listing actions: Copy Cell Value, Power ON, Power OFF, Shut Down, Hard Reset, Power Cycle, KVM Console, Launch GUI, Locator LED, Set Label, View Details, Manage Tag, Add Tags, Delete Tags, Settings..., Global Settings..., and About Adobe Flash Player 15.0.0.189...

Product Name	Product ID	Host Name	Power State	Overall Service	IP Address	User Label	Description	Firmware Ver	Inventory Status	Tag
UCS C240 M3S	UCSC-C240-M3S	C240-65M003	Good	Good	10.29.131.109		Cisco C240 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C240)
UCS C22 M3L	UCSC-C22-M3L	C22-65M003	Good	Good	10.29.131.107		Cisco C22 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C22)
UCS C24 M3S	UCSC-C24-M3S	C24-65M003	Good	Good	10.29.131.151		Cisco C24 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C24),OS(LINUX)
UCS C22 M3S	UCSC-C22-M3S	C22-65M003	Good	Good	10.29.131.137		Cisco C22 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C22)
UCS C420 M3	UCSC-C420-M3	C420-65M003	Good	Good	10.29.131.101		Cisco C420 M3	1.5(7a)	SUCCESS	OS(LINUX),Lab(SJC02),Region(AMS),Model(C420)

Call Home E-Mail Alerting

E-Mails can be configured to send when there is a critical fault on managed system

The screenshot shows the Cisco IMC Supervisor web interface. The top navigation bar includes 'Systems', 'Policies', 'Administration', and 'Favorites'. The main content area is titled 'Inventory and Fault Status for Building #2 > Rack Server (CIMC_10_29_131_101)'. Below this, there are tabs for 'Summary', 'CPUs', 'Memory', 'PSUs', 'PCI Adapters', 'VIC Adapters', 'Network Adapters', 'Storage Adapters', 'Faults', 'Cisco IMC Log', 'System Event Log', 'TPM', 'Fault History', and 'Tech Support'. The 'Faults' tab is selected, and a red oval highlights a table of faults. The first row in the table is a critical fault.

Severity	DN	Description	Code	Created	Cause
critical	sys/rack-unit-1/fan-module-1-1/fan-1	FAN1_SPEED: Fan speed for fan-1 is lower non recoverable : Check the air intake to the server	F0397	Sun Nov 30 05:39:53 2014	performance-problem
info	sys/rack-unit-1/mgmt/log-SEL-0	SEL_FULLNESS: System Event log is Full: Clear the log	F0462	Sun Oct 26 03:14:01 2014	log-capacity
info	sys/rack-unit-1/mgmt/log-SEL-0	SEL_FULLNESS: System Event log is Full: Clear the log	F0462	Sun Oct 26 03:14:01 2014	log-capacity

The screenshot shows an email notification titled 'Critical Faults occurred in the IMC Supervisor server 10.29.131.180'. The email body contains a table with fault details. A red oval highlights the first row of the table, which corresponds to the critical fault shown in the screenshot above.

Server IP	Host name	Severity	Code	Cause	Description	Created	Affected DN
10.29.131.101	C420-FCH1649V0EP	critical	F0397	performance-problem	FAN1_SPEED: Fan speed for fan-1 is lower non recoverable : Check the air intake to the server	Sun Nov 30 05:39:53 2014	sys/rack-unit-1/fan-module-1-1/fan-1

1. Critical Fault Recorded

2. E-Mail Notification Sent

Firmware Updates

Manage firmware across systems

- Download Firmware with Cisco ID (C220 M3/C240 M3)
- Use existing (CIFS/NFS) repositories
- Update 1+ systems concurrently (Using HUU)

Step 1: Identify Image

Download Firmware

Select Profile Cisco C220 M3

Download Option Local HTTP Server

User Name (cisco.com) username

Password (cisco.com) *****

☐ Enable Proxy Configuration

☐ Enable Proxy Authentication

Platform C220

Available Image ucs-c220-huu-2.0.3d-1.iso(2.0(3d)1)

Submit

Close

Step 2: Select Image

Upgrade Firmware

Select Profile Cisco C220 M3

Select Servers Select....

Submit Close

Step 3: Select System(s)

Select

	Product Name	Product ID	Power State	IP Address	Description	Firmware Ver	Rack Group
<input type="checkbox"/>	UCS C220 M3S	C220-FCH1705V	on	172.22.251.50		1.5(4d)	
<input type="checkbox"/>	UCS C220 M3S	C220-FCH1535V	on	172.22.251.70		2.0(1)	
<input type="checkbox"/>	UCS C220 M3S	C220-FCH1746V	on	172.22.251.66		2.0(1b)	
<input type="checkbox"/>	UCS C220 M3S	C220-FCH1715V	on	172.22.251.54		2.0(1b)	

Select Cancel

Cisco live!

Grouping and Tagging

Systems can be grouped & tagged for easy sorting and identification

- Groups: Sorted using left navigation menu
- Tags are metadata labels that can be applied across groups

Cisco IMC Supervisor

admin | Log Out | Cisco | About | Help

Systems Policies Administration Favorites

Inventory and Fault Status for Building #2

Summary Rack Servers Faults More Reports

Refresh Favorite

Rack Servers

Product Name	Product ID	Host Name	Power Status	Overall Service	IP Address	Description	Firmware	Inventory Status	Tag
UCS C240 M3S	UCSC-C240-M3S	C240-FC	on	Good	10.29.131.109	Cisco C240 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C240)
UCS C22 M3L	UCSC-C22-M3L	ucs-c22-r	on	Good	10.29.131.107	Cisco C22 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C22)
UCS C24 M3S	UCSC-C24-M3S	ucs-c24-r	on	Moderate Fault	10.29.131.151	Cisco C24 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C24),OS(LINUX)
UCS C22 M3S	UCSC-C22-M3S	ucs-c22-r	on	Good	10.29.131.137	Cisco C22 M3	2.0(3d)	SUCCESS	Region(AMS),Lab(SJC02),Model(C22)
UCS C420 M3	UCSC-C420-M3	C420-FC	on	Moderate Fault	10.29.131.101	Cisco C420 M3	1.5(7a)	SUCCESS	OS(LINUX),Lab(SJC02),Region(AMS),Model(C420)

Groups: Primary sorting mechanism

Tags: User defined Metadata that can be assigned by system

Cisco *live!*

Managed System Discovery

Systems can be discovered:

- By Individual System
- By Discovery Profile
 - IP Range
 - Subnet
 - Comma separated list
 - CSV file
- Discovery profiles can be re-run at any time

Discovery Configuration Criteria

Select Profile: Building #2

Search Criteria: IP Address Range

Starting IP: 10.29.131.101
Example: 12.0.0.X

Ending IP: 10.29.131.165
Example: 12.0.0.X+1 or X+1 (Note: Ensure there are no leading or trailing spaces)

☒ Use Credential Policy

Credential Policy: Default

Discovery Configuration Criteria

Select Profile: <New>

Profile Name:

Search Criteria: IP Address Range

Starting IP:

Ending IP:

Example: 12.0.0.X+1 or X+1 (Note: Ensure there are no leading or trailing spaces)

☐ Use Credential Policy

User Name:

Password:

Protocol: https

Port: 443

Submit Close



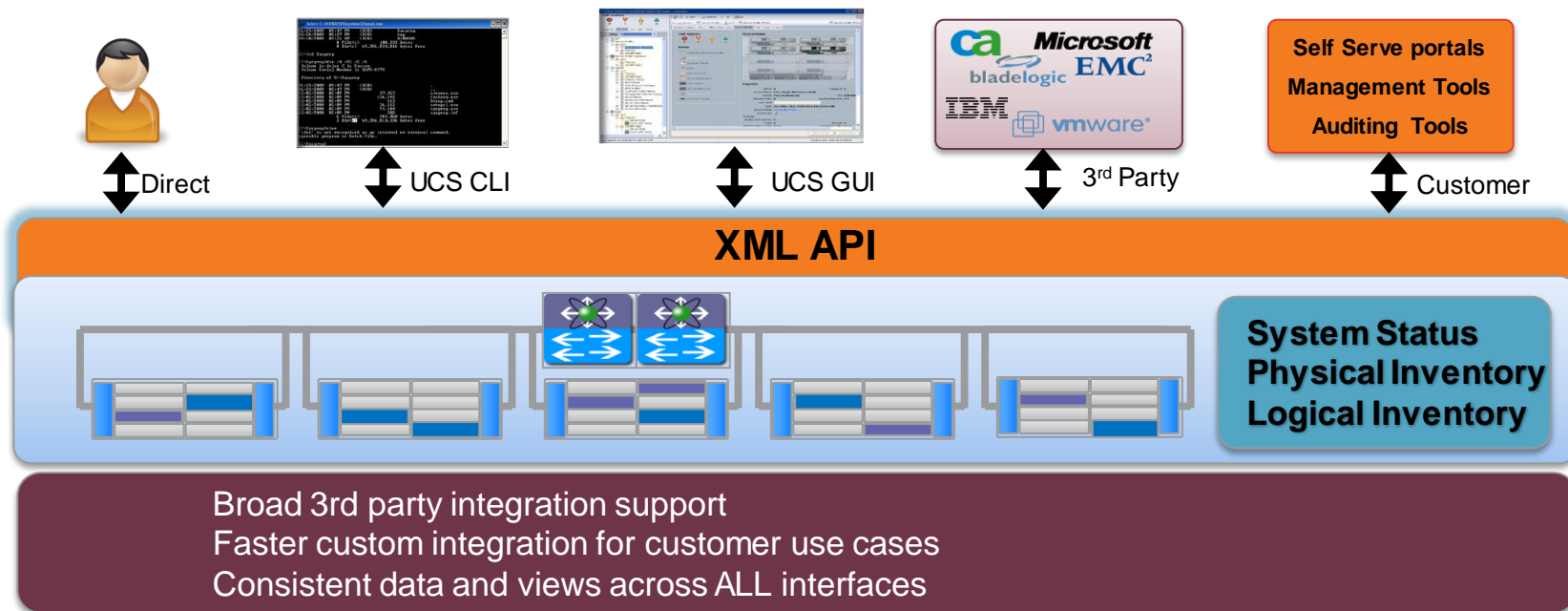
IMC Supervisor Demo



Automating Configuration Tasks with UCS PowerTool

Programmatic Infrastructure

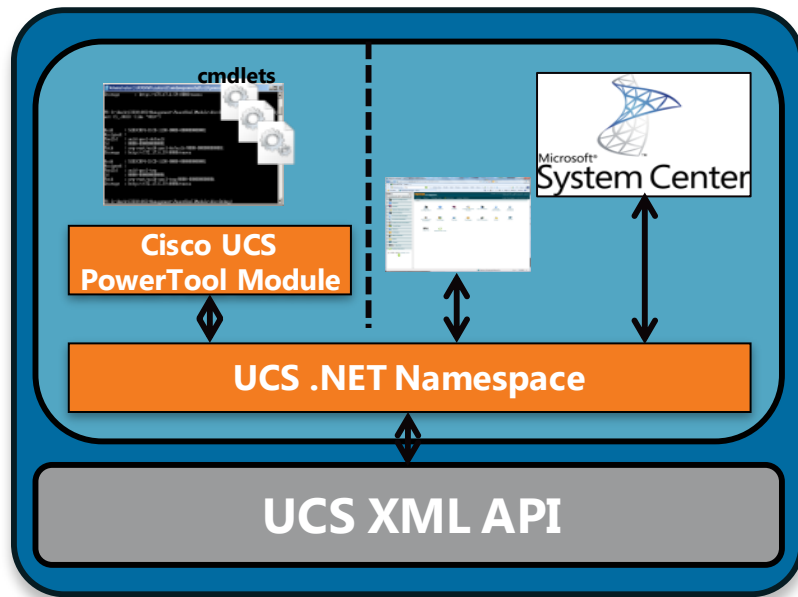
- Comprehensive XML API, standards-based interfaces
- Bi-Directional access to physical & logical internals



Cisco UCS PowerTool

Programmatic control over UCS hardware

- Architected for Flexibility and coverage
 - PowerShell Wrapper
 - Cmdlet definition and structure
 - Get-help support
 - .NET UCS Namespace Library
 - XML API call construction
 - Class Definition
 - Validation
- PowerShell Design
 - In-line get-help support
 - Full Pipelining support
 - Fully classed object definition
 - All 'legal' verbs
- .NET Namespace provides common base for all Microsoft focused integration
- Targeted to support full manageability of UCS across multiple releases



Cisco UCS PowerTool for UCS Manager

Most Commonly Used Objects and Assets

- **Chassis**

- Hardware – Power Supply / Fan Modules / IO Modules
- Environmental statistical data (Power, cooling, network)
- Config and Hardware Faults

- **Fabric Interconnect**

- Hardware – Power Supply / Fan Modules / Network Expansion Modules
- Power / cooling / network / environmental statistical data
- Network Elements (VLAN, VSAN, QoS, Port Profiles)
- Config and Hardware Faults

- **Service Profiles**

- Policies (Firmware, Boot Order, vNIC / vHBA config, Storage, IPMI, SoL, BIOS)
- Pools (WWN, UUID, MAC, IP)
- Configuration Faults
- Launch UCS KVM for SP

- **Servers**

- Hardware - CPU, Memory, Adaptors, CIMC
- Power Operations
- Power / cooling / network / environmental statistical data
- Hardware Faults

- **Config. Operations**

- Pools (WWN, UUID, MAC, IP)
- Policy creation, manipulation, deletion, and consumption
- vNIC / vHBA Templates
- Service profile template creation, cloning, deletion, and consumption
 - Simplistic service profile creation (with a limited scope of what is available to configure)
 - Expert SP creation (use variabilised XML w/ config file)
- Compare Managed Objects across orgs and/or domains
- Sync Managed Objects across orgs and/or domains

Getting Started: ConvertTo-UcsCmdlet

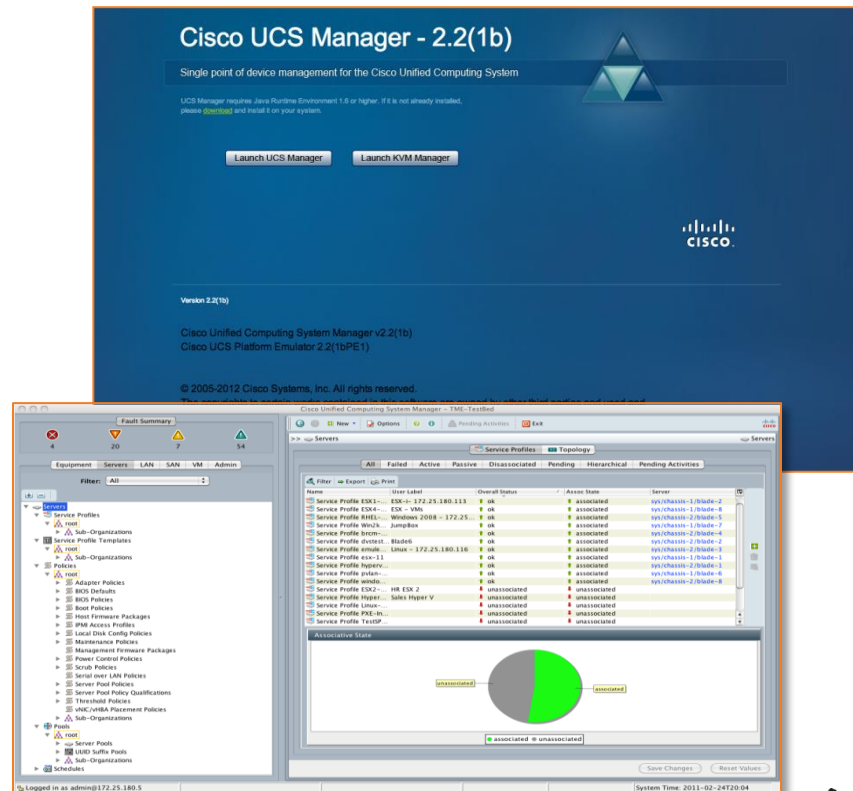
- The best way to discover usage of PowerTool cmdlets and usage
- Usage: Option #1
 - Launch UCS GUI & Login
 - `C:\> ConvertTo-UcsCmdlet`
- Usage: Option #2
 - `C:\> Connect-Ucs 1.2.3.4`
 - `C:\> Start-UcsGuiSession -LogAllXml`
 - `C:\> ConvertTo-UcsCmdlet`
- Usage: Option #3
 - Create a 'config-all' XML backup from UCS Manager
 - `C:\> ConvertTo-UcsCmdlet -UcsBackup -LiteralPath backup.xml -OutputPath output.ps1`

UCS Platform Emulator (UCSPE)

<http://communities.cisco.com/ucspe>

- No UCS Hardware Needed for API integration Development

- Full featured emulator for the UCS Manager
- Installs as a Virtual Machine
- Provides complete support for all XML API calls
- Object Browser to peruse the UCSM model
- Import & replicate existing live UCS Manager physical inventory
- Share saved physical inventories among UCS Platform Emulators
- Drag-n-drop hardware builder to create custom physical inventory



A long-exposure photograph of a city street at night. The image shows light trails from vehicles, with prominent blue and white streaks on the left and yellow/orange streaks on the right. In the background, there are city buildings and streetlights. The text "UCS PowerTool Demo" is overlaid in white on the left side of the image.

UCS PowerTool Demo

A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on the left. The overall scene is a dynamic urban environment.

Evaluation Reminder!

Call to Action

- Visit the World of Solutions for
 - Cisco Campus
 - Walk in Labs
 - Technical Solution Clinics
- Meet the Engineer – Available Wednesday afternoon
- Lunch time Table Topics
- DevNet zone related labs and sessions
- Recommended Reading: for reading material and further resources for this session, please visit www.pearson-books.com/CLMilan2015

A long-exposure photograph of a city street at night. The foreground is filled with vibrant, multi-colored light trails from moving vehicles, creating a sense of motion. In the background, a modern pedestrian bridge with blue lighting spans the street. Tall buildings with illuminated windows and storefronts line the street, and several flags are visible on the left. The overall scene is a dynamic urban nightscape.

Q & A

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T-Shirts can be collected in the World of Solutions on Friday 20 March 12:00pm - 2:00pm



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Thank you.



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