We’re ready.
Are you?
Deploying, Managing and Monitoring Cisco UCS with VMware vCenter / vRealize and Microsoft System Centre

Nithya Natesan - Technical Marketing Engineer
Agenda

- UCS Management Ecosystem Overview
- UCS Integrations for Microsoft System Centre
- UCS Management Packs for VMware vCenter / vRealize
- UCS PowerTool – What’s new
- Intro to UCS Manager Python SDK
- Wrap
UCS Management Evolution

Non-Cisco Infrastructure
- Virtual Machines
- Network Devices
- Storage
- Servers

UCS Director
Policy Driven, Application Centric Infrastructure Management and Orchestration

UCS Central
Policy Driven Multi DC, Multi-Domain Management

UCS Performance Manager
Performance Monitoring

Basic Management Functionality
- IMC Supervisor
- UCS Manager Domain 1
- CIMC
- Stand-Alone UCS C-Series

Advanced Infrastructure Abstraction & Automation
- UCS Performance Manager
- UCS Director
- UCS Central
- UCS Manager Domain x

Unified Computing System

Integrated & Converged Infrastructure
UCS Management Evolution

Non-Cisco Infrastructure
- Virtual Machines
- Network Devices
- Storage
- Servers

UCS Central
API
- UCS Director
  Policy Driven, Application Centric Infrastructure Management and Orchestration
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Advanced Infrastructure Abstraction & Automation
- Stand-Alone UCS C-Series
- Unified Computing System
- Integrated & Converged Infrastructure

✔
✗
✗
Core of UCS Manager

- **SNMP-based NMS**
  - Events: Traps
  - Polls: GET

- **Syslog Server**
  - Events: Syslog Messages

- **CIM Object Translation**

- **UCSM CLI**
- **XML API**

- **HTTP(S)**

- **SYSLOG Server**
  - Events: Syslog Messages

- **UCSM GUI**

- **DME**

- **DB**

- **UCS M**

- **AGblade**
- **AGFl**
- **AGchassis**
- **AGn**

- **FI-A (10.10.5.1)**
- **FI-B (10.10.5.2)**
Core of Cisco IMC

SNMP-based NMS
Events
{SNMP Traps}
Polls
{SNMP GET}

Syslog Server
Events
{Syslog Messages}

XML API
Events
{xml}

HTTP(S)
Events
{xml}

Syslog Server
Polls
{SNMP GET}
Events
{Syslog Messages}

Fault Engine

Storage Daemon

IPMI

Cisco UCS C-Series Server

CPU
Memory
System Board
Fans
PCI Adaptors
PSU

Fault Engine

Storage Controller
Disk
Disk
Disk
Disk
Disk
Disk
Disk
Disk

CIMCGUI

Inventory
Sensor Data
Config
## Broad, Mature Partner Ecosystem

<table>
<thead>
<tr>
<th>Monitoring and Analysis</th>
<th>Deployment and Config.</th>
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<td>Cisco PowerTool (PowerShell Cmdlets)</td>
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Cisco developed UCS Integrations

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<th>Cisco</th>
<th>Microsoft</th>
<th>VMware</th>
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<th>Windows PowerShell</th>
<th>System Centre Operations Manager</th>
<th>System Centre Config Manager</th>
<th>vCenter WebClient</th>
<th>vRealize Operations Manager</th>
<th>Nagios</th>
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<td>✔</td>
<td>✔</td>
<td>Beta</td>
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Microsoft System Centre Integrations
UCS Management with Microsoft System Centre

Software

- Operations Manager
- Configuration Manager
- Orchestrator
- VM Manager

Integration

- Management Pack
- Integration Pack
- Integration Pack
- UI Extension

.NET Library

Cisco UCS XML API

Unified Compute System

Physical & Virtual

UCS Power Tool for PowerShell

“Single Pane of Glass”
Monitor Cisco UCS with SCOM
UCS Integration for SCOM

• Holistic View of Converged Infrastructure Health
  • Monitor alerts and faults
  • Manage multiple UCS C-Series Servers with single Management Pack

• Simple and Powerful Visualisations
  • Graphical views of System topology

• Reliable Information
  • IMC XML API provides a powerful, supported interface for Operations Manager
UCS Integration for SCOM

- Do more with less!
  - Monitor more UCS servers with SCOM resource pool and UCS MP
- Real time monitoring
  - Event based monitoring mechanism
- Better Performance
  - Preprocessing of data
- Better manage the info flow!
  - Advanced filtering capabilities
  - Severity level remapping
  - Fault auto-clearing
UCS Integration for SCOM

We have…

• Separate MP and installers for UCS Manager and IMC
• UCS Manager pack used monitors, IMC pack used rules
• Management Packs used old Operations Manager schema
• Lack of modularisation in the Monitoring Service code

We want…

• Cisco UCS Central support
• UCS performance metrics
• Unified installer
• High scalability
• Performance improvements
• Support for new UCS platforms
UCS Management Pack Architecture for SCOM

- Cisco UCS Manager MP
- Cisco UCS Central MP
- Cisco IMC MP
- Cisco UCS Views Library MP
- Cisco UCS Core Library MP
- Cisco UCS Monitoring Service MP
UCS Management Pack Architecture for SCOM

- **Cisco UCS Manager MP**
- **Cisco UCS Central MP**
- **Cisco IMC MP**
- **Cisco UCS Views Library MP**

M – Mandatory
O – Optional

- **Cisco UCS Monitoring Service MP**
- **Cisco UCS Core Library MP**
What’s New in UCS Management Pack for SCOM

• Modular design for Management Packs
  • Uniform feature set across UCSM, IMC and UCS Central Management Packs
  • Support for monitoring Cisco IMC from Management Server, Gateway Server and Agent Managed Computers too

• Modular architecture
  • Single service to handle requests for UCS Manager, IMC, and UCS Central
  • Scalable – faster support for adding new targets

• Rule based monitoring UCS Manager, IMC and UCS Central
• Utilises the latest Operations Manager schema v2.0
• PowerTool Commandlet support
• Performance improvements
What’s New in UCS Management Pack for SCOM

- Performance metrics
  - UCS performance data for Fan, PSU, CPU, Motherboard, Ports, Memory, Adaptors etc.
  - Historic UCS Manager performance data available in Data Warehouse
- Report generation capability from historic data
- Generate alerts (in Operations Manager) for Threshold Policy Faults in UCSM
What’s New in UCS Management Pack for SCOM

- Cisco UCS M series (compostable infrastructure) support
- Cartridge and Server Unit discovery and Fault Monitoring
- KVM launch support for Server Units
What’s New in UCS Management Pack for SCOM

- Enhanced Inventory & Alert views
  - Dashboard view for UCS Inventory
  - Alert views for Active, Acknowledged and Cleared faults
  - Customisable dashboard for Monitoring Service

- Support for latest UCSM, IMC and Central firmware
  - UCS Manager: 2.2.6, 2.5.2, 3.0.2
  - UCS Central: 1.3.1
  - Cisco IMC: 2.0(8)
SCOM Demo
Announcing SCOM BETA!

Copy your Cisco account representative…

NEW!
System Compliance with SCCM
UCS Manager Integration for SCCM

• Pre-boot image for easier deployment of OS/apps on UCS

• Create Service Profile instances from templates

• Server details, inventory

• Server configuration capabilities (BIOS, CIMC, Adapters…) through Service Profiles

• UCSM Firmware management
Cisco IMC Integration for SCCM

- Pre-boot image for easier deployment of OS/apps on UCS
- Create policies and rules based on server groupings
- Server details, inventory
- Server configuration capabilities (BIOS, CIMP, Adapters….)
- Firmware management for IMC
- Support starting with CIMC v1.5
Automate Cisco UCS with SCO
UCS Manager Integration for SCO

- Automate UCS management
  - Improve predictability and reduce manual errors with UCS integration pack
  - Reduce time to delivery and reduce TCO
  - Packaged UCS activities for consistent delivery of UCS operations

- Deliver scalable and reliable UCS management through Orchestrated workflows
  - Deliver consistent service across multiple systems and departments
  - Packaged workflows to automate UCS operations
  - UCS XML API provides a powerful, supported interface for Orchestrator workflow operations

- Optimise and extend UCS capabilities
  - Integrate with 3rd party tools using Cisco UCS integration pack
Sample UCS Manager Runbooks in SCO

- Add Service Profile from Service Profile template
- Backup UCS configuration
- Decommission Blade
- Clone a Service Profile
Cisco IMC Integration for SCO

- Get the same capabilities for standalone rack servers
- Perform and replicate common steps across multiple servers
  - Update server firmware
  - Templates for firmware
  - Runbooks to automate OS/app installs
- Support starting with CIMC v1.5
Manage Virtual Environment with SCVMM
UCS Manager UI Extension for SCVMM

- Manage your private cloud from a single console!
  - Physical compute and Virtual infrastructure in one place

- Correlate hypervisors to Service Profiles to physical servers

- View and manage UCS directly from SCVMM
  - Convenience of using the same interface for Hyper-V and UCS views
  - See complete UCS inventory
  - Launch UCSM GUI
VMware vCenter / vRealize Integrations
Manage Cisco UCS with vSphere Web Client
vSphere Web Client Plugin Architecture

Cisco UCS Manager Plug-in

- ucs-vcplugin UI (Flex)
  - uses UCS Java SDK

Cisco UCS

XML APIs
vSphere Web Client plugin capabilities

- UCS Domain
  - Reload UCS Domain: reload the whole inventory
- ESX/Non-Esx Server
  - Create Service Profile
  - Manage BIOS policy
  - Associate Service Profile
  - Manage Firmware Host Pack
  - Disassociate Service Profile
  - Launch KVM console (ESX server only)
  - Launch UCSM GUI (ESX server only)
- Service Profile
  - Manage Firmware Host Pack
- Service Profile template
  - Manage Firmware Host Pack
  - Manage Server Pool
  - Create SP from Service Profile template
New capabilities for vSphere Web Client plugin

- Firmware management (Views)
  - Host Firmware Packages
  - Firmware upload tasks
  - Available firmware packages
- Firmware management (Actions)
  - Modification of package version for HFP
  - Upload firmware from remote share
  - Delete packages
- Fault views
- VIF Paths
- Chassis Power statistics
Automate Cisco UCS with vRO
Capabilities of UCS Management Pack for vRO

- Run, Design, Administer perspectives
  - Run/schedule workflows
  - Develop actions/workflows

- Around 1800 Orchestrator actions to Get, Set, Add and Remove UCS managed objects

- Utility actions
  - Import and export UCS backup
  - Clone and rename Service Profile
  - Associate and disassociate Service Profile
  - Create Service Profile from template
  - Get UCS tech support file

- UCS Domain inventory
  - Inventory objects can be used as inputs to workflows/actions
  - All physical objects in UCS – Chassis, Blades, Rack Servers, Fabric Interconnects
  - All virtual aspects of UCS – Service Profiles, Policies and Pools
Capabilities of UCS Management Pack for vRO

Canned UCS workflows
Addresses top UCS Domain use cases
Monitor Cisco UCS with VMware vROps
UCS Management Pack for vROps

BETA since Oct 2015

- Mapping physical infrastructure to virtual infrastructure
- UCS resource availability
- UCS resource performance monitoring
  - Network traffic
  - Performance
  - Temperature
  - Cooling
  - UCS Manager Faults as vRealize Operations Manager Alerts
UCS Management Pack for vROps

Features from BETA feedback

• Simplified UCS Manager Adapter instance creation
• Non-admin (Read Only) user support
• Fixed the dashboard import on Windows
• Better arrangement of stats counters for network management
• New metrics support
  • Error counters for DCE interfaces, Fabric Port and Port Channels
  • Exhaust temperature for Chassis Fan modules
Announcing GA!

Cisco UCS Management Pack for VMware vRealize Operations Manager

- Shipping soon
- Compatible with VMware vRealize Operations Manager v6.0 and 6.1
- Qualified with latest UCS platforms
- Tailored for scale – large Enterprise deployments
- Fully supported by Cisco TAC
- Reach out to your Cisco Account Manager for further details
For additional details…

Cisco UCS Management Pack for VMware vRealize Operations Manager

ucs-vmw-plugins@cisco.com
Script using UCS PowerTool
Cisco UCS PowerTool

- UCS PowerTool—PowerShell Modules
  - Enables programmatic control over UCS infrastructure
  - Helps you front-end the release of jobs into production
- Easily tie management of infrastructure components with applications into a custom, end-to-end solution
  - .NET Namespace provides common base for all Microsoft focused integrations
UCS PowerTool – New capabilities
Yet to go GA!

- Unified PowerTool Installer
  - Single package for Cisco UCS Manager, Central and Cisco IMC PowerShell modules
  - Choose any or all modules during Installation
  - Modify options to add or remove PowerShell modules

- Desired State Configuration (DSC) support

- Enhancements for Firmware management

- Latest UCS Manager v3.1, UCS Central v1.4.1, IMC v2.0.9 supported!

- Architectural enhancements
  - Base PowerShell module for common functions /cmdlets for maintainability and ease of use
Programmability with UCSM Python SDK
Python SDK – Design and Usability Changes

• Convert-to-UCS Python
  • Kick-start with ucsmsdk without having pre-requisite knowledge of UCS Object Model or Python SDK
  • Ability to generate Python script based on operations done on UCSM Java based UI

• Filters can be specified as pure strings now, without the need for creating filters objects

• Event Handling
  • ASync APIs are provided to tap into UCS event channel for specified conditions
  • Poll-mode is also supported

• Changes in code format
  • Code is restructured for better usability
  • Enables community contribution
  • Additional documentation and tests available

• Note: Not backward compatible with any of the earlier SDKs (Beta). It is re-written to be more Pythonic and moves away from the earlier JAVA like syntax
UCSM Python SDK Resources

- [https://communities.cisco.com/docs/DOC-64378](https://communities.cisco.com/docs/DOC-64378)
- Code samples - [https://github.com/CiscoUcs/ucsmsdk_samples](https://github.com/CiscoUcs/ucsmsdk_samples)
- Email alias - ucs-python@cisco.com
- Slack
  - We are on Slack - Slack requires registration, but the ucspython team is open invitation to anyone to register here
Wrap
Q & A
Call to Action

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  • Cisco Campus
  • Walk in Labs
  • Technical Solution Clinics

• Meet the Engineer

• Lunch and Learn Topics

• DevNet zone related sessions
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<tr>
<td>SCOM Beta (Feb 15 – March 31, 2016)</td>
<td><a href="mailto:ucs-betascom@cisco.com">ucs-betascom@cisco.com</a></td>
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<tr>
<td>All Microsoft System Center Integrations (SCOM, SCCM, SCO SCVMM)</td>
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Cisco Communities site for UCS Integrations

communities.cisco.com/ucsintegrations

“UCS Integrations enables Better Together”
Thank you