

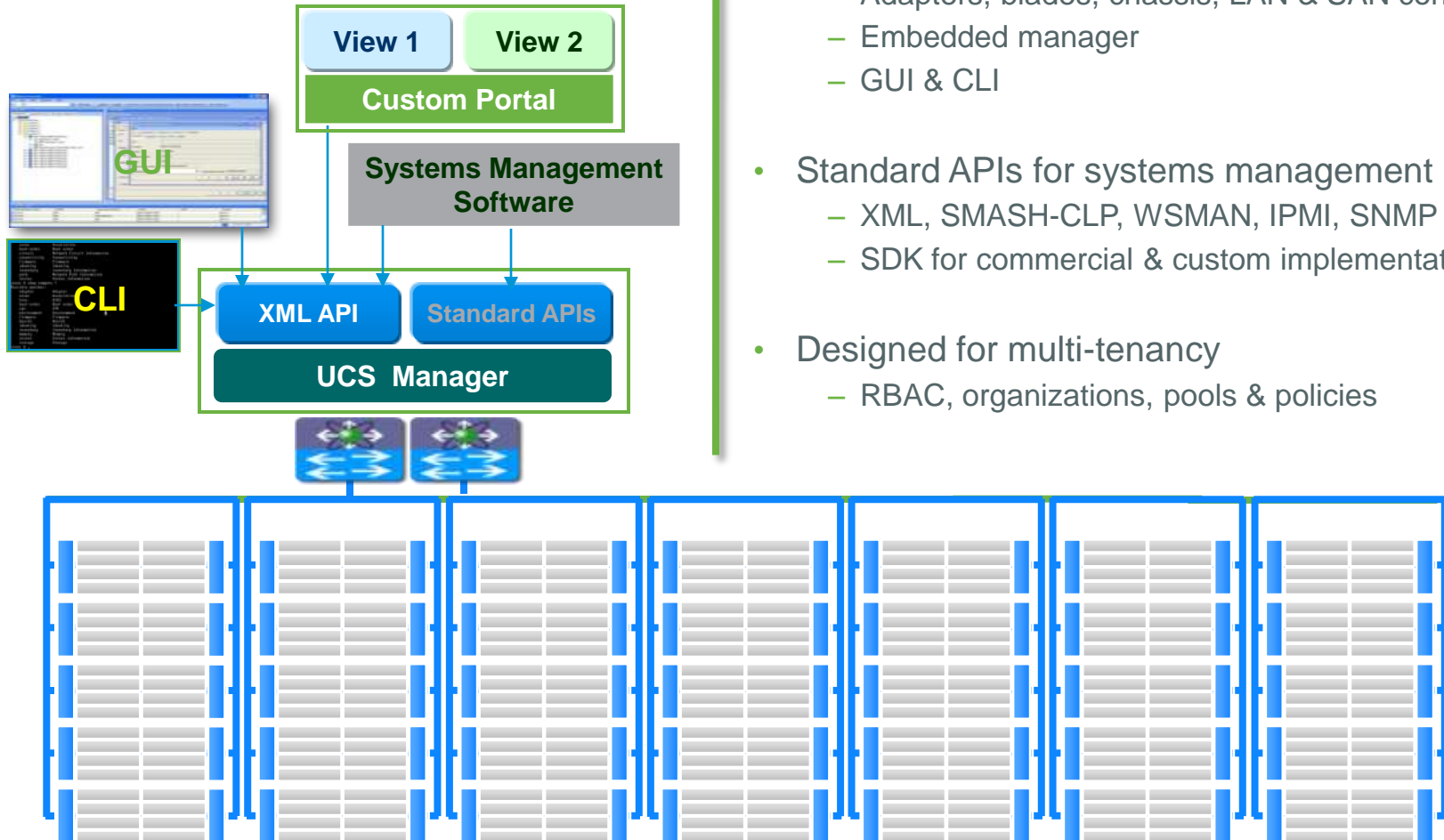
Extending UCS Management

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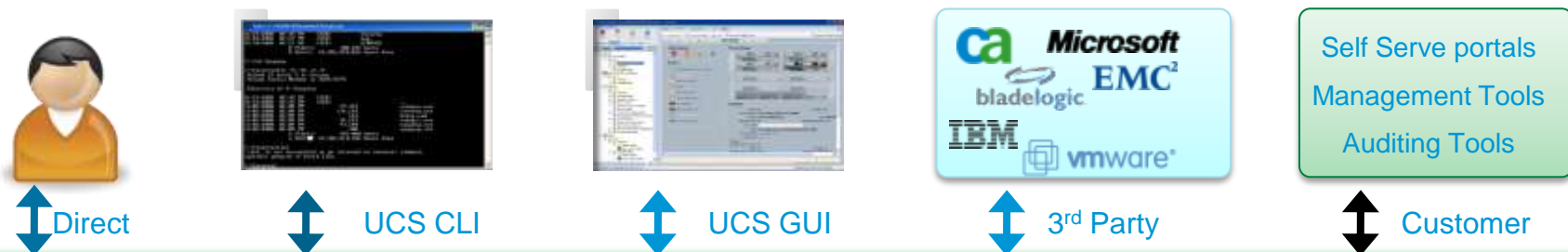
UCS Management



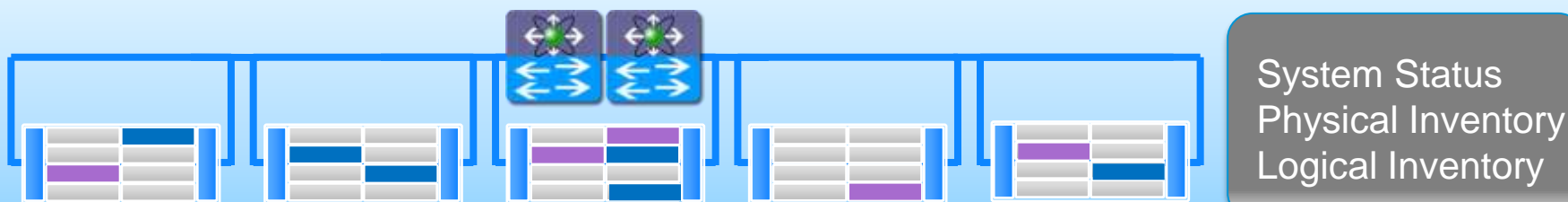
- Single point of device management
 - Adapters, blades, chassis, LAN & SAN connectivity
 - Embedded manager
 - GUI & CLI
- Standard APIs for systems management
 - XML, SMASH-CLP, WSMAN, IPMI, SNMP
 - SDK for commercial & custom implementations
- Designed for multi-tenancy
 - RBAC, organizations, pools & policies

Programmatic Infrastructure

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



XML API



- Broad 3rd party integration support
- Faster custom integration for customer use cases
- Consistent data and views across ALL interfaces

Embedded Unified Management

Tightly Coupled Partner
Mgmt Tools

Existing Customer Mgmt
Tools



- Unified Management Domain
 - Automatic discovery
 - Dynamic Provisioning
- Building Block for Dynamic Data Center
 - Simplify management of infrastructure for ESX clusters and datacenters
- One-click configuration of LAN, SAN and firmware parameters

Service Profile: HR-App1
Network: HR-VLAN
Network QoS: High
MAC: 08:00:69:02:01:FC-E
WWN: 5080020000075740-3
BIOS: Version 1.03
Boot Order: SAN, LAN



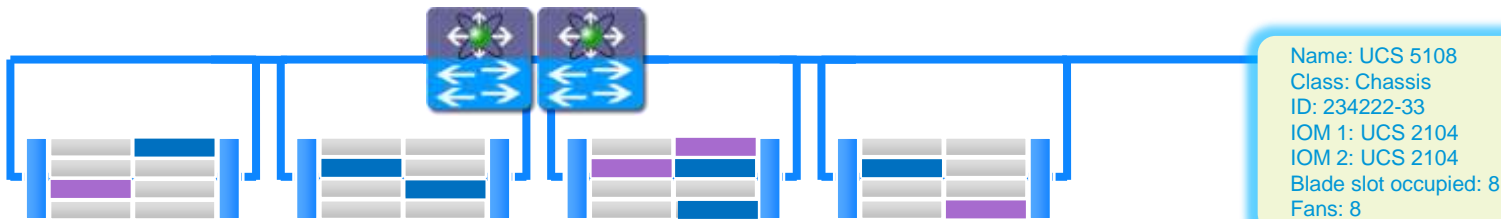
Zero Touch Integration

Decouple Complexity & Scale

Physical Inventory

Name: UCS 12
Class: System
ID: 77449-32
Chassis: 1
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 2
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 3
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 4
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8
Chassis: 5
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8

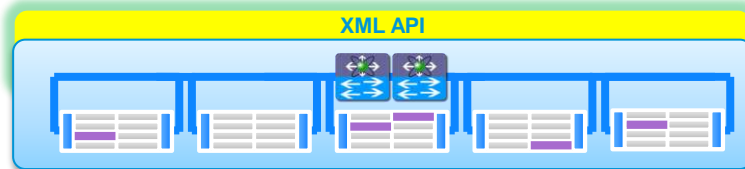
- Increase capacity, not complexity
- New equipment self integrates



UCS API Overview

UCS API Features

- **Communicates over HTTP/HTTPS**
- **XML Based, Transactional**
- **Standard Request/Response cycle**
- **Role Based Authentication**
- **Object Model Hierarchy**
- **Built-in Object Browser**
- **Published Schema**
- **Java Doc Style documentation**
- **High Availability**
- **EventStream**



Use case examples for the UCS XML API

Manage Multiple UCS Systems

- Overarching system to maintain resource pools, users, policies, etc...

Monitor and Integrate the Event Stream

- Capture events, parse, store, report
- Create event gateway to monitoring solutions

Automate Issue Remediation

- Generate appropriate responses to events

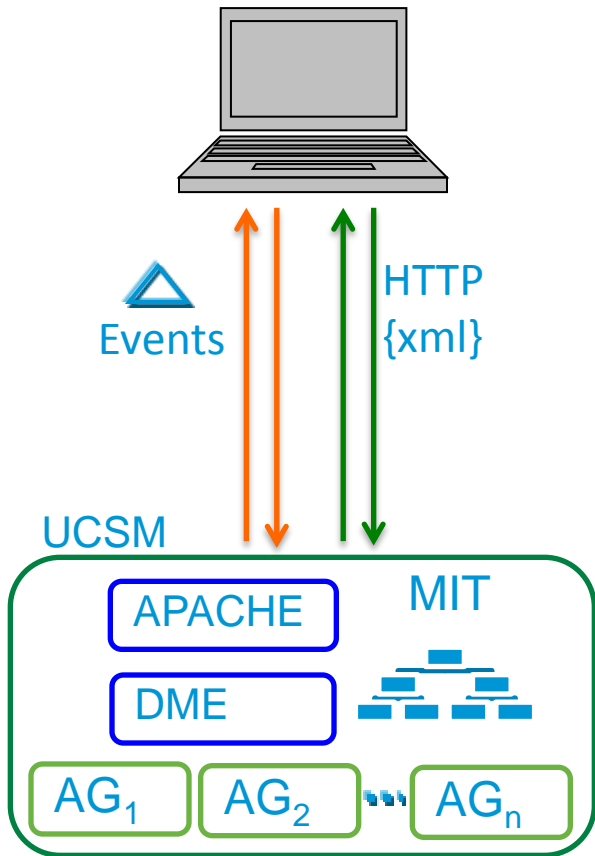
Configuration Backup

- Export entire UCS Information Model

Firmware Image Management

- Ensure Firmware consistency across all components

Cisco UCS XML Interface



Embedded apache webserver

XML content sent in body of http post

Result contained within body of http response

URL:

<http://<Virtual IP of UCS Manager>>

Clients invoke methods to query and configure the server

Method categories: instance, class, generic

http (port 80) and https (port 443)

GUI uses the same API – look at logs in:

C:\Documents and Settings\{user}\Application Data\Sun\Java\Deployment\log\ucsm

Cisco Developer Network

Free!

The screenshot displays the Cisco Developer Network website. At the top, the Cisco logo and "Cisco Developer Network" are visible. A navigation bar includes links for Home, Membership, Technologies, Community, Technology Partners, News & Events, and My C. The main content area is titled "UCS Manager" and includes sub-links for UCS Manager, Forums, Blogs, and Documentation. A descriptive paragraph explains that the Cisco Unified Computing System (UCS) includes an innovative XML API for programmatic integration. Below this, there are three columns: "What Is It?" (Overview), "How Do I Get Started?" (Getting Started), and "What Resources Are Available?" (Resources). At the bottom, there are three more columns: "Developer Forums" (Business Solutions, Technical Discussions, UCS Sandbox), "Recent Bloggers" (a table with columns for User, Posts, and Date), and "Recent Downloads" (Cisco UCS Platform Emulator..., Cisco UCS Manager API..., UCS Emulator v1.3.zip).

User	Posts	Date
Sheryl Sage	3	8/27/10
John McDonough	3	7/14/10
Pramod Borkar	1	6/23/10

Web based developer community

<http://developer.cisco.com/web/unifiedcomputing/home>

• Downloads:

- UCS Platform Emulator
- goUCS Automation Tool
- XML API, Perl, Powershell code samples (44 and counting)

• Documentation:

- Programming & developer guides
- White papers
- Reference guides (XML model, Faults)

• Collaboration:

- Blogs
- Peer to peer forums
- Videos
- Access to Cisco subject matter experts

goUCS Automation Tool

Overview



- **UCS Manager:** Know XML, no problem
- **With goUCS:** No XML, no problem
- Convert **UCS Manager** actions into **automation scripts**

1

Perform single action on UCS Manager and capture it

2

Create script in goUCS framework with variable substitutions

3

Re-run script over and over against single or multiple UCSMs

goUCS Automation Tool

Invocation syntax

`X:\goucs <session> <xml/cmd wrapper> <process type> <output type> <user args>`

- IP address
- Web server port
- Credentials
- Multiple concurrent sessions possible
- Sessions to multiple UCS Managers

- Determines execution mode for commands
 - REALTIME
 - RAW
 - OUTCACHE
 - INCACHE
- Controls data output location for returned data

- Arguments to be used in conjunction with parameters on the XML wrapper
- Up to 10 arguments are passable

- Collection of XML “commands” that need to be executed
- Can be derived from running UCS Manager
- Storable for repetitive use
- Parametrized with arguments passing

- Output format control
 - Indented XML
 - Raw XML
 - Quiet – no output
 - xpath
 - Comma Separated Values (CSV)
 - Table

goUCS Automation Tool

An Example: Automating VLAN creation

1

Capture



Perform the task in UCS Manager
Use goUCS filterlog to capture the transaction

2

Create

```
x:\>mkdir x:\goucs\cmdwrappers\CreateNewVlan
```

Create the XMLwrapper using the captured logs
Create variables for parameters

```
User Arguments  
UserArg1=%inUserArg1%  
UserArg2=%inUserArg2%  
UserArg3=  
...  
UserArg10=
```

3

Execute

```
x:\>goucs createvlan realtime indent TestVLAN 321
```

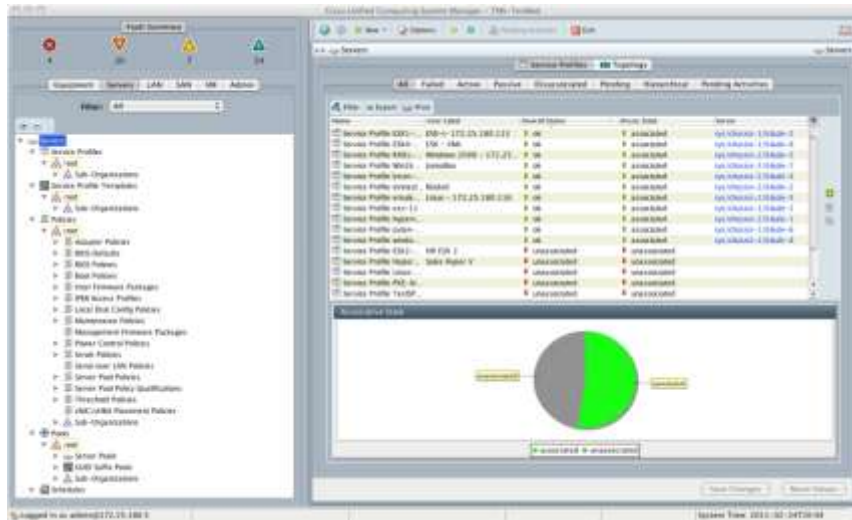
Run the command on one or more UCS systems substituting values for variables

Available now on Cisco Developer Network: <http://developer.cisco.com/web/unifiedcomputing/goucs>

UCS Platform Emulator



- 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 Pes
- Drag-n-drop hardware builder to create custom physical inventory



UCS Management Ecosystem

Manage UCS with Industry Standard Tools



Application Stack



OS and Software Management

UCS Visibility and Control

Third Party Management

Service Orchestration
Provisioning and Configuration
Monitoring and Analysis

Cisco UCS Manager

Unified Control API
Service Profiles
Cisco UCS Pools

Orchestration, Provisioning & Orchestration

Leveraging the UCS Management Ecosystem

Monitoring and Analysis

- BMC ProactiveNet Performance Management
- CA Spectrum Infrastructure Manager, eHealth
- EMC DCI
- HP Operations Manager/OpenView
- IBM Tivoli Monitoring and Netcool
- Microsoft Systems Center Operations Manager
- Solarwinds Orion
- Zenoss Enterprise

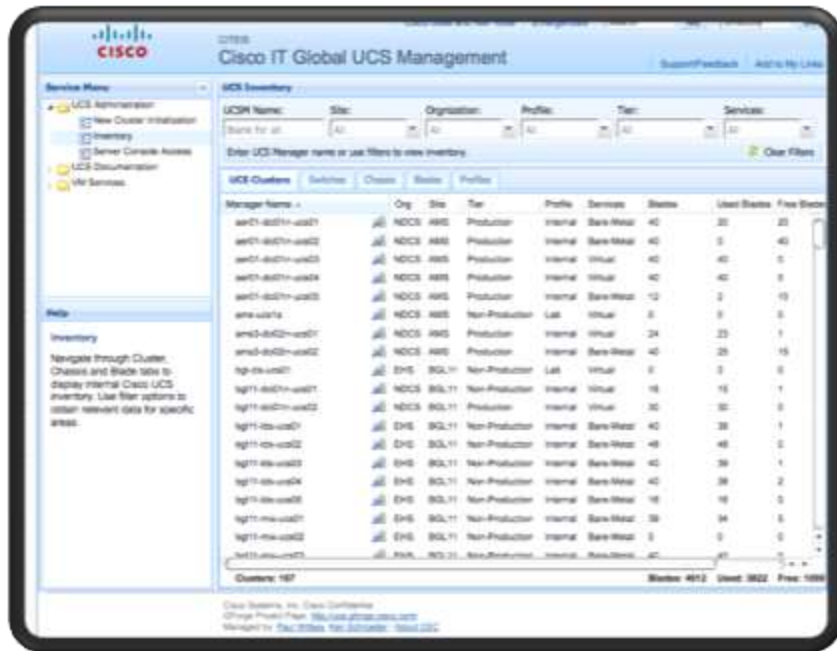
Deployment and Configuration

- BMC BladeLogic
- CA Spectrum Automation Manager
- HP Server Automation
- IBM Tivoli Provisioning Manager
- Symantec Altiris

Service Orchestration

- BMC Cloud Lifecycle Manager
- Cloupia
- EMC Unified Infrastructure Manager
- DynamicOps CAC
- newScale 9
- Tidal Enterprise Orchestrator
- VMware Orchestrator

Example: Cisco IT CITIES dashboard



- Dashboard for aggregating data across multiple UCS Managers

Inventory

- Blades
- Chassis
- Fabric Interconnects

Mapping of service profiles

- KVM cross launch capability
- Identifier pool management
- UCS Manager initial setup

Integrated in the backend with Cisco IT's processes and end-user VM provisioning scheme

Developed internally by
Cisco IT
using the UCS XML API

Example of end customer development

- Doug's Linux Lab: <http://douglinuxlab.org/>

Doug's Linux Lab

Experimentation around Cisco's Unified Computing System, Linux and Virtualization

Good News, Everyone...

This page is designed to quickly configure a Cisco Unified Computing System pod via the XML API. This started as an exploration of what was possible within the context of the UCS framework, and then extrapolated into this. Comments/feedbacks/suggestions are very welcome. All of the UCSM programming is done via HTML, Perl and the XML API with some HTML manipulation with JavaScript.

The intent is to demonstrate the power of the UCSM XML API, the capabilities of UCS, and of course, demonstrating simply how easy it is to get real work done and get a workload running in production faster with UCS than any other vendor on the market.

In full disclosure, I work for Cisco Systems. This site, its pages, the code, the scripts, and the content is all of my opinion, and not that of Cisco Systems nor any other entity, images are blantly ripped off from the series of tubes...



UCS-Builder



UCS Initial Configuration



Service Profile Templates



Pre-Determined Policies

Use these pages to quickly get started with your UCS system. Use the **Initial Configurator** to quickly setup your general administrative tasks such as SYSLOG, default SEL selections, DNS, NTP, etc. Use the **Service Profile Template Creator** to rapidly build a Service Profile Template, complete with all of the one-off settings you need for that template (MAC pools, etc.) Finally, there are Pre-Defined default Policies available [here](#) to save and then import into UCSM.

Summary

- Built-in, readily expandable UCS Manager framework
- XML API is a core component of the management
- SDK, documentation, examples and live forums for API support
- Advanced Services for ready customization assistance
- Cisco Developer Network community with backend Cisco support
- UCS Platform Emulator for development and test using API
- Customers using API in production today for:
 - Portals
 - Scripting automation
 - Simple queries