



Automation Tools for UCS Sysadmins

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What is the Cisco UCS XML API?



Cisco Unified Computing System

Optimized and Designed as an Integrated System

Cisco UCS™ Manager (Read / Write Configuration Interfaces)

UCS Manager GUI and CLI

Cisco UCS Fabric Interconnects (Read Only / Cut Through Interfaces)

SNMP, Syslog, SMTP, SMASH CLP, CIM XML, Smart Call Home

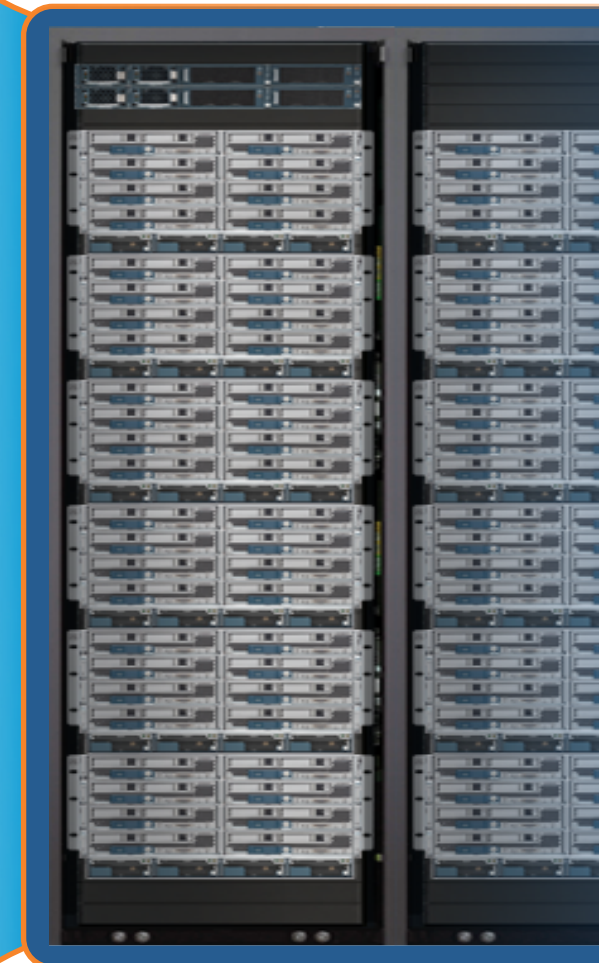
Cisco UCS I/O modules

Cisco UCS Blade Server Chassis

Cisco UCS Blade and Rack Servers (Cut through Interfaces to CIMC)

Serial over LAN, KVM, IPMI

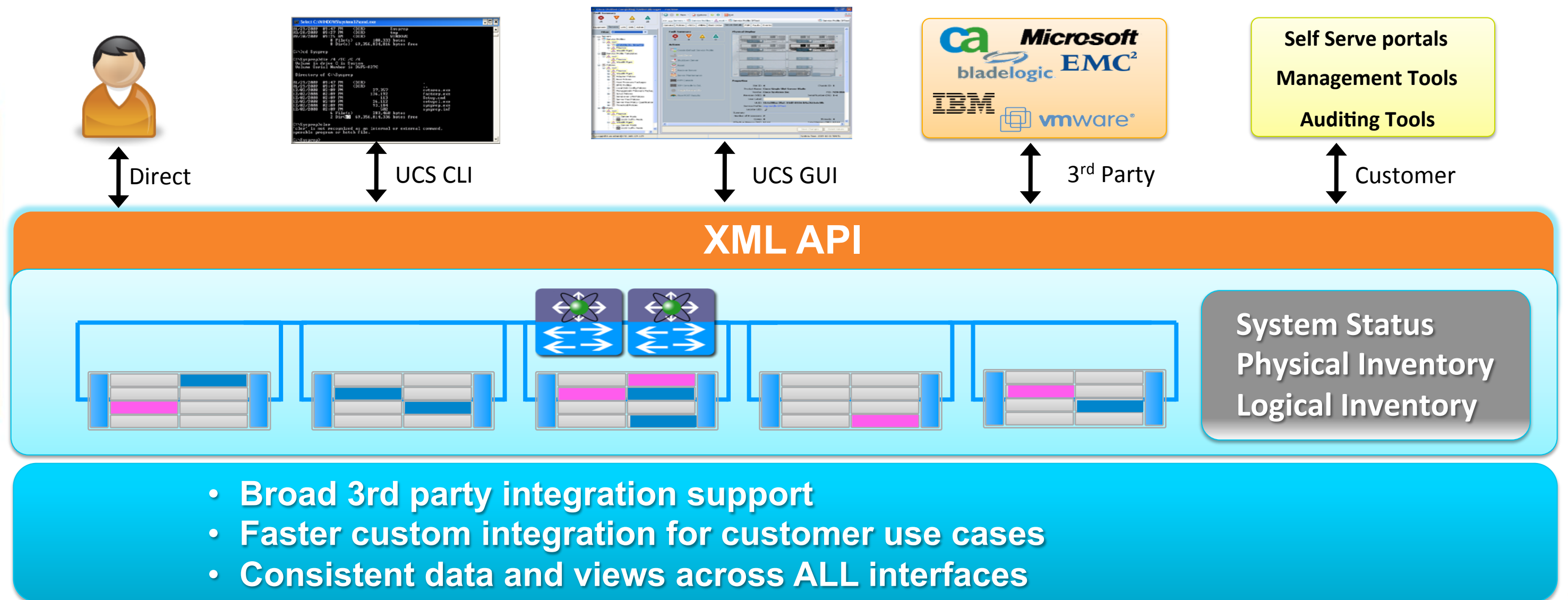
Cisco UCS I/O Adapters



Cisco *live!*

Programmatic Infrastructure

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



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

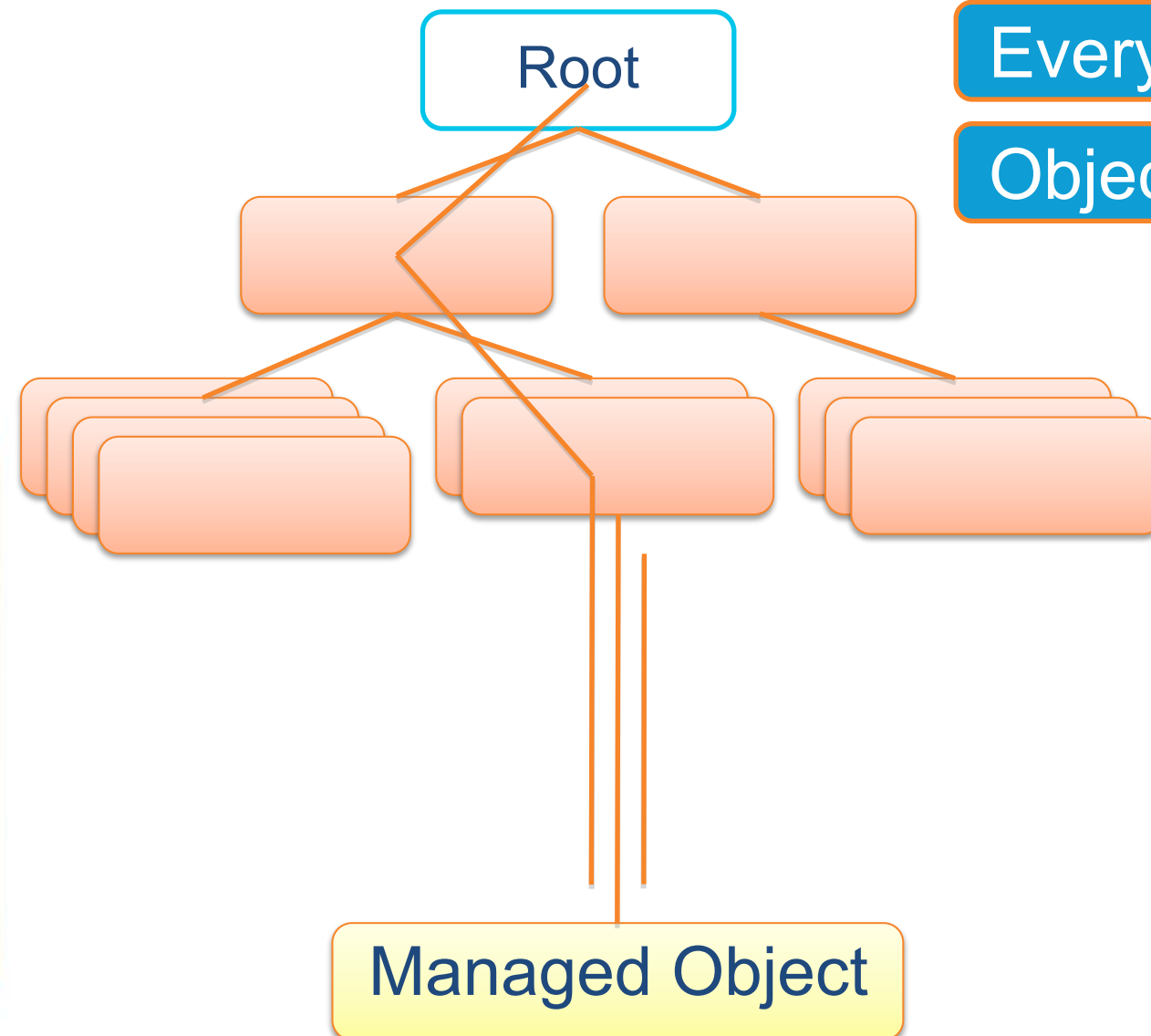
Configuration Backup

- Export entire UCS Information Model

Firmware Image Management

- Ensure Firmware consistency across all components

Managed Objects (MO)



Everything is an object

Objects are hierarchically organized

Class identifies object type
Card, Port, VNIC...

Class Inheritance

Server port is a subclass of port.
A server blade is a subclass of compute entity.

Set of attributes

identity

states

descriptions

references

lifecycle

UCS XML Database contains comprehensive system information

- Discovered components
- System configuration
- Operational status including statistics and faults

What toolkits are available for Cisco UCS automation development?



Cisco Developer Network

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, three columns provide an overview, getting started guide, and available resources. At the bottom, there are sections for Developer Forums, Recent Bloggers (with a table of user, posts, and date), and Recent Downloads.

UCS Manager

UCS Manager Forums Blogs Documentation

UCS Manager

The Cisco Unified Computing System (UCS) includes an innovative XML API which offers you a programmatic way to integrate or interact with any of the over 9,000 managed objects in UCS. Managed objects are abstractions of UCS physical and logical components such as adaptors, chassis, blade servers, and fabric interconnects.

Developers can use any programming language to generate XML documents containing UCS API methods. The complete and standard structure of the UCS XML API makes it a powerful tool that is simple to learn and implement.

What Is It?

Overview

Explore UCS Manager and the business benefits it provides

How Do I Get Started?

Getting Started

Learn what is required to download or further develop with the UCS Manager

What Resources Are Available?

Resources

Access resources that will help you utilize and learn UCS Manager

Developer Forums

Business Solutions
Technical Discussions
UCS Sandbox

> View All Forums

Recent Bloggers

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

Recent Downloads

- Cisco UCS Platform Emulator...
- Cisco UCS Manager API...
- UCS Emulator v1.3.zip

Web based developer community

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

Downloads:

- UCS Platform Emulator (UCSPE)
- goUCS Automation Tool
- XML API, Perl, PowerShell code samples (44 and counting)
- Microsoft – PowerShell library, SCOM MP
- HP Software – HPOM, HPOO integration modules

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 Toolkit



goUCS Automation Toolkit

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

What's new with goUCS v2.0

Linux & Mac OS X Support

HTTPS Communication Support

Tagged Based User Arguments

Performance Enhancements

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 Toolkit

Invocation Syntax

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
- More than 10 arguments can be passed answer files

- Collection of XML “functions” available to be executed
- Can be derived from running UCS Manager
- Storable for repetitive use
- Parameterized with arguments passing

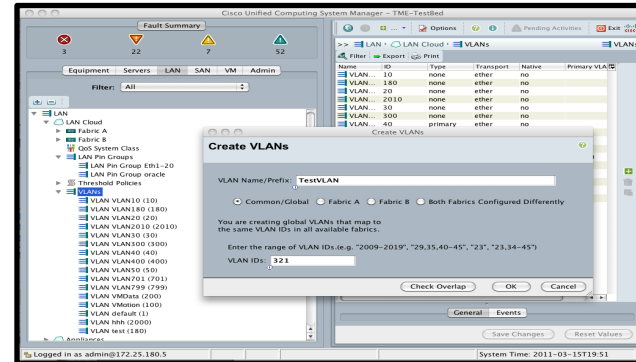
- Output format control
 - Indented XML
 - Raw XML
 - Quiet – no output
 - XPath
 - Comma Separated Values (CSV)
 - Table

goUCS Automation Toolkit

Example: Automating VLAN Creation

1

Capture



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

2

Create

```
mkdir <GOUCS_PATH>/xmlwrappers/CreateVlan  
goucs filterlog trueco vlan10 vlan10:NAME @id:10:ID > CreateVlan.xml
```

Create the XML wrapper using the captured logs
Create variables for parameters

3

Execute

```
goucs createvlan realtime indent /name:TestVLAN /id:321
```

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

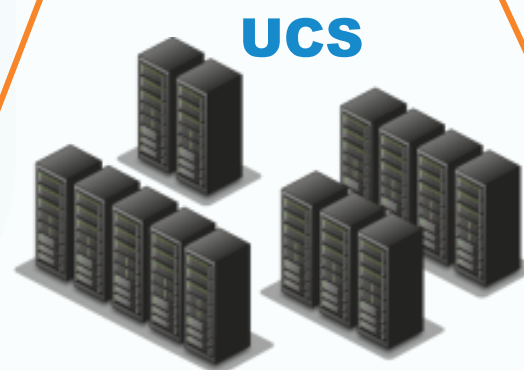
Available now on Cisco Developer Network: <http://developer.cisco.com/web/unifiedcomputing/goucs>

Cisco UCS PowerTool



Cisco UCS PowerTool

Bringing More Power to PowerShell



The Essential Tool Kit

- PowerShell is the common management platform used across all Microsoft operating systems and applications
- UCS PowerTool is a Cisco-built, user-friendly, PowerShell-based library that Microsoft tools understand
- A simple way to utilize Windows PowerShell and customize tools to business needs

Don't reinvent the wheel...

...build on it



Cisco UCS PowerTool

Key Supported Objects and Assets

▪ Service Profiles

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

▪ Servers

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

▪ Chassis

- Hardware – Power Supply / Fan Modules / IO Modules
- Power / cooling / network / environmental statistical data
- 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

▪ Configuration 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 variabilized XML w/ config file)
- Compare Managed Objects across orgs and/or domains
- Sync Managed Objects across orgs and/or domains

Q & A



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THE HUMAN
NETWORK

