Extending UCS Management

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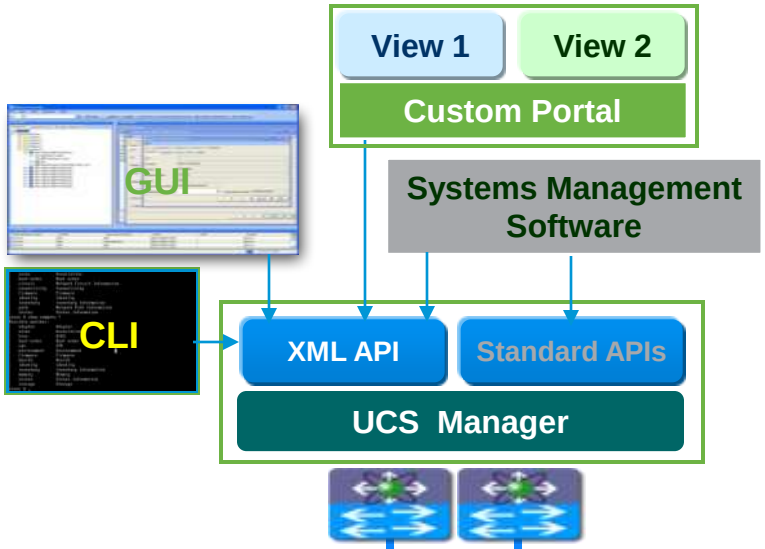
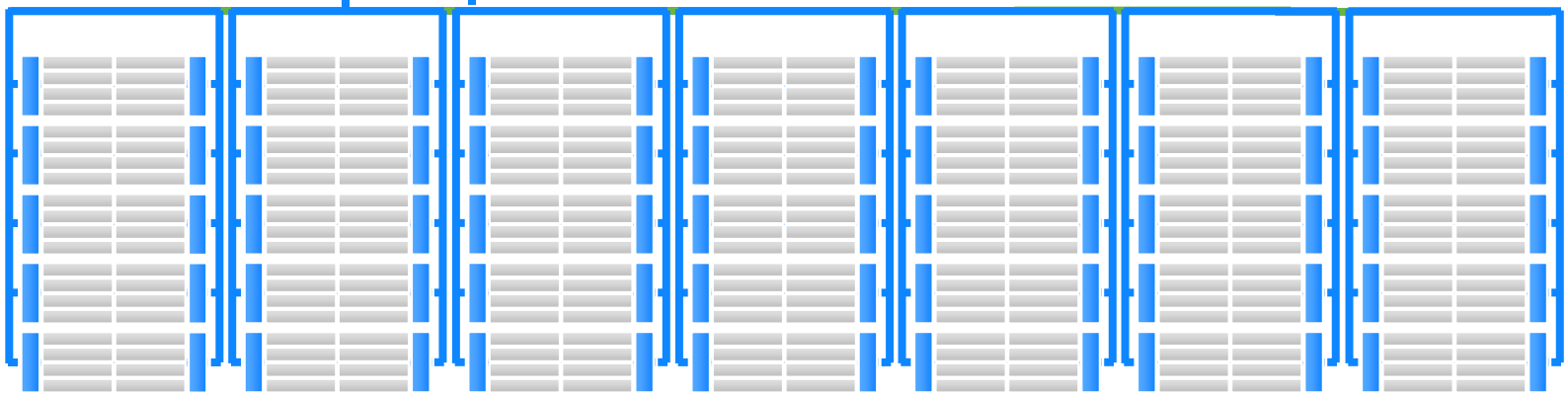
UCS Management

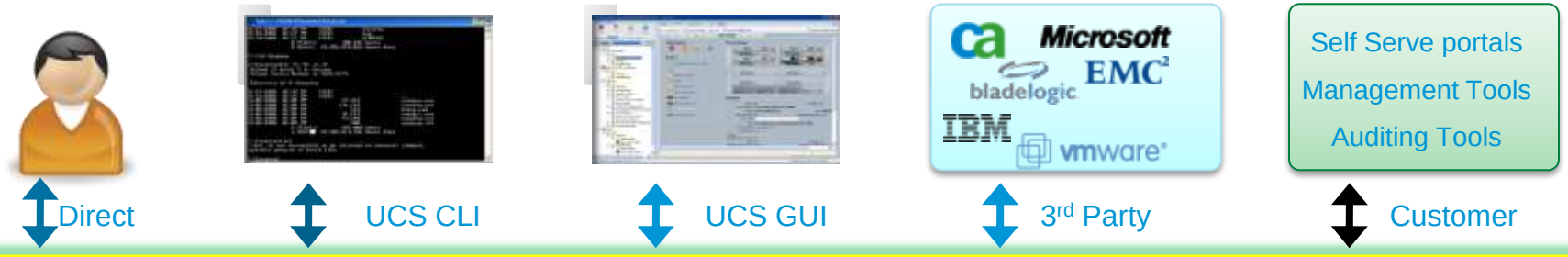


- Single point of device management
  - Adapters, blades, chassis, LAN & SAN connectivity
  - Embedded manager
  - GUI & CLI
- Standard APIs for systems management
  - XML, SMASH-CLP, WSMAN, IPMI, SNMP
  - SDK for commercial & custom implementations
- Designed for multi-tenancy
  - RBAC, organizations,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



Programmatic Infrastructure

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

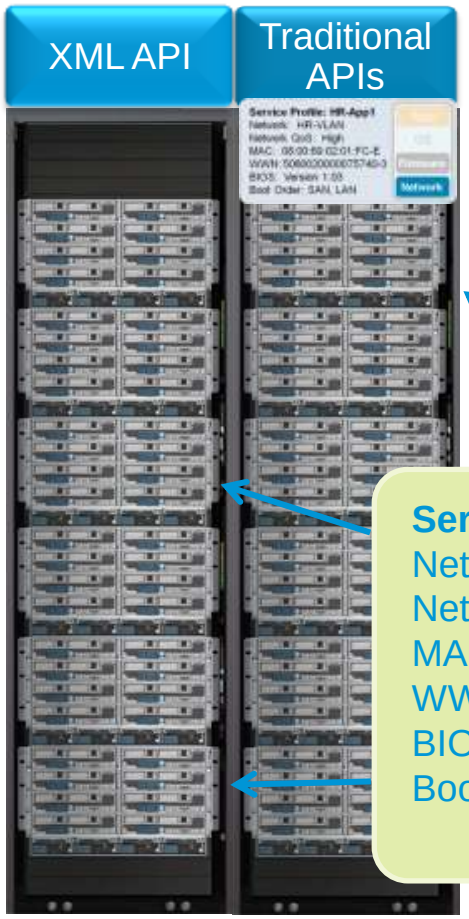


- Broad 3rd party integration support
- Faster custom integration for customer use cases
- Consistent data and views across ALL interfaces

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

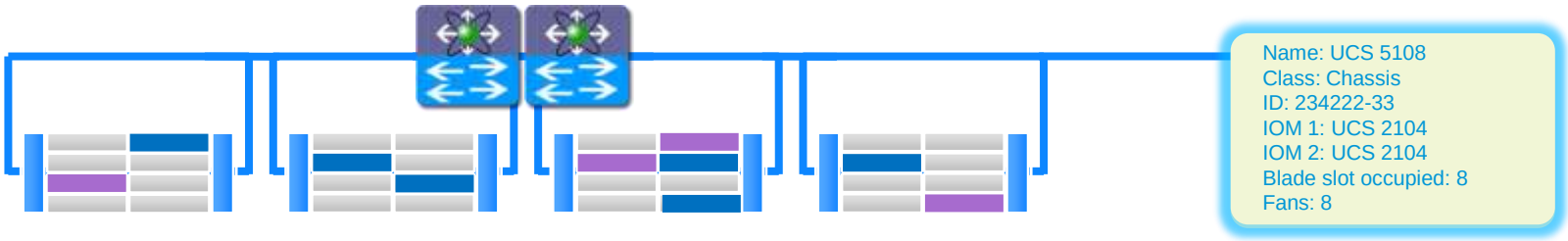
Chassis: 2
- IOM 1: UCS 2104
- IOM 2: UCS 2104
- Blade slots occupied: 8

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

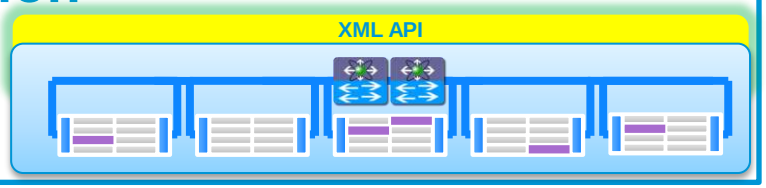


Name: UCS 5108
Class: Chassis
ID: 234222-33
IOM 1: UCS 2104
IOM 2: UCS 2104
Blade slot occupied: 8
Fans: 8

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

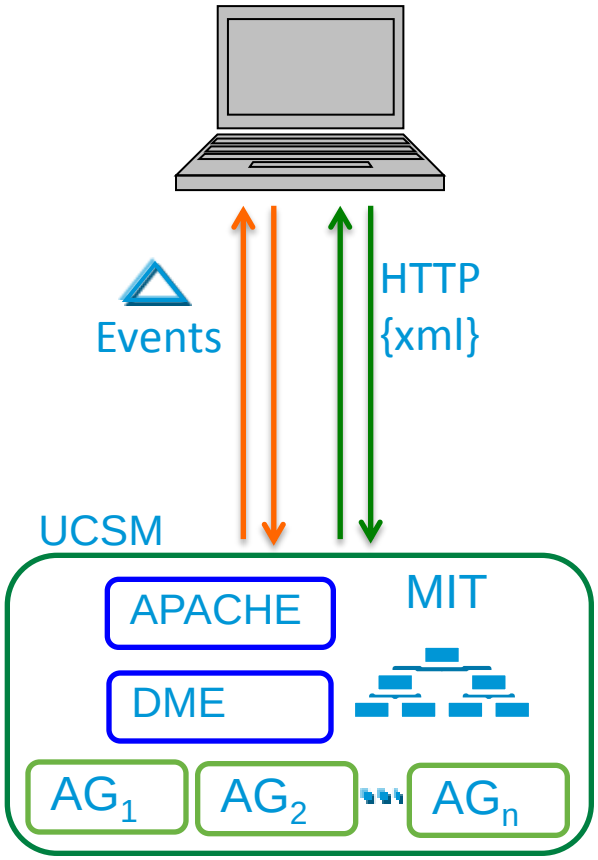
Configuration Backup

- Export entire UCS Information Model

Firmware Image Management

- Ensure Firmware consistency across all components

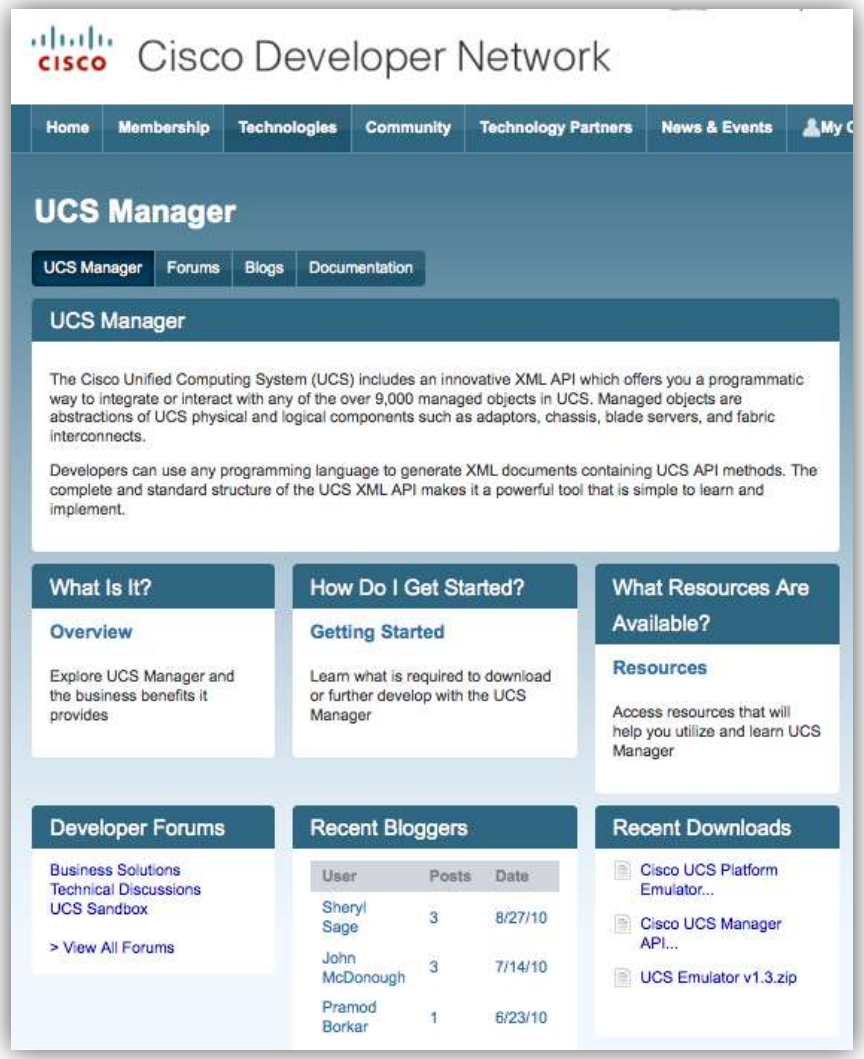
Cisco UCS XML Interface



- 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!

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

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

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

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

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

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=
```

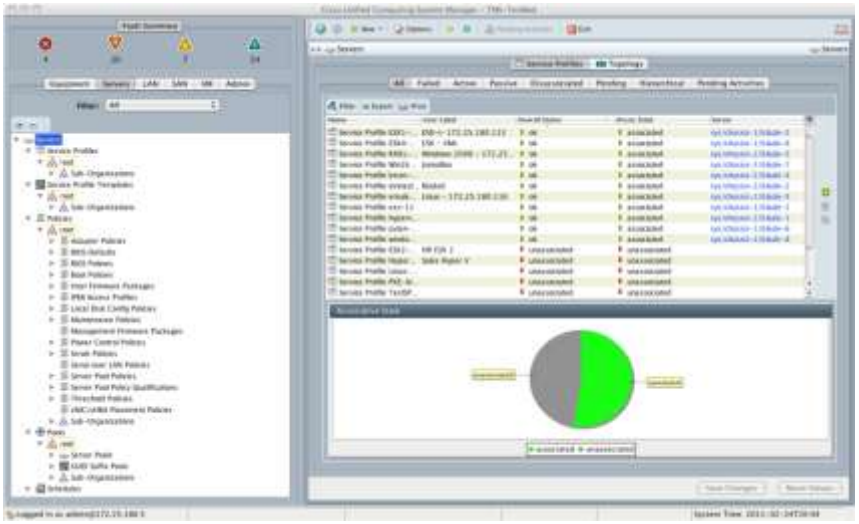
3 **Execute**

```
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

bmcsoftware · ca technologies · Compuware · DynamicOps · EMC² where information lives · hp invent · IBM · Microsoft · newScale The Service Catalog Leader · solarwinds · symantec. · TIDAL SOFTWARE · vmware · Zenoss Open Source IT Management

Application Stack

solaris

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

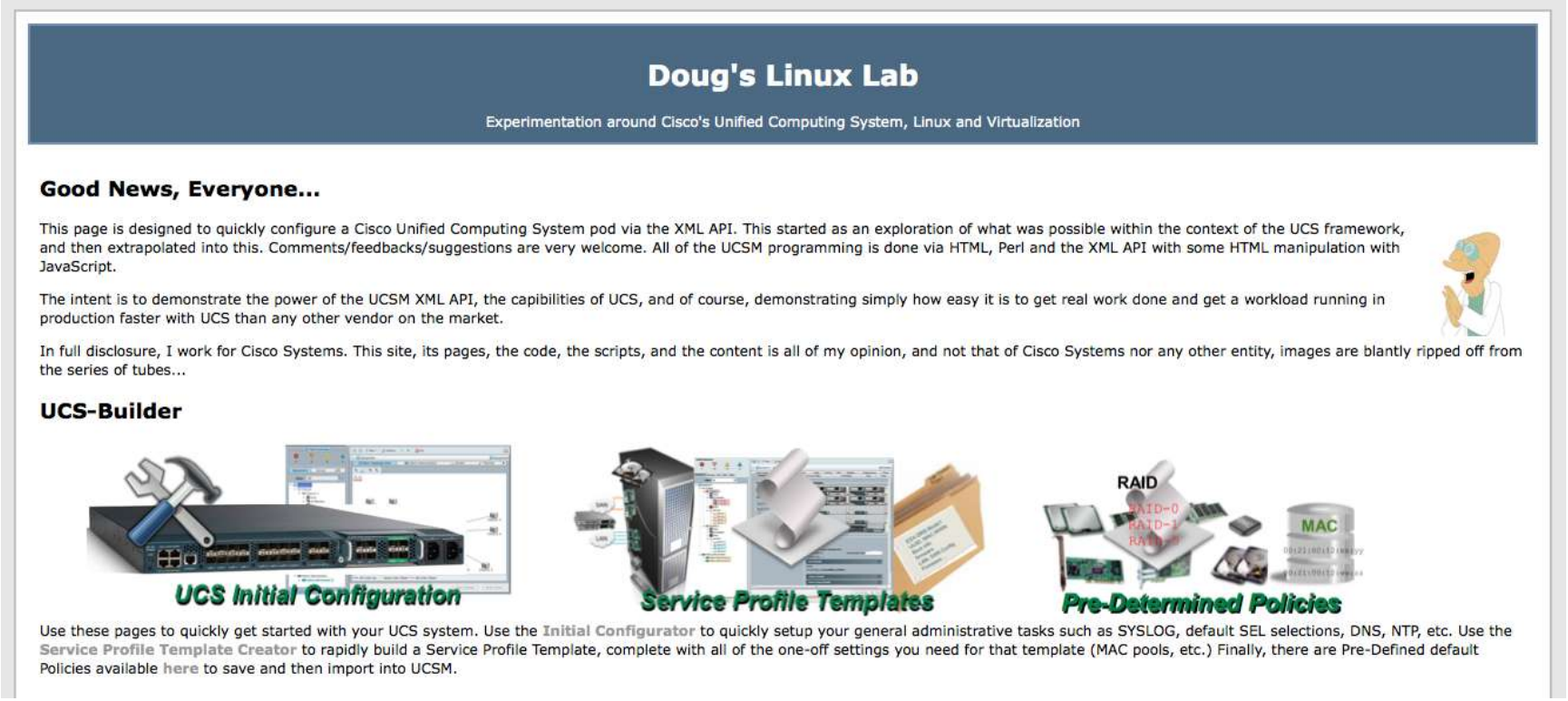
Integrated in the backend with Cisco IT's processes and end-user VM provisioning scheme

- 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

Developed internally by Cisco IT using the UCS XML API

Example of end customer development

- Doug's Linux Lab: http://dougslinuxlab.org/



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